Edition 9

Display instrumentation

for use in **hazardous**

and **safe areas**

- *Loop Powered Indicators*
- *Panel Meters*
- *Set Point Stations [Generators]*
- *Rate Totalisers*
- *Counters*
- *Tachometers*
- *Timers or Clocks*
- *Serial Text Displays*
- *Fieldbus Indicators & Displays*
- *Flow Batch Controllers*
- *Indicating Temperature Transmitters*
- *Sounders & Beacons*
- *LED Cluster Lamps*

visit our website **www.beka.co.uk**

BEKA associates

Sales@beka.co.uk

Our experienced sales engineers will be pleased to guide you through the BEKA product range and to answer technical questions.

Led by Andy Clarke, the in-house team includes Mark Foster, Andrew Curtis, Lorna Hill and Laura Thompson.

We can organise product demonstrations at your site, or potential customers can take advantage of our long established evaluation service which allows you to *TRY BEFORE YOU BUY.*

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Contents

Welcome!

Thank you for spending time to review our latest catalogue.

There has been a considerable gap since the last edition. So much has changed in this printed version but

www.beka.co.uk

remains a live and constantly updated source of data sheets and application guides, plus installation manuals, numerous hazardous area certificates, declarations of conformity and some product related software downloads.

This edition 9 catalogue brings you the data sheets for the entire BEKA portfolio including those most recently developed.

Dave Turner, Sales Director

How to use this catalogue

Each section of this catalogue is devoted to a single product type and includes a summary to aid selection. The data sheets in each section are arranged in alphanumeric order and colour coded to show the product safety certification:

Instrinsically safe
Ex nA
Flameproof
General purpose

News by email

If you would like to receive occasional updates from ***BEKA*** when new products, services or certifications become available, please send an email to **sales@beka.co.uk**

Worldwide agents see www.beka.co.uk for details

Why Buy BEKA ?

> Three-Year warranty on all products

> Fast manufacturing times, typically 3-5 working days

> Widest range available of hazardous area indicators and displays

> International certifications for global applications

> High reliability products for hazardous areas and general purpose applications

> Privately owned by engineers designing products for engineers since 1984

> Direct telephone or email contact to sales team and knowledgeable engineers

> Excellent customer support pre and post sales

> World-wide support network of agents and distributors

> Set-up and scale printing on most models for no additional charge

> Comprehensive website and easy access to all documentation

sales@beka.co.uk www.beka.co.uk +44 1462 438301

About BEKA

BEKA associates Ltd is an independent British company committed to the design and manufacture of cost effective display instrumentation, mainly for use in hazardous areas.

In addition to our well known 4/20mA loop powered indicators which are now fourth generation models, we can supply a wide range of rate totalisers, fieldbus and data indicators, plus annunciators such as flashing beacons, sounders and panel lamps. All have been designed by BEKA engineers and are manufactured in our modern Hitchin, UK, factory.

With a 3-year warranty, BEKA products are often commissioned for the latest processing equipment in the oil and gas, chemical, pharmaceutical and waste water industries. International certification is provided by ATEX and IECEx; FM and ETL for USA and Canada.

New products

<<<< Stainless steel enclosure for large digit indicators

316 Stainless Steel enclosure option for the popular 'G' range field mounting 4/20mA loop powered indicators. Designed for applications in marine and harsh environments, the new enclosure provides IP66 protection.
See page 5

Universal process panel meters >>>>

High quality universal process panel meters featuring a bold five digit display and bargraph visible in most lighting conditions. The display colour is fully adjustable and can be linked to the meter's alarm status.
See page 297

<<<< Flow rate totalisers

An extensive new range of easy to use field and panel mounting instruments that can display rate and total flow in engineering units from most pulse or 4/20mA output flowmeters.
See pages 135 and 159

Tachometers, speed and hours run indication >>>>

New easy to configure, externally powered instruments that measure and display speed in engineering units from a wide range of sensors. To assist with maintenance all models include a run-time display. *See page 207*

<<<< Counter and position indicators

New one and two input, easy to use externally powered counters which can display total, rate and position in engineering units from a wide variety of sensors. *See page 183*

Contact us

Placing your order:

BEKA associates Ltd
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Hitchin
Hertfordshire
SG5 2DA, UK

FAX **+44 (0) 1462 453971**

sales@beka.co.uk

Visit
www.beka.co.uk
or call
+44 1462 438301
for further information

PRODUCT LEAD TIMES

Orders for small quantities of instruments can normally be despatched within three working days, but if required earlier despatches can usually be arranged.

WARRANTY

3 years warranty on return to factory basis.

OVERSEAS CUSTOMERS

BEKA products are available from our overseas agents network. The countries in which we are represented are shown on our web site at **www.beka.co.uk.** If we are not represented in your area, please contact us directly for an export quotation.

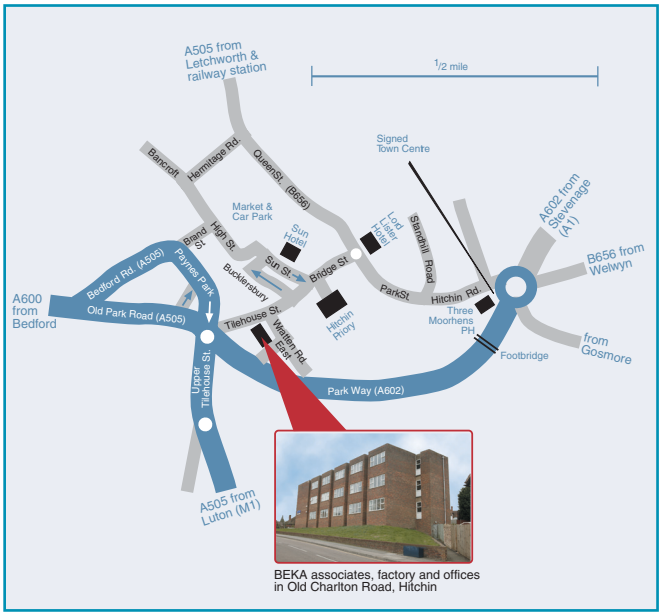
EVALUATION SERVICE

Our free evaluation service enables potential customers to prove the suitability of any BEKA product for up to three months. Please contact our sales department for details.

HOW TO FIND US

BEKA associates is located close to Hitchin town centre, adjacent to Hitchin Priory and historic Tilehouse Street. Parking for visitors is available. Hitchin railway station is less than one mile away.

GPS co-ordinates:
Latitiude: 51.946284
Longitude: -0.281168
51° 56’ 46.583” N
0° 16’ 52.759” W

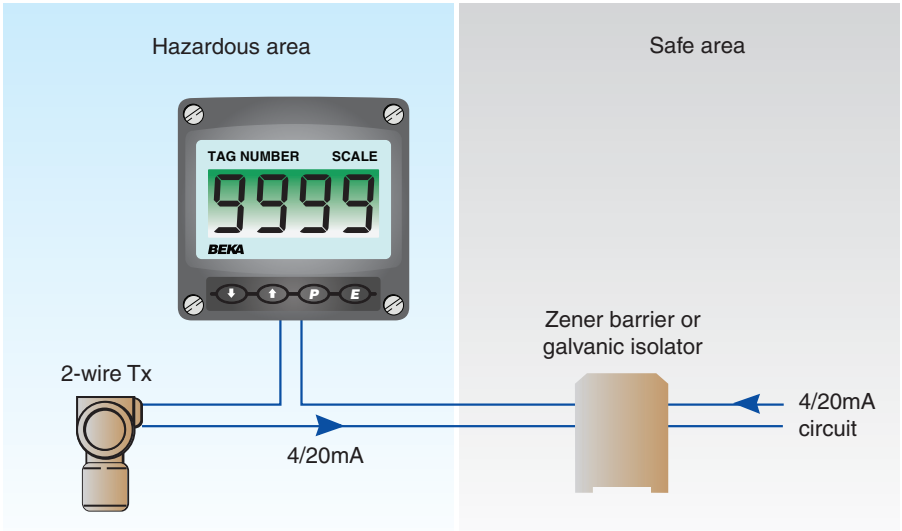


BEKA associates, factory and offices in Old Charlton Road, Hitchin

4/20mA Loop Powered Digital Indicators
Field Mounting

An extensive range of 4/20mA loop powered field mounting indicators in GRP and 316 stainless steel enclosures.

- **Large high contrast displays with a wide viewing angle**
- **General purpose and certified hazardous area models**
  International Ex ia gas and dust intrinsic safety
  Ex nA non sparking
  Ex t dust ignition protection certification.
- **Robust impact resistant GRP and 316 stainless steel IP66 enclosures**
  Compact 'G' models with GRP or stainless steel enclosure
  'E' models with separate terminal compartment
- **Internal calibrator, root extractor, lineariser & tare function**
- **-40 to +70˚C operating temperature range**
- **Accessories**
  Dual isolated alarms
  Pipe & panel mounting kits
  Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
  Laser engraved stainless steel legend plates



Intrinsically safe

Ex nA

Flameproof

General purpose

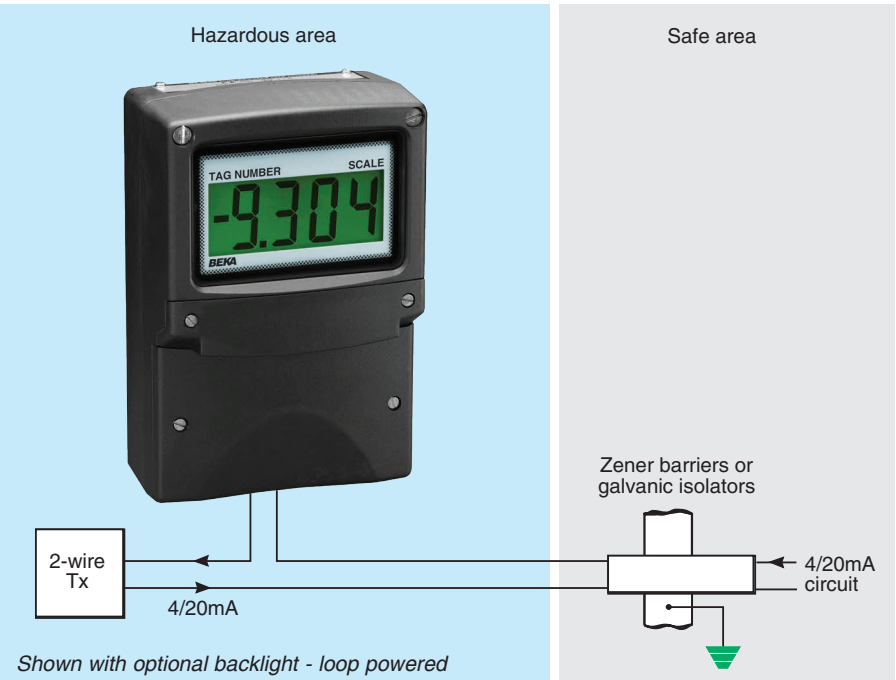
Slide-in scale card can be supplied printed with customer specified information for no extra charge.

'G' instrument panel mounted using BA494G panel mounting kit.

'G' instrument attached to pipe using BA393G panel mounted kit.

4/20mA Loop Powered Digital Indicators. Field mounting models available:

Model No.	Enclosure	Display				Certification					
		Digits		Bargraph		Europe ATEX		International IECEx		USA & Canada	
		Number	Height	Segments	Length	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22											
BA304E	GRP - separate tml. compartment	4	34mm	–	–	✔	✔	✔	✔	✔	✔
BA324E	GRP - separate tml. compartment	5	29mm	31	83mm	✔	✔	✔	✔	✔	✔
BA304G	GRP Compact	4	34mm	–	–	✔	✔	✔	✔	✔	✔
BA304G-SS	Stainless Steel	4	34mm	–	–	✔	✔	✔	✔	✔	✔
BA324G	GRP Compact	5	29mm	31	83mm	✔	✔	✔	✔	✔	✔
BA324G-SS	Stainless Steel	5	29mm	31	83mm	✔	✔	✔	✔	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators											
BA304NE	GRP - separate tml. compartment	4	34mm	–	–	✔	✔	✔	✔	–	–
BA324NE	GRP - separate tml. compartment	5	29mm	31	83mm	✔	✔	✔	✔	–	–
BA304NG	GRP Compact	4	34mm	–	–	✔	✔	✔	✔	✔	✔
BA324NG	GRP Compact	5	29mm	31	83mm	✔	✔	✔	✔	✔	✔
Ex d Flameproof for use in Zones 1, 2. 21 and 22											
BR323AL	Aluminium	5	10mm	–	–	✔	✔	–	–	–	–
BR323SS	Stainless Steel	5	10mm	–	–	✔	✔	–	–	–	–
General Purpose - for use in safe areas											
BA504E	GRP - separate tml. compartment	4	34mm	–	–						
BA524E	GRP - separate tml. compartment	5	29mm	31	83mm						
BA504G	GRP Compact	4	34mm	–	–						
BA504G-SS	Stainless Steel	4	34mm	–	–						
BA524G	GRP Compact	5	29mm	31	83mm						
BA524G-SS	Stainless Steel	5	29mm	31	83mm						



Shown with optional backlight - loop powered

BA304E

2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM, cFM & ATEX gas**
  All versions have IECEx certification.
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba304e

The BA304E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA304D. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA304E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA304E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA304E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA304D, thus allowing the BA304E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus.* Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at –40°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 4 digits34mm high
Span	Adjustable between 0 & ±9999 for a 4/20mA input
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Ta = -40 to 70°C — *Dust option, see How to order*
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus*.
Cert. No.	ITS11ATEX27253X (Special conditions only apply for installations in Zone 0)

USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 Gp A, B, C, D, E, F & G T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Tamb = -40 to 70°C — *Dust option, see How to order*
Cert. No	IECEx ITS11.0014X (Special conditions only apply for installations in Zone 0)

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

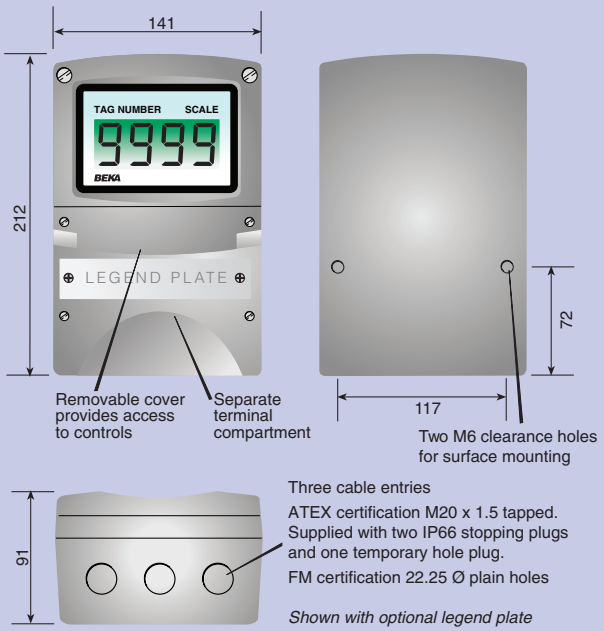
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

Accessories

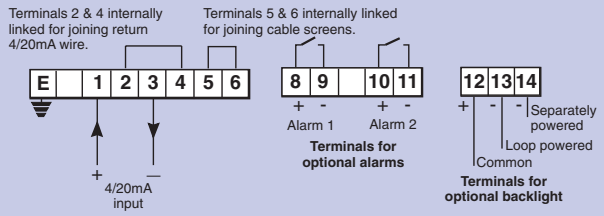
Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus.*
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.#
Tag legend	Tag number or application marked onto display escutcheon.#
Stainless steel legend plate	Etched legend plate.with tag number or application attached to front of the instrument.#
Pipe mounting kit	BA392D or BA393 #

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

		Please specify
Model number		BA304E
Certification		ATEX gas
	or	ATEX gas & dust
	or	FM, cFM & ATEX gas

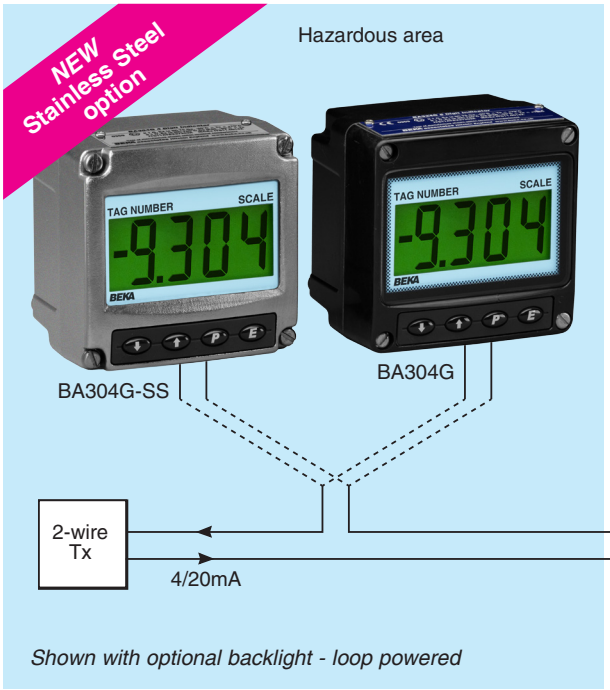
All versions have IECEx certification.

Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	Please specify if required
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



Shown with optional backlight - loop powered

BA304G
BA304G-SS
2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **IP66 GRP or stainless steel enclosure.**
- **Intrinsically safe ATEX, IECEx, ETL and cETL certification.**
- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Optional backlight & alarms.**
- **Root extractor, lineariser and tare function.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

www.beka.co.uk/ba304g

The BA304G loop powered 4/20mA indicator is an intrinsically safe field mounting instrument with a large 4 digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA304G is to display a measured variable in engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304G indicator to be easily read in most lighting conditions. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 protection is provided by a robust GRP or 316 stainless steel enclosure, both have thick armoured glass windows and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA304G is surface mounting but can be pipe or panel mounting using accessories.

IECEx, ATEX and ETL intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge. If this is not requested, a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, 4 digits 34mm high non-multiplexed
Span	Adjustable between 0 & ±9999 for a 4/20mA input
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing

Push buttons (Function in display mode)

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Comply with requirements for *simple apparatus*
Cert. No.	IECEx ITS 11.0014X (Special conditions only apply for Zone 0)

Europe ATEX

Code Group II	Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Safety parameters	As IECEx certification
Cert. No.	ITS11ATEX27253X (Special conditions only apply for Zone 0)

USA & Canada ETL & cETL

Code	Class I, Div 1, Gp A, B, C, D. T5	USA & Canada
	Class I, Zone 0, AEx ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	USA
	Class II, Div 1, Gp E, F, G. Class III, Div 1	USA & Canada
	Zone 20 AEx ia IIIC T80°C Da -40°C ≤ Ta ≤ 60°C	USA
	Ex ia T5 Ga -40°C ≤ Ta ≤ 70°C Ex ia IIIC Da -40°C ≤ Ta ≤ 60°C	Canada
ETL control No.	4008610	

USA & Canada Nonincendive

Code	Class I, Div 2, Gp A, B, C, D T5 Class II, Div 2, Gp F, G Class III, Div 2 -40°C ≤ Ta ≤ 70°C
ETL control No.	4008610

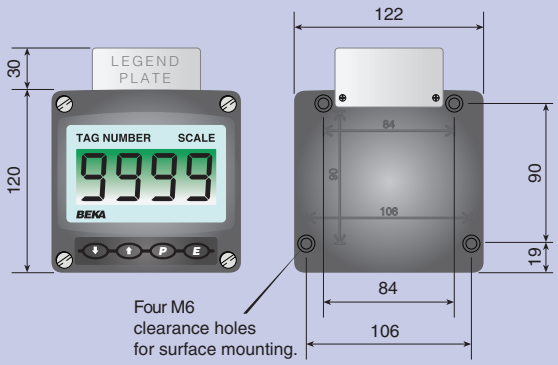
Environmental

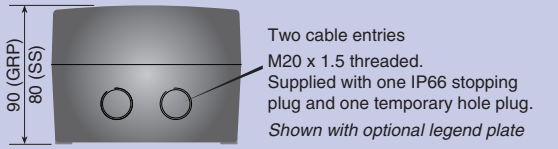
Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

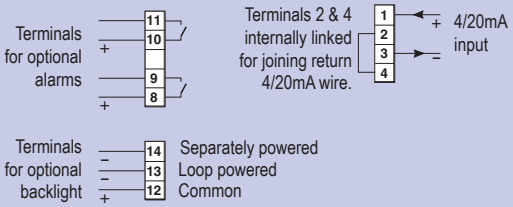
Enclosure	
Material	GRP or 316 stainless steel
Ingress protection	IP66
Impact protection	Enclosure 7J Window 4J
Weight	
GRP	1.1kg
Stainless steel	2.6kg
Terminals	Blue with screw clamp for 0.5 to 1.5mm² cable
Scale card	Slide-in card showing units of measurement and tag information through display window.

DIMENSIONS (mm)





TERMINAL CONNECTIONS



Accessories

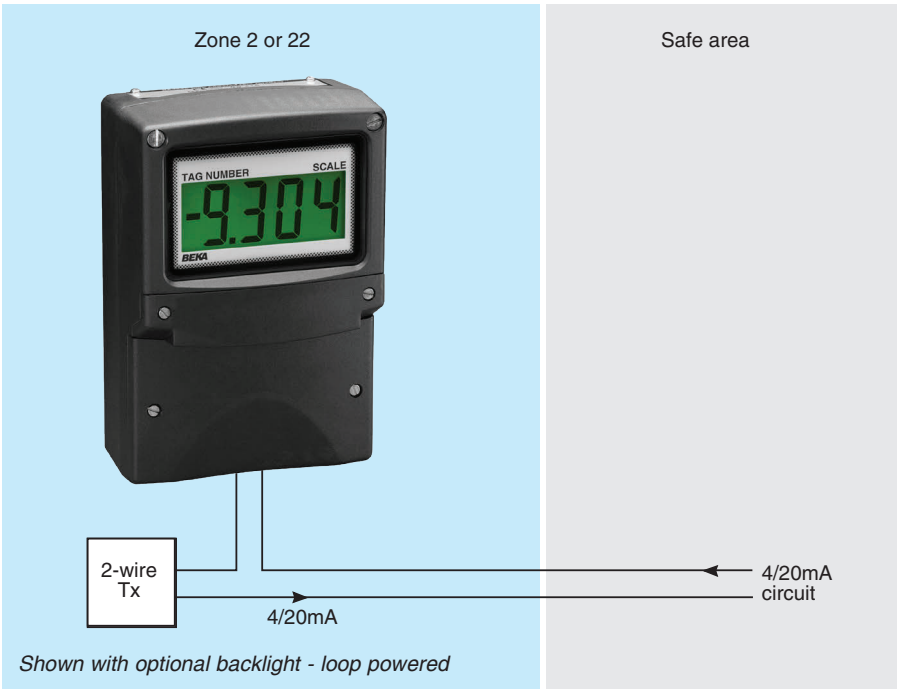
Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Legend plate	Stainless steel plate laser engraved tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits #	
For BA304G & BA304G-SS	
BA394G	Mounts indicator into an open panel aperture, does not seal aperture.
For BA304G	
BA494G	Mounts indicator into an open panel aperture & seals aperture
For BA304G-SS	
BA494G-SS	Mounts indicator into an open panel aperture & seals aperture
Back-box terminals for BA304G.	Including 4/20mA loop maintenance diode

See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	
GRP enclosure	BA304G
Stainless steel enclosure	BA304G-SS
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX] Include position of decimal point & sign if negative.
20.000mA	XXXX]
Scale card marking	
Units	Legend required
Tag	Legend required

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G, BA494G or BA494G-SS
Back-box terminals	Back-box terminals



Shown with optional backlight - loop powered

BA304NE

2-wire 4/20mA 4 digit indicator

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Ex nA gas and Ex tc dust ATEX & IECEx certification.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba304ne

The BA304NE loop powered 4/20mA indicator is a fourth generation field mounting instrument that is mechanically compatible and electrically similar to the earlier BA304ND. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA304NE is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA304NE is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304NE indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70˚C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

ATEX and IECEx non sparking Ex nA certification allows the BA304NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA304NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA304NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324NE which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at 040°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Root extractor	Selectable
Lineariser	16 adjustable segments
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20˚C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Certification

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex tc IIIC 80°C Dc IP66 Ta = -40 to 70°C
Input parameters	
Ii	100mA
Cert. No.	ITS11ATEX47255

International IECEx

Code	Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0016

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2014/30/EU

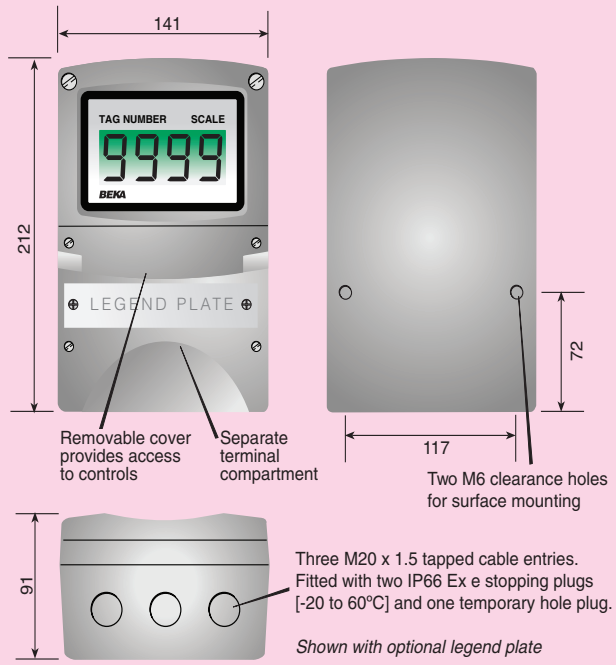
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

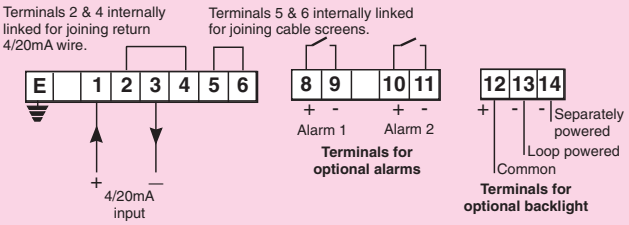
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Input voltage increased to 5V
Separately powered	11V min at 35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.#
Tag legend	Tag number or application marked onto display escutcheon.#

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Stainless steel legend plate.	Stainless steel plate etched with tag number or applicationattached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

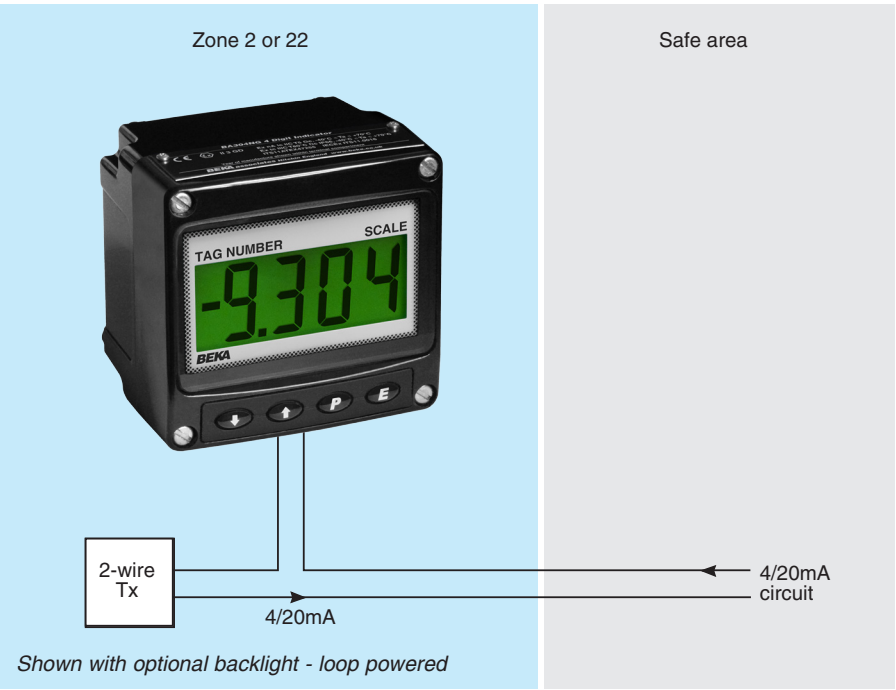
See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA304NE
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX] Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *
20.000mA	XXXX]

Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

* *Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA304NG

2-wire 4/20mA 4 digit indicator

Ex nA & tc certified for use in Zones 2 & 22 hazardous areas

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Ex nA gas and Ex tc dust ATEX, IECEx, ETL and cETL certification.**
- **Root extractor and 16 segment lineariser.**
- **IP66 GRP enclosure**
- **Easy scale card installation on-site.**
- **Optional backlight & alarms.**
- **3 year guarantee**

www.beka.co.uk/ba304ng

The BA304NG loop powered 4/20mA indicator is a new field mounting instrument that supersedes the well established BA304NC. It is electrically and mechanically compatible with the earlier model but has a much larger full 4 digit display, dust certification and guaranteed performance between -40 and +70°C. Like it's predecessor, the BA304NG is housed in a robust IP66 enclosure which may be surface or pipe mounting.

Main application of the BA304NG is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA304NG indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. An optional back-box terminal assembly, including a continuity diode in the 4/20mA loop, is available for users wishing to terminate field wiring before the indicator assembly is installed.

The scale card which show units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site.

IECEx, ATEX and ETL non sparking Ex nA certification allows the BA304NG to be installed in Zone 2 hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA304NG offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification permits the BA304NG to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA324NG which has a similar specification with a five digit 29mm high display plus a 31 segment bargraph.

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage indicator

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Certification

Europe ATEX

Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS11ATEX47255

International IECEx

Code	Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 -40°C ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 11.0016

ETL & cETL USA & Canada

Code	Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C	USA
	Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C	Canada
ETL control No.	4008610	

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
Enclosure	GRP IP66
EMC	Complies with EMC Directive 2014/30/EU

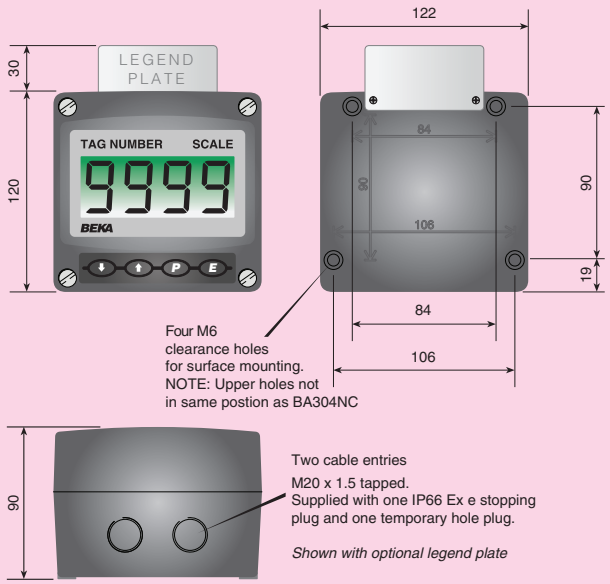
Mechanical

Terminals	Black with screw clamp for 0.5 to 1.5mm² cable
Weight	1.1kg

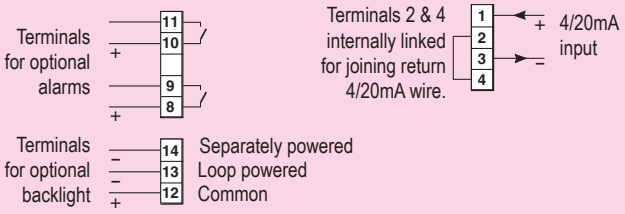
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately	11V to 30V dc at 35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	30V
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Slide-in card showing through display window units of measurement and tag information.
Stainless steel legend plate.	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Terminal assembly	Mounted in enclosure back-box for terminating field wiring before indicator assembly is installed. Includes continuity diode in 4/20mA loop.
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

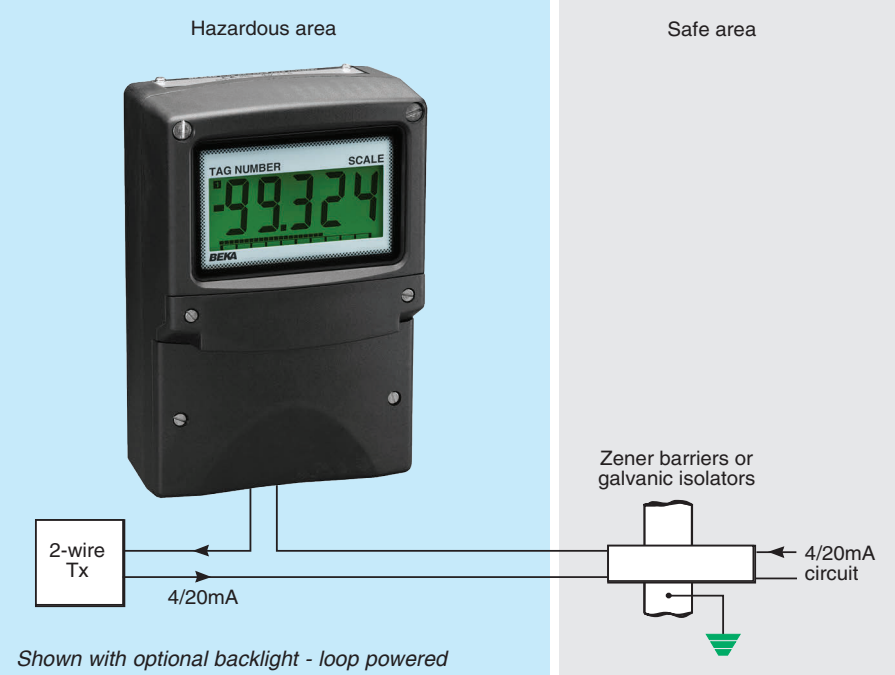
HOW TO ORDER

	Please specify
Model number	BA304NG
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. **

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Back-box terminal assembly	Terminal assembly
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA324E

2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM, cFM & ATEX gas**
  All versions have IECEx certification.
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba324e

The BA324E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA324D. It has a much larger full 5 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA324E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA324E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA324E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA324E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA324D, thus allowing the BA324E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus.* Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304E which has a similar specification and an even larger four digit 34mm high display.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segment 80mm long
Overange	99999 or -99999 with all decimal points flashing

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Ta = -40 to 70°C — *Dust option, see How to order*
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus*
Cert. No.	ITS11ATEX27253X (Special conditions only apply for installations in Zone 0)

USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC 20 T80°C Da IP66- Tamb = -40 to 70°C — *Dust option, see How to order*
Cert. No	IECEx ITS11.0014X (Special conditions only apply for installations in Zone 0)

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2014/30/EU

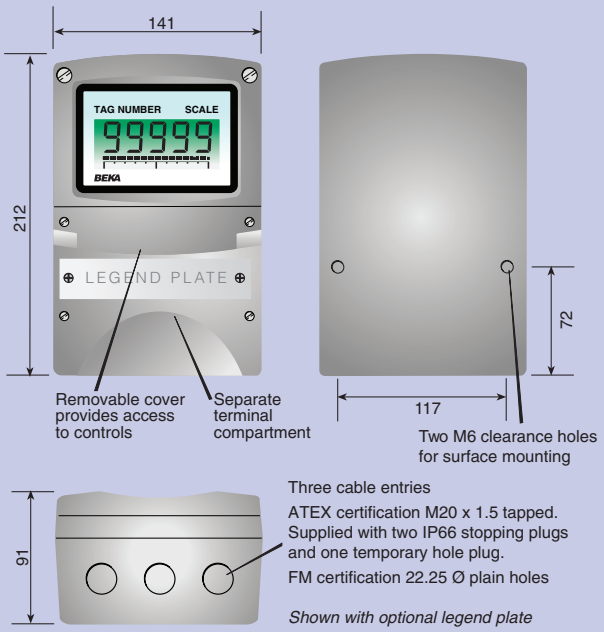
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

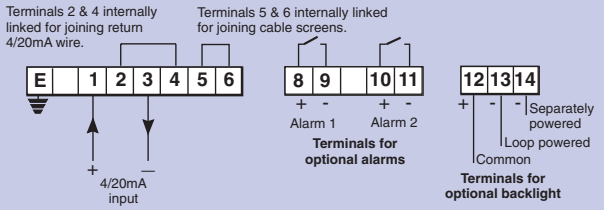
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered.	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale legend	Units of measurement marked onto display escutcheon. #
Tag legend	Tag number or application marked onto display escutcheon. #
Stainless steel legend plate	Etched legend plate with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

See accessory datasheet for details

HOW TO ORDER

		Please specify
Model number		BA324E
Certification		ATEX gas
	or	ATEX gas & dust
	or	FM, cFM & ATEX gas

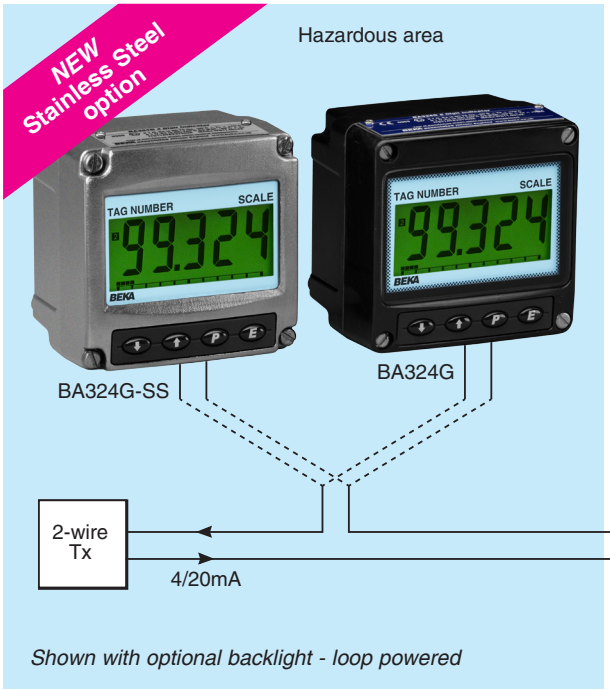
All versions have IECEx certification.

Display mode	Linear, root or lineariser*
Display at: 4.000mA	XXXXX
20.000mA	XXXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	Please specify if required
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

* *Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA324G
BA324G-SS
2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **IP66 GRP or stainless steel enclosure.**
- **Intrinsically safe ATEX, IECEx, ETL and cETL certification.**
- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Root extractor, lineariser and tare function.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

www.beka.co.uk/ba324g

The BA324G loop powered 4/20mA indicator is an intrinsically safe field mounting instrument with a large 5 digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA324G is to display a measured variable in engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324G indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 protection is provided by a robust GRP or 316 stainless steel enclosure, both have thick armoured glass windows and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA324G is surface mounting but can be pipe or panel mounting using accessories.

IECEx, ATEX and ETL intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge. If this is not requested, a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high
Span	Adjustable between 0 & ±99999 for a 4/20mA input
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overrange	99999 or -99999 with all decimal points flashing

Push buttons

	(Function in display mode)
▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Comply with requirements for *simple apparatus*.
Cert. No.	ITS11ATEX27253X (Special conditions only apply for Zone 0)

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Parameters	As ATEX
Cert. No.	IECEx ITS 11.0014X (Special conditions only apply for Zone 0)

USA & Canada ETL & cETL

Code	Class I, Div 1, Gp A, B, C, D. T5 Class I, Zone 0, AEx ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	USA & Canada USA
	Class II, Div 1, Gp E, F, G. Class III, Div 1 Zone 20 AEx ia IIIC T80°C Da -40°C ≤ Ta ≤ 60°C	USA & Canada USA
	Ex ia T5 Ga -40°C ≤Ta ≤ 70°C Ex ia IIIC Da -40°C ≤Ta ≤ 60°C	Canada
ETL control No	4008610	

USA & Canada Nonincendive

Code	Class I, Div 2, Gp A, B, C, D T5 Class II, Div 2, Gp F, G Class III, Div 2 -40°C ≤Ta ≤ 70°C	USA & Canada
ETL control No.	4008610	

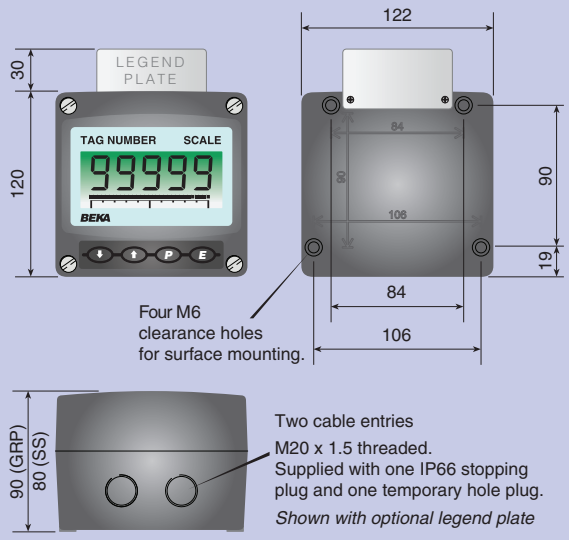
Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU

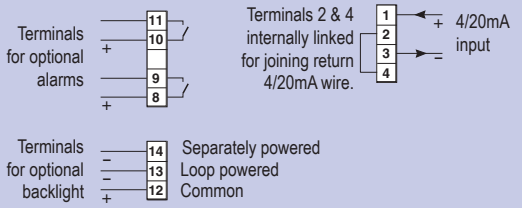
Mechanical

Enclosure	
Material	GRP or 316 stainless steel
Ingress protection	IP66
Impact protection	Enclosure 7J, Window 4J
Weight	
GRP	1.1kg
Stainless steel	2.6kg
Terminals	Blue with screw clamp for 0.5 to 1.5mm² cable
Scale card	Slide-in card showing units of measurement and tag information through display window.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

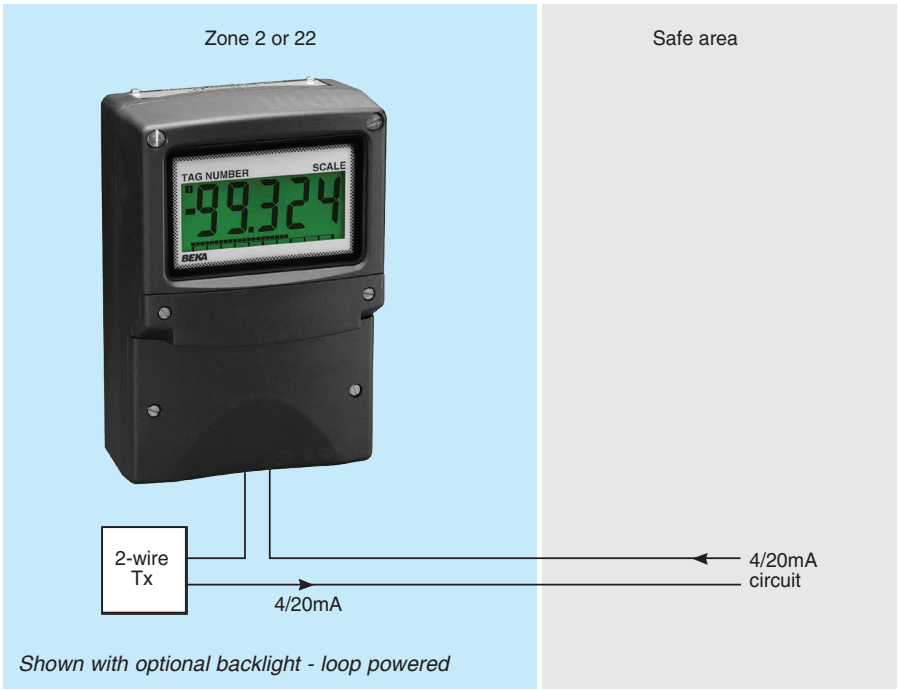
Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Legend plate	Stainless steel plate laser engraved tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits #	
For BA324G & BA324G-SS	
BA394G	Mounts indicator into an open panel aperture, does not seal aperture.
For BA324G	
BA494G	Mounts indicator into an open panel aperture & seals aperture
For BA324G-SS	
BA494G-SS	Mounts indicator into an open panel aperture & seals aperture
Back-box terminals for BA324G.	Including 4/20mA loop maintenance diode

See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	
GRP enclosure	BA324G
Stainless steel enclosure	BA324G-SS
Display mode	Linear, root or linearise
Display at:	
4.000mA	XXXX] Include position of decimal point & sign if negative.
20.000mA	XXXX]
Scale card marking	
Units	Legend required
Tag	Legend required

Accessories	Please specify if required
Display backlight	Backlight
Dual alarms	Alarms
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G, BA494G or BA494G-SS
Back-box terminals	Back-box terminals



Shown with optional backlight - loop powered

BA324NE

2-wire 4/20mA 5 digit indicator

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Ex nA gas and Ex tc dust ATEX & IECEx certification.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba324ne

The BA324NE loop powered 4/20mA indicator is a fourth generation field mounting instrument that is mechanically compatible and electrically similar to the earlier BA324ND. It has a much larger full 5 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA324NE is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA324NE is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and has a very wide viewing angle, allowing the BA324NE indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -99999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

ATEX and IECEx non sparking Ex nA certification allows the BA324NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA324NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA324NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304NE which has a similar specification but has a four digit 34mm high display.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high and 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Root extractor	Selectable
Lineariser	16 adjustable segments
Reading rate	2 per second
Bargaph	31 segments 80mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Certification

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex tc IIIC 80°C Dc IP66 Ta = -40 to 70°C
Input parameters	
Ii	100mA
Cert. No.	ITS11ATEX47255

International IECEx

Code	Ex nA IIC T5 Gc Ex tc IIIC T80°C Dc IP66 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0016

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2014/30/EU

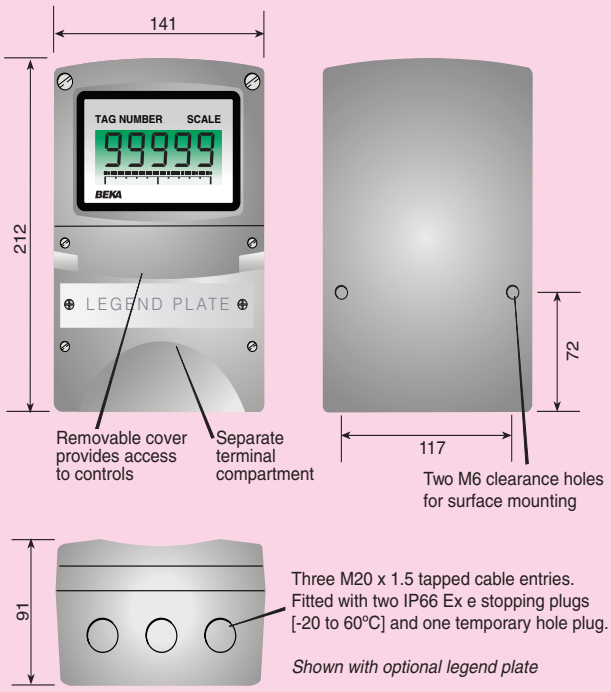
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

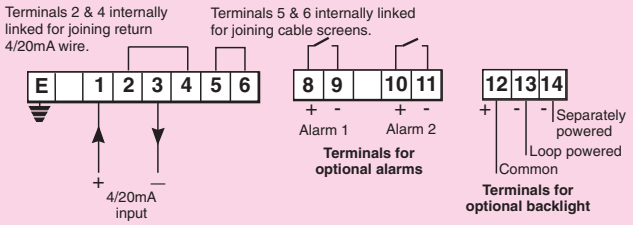
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Input voltage increased to 5V
Separately powered	11V min at 35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.#

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Tag legend	Tag number or application marked onto display escutcheon.#
Stainless steel legend plate.	Stainless steel plate etched with tag number or applicationattached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

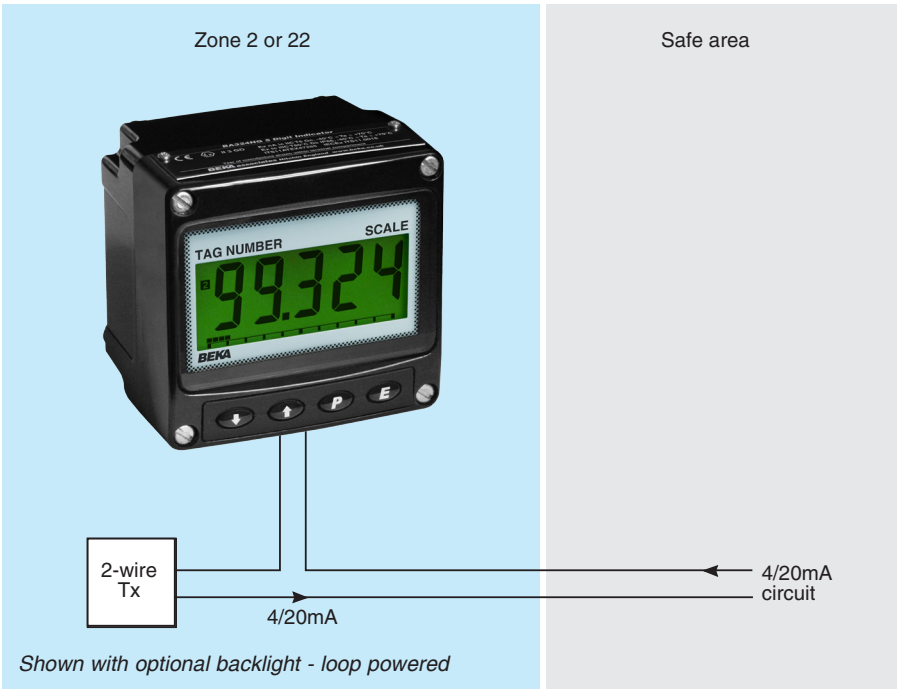
See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA324NE
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX ⎫ Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *
20.000mA	XXXXX ⎭

Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA324NG

2-wire 4/20mA 5 digit indicator

Ex nA & tc certified for use in Zones 2 & 22 hazardous areas

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Ex nA gas and Ex tc dust ATEX, IECEx, ETL & cETL certification.**
- **Root extractor and 16 segment lineariser.**
- **IP66 GRP enclosure**
- **Easy scale card installation on-site.**
- **Optional backlight & alarms.**
- **3 year guarantee**

www.beka.co.uk/ba324ng

The BA324NG loop powered 4/20mA indicator is a new field mounting instrument that supersedes the well established BA324NC. It is electrically and mechanically compatible with the earlier model but has a much larger full 5 digit display, bargraph, dust certification and guaranteed performance between -40 and +70°C. Like it's predecessor, the BA324NG is housed in a robust IP66 enclosure which may be surface or pipe mounting.

Main application of the BA324NG is to display a measured variable in meaningful engineering units within a Zone 2 or 22 hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A large 29mm high 5 digit display and 31 segment bargraph provided maximum contrast and have a very wide viewing angle, allowing the BA324NG indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. An optional back-box terminal assembly, including a continuity diode in the 4/20mA loop, is available for users wishing to terminate field wiring before the indicator assembly is installed.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site.

New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site.

IECEx, ATEX and ETL non sparking Ex nA certification allows the BA324NG to be installed in a Zone 2 hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA324NG offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification permits the BA324NG to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA304NG which has a similar specification and an even larger four digit 32mm high display.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage indicator

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Certification

Europe ATEX

Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS11ATEX47255

International IECEx

Code	Ex nA ic IIC T5 Gc Ex tc IIIC T80°C Dc IP66 -40°C ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 11.0016

USA & Canada ETL & cETL

Code	Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C	USA
	Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C	Canada
ETL control No.	4008610	

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
Enclosure	GRP IP66
EMC	Complies with EMC Directive 2014/30/EU

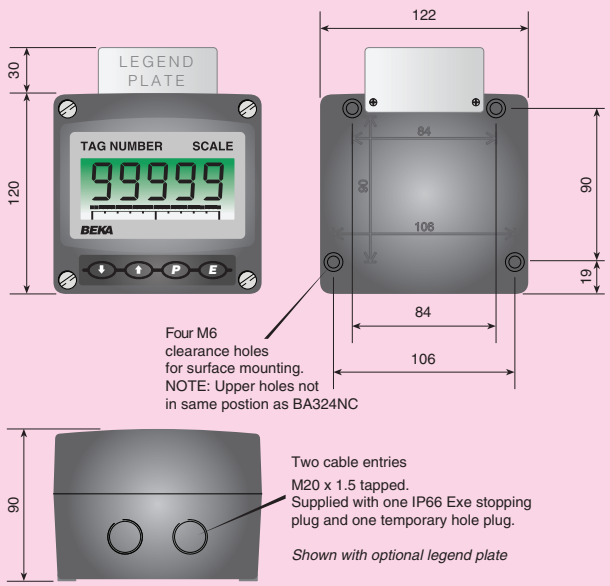
Mechanical

Terminals	Black with screw clamp for 0.5 to 1.5mm² cable.
Weight	1.1kg

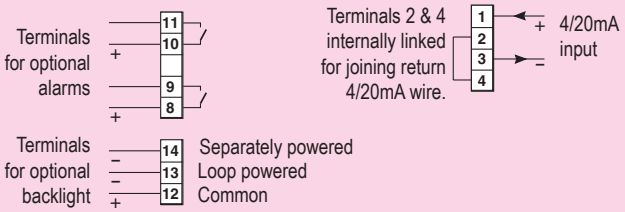
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately	11V to 30V dc at 35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	30V
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Slide-in card showing through display window units of measurement and tag information.
Stainless steel legend plate.	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Terminal assembly	Mounted in enclosure back-box for terminating field wiring before indicator assembly is installed. Includes continuity diode in 4/20mA loop.
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA324NG
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX
20.000mA	XXXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. **

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Back-box terminal assembly	Terminal assembly
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

Zone 1, 2,11 or 22 Hazardous area

BR323AL and BR323SS

2 wire 4/20mA 5 digit indicators

Flameproof enclosure for use in gas & dust hazardous areas

- **Loop powered**
- **± 99999 display 10mm high.**
- **IP66, NEMA Type 4X enclosures**
  - **BR323AL aluminium**
  - **BR323SS 316 stainless steel.**
- **No additional charge for Configuration and calibration.**
- **ATEX certification**
- **Root extractor and lineariser.**
- **Programmable units of measurement legend.**
- **3 Year guarantee**

www.beka.co.uk/br323

The BR323AL and BR323SS are flameproof field mounting loop powered indicators that only introduces a 2.3V drop making them suitable for inclusion in almost any 4/20mA loop. The two instruments are electrically identical but have different enclosure materials. The BR323AL is housed in an epoxy painted aluminium enclosure and the BR323SS in a 316 stainless steel enclosure. Both provide IP66 and NEMA Type 4X protection.

The main application of both instruments is to display a process variable or control signal in a hazardous process area. The zero and span are independently adjustable so the indicator may be calibrated to display any variable represented by a 4/20mA current, such as temperature, pressure or level. A fully adjustable lineariser is included which enables almost any non linear variable to be displayed in linear engineering units. For use with differential flow transmitters, a square root function is included with the lineariser.

ATEX flameproof certification allows the BR323AL and the BR323SS to be installed throughout Europe in Zones 1 and 2 gas hazardous and in Zones 21 and 22 dust hazardous areas.

Indicator configuration and calibration is performed for no additional charge so indicator arrives ready for use. Reconfiguration can easily be performed on-site using simple Windows® compatible software running on a personal computer connected to the instrument via a temporary serial communications cable. The free of charge software may be downloaded from the BEKA website, or is available on CD. A cable for temporarily connecting the indicator to an RS232 serial port and a USB to serial port converter are available from BEKA.

The 'View' button on the front of the indicator adjacent to the terminals provides a rapid check of loop function and instrument calibration with no risk of the calibration being accidentally changed. The first operation of the button changes the display from normal engineering units to the loop current in milliamps, subsequent operations of the button display the instrument calibration at 4 and 20 mA.

Units of measurement can be displayed by the BR323AL and BR323SS indicators. Up to five upper case alphanumeric characters may be entered via the configuration software, these are stored by the indicator and appear below the main instrument display.

A 128 segment lineariser is contained in the configuration software which can accurately linearise almost any curve. Data can be imported as a comma delimited csv file or typed point by point into a table. Again the software is very easy to use.

Both robust enclosures provide IP66 and NEMA 4X protection and have two M20 or 1/2 inch NPT tapped entries. The BR323AL, which has an aluminium enclosure, is suitable for general industrial application, whereas the BR323SS 316 stainless steel enclosure is intended for use in corrosive and marine environments. Both enclosures are available with an optional pipe mounting kit.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Minimum operating	3.8mA
Maximum operating	20.2mA
Overrange	±100mA will not cause damage.
Voltage	Less than 2.3V

Display

Type	Liquid crystal 10mm high -99999 to 99999
Resolution selectable	None, one or two digits after the decimal point, or maximum number possible.
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current.
Reading rate	10 per second

Scale legend

Type	Liquid crystal 6mm high
Digits	Five alphanumeric upper case characters entered via configuration software.

Accuracy

At 20°C	±0.0012% of input
Temp effect.	±0.015% of span/°C max
Stability	
1 year	0.08mA
2 year	0.14mA
5 years	0.18mA

Safety certification

Europe ATEX	ATEX flameproof certification applies to the loop powered indicator in both the aluminium and stainless steel enclosures.
Standards	IEC 60079-1; IEC 61241-1
Code	Group II Category 2GD Ex d IIC T6
Location	Zone 1, 2, 21 or 22
Cert. No.	ISSeP08ATEX035X

Environmental

Operating temp	-20 to 60°C
Certification temp	
ATEX	-20 to 60°C
Storage temp	-45 to 85°C
Humidity	To 95% non condensing
Enclosure	IP66, NEMA Type 4X
BR323AL	Aluminium, polyester powder coated.
BR323SS	316 stainless steel
EMC	In accordance with EU Directive 89/336/EU
Complies with	EN61326
Immunity	Less than 0.5% error for 20V/m field strength between 80MHz & 1GHz.
Emissions	Undetectable above background noise, Class B equipment

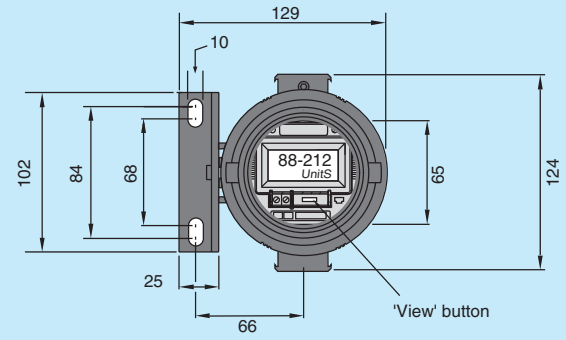
Mechanical

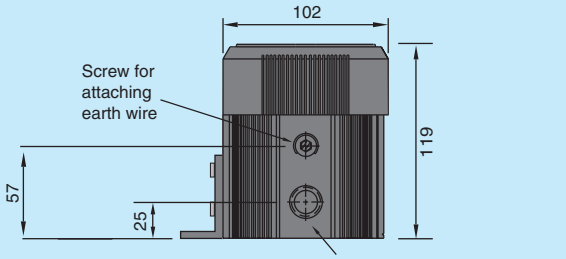
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	
BR323AL	1.6kg
BR323SS	3.2kg

Accessories

Tag strip	Thermally printed label
Tag plate	Etched tie-on stainless steel label

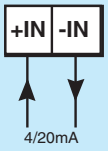
DIMENSIONS (mm)





Two M20 x 1.5 cable entries (model number suffix 'M')~
or Two 1/2 inch NPT cable entries (model number suffix 'N')~

TERMINAL CONNECTIONS



Pipe mounting kit	304 stainless steel 'U' bolt to fit up to 50mm outside diameter pipe.
RS232 cable	Connects BR323 indicator to serial communications port or to USB serial converter.
USB to serial converter	Chipi-X10 cable converts USB to RS232 serial port. USB port must be configured as COM 1, 2, 3 or 4. RS232 cable is also required.

HOW TO ORDER

	Please specify
Model number	
Aluminium enclosure	BR323AL
Stainless steel enclosure	BR323SS
Entry threads~	M20 x 1.5 (model number suffix 'M')
or	½ inch NPT (model number suffix 'N')
Calibration	
Display at 4mA	XXXXX Include position of decimal point
Display at 20mA	XXXXX and sign if negative.*
Units of measurement	XXXXX*
Accessories	**Please specify if required**
Tag strip	Legend
Tag plate	Legend
Pipe mounting kit	BR391 Pipe mounting kit
RS232 cable	RS 232 cable
USB to RS232 converter	Chipi-X10 Cable (RS232 cable also required)

* *Will be set to display 0.00 at 4mA and 100.00 at 20mA with 'PCT' as units of measurement if calibration information is not supplied.*

~ *Unless otherwise requested indicators supplied in the UK will have M20 entries.*

BA504E

2-wire 4/20mA 4 digit indicator

General purpose

Shown with optional backlight - loop powered

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba504e

The BA504E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA504D. It has a much larger full 4 digit display and guaranteed performance between -40 and 70°C. Like it's predecessor, the BA504E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA504E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA504E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70°C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional wiring is required, but the indicators voltage is increased. Powering from a separate supply produces a brighter backlight but requires an additional field wiring.

Optional dual alarm outputs which can switch low power loads such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA524E which has a similar specification but has a five digit 29mm high display plus a 31 segment bargraph.

If flammable atmospheres are present either the BA304E or BA304NE should be used. Both have the same features as the BA504E but have been certified for use in hazardous area.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20ºC

Linear	±0.02% of span ±1 digit.
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC.

Mechanical

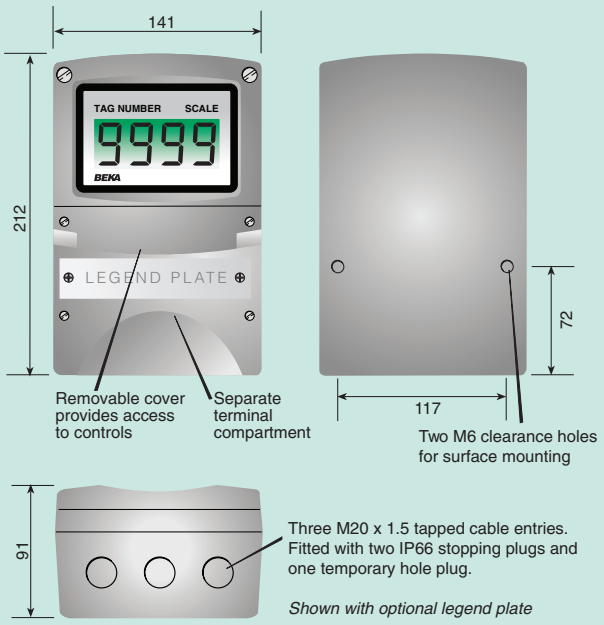
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

Accessories

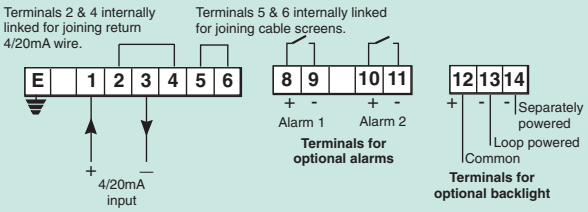
Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	11V to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon. #
Tag legend	Tag number or application marked onto display escutcheon. #
Stainless steel legend plate	Stainless steel plate etched legend plate with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

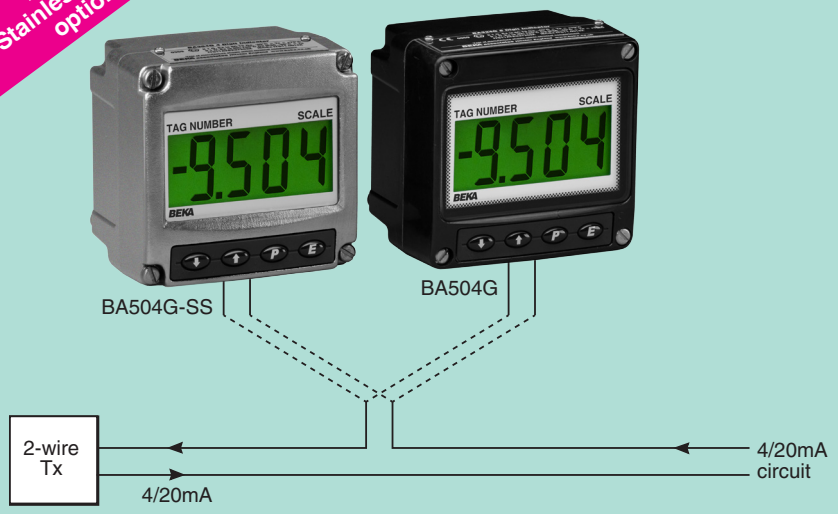
	Please specify
Model number	BA504E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

** Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

NEW Stainless Steel option



Shown with optional backlight - loop powered

BA504G
BA504G-SS
2-wire 4/20mA 4 digit indicator

General purpose

- **IP66 GRP or stainless steel enclosure.**
- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Optional backlight & alarms.**
- **Root extractor and 16 segment lineariser.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

www.beka.co.uk/ba504g

The BA504G is a general purpose, loop powered 4/20mA field mounting indicator, with a large four digit display housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA504G is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA504G indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 and impact protection are provided by a robust GRP or 316 stainless steel enclosure. Both have a thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA504G and BA524G are surface mounting, but can be pipe or panel mounted using accessories.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA524G which has a similar specification with a five digit 29mm high display plus a 31 segment bargraph.

If flammable atmospheres are present either the 4 digit BA304G or the 5 digit BA324G, should be used. Both have the same features as the BA504G, but are intrinsically safe and have international certification for use in hazardous, gas and dust areas worldwide.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing.

Push buttons

	(Function in display mode)
▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU.

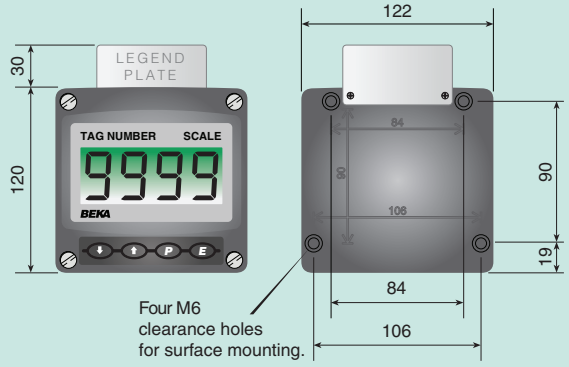
Mechanical

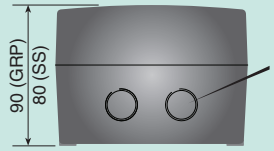
Enclosure	
Material	GRP or 316 stainless steel
Ingress protection	IP66
Impact protection	Enclosure 7J, Window 4J
Weight	
GRP	1.1kg
Stainless steel	2.6kg
Terminals	Orange with screw clamp for 0.5 to 1.5mm² cable.
Scale card	Slide-in card showing units of measurement and tag information through display window.

Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage increases to 5V.
Separately powered	
V supply	11 to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch.
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

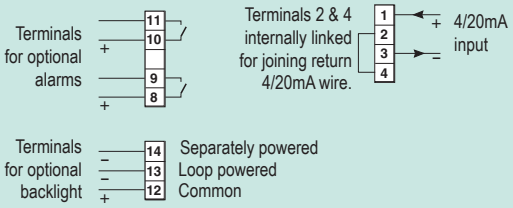
DIMENSIONS (mm)





Two cable entries
M20 x 1.5 threaded.
Supplied with one IP66 stopping plug and one temporary hole plug.
Shown with optional legend plate

TERMINAL CONNECTIONS



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	
For BA504G and BA504G-SS	
BA394G	Mounts indicator into an open panel aperture, does not seal aperture #
For BA504G	
BA494G	Mounts indicator into an open panel aperture and seals aperture #
For BA504G-SS	
BA494G-SS	Mounts indicator into an open panel aperture and seals aperture #
Back-box terminals for BA504G.	Including 4/20mA loop maintenance diode

See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	
GRP enclosure	BA504G
Stainless steel enclosure	BA504G-SS
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX] Include position of decimal point & sign if negative.*
20.000mA	XXXX]
Scale card marking	
Units	Legend required
Tag	Legend required

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G, BA494G or BA494G-SS
Back-box terminals	Back-box terminals

BA524E

2-wire 4/20mA 5 digit indicator

General purpose

Shown with optional backlight - loop powered

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba524e

The BA524E loop powered 4/20mA indicator is a fourth generation field mounting instrument that is electrically and mechanically compatible with the earlier BA524D. It has a much larger full 5 digit display and guaranteed performance between -40 and 70˚C. Like it's predecessor, the BA524E is housed in a robust IP66 enclosure with a separate terminal compartment.

Main application of the BA524E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA524E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection between -40 and 70˚C. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA504E which has a similar specification and an even larger four digit 34mm high display.

If flammable atmospheres are present either the BA324E or BA324NE should be used. Both have the same features as the BA524E but have been certified for use in hazardous area.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segment 80mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons

	(Function in display mode)
▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC.

Mechanical

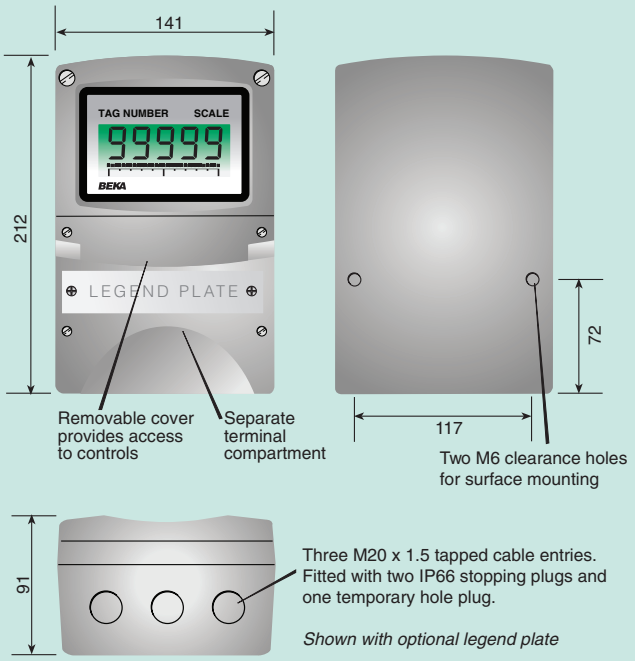
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	11V to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables indicator to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon. #
Tag legend	Tag number or application marked onto display escutcheon. #
Stainless steel legend plate.	Stainless steel plate etched with tag number or applicationattached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

 # See accessory datasheet for details

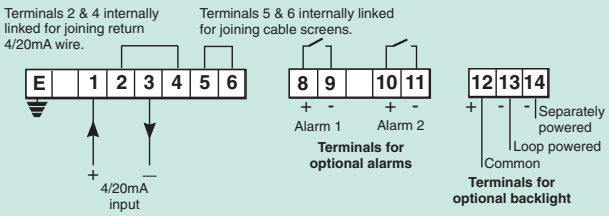
DIMENSIONS (mm)



Three M20 x 1.5 tapped cable entries. Fitted with two IP66 stopping plugs and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



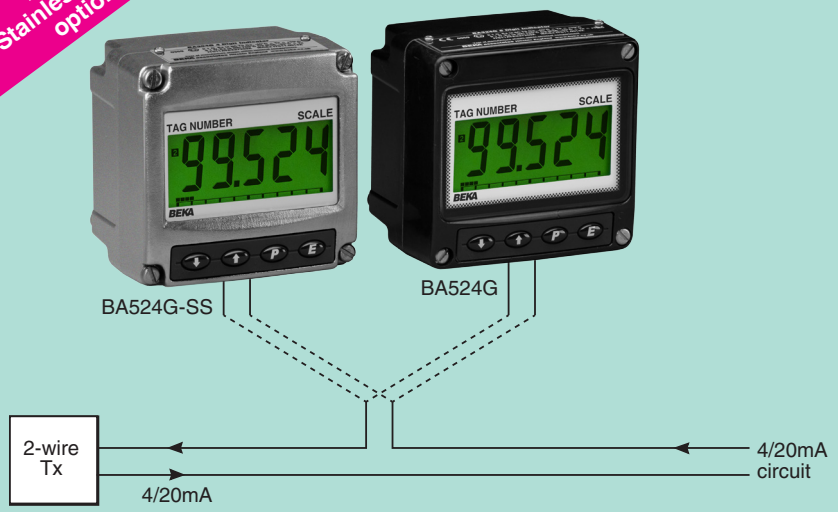
HOW TO ORDER

	Please specify
Model number	BA524E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX] *Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**
20.000mA	XXXX]

Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

NEW Stainless Steel option



Shown with optional backlight - loop powered

BA524G
BA524G-SS
2-wire 4/20mA 5 digit indicator

General purpose

- **IP66 GRP or stainless steel enclosure.**
- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Root extractor and 16 segment lineariser.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

www.beka.co.uk/ba524g

The BA524G is a general purpose, loop powered 4/20mA field mounting indicator, with a large five digit display and a bargraph housed in a robust IP66 GRP or stainless steel enclosure.

Main application of the BA524G is to display a measured variable in engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser also enable the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA524G indicator to be easily read in most lighting conditions over a wide temperature range. Optional factory fitted backlighting is available for installations in poorly illuminated areas. The five digit display, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 and impact protection are provided by a robust GRP or 316 stainless steel enclosure. Both have a thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by UKAS accredited bodies. The BA524G and BA524G-SS are surface mounting, but can be pipe or panel mounted using accessories.

Display backlighting which may be loop or separately powered is available as a factory fitted option. t provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other field mounting models in this range include the BA504G which has a similar specification with an even larger 4 digit, 34mm high display.

If flammable atmospheres are present either the BA324G or BA304G, should be used. Both have the same features as the BA524G, but are intrinsically safe and have international certification for use in hazardous gas and dust atmospheres.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overrange	99999 or -99999 with all decimal points flashing.

Push buttons

	(Function in display mode)
▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU.

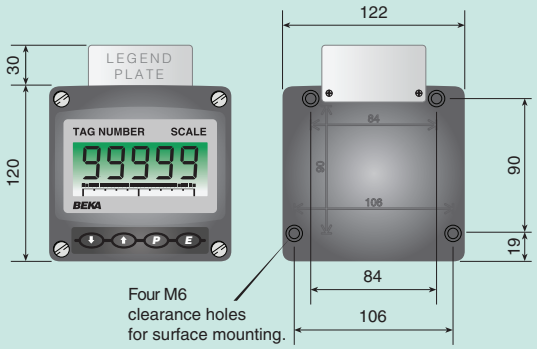
Mechanical

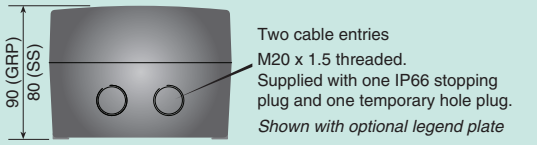
Enclosure	
Material	GRP or 316 stainless steel
Ingress protection	IP66
Impact protection	Enclosure 7J, Window 4J
Weight	
GRP	1.1kg
Stainless steel	2.6kg
Terminals	Orange with screw clamp for 0.5 to 1.5mm² cable.
Scale card	Slide-in card showing units of measurement and tag information through display window.

Accessories

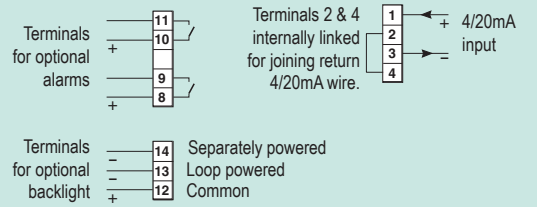
Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage increases to 5V.
Separately powered	
V supply	11 to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch.
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)





TERMINAL CONNECTIONS



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	
For BA524G and BA524G-SS	
BA394G	Mounts indicator into an open panelaperture, does not seal aperture #
For BA524G	
BA494G	Mounts indicator into an open panel aperture and seals aperture.#
For BA524G-SS	
BA494G-SS	Mounts indicator into an open panel aperture and seals aperture #
Back-box terminals for BA524G.	Including 4/20mA loop maintenance diode

See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	
GRP enclosure	BA524G
Stainless steel enclosure	BA524G-SS
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX] Include position of decimal point & sign if negative.*
20.000mA	XXXXX]
Scale card marking	
Units	Legend required
Tag	Legend required

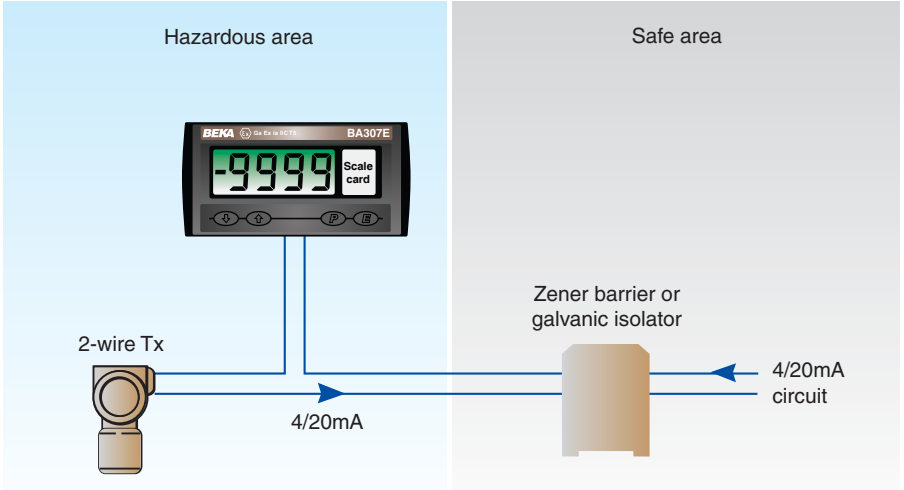
Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G, BA494G or BA494G-SS
Back-box terminals	Back-box terminals

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

4/20mA Loop Powered Digital Indicators
Panel Mounting

An extensive range of panel mounting 4/20mA loop powered indicators in Noryl® or rugged 316 stainless steel enclosures.

- **Large high contrast displays with a wide viewing angle**
- **General purpose and certified hazardous area models**
  International Ex ia intrinsic safety and Ex nA non sparking certification.
- **Rugged stainless steel Ex ia models**
  May be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
- **Combined analogue and digital display indicators**
- **IP66 front panels**
- **Internal calibrator, root extractor, lineariser & tare function**
- **-40 to +70˚C operating temperature range**
- **Accessories**
  Dual isolated alarms
  Display backlight may be loop or separately powered
  Scale card - *can be supplied printed with units of measurement and tag information for no additional charge.*
  BA495 rear IP66 sealing kit



Intrinsically safe

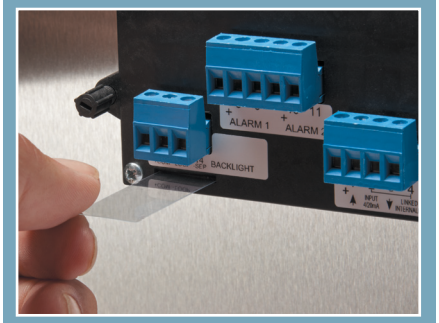
Ex nA

General purpose

Rugged indicator maintains panel enclosure's impact & ingress protection and does not invalidate its certification.

Gasket provides IP66 seal to panel

Sturdy panel clamps supplied with unit



Easy scale card installation without the need to remove indicator from the panel.

4/20mA Loop Powered Digital Indicators. Panel mounting models available:

Model No.	Enclosure	Display				Certification					
		Digits		Bargraph		Europe ATEX		International IECEx		USA & Canada	
		Number	Height	Segments	Length	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22											
BA304G-SS-PM*	Rugged 120 x 122	4	34mm	–	–	✔	✔	✔	✔	–	–
BA324G-SS-PM*	Rugged 120 x 122	5	29mm	31	83mm	✔	✔	✔	✔	–	–
BA307E	96 x 48	4	15mm	–	–	✔	✔	✔	✔	✔	–
BA308E	144 x 72	4	34mm	–	–	✔	✔	✔	✔	✔	–
BA327E	96 x 48	5	11mm	31	44mm	✔	✔	✔	✔	✔	–
BA328E	144 x 72	5	29mm	31	83mm	✔	✔	✔	✔	✔	–
BA326C	144 x 48 Combined	4½	5.5mm	100	95mm	✔	–	✔	–	–	–
BA307E-SS*	Rugged 105 x 60	4	15mm	–	–	✔	✔	✔	✔	✔	–
BA327E-SS*	Rugged 105 x 60	5	11mm	31	44mm	✔	✔	✔	✔	✔	–
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators											
BA307NE	Rugged 105 x 60	4	15mm	–	–	✔	✔	✔	✔	–	–
BA327NE	Rugged 105 x 60	5	11mm	31	44mm	✔	✔	✔	✔	–	–
General Purpose - for use in safe areas											
BA504G-SS-PM	Rugged 120 x 122	4	34mm	–	–						
BA524G-SS-PM	Rugged 120 x 122	5	29mm	31	83mm						
BA507E	96 x 48	4	15mm	–	–						
BA508E	144 x 72	4	34mm	–	–						
BA527E	96 x 48	5	11mm	31	44mm						
BA528E	144 x 72	5	29mm	31	83mm						
BA526C	144 x 48 Combined	4½	5.5mm	100	95mm						
BA507E-SS	Rugged 105 x 60	4	15mm	–	–						
BA527E-SS	Rugged 105 x 60	5	11mm	31	44mm						

* *Certification allows installation in an Ex e, or Ex p or Ex t panel enclosure without invalidating enclosure certification*

Shown with optional backlight - loop powered

BA304G-SS-PM 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in Ex e, Ex p or Ex t panel enclosures and in harsh environments.

- **IP66 stainless steel indicator front maintains Ex e, Ex p or Ex t panel enclosure certification.**
- **Intrinsically safe ATEX and IECEx certification.**
- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display**
- **Optional backlight & alarms.**
- **Root extractor, lineariser and tare function.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

beka.co.uk/ba304g-ss-pm

The BA304G-SS-PM loop powered 4/20mA indicator is an intrinsically safe panel mounting instrument with a large 4 digit display. It has a rugged, impact resistant IP66 stainless steel front allowing it to be safely mounted in an Ex e, Ex p or Ex t panel enclosure.

IECEx and ATEX intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Main application of the BA304G-SS-PM is to display a measured variable in engineering units when mounted in an Ex e, Ex p or Ex t panel enclosure or cubicle. The front of the indicator has IECEx and ATEX impact and ingress certification allowing it to be installed in a certified panel enclosure without invalidating the enclosure's certification. The rugged front and IP66 protection also make the indicator ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, thus the BA304G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

A Zener barrier or galvanic isolator is not required when the indicator is installed in an Ex pxb, Ex pzc or Ex t panel enclosure. See Application Guide AG300 for details.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, 4 digits 34mm high non-multiplexed
Span	Adjustable between 0 & ±9999 for a 4/20mA input
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing

Push buttons (Function in display mode)

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Comply with requirements for *simple apparatus*
Cert. No.	IECEx ITS 11.0014X (Special conditions only apply for Zone 0)

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Safety parameters	As IECEx certification
Cert. No.	ITS11ATEX27253X (Special conditions only apply for Zone 0)

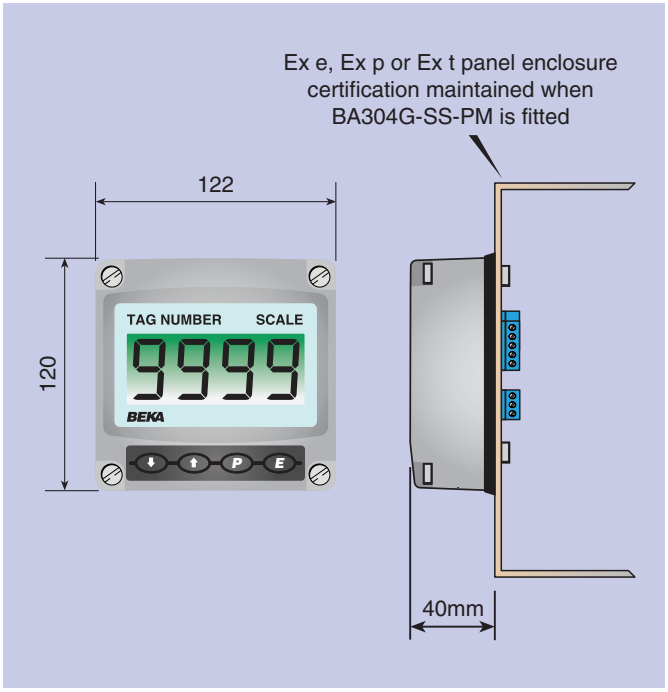
Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity (front)	to 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU

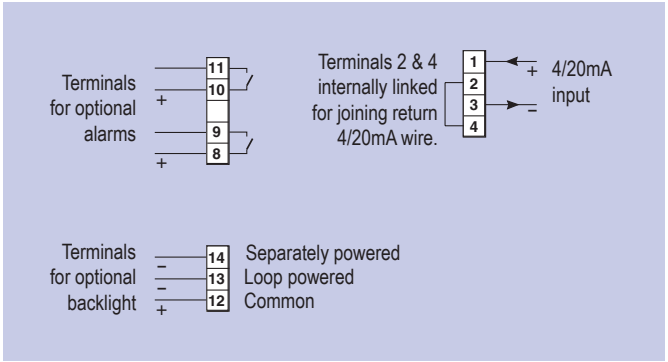
Mechanical

Front of indicator	
Material	316 stainless steel
Ingress protection	IECEx & ATEX certified IP66 ingress protection after thermal endurance, 7J (front) and 4J (window) impacting.
Rear of indicator	
Ingress protection	IP20
Terminals	Blue with screw clamp for 0.5 to 1.5mm² cable
Weight	1.2kg
Scale card	Slide-in card showing units of measurement and tag information through display window.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

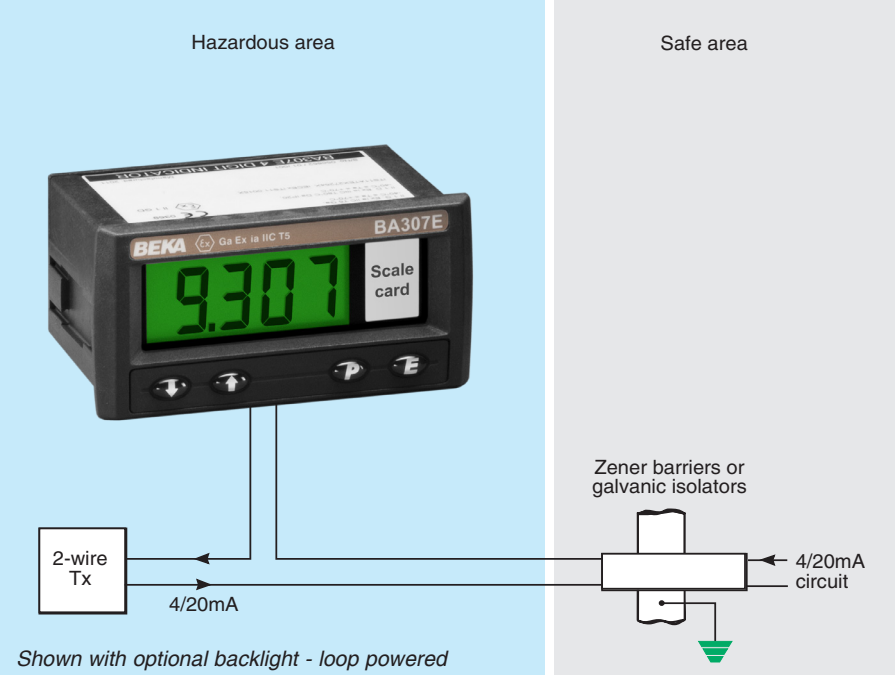
Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output complying with	Isolated, voltage free solid state switch requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min

HOW TO ORDER

	Please specify	
Model number	BA304G-SS-PM	
Display mode	Linear, root or lineariser*	
Display at:		
4.000mA	XXXX	Include position of decimal point & sign if negative.*
20.000mA	XXXX	
Scale card marking		
Units	Legend required	
Tag	Legend required	

Accessories	Please specify if required
Display backlight	Backlight
Dual alarms	Alarms

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



Shown with optional backlight - loop powered

BA307E

2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **4 digit 15mm high display.**
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba307e

The BA307E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA307C, but has a much larger full 4 digit display providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA307E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A bold 15mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA307E indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA307E indicator is installed.

International intrinsic safety certification permits the BA307E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA307E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA307C, thus allowing the BA307E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA327E which has a similar specification with five 11mm high digits and a 31 segment bargraph.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digit 15mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM

Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

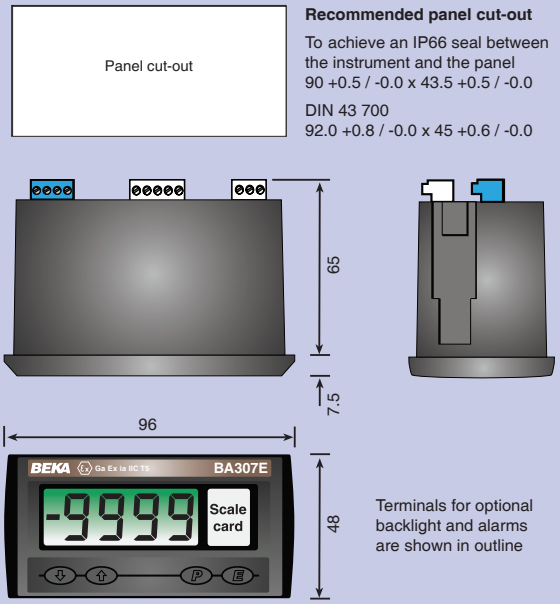
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

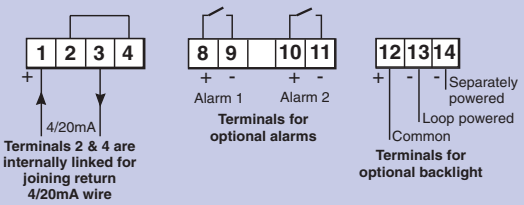
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable terminal blocks.
Weight	0.2kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V max.
Separately powered	9V at 22.5mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

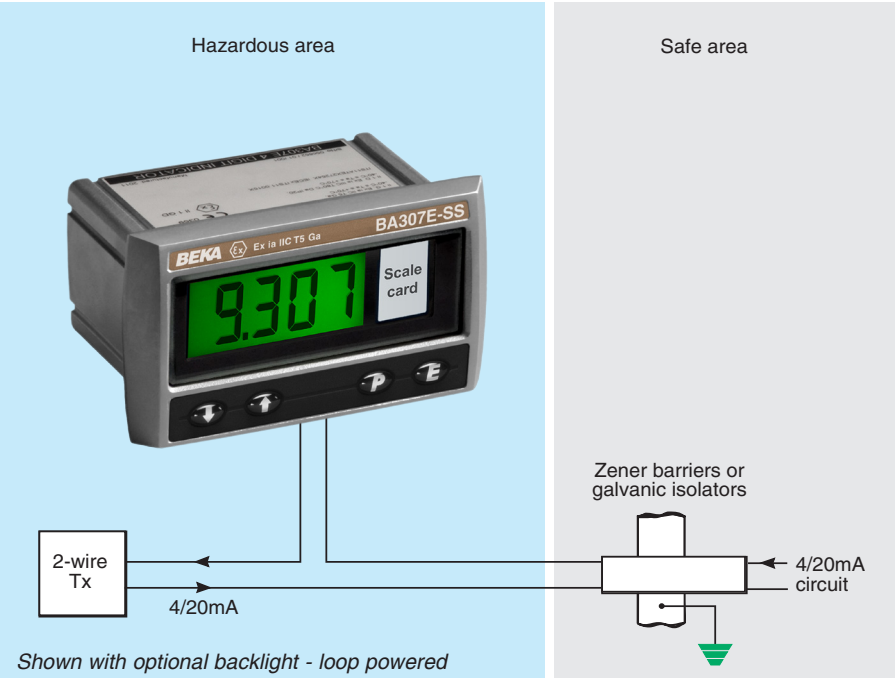
HOW TO ORDER

	Please specify
Model number	BA307E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

* *Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA307E-SS

Rugged 2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in Zone 1 Ex e or Ex p panel enclosures and in harsh marine environments

- **Rugged IP66 stainless steel enclosure.**
- **Intrinsically safe Ex ia ATEX, FM, cFM & IECEx.**
- **Front of indicator maintains Ex e, Ex p and Ex t enclosure certification.**
- **Loop powered only 1.2V drop.**
- **4 digit 15mm high display.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor and 16 segment linearisers.**
- **3 year guarantee**

www.beka.co.uk/ba307e-ss

The BA307E-SS intrinsically safe, panel mounting loop powered Indicator has a rugged stainless steel housing allowing it to be safely installed in an Ex e or Ex p panel, in marine environments or where the front of the instrument is likely to be impacted. The indicator has a full 4 digit display with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

Main application of the BA307E-SS is to display a measured variable in engineering units when mounted in an Ex e or Ex p panel enclosure located in Zones 1 or 2. The front of the indicator has IP66 ingress and impact protection which allows it to be installed in a certified Ex e or Ex p panel enclosure without invalidating the enclosure certification. The indicator's rugged stainless steel housing and 10mm thick toughtened glass window also make the BA307E-SS ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999.

International intrinsic safety certification allow the BA307E-SS to be installed worldwide. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, permit connection to most intrisically safe circuits.

For applications in combustible dusts the BA307E-SS may be installed in a certified Ex t panel enclosure without invalidating the enclosure's certification.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA307E-SS from the panel or opening the instrument enclosure.

Application Guide AG300 explains how the BA307E-SS and similar instruments may be safely installed in gas and dust hazardous areas. Copies may be downloaded from the BEKA website or requested from the BEKA sales office.

Other models in this range include the BA327E-SS which has a similar specification with five 11mm high digits and a 31 segment bargraph.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered
backlight.	
Over range	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 4 digits 15mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	9999 or -9999 with flashing decimal points

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Hazardous area certification

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output paramters	Comply with requirements for *simple apparatus*
Cert. Number	ITS14ATEX28077X *(Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)*

USA FM

Standard	3610 Entity
Code	CL I: Div 1: Gp A, B, C, & D CL I: Zone 0: AEx ia IIC T5 @ 70°C *May be installed in an AEx e, AEx p or AEx n panel without invalidating panel's certification.*
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2: Gp A, B, C & D CL I: Zone 2: Gp IIC T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C
Cert. Number	IECEx ITS 14.0048X *(Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)*

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2004/108/EC

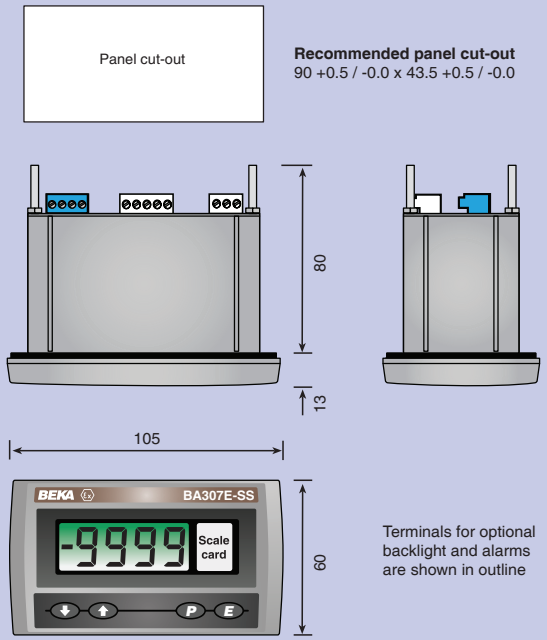
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

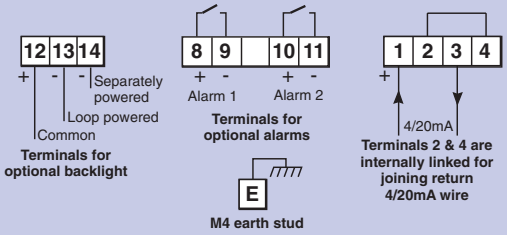
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage increased to 5V max.
Separately powered	9V at 22mA from IS interface

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with the requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 28 common units of measurement and 2 blank cards.
Tag legend	Specified tag number or application information laser etched on rear of instrument.
Support plate	Evenly distributes clamping force when the indicator is installed in a non-metallic or thin panel less than 1mm thick.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

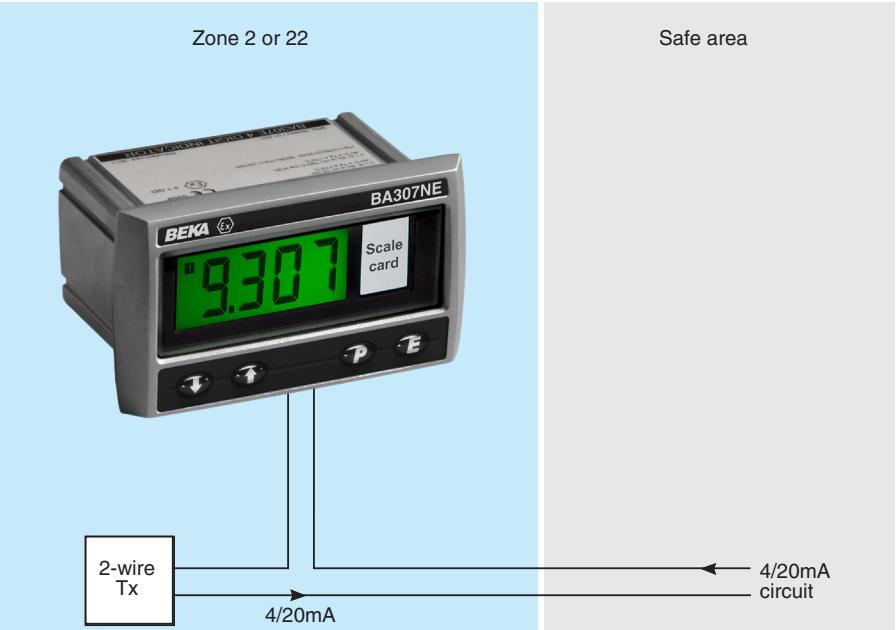
	Please specify
Model number	BA307E-SS
Display mode	Linear, root or linariser*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative. Together with intermediate points if linearisation is required.**

Accessories

Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag Legend required	
Support plate	Support plate
Rear cover and sealing kit	BA495

* *Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA307NE

Rugged 2-wire 4/20mA 4 digit indicator

Ex nA and Ex tc certified for installation in Ex n, Ex e, Ex p or Ex tc panel enclosure located in Zones 2 or 22

- **Rugged IP66 stainless steel enclosure.**
- **Ex nA & Ex tc certification eliminates the need for Zener barriers and galvanic isolators.**
- **Loop powered only 1.2V drop.**
- **4 digit 15mm high display.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor and 16 segment linearliser.**
- **3 year guarantee**

www.beka.co.uk/ba307ne

The BA307NE loop powered, panel mounting Indicator has a rugged stainless steel housing allowing it to be safely installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure located in Zone 2 or 22, without the need for Zener barriers or galvanic isolators. The indicator has a full 4 digit display with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

The main application of the BA307NE is to display a measured variable in meaningful engineering units in Zone 2 or 22. The front of the indicator has certified impact and ingress protection allowing it to be installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure without invalidating the panel's impact and ingress protection.

The bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307NE to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999.

ATEX, IECEx and ETL Ex nA non sparking certification allows the BA307NE, when installed in a Ex n, Ex p, or Ex e panel, to be operated in a Zone 2 gas hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA307NE offers a less expensive alternative to intrinsically safe and flameproof indicators.

Ex tc dust certification also allows the BA307NE, when installed in an Ex tc panel enclosure, to be operated in a Zone 22 dust hazardous area, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop increases. Powering from a separate supply produces a brighter backlight but requires additional wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA307NE from the panel or opening the instrument enclosure.

Application Guide AG310 which explain how Ex nA certified instruments should be installed may be downloaded from the BEKA associates website, or requested from the BEKA sales office.

Other models in this range include the BA327NE which has a similar specification with five 11mm high digits and a 31 segment bargraph.

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Over range	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 4 digits 15mm high
Span	Adjustable between 0 & ±9999 for a 4/20mA input
Zero	Adjustable between 0 & ±9999 with 4mA input
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	9999 or -9999 with flashing decimal points

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Hazardous area certification

Europe ATEX *(Special conditions permit installation in Ex n, Ex e, Ex p and Ex tc enclosures)*

Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS14ATEX48028X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 14.0026X

USA & Canada ETL & cETL

Code	Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc -40°C ≤Ta ≤ 60°C	USA
	Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C	Canada
ETL control No.	4008610	

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

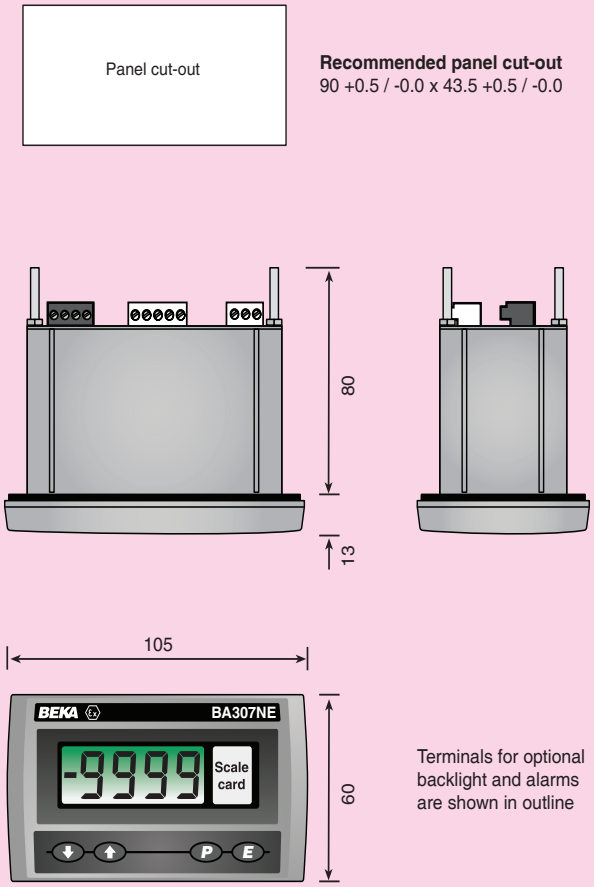
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

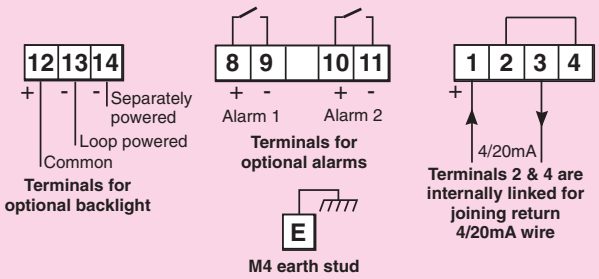
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage increased to 5V max.
Separately powered	9V at 22mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale	Contains 26 common units of measurement cards and 2 blank cards.
Tag legend	Specified tag number or application information laser etched on rear of instrument.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

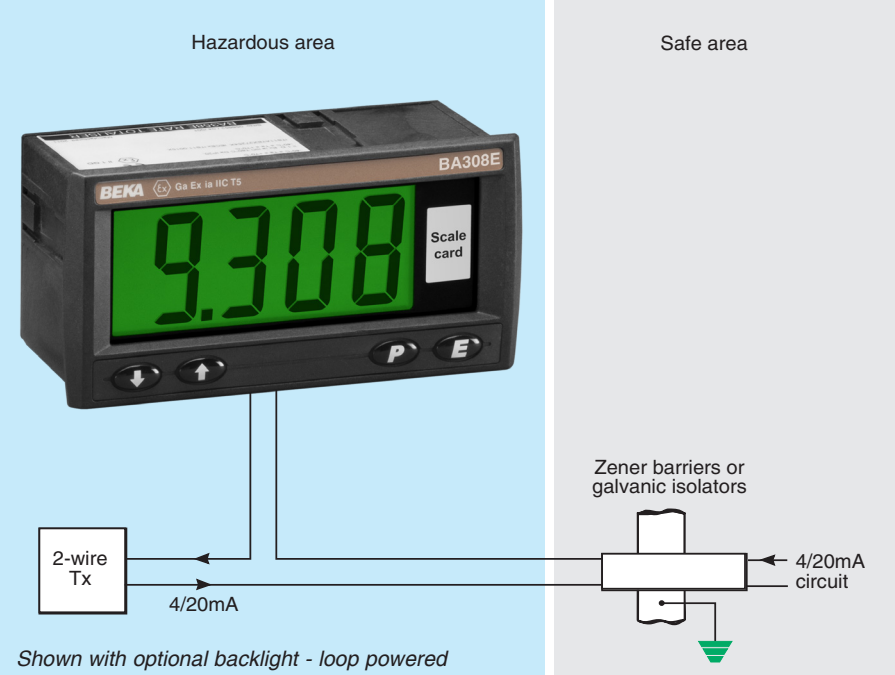
	Please specify
Model number	BA307NE
Display mode	Linear, root or linearisers*
Display at:	
4.000mA	XXXX
20.000mA	XXXX

*Include position of decimal point & sign if negative. Together with intermediate points if linearisation is required.**

Accessories

Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend if required
Tag	Legend if required
Rear cover and sealing kit	BA495

* *Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA308E

2-wire 4/20mA 4 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba308e

The BA308E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA308C, but has a much larger full 4 digit display providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA308E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

A bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA308E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA308E indicator is installed.

International intrinsic safety certification permits the BA308E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA308E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA308C, thus allowing the BA308E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA328E which has a similar specification with five 29mm high digits and a 31 segment bargraph.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM

Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

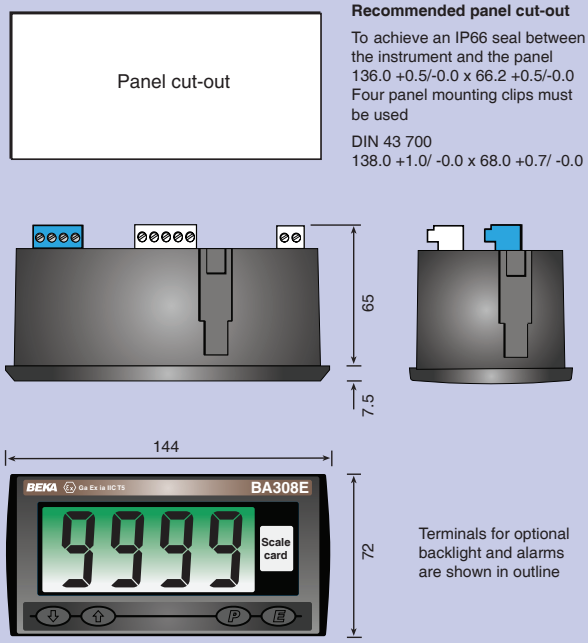
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

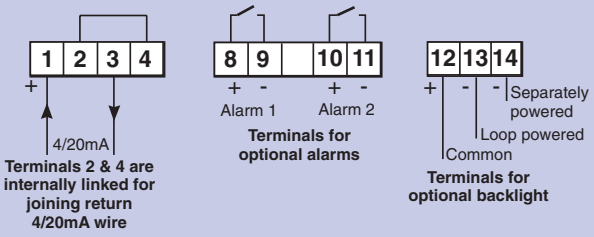
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable termial blocks.
Weight	0.35kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus.*
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

	Please specify	
Model number	BA308E	
Display mode	Linear, root or lineariser*	
Display at:		
4.000mA	XXXX	*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**
20.000mA	XXXX	

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

Shown with optional backlight - loop powered

BA324G-SS-PM 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in Ex e, Ex p or Ex t panel enclosures and in harsh environments.

- **IP66 stainless steel indicator front maintains Ex e, Ex p or Ex t panel enclosure certification.**
- **Intrinsically safe ATEX and IECEx certification.**
- **Loop powered only 1.2V drop.**
- **5 digit 29m high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Root extractor, lineariser and tare function.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

beka.co.uk/ba324g-ss-pm

The BA324G-SS-PM loop powered 4/20mA indicator is an intrinsically safe panel mounting instrument with a large 5 digit display. It has a rugged, impact resistant IP66 stainless steel front allowing it to be safely mounted in an Ex e, Ex p or Ex t panel enclosure.

IECEx and ATEX intrinsic safety gas and dust certification permit world wide installation. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops.

Main application of the BA324G-SS-PM is to display a measured variable in engineering units when mounted in an Ex e, Ex p or Ex t panel enclosure or cubicle. The front of the indicator has IECEx and ATEX impact and ingress certification allowing it to be installed in a certified panel enclosure without invalidating the enclosure's certification. The rugged front and IP66 protection also make the indicator ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

A large 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA324G-SS-PM indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for installations in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional intrinsically safe interface or wiring is required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a slightly brighter backlight but requires an additional intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

A Zener barrier or galvanic isolator is not required when the indicator is installed in an Ex pxb, Ex pzc or Ex t panel enclosure. See Application Guide AG300 for details.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high
Span	Adjustable between 0 & ±99999 for a 4/20mA input
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overrange	99999 or -99999 with all decimal points flashing

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Comply with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27253X (Special conditions only apply for Zone 0)

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66 -40°C ≤ Ta ≤ 70°C
Parameters	As ATEX
Cert. No.	IECEx ITS 11.0014X (Special conditions only apply for Zone 0)

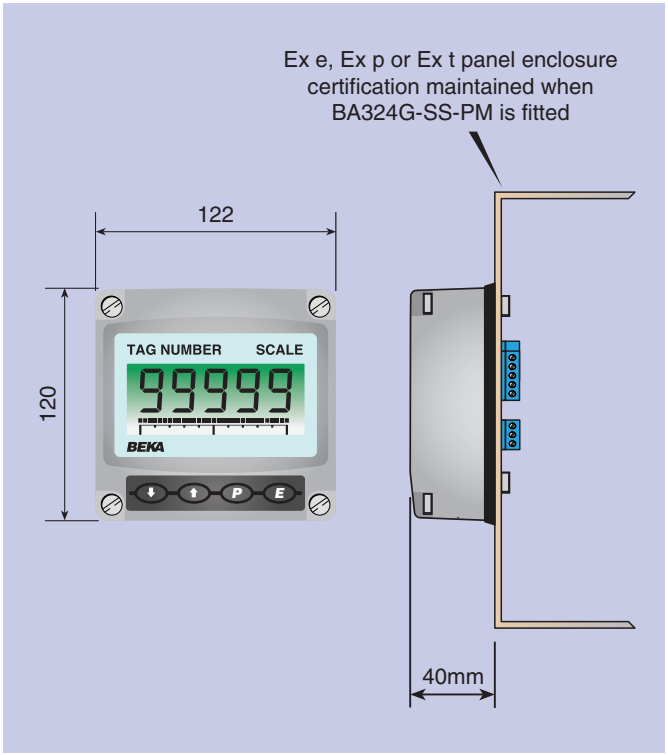
Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU

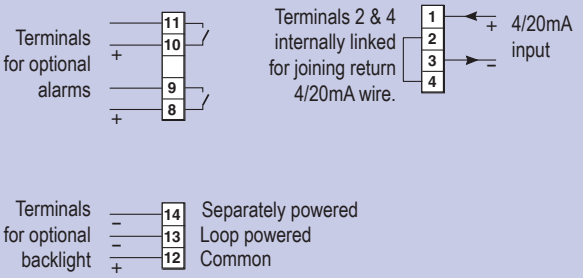
Mechanical

Enclosure	
Material	316 stainless steel
Ingress protection	IP66
Impact protection	Enclosure 7J, Window 4J
Weight	1.2.kg
Scale card	Slide-in card showing units of measurement and tag information through display window.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

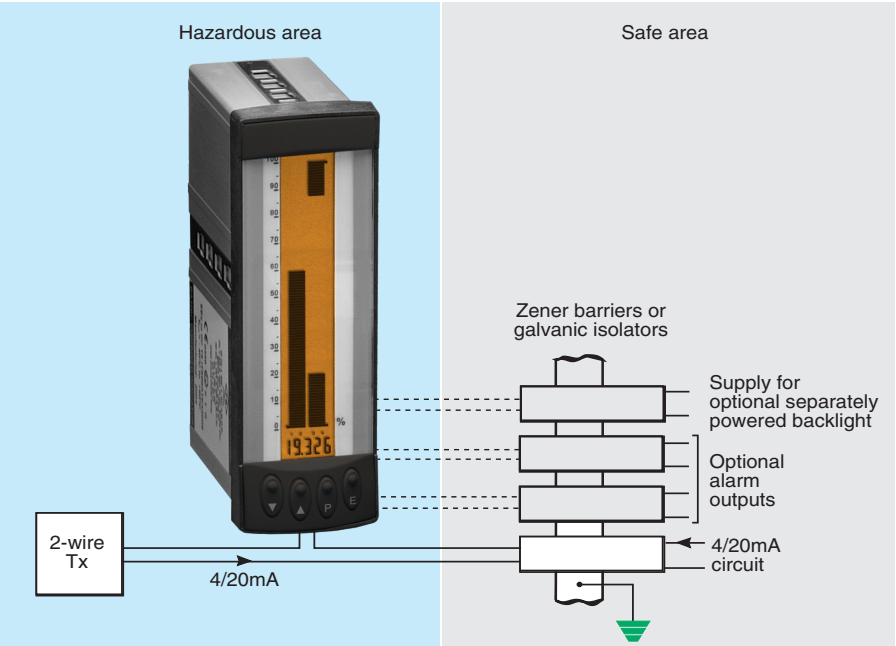
Backlight	Green, may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min

HOW TO ORDER

	Please specify	
Model number	BA324G-SS-PM	
Display mode	Linear, root or lineariser*	
Display at:		
4.000mA	XXXX	Include position of decimal point & sign if negative.*
20.000mA	XXXX	

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional alarms and separately powered display backlight

BA326C

2-wire 4/20mA analogue & digital indicator

Intrinsically safe for use in all gas hazardous areas

- **Loop powered only 1.2V drop.**
- **Optimum visibility**
- **Intrinsically safe ATEX & IECEx certification.**
- **100 segment bargraph plus digital display.**
- **Optional:**
  Display backlight
  Alarms
  Lineariser
- **144 x 48mm DIN enclosure with IP65 front.**
- **3 year guarantee**

www.beka.co.uk/ba326c

The BA326C is an intrinsically safe loop powered indicator that displays the 4/20mA input current on both a 100 segment analogue bargraph and in accurate engineering units on a digital display.

Main application of the BA326C is to display a measured variable or control signal in a hazardous process area. For level and similar measurements the combination of an analogue and digital display provides magnitude and trend information from the bargraph, plus accurate readings in engineering units from the digital display. The relative magnitude of variables can be effectively presented by mounting BA326C indicators side by side. An optional 16 point lineariser enables the BA326C to display non linear variables in linear engineering units.

Control and calibration of the combined indicator is performed via the front panel tactile push buttons. Using these buttons the operator can temporarily display the measured variable as a percentage of span, the input current in mA and the numerical display at 4 and 20mA input. All the calibration functions are contained in easy to understand menus which may be protected by a four digit user selectable security code.

Intrinsic safety certification to the ATEX Directive allows installation throughout Europe. The 4/20mA input terminals comply with the requirements for *simple apparatus* allowing the BA326C to be connected in series with most certified intrinsically safe circuits without the need for an additional system certificate. This, together with the low voltage drop, makes the BA326C very easy to apply. The optional backlight is electrically segregated from the indicator and has been certified as a separate intrinsically safe circuit which may be powered from a Zener barrier or galvanic isolator. Similarly, the two optional alarms are galvanically isolated and each is certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.* IECEx certification permits international installation.

The analogue bargraph which contains 100 segments, provides a rapid indication of the input current, enabling an operator to quickly assess the magnitude and trend of a process variable. The bargraph displays zero to full scale for a 4 to 20mA input, but may be calibrated to show deviation from any input current. Either a column or a single segment display may be selected and if only the analogue display is required, the digital display may be disabled.

Separately powered backlighting is available as an option. The orange output enhances daylight contrast and enables the display to be read when the instrument is installed in a poorly illuminated area.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed. For easy comparison with the 4/20mA input, both setpoints are displayed on a second bargraph with annunciators showing the alarm status. Each alarm can control a certified hazardous area load or the output may be transferred to the safe area via a Zener barrier or galvanic isolator.

The IP65 front panel is a robust, easy to clean Noryl moulding surrounding an armoured glass window. A captive neoprene gasket provides a seal between the instrument enclosure and the panel.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C
Overrange	±200mA will not cause damage

Display

Type	Liquid crystal
Reading rate	
Analogue	4 per second
Digital	2 per second
Analogue	95mm long 100 segment column or single segment.
Range	0 to100% for 4 to 20mA input
Digital	4½ digit (-19999 to 19999) 5.5mm high; selectable dummy trailing zero extends display range to (-19990 to 99990).
Span	Adjustable between 0 & ±19999
Zero	Adjustable between ±19999 with 4mA input
Decimal point	1 of 5 positions or absent
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current.
Over & underrange	4 least significant digits are blanked

Push-buttons (Function in operating mode)

▲ button	Shows display with 4mA input
▼ button	Shows display with 20mA input
P button	Displays input current in mA, or as a percentage of span.

Accuracy at 20°C

Analogue	±0.5%	
Digital	Linear	±0.02% ±1 digit
	Root extracting	16µA at input ±1 digit
Temp. effect		
Analogue	±0.5% between -20 & 60°C	
Digital		
Zero	Less than 25ppm/°C	
Span	Less than 50ppm/°C	
Series mode	Less than 0.5% error for 1mA pk to pk 50Hz or 60Hz signal.	

Intrinsic safety

Europe ATEX

Code	Group II Category 1 G Ex ia IIC T5 Ga Ta = -40 to 60°C
Cert. No	ITS99ATEX2009X
Output parameters	
Uo	1.1V dc] Complies with
Io	70mA dc] requirements for
Po	23mW] *simple apparatus*
Location	Zone 0, 1 or 2
Installation	The BA326C may be connected to any certified intrinsically safe circuit whose output parameters do not exceed:

Uo	28V
Io	200mA
Po	0.84W

International IECEx

Standard	IEC 60079-0:2004
Code	Ex ia IIC T5 Ga Ta = -40 to 60°C
Cert. No.	IECEx ITS 08.0003X

Environmental

Operating temp	-20 to 60°C (Certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Enclosure	Front IP65 rear IP20
EMC	In accordance with EU Directive 2004/108/EC, full report available.

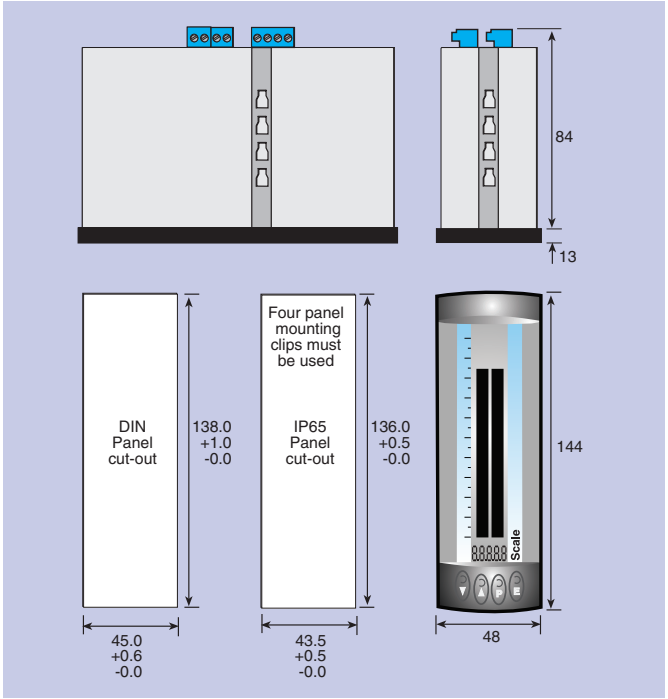
Mechanical

Terminals	Blue removable terminal block for 0.5 to 1.5mm^2 cables
Weight	0.5kg

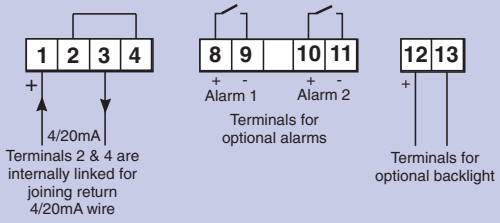
Accessories

Separately powered backlight	LED backlight powered from 28V 300Ω Zener barrier or galvanic isolator.
Alarms	Two independent alarms each of which may be programmed for high or low operation with a NC or NO output.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Outputs	Isolated single pole solid state switch: Ron less than 5Ω +0.6V Roff greater than 180k
Certification	Both outputs comply with the requirements for *simple apparatus*.
Lineariser	Provides 16 fully adjustable straight lines which may be positioned to compensate for almost any non-linear variable.
Typeset scale card	Blank scale card fitted to each indicator can be supplied typeset with units of measurement.
Bargraph scale	Blank scale fitted to each indicator can be supplied typeset with analogue scale.
Tag number	Thermally printed number on rear of the instrument.

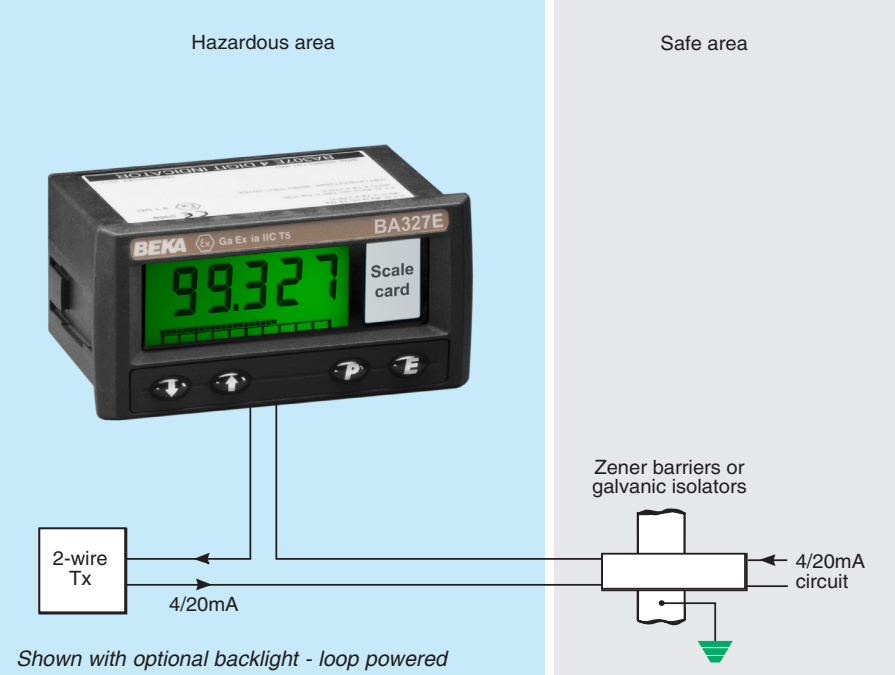
HOW TO ORDER

	Please specify:
Model number	BA326C
Display mode	Linear or root extracting*
Digital display	
at 4mA	XXXX*] Include position of decimal point, dummy
at 20mA	XXXX*] zero if required & sign if negative

Accessories	**Please specify if required**
Display backlight	Separately powered backlight
Alarms	Alarms#
Lineariser	Lineariser#
Scale card	Legend
Bargraph scale	Required scale graduations
Tag number	Legend

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied.

Contact BEKA if calibration of accessories is required.



Shown with optional backlight - loop powered

BA327E

2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba327e

The BA327E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA327C, but has a larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA327E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA327E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA327E indicator is installed.

International intrinsic safety certification permits the BA327E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA327E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA327C, thus allowing the BA327E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA307E which has a similar specification with four larger 15mm high digits without a bargraph.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 43mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM

Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

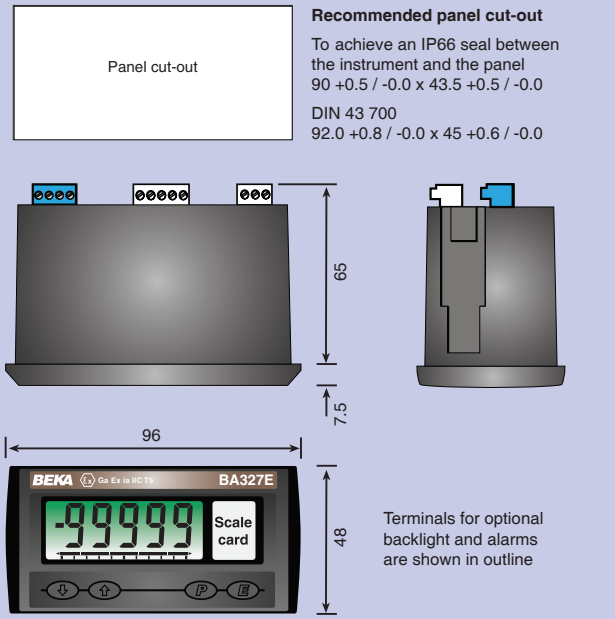
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

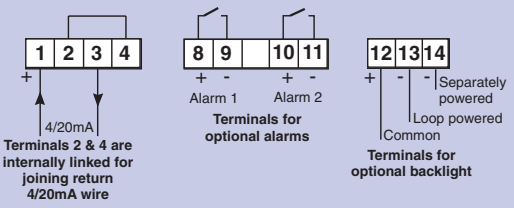
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable terminal blocks.
Weight	0.2kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V max.
Separately powered	9V at 22.5mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus.*
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

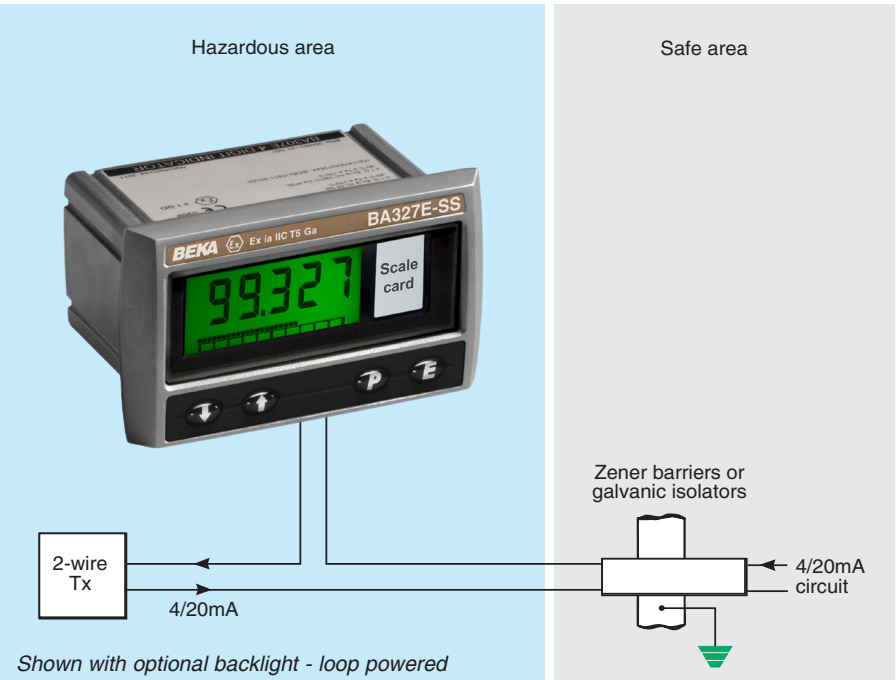
HOW TO ORDER

	Please specify
Model number	BA327E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX
20.000mA	XXXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA327E-SS

Rugged 2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in Zone 1 Ex e or Ex p panel enclosures and in harsh marine environments

- **Rugged IP66 stainless steel enclosure.**
- **Intrinsically safe Ex ia ATEX, FM, cFM & IECEx.**
- **Front of indicator maintains Ex e, Ex p and Ex t enclosure certification.**
- **Loop powered only 1.2V drop.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor and 16 segment lineariser.**
- **3 year guarantee**

www.beka.co.uk/ba327e-ss

The BA327E-SS intrinsically safe, panel mounting loop powered Indicator has a rugged stainless steel enclosure allowing it to be safely installed in an Ex e or Ex p panel, in marine environments or where the front of the instrument is likely to be impacted. The indicator has a full 5 digit display plus a 31 segment bargraph with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

Main application of the BA327E-SS is to display a measured variable in engineering units when mounted in an Ex e or Ex p enclosure located in Zones 1 or 2. The front of the indicator has IP66 ingress and impact protection which allows it to be installed in a certified Ex e or Ex p panel enclosure without invalidating the enclosure certification. The indicator's rugged stainless steel housing and 10mm thick toughtened glass window also make the BA327E-SS ideal for intrinsically safe applications in marine environments or where the front of the instrument is likely to be impacted.

The bold 11mm high 5 digit display and 31 segment bargraph provides maximum contrast and have a wide viewing angle, allowing the BA327E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999.

International intrinsic safety certification allow the BA327E-SS to be installed worldwide. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, permit connection to most intrinsically safe circuits.

For applications in combustible dusts the BA327E-SS may be installed in a certified Ex t panel enclosure without invalidating the enclosure's certification.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required and the indicator input remains compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface. Two backlights may be separately powered from one intrinsically safe interface.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA327E-SS from the panel or opening the instrument enclosure.

Application Guide AG300 explains how the BA327E-SS and similar instruments may be safely installed in gas and dust hazardous areas. Copies may be downloaded from the BEKA website or requested from the BEKA sales office.

Other models in this range include the BA307E-SS which has a similar specification with four 15mm high digits.

BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Over range	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 5 digits 11mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	99999 or -99999 with flashing decimal points

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Hazardous area certification

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output paramters	Comply with requirements for *simple apparatus*
Cert. Number	ITS14ATEX28077X *(Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)*

USA FM

Standard	3610 Entity
Code	CL I: Div 1: Gp A, B, C, & D CL I: Zone 0: AEx ia IIC T5 @ 70°C *May be installed in an AEx e, AEx p or AEx n panel without invalidating panel's certification.*
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2: Gp A, B, C & D CL I: Zone 2: Gp IIC T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Ta = -40 to 70°C
Cert. Number	IECEx ITS 14.0048X *(Special conditions permit installation in Ex e, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts)*

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2004/108/EC

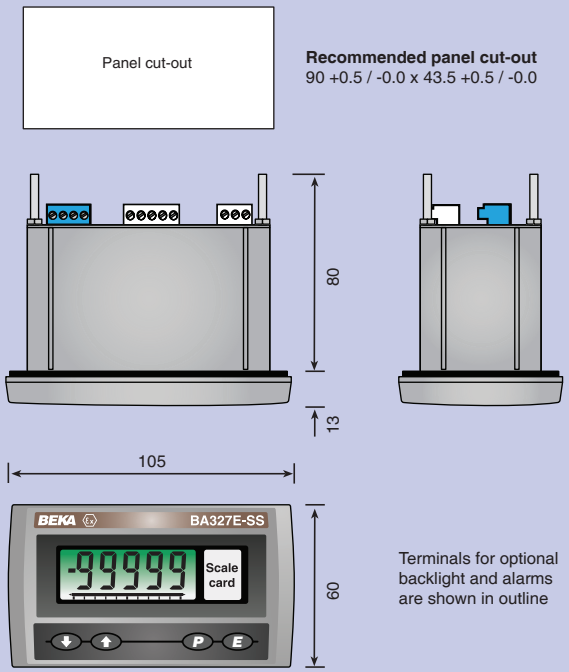
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

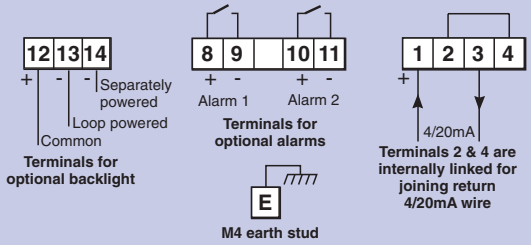
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage increased to 5V max.
Separately powered	9V at 22mA from IS interface

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with the requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 28 common units of measurement and 2 blank cards.
Tag legend	Specified tag number or application information laser etched on rear of instrument.
Support plate	Evenly distributes clamping force when the indicator is installed in a non-metallic or thin panel less than 1mm thick.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

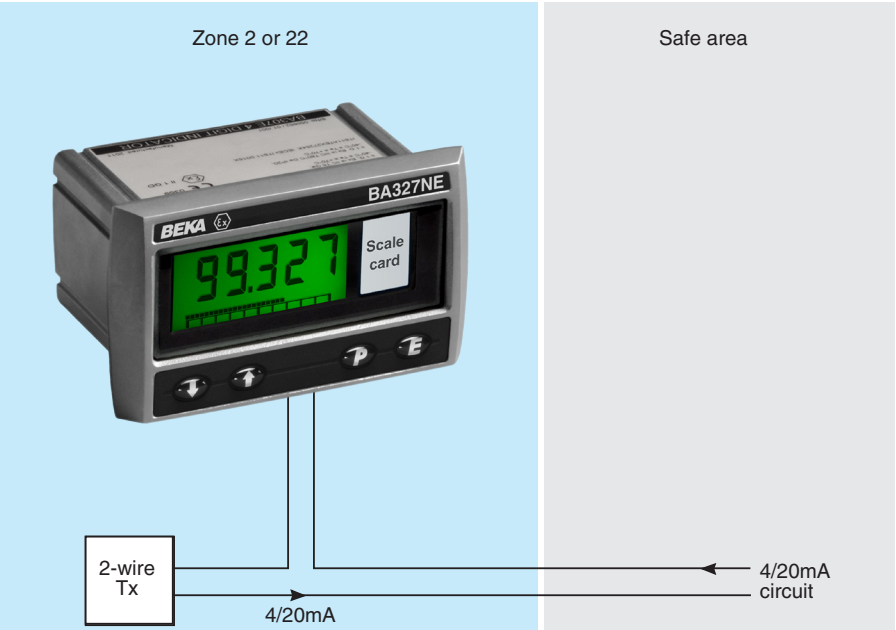
HOW TO ORDER

	Please specify
Model number	BA327E-SS
Display mode	Linear, root or linariser*
Display at:	
4.000mA	XXXXX
20.000mA	XXXXX

*Include position of decimal point & sign if negative. Together with intermediate points if linearisation is required.**

Accessories	
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Support plate	Support plate
Rear cover and sealing kit	BA495

* *Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA327NE

Rugged 2-wire 4/20mA 5 digit indicator

Ex nA and Ex tc certified for installation in Ex n, Ex e, Ex p or Ex tc panel enclosure located in Zones 2 or 22

- **Rugged IP66 stainless steel enclosure.**
- **Ex nA & Ex tc certification eliminates the need for Zener barriers and galvanic isolators.**
- **Loop powered only 1.2V drop.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor and 16 segment lineariser.**
- **3 year guarantee**

www.beka.co.uk/ba327ne

The BA327NE loop powered, panel mounting Indicator has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure located in Zone 2 or 22, without the need for Zener barriers or galvanic isolators. The indicator has a full 5 digit display plus a 31 segment analogue bargraph with guaranteed performance between -40 and 70°C. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the instrument or removing it from the panel.

The main application of the BA327NE is to display a measured variable in meaningful engineering units in Zone 2 or 22. The front of the indicator has certified impact and ingress protection allowing it to be installed in an Ex n, Ex p, Ex e or Ex tc panel enclosure without invalidating the panel's impact and ingress protection.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a wide viewing angle, allowing the BA327NE indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999.

ATEX, IECEx and ETL Ex nA non sparking certification allows the BA327NE, when installed in an Ex n, Ex p or Ex e panel to be located in a Zone 2 gas hazardous area without the need for Zener barriers or galvanic isolators. For Zone 2 applications the BA327NE offers a less expensive alternative to intrinsically safe and flameproof indicators.

Ex tc dust certification also allows the BA327NE, when installed in an Ex tc panel enclosure, to be locateded in a Zone 22 dust hazardous area, again without the need for Zener barriers or galvanic isolators.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop increases. Powering from a separate supply produces a brighter backlight but requires additional wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA327NE from the panel or opening the instrument enclosure.

Application Guide AG310 which explain how Ex nA certified instruments should be installed may be downloaded from the BEKA associates website, or requested from the BEKA sales office.

Other models in this range include the BA307NE which has a similar specification with four 15mm high digits.

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SPECIFICATION

Input

Current	4 to 20mA HART® transparent
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight
Over range	±200mA or ±30V will not damage the indicator

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	99999 or -99999 with flashing decimal points

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Hazardous area certification

Europe ATEX	(Special conditions permit installation in Ex n, Ex e, Ex p and Ex tc enclosures)
Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS14ATEX48028X

International IECEx	
Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 70°C
Cert. No.	IECEx ITS 14.0026X

USA & Canada ETL & cETL	
Code	Class I, Zone 2, AEx nA ic IIC T5 Gc Zone 22, AEx ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C **]** USA Ex nA ic IIC T5 Gc: Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ 60°C **]** Canada
ETL control No.	4008610

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with 2014/30/EU

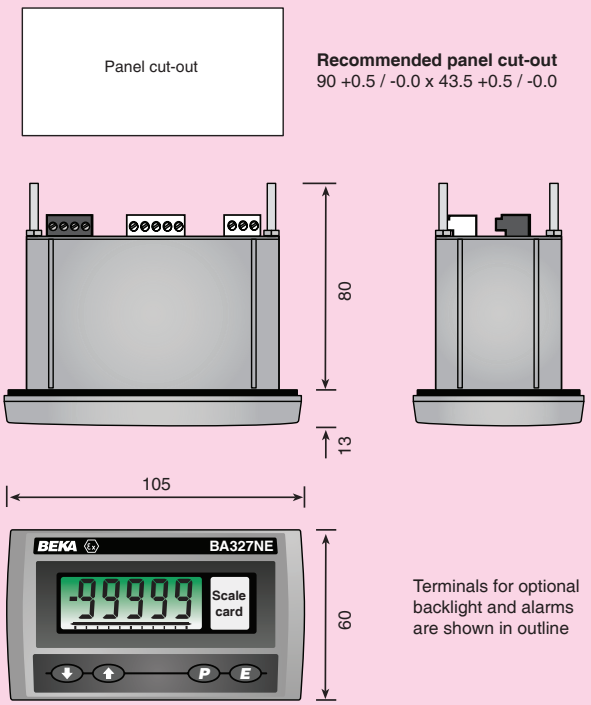
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

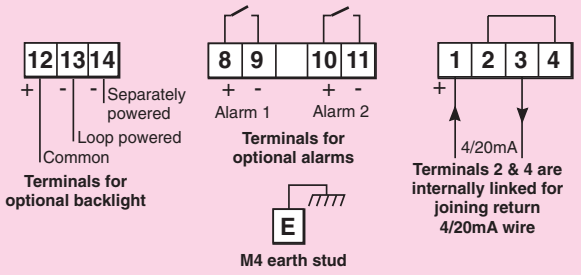
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage increased to 5V max.
Separately powered	9V at 22mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 26 common units of measurement and 2 blank cards.
Tag legend	Specified tag number or application information laser etched on rear of instrument.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

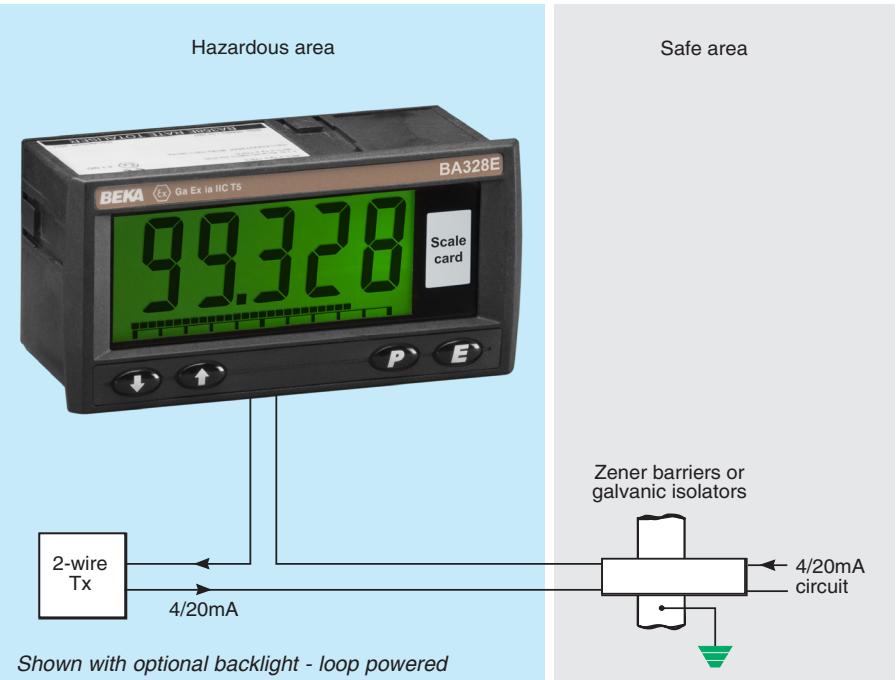
HOW TO ORDER

	Please specify
Model number	BA327NE
Display mode	Linear, root or linearisers*
Display at:	
4.000mA	XXXXX] *Include position of decimal point & sign if negative. Together with intermediate points if linearisation is required.**
20.000mA	XXXXX]

Accessories

Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered

BA328E

2-wire 4/20mA 5 digit indicator

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba328e

The BA328E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA328C, but has a much larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70°C, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and be installed on-site without dismantling the indicator enclosure or removing it from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA328E is to display a measured variable in meaningful engineering units within a hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and non-linear variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA328E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA328E indicator is installed.

International intrinsic safety certification permits the BA328E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the indicator to be connected in series with most intrinsically safe 4/20mA loops. The BA328E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA328C, thus allowing the BA328E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA308E which has a similar specification with four larger 34mm high digits without a bargraph.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digit 29mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus*.
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM

Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

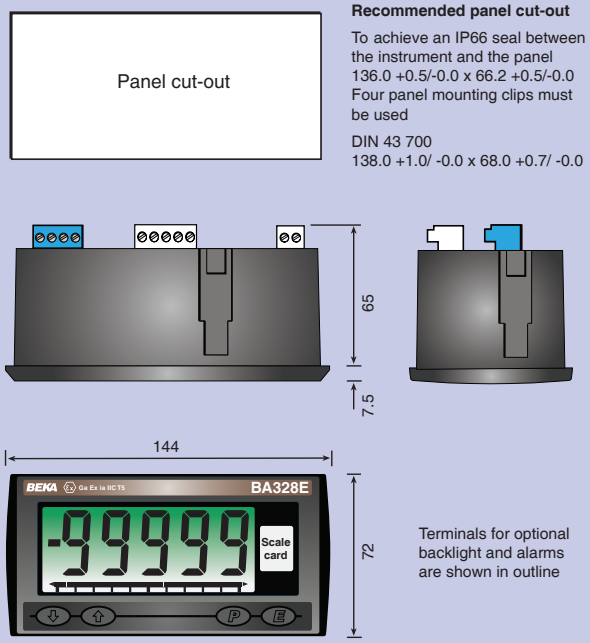
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

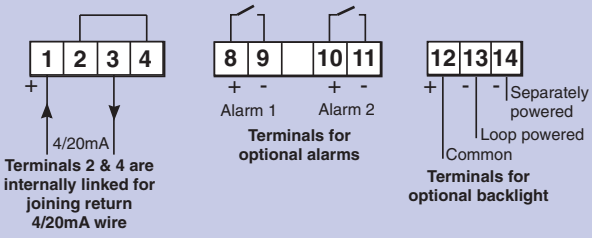
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.35kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V max.
Separately powered.	11V at 35mA from IS interface
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

	Please specify
Model number	BA328E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX
20.000mA	XXXXX

*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required

* *Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

Shown with optional backlight - loop powered

BA504G-SS-PM Rugged 2-wire 4/20mA 4 digit indicator

General purpose panel mounting for use in harsh environments.

- **Rugged IP66 stainless steel front maintains panel enclosure's IP66 protection.**
- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Optional backlight & alarms.**
- **Root extractor and 16 segment lineariser.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

beka.co.uk/ba504g-ss-pm

The BA504G-SS-PM loop powered 4/20mA indicator is a rugged, general purpose panel mounting instrument with a large 4 digit display. It has an impact resistant IP66 stainless steel front which maintains the integrity of the panel enclosure in which it is mounted.

Main application of the BA504G-SS-PM is to display a measured variable in engineering units within a harsh process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. Root extraction and an adjustable sixteen segment lineariser enable flow and variables such as tank levels to be shown in linear engineering units. For weighing applications a tare function is included.

The large 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, thus the BA504G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The four digit display, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 and impact protection are provided by a rugged 316 stainless steel front with a 6mm thick armoured glass window and silicone gaskets. Impact and ingress protection have been independently assessed by a UKAS accredited authority.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicators voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other panel mounting models in this range include the five digit BA524G-SS-PM and the smaller 4 digit BA507E-SS and 5 digit BA527E-SS.

If flammable atmospheres are present the intrinsically safe BA304G-SS-PM has the same features as the BA504G-SS-PM with international gas and dust certification.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overrange	9999 or -9999 with all decimal points flashing.

Push buttons (Function in display mode)

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU.

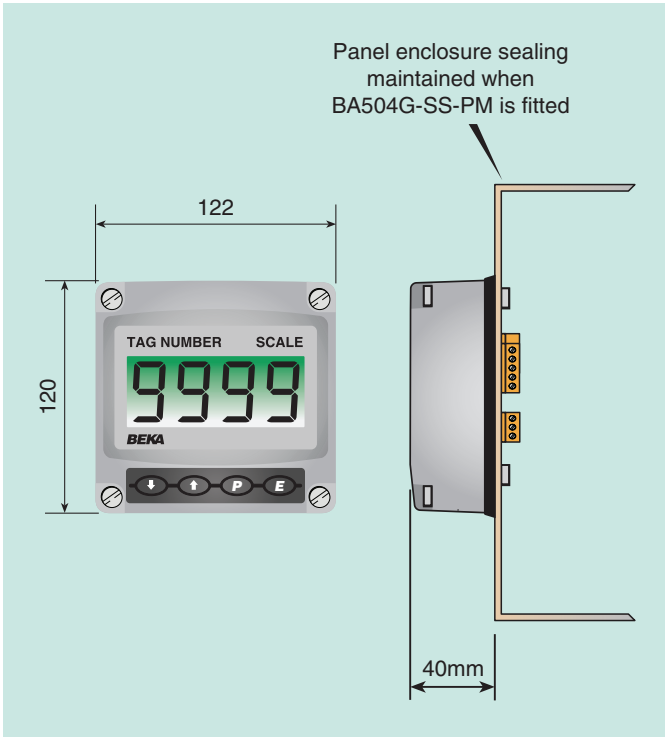
Mechanical

Front of indicator	
Material	316 stainless steel
Ingress protection	IP66
Impact	7J, Window 4J
Rear	IP20
Weight	1.1kg
Terminals	Orange with screw clamp for 0.5 to 1.5mm² cable.
Scale card	Slide-in card showing units of measurement and tag information through display window.

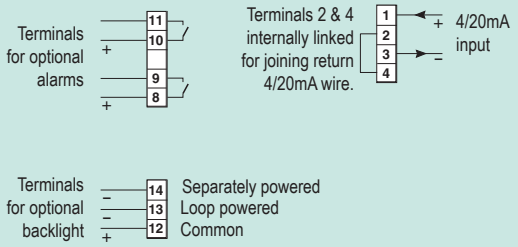
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage increases to 5V
Separately powered	
V supply	11 to 30V dc
I in	35mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

HOW TO ORDER

	Please specify
Model number	BA504G-SS-PM
Display mode	Linear, root or lineariser*
Display at:	
4.000mA 20.000mA	XXXX XXXX — Include position of decimal point & sign if negative.*
Scale card marking	
Units	Legend required
Tag	Legend required

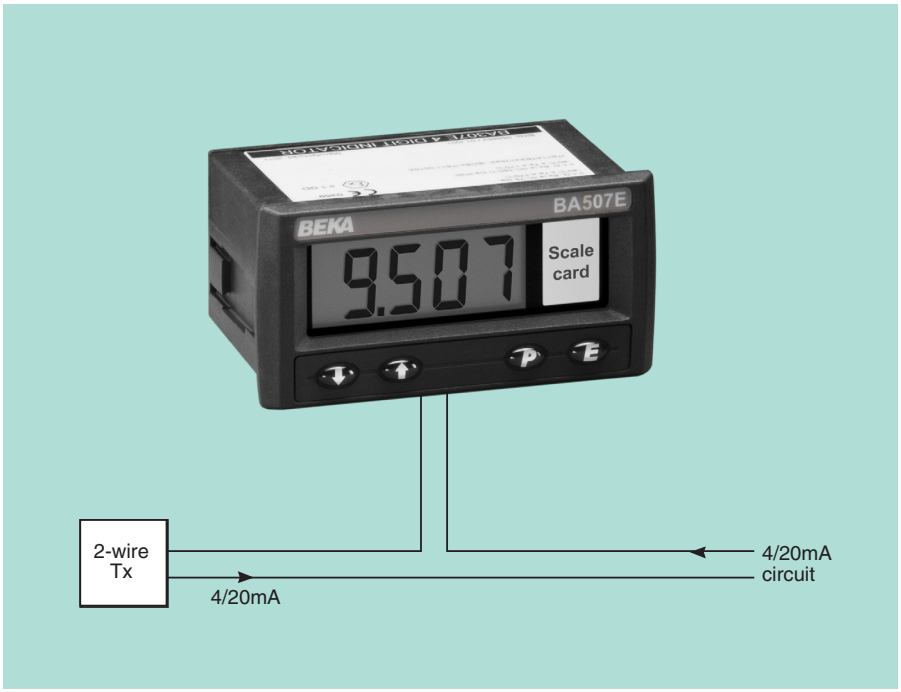
Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

BA507E

2-wire 4/20mA 4 digit indicator

General purpose



- **Loop powered only 1.2V drop.**
- **4 digit 15mm high display.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba507e

The BA507E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry standard BA507C, but has a much larger full 4 digit display providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70˚C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA507E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 15mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA507E indicator to be read easily in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA507E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA527E which has a similar specification with five 11mm high digits and a 31 segment bargraph.

If flammable atmospheres are present the BA307E should be used. This has the same features as the BA507E but has been certified for use in hazardous areas.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digit 15mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit.
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing.
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

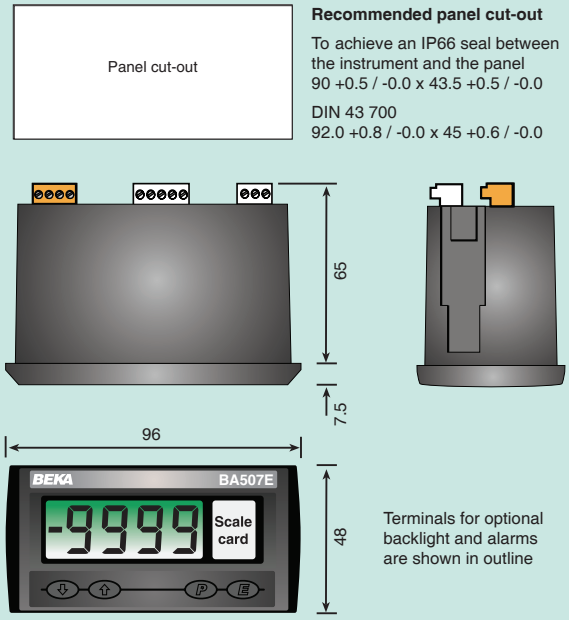
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.2kg

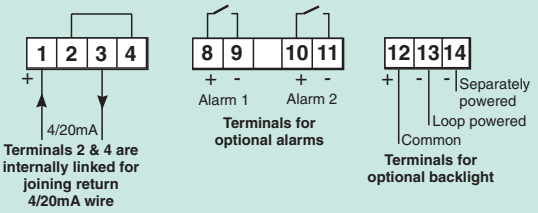
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	9 to 30V dc
I in	22.5mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

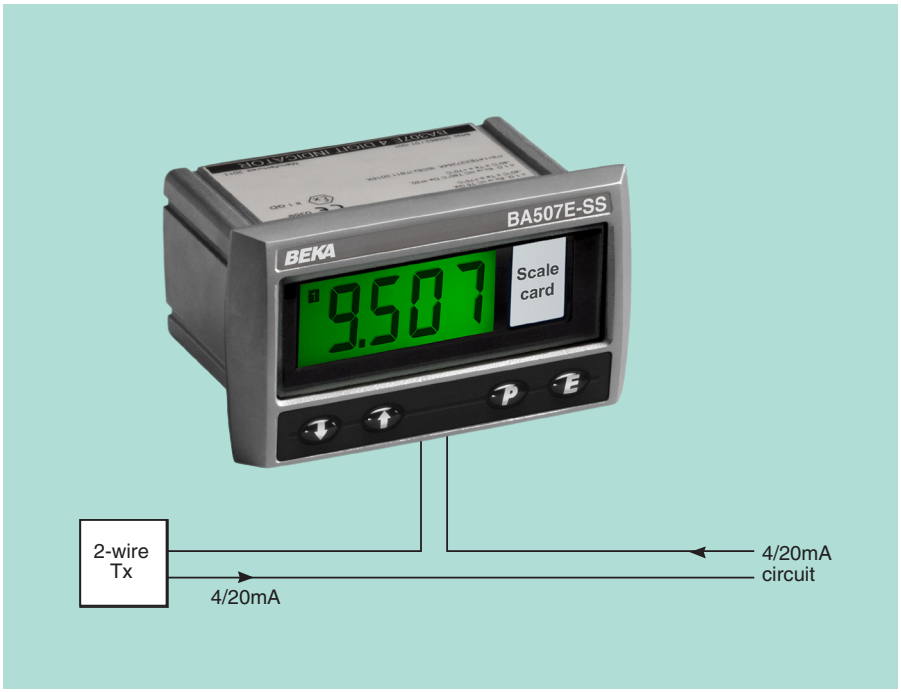
	Please specify
Model number	BA507E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX ⎫ Include position of decimal point,*
20.000mA	XXXX ⎬ sign if negative & intermediate
	⎭ points if lineariser is required.

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

BA507E-SS

Rugged 2-wire 4/20mA 4 digit indicator



General purpose for use in harsh & marine environments

- **Rugged IP66 stainless steel enclosure.**
- **Loop powered only 1.2V drop.**
- **4 digit 15mm high display.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor, 16 segment lineariser and Tare function.**
- **3 year guarantee**

www.beka.co.uk/ba507e-ss

The BA507E-SS rugged general purpose, panel mounting 4/20mA loop powered Indicator, has a stainless steel housing allowing it to be safely installed in harsh industrial and marine environments, or where the front of the instrument is likely to be impacted. Incorporating a full 4 digit display with guaranteed performance between -40 and 70°C, the indicator can be calibrated to show the 4/20mA input current in almost any engineering units.

Main application of the BA507-SS is to display a measured variable in meaningful engineering units within an industrial process area. The rugged stainless steel housing and robust construction make the BA507E-SS ideal for installation in panel enclosures located in harsh environments such as agricultural vehicles and waste water processing plant. The indicator includes a square root extractor for flow applications, a sixteen point fully adjustable linearisers and a tare function which enable most types of 4/20mA process variables to be displayed in linear units.

The stainless steel cast front provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the BA507E-SS and the panel enclosure in which it is mounted. The ingress and impact protection provided by the indicator's stainless steel housing, including the 10mm thick glass display window, have been independently tested at maximum and minimum operating temperatures by Intertek Testing and Certification.

A bold 15mm high 4 digit display provides maximum contrast and has a wide viewing angle, allowing the BA307E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The four digits, with three decimal point positions and a negative sign, may be configured to display any variable between -9999 and 9999.

An optional backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional wiring and another power supply.

Optional dual alarm outputs which can switch low power loads, such as a sounder, beacon or solenoid valve are available as a factory fitted option. The two galvanically isolated single pole solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA507E-SS from the panel enclosure or opening the instrument case.

Reliability is ensured by component conformal coating, protection from incorrect connection and from radio frequency interference. The indicator has been subjected to thermal endurance and vibration testing and is supported by a three year guarantee.

Other rugged models in this range of loop powered indicators, all of which have a stainless steel enclosure, include the BA527E–SS general purpose indicator which has a similar electrical specification as the BA507E-SS, but has five 11mm high display digits plus a 31 segment bargraph. Intrinsically safe Ex ia and Ex nA 4 and 5 digit models are also included, please see datasheets for the BA307E-SS, BA327E-SS, BA307NE and the BA327NE.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional backlight loop powered.
Over range	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 15mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	9999 or -9999 with flashing decimal points

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Impact protection	Front 7J, window 4J
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2004/108/EC

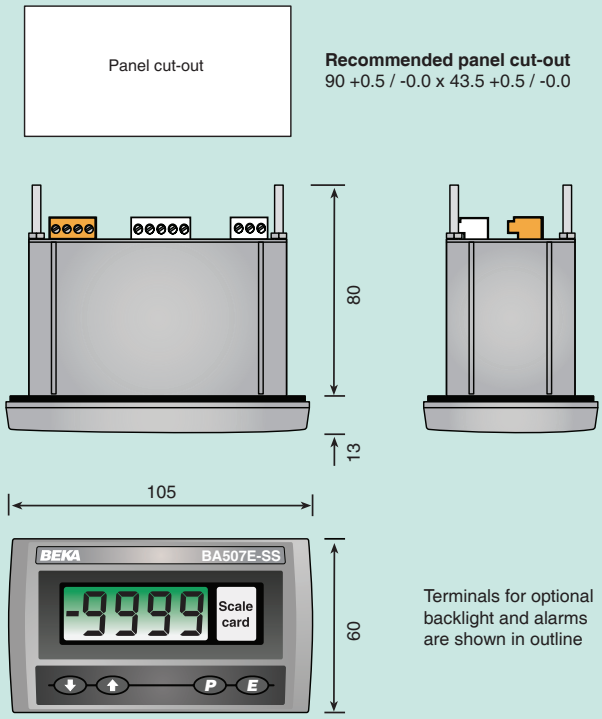
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

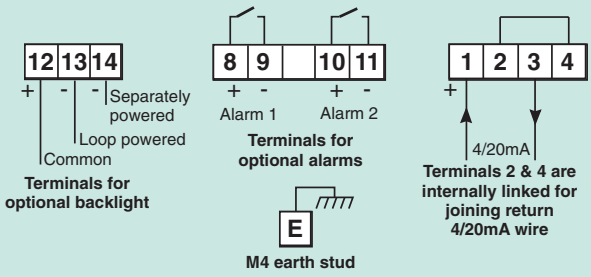
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	
Supply voltage	9 to 30V dc
Supply current	22.5mA at 9 to 30V
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	30V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 28 common units of measurement and 2 blank cards.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Tag legend	Specified tag number or application information laser etched onto rear of the instrument.
Support plate	Evenly distributes clamping force when the indicator is installed in a non-metallic or thin panel less than 1mm thick.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

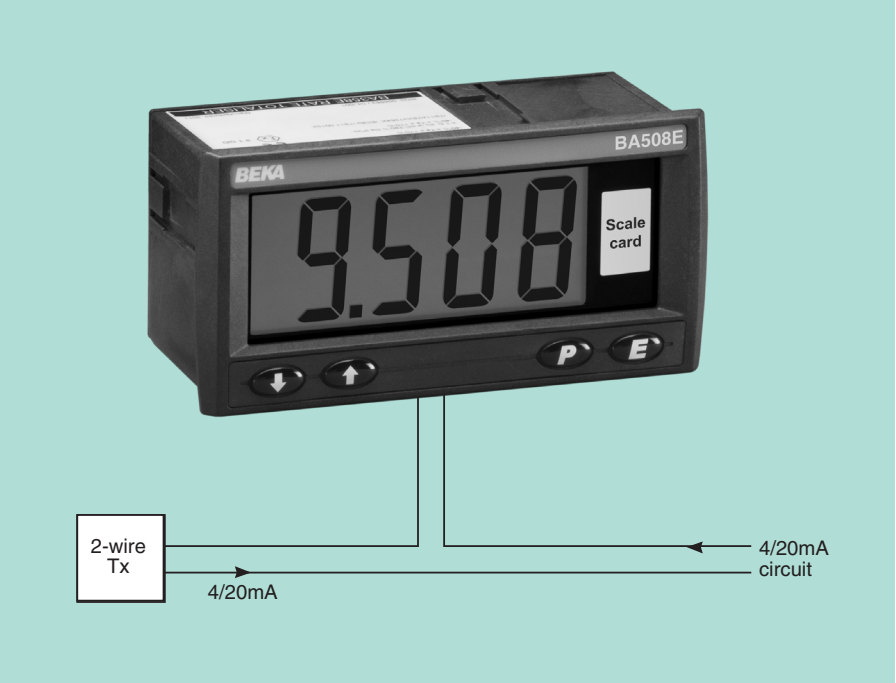
HOW TO ORDER

	Please specify
Model number	BA507E–SS
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX Include position of decimal point & sign if negative. Together with
20.000mA	XXXX intermediate points is linearisation is required.*

Accessories

Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag Legend required	
Support plate	Support plate
Rear cover and sealing kit	BA495

* Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.



BA508E

2-wire 4/20mA 4 digit indicator

General purpose

- **Loop powered only 1.2V drop.**
- **4 digit 34mm high display.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba508e

The BA508E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA508C, but has a much larger full 4 digit display providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40 & 70˚C, and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA508E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 34mm high 4 digit display provides maximum contrast and has a very wide viewing angle, allowing the BA508E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -9999 and 9999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA508E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wirings.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA528E which has a similar specification with five 29mm high digits and a 31 segment bargraph.

If flammable atmospheres are present the BA308E should be used. This has the same features as the BA508E but has been certified for use in hazardous areas

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 4 digits 34mm high.
Span	Adjustable between 0 & ±9999 for a 4/20mA input.
Zero	Adjustable between 0 & ±9999 with 4mA input.
Decimal point	1 of 3 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Overange	9999 or -9999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit. Root extracting ±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing.
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

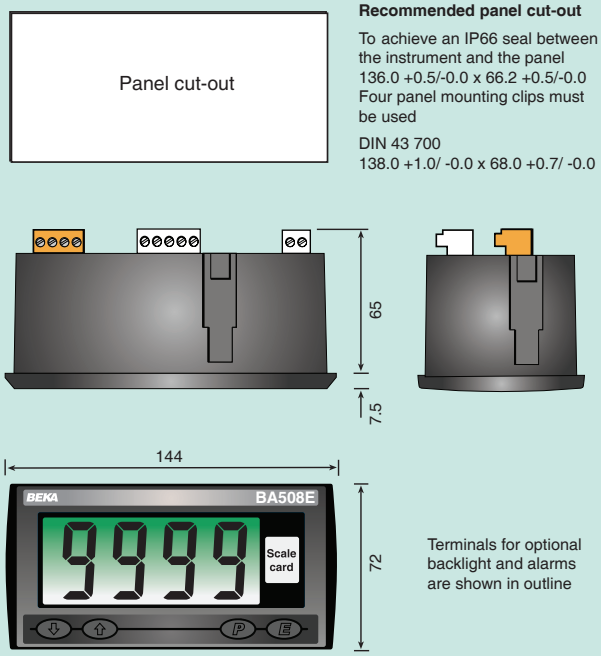
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.35kg

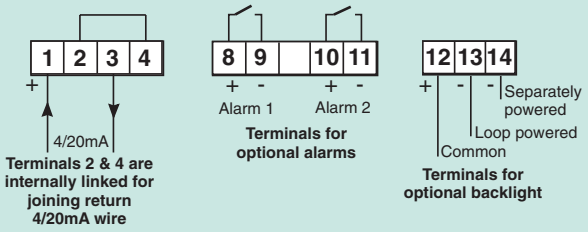
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	11V to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Printed scale card	Blank card fitted to each Indicator can be supplied typeset with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

	Please specify
Model number	BA508E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX Include position of decimal point,*
20.000mA	XXXX sign if negative & intermediate points if lineariser is required.

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required

** Will be set to display 0.0 at 4mA and 100.0 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

NEW PANEL MOUNTING MODEL

Shown with optional backlight - loop powered

BA524G-SS-PM Rugged 2-wire 4/20mA 5 digit indicator

General purpose panel mounting for use in harsh environments.

- **Rugged IP66 stainless steel front maintains panel enclosure's IP66 protection.**
- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Root extractor and 16 segment lineariser.**
- **Easy scale card installation on-site.**
- **3 year guarantee**

beka.co.uk/ba524g-ss-pm

The BA524G-SS-PM loop powered 4/20mA indicator is a rugged, general purpose panel mounting instrument with a large 5 digit display and a bargraph. It has an impact resistant IP66 stainless steel front which maintains the integrity of the panel enclosure in which it is mounted.

Main application of the BA524G-SS-PM is to display a measured variable in engineering units within a harsh process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. Root extraction and an adjustable sixteen segment lineariser also enable flow and variables such as tank levels to be shown in linear engineering units. For weighing applications a tare function is included.

The large 29mm high 5 digit display provides maximum contrast and has a very wide viewing angle, thus the BA524G-SS-PM indicator is easily read in most lighting conditions. An optional backlight is available for installations in poorly illuminated areas. The five digit display, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 and impact protection are provided by a rugged 316 stainless steel front with a 6mm thick armoured glass window and silicone gaskets. Impact and ingress protection have been assessed by a UKAS accredited authority.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination enabling the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop, no additional wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a slightly brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarms.

The scale card which shows units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments can be supplied with the scale card printed to show customer specified information for no additional charge, if this is not requested a blank card is fitted which can easily be marked on-site.

Reliability is ensured by protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration and thermal testing and is supported by a three year guarantee.

Other panel mounting models in this range include the four digit BA504G-SS-PM and the smaller BA507E-SS and 5 digit BA527E-SS.

If flammable atmospheres are present the intrinsically safe BA324G-SS-PM has the same features as the BA524G-SS-PM with international gas and dust certification.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digits 29mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overrange	99999 or -99999 with all decimal points flashing.

Push buttons (Function in display mode)

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C noncondensing
EMC	Complies with EMC Directive 2014/30/EU.

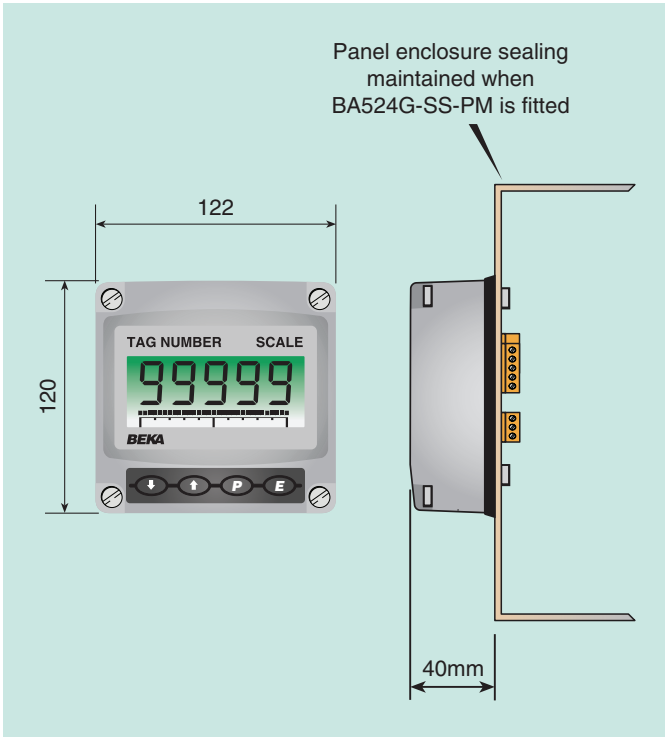
Mechanical

Front of indicator	
Material	316 stainless steel
Ingress protection	IP66
Impact	7J, Window 4J
Rear of indicator	IP20
Weight	1.1kg
Terminals	Orange with screw clamp for 0.5 to 1.5mm² cable.
Scale card	Slide-in card showing units of measurement and tag information through display window.

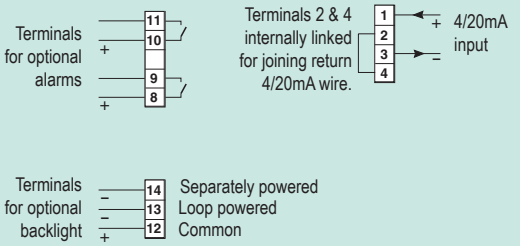
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage increases to 5V
Separately powered	
V supply	11 to 30V dc
I in	35mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated, voltage free solid state switch.
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

HOW TO ORDER

	Please specify
Model number	BA524G-SS-PM
Display mode	Linear, root or lineariser*
Display at:	
4.000mA 20.000mA	XXXXX XXXXX] Include position of decimal point & sign if negative.*
Scale card marking	
Units	Legend required
Tag	Legend required

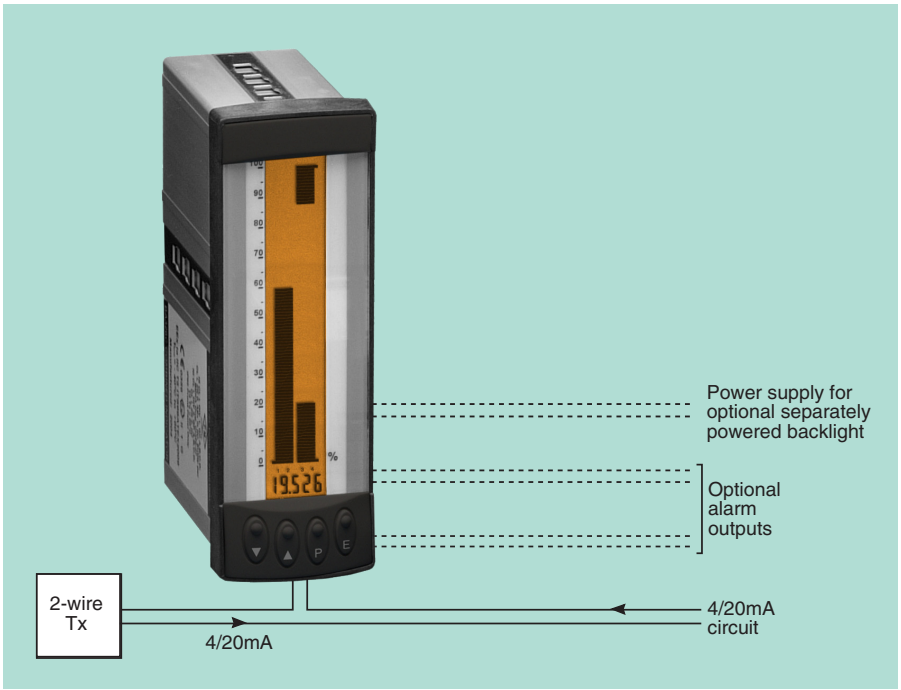
Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

BA526C

2-wire 4/20mA analogue & digital indicator

General purpose



- **Loop powered only 1.1V drop.**
- **Optimum visibility**
- **100 segment bargraph plus digital display.**
- **Optional:**
  - **Display backlight**
  - **Alarms**
  - **Lineariser**
- **144 x 48mm DIN enclosure with IP65 front.**
- **3 year guarantee**

www.beka.co.uk/ba526c

The BA526C is a new combined analogue and digital indicator which replaces the BA526. It offers enhanced features and improved visibility in a shorter enclosure. Like its predecessor, the BA526C displays the current flowing in a 4/20mA loop on a 100 segment bargraph and in accurate engineering units on a digital display. The instrument is loop powered but only introduces a 1V drop allowing it to be installed in series with almost any 4/20mA loop.

Main application of the BA526C is to display a measured variable or control signal in a process area. For level and similar measurements the combination of an analogue and digital display provides magnitude and trend information from the bargraph, plus accurate readings in engineering units from the digital display. The relative magnitude of variables can be effectively presented by mounting BA526C indicators side by side. An optional 16 point lineariser enables the BA526C to display non linear variables in linear engineering units.

Control and calibration of the combined indicator is performed via the front panel tactile push buttons. Using these buttons the operator can tem-porarily display the measured variable as a percentage of span, the input current in mA and the numerical display at 4 and 20mA input. All the calibration functions are contained in easy to understand menus which may be protected by a four digit user selectable security code.

The analogue bargraph which contains 100 segments, provides a rapid indication of the input current, enabling an operator to quickly assess the magnitude and trend of a process variable.

The bargraph displays zero to full scale for a 4 to 20mA input, but may be calibrated to show deviation from any input current. Either a column or a single segment display may be selected and if only the analogue display is required, the digital display may be disabled.

Separately powered backlighting is available as an option. The orange output enhances daylight contrast and enables the display to be read when the instrument is installed in a poorly illuminated area.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed for high or low operation with a normally open or closed output. For easy comparison with the 4/20mA input, both setpoints are displayed on a second bargraph together with annunciators showing the status of both alarms.

The IP65 front panel is a robust, easy to clean Noryl moulding surrounding an armoured glass window. A captive neoprene gasket provides a seal between the instrument enclosure and the panel.

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee. The BA526C is protected from reverse connection and overrange input currents, and incorporates extensive radio frequency filtering to comply with the European EMC Directive.

If flammable atmospheres are present the BA326C should be used. This has the same features as the BA526C and has been certified intrinsically safe in both Europe and the USA.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.1V at 20°C Less than 1.2V at -20°C
Overrange	±200mA will not cause damage

Display

Type	Liquid crystal
Reading rate	
Analogue	4 per second
Digital	2 per second
Analogue	95mm long 100 segment column or single segment.
Range	0 to100% for 4 to 20mA input
Digital	4½ digit (-19999 to 19999) 5.5mm high; selectable dummy trailing zero extends display range to (-19990 to 99990).
Span	Adjustable between 0 & ±19999
Zero	Adjustable between ±19999 with 4mA input
Decimal point	1 of 5 positions or absent
Polarity	Automatic minus sign
Direction	Display may increase or decrease with increasing current.
Over & underrange.	4 least significant digits are blanked

Push buttons (In operating mode)

Down button	Shows displays with 4mA input
Up button	Shows displays with 20mA input
'P' button	Displays input current in mA or as a percentage of span.

Accuracy at 20°C

Analogue	±0.5%	
Digital	Linear	±0.02% ±1 digit
	Root extracting	16µA at input ±1 digit
Temp. effect		
Analogue	±0.5% between -20 & 60°C	
Digital		
Zero	Less than 25ppm/°C	
Span	Less than 50ppm/°C	
Series mode	Less than 0.5% error for 1mA pk to pk 50Hz or 60Hz signal.	

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Enclosure	Front IP65 rear IP20
EMC	In accordance with EU Directive 2004/108/EC, full report available.

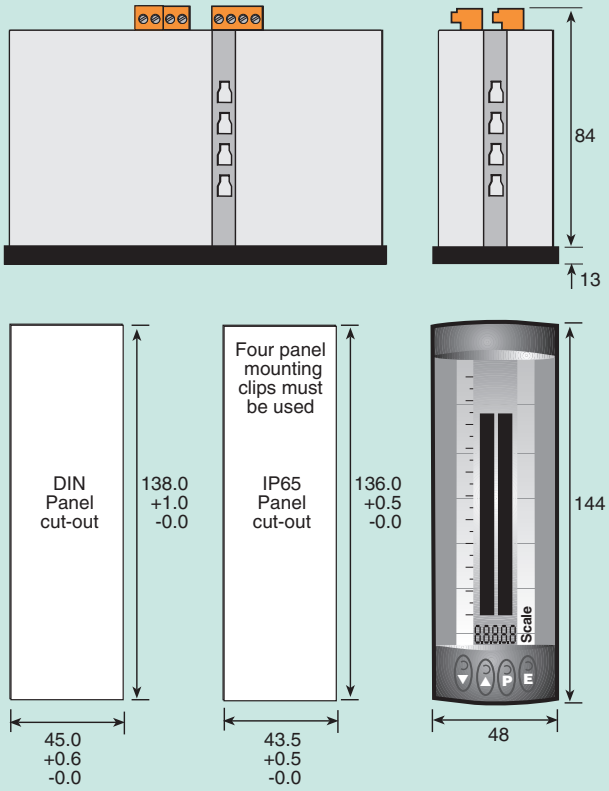
Mechanical

Terminals	Removable terminal block for 0.5 to 1.5mm^2 cables.
Weight	0.5kg

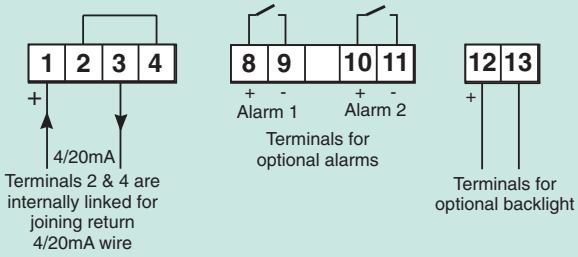
Accessories

Separately powered backlight.	LED backlight
Vin	18 to 30V dc, may be dimmed by reducing voltage below 18V.
Iin	40mA typical
Alarms	Two independent alarms each of which may be programmed for high or low operation with a NC or NO output.
Outputs	Isolated single pole solid state switch: Ron less than 5Ω +0.6V Roff greater than 180k
Lineariser	Provides 16 fully adjustable straight lines which may be adjusted to compensate for almost any non-linear variable.
Typeset scale card.	Blank scale card fitted to each indicator can be supplied typeset with units of measurement.
Bargraph scale	Blank scale fitted to each indicator can be supplied typeset with analogue scale.
Tag number	Thermally printed number on rear of the instrument.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify	
Model number	BA526C	
Display mode	Linear or root extracting*	
Digital display		
Display at 4mA	XXXX*	Include position of decimal point, dummy zero if required & sign if negative.
Display at 20mA	XXXX*	

Accessories	Please specify if required
Separately powered backlight.	Backlight
Alarms	Alarms
Lineariser	Lineariser#
Scale card	Legend
Bargraph scale	Required scale graduations
Tag number	Legend

**Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied.*
#Contact BEKA if calibration of accessories is required.

BA527E

2-wire 4/20mA 5 digit indicator

General purpose

Shown with optional backlight - loop powered

- **Loop powered only 1.2V drop.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba527e

The BA527E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier industry tandard BA527C, but has a larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 96 x 48mm instrument. The new model has guaranteed performance between -40 & 70˚C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA527E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and variables such as tank level in linear engineering units. For weighing applications a tare function is included.

The bold 11mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA527E indicator to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA527E indicator is installed.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch low power loads, such as sounders, beacons and solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state alarm outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA507E which has a similar specification with four larger 15mm high digits without a bargraph.

If flammable atmospheres are present the BA327E should be used. This has the same features as the BA527E but has been certified for use in hazardous areas.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 43mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function
'E'	Used for tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit.
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing.
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

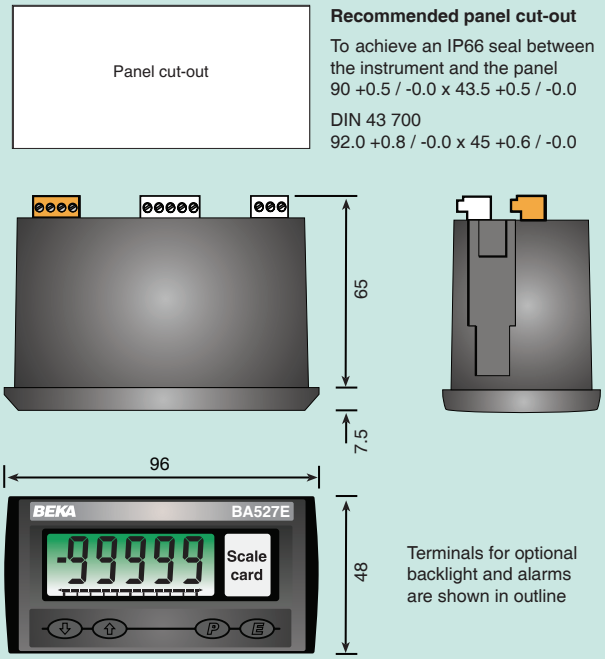
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.2kg

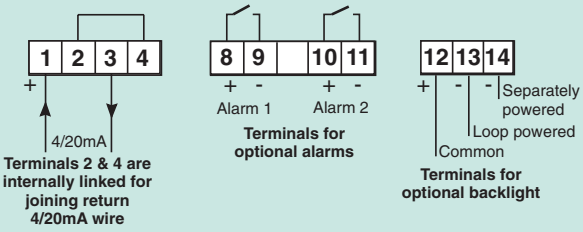
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	9 to 30V dc
I in	22.5mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

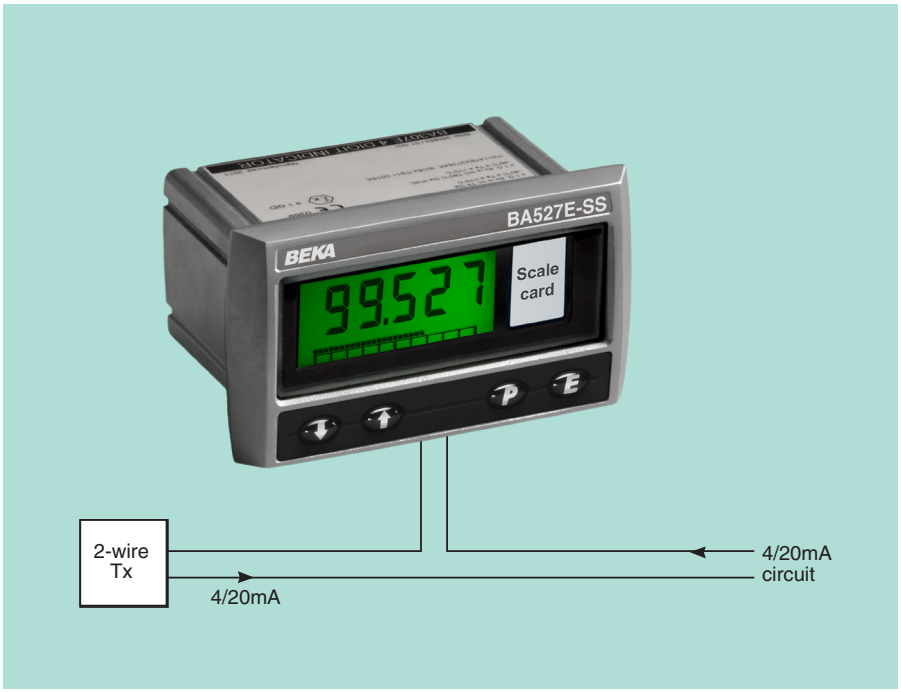
	Please specify
Model number	BA527E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXX Include position of decimal point,*
20.000mA	XXXX sign if negative & intermediate points if lineariser is required.

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.*

BA527E-SS

Rugged 2-wire 4/20mA 5 digit indicator



General purpose for use in harsh & marine environments

- **Rugged IP66 stainless steel enclosure.**
- **Loop powered only 1.2V drop.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **Root extractor and 16 segment lineariser.**
- **3 year guarantee**

www.beka.co.uk/ba527e-ss

The BA527E-SS rugged general purpose, panel mounting 4/20mA loop powered Indicator, has a stainless steel housing allowing it to be safely installed in harsh industrial and marine environments, or where the front of the instrument is likely to be impacted. Incorporating a full 5 digit display plus a 31 segment bargraph with guaranteed performance between -40 and 70°C, the indicator can be calibrated to show the 4/20mA input current in almost any engineering units.

Main application of the BA527-SS is to display a measured variable in meaningful engineering units within an industrial process area. The rugged stainless steel housing and robust construction make the BA527E-SS ideal for installation in panel enclosures located in harsh environments such as agricultural vehicles and waste water processing plant. The indicator includes a square root extractor for flow applications, a sixteen point fully adjustable lineariser and a tare function which enable most types of 4/20mA process variables to be displayed in linear units.

The stainless steel cast front provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the BA527E-SS and the panel enclosure in which it is mounted. The ingress and impact protection provided by the indicator's stainless steel housing, including the 10mm thick glass display window, have been independently tested at maximum and minimum operating temperatures by Intertek Testing and Certification.

A bold 11mm high 5 digit display and 31 segment bargraph provides maximum contrast and has a wide viewing angle, allowing the BA327E-SS to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal point positions and a negative sign, may be configured to display any variable between -99999 and 99999.

An optional backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional wiring and another power supply.

Optional dual alarm outputs which can switch low power loads, such as a sounder, beacon or solenoid valve are available as a factory fitted option. The two galvanically isolated single pole solid state alarm outputs may be independently configured as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Units of measurement may be shown on the scale card which is visible through the window on the right hand side of the display. Instruments are supplied with the units legend requested when ordered, but the scale card may be easily changed on-site without removing the BA527E-SS from the panel enclosure or opening the instrument case.

Reliability is ensured by component conformal coating, protection from incorrect connection and from radio frequency interference. The indicator has been subjected to thermal endurance and vibration testing and is supported by a three year guarantee.

Other rugged models in this range of loop powered indicators, all of which have a stainless steel enclosure, include the BA507E–SS general purpose indicator which has a similar electrical specification as the BA527E-SS, but has four 15mm high display digits. Intrinsically safe Ex ia and Ex nA 4 and 5 digit models are also included, please see datasheets for the BA307E-SS, BA327E-SS, BA307NE and the BA327NE.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional backlight loop powered.
Over range	±200mA or ±30V will not damage the indicator.

Display

Type	Liquid crystal, non-multiplexed 5 digits 11mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of the decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Over range	99999 or -99999 with flashing decimal points.

Push buttons

▼	Shows display with 4mA input
▲	Shows display with 20mA input
P	Displays input in mA or as a % of span, has a modified function when alarms are fitted.
E	Used for Tare function

Accuracy at 20°C

Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temperature	-40 to 70°C
Storage temperature	-40 to 85°C
Humidity	To 95% at 40°C non-condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Impact protection	Front 7J, window 4J
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2004/108/EC

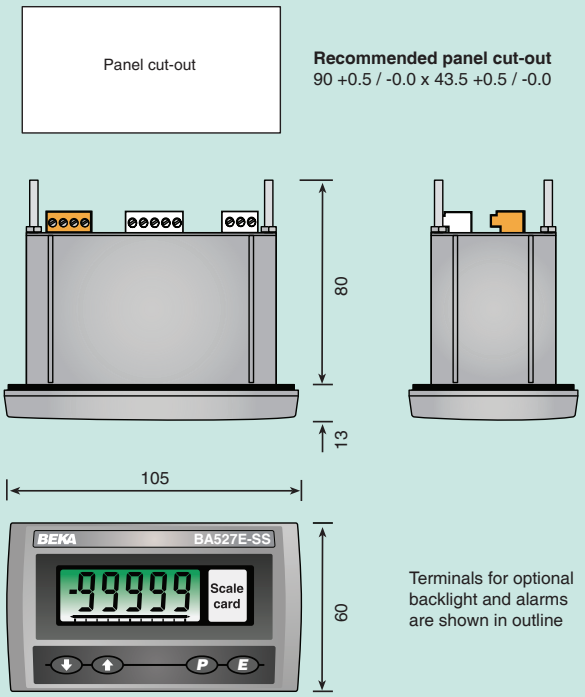
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable with removable terminal blocks.
Weight	0.85kg

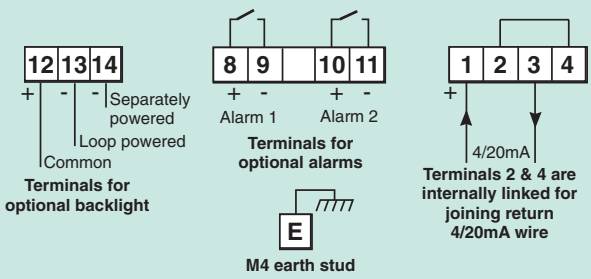
Accessories

Backlight	Green may be loop or separately powered
Loop powered	Indicator input voltage 5V
Separately powered	
Supply voltage	9 to 30V dc
Supply current	22.5mA at 9 to 30V
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	30V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards.	Contains 28 common units of measurement and 2 blank cards.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Tag legend	Specified tag number or application information laser etched onto rear of the instrument.
Support plate	Evenly distributes clamping force when the indicator is installed in a non-metallic or thin panel less than 1mm thick.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA527E–SS
Display mode	Linear, root or lineariser*
Display at:	Include position of decimal point & sign if negative. Together with intermediate points if linearisation is required.*
4.000mA	XXXXX
20.000mA	XXXXX

Accessories

Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required
Support plate	Support plate
Rear cover and sealing kit	BA495

* Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on-site.

BA528E

2-wire 4/20mA 5 digit indicator

General purpose

Shown with optional backlight - loop powered

- **Loop powered only 1.2V drop.**
- **5 digit 29mm high display & 31 segment bargraph.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **Root extractor and 16 segment lineariser.**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba528e

The BA528E loop powered 4/20mA indicator is a fourth generation instrument that is electrically and mechanically compatible with the earlier BA528C, but has a much larger full 5 digit display plus a 31 segment analogue bargraph providing maximum visibility from a 144 x 72mm instrument. The new model has guaranteed performance between -40˚C & 70˚C and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing the indicator from the panel. If the units of measurement are not specified when the indicator is ordered, a blank scale card will be fitted.

The main application of the BA528E is to display a measured variable in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20mA signal. A root extractor and an adjustable sixteen segment lineariser enables the indicator to display flow and tank level variables in linear engineering units. For weighing applications a tare function is included.

The bold 29mm high 5 digit display and 31 segment bargraph provide maximum contrast and have a very wide viewing angle, allowing the BA528E indicator to be read easily in most lighting conditions. An optional factory fitted backlight is available for applications in poorly illuminated areas. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999.

IP66 front panel protection and a neoprene gasket to seal the joint between the indicator and the panel, making the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block allowing panel wiring to be completed before the BA528E indicator is installed.

A Backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional alarm outputs which can switch low power loads such as sounders, beacons and solenoid valves are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of each output.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to vibration testing and is supported by a three year guarantee.

Other models in this range include the BA508E which has a similar specification with four even larger 34mm high digits without a bargraph.

If flammable atmospheres are present the BA328E should be used. This has the same features as the BA528E but has been certified for use in hazardous areas.

BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -40°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage indicator.

Display

Type	Liquid crystal 5 digit 29mm high & 31 segment bargraph.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA input.
Reading rate	2 per second
Bargraph	31 segments 80mm long
Overange	99999 or -99999 with all decimal points flashing.

Push buttons *(Function in display mode)*

▼	Shows display with 4mA input
▲	Shows display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted or Tare enabled.
'E'	Used for Tare function

Accuracy at 20°C

Linear	±0.02% ±1 digit.
Root extracting	±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm/°C
Span	Less than 50ppm/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing.
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

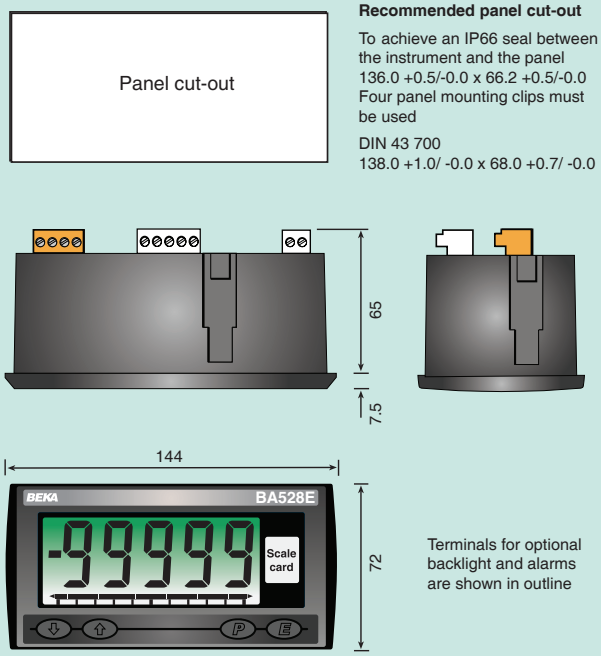
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.35kg

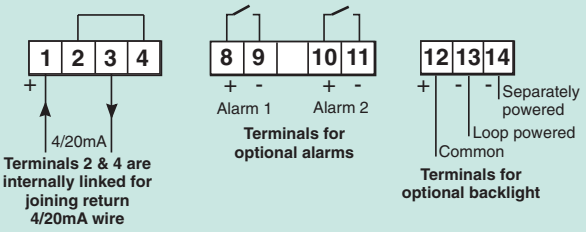
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Indicator input voltage 5V
Separately powered	
V supply	11V to 30V dc
I in	35mA
Alarms	Two alarm outputs each of which may be independently configured as a high or low alarm contact with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Printed scale card	Blank card fitted to each Indicator can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

	Please specify
Model number	BA528E
Display mode	Linear, root or lineariser*
Display at:	
4.000mA	XXXXX
20.000mA	XXXXX

Include position of decimal point,* sign if negative & intermediate points if lineariser is required.

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legend required
Tag	Legend required

** Will be set to display 0.00 at 4mA and 100.00 at 20mA with a linear display if calibration information is not supplied. Can easily be recalibrated on site.*

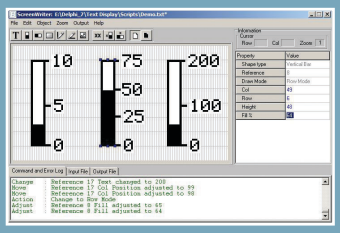
Serial Text [Data] Displays

Low cost operator interfaces which are ideal for simple machine and process control applications in hazardous and safe areas.

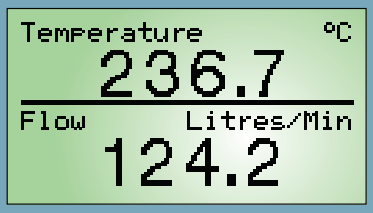
- > **Intrinsically safe and general purpose models.**
- > **Field and panel mounting models with IP66 protection.**
- > **High contrast display with backlight, operator push buttons and two switch outputs.**
- > **Selectable Modbus, BEKA or Legacy protocol.**
- > **General purpose models have RS232 or RS485 ports.**
- > **Displays up to eight variables on one of eleven standard screens, some with bargraphs.**
- > **Free BEKA ScreenWriter software simplifies design of custom screens.**
- > **BA201 galvanic isolator has ATEX, IECEx and FM certification.**

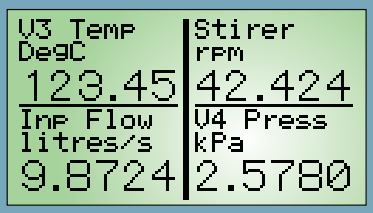
Intrinsically safe

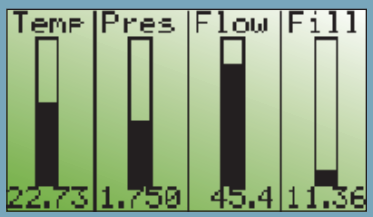
General purpose

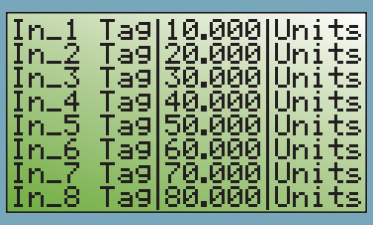


FREE simulation and ScreenWriter software



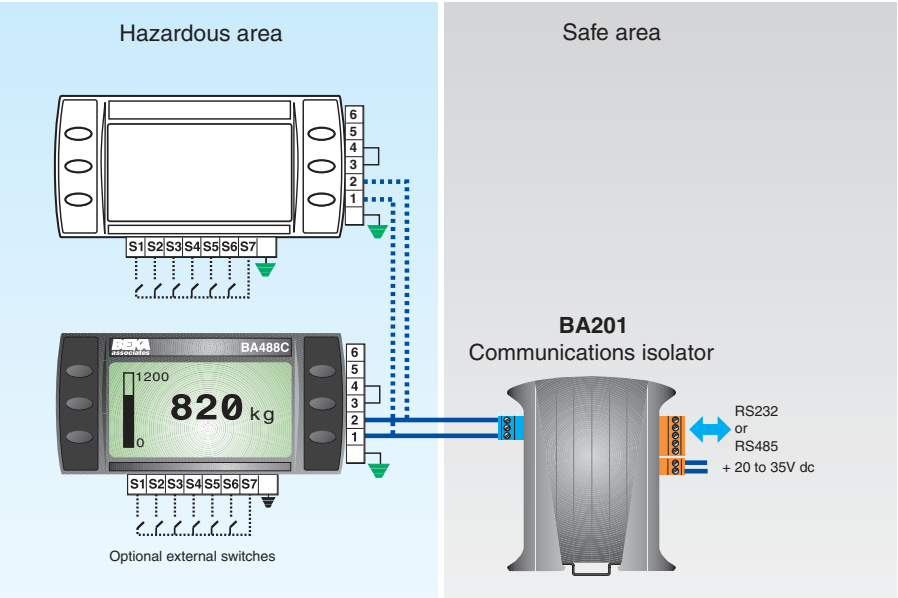






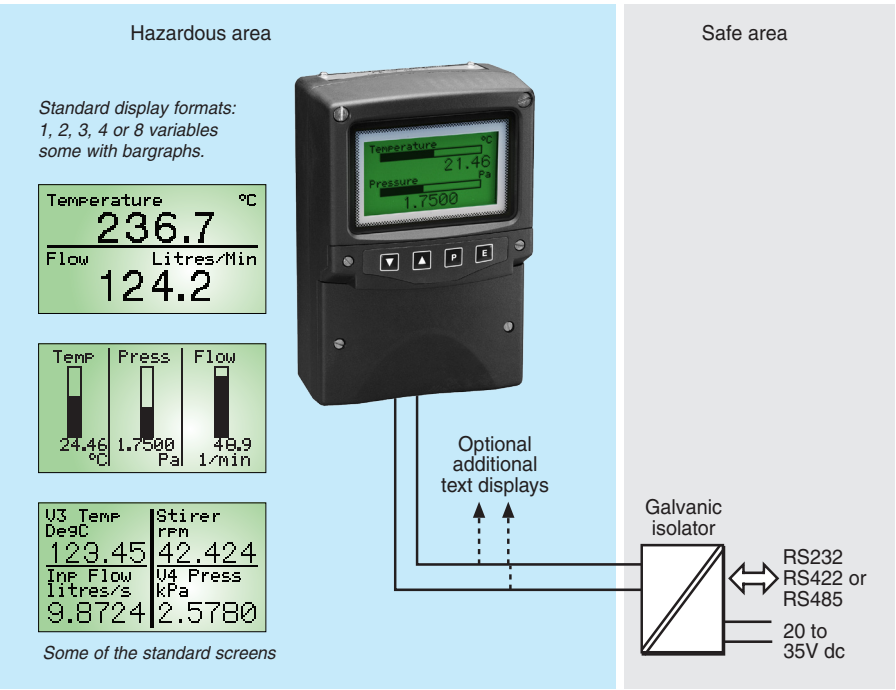
Serial Text [Data] Displays available:

Model No.	Mounting	Operator buttons	Communication	Certification					
				Europe ATEX		International IECEx		USA & Canada	
				Gas	Dust	Gas	Dust	Gas	Dust
Ex i intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified									
BA484D	Field	4	Via BEKA BA201 galvanic isolator	✔	✔	✔	✔	✔	✔
BA488C	Panel 144 x 72	6		✔	–	✔	–	✔	–
General Purpose - for use in safe areas									
BA684D	Field	4	RS232 or RS485						
BA688C	Panel 144 x 72	6							



Galvanic Isolator

Model No.	Mounting	Communication	Certification		
			Europe ATEX	International IECEx	USA & Canada
[Ex ia] IIC intrinsically safe associated apparatus					
BA201	35mm DIN rail	RS232 or RS485	✔	✔	✔



BA484D

Serial text [Data] display

Intrinsically safe for use in gas and dust hazardous areas

- **Intrinsically safe ATEX gas *or* ATEX gas & dust *or* FM, cFM & ATEX gas**
  All models have IECEx certification.
- **High contrast display with backlight.**
- **Modbus RTU slave**
- **BEKA and Legacy protocols.**
- **11 standard screen formats.**
- **Four operator push-buttons & two switch outputs.**
- **IP66 field mounting GRP enclosure.**
- **Free simulator and ScreenWriter software.**
- **3 year guarantee**

www.beka.co.uk/ba484d

The BA484D is an intrinsically safe instrument that can display text and simple graphics in a hazardous area. Incorporating six push-buttons and two solid state outputs, the BA484D is a low cost operator interface ideal for simple machine and process control applications. Incorporating Modbus RTU, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are supplied via a 2 wire serial data link from a galvanic isolator in the safe area. Two isolators are available, the BA201 has RS232 and RS485 safe area ports and the MTL5051 can be configured with an RS232 or an RS422 port. Both isolators can power and communicate with one or two BA484D serial text displays. Using a 3 wire system, the BA201 can power and communicate with up to four serial text displays.

The high contrast liquid crystal display incorporates a green backlight that is powered by the serial data link enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Four push-buttons which may be used for operator acknowledgments or controls are included below the display. If larger industrial switches are required, up to six external push-buttons may be connected to the text display. When the remote switches are activated, the front panel push-buttons are automatically disabled.

Two isolated switch outputs, which are controlled via the serial data link, comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Eleven selectable standard screen formats display one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens. The use of a standard display screen format greatly simplifies system design.

The BA484D is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA484D communication parameters and writing each Modbus variable into the BA484D Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA484D to replace an MTL643 to provide ATEX certification and a display backlight. No software or galvanic isolator changes are required.

ATEX, FM, cFM & IECEx intrinsic safety certification allows installation in most gas and dust hazardous areas. Both solid state outputs comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA484D text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature that allows the BA484D to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The enclosure which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA484D to be installed and terminated without exposing the display electronics.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal.
Size	86.5mm x 45mm.
Backlight	Powered from serial link.
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement and tag information
Custom format	See Programming Guide ASCII character set, 5 font sizes
Hidden screen	May be written to at any time and displayed when required.

Controls

Front panel	Four push-buttons which can be software interrogated.
External switches	Control may be transferred to six external switches, front panel buttons are inhibited.
Switch cable length	5m max

Outputs Two software controlled switch outputs.

Contacts	Isolated single pole solid state switch certified as *simple apparatus*. Ron less than 5Ω + 0.7V Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc Ii = 200mA Pi = 0.85W

Data transmission

Baud rate	0.3, 0.6, 1.2, 2.4, 4.8, 9.6 or 19.2k bps.*
Cable length between isolator(s) & BA484D.	100m max at Baud rate of 9.6k bps* **Depends upon configuration & type of cable - see instruction manual.*
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 – 247
BEKA protocol	0 – 247] Zero reserved for single
Legacy protocol	0 – 15] instrument applications

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66] *Dust option, see How to order*
Cert. No.	ITS02ATEX2035
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22
Interface	BA201 (See datasheet)
or	MTL5051 serial communications isolator Input/output RS232 or RS422
2-wire system	Powers one or two text displays
3 wire system	With MTL5025 powers up to four text displays

USA FM *Option, see How to order*

Standard	3610 Entity
Code	CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C
File	3025514
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP E F & G, T4 @ 60°C
File	3025514

Canada cFM

File No	3032633C

International IECEx

Code	Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66] *Dust option, see How to order*
Cert. No	IECEx ITS 07.0020

Environmental

Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment

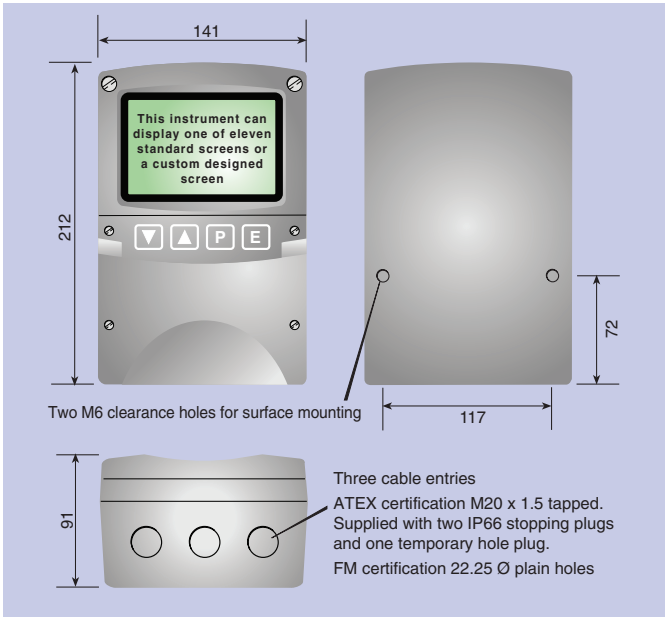
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

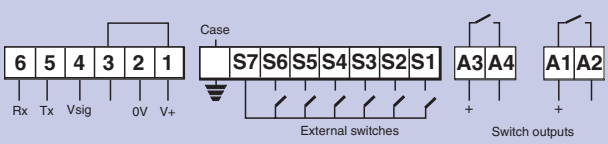
Accessories

Stainless legend plate	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument
Pipe mounting kit	BA392D or BA393

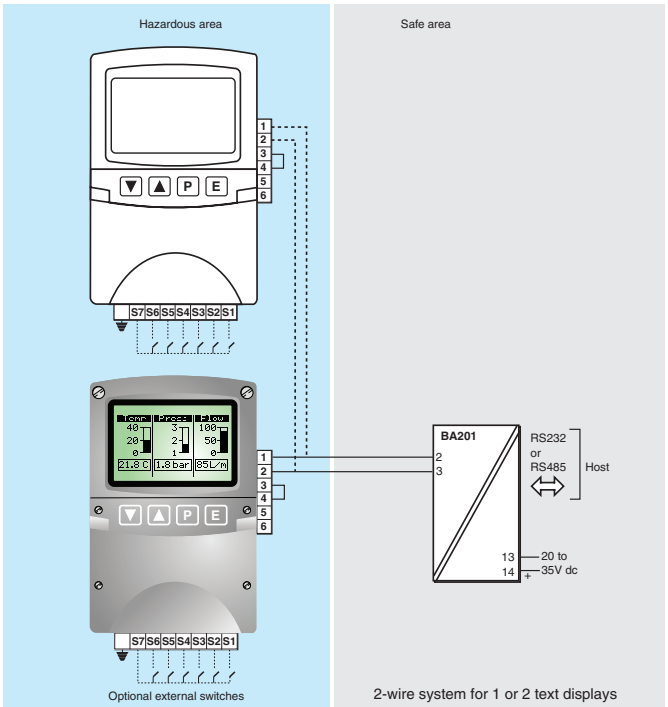
DIMENSIONS (mm)



TERMINAL CONNECTIONS



CONNECTION

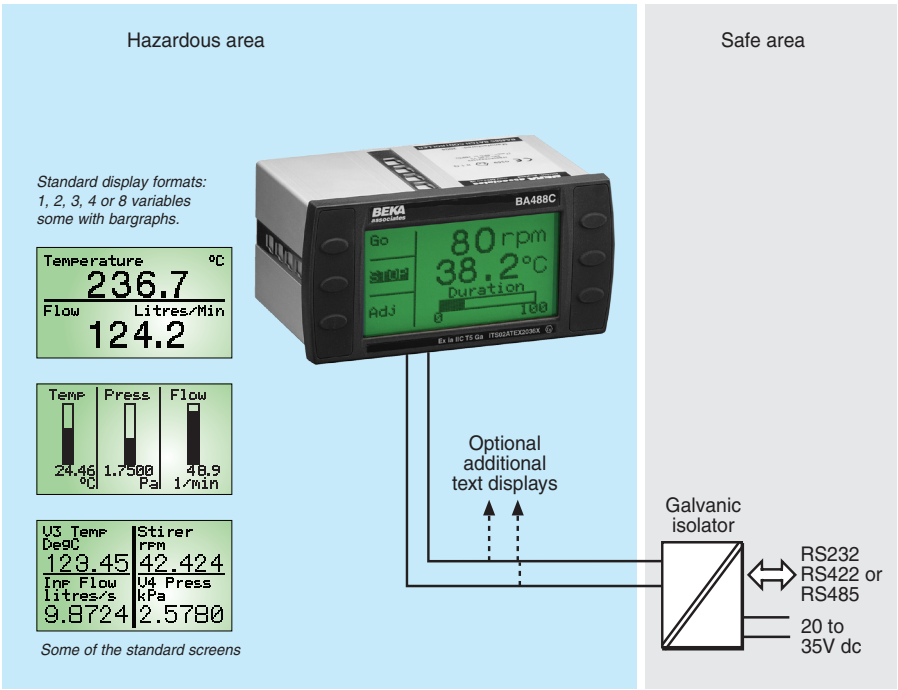


Modbus Guide
Programming Guide
Instrument simulator] May be downloaded from www.beka.co.uk

HOW TO ORDER

		Please specify
Model number		BA484D
Certification		ATEX gas] *All versions have IECEx certification. **Note:** Cable entries differ for FM & ATEX versions*
	or	ATEX gas & dust
	or	FM, cFM & ATEX gas

Accessories	**Please specify if required**
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393
Modbus Guide	Serial Text Display - Modbus Guide
Programming Guide	Serial Text Display - Programming Guide
Instrument simulator	Instrument simulator for personal computer
BEKA ScreenWriter	Custom screen design aid for personal computer



BA488C

Serial text [Data] display

Intrinsically safe for use in gas hazardous areas

- **Intrinsically safe ATEX, FM, cFM & IECEx certified.**
- **High contrast display with backlight.**
- **Modbus RTU slave**
- **BEKA and Legacy protocols.**
- **11 standard screen formats.**
- **Six operator push buttons & two switch outputs.**
- **IP66 front panel**
- **Free simulator and ScreenWriter software.**
- **3 year guarantee**

www.beka.co.uk/ba488c

The BA488C is an intrinsically safe instrument that can display text and simple graphics in a hazardous area. Incorporating six push buttons and two solid state outputs, the BA488C is a low cost operator interface ideal for simple machine and process control applications. Incorporating Modbus RTU, BEKA and Legacy protocol the instrument may be used for new installations or to upgrade existing intrinsically safe systems.

Data and power are supplied via a 2 wire serial data link from a galvanic isolator in the safe area. Two isolators are available, the BA201 has RS232 and RS485 safe area ports and the MTL5051 can be configured with an RS232 or an RS422 port. Both isolators can power and communicate with one or two BA484D serial text displays. Using a 3 wire system, the BA201 can power and communicate with up to four serial text displays.

The high contrast liquid crystal display incorporates a green backlight that is powered by the serial data link enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Six push buttons which may be used for operator acknowledgments or controls are included on the instrument front panel. If larger industrial switches are required, these may be connected to the text display rear terminals. When activated, the front panel push-buttons are automatically disabled.

Two isolated switch outputs, which are controlled via the serial data link, comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Eleven selectable standard screen formats display one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens. The use of a standard display screen format greatly simplifies system design.

The BA488C is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA488C communication parameters and writing each Modbus variable into the BA488C Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA488C to replace an MTL644 to provide ATEX certification and a display backlight. No software or galvanic isolator changes are required and the BA488C will fit into the existing panel cut-out.

ATEX, FM, cFM & IECEx intrinsic safety certification allows installation in all gas hazardous areas. Both solid state outputs comply with the requirements for simple apparatus and may be used to switch almost any certified intrinsically safe device such as a sounder, beacon or a valve.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA488C text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature which allows the BA488C to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The front panel of the BA488C has IP66 protection and a neoprene gasket seals the joint between the text display and the panel, making it suitable for use in areas that will be hosed.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal.
Size	86.5mm x 45mm.
Backlight	Powered from serial link.
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include units of measurement and tag information
Custom format	See Programming Guide ASCII character set, 5 font sizes.
Hidden screen	May be written to at any time and displayed when required.

Controls

Front panel	Six push buttons which can be software interrogated. Each button function may be displayed on the screen. Buttons may be disabled.
External switches	Control may be transferred to six external switches; front panel buttons are inhibited.
Switch cable length	5m max

Outputs

Contacts	Two software controlled switch outputs. Isolated single pole solid state switch certified as *simple apparatus*.
Intrinsic safety parameters	Ron less than 5Ω + 0.7V Roff greater than 1MΩ Ui = 28Vdc Ii = 200mA Pi = 0.85W

Data transmission

Speed	0.3, 0.6, 1.2, 2.4, 4.8, 9.6 or 19.2k bps.*
Cable length between isolator(s) & BA488C	100m max at Baud rate of 9.6k bps* **Depends upon configuration & type of cable - see instruction manual.*
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 – 247
BEKA protocol	0 – 247] Zero reserved for single
Legacy protocol	0 – 15] instrument applications

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	ITS02ATEX2036X
	Special condition only apply for installations in Zone 0
Location	Zone 0, 1 or 2
Interface	BA201 (See datasheet)
or	MTL5051 serial communications isolator Input/output RS232 or RS422
2-wire system	Powers one or two text displays
3 wire system	With MTL5025 powers up to four text displays

USA FM

Standard	3610 Entity
Code	CL I; Div 1; GP A, B, C & D T4 @ 60°C
File No	3025514
Standard	3611 Nonincendive
Code	CL I; Div 2; GP A, B, C & D T4 @ 60°C
File No	3025514

Canada cFM

File No	3032633C

International IECEx

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No	IECEx ITS 07.0021X
	Special condition only apply for installations in Zone 0

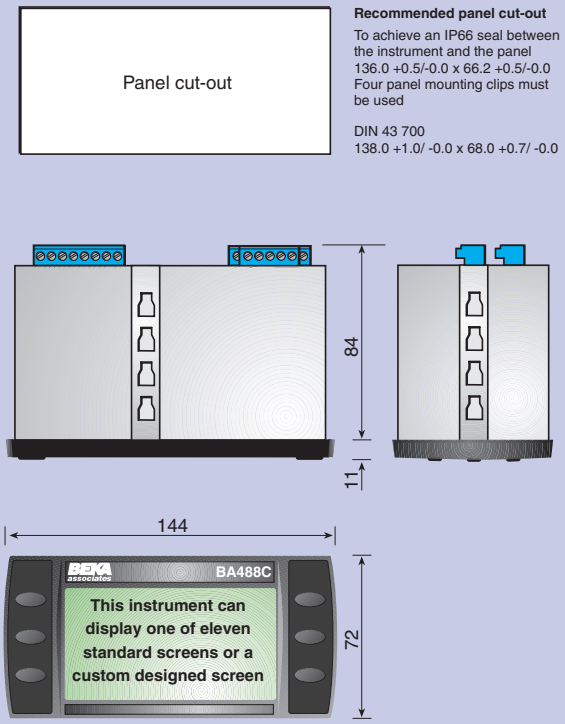
Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment

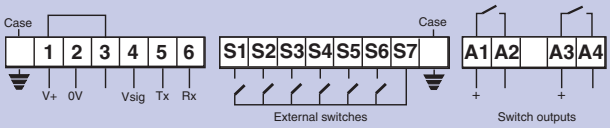
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

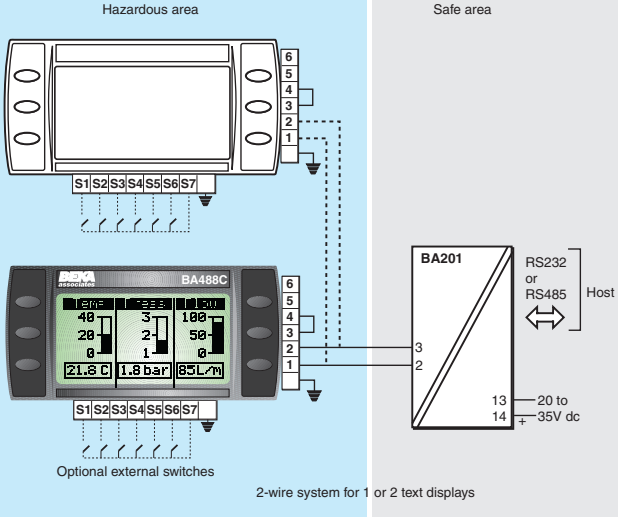
DIMENSIONS (mm)



TERMINAL CONNECTIONS



CONNECTION



Accessories

Tag number	Thermally printed strip on rear of instrument.
Modbus Guide	] May be downloaded from www.beka.co.uk
Programming Guide	
Instrument simulator	

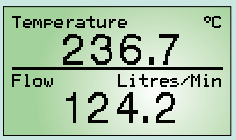
HOW TO ORDER

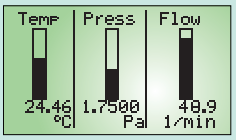
	Please specify
Model number	BA488C
Accessories	**Please specify if required**
Tag strip	Legend
Modbus Guide	Serial Text Display - Modbus Guide
Programming Guide	Serial Text Display – Programming Guide
Instrument simulator	Instrument simulator for personal computer
BEKA ScreenWriter	Custom screen design aid for personal computer

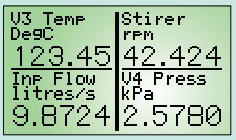
BA684D

Serial text [Data] display

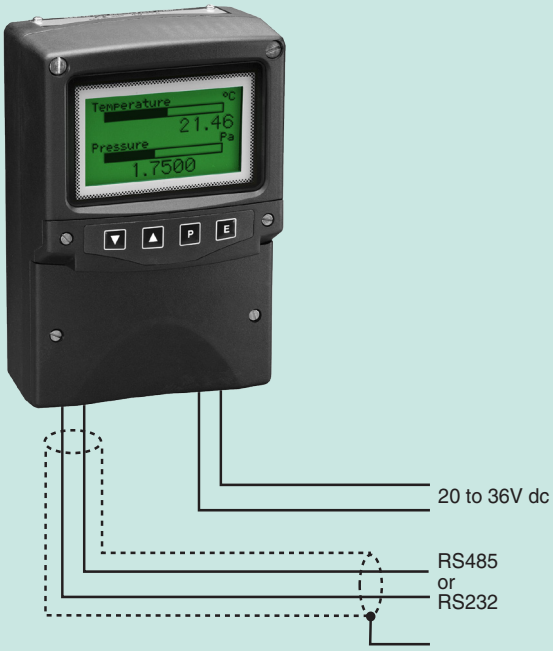
Standard display formats: 1, 2, 3, 4 or 8 variables some with bargraphs.







Some of the standard screens



The BA684D is a dc powered instrument that can display text and simple graphics in a process area. Incorporating four push-buttons and two single pole outputs, the BA684D is a low cost robust operator interface ideal for simple machine and process control applications.

Available with either an RS485 or RS232 port and incorporating Modbus RTU, BEKA and Legacy protocol, the BA684D may be directly connected to many industrial networks and instruments, including new installations and upgrades to existing systems.

A high contrast liquid crystal display incorporates a green backlight allowing the display to be read in all lighting conditions from full sunlight to total darkness. The BA684D text display is therefore suitable for mounting in almost any process location.

Four push-buttons, which may be used for operator acknowledgments or controls, are mounted on the instrument front panel below the display. If larger industrial switches are required for operator acknowledgements, these may be connected to the text display terminals. When external switches are activated, the front panel push-buttons are automatically disabled.

Two switch outputs, which are controlled via the serial data link, may be used to control a small load such as a valve, actuator or sounder.

Standard screen formats contain one, two, three, four or eight variables, together with units of measurement, tag descriptions and bargraphs on some of the screens. Use of one of these eleven standard screens greatly reduces the amount of programming required and will satisfy most display requirements. If a custom display format is required, this can be developed using BEKA protocol.

The BA684D is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA684D communication parameters and writing each Modbus variable into the BA684D Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol allows custom screens using five different font sizes together with, lines, boxes and bargraphs to be produced and stored in non-volatile memory. Simple bit map graphics may be downloaded and stored. Information can also be written to a hidden screen that may be displayed when required.

Legacy protocol enables the BA684D to replace an MTL643 for safe area applications without the need for a galvanic communications isolator and with the added advantage of a display backlight. If required, simple modifications to the host software will allow the enhanced features of the BA684D to be used i.e. five font sizes, simple graphics, additional operator buttons and a second solid state output.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA684D text display, that can be executed by the instrument without intervention from the host. For example, a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature that allows the BA684D to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The robust enclosure which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA684D to be installed and terminated without exposing the display electronics.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

General purpose

- **High contrast display with backlight.**
- **Modbus RTU slave**
- **BEKA and Legacy protocols.**
- **11 standard screen formats.**
- **Four operator push-buttons & two switch outputs.**
- **IP66 field mounting GRP enclosure.**
- **Free simulator and ScreenWriter software.**
- **3 year guarantee**

www.beka.co.uk/ba684d

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	20 to 36V dc
Current	95mA max

Display

Type	120 x 64 pixel backlit liquid crystal
Size	86.5 x 45mm
Screens	
11 standard formats	1, 2, 3, 4 or 8 variables plus units of measurement & tag information, some include bargraphs.
Custom format	See Programming Guide ASCII character set, 5 font sizes
Hidden screen	May be written to at any time and displayed when required.

Controls

Front panel	Four push-buttons which can be software interrogated.
External switches	Control may be transferred to six external switches, front panel buttons are inhibited.
Switch cable length	5m max

Outputs

	Two software controlled single pole relay contacts
Rating	250V; 5A ac 30V; 5A dc Reactive loads must be suppressed

Data transmission

Speed	0.3, 0.6, 1.2, 2.4, 4.8, 9.6,19.2, 38.4, 67.6 &115.2k bps.
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644
Address	
Modbus protocol	1 – 247
BEKA protocol	0 – 247] Zero reserved for single
Legacy protocol	0 – 15] instrument applications

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC.
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

Accessories

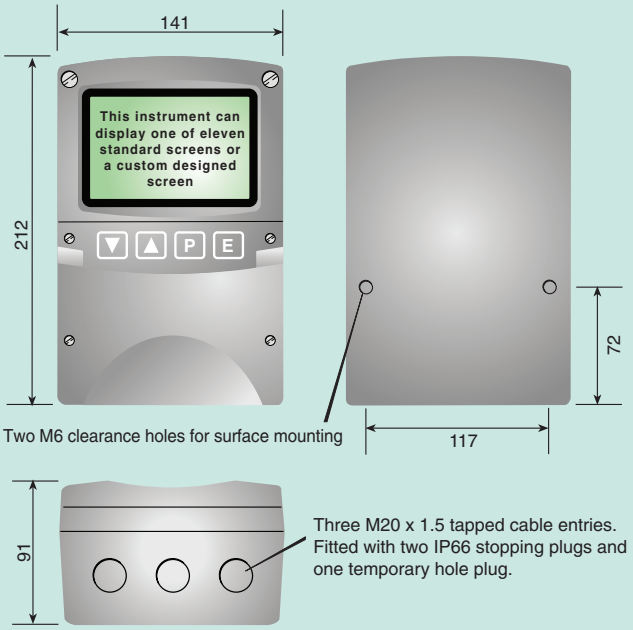
Stainless legend plate	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument
Pipe mounting kit	BA392D or BA393
Modbus Guide	
Programming Guide	] May be downloaded from www.beka.co.uk
Instrument simulator	]

HOW TO ORDER

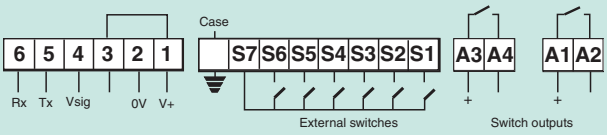
	Please specify
Model number	BA684D
Communication port	RS485 or RS232

Accessories	**Please specify if required**
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393
Modbus Guide	Serial Text Display - Modbus Guide
Programming Guide	Serial Text Display - Programming Guide
Instrument simulator	Instrument simulator for personal computer
BEKA ScreenWriter	Custom screen design aid for personal computer

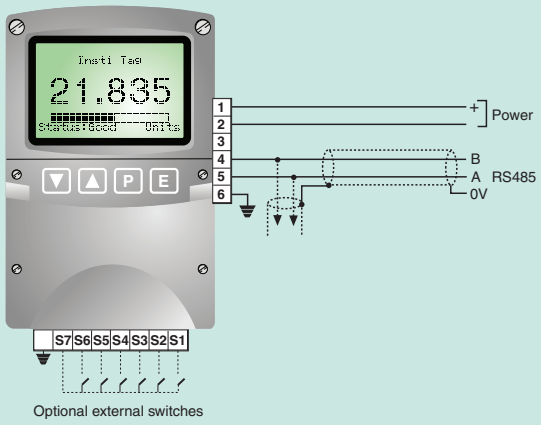
DIMENSIONS (mm)



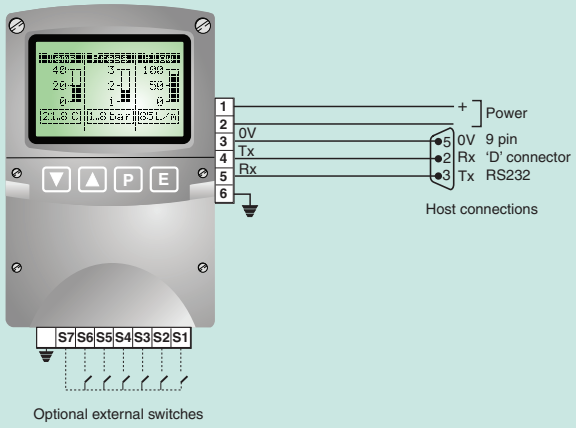
TERMINAL CONNECTIONS



CONNECTION

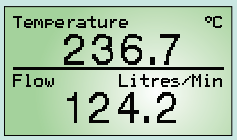


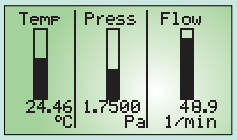
Connections for RS485 communication

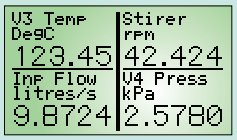


Connections for RS232 communication

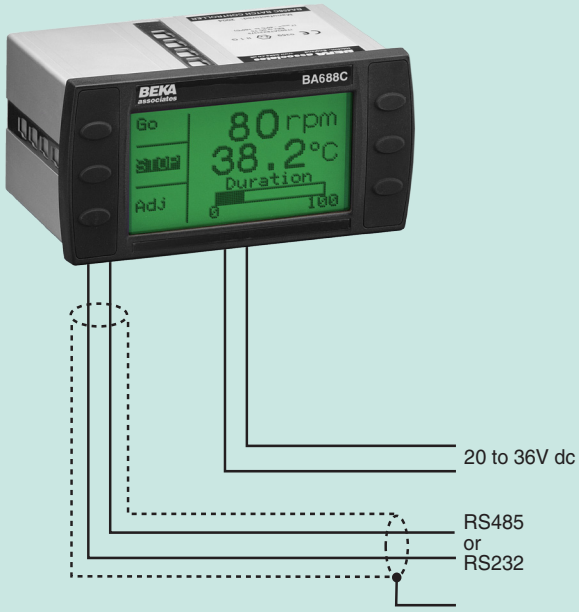
Standard display formats: 1, 2, 3, 4 or 8 variables some with bargraphs.







Some of the standard screens



The BA688C is a dc powered instrument that can display text and simple graphics in a process area. Incorporating six push buttons and two single pole outputs, the BA688C is a robust low cost operator interface ideal for simple machine and process control applications.

Available with either an RS485 or RS232 port and incorporating Modbus RTU, BEKA and Legacy protocol, the BA688C may be directly connected to many industrial networks and instruments, including new installations and upgrades to existing systems.

A high contrast liquid crystal display incorporates a green backlight allowing the display to be read in all lighting conditions from full sunlight to total darkness. The text display is therefore suitable for mounting in control panels or incorporated into measuring instruments.

Six push buttons which may be used for operator acknowledgments or controls are included on the instrument front panel. If larger industrial switches are required, these may be connected to the text display rear terminals. When activated, the front panel push buttons are automatically disabled.

Two single pole switch outputs, which are controlled via the serial data link, may be used to switch a small load such as a valve, actuator or sounder.

Standard screen formats contain one, two, three, four or eight variables, together with units of measurement, tag descriptions and bargraphs on some of the screens. Use of one of these eleven standard screens greatly reduces the amount of programming required and will satisfy most display requirements. If a custom display format is required, this can be developed using BEKA protocol.

The BA688C is a Modbus RTU slave that can display up to eight process variables together with units of measurement and tag descriptions. When used with one of the eleven standard screen formats, no programming is required apart from setting the BA688C communication parameters and writing each Modbus variable into the BA688C Modbus register address map. If a custom screen layout is required in a Modbus system this can be constructed using the BEKA protocol.

BEKA protocol enables custom screen formats to be designed and stored in non-volatile memory using a wide selection of lines, boxes, bargraphs and fonts. Although screens can be manually designed, free BEKA ScreenWriter software which will run on a PC simplifies the process.

Legacy protocol enables the BA688C to replace an MTL644 for safe area applications without the need for a galvanic communications isolator and with the added advantage of a display backlight. No software changes are required and the BA688C will fit into the existing panel cut-out. If required, simple modifications to the host software will allow the enhanced features of the BA688C to be used i.e. five font sizes, simple graphics, additional operator buttons and a second output.

Scripts are a sequence of commands, downloaded to and stored in non-volatile memory by the BA688C text display, that can be executed by the instrument without intervention from the host. For example a routine may be written to monitor the instruments push-buttons and to change the displayed screen or variable depending upon which button has been operated.

Pattern matching is a powerful feature which allows the BA688C to capture and display data contained in a proprietary ASCII serial string, such as that from a weighing system or barcode reader primarily intended for printing.

The front panel of the BA688C has IP66 protection and a neoprene gasket seals the joint between the text display and the panel, making it suitable for use in areas that will be hosed.

To simplify system design the instruction manual is supplemented by comprehensive Modbus and programming guides plus a free instrument simulator which will run on a PC. All are available from the BEKA sales office or may be downloaded from www.beka.co.uk

BA688C

Serial text display

General purpose

- **High contrast display with backlight.**
- **Modbus RTU slave**
- **BEKA and Legacy protocols.**
- **11 standard screen formats.**
- **Six operator push-buttons & two switch outputs.**
- **IP66 front panel**
- **Free simulator and ScreenWriter software.**
- **3 year guarantee**

www.beka.co.uk/ba688c

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	20 to 36V dc
Current	95mA max

Display

Type	120 x 64 pixel backlit liquid crystal
Size	86.5 x 45mm
Screens	
11 standard formats	1, 2, 3, 4 or 8 variables plus units of measurement & tag information, some include bargraphs.
Custom format	See Programming Guide ASCII character set, 5 font sizes.
Hidden screen	May be written to at any time and displayed when required.

Controls

Front panel	Six push-buttons which can be software interrogated. Each button function may be displayed on the screen. Buttons may be disabled.
External switches	Control may be transferred to six external switches; front panel buttons are inhibited.
Switch cable length	5m max

Outputs Two software controlled single pole relay contacts.

Rating	250V; 5A ac 30V; 5A dc Reactive loads must be suppressed

Data transmission

Speed	0.3, 0.6, 1.2, 2.4, 4.8, 9.6,19.2, 38.4, 67.6 &115.2k bps.
Format	1 or 2 stop bits; odd, even or no parity bit; 7 or 8 data bits.
Protocol	Selectable Modbus RTU, BEKA or Legacy that is compatible with the MTL643 & MTL644.
Address	
Modbus protocol	1 – 247
BEKA protocol	0 – 247 ⎫ Zero reserved for single
Legacy protocol	0 – 15 ⎭ instrument applications.

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU.
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment.

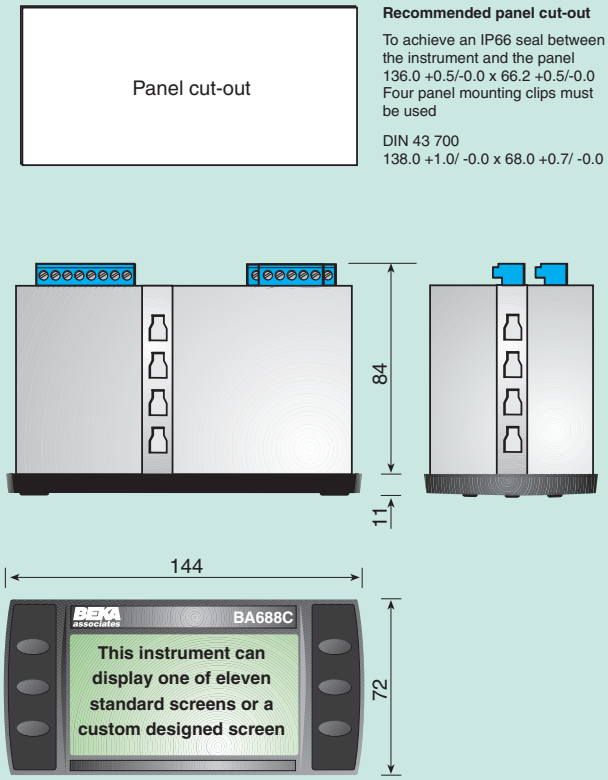
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

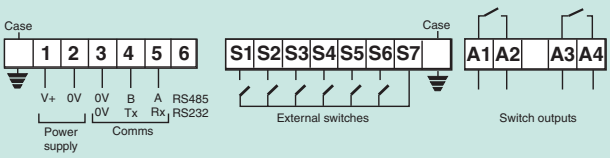
Accessories

Tag number	Thermally printed strip on rear of instrument.
Modbus Guide Programming Guide Instrument simulator	⎫ May be downloaded from www.beka.co.uk ⎭
BEKA ScreenWriter	Custom screen design aid for personal computer.

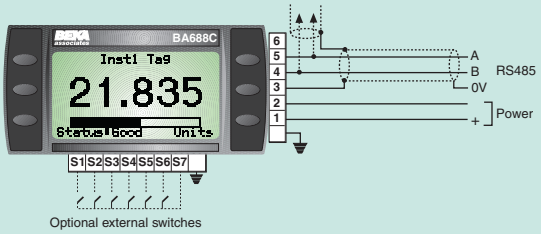
DIMENSIONS (mm)



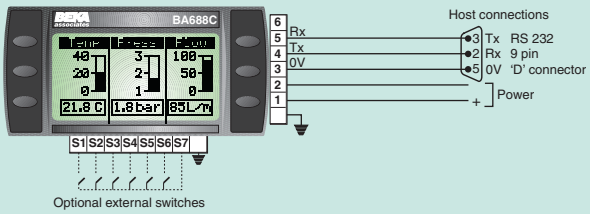
TERMINAL CONNECTIONS



CONNECTION



Connections for RS485 communication

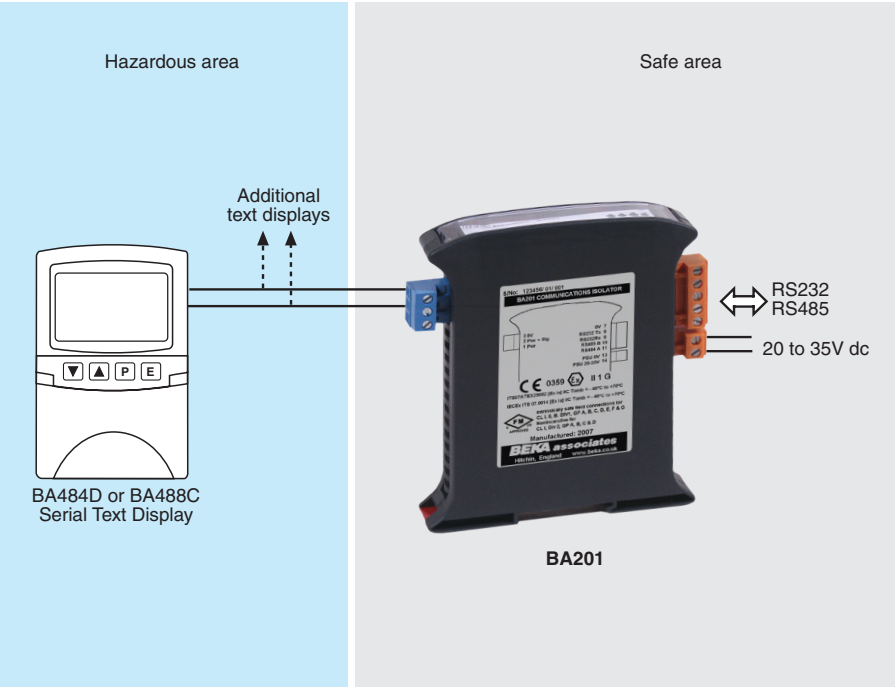


Connections for RS232 communication

HOW TO ORDER

Please specify

Model number	BA688C
Communication port	RS485 or RS232
Accessories	**Please specify if required**
Tag number	Legend
Modbus Guide	Serial Text Display – Modbus Guide
Programming Guide	Serial Text Display – Programming Guide
Instrument simulator	Instrument simulator for use on personal computer.



BA201
Communications isolator

Interface for BEKA intrinsically safe Serial Text Displays

- **Powers and communicates with BA484D & BA488C serial text displays.**
- **RS232 and RS485 safe area port.**
- **ATEX, FM, cFM and IECEx certification.**
- **DIN rail mounting**
- **3 year guarantee**

www.beka.co.uk/ba201

The BA201 communications isolator is a dedicated interface for connecting intrinsically safe BEKA Serial Text Displays to a safe area computer system. The isolator provides intrinsically safe galvanic isolation between the safe and hazardous areas, plus conversion of the RS232 or RS485 safe area serial data to the dedicated communications signalling required by BEKA Serial Text Displays.

The isolator also powers the Serial Text Displays and depending upon the wiring configuration, up to four displays may be connected to each BA201. To prevent earth loops both communications ports are functionally isolated from the BA201 power supply terminals allowing an earthed or floating supply to be used.

No configuration is required it is only necessary to connect to the required RS232 or RS485 safe area port, the isolator will automatically function at any of the serial text display communication rates between 300 and 19.2k baud. The RS485 driver turn-around is automatic and optimised for the baud rate in use. Four green LEDs on the top of the isolator indicate status. One LED shows that the device is powered; the others indicate when the RS232 port is being used and when the isolator is transmitting to, or receiving from the serial text display.

The enclosure, which is moulded in ABS and polycarbonate, is DIN rail mounting and only 22.6mm wide making it compatible with many proprietary galvanic isolators and Zener barriers. To simplify installation and commissioning the terminals are colour coded and removable.

IECEx and ATEX associated apparatus certification permits the BA201 isolator, when mounted in a safe area, to power and communicate with up to four BEKA intrinsically safe serial text displays mounted in a hazardous area. Either BA484D field mounting or BA488C panel mounting models text displays may be used, or a mixture of both models may be connected to one BA201 communications isolator.

FM and cFM intrinsic safety certification allow the BA201 communication isolator to be used for applications in the USA and Canada. Both certifications permit the BA201 to power and communicate with up to four hazardous area BA484D and BA488C serial text displays. The BA201 isolator may be mounted in the safe area, or in Division 2 or Zone 2.

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	20 - 35V dc
Current	100mA typical at 24V powering two Text Displays in a three wire system.

Safe area communication

Port	RS232 or RS485 Unused port should not be connected.

Intrinsic safety

Type	Associated apparatus
Location	Safe area

Europe ATEX

Standard	EN60079-11:2007
Code	Group II Category (1) G [Ex ia] IIC
Cert. No.	ITS07ATEX25602

USA FM

Standard	3610 Entity
Code	Intrinsically safe associated apparatus for connection to: CL I, II, III; Div 1 GP A, B, C, D, E, F & G AEx ia IIC Ta 60°C In accordance with Control Drawing CI201-12
Location	BA201 may be located in safe (unclassified) area or in Div 2 / Zone 2
Nonincendive	See certificate for details
File	3029711

Canada cFM

Standard	CSA 22.2 No 157
Code	Intrinsically safe associated apparatus for connection to: CL I, II, III; Div 1 GP A, B, C, D, E, F & G Ex ia IIC Ta 60°C In accordance with Control Drawing CI201-12
Location	BA201 may be located in safe (unclassified) area or in Div 2 / Zone 2
Nonincendive	See certificate for details
File	3029711C

International IECEx

Standard	IEC60079-11:2006
Code	[Ex ia] IIC
Cert. No.	IECEx ITS 07.0014

Environmental

Operating temp	-20 to 60°C (ATEX & IECEx Certified for use between -40 and 70°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C noncondensing
Enclosure	Polycarbonate and ABS moulding IP20
EMC	Complies with EU Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable. Removable terminal blocks.
Colour	Hazardous area wiring blue
Mounting	35mm 'top hat' DIN rail
Weight	0.15kg

Accessories

Tag number	Thermally printed strip on top of instrument.

NUMBER OF TEXT DISPLAYS

The BA201 can power and communicate with multiple BA484D or BA488C Serial Text Displays, the maximum number depends upon the wiring configuration.

Two-wire connection

No. of Text Displays	Backlight brilliance
1	Full
2	Reduced

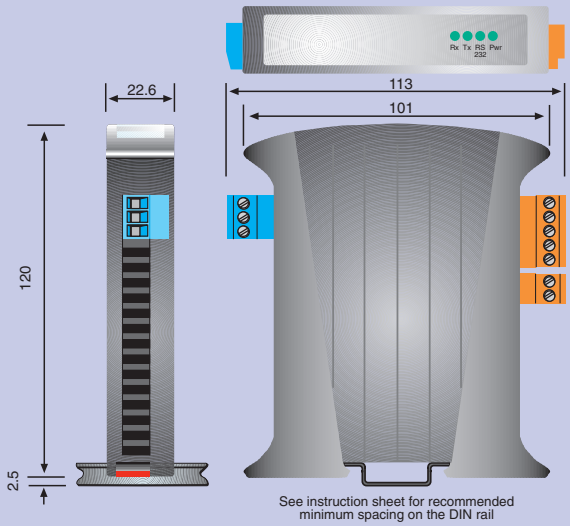
Three-wire connection

No. of Text Displays	Backlight brilliance
1	Full
2	Full
3	Reduced
4	Reduced

HOW TO ORDER

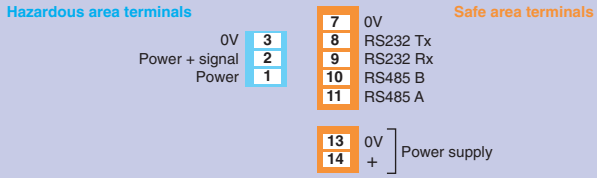
	Please specify
Model number	BA201
Accessories	**Please specify if required**
Tag strip	Legend

DIMENSIONS (mm)



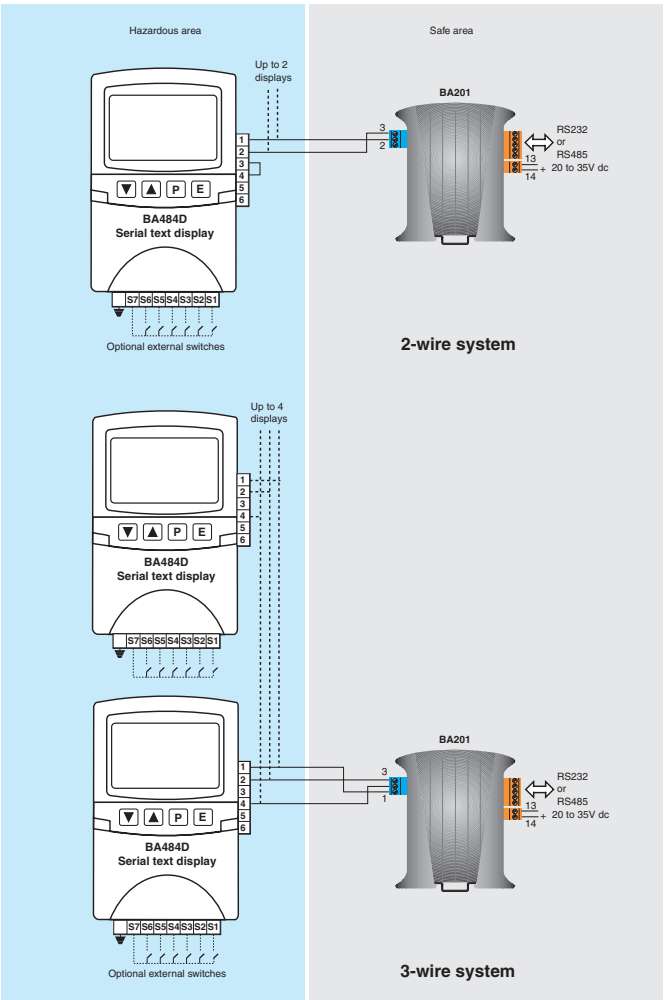
See instruction sheet for recommended minimum spacing on the DIN rail

TERMINAL CONNECTIONS



Terms Tx & Rx are relative to the BA201

SYSTEM CONNECTIONS



Fieldbus Indicators & Displays

Intrinsically safe

Ex nA

General purpose

An extensive range of bus powered, single and eight variable Displays, Indicators and Listeners for use with FOUNDATION fieldbus and Profibus PA systems in hazardous or safe areas.

FIELDBUS INDICATORS

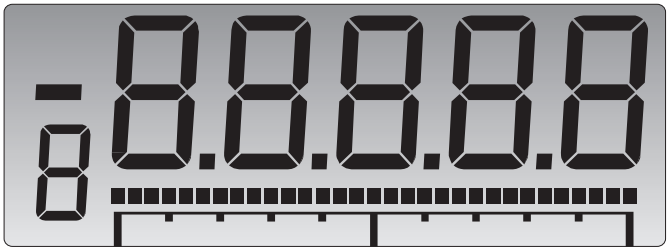
5 digit 20mm high LCD digits with a 31 segment bargraph

- Single variable FOUNDATION fieldbus models
- 8 variable FOUNDATION fieldbus models which can be nodes or listeners.
- 8 variable Profibus PA models which can be nodes or listeners.
- Ex ia and Ex ic certification permits use with higher voltages in Zone 2.

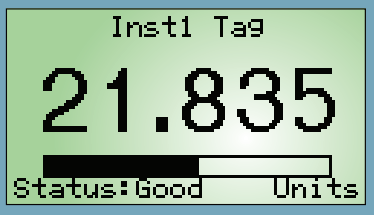
FIELDBUS DISPLAYS

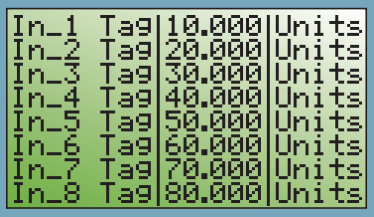
Graphical display which can show up to 8 variables

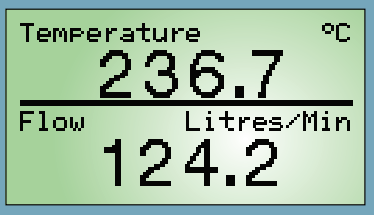
- Models for FOUNDATION fieldbus or Profibus PA applications.
- Choice of 11 standard display screen formats, some with bargraphs.
- Backlight
- 6 optional outputs

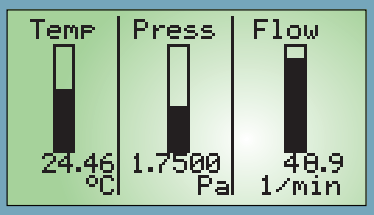


Fieldbus indicator digits shown full size





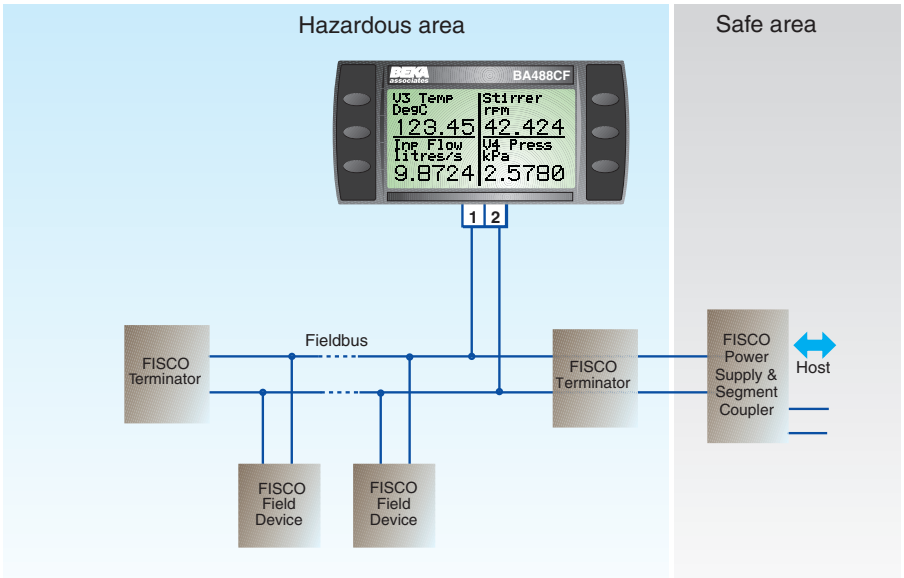




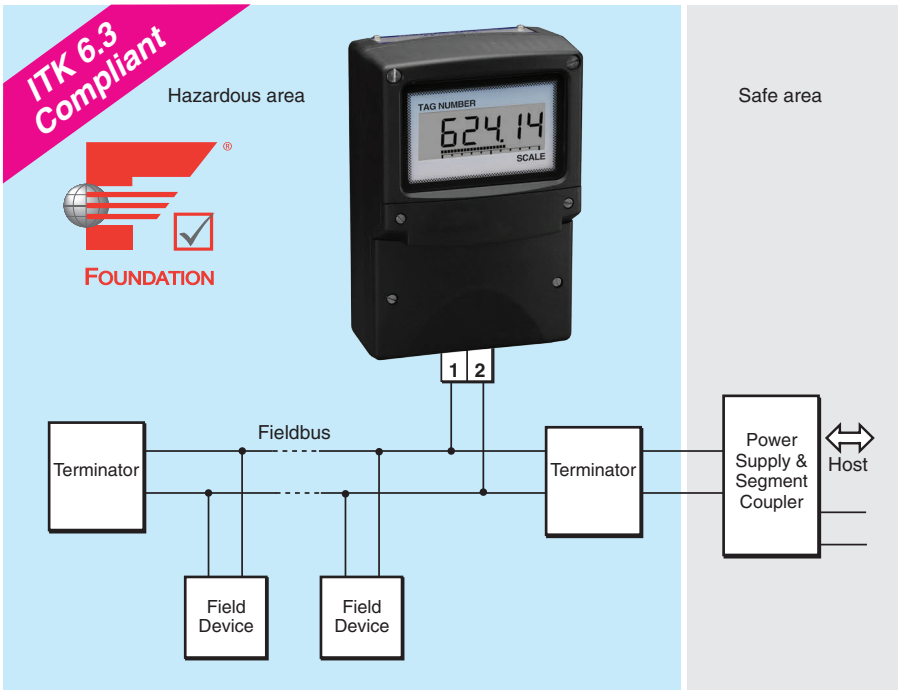
Fieldbus Indicators and Displays available

Model No.	Mounting	Variables	Protocol	Certification					
				Europe ATEX		International IECEx		USA & Canada	
				Gas	Dust	Gas	Dust	Gas	Dust
Ex ia & Ex ic intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified									
INDICATORS									
BA414DF	Field	1	FF ITK 6 compliant	✔	✔	✔	✔	✔	✔
BA444DF Node or Listener	Field	8	FF or Profibus PA	✔	✔	✔	✔	✔	✔
BA418CF	Panel	1	FF ITK 6 compliant	✔	–	✔	–	✔	–
BA448CF Node or Listener	Panel	8	FF or Profibus PA	✔	–	✔	–	✔	–
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified									
DISPLAYS									
BA484DF *	Field	8	FF ITK 6 compliant or Profibus PA	✔	✔	✔	✔	✔	✔
BA488CF *	Panel	8		✔	–	✔	–	✔	–
Ex nL & Ex tD - for use in Zones 2 and 22 without Zener barriers or galvanic isolators. Only for legacy applications									
INDICATORS									
BA414NDF	Field	1	FF ITK 6 compliant	✔	✔	✔	✔	–	–
BA444NDF Node or Listener	Field	8	FF or Profibus PA	✔	✔	✔	✔	–	–
General Purpose - for use in safe areas									
INDICATORS									
BA614DF	Field	1	FF ITK 6 compliant						
BA644DF Node or Listener	Field	8	FF or Profibus PA						
BA618CF	Panel	1	FF ITK 6 compliant						
BA648CF Node or Listener	Panel	8	FF or Profibus PA						
DISPLAYS									
BA684DF	Field	8	FF ITK 6 compliant or Profibus PA						
BA688CF	Panel	8							

*Not Canada



*A **Display** or **Indicator** for every **application** - delivered ready for **installation***



BA414DF-F

FOUNDATION™ fieldbus Fieldbus indicator Single variable

Intrinsically safe for use in gas and dust hazardous areas

- **20mm high easy to read 5 digit display.**
- **31 segment bargraph**
- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **Intrinsically safe**
  ATEX gas
  or **ATEX gas & dust**
  or **FM, cFM & ATEX gas**
  All models have IECEx certification.
- **Entity Ex ia & Ex ic parameters, FISCO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba414df-f

The BA414DF-F Fieldbus Indicator is a cost-effective intrinsically safe field mounting instrument that displays a single fieldbus process variable in a hazardous area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA414DF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA414DF-F only requires a 2-wire connection to the intrinsically safe fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA414DF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services - report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA414DF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA414DF-F indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada, plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse side of this datasheet.

The FOUNDATION™ fieldbus Interface Guide contains commissioning information for the BA414DF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. For users who require a stainless steel identification label, the indicator can be supplied with a laser engraved stainless steel legend plate mounted on the front of the instrument.

For panel mounting applications see the BA418CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

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SPECIFICATION

Display

Type	Liquid crystal 5 digits plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	Single

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode Clauses 11 and 22
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant
Function block	1 x IS (input selector)

Intrinsic safety

Europe ATEX

Code	Group II Cat. 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Cat. 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C
or	Group II Cat. 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Cat. 3G Ex ic IIC T4 Gc Group II Cat. 1D Ex ia IIIC T100°C IP66 Da Group II Cat. 3D Ex ic IIIC T100°C IP66 Dc Ta = -20°C to 60°C

Dust option, see How to order

Input parameters	FISCO	Ex ia entity	Ex ic entity
Ui	17.5V	22.0V	32V
Ii	380mA	250mA	125mA
Pi	5.32W	1.2W	1W

Location	
Gas	Zone 0, 1 or 2
Dust	Zone 20, 21 or 22
Cert. No.	ITS06ATEX25313X

USA FM

Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T4 @ 70°C
Standard Code	3611 Nonincendive CL I, II, III: Div 2 GP A, B, C, D, E, F & G T4 @ 70°C
File	3027031

Canada cFM

File	3027031C

International IECEx

Code	As ATEX codes shown above
Cert. No	IECEx ITS 06.0012X

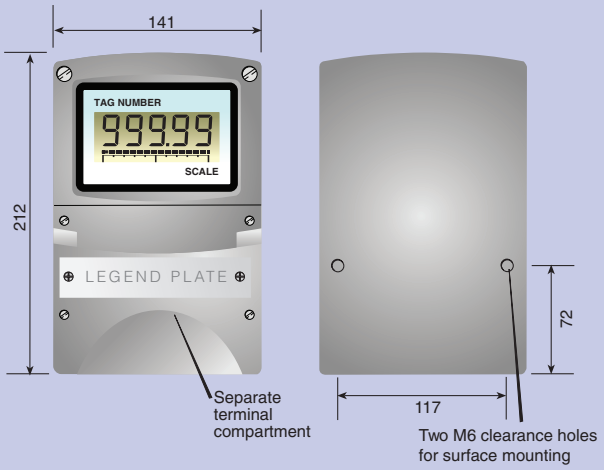
Environmental

Operating temp	-20 to 70°C ATEX & IECEx certification gas -40°C to 70°C dust -20°C to 60°C
Storage temp	-40 to 85˚C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2014/30/EU

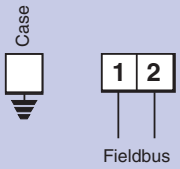
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

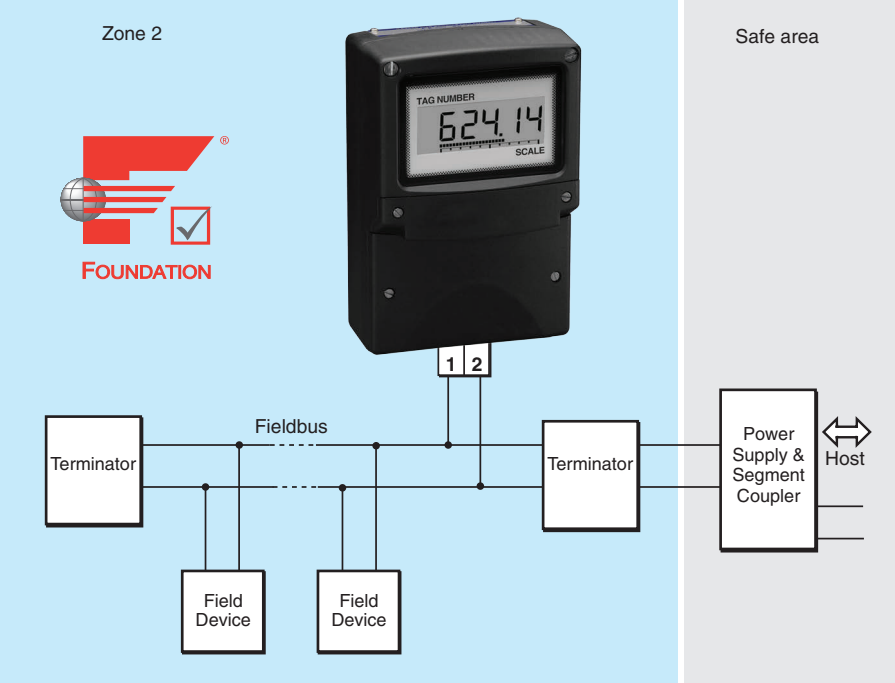
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or applicational information marked onto display escutcheon.
Stainless legend plate.	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument.
Pipe mounting kit	BA392D or BA393
FOUNDATION ™ Fieldbus interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA414DF-F
Certification	ATEX gas
or	ATEX gas & dust
or	FM, cFM & ATEX gas

All versions have IECEx certification. ***Note:*** *Cable entries differ for FM & ATEX versions.*

Accessories	Please specify if required
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA414NDF-F

FOUNDATION™ fieldbus Fieldbus indicator Single variable

Type nL certified for use in Zones 2 and 22

- **20mm high easy to read 5 digit display.**
- **31 segment bargraph**
- **FOUNDATION™ fieldbus protocol.**
- **Type nL certification**
  ATEX & IECEx
  gas & dust
- **Entity parameters & FISCO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba414ndf-f

The BA414NDF-F Fieldbus Display is a new cost-effective Type nL field mounting instrument that can display a single fieldbus process variables in a Zone 2 or Zone 22 hazardous area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA414NDF-F uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA414NDF-F only requires a 2-wire connection to the Type nL fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single *Input Selector* function block which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has been registered by The Fieldbus Foundation and Device Description Files may be downloaded from their web site or from www.beka.co.uk.

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA414NDF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services - report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type nL certification allows the BA414NDF-F to be installed in Zone 2 gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept (FNICO) simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type nL systems. A BA414NDF-F indicator may therefore be connected to almost any Type nL fieldbus segment, provided the segment can supply 13mA to power the instrument.

IECEx approvals allow installation in the growing number of countries accepting IECEx certificates. The approval includes FNICO certification.

The FOUNDATION™ fieldbus Interface Guide contains commissioning information for the BA414NDF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk.

Units of measurement and the instrument application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom engraved stainless steel plate mounted on the front of the enclosure.

For nonincendive applications in the USA & Canada please see datasheets for the BA414DF-F and BA418CF-F. These field and panel mounting fieldbus indicators have FM and cFM nonincendive approval.

BEKA associates
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SPECIFICATION

Display

Type	Liquid crystal 5 digits plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	Single

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode Clauses 11 and 22
Protocol	FOUNDATION™ fieldbus
Function block	1 x IS (input selector)

Type nL certification

Europe ATEX

Code	Group II Category 3G Ex nL IIC T4 FNICO Field Device Ex nL IIC T4
and	Group II Category 3D Ex tD A22 IP66 T100°C Tamb = -20 to 60°C

Input parameters

Entity	Ui	=	36V
	Ii	=	250mA
	Pi	=	1.2W
FNICO	Ui	=	17.5V
	Ii	=	380mA
	Pi	=	5.32W

Location

Gas	Zone 2
Dust	Zone 22

Type Examination Certificate ITS06ATEX45315

International IECEx

Code	Ex nL IIC T4 FNICO Field Device Ex nL IIC T4
and	Ex tD IIIC T100°C Dc IP66 Ta = -20 to 60°C
Cert. No.	IECEx ITS 06.0015

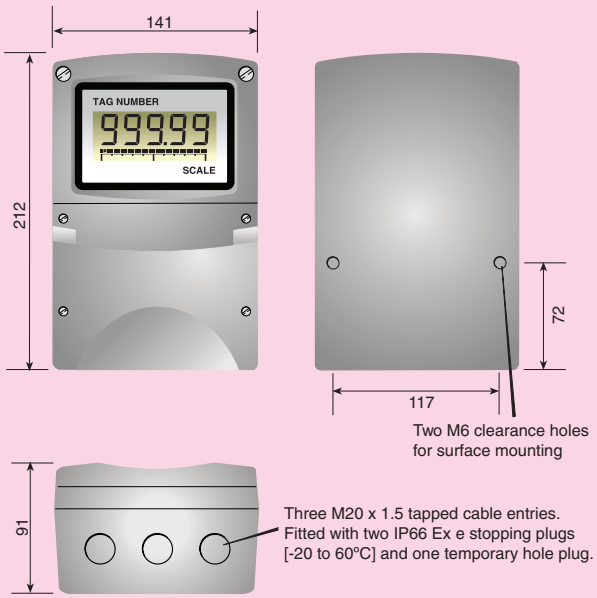
Environmental

Operating temp	
In flammable gas	-20 to 70°C
In combustible dust	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC
Immunity	BS EN 61326:1998 Operates normally with conducted 3Vrms between 0.15kHz and 80MHz.radiated 10V/m between 80MHz and 1GHz.
Emissions	CISPR16-1/2 Class A

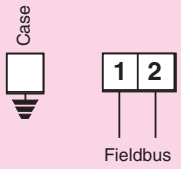
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS

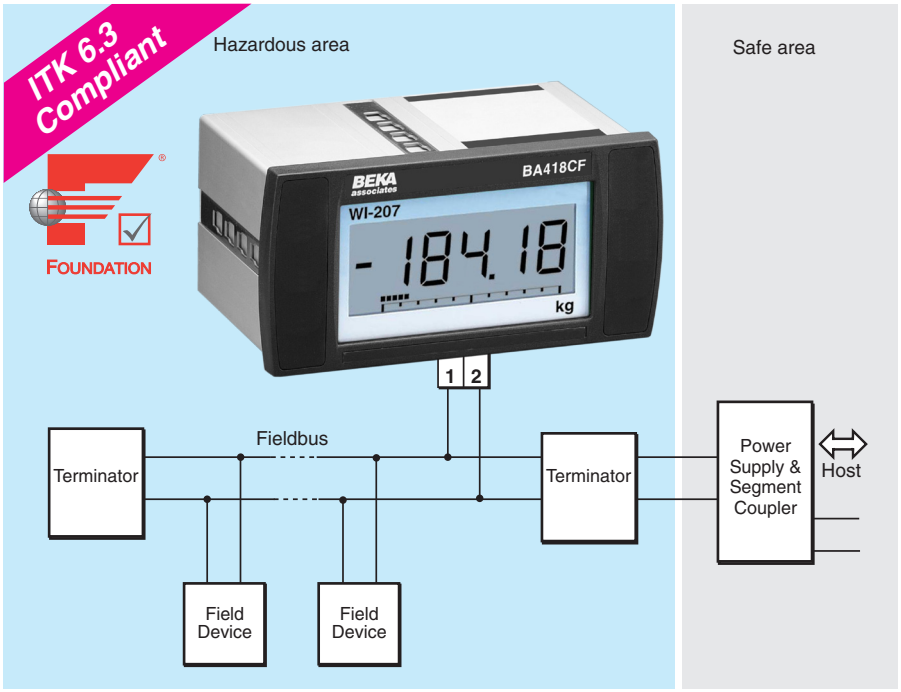


Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or applicational information marked onto display escutcheon.
Stainless legend tagging plate secured to the front of the instrument.	Stainless steel plate engraved with or applicational information
Pipe mounting kit	BA392D or BA393
Fieldbus interface guide	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA414NDF-F
Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA418CF-F

FOUNDATION™ fieldbus Fieldbus indicator Single variable

Intrinsically safe for use in all gas hazardous areas

- **20mm high easy to read 5 digit display.**
- **31 segment bargraph**
- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **Intrinsically safe ATEX, FM, cFM & IECEx certification.**
- **Entity Ex ia & Ex ic parameters, FISCO compliant.**
- **144 x 72mm DIN enclosure.**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba418cf-f

The BA418CF-F Fieldbus Indicator is a cost-effective intrinsically safe panel mounting instrument that displays a single fieldbus process variable in a hazardous area. Housed in a robust panel mounting enclosure with an IP66 front, the instrument has a large, high contrast five digit display and a horizontal bargraph. The BA418CF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA418CF-F only requires a 2-wire connection to the intrinsically safe fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle, thus enabling the BA418CF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the range of the fieldbus variable.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA418CF-F indicator is installed.

ATEX intrinsic safety certification allows the BA418CF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA418CF-F indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada, plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

The FOUNDATION™ fieldbus Interface Guide contains commissioning information for the BA418CF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. Tag information can also be thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA414DF-F datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

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SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph
Variables	Single

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant.
Function block	1 x IS (input selector)

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Category 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C

Input parameters	FISCO	Ex ia entity	Ex ic entity
Ui	17.5V	22.0V	32V
Ii	380mA	250mA	125mA
Pi	5.32W	1.2W	1W

Location	Zone 0, 1 or 2
Cert. No.	ITS06ATEX25314X

USA FM

Standard Code	3610 Entity CL I: Div 1 GP A, B, C & D T4 @ 70°C
Standard Code	3611 Nonincendive CL I: Div 2 GP A, B, C & D T4 @ 70°C
File	3027031

Canada cFM

File	3027031C

International IECEx

Code	As ATEX code shown above
Cert. No	IECEx ITS 06 0013X

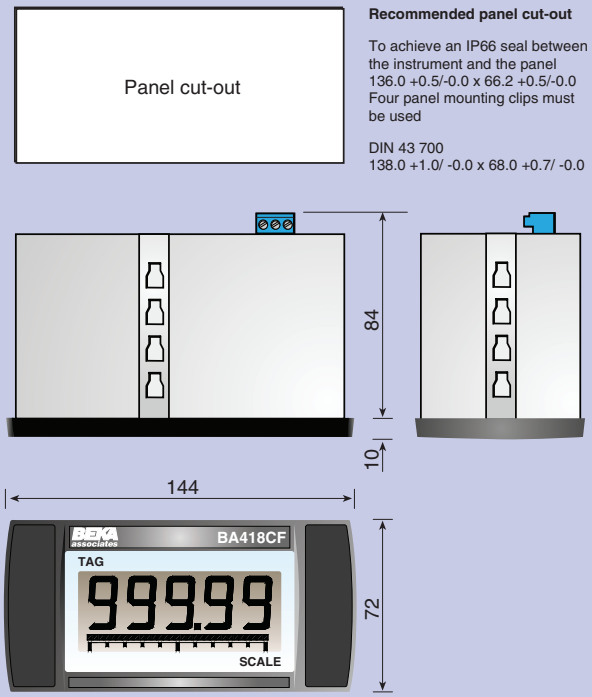
Environmental

Operating temp	-20 to 70°C (ATEX, FM & IECEx certification -40°C to 70°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

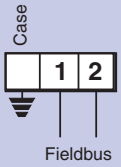
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS

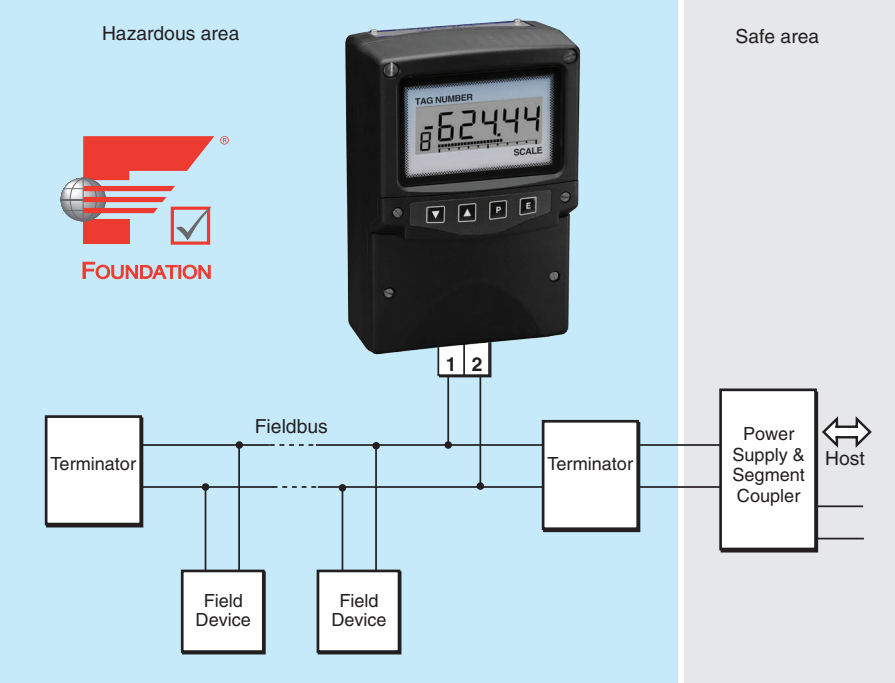


Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon
Tag strip	Tag number or application thermally printed onto rear of instrument
FOUNDATION ™ Fieldbus interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA418CF-F
Accessories	**Please specify if required**
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA444DF-F

FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- **Large 5 digit display with bargraph.**
- **FOUNDATION™ fieldbus protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Intrinsically safe**
  ATEX gas
  or **ATEX gas & dust**
  or **FM, cFM & ATEX gas**
  All versions have IECEx certification.
- **Entity Ex ia & Ex ic parameters, FISCO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba444df-f

The BA444DF-F FOUNDATION™ fieldbus Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports FOUNDATION™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA444DF-P PROFIBUS data-sheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444DF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA444DF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia & Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA444DF-F may therefore be connected to almost any intrinsically safe fieldbus segment that can supply an additional 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the many countries accepting international IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse of this datasheet.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA448CF-F FOUNDATION™ fieldbus indicator datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration.

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety input safety parameters)
Current	13mA.
Compliant with Mode.	IEC61158-2 31.25kbits/s Voltage
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)
Function	Fieldbus Node or Listener selected by front panel push buttons.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Category 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C
or	Group II Cat. 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Cat. 3G Ex ic IIC T4 Gc Group II Cat. 1D Ex ia IIIC T100°C IP66 Da Group II Cat. 3D Ex ic IIIC T100°C IP66 Dc Ta = -20°C to 60°C

Dust option, see How to order

Input parameters	FISCO	Ex ia entity	Ex ic entity
Ui	17.5V	22.0V	32V
Ii	380mA	250mA	125mA
Pi	5.32W	1.2W	1W

Location	
Gas	Zone 0, 1 or 2
Dust	Zone 20, 21 or 22
Cert. No.	ITS06ATEX25313X

USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T4 at 70˚C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T4 at 70˚C
File	3027031

Canada cFM

File 3027031C

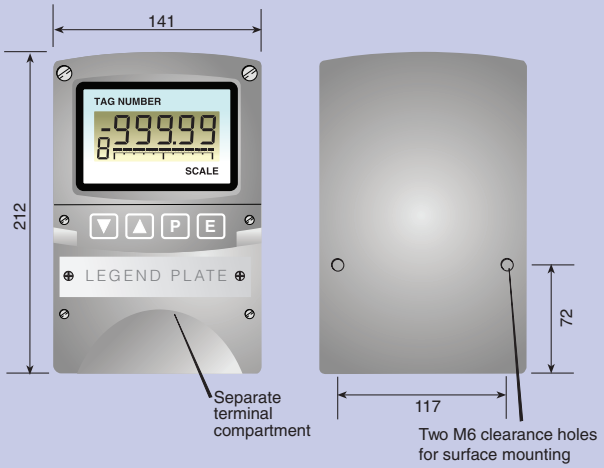
International IECEx

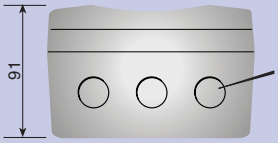
Code	As ATEX codes shown above
Cert. No.	IECEx ITS 06.0012X

Environmental

Operating temp	-20 to 60°C ATEX & IECEx certification Gas -40 to 70°C Dust -20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC.

DIMENSIONS (mm)

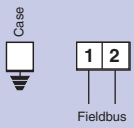




Three cable entries
ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug.
FM certification 22.25 Ø plain holes

Shown with optional legend plate

TERMINAL CONNECTIONS



Non polarised

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

Accessories

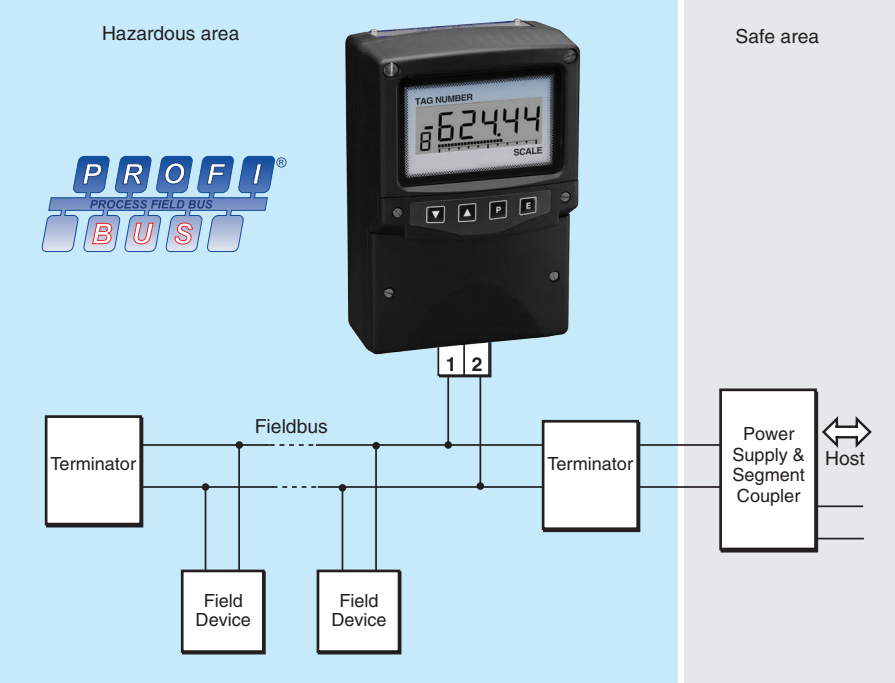
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend Plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393
FOUNDATION ™ Fieldbus interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA444DF-F FOUNDATION™ fieldbus.
Certification	ATEX gas
or	ATEX gas & dust
or	FM, cFM & ATEX gas

*All versions have IECEx certification. **Note:** Cable entries differ for FM & ATEX versions*

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA444DF-P
PROFIBUS PA Fieldbus Indicator 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- **Large 5 digit display with bargraph.**
- **PROFIBUS PA protocol**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM, cFM & ATEX gas**
  ***or* INMETRO**
  All models have IECEx certification.
- **Entity Ex ia & Ex ic parameters, FISCO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba444df-p

The BA444DF-P PROFIBUS Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA444DF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA444DF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA444DF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444DF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX intrinsic safety certification allows the BA444DF-P to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA444DF-P may therefore be connected to almost any intrinsically safe fieldbus segment that can supply an additional 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the many countries accepting international IECEx certificates. All approvals incorporate FISCO certification. Details of the versions available are shown in the How to Order section on the reverse of this datasheet.

Operator acknowledgements may be returned to the fieldbus host when the BA444DF-P is configured as a fieldbus Node. Six digital Input function blocks in the indicator which are supported by most PROFIBUS hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA444DF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA448CF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

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SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999). 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration. May be used for returning operator acknowledgements when configured as a fieldbus node.

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety input safety parameters)
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode
Protocol	PROFIBUS PA
Profibus User Organisation.	Approval certificate Z01505
Function	Fieldbus Node or Listener selected via front panel push buttons.
Function blocks	
Profibus-PA node	8 x AO; 6 x DI
Listener	Captures data in DS-33 format

Intrinsic safety

Europe ATEX

Code	Group II Cat. 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Cat. 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C
or	Group II Cat. 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Cat. 3G Ex ic IIC T4 Gc Group II Cat. 1D Ex ia IIIC T100°C IP66 Da Group II Cat. 3D Ex ic IIIC T100°C IP66 Dc Ta = -20°C to 60°C

Dust option, see How to order

Input parameters		FISCO	Ex ia entity	Ex ic entity
	Ui	17.5V	22.0V	32V
	Ii	380mA	250mA	125mA
	Pi	5.32W	1.2W	1W

Location	
Gas	Zone 0, 1 or 2
Dust	Zone 20, 21 or 22
Cert. No.	ITS06ATEX25313X

USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T4 at 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T4 at 70°C
File	3027031

Canada cFM

File	3027031C

International IECEx

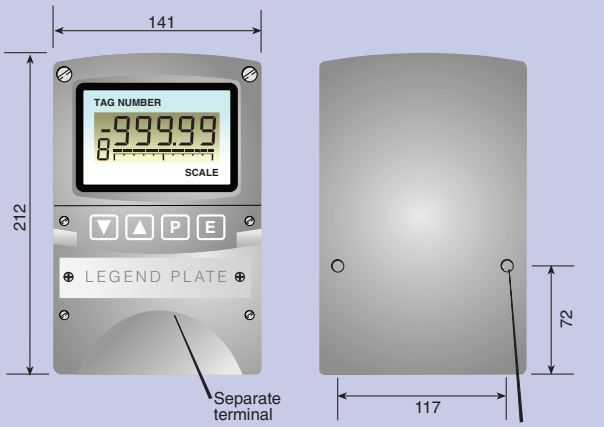
Code	As ATEX codes shown above
Cert. No.	IECEx ITS 06.0012X

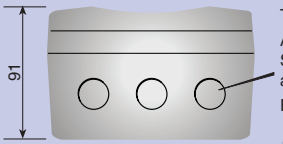
Brazil INMETRO NCC 12.0868

Environmental

Operating temp	-20 to 60°C ATEX & IECEx certification Gas -40 to 70°C Dust -20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC.

DIMENSIONS (mm)

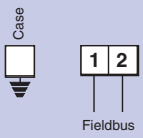




Three cable entries
ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug.
FM certification 22.25 Ø plain holes

Shown with optional legend plate

TERMINAL CONNECTIONS



Non polarised

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

Accessories

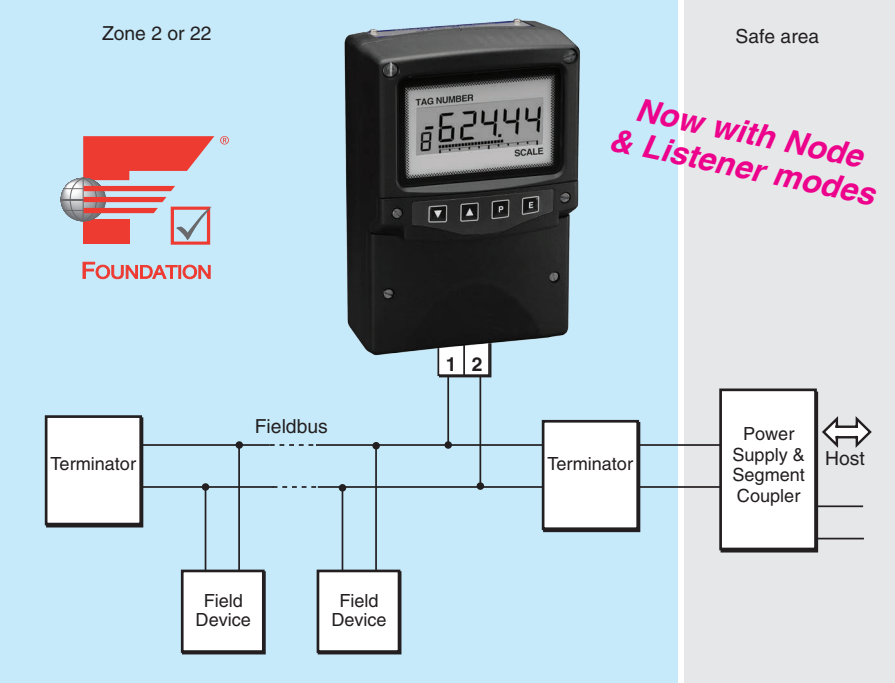
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend Plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393
PROFIBUS interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

		Please specify
Model number		BA444DF-P PROFIBUS
Certification		ATEX gas
	or	ATEX gas and dust
	or	FM, cFM and ATEX gas
	or	INMETRO gas
	or	INMETRO gas and dust

All versions have IECEx certification. ***Note:*** *Cable entries differ for FM & ATEX versions*

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



The BA444NDF-F FOUNDATION™ fieldbus Indicator is a Type n instrument that can display up to eight fieldbus process variables within a Zone 2 or 22 hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA444NDF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.

When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444NDF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator's electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The instrument may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type n and tD certification allows the BA444NDF-F to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept FNICO simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type n systems. A BA444NDF-F may therefore be connected to almost any Type n fieldbus segment that can supply an additional 13mA to power the instrument.

IECEx approval permits installation in the many countries already accepting international IECEx certificates. The approval incorporate FNICO certification and dust approval for use in Zone 22.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For nonincendive applications in the USA and Canada please see datasheet for the BA444DF FOUNDATION fieldbus™ Listener which has FM and cFM nonincendive approval.

BA444NDF-F

FOUNDATION™ fieldbus Fieldbus indicator 8 variable

Type n certified for use in Zones 2 and 22

- **Large 5 digit display with bargraph.**
- **FOUNDATION™ fieldbus protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Type n ATEX & IECEx certification for gas & dust.**
- **Entity parameters & FNICO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba444ndf-f

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration.

Fieldbus communication

Fieldbus communication

Voltage	9 to 32V
Current	13mA.
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)
Function	Fieldbus Node or Listener selected by front panel push buttons.

Type n and tD certification

Europe ATEX

Code	Group II Category 3GD FNICO Field Device Ex nL IIC T4 Ex tD A22 IP66 T100°C Ta = -20 to 60°C
Location	
Gas	Zone 2
Dust	Zone 22
Cert. No.	ITS06ATEX45315

International IECEx

Code	Ex nL IIC T4 FNICO Field Device Ex nL IIC T4 Ex tD IIIC T100°C Dc IP66 Ta = -20 to 60°C
Cert. No.	IECEx ITS 06.0015

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC

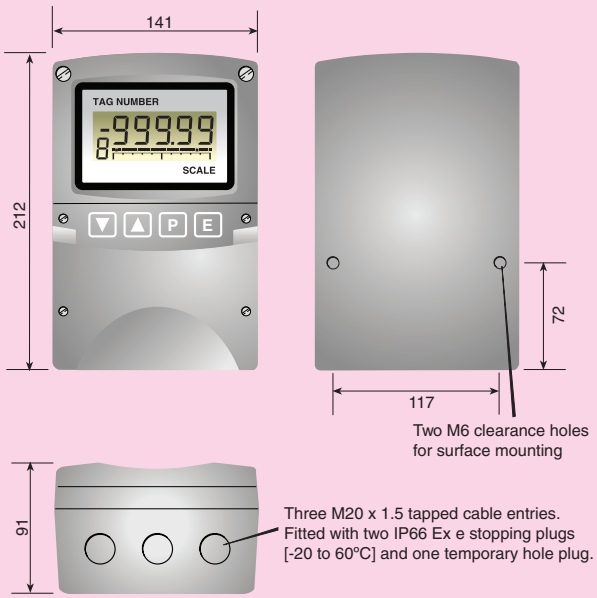
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

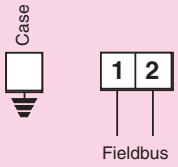
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393

DIMENSIONS (mm)



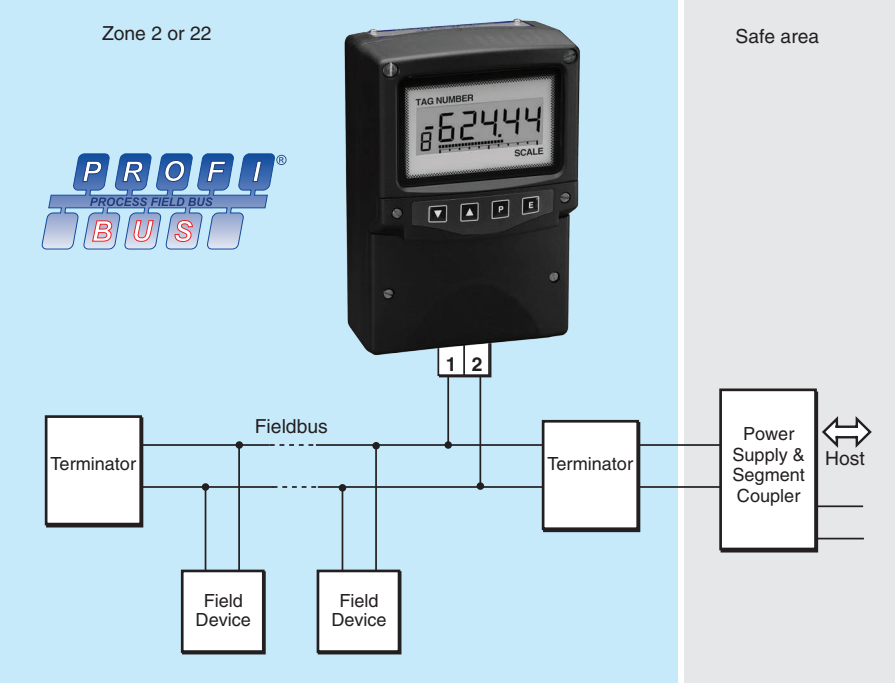
TERMINAL CONNECTIONS



Non polarised

HOW TO ORDER

	Please specify
Model number	BA444NDF-F FOUNDATION™ fieldbus
Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA444NDF-P
PROFIBUS PA Fieldbus indicator 8 variable

Type n certified for use in Zones 2 and 22

- **Large 5 digit display with bargraph.**
- **PROFIBUS PA protocol**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Type n ATEX & IECEx certification for gas & dust.**
- **Entity parameters & FNICO compliant.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba444ndf-p

The BA444NDF-P PROFIBUS Indicator is a Type n instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA444NDF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA444NDF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons. As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA444NDF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA444NDF-P Profibus indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

ATEX Type n and tD certification allows the BA444NDF-P to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Non-incendive Concept FNICO simplifying system design and documentation. Separate entity input safety parameters also allow connection to most non-FNICO Type n systems. A BA444NDF-P may therefore be connected to almost any Type n fieldbus segment that can supply an additional 13mA to power the instrument.

IECEx approval permits installation in the many countries already accepting international IECEx certificates. The approval incorporate FNICO certification and dust approval for use in Zone 22.

Operator acknowledgements may be returned to the fieldbus host when the BA444NDF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA444NDF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For nonincendive application in the USA and Canada please see datasheet for BA444DF-P PROFIBUS indicator which has FM and cFM nonincendive approval.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration. May be used for returning operator acknowledgements when configured as a fieldbus node.

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	PROFIBUS PA
Profibus User Organisation.	Approval certificate Z01505
Function	Fieldbus Node or Listener selected via front panel push buttons.

Function blocks

Profibus PA node	8 x AO; 6 x DI
Listener	Captures data in DS-33 format

Type n and tD certification

Europe ATEX

Code	Group II Category 3GD FNICO Field Device Ex nL IIC T4 Ex tD A22 IP66 T100°C Ta = -20 to 60°C
Location	
Gas	Zone 2
Dust	Zone 22
Cert. No.	ITS06ATEX45315

International IECEx

Code	Ex nL IIC T4 FNICO Field Device Ex nL IIC T4 Ex tD IIIC T100°C Dc IP66 Ta = -20 to 60°C
Cert. No.	IECEx ITS 06.0015

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC

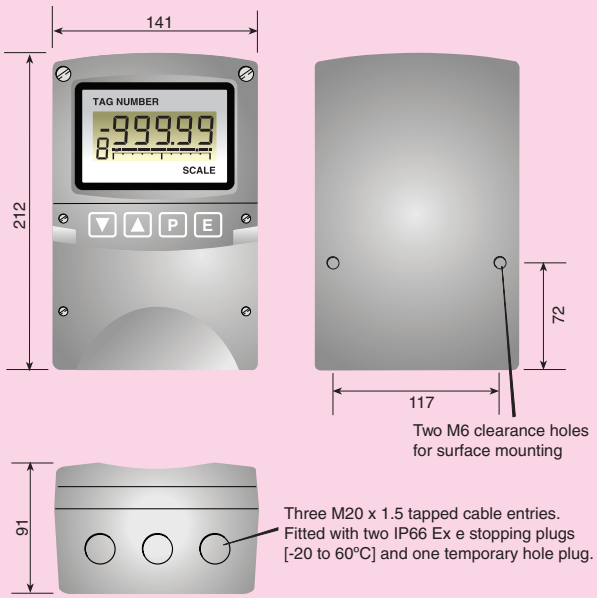
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

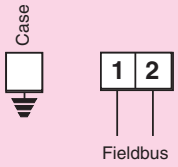
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend plate	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393
Profibus interface guide	May be downloaded from www.beka.co.uk

DIMENSIONS (mm)



TERMINAL CONNECTIONS

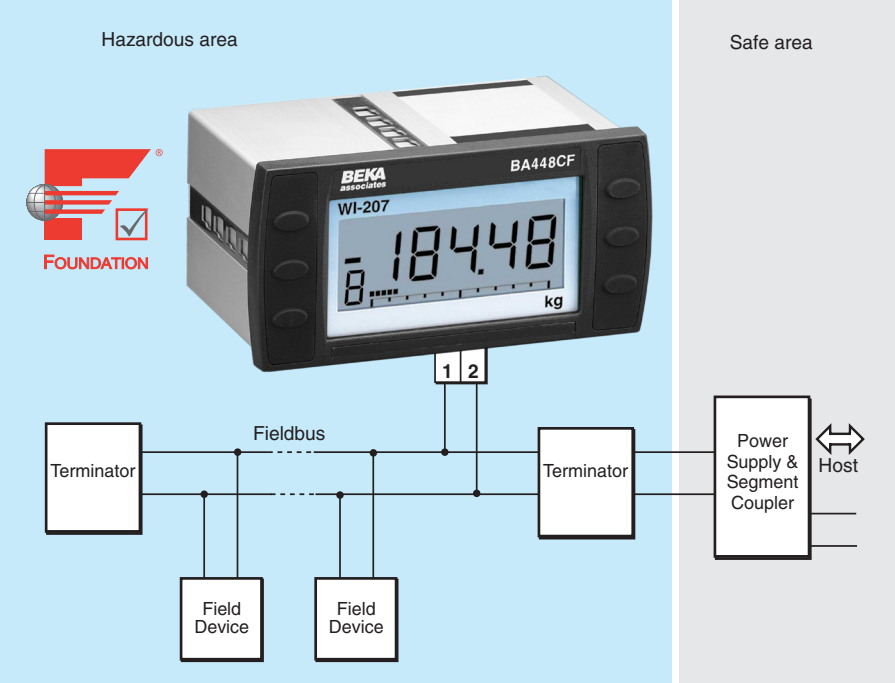


Non polarised

HOW TO ORDER

	Please specify
Model number	BA444NDF-P PROFIBUS

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA448CF-F

FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

Intrinsically safe for use in all gas hazardous areas

- **Large 5 digit display with bargraph.**
- **FOUNDATION™ fieldbus protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Entity Ex ia & ic parameters, FISCO compliant.**
- **144 x 72mm DIN enclosure.**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba448cf-f

The BA448CF-F Fieldbus Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION ™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA448CF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.
When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA448CF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA448CF-F indicator is installed.

ATEX intrinsic safety certification allows the BA448CF-F to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept FISCO simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA448CF-F indicator may therefore be connected to almost any intrinsically safe FOUNDATION™ fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA444DF-F FOUNDATION™ fieldbus datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety input safety parameters)
Current	13mA.
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)
Function	Fieldbus Node or Listener selected by front panel push buttons.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Category 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C

Input parameters

	FISCO	Ex ia entity	Ex ic entity
Ui	17.5V	22.0V	32V
Ii	380mA	250mA	125mA
Pi	5.32W	1.2W	1W

Location	Zone 0, 1 or 2
Cert. No.	ITS06ATEX25314X

USA FM

Standard	3610 Entity
Code	CL I: Div 1 GP A, B, C & D T4 @ 70°C
Standard	3611 Nonincendive
Code	CL I: Div 2 GP A, B, C & D T4 @ 70°C
File	3027031

Canada cFM

File	3027031C

International IECEx

Code	As ATEX code shown above
Cert. No	IECEx ITS 06 0013X

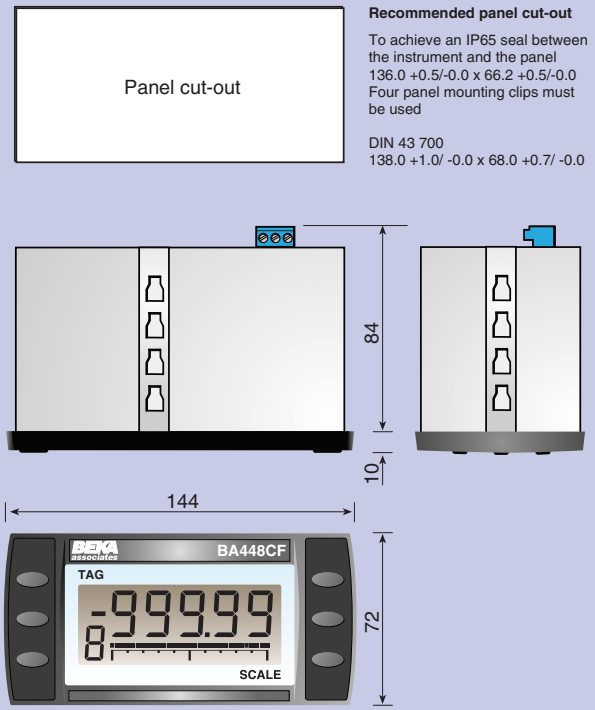
Environmental

Operating temp	-20 to 70°C (ATEX, FM & IECEx certification -40°C to 70°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	In accordance with EU Complies with EMC Directive 2014/30/EU

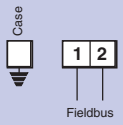
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Non polarised

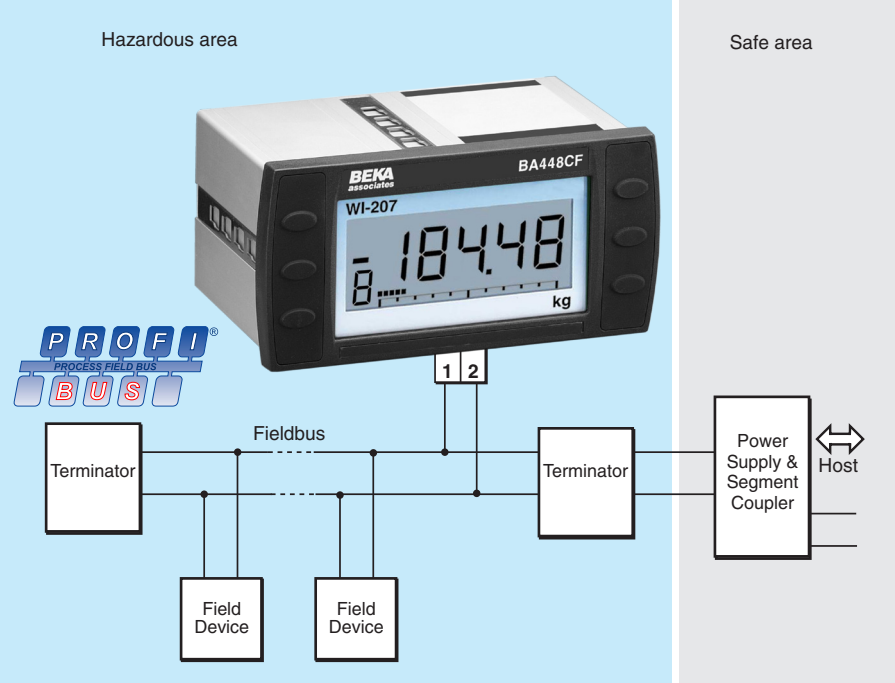
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Tag strip	Tag number or application thermally printed onto rear of the instrument.
FOUNDATION ™ Fieldbus interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA448CF-F FOUNDATION™ fieldbus

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA448CF-P
PROFIBUS PA Fieldbus Indicator 8 variables

Intrinsically safe for use in all gas hazardous areas

- **Large 5 digit display with bargraph.**
- **PROFIBUS PA protocol**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **Intrinsically safe ATEX, FM, cFM, INMETRO & IECEx.**
- **Entity Ex ia & ic parameters & FISCO compliant.**
- **144 x 72mm DIN enclosure.**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba448cf-p

The BA448CF-P PROFIBUS Indicator is an intrinsically safe instrument that can display up to eight fieldbus process variables within a hazardous area. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA448CF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA448CF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons.
As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA448CF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA448CF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA448CF-P indicator is installed.

ATEX intrinsic safety certification allows the BA448CF-P to be installed in all gas hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation. Separate Ex ia and Ex ic entity input safety parameters also allow connection to most non-FISCO intrinsically safe systems. A BA448CF-P indicator may therefore be connected to almost any intrinsically safe fieldbus segment, provided the segment can supply 13mA to power the instrument.

FM, cFM and IECEx approvals allow installation in the USA, Canada plus the growing number of countries accepting IECEx certificates. All approvals incorporate FISCO certification.

Operator acknowledgements may be returned to the fieldbus host when the BA448CF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA448CF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA444DF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode Clauses 11 and 22
Protocol	PROFIBUS PA
Profibus User Organisation.	Approval certificate Z01505
Function	Fieldbus Node or Listener selected via front panel push buttons.
Function blocks	
Profibus PA node	8 x AO; 6 x DI
Listener	Captures date in DS-33 format

Intrinsic safety
Europe ATEX

Code	Group II Category 1G Ex ia IIC T4 Ga FISCO field device Ex ia IIC T4 Ga Group II Category 3G Ex ic IIC T4 Gc Ta = -40°C to 70°C

Input parameters	FISCO	Ex ia entity	Ex ic entity
Ui	17.5V	22.0V	32V
Ii	380mA	250mA	125mA
Pi	5.32W	1.2W	1W

Location	Zone 0, 1 or 2
Cert. No.	ITS06ATEX25314X

USA FM

Standard	3610 Entity
Code	CL I: Div 1 GP A, B, C & D T4 @ 70°C
Standard	3611 Nonincendive
Code	CL I: Div 2 GP A, B, C & D T4 @ 70°C
File	3027031

Canada cFM

File	3027031C

International IECEx

Code	As ATEX code shown above
Cert. No	IECEx ITS 06 0013X

Brazil INMETRO NCC 12.0873X

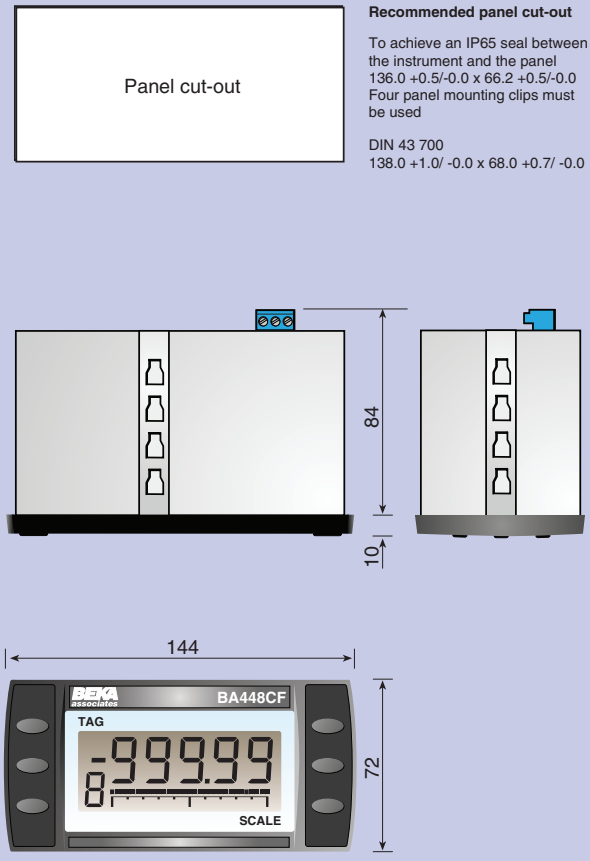
Environmental

Operating temp	-20 to 70°C (ATEX, FM & IECEx certification -40°C to 70°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	In accordance with EU Complies with EMC Directive 2014/30/EU

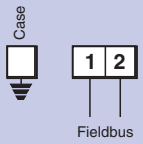
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



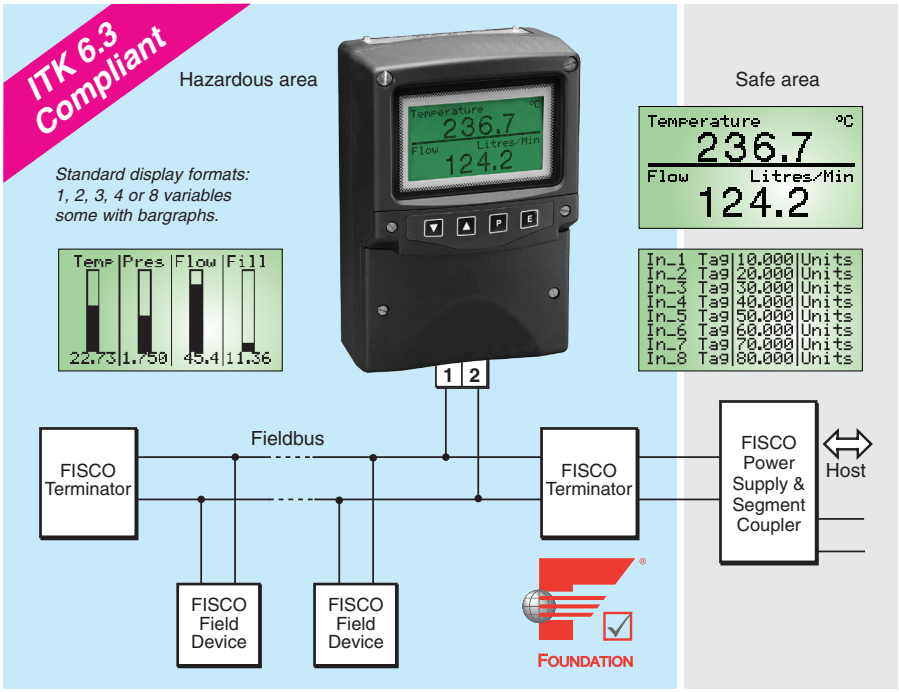
Non polarised

Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
PROFIBUS interface guide.	May be downloaded from www.beka.co.uk

HOW TO ORDER

	Please specify
Model number	BA448CF-P PROFIBUS
Accessories	**Please specify if required**
Certification	INMETRO
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA484DF-F

FOUNDATION™ fieldbus Fieldbus display 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM & ATEX gas**
  All models have IECEx certification.
  FISCO compliant.
- **Six optional local alarm outputs.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba484df-f

The BA484DF-F Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA484DF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Fieldbus Foundation or the BEKA websites

Powered by the fieldbus the BA484DF-F only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA484DF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA484DF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

Comprehensive documentation includes a FOUNDATION™ fieldbus Interface Guide.

ATEX, FM and IECEx intrinsic safety certification allows the BA484DF-F to be installed in gas and dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe systems is possible using the entity concept.
This allows a BA484DF-F display to be directly connected to almost any hazardous fieldbus segment, provided that the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for *simple apparatus* allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA484DF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

For panel mounting applications see the BA488CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

BEKA associates
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SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Four push buttons scroll the indicator display between screens when the BA484DF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)	
Current	25mA	
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode	
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant	
Function blocks		
FOUNDATION™ fieldbus	1 x MAO (Multiple Analogue Output)	*Selectable on-site*
or	2 x IS (Input Selector)	

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)	
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66	*Dust option, see How to order*
Cert. No.	ITS04ATEX22778	
Intrinsic safety parameters	Ui = 17.5V Ii = 380mA Pi = 5.32W	FISCO compliant
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22	

USA FM *Option, see How to order*

Standard	3610 Entity
Code	CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C
File	3022546
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP F & G, T4 @ 60°C
File	3022546

International IECEx

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)	
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66	*Dust option, see How to order*
Cert. No	IECEx ITS 05.0006	

Environmental

Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2014/30/EU

Mechanical

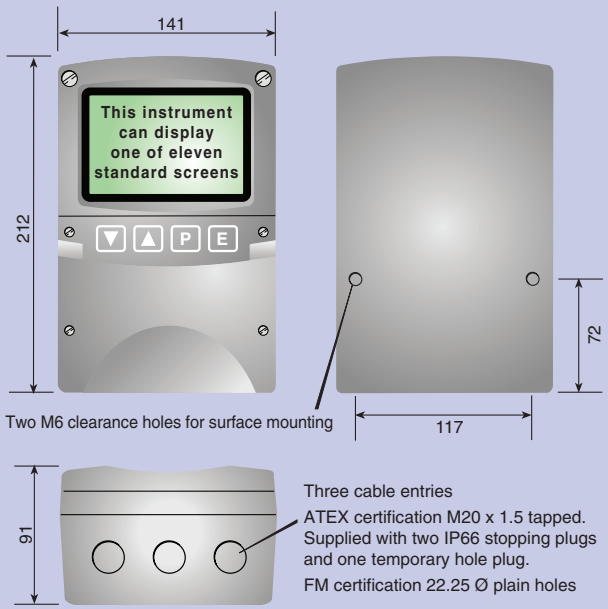
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

Accessories

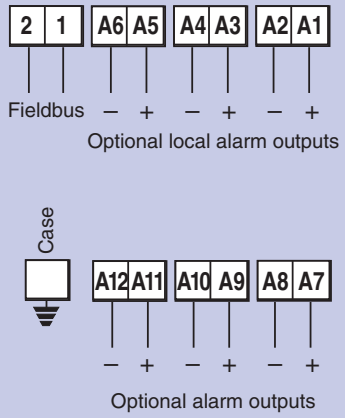
Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm

***Note:** Alarms are not accessible from the fieldbus system host*

DIMENSIONS (mm)



TERMINAL CONNECTIONS

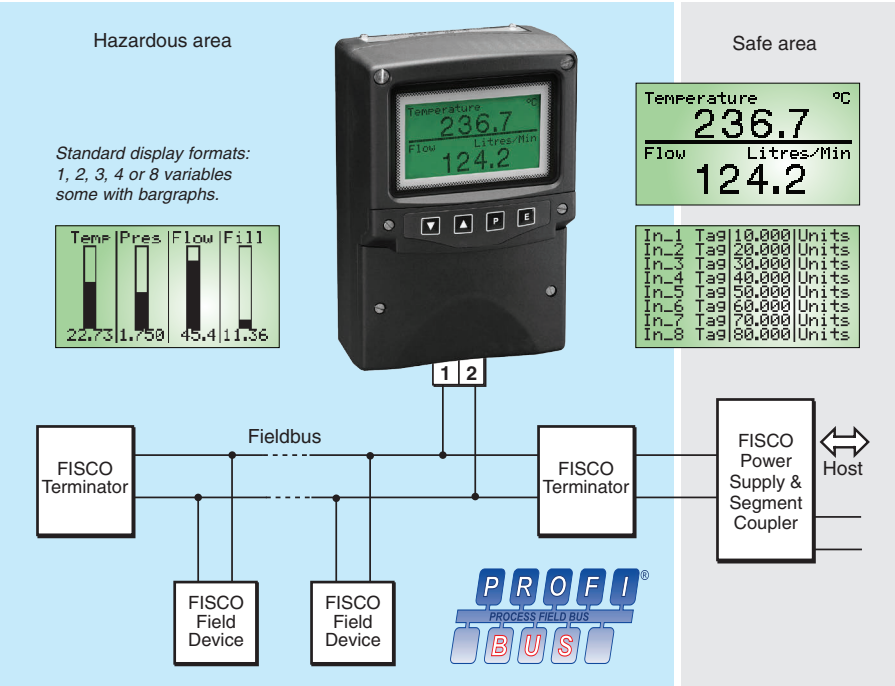


Contacts	Isolated single pole solid state switch certified as simple apparatus. Ron less than 5Ω + 0.7V Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc Ii = 200mA Pi = 0.84W
Tag strip	Printed legend behind the display window
Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Pipe mounting kit	BA392D or BA393
FOUNDATION™ fieldbus interface guide	May be downloaded from *www.beka.co.uk*

HOW TO ORDER

	Please specify	
Model number	BA484DF-F	
Certification	ATEX gas	*All models have IECEx certification.* ***Note:** Cable entries differ for FM & ATEX models*
or	ATEX gas & dust	
or	FM & ATEX gas	

Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Tag strip legend
Tag plate	Tag plate legend
Pipe mounting kit	BA392D or BA393



BA484DF-P

PROFIBUS PA Fieldbus display 8 variables

Intrinsically safe for use in gas and dust hazardous areas

- **PROFIBUS PA protocol.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM & ATEX gas**
  ***or* INMETRO**
  All models have IECEx certification.
  FISCO compliant.
- **Four operator push buttons & six optional local alarm outputs.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba484df-p

The BA484DF-P Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA484DF-P only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA484DF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is re-quired. Configuration of the BA484DF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

ATEX, FM and IECEx intrinsic safety certification allows the BABA484DF-P to be installed in gas and dust hazardous areas. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe systems is possible using the entity concept. This allows a BA484DF-P display to be directly connected to almost any hazardous fieldbus segment, provided that the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for simple apparatus allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA484DF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

The four push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA484DF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For panel mounting applications see the BA488CF-P datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA484DF-F fieldbus display.

BEKA associates

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SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Four push buttons scroll the indicator display between screens when the BA484DF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host.
External switches	Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel.
Switch cable	Length 5m max

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	25mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode
Protocol	PROFIBUS PA
Function blocks	
PROFIBUS PA	8 x AO (Analogue Output) 6 x DI (Digital Input)

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66 — *Dust option, see How to order*
Cert. No.	ITS04ATEX22778
Intrinsic safety parameters	Ui = 17.5V Ii = 380mA Pi = 5.32W — FISCO compliant
Location	Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22

USA FM *Option, see How to order*

Standard	3610 Entity
Code	CL I, II, III: Div 1: GP A, B, C, D, E, F & G T4 @ 60°C
File	3022546
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D, T4 @ 60°C CL II, III: Div 2: GP F & G, T4 @ 60°C
File	3022546

International IECEx

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
or	Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66 — *Dust option, see How to order*
Cert. No	IECEx ITS 05.0006

Brazil INMETRO NCC 12.0845

Environmental

Operating temp	-20 to 60°C (ATEX gas certification -40 to 60°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC
Immunity	BS EN 61326:1998 Operates normally with conducted 3Vrms interferance between 0.15kHz and 80MHz, or radiated 10V/m interferance between 80MHz and 1GHz.
Emissions	CISPR16-1/2 Class A

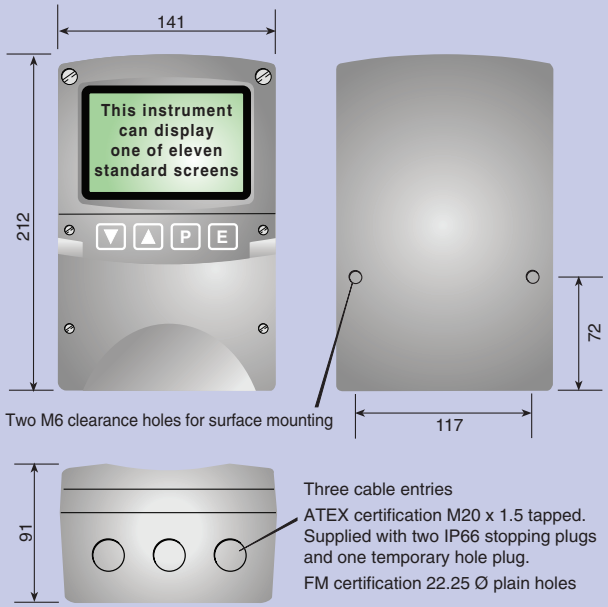
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

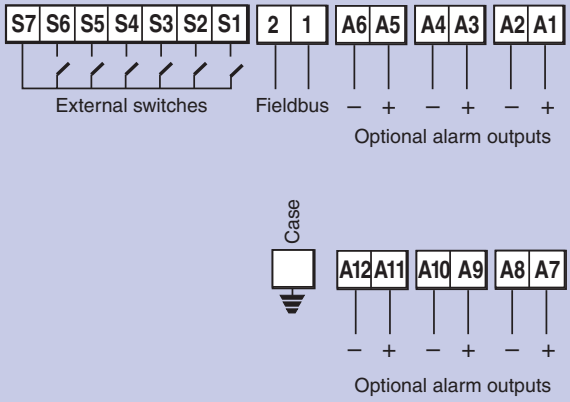
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note**: Alarms are not accessible from the fieldbus system host*

DIMENSIONS (mm)



TERMINAL CONNECTIONS



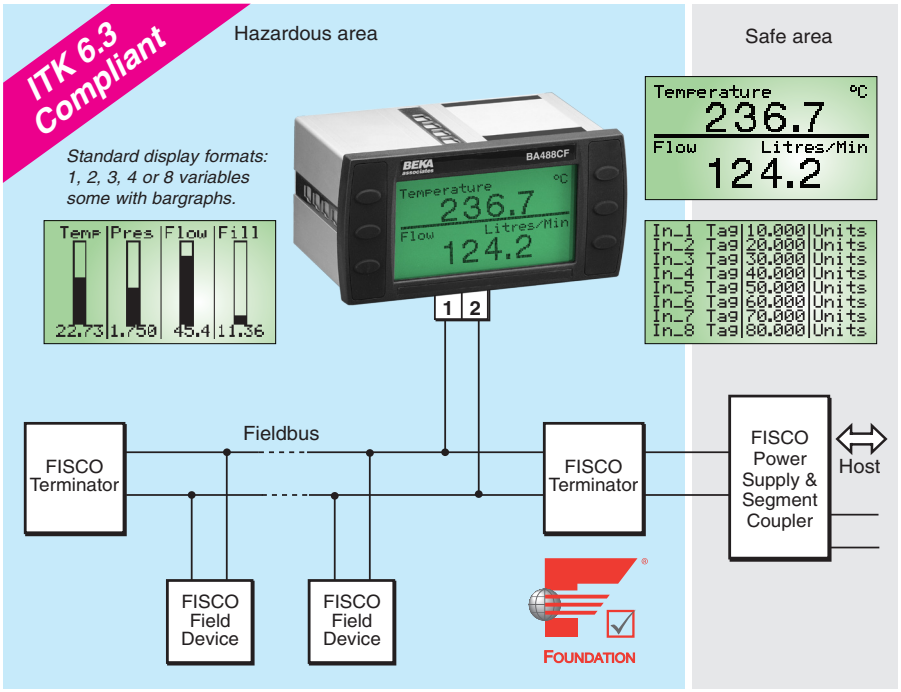
Contacts	Isolated single pole solid state switch certified as simple apparatus. Ron less than 5Ω + 0.7V Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc Ii = 200mA Pi = 0.84W
Tag strip	Printed legend behind the display window
Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Pipe mounting kit	BA392D or BA393
PROFIBUS PA interface guide	May be downloaded from *www.beka.co.uk*

HOW TO ORDER

		Please specify
Model number		BA484DF-P
Certification		ATEX gas
	or	ATEX gas & dust
	or	FM & ATEX gas
	or	INMETRO gas
	or	INMETRO gas & dust

All models have IECEx certification.
***Note:** Cable entries differ for FM & ATEX models*

Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Tag strip legend
Tag plate	Tag plate legend
Pipe mounting kit	BA392D or BA393



BA488CF-F

FOUNDATION™ fieldbus Fieldbus display 8 variables

Intrinsically safe for use in all gas hazardous areas

- **FOUNDATION™ fieldbus protocol, ITK 6 compliant.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Intrinsically safe ATEX, FM and IECEx certification FISCO compliant.**
- **Six optional local alarm outputs.**
- **IP66 front panel**
- **3 year guarantee**

www.beka.co.uk/ba488cf-f

The BA488CF-F Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA488CF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA488CF-F only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA488CF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA488CF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

ATEX, FM & IECEx intrinsic safety certification allows the BA488CF-F to be installed in gas hazardous areas worldwide. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe segments is possible using the entity concept. This allows a BA488CF-F to be directly connected to almost any hazardous fieldbus providing the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for *simple apparatus* allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA488CF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes a FOUNDATION™ fieldbus Interface Guide.

For field mounting applications see the BA484DF-F datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Six push buttons scroll the indicator display between screens when the BA488CF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	25mA
Compliant with	EC61158-2 31.25kbits/s Voltage Mode
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant
Function blocks	
FOUNDATION fieldbus™	1 x MAO (Multiple Analogue Output) **or** 2 x IS (Input Selector) — Selectable on-site

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	ITS04ATEX22779X *Special condition only apply for installations in Zone 0*
Intrinsic safety parameters	Ui = 17.5V Ii = 380mA Pi = 5.32W FISCO compliant
Location	Zone 0, 1 or 2

USA FM

Standard	3610 Entity
Code	CL I; Div 1; GP A, B, C & D T4 @ 60°C
File No	3022546
Standard	3611 Nonincendive
Code	CL I; Div 2; GP A, B, C & D T4 @ 60°C
File No	3022546

International IECEx

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	IECEx ITS 05.0007X *Special condition only apply for installations in Zone 0*

Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

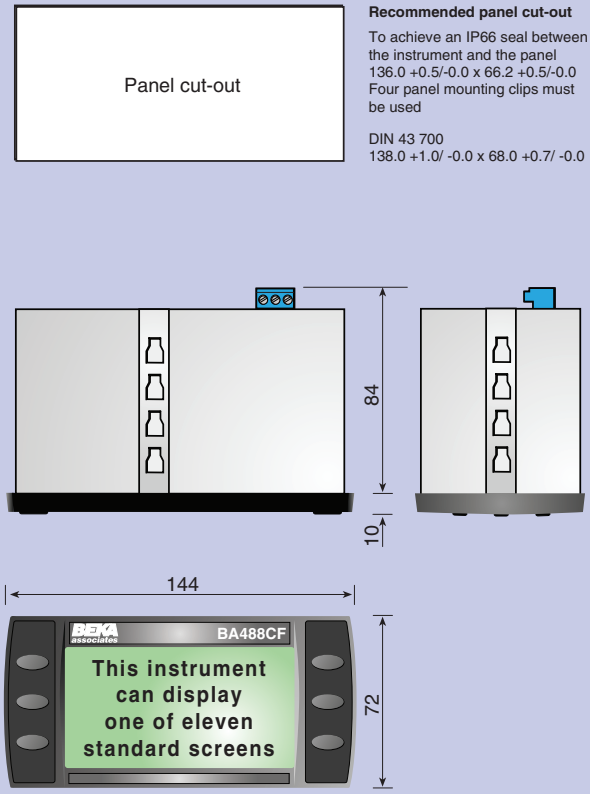
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm² cable.
Weight	0.7kg

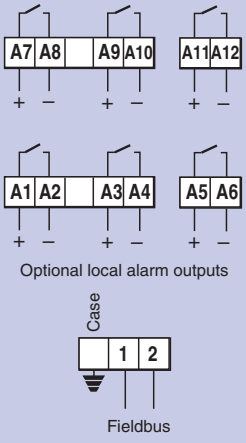
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note:*** *Alarms are not accessible from the fieldbus system host*

DIMENSIONS (mm)



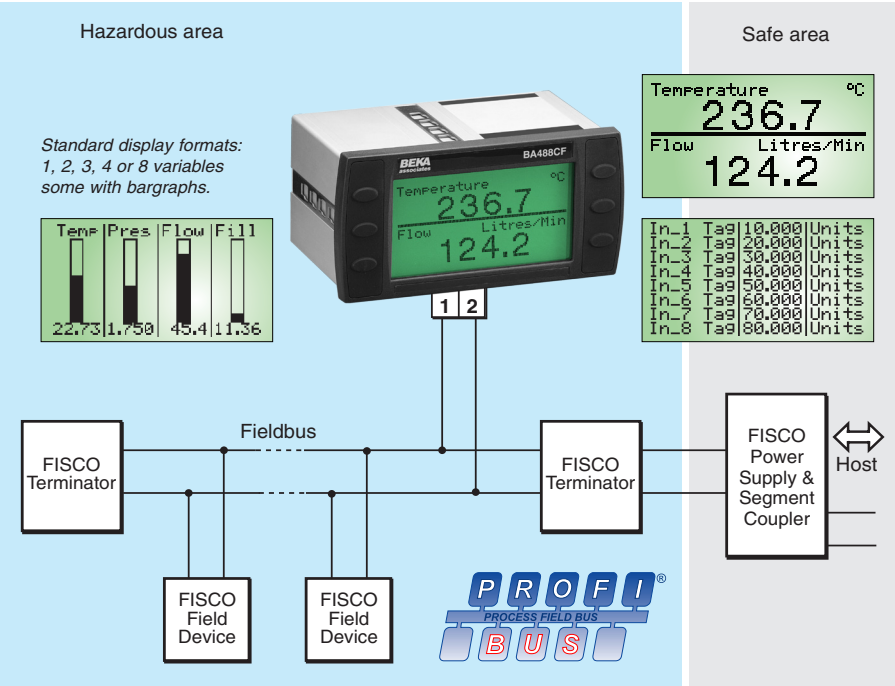
TERMINAL CONNECTIONS



Contacts	Isolated single pole solid state switch certified as simple apparatus. Ron less than 5Ω + 0.7V Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc Ii = 200mA Pi = 0.84W
Tag number	Thermally printed strip on rear of instrument.
FOUNDATION™ fieldbus interface guide	May be downloaded from *www.beka.co.uk*

HOW TO ORDER

	Please specify
Model number	BA488CF-F
Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Legend



BA488CF-P

PROFIBUS PA Fieldbus display 8 variables

Intrinsically safe for use in all gas hazardous areas

- **PROFIBUS PA protocol**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Intrinsically safe ATEX, FM, INMETRO and IECEx certification FISCO compliant.**
- **Six operator push buttons & six optional local alarm outputs.**
- **IP66 front panel**
- **3 year guarantee**

www.beka.co.uk/ba488cf-p

The BA488CF-P Fieldbus Display is an intrinsically safe instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA488CF-P only requires a 2-wire connection, no additional power supply Zener barriers or galvanic isolators are required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA488CF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA488CF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons.

ATEX, FM & IECEx intrinsic safety certification allows the BA488CF-P to be installed in gas hazardous areas worldwide. The two fieldbus terminals comply with the Fieldbus Intrinsic Safety Concept (FISCO) simplifying system design and documentation, although connection to non-FISCO intrinsically safe segments is possible using the entity concept. This allows a BA488CF-P to be directly connected to almost any hazardous fieldbus providing the segment can supply the 25mA consumed by the display.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. All the outputs comply with the requirements for simple apparatus allowing them to switch any certified intrinsically safe load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA488CF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host

The six push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA488CF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For field mounting applications see the BA484DF-P datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA488CF-F fieldbus display.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Six push buttons scroll the indicator display between screens when the BA488CF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host.
External switches	Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel.
Switch cable	5m max length.

Fieldbus communication

Voltage	9 to 32V (Limited by intrinsic safety parameters)
Current	25mA
Compliant with	EC61158-2 31.25kbits/s Voltage Mode
Protocol	PROFIBUS PA
Function blocks	
PROFIBUS PA	8 x AO (Analogue Output) 6 x DI (Digitl Input)

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	ITS04ATEX22779X *Special condition only apply for installations in Zone 0*
Intrinsic safety parameters	Ui = 17.5V Ii = 380mA Pi = 5.32W FISCO compliant
Location	Zone 0, 1 or 2

USA FM

Standard	3610 Entity
Code	CL I; Div 1; GP A, B, C & D T4 @ 60°C
File No	3022546
Standard	3611 Nonincendive
Code	CL I; Div 2; GP A, B, C & D T4 @ 60°C
File No	3022546

International IECEx

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	IECEx ITS 05.0007X *Special condition only apply for installations in Zone 0*

Brazil INMETRO NCC 12.0833X

Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU
Immunity	BS EN 61326:1998 Operates normally with conducted 3Vrms interference between 0.15kHz and 80MHz, or radiated 10V/m interference between 80MHz and 1GHz.
Emissions	CISPR 16-1/2 Class A

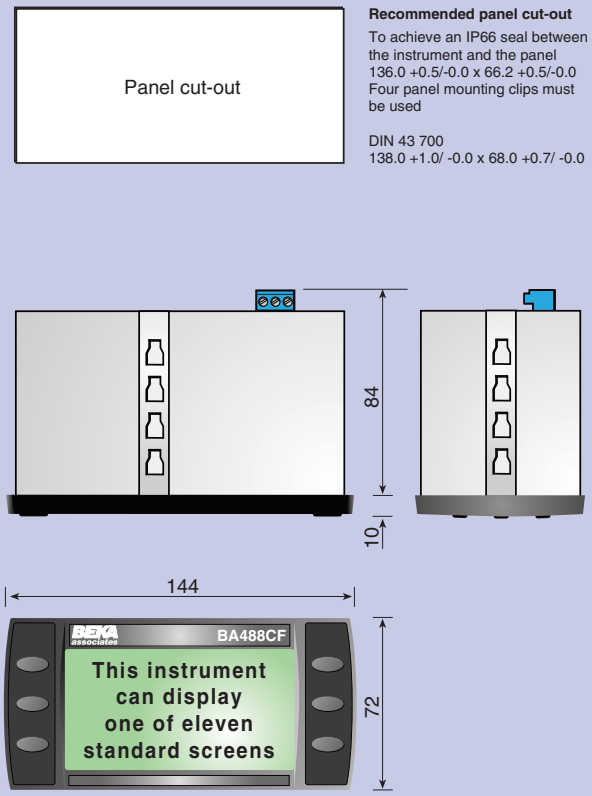
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

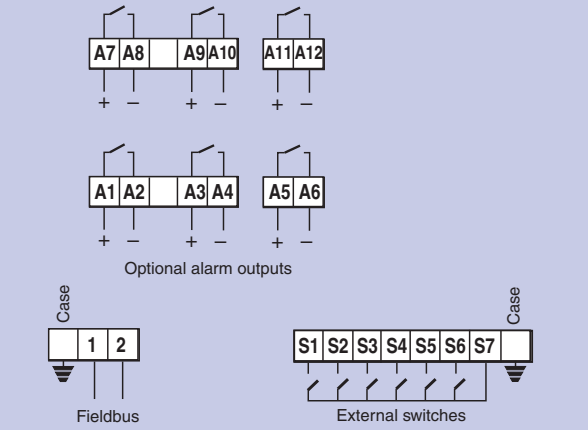
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note**: Alarms are not accessible from the fieldbus system host*

DIMENSIONS (mm)



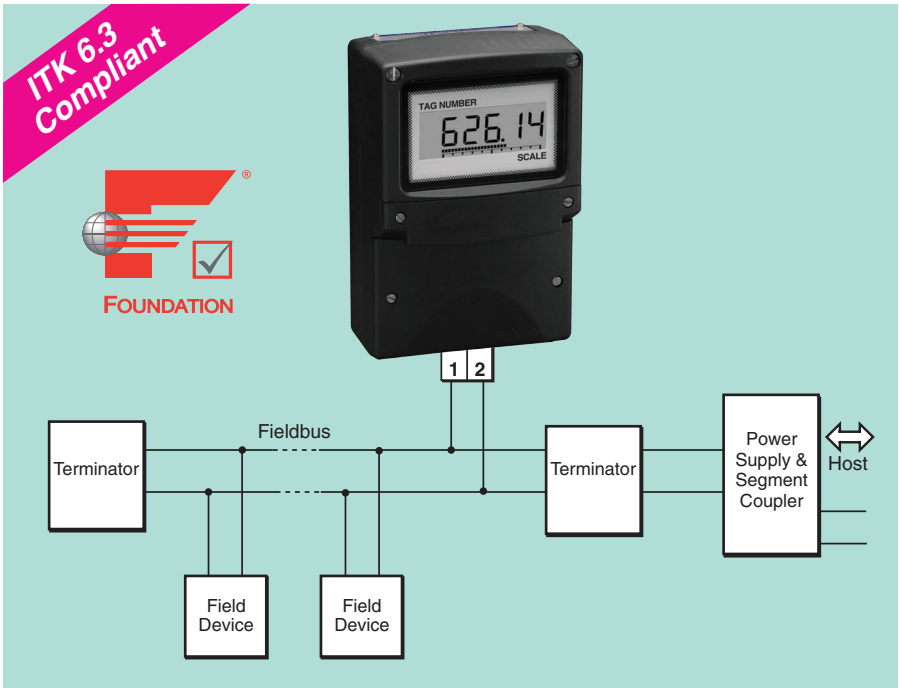
TERMINAL CONNECTIONS



Contacts	Isolated single pole solid state switch certified as simple apparatus. Ron less than 5Ω + 0.7V Roff greater than 1MΩ
Intrinsic safety parameters	Ui = 28Vdc Ii = 200mA Pi = 0.84W
Tag number	Thermally printed strip on rear of instrument.
PROFIBUS PA interface guide	May be downloaded from *www.beka.co.uk*

HOW TO ORDER

	Please specify
Model number	BA488CF-P
Accessories	**Please specify if required**
Certification	INMETRO
Six alarms	Alarms
Tag strip	Legend



BA614DF-F

FOUNDATION™ fieldbus
Fieldbus indicator
Single variable

General purpose

- **Large easy to read 5 digit display.**
- **31 segment bargraph**
- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **Bus powered, only 13mA consumption.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba614df-f

The BA614DF-F Fieldbus Indicator is a new cost-effective field mounting instrument that displays a single fieldbus variable in a process area. Housed in a robust IP66 GRP enclosure, the instrument has a large, high contrast five digit display, plus a horizontal bargraph. The BA614DF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA614DF-F only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk.

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle which enables the BA614DF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the fieldbus variable's range.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection, which has been independently assessed by Intertek Testing Services - report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

The FOUNDATION™ fieldbus Interface Guide contains commissioning information for the BA614DF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. For users who require a stainless steel identification label, the indicator can be supplied with a laser engraved stainless steel legend plate mounted on the front of the instrument.

For panel mounting applications see the BA618CF-F datasheet. This instrument is electrically identical to the BA614DF-F but is housed in a 144 x 72 panel mounting enclosure with an IP66 front.

For use in hazardous areas the intrinsically safe BA414DF-F and Type nL BA414NDF-F single variable fieldbus indicators are available. These have similar specifications as the BA614DF-F plus international certification allowing installation in most gas and dust hazardous areas.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digits plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	Single

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode Clauses 11 and 22
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant
Function block	1 x IS (input selector)

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2014/30/EU

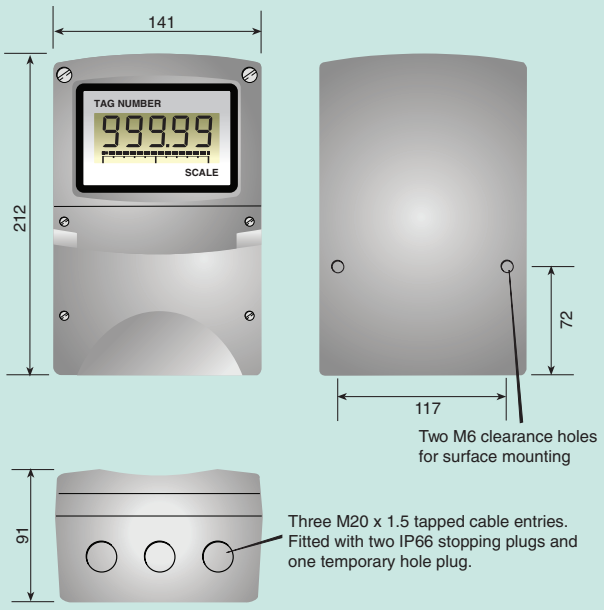
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

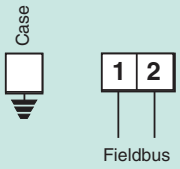
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or applicational information marked onto display escutcheon.
Stainless legend plate	Stainless steel plate etched with tagging or applicational information secured to the front of the instrument.
Pipe mounting kit	BA392D or BA393
Fieldbus interface guide	May be downloaded from www.beka.co.uk

DIMENSIONS (mm)



TERMINAL CONNECTIONS



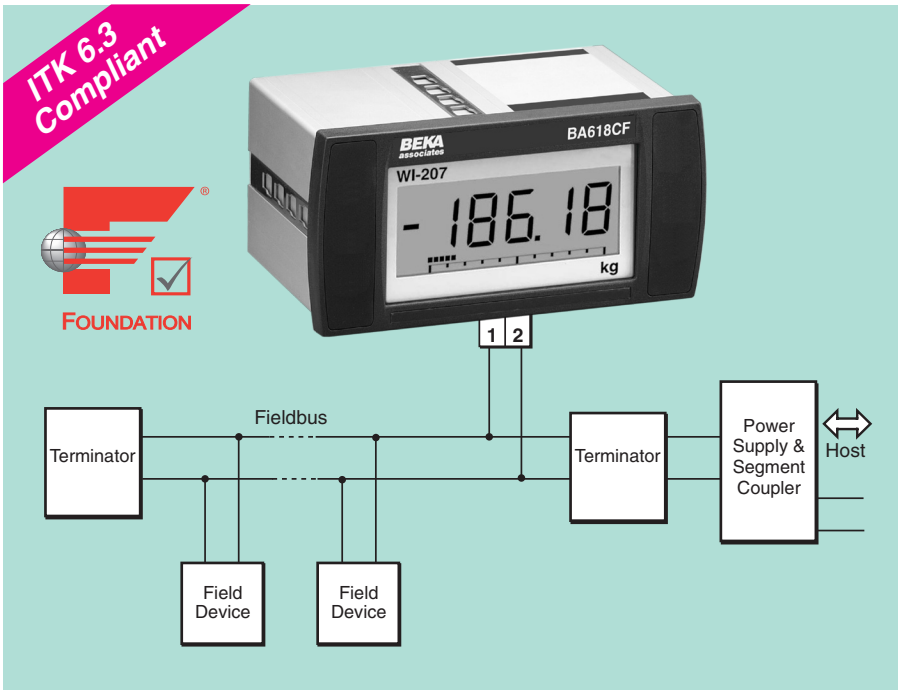
HOW TO ORDER

	Please specify
Model number	BA614DF-F
Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

BA618CF-F

FOUNDATION™ fieldbus
Fieldbus indicator
Single variable

General purpose



- Large easy to read 5 digit display.
- 31 segment bargraph
- FOUNDATION™ fieldbus protocol ITK 6.3 compliant.
- Compatible with most system hosts.
- Bus powered, only 13mA consumption.
- 144 x 72mm DIN enclosure.
- IP66 front
- 3 year guarantee

www.beka.co.uk/ba618cf-f

The BA618CF-F Fieldbus Indicator is a cost-effective panel mounting instrument that displays a single fieldbus variable in a control room or process area. Housed in a robust panel mounting enclosure with an IP66 front, the instrument has a large, high contrast five digit display and a horizontal bargraph. The BA618CF-F indicator uses the same technology and compliments the well established BEKA eight variable fieldbus displays that are now in worldwide use.

Powered by the fieldbus the BA618CF-F only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most FOUNDATION™ fieldbus hosts is ensured by the use of a single *Input Selector* function block, which is supported by nearly all systems. Please contact the BEKA sales office for the latest compatibility information. The instrument has ITK 6.3 Fieldbus Foundation registration and device description files may be downloaded from their website or from www.beka.co.uk

The liquid crystal display has large characters and is designed to provide maximum contrast and a wide viewing angle, thus enabling the BA618CF-F indicator to be easily read in most lighting conditions. Five digits, with four decimal points and a negative sign, may be configured to display any value between -99999 and 99999. The 31 segment horizontal bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting and finishing values within the range of the fieldbus variable.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA618CF-F indicator is installed.

The FOUNDATION Fieldbus Interface Guide contains commissioning information for the BA618CF-F indicator. A copy may be requested from the BEKA sales office or from the BEKA web site at www.beka.co.uk

Units of measurement, tag or application information specified by the customer can be printed onto the instrument escutcheon that surrounds the display for no additional charge. Tag information can also be thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA614DF-F datasheet. This instrument is electrically identical to the BA618CF-F but is housed in a robust IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA418CF-F single variable panel mounting fieldbus indicator is available. This has a similar specification as the BA618CF-F plus international certification allowing installation in most gas hazardous areas.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph
Variables	Single

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 Clauses 11 and 22
Protocol	FOUNDATION™ fieldbus
Function block	1 x IS (input selector)

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

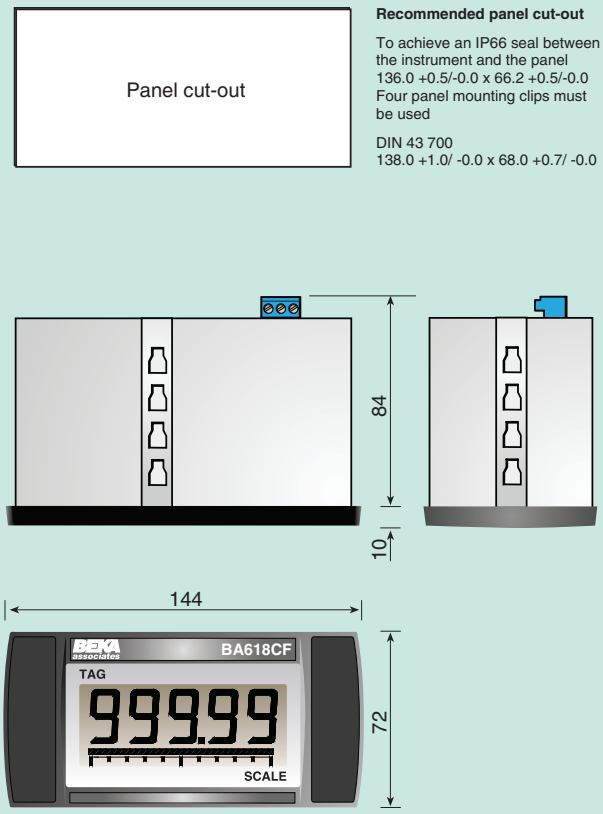
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

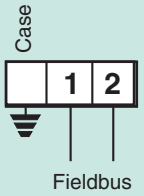
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon
Tag strip	Tag number or application thermally printed onto rear of instrument
Fieldbus interface guide	May be downloaded from www.beka.co.uk

DIMENSIONS (mm)



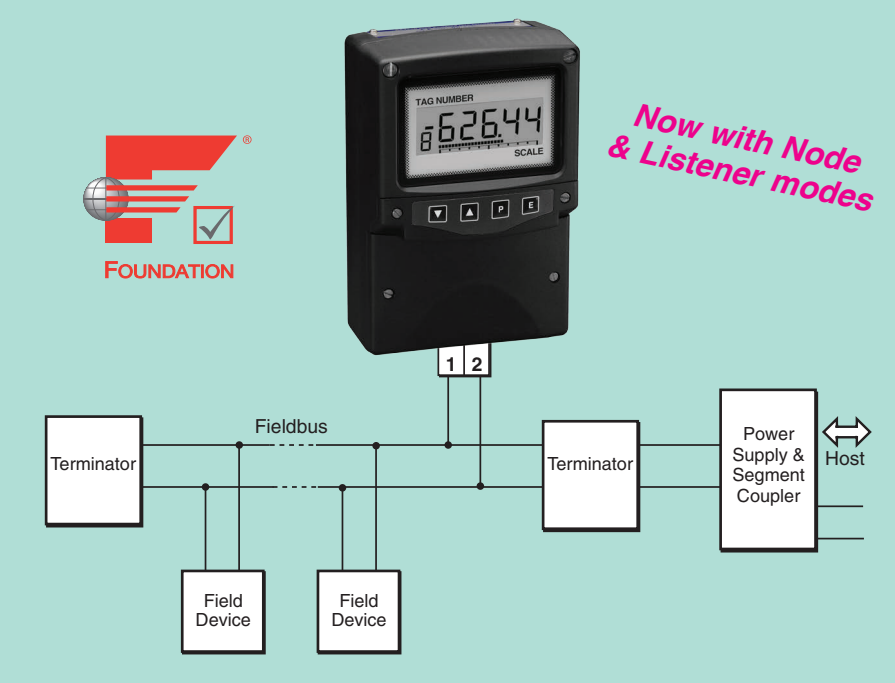
TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA618CF-F

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA644DF-F

FOUNDATION™ fieldbus Fieldbus indicator 8 variables

General purpose

- **Large 5 digit display with bargraph.**
- **FOUNDATION™ fieldbus Listener.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba644df-f

The BA644DF-F FOUNDATION™ fieldbus Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports FOUNDATION™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA644DF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons.
When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA644DF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator's electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA648CF-F FOUNDATION™ fieldbus indicator datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For use in hazardous areas the intrinsically safe BA444DF-F FOUNDATION™ fieldbus and the Type n BA444NDF-F FOUNDATION™ fieldbus indicators are available. These are similar to the BA644DF-F FOUNDATION™ fieldbus indicator but have international certifications allowing installation in most gas and dust hazardous area.

BEKA associates

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SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration.

Fieldbus communication

Voltage	9 to 32V
Current	13mA.
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)
Function	Fieldbus Node or Listener selected by front panel push buttons.

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC

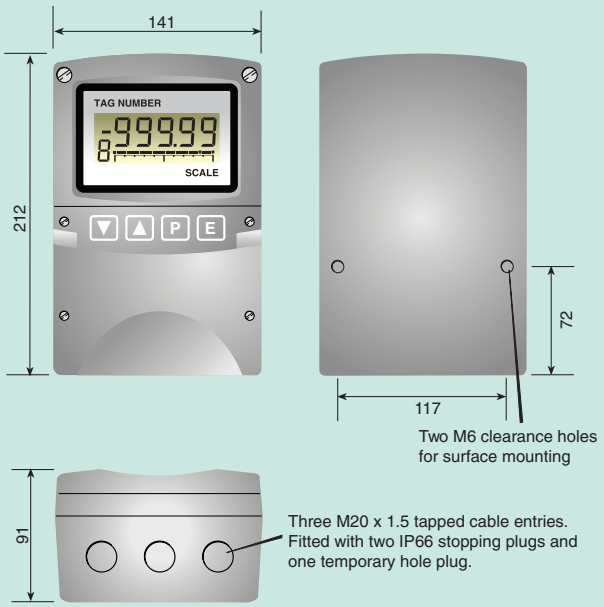
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

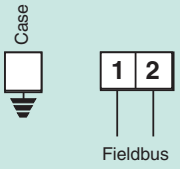
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Non polarised

HOW TO ORDER

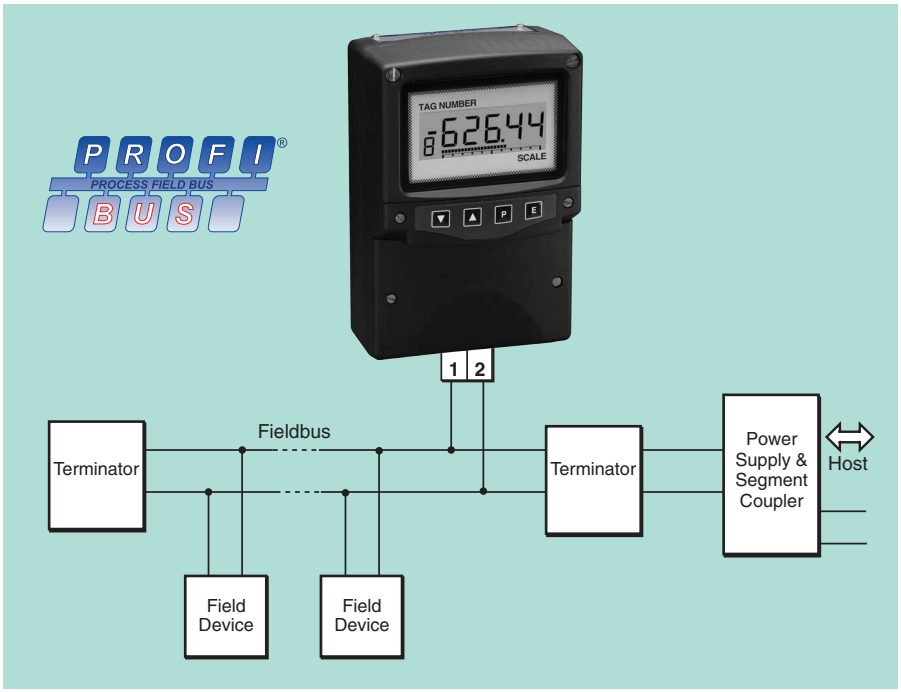
	Please specify
Model number	BA644DF-F FOUNDATION™ fieldbus

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

BA644DF-P

PROFIBUS PA Fieldbus Indicator 8 variables

General purpose



- **Large 5 digit display with bargraph.**
- **PROFIBUS PA protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba644df-p

The BA644DF-P PROFIBUS Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see the BA644DF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA644DF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons.
As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA644DF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most Profibus hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA644DF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable may be conditioned to any starting or finishing values within the fieldbus variable's range.

The enclosure which is moulded in glass reinforced Polyester (GRP) has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection which has been independently assessed by Intertek Testing Services. A separate terminal compartment allows the instrument to be installed and terminated without exposing the indicator electronics. To further simplify wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. The indicator may also be mounted onto a vertical or horizontal pipe using one of the accessory kits.

Operator acknowledgements may be returned to the fieldbus host when the BA644DF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the four front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA644DF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement and the instrument's application or tag number can be economically marked onto the display escutcheon prior to despatch or after installation on-site. Alternatively, for customers who prefer a stainless steel label, the indicator can be supplied with a removable blank or custom etched stainless steel plate mounted on the front of the enclosure.

For panel mounting applications see the BA648CF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

For use in hazardous areas the intrinsically safe BA444DF-P PROFIBUS and the Type n BA444NDF-P PROFIBUS indicators are available. These are similar to the BA644DF-P PROFIBUS indicator but have international certifications allowing installation in most gas and dust hazardous area.

BEKA associates

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SPECIFICATION

Display

Type	Liquid crystal 5 digit plus sign, 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Controls

Front panel	Four push buttons for selecting displayed variable and configuration. May be used for returning operator acknowledgements when configured as a fieldbus node.

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	PROFIBUS PA
Profibus User Organisation.	Approval certificate Z01505
Function	Fieldbus Node or Listener selected via front panel push buttons.
Function blocks	
Profibus-PA node	8 x AO; 6 x DI
Listener	Captures data in DS-33 format

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2004/108/EC

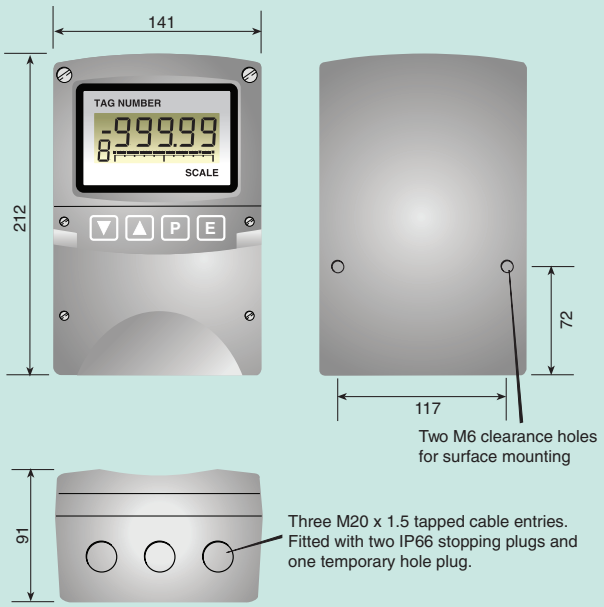
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

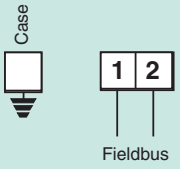
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument.
Pipe mounting kit	BA392D or BA393
Profibus interface guide.	May be downloaded from www.beka.co.uk

DIMENSIONS (mm)



TERMINAL CONNECTIONS

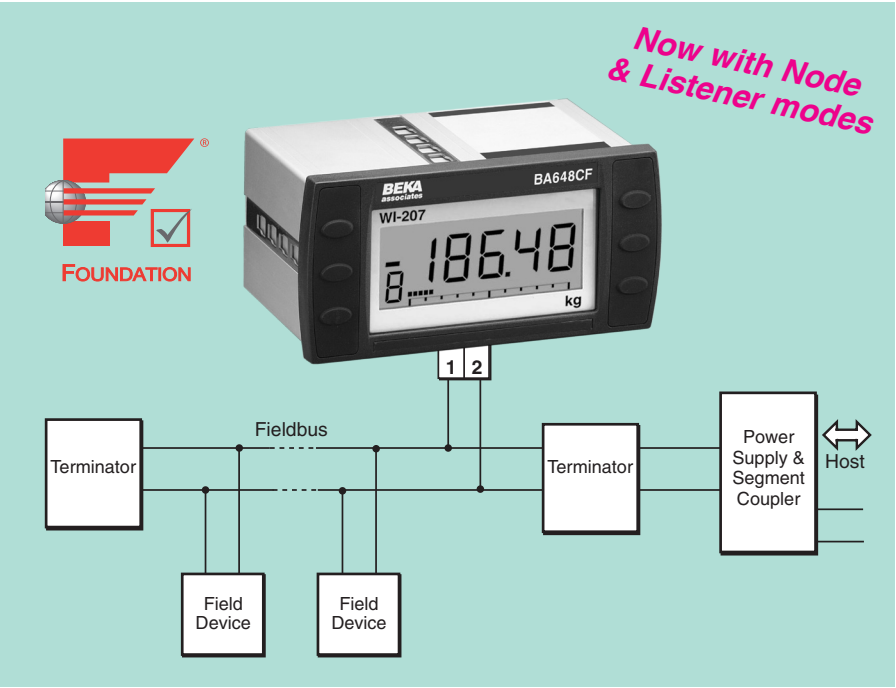


Non polarised

HOW TO ORDER

	Please specify
Model number	BA644DF-P PROFIBUS

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Scale legend
Tag	Tag legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393



BA648CF-F

FOUNDATION™ fieldbus Fieldbus Indicator 8 variables

General purpose

- **Large 5 digit display with bargraph.**
- **FOUNDATION™ fieldbus protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **144 x 72mm DIN enclosure.**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba648cf-f

The BA648CF-F Fieldbus Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the instrument supports FOUNDATION™ fieldbus protocol; for PROFIBUS PA systems an alternative version is available - please see the BA648CF-P PROFIBUS datasheet.

Configuration as a fieldbus Node or Listener allows the indicator to be tailored to suit local requirements. As a FOUNDATION™ fieldbus Node the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured fieldbus variables using the indicator's push buttons. When configured as a Listener, the indicator is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled by the indicator's push-buttons.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA648CF-F indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA648CF-F indicator is installed.

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA644DF-F FOUNDATION™ fieldbus datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA448CF-F FOUNDATION™ fieldbus indicator is available. This is similar to the BA648CF-F FOUNDATION™ fieldbus indicator but has international certifications allowing installation in most gas and dust hazardous areas.

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SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph
Variables	8

Fieldbus communication

Voltage	9 to 32V
Current	13mA.
Compliant with	IEC61158
Protocol	FOUNDATION™ fieldbus
Function blocks	2 x IS (input selector) 6 x DI (digital input)
Function	Fieldbus Node or Listener selected by front panel push buttons.

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

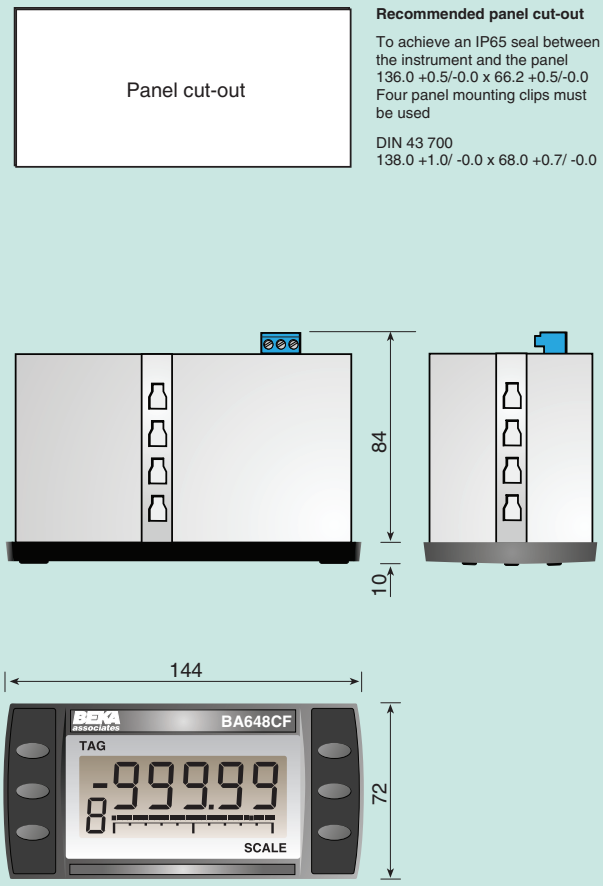
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

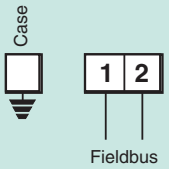
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Tag strip	Tag number or application thermally printed onto rear of the instrument.

DIMENSIONS (mm)



TERMINAL CONNECTIONS

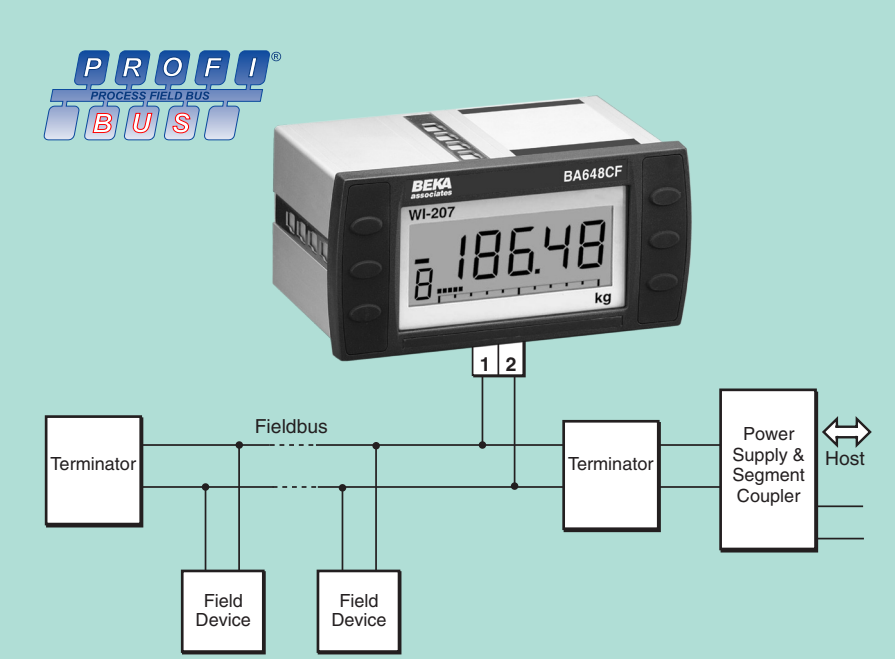


Non polarised

HOW TO ORDER

	Please specify
Model number fieldbus	BA648CF-F FOUNDATION™

Accessories	**Please specify if required**
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA648CF-P

PROFIBUS PA Fieldbus Indicator 8 variables

General purpose

- **Large 5 digit display with bargraph.**
- **PROFIBUS PA protocol.**
- **Displays up to 8 fieldbus variables.**
- **Selectable Node or Listener modes.**
- **144 x 72mm DIN enclosure.**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba648cf-p

The BA648CF-P PROFIBUS Indicator is a general purpose instrument that can display up to eight fieldbus process variables. A numeric annunciator on the left hand side of the screen shows which variable is being displayed. This version of the indicator supports PROFIBUS PA protocol; for FOUNDATION™ fieldbus systems an alternative version is available - please see BA648CF-F FOUNDATION™ fieldbus datasheet.

Configuration as a fieldbus Node or Listener using the indicator's front panel push buttons allows the instrument to be tailored to suit local requirements. When configured as a Listener the BA648CF-P is not visible to the fieldbus host; may not be subject to a Node Licence Fee and is configured and controlled via the instrument's front panel push buttons.
As a fieldbus Node, the indicator is configured by the fieldbus host and the displayed variable is selected from the eight pre-configured variables using the indicator's front panel up and down buttons.

Powered by the fieldbus the BA648CF-P only requires a 2-wire connection to the fieldbus segment, no additional power supply is required. Compatibility with most PROFIBUS hosts is assured by the use of eight Analogue Output and six Digital Input function blocks.

The liquid crystal display has large 20mm high digits providing maximum contrast and a wide viewing angle, allowing the BA648CF-P PROFIBUS indicator to be read easily in most lighting conditions. The five digits, with four decimal points and a negative sign, may be configured to display any variable between -99999 and 99999. The 31 segment bargraph, which provides a bold analogue indication of the fieldbus variable, may be conditioned to any starting or finishing values within the fieldbus variable's range.

The instrument front panel provides IP66 protection and a neoprene gasket seals the joint between the fieldbus indicator and the panel, making it suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the indicator has a removable terminal block that allows panel wiring to be completed before the BA648C-P indicator is installed.

Operator acknowledgements may be returned to the fieldbus host when the BA648CF-P is configured as a fieldbus Node. Six Digital Input function blocks in the indicator which are supported by most Profibus hosts enable the status of the front panel push buttons to be read.

A Comprehensive PROFIBUS interface guide contains commissioning information for the BA648CF-P. Copies may be requested from the BEKA sales office or downloaded from www.beka.co.uk

Units of measurement can be marked onto the display escutcheon prior to despatch and the tag number or application thermally printed onto the rear panel adjacent to the terminals.

For field mounting applications see the BA644DF-P PROFIBUS datasheet. This instrument has a similar electrical specification but is housed in an IP66 field mounting enclosure.

For use in hazardous areas the intrinsically safe BA448CF-P PROFIBUS indicator is available. This is similar to the BA648CF-P PROFIBUS indicator but has international certifications allowing installation in most gas and dust hazardous areas.

BEKA associates

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SPECIFICATION

Display

Type	Liquid crystal 5 digit 20mm high (-99999 to 99999) 31 segment bargraph.
Variables	8

Fieldbus communication

Voltage	9 to 32V
Current	13mA
Compliant with	IEC61158-2 Clauses 11 and 22
Protocol	PROFIBUS PA
Profibus User Organisation.	Approval certificate Z01505
Function	Fieldbus Node or Listener selected via front panel push buttons.
Function blocks	
Profibus PA Node	8 x AO; 6 x DI
Listener Format	Captures date in DS-33

Environmental

Operating temp	-20 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU.

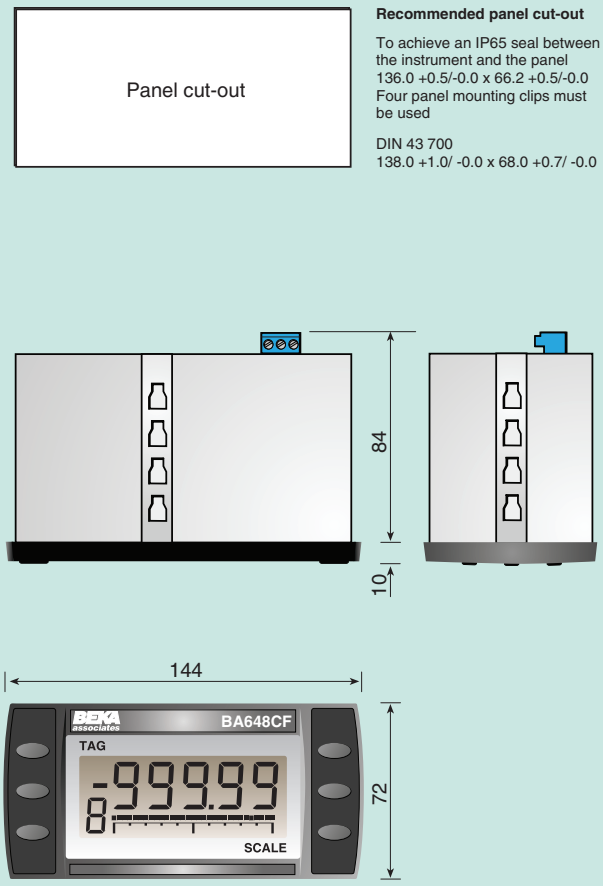
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

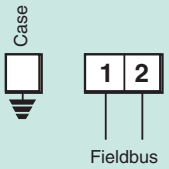
Accessories

Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Profibus interface guide.	May be downloaded from www.beka.co.uk

DIMENSIONS (mm)



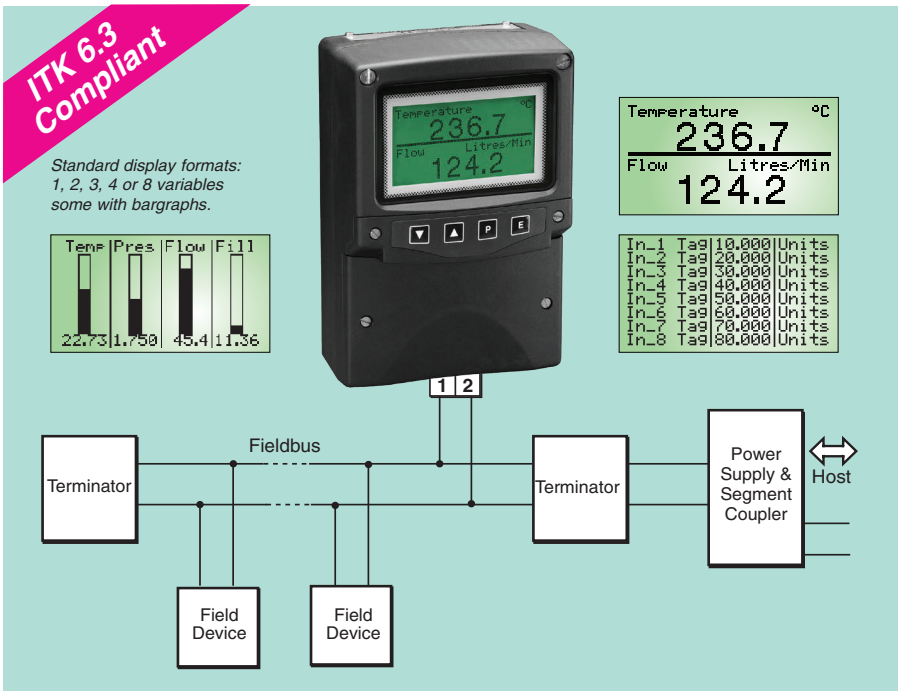
TERMINAL CONNECTIONS



Non polarised

HOW TO ORDER

	Please specify
Model number	BA648CF-P PROFIBUS
Accessories	**Please specify if required**
Escutcheon markings	
Scale	Legend
Tag	Legend
Tag strip	Legend



BA684DF-F

FOUNDATION™ fieldbus Fieldbus display 8 variables

General purpose

- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Six optional local alarm outputs.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba684df-f

The BA684DF-F Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA684DF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA684DF-F only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA684DF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA684DF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA684DF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes a FOUNDATION™ fieldbus Interface Guide.

For panel mounting applications see the BA688CF-F datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

If flammable atmospheres are present the intrinsically safe BA484DF-F fieldbus display should be used.

BEKA associates

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SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Four push buttons scroll the indicator display between screens when the BA684DF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.

Fieldbus communication

Voltage	9 to 32V
Current	25mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode.
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant
Function blocks	Selectable on-site
FOUNDATION™ fieldbus	1 x MAO (Multiple Analogue Output)
or	2 x IS (Input Selector)

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 2014/30/EU

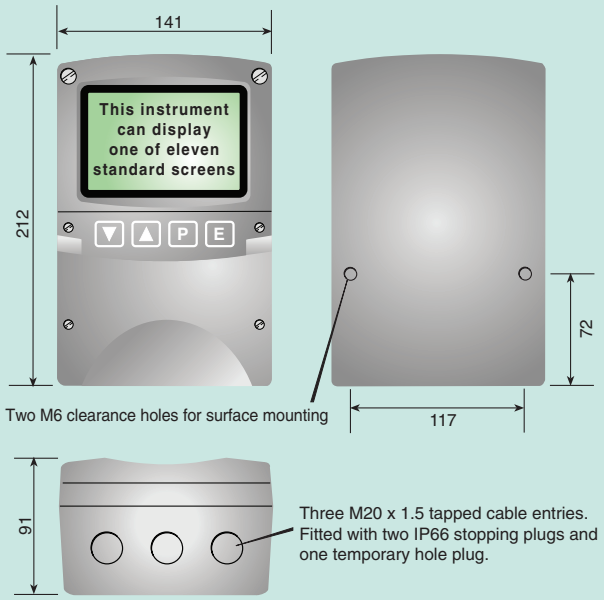
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

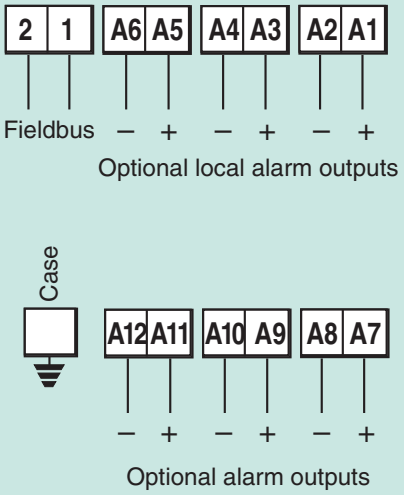
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note:*** *Alarms are not accessible from the fieldbus system host*
Contacts	Isolated single pole solid state Ron less than 5Ω + 0.7V Roff greater than 1MΩ Vmax= 30V dc Imax = 200mA
Tag strip	Printed legend behind the display window
Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Pipe mounting kit	BA392D or BA393
FOUNDATION™ fieldbus interface guides	May be downloaded from *www.beka.co.uk*

DIMENSIONS (mm)



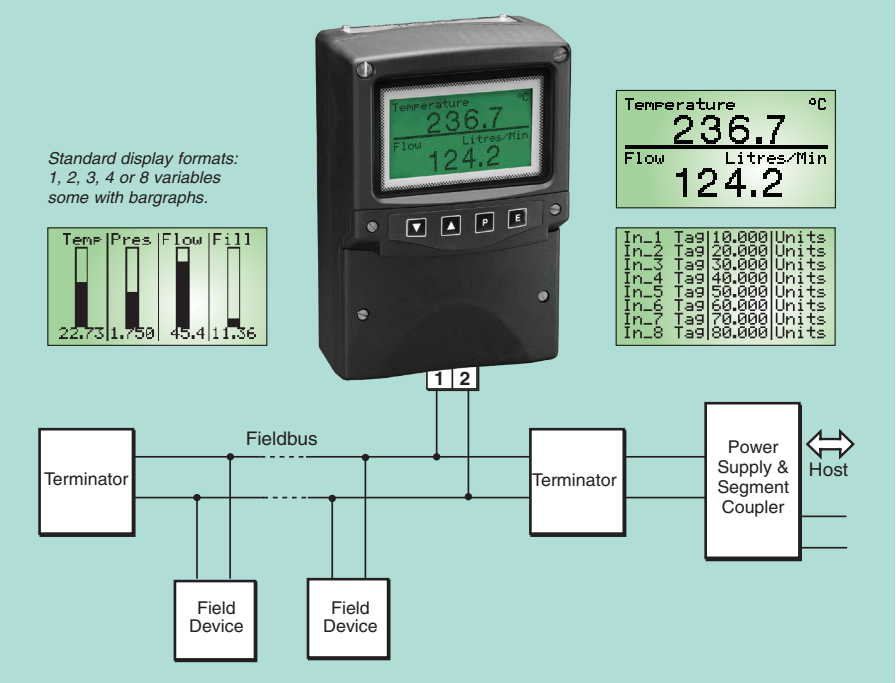
TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA684DF-F
Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Tag strip legend
Tag plate	Tag plate legend
Pipe mounting kit	BA392D or BA393

Will be set to display 00.0 at 4mA and 100.0 at 20mA if calibration information is not supplied.



BA684DF-P

PROFIBUS PA Fieldbus display 8 variables

General purpose

- **PROFIBUS PA protocol.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Four operator push buttons & six optional local alarm outputs.**
- **IP66 field mounting GRP enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba684df-p

The BA684DF-P Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA684DF-P only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA684DF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA684DF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA684DF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

BA684DF-P applications vary from a simple single variable display using a standard format, to providing an operator interface with a custom display and control inputs via external buttons.

The four push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA684DF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For panel mounting applications see the BA688CF-P datasheet. This instrument has a similar electrical specification but is housed in a 144 x 72 panel mounting enclosure.

If flammable atmospheres are present the intrinsically safe BA484DF-P fieldbus display should be used.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA684DF-F fieldbus display.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Four push buttons scroll the indicator display between screens when the BA684DF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host.
External switches	Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel.
Switch cable	Length 5m max

Fieldbus communication

Voltage	9 to 32V
Current	25mA
Compliant with	IEC61158-2 31.25kbits/s Voltage Mode
Protocol	PROFIBUS PA
Function blocks	
PROFIBUS PA	8 x AO (Analogue Output) 6 x DI (Digital Input)

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 89/336/EEC
Immunity	BS EN 61326:1998 Operates normally with conducted 3Vrms interference between 0.15kHz and 80MHz, or radiated 10V/m interference between 80MHz and 1GHz.
Emissions	CISPR16-1/2 Class A

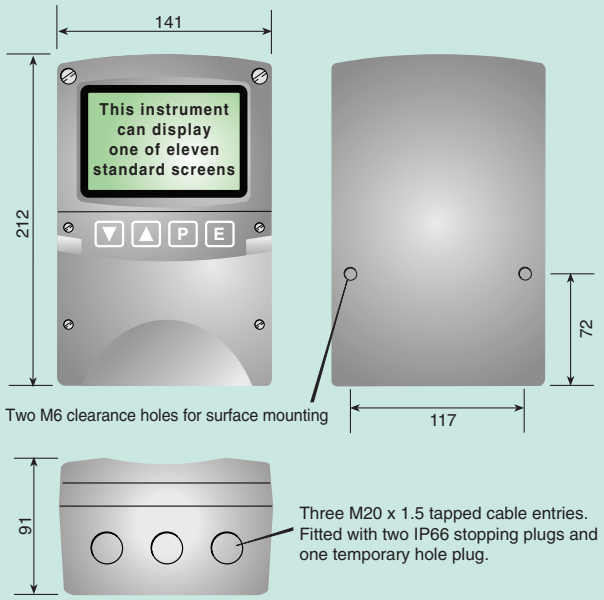
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

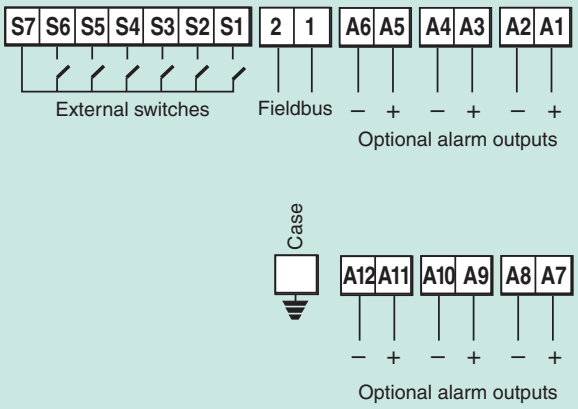
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note:*** *Alarms are not accessible from the fieldbus system host*
Contacts	Isolated single pole solid state Ron less than 5Ω + 0.7V Roff greater than 1MΩ Vmax = 30V dc Imax = 200mA
Tag strip	Printed legend behind the display window
Tag plate	Engraved stainless steel plate attached to the side of the instrument.
Pipe mounting kit	BA392D or BA393
PROFIBUS PA interface guide	May be downloaded from *www.beka.co.uk*

DIMENSIONS (mm)

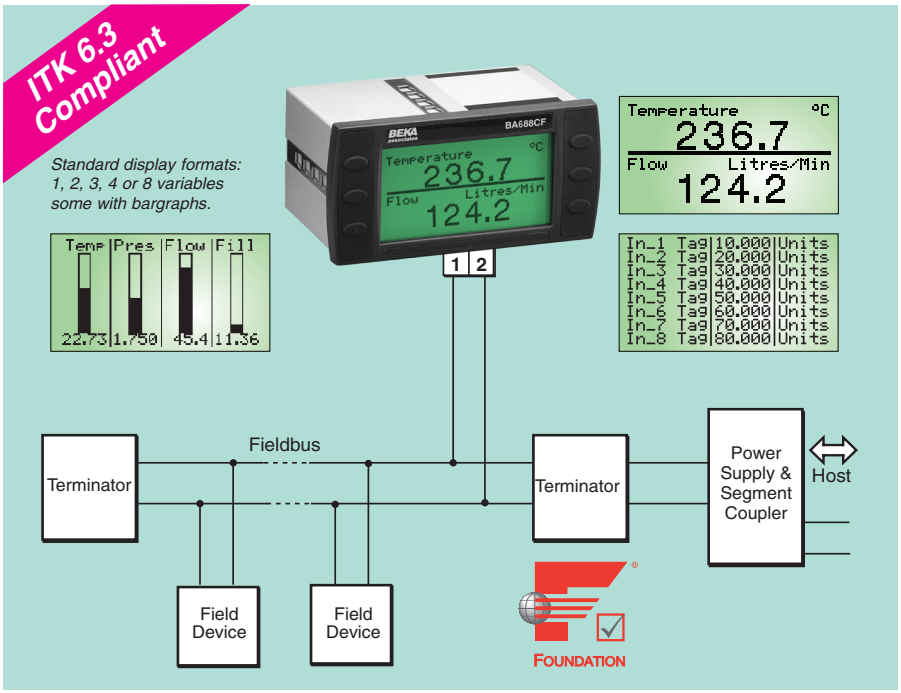


TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA684DF-P
Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Tag strip legend
Tag plate	Tag plate legend
Pipe mounting kit	BA392D or BA393



BA688CF-F

FOUNDATION™ fieldbus Fieldbus display 8 variables

General purpose

- **FOUNDATION™ fieldbus protocol, ITK 6.3 compliant.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Six optional local alarm outputs.**
- **IP66 front panel**
- **3 year guarantee**

www.beka.co.uk/ba688cf-f

The BA688CF-F Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Selectable function blocks allow the BA688CF-F fieldbus display to be used with all common system hosts. Configuration files may be downloaded from the Foundation fieldbus or the BEKA websites

Powered by the fieldbus the BA688CF-F only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA688CF-F configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA688CF-F Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA688CF-F front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

Comprehensive documentation includes FOUNDATION™ fieldbus Interface Guide.

For field mounting applications see the BA684DF-F datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

If flammable atmospheres are present, the intrinsically safe BA488CF-F fieldbus display should be used.

BEKA associates

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SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3, 4 or eight variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Six push buttons scroll the indicator display between screens when the BA688CF-F is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms.

Fieldbus communication

Voltage	9 to 32V
Current	25mA
Compliant with	IEC61158-2 Clauses 11 and 22
Protocol	FOUNDATION™ fieldbus, ITK 6.3 compliant
Function blocks	Selectable on-site
FOUNDATION fieldbus™	1 x MAO (Multiple AnalogueOutput) **or** 2 x IS (Input Selector)

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU.

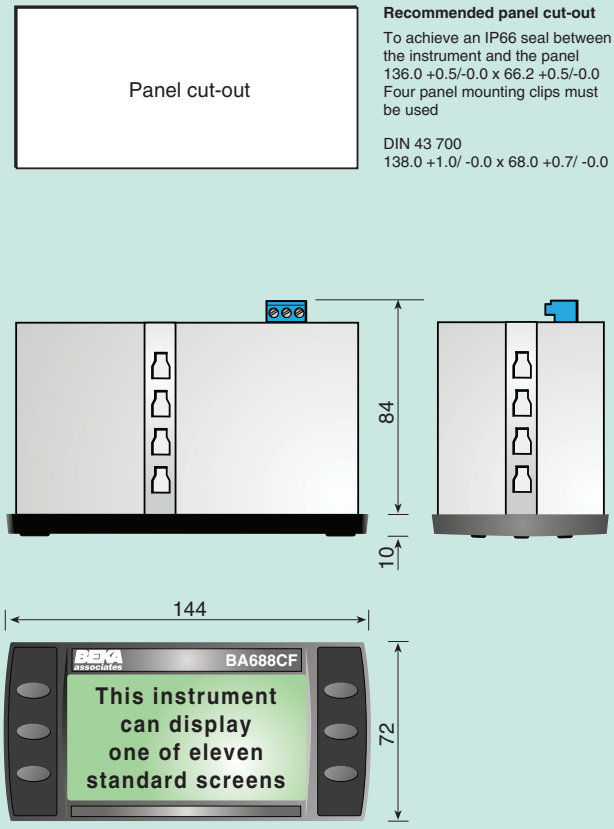
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

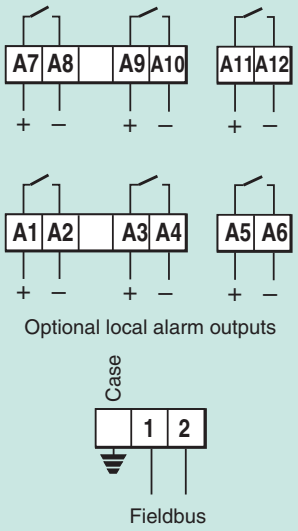
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note:*** *Alarms are not accessible from the fieldbus system host*
Contacts	Isolated single pole solid state switch. Ron less than 5Ω + 0.7V Roff greater than 1MΩ Vmax= 30V dc Imax = 200mA
Tag number	Thermally printed strip on rear of instrument.
FOUNDATION™ fieldbus interface guide.	May be downloaded from *www.beka.co.uk*

DIMENSIONS (mm)

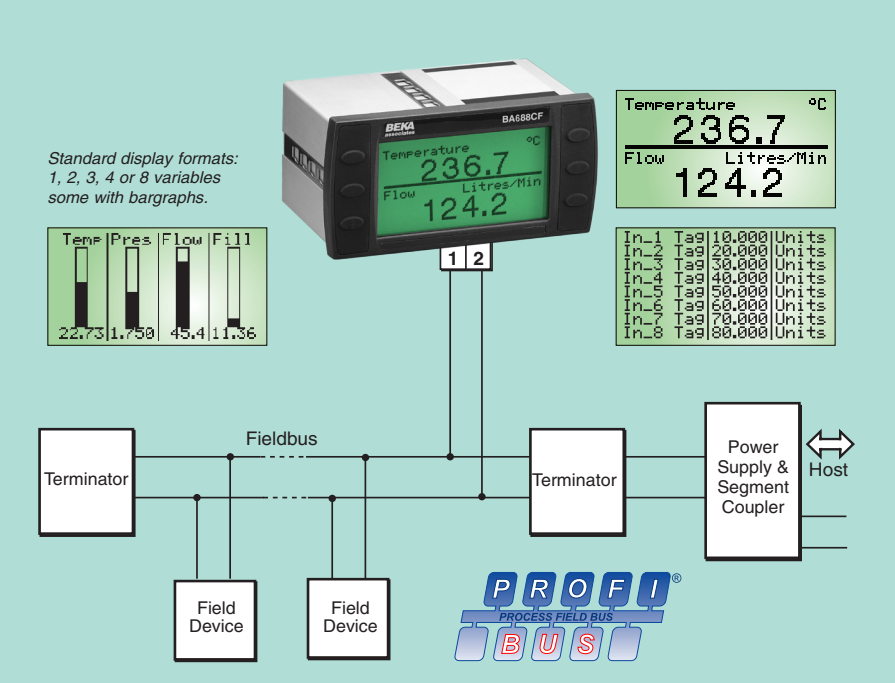


TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA688CF-F
Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Legend



BA688CF-P

PROFIBUS PA Fieldbus display 8 variables

General purpose

- **PROFIBUS PA protocol.**
- **Compatible with most system hosts.**
- **High contrast display with backlight.**
- **Six operator push buttons & six optional local alarm outputs.**
- **IP66 front panel**
- **3 year guarantee**

www.beka.co.uk/ba688cf-p

The BA688CF-P Fieldbus Display is a general purpose instrument that can display up to eight fieldbus process variables. Eleven selectable standard screen formats contain one, two, three, four or eight variables, with units of measurement, tag descriptions and bargraphs on some screens.

Powered by the fieldbus the BA688CF-P only requires a 2-wire connection, no additional power supply is required. The high contrast 86 x 45mm liquid crystal display incorporates a green backlight that is also powered from the fieldbus enabling the display to be read in all lighting conditions from full sunlight to total darkness.

Simple commissioning results from the use of standard display formats. Apart from loading the BA688CF-P configuration files onto the system host and selecting the fieldbus variables to be displayed, no programming is required. Configuration of the BA688CF-P Fieldbus Display is performed via the fieldbus and the instrument front panel push buttons; simple menus enable the required standard display format to be selected and the units of measurement and tag information for each variable to be entered.

Six optional local alarm outputs may be linked to any of the displayed variables. Each isolated single pole solid state output may be conditioned as a combined high and low alarm, or as just a high or low alarm. Each output can switch any low power load such as a sounder, lamp or solenoid valve. Alarm configuration and the alarm set point adjustment is performed via the BA688CF-P front panel push buttons, as the local alarms are not accessible from the fieldbus system host.

BA688CF-P applications vary from a simple single variable display using a standard format, to providing an operator interface with a custom display and control inputs via external buttons.

The six push buttons on the front of the instrument may be used for returning operator acknowledgments or controls to the fieldbus host. If larger industrial switches are required for these operator controls, up to six external push buttons may be connected to the BA688CF-P. When the external switches are activated, the front panel push buttons may be disabled or operated in parallel with the external switches.

Comprehensive documentation includes a PROFIBUS Interface Guide.

For field mounting applications see the BA684DF-P datasheet. This instrument has a similar electrical specification but is housed in a robust IP66 GRP enclosure suitable for external mounting.

If flammable atmospheres are present, the intrinsically safe BA488CF-P fieldbus display should be used.

For FOUNDATION™ fieldbus systems, please see the datasheet for the equivalent BA688CF-F fieldbus display.

BEKA associates

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SPECIFICATION

Display

Type	120 x 64 pixel liquid crystal
Size	86.5mm x 45mm
Backlight	Powered from fieldbus
Screens	
Standard format	1, 2, 3,4 or 8 variables plus bargraph can include: units of measurement tag information

Controls

Front panel	Six push buttons scroll the indicator display between screens when the BA688CF-P is configured to display more variables than fit onto a single screen. Also used to configure optional local alarms and may be used to return operator inputs to the system host.
External switches	Control may be transferred to six external switches; front panel buttons may be inhibited or operated in parallel.
Switch cable	5m max length.

Fieldbus communication

Voltage	9 to 32V
Current	25mA
Compliant with	IEC61158-2 Clauses 11 and 22
Protocol	PROFIBUS PA
Function blocks	
PROFIBUS PA	8 x AO (Analogue Output) 6 x DI (digitl Input)

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU.
Immunity	BS EN 61326:1998 Operates normally with conducted 3Vrms interference between 0.15kHz and 80MHz, or radiated 10V/m interference between 80MHz and 1GHz.
Emissions	CISPR 16-1/2 Class A

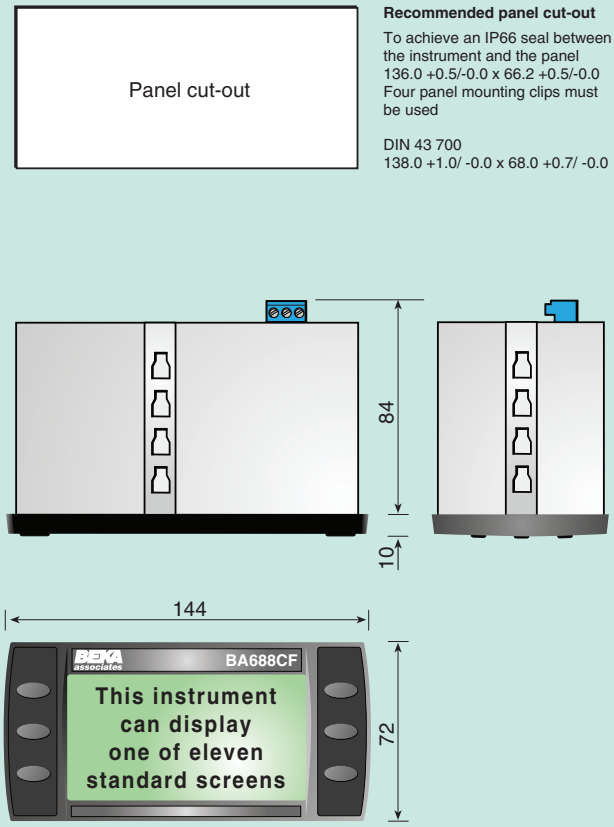
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

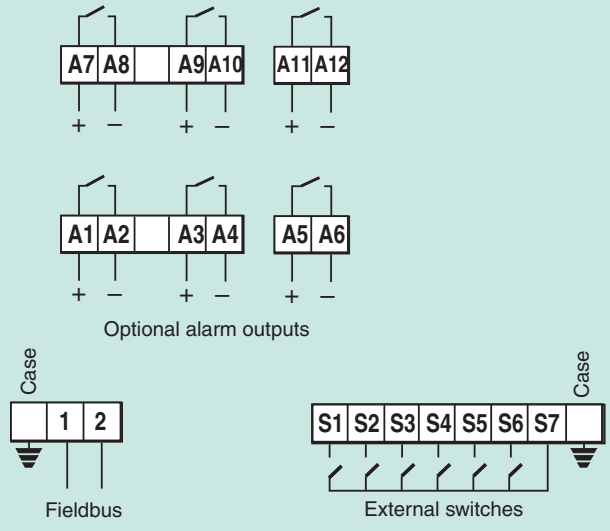
Accessories

Alarms	Six galvanically isolated outputs which may be linked to displayed variables. Each alarm is configurable from instrument push buttons as: combined high and low alarm high or low alarm ***Note:*** *Alarms are not accessible from the fieldbus system host*
Contacts	Isolated single pole solid state switch. Ron less than 5Ω + 0.7V Roff greater than 1MΩ Vmax= 30V dc Imax = 200mA
Tag number	Thermally printed strip on rear of instrument.
PROFIBUS PA interface guide.	May be downloaded from *www.beka.co.uk*

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA688CF-P
Accessories	**Please specify if required**
Six alarms	Alarms
Tag strip	Legend

Rate Totalisers
Field Mounting

This extensive range includes one and two pulse input instruments and loop powered 4/20mA rate totalisers. All models can display rate of flow and total flow on separate displays in the same or different engineering units. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser enabling flow to be displayed in linear engineering units.

> **Large high contrast separate rate and total displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety
Ex nA non sparking
Dust certification

> **Robust impact resistant IP66 GRP enclosures**
Compact 'G' models
'E' models with separate terminal compartment

> **Isolated pulse output**

> **-40 to +70˚C operating temperature range**

> **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Pipe & panel mounting kits
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
Laser engraved stainless steel legend plates

Intrinsically safe

Ex nA

General purpose

Slide-in scale card can be supplied printed with customer specified information for no extra charge.

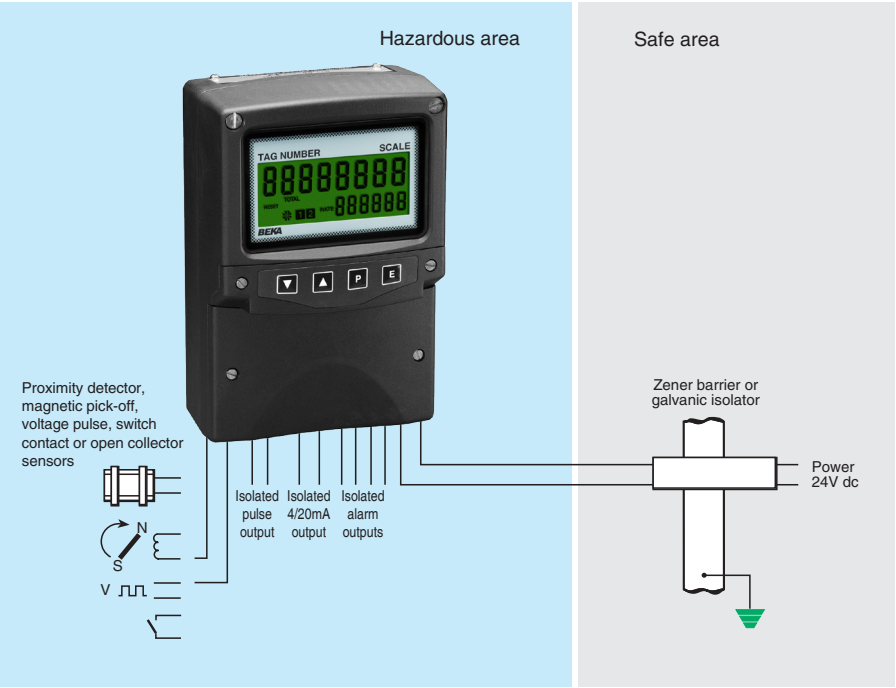
'G' instrument panel mounted using BA494G panel mounting kit.

'G' instrument attached to pipe using BA393G panel mounted kit.

Rate Totalisers. Field mounting models available:

Model No.	Enclosure	Input	Powered	Display digits		Certification					
						Europe ATEX		International IECEx		USA & Canada	
				TOTAL No. x height	RATE No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified											
BA334G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA334E	GRP- separate tml. compartment	Pulse	External	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA354E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm	✔	✔	✔	✔	✔	✔
BA384G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA384E	GRP - separate tml. compartment	2 x Pulse	External	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators											
BA334NG	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA384NG	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA354NE	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	6 x 12mm	✔	✔	✔	✔	–	–
General Purpose - for use in safe areas											
BA534G	GRP Compact	Pulse	External	8 x 18mm	6 x 12mm						
BA554E	GRP- separate tml. compartment	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA584G	GRP Compact	2 x Pulse	External	8 x 18mm	6 x 12mm						

*A **Rate Totaliser***
*for every **application**. . . delivered ready for **installation***



BA334E

one input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays with backlight.**
- **Intrinsically safe**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Lineariser**
- **Isolated dual alarms, pulse and 4/20mA outputs.**
- **3 year guarantee**

www.beka.co.uk/ba334e

The BA334E is a third generation intrinsically safe field mounting rate totaliser housed in a robust IP66 GRP enclosure with a seperate terminal compartment. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The main application of the BA334E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334E rate totaliser to be installed in gas hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

Isolated pulse and 4/20mA outputs which comply with the requirements for *simple apparatus* are included. The pulse output can synchronously retransmit the rate totaliser's pulse input, or a scaled pulse when the least significant digit of the total display is incremented. The 4/20mA output may be configured to produce an output proportional to any part of the rate or total display.

Dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334E display show the status of both alarm outputs.

The escutcheon which shows the Rate Totaliser's units of measurement and tag information can be changed on-site. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

The compact BA334G has the same functions as the BA334E without a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Backlight	Green LED internally powered
Zero blanking	Blanked apart from 0 in front of decimal point.
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	
Linearisers	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

4/20mA output Isolated current sink, configurable to represent any part of the rate or total display.

Voltage drop	5 to 28V

Dual alarms Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	USA
	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	Canada

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

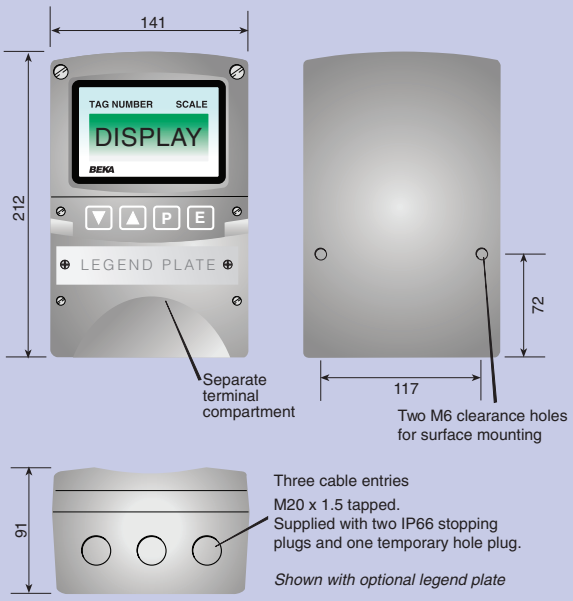
Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

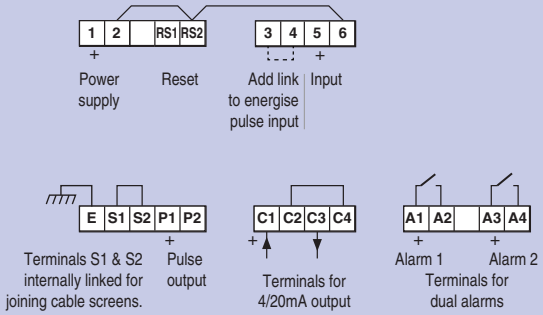
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 Stainless steel plate secured to the front of the instrument laser engraved with tag number or application information. #
Pipe mounting kit	BA392D or BA393 #

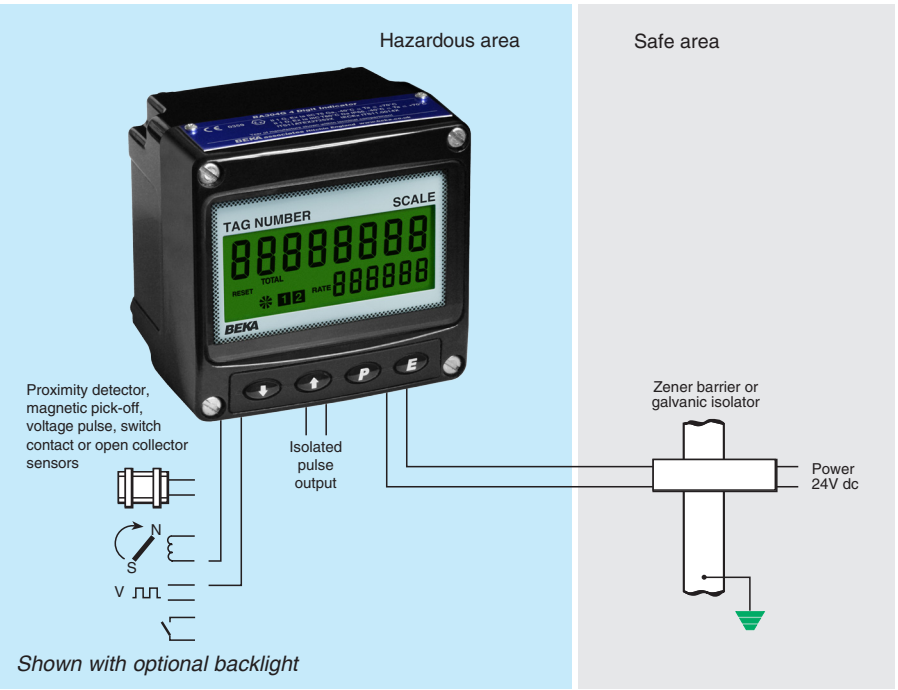
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA334E
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Escutcheon marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA334G
one input rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **IP66 GRP enclosure**
- **Lineariser**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba334g

The BA334G is a third generation intrinsically safe field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International intrinsic safety certification permits worldwide installation.

The main application of the BA334G is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA334G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International intrinsic safety certification allows the BA334G rate totaliser to be installed in gas and dust hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the Rate Totaliser's units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output may be configured to synchronously retransmit the rate totalisers pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. The two isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334G display show the status of both alarm outputs.

Other field mounting rate totalisers include the BA334E which has the same functions as the BA334G, but incorporates a separate terminal compartment and supersedes the BA334D.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol.
Flowmeter K-factor	
Linearisers	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Group II Category 1D Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	USA
	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da	Canada
	-40°C ≤ Ta ≤ 70°C	

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

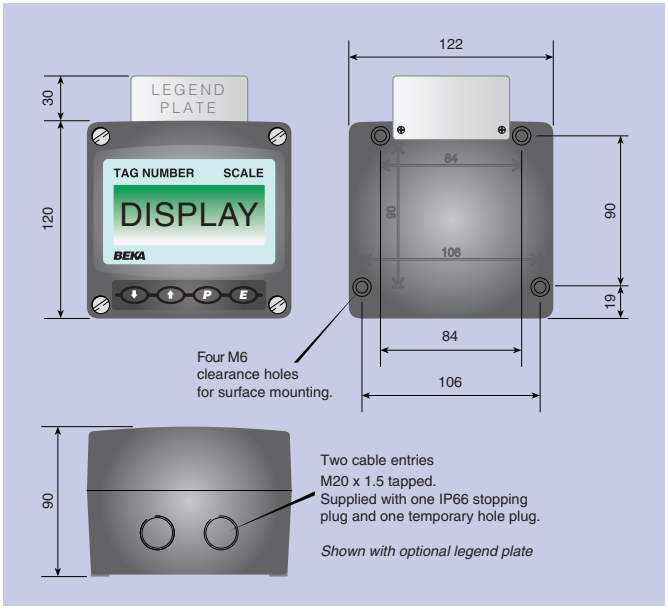
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

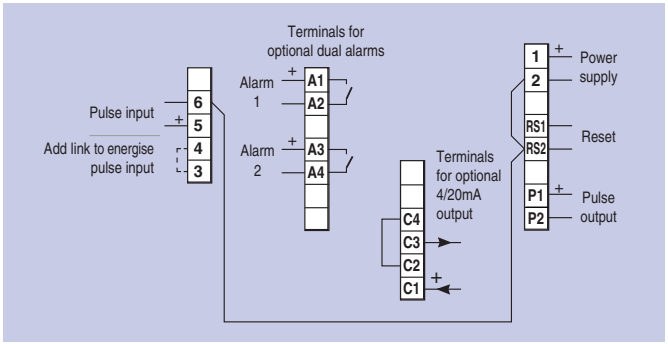
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



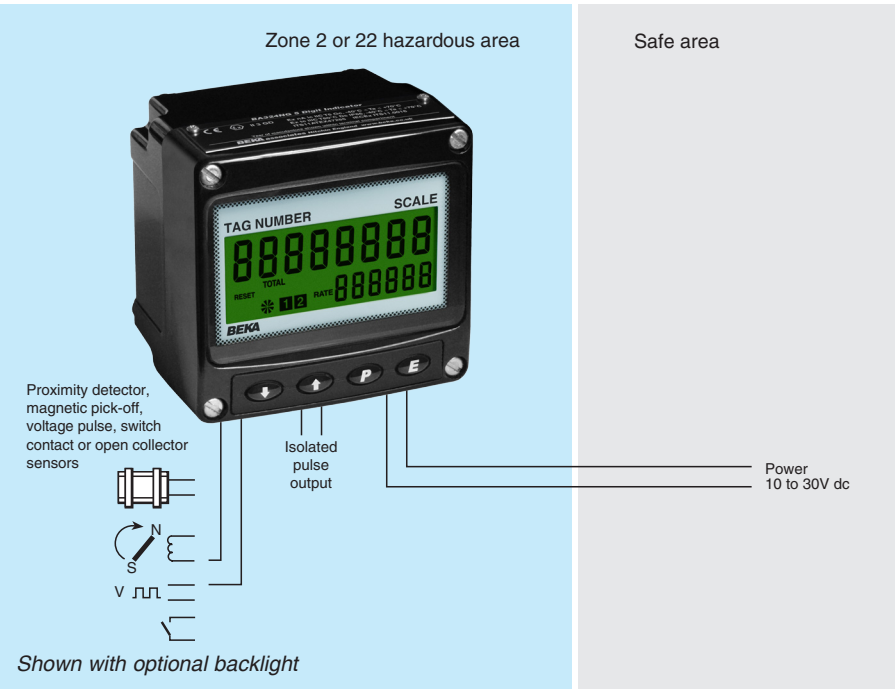
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA334G
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA334NG

Ex nA one input rate totaliser

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Linearliser**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba334ng

The BA334NG is a third generation field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation cost.

The main application of the BA334NG is to process the pulse output from a hazardous area flowmeter, such as a turbine meter, and simultaneously display the rate and total flow in engineering units within a Zone 2 or 22 hazardous area. The BA334NG can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

International Ex nA and Ex tc certification allows the BA334NG rate totaliser to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output may be configured to synchronously retransmit the pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA334NG display show the status of both alarm outputs.

Other field mounting rate totalisers include the two input BA384NG which also has Ex nA and Ex tc certification and can display the sum or difference of two flowmeter outputs. Intrinsically safe and general purpose field and panel mounting models are also available.

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SPECIFICATION

Power supply

Voltage	10 to 30V
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width*
Other inputs	100kHz max	*and debounce setting.*
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset — Contact closure with resistance less than 10kΩ

Pulse output — Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
Ui	30Vdc
I max	10mA

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Lineariser	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Certification — **Note:** Ex ic codes refer to instrument push button contacts which are nonincendive.

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40 < Ta < 60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 < Ta < 60°C
Cert. No	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc	USA
	Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C	Canada
ETL Control No.	4008610	

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

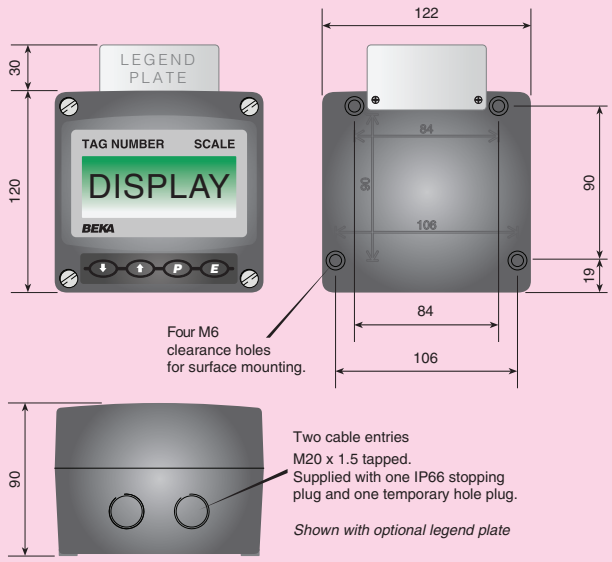
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

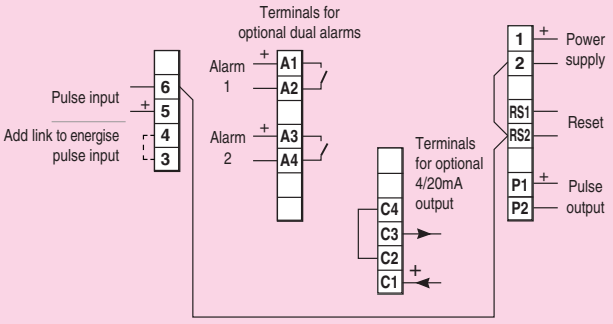
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Ui	30Vdc
I max	10mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Legend plate	316 Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

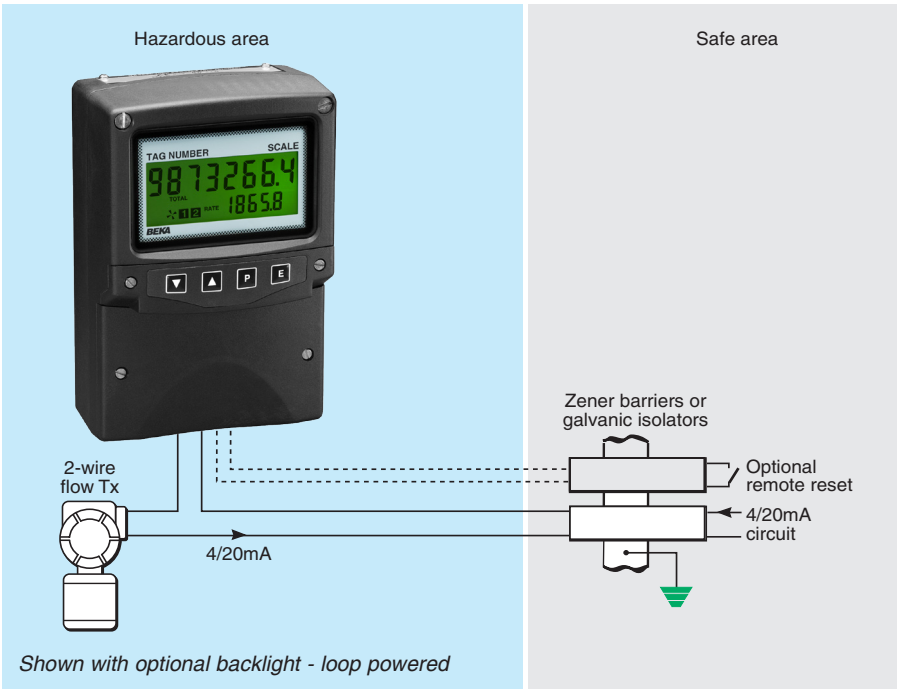
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA334NG
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.*
Total scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

* Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



Shown with optional backlight - loop powered

BA354E

2-wire 4/20mA rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **Total display 8 digit 18mm high**
  Rate display 5 digit 12mm high
- **Intrinsically safe ATEX gas *or* ATEX gas & dust *or* FM, cFM & ATEX gas**
  All versions have IECEx certification.
- **IP66 GRP enclosure with separate terminal compartment.**
- **Uni-directional & bi-directional operation.**
- **Root extractor and 16 segment linearliser.**
- **Optional backlight & alarms.**
- **3 year guarantee**

www.beka.co.uk/ba354e

The BA354E loop powered 4/20mA rate totaliser is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354E is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354E is to integrate the 4/20mA output from a hazardous area flow transmitter and display the rate and total flow in engineering units within the hazardous area. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA354E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA354E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

International intrinsic safety certification permits the BA354E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for *simple apparatus* which, together with the low voltage drop, allow the totaliser to be connected in series with most intrinsically safe 4/20mA loops. The BA354E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA354D, thus allowing the BA354E to safely replace the earlier model.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for *simple apparatus*. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarms which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

For panel mounting applications the BA358E has a similar specification but is housed in a 144 x 72 DIN panel mounting enclosure with an IP66 front panel.

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight
Overrange	±200mA or ±30V will not damage the instrument

Display

Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input
Zero	Adjustable between 0 & ±99999 with 4mA input
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10^{16}

~ Rate & Total can be shown on either display

Push buttons	*(Function in display mode)*
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy

Rate display at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error
Total display	Updated every second

Remote total reset — Contact closure with resistance less than 1kΩ

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Ta = -40 to 70°C — *Dust option, see How to order*
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27253X (Special conditions only apply for installations in Zone 0)

USA FM

Standard	3610 Entity
Code	CL I, II, III: Div 1 GP A, B, C, D, E, F & G T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 GP A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP66- Tamb = -40 to 70°C — *Dust option, see How to order*
Cert. No	IECEx ITS11.0014X (Special conditions only apply for installations in Zone 0)

Environmental

Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC

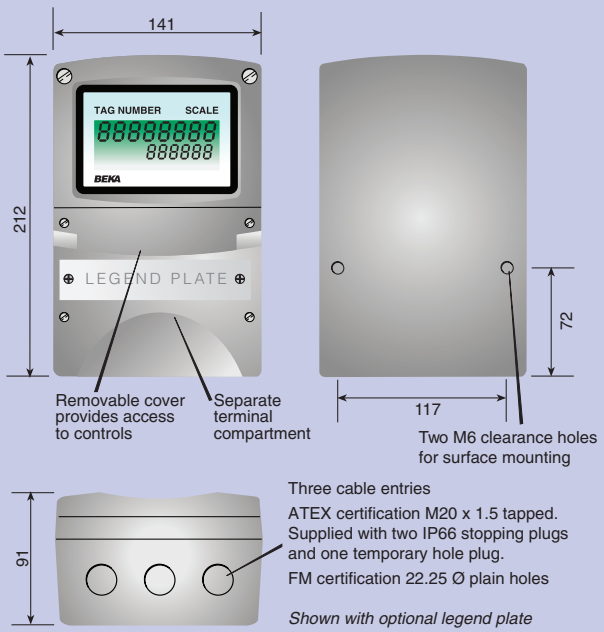
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

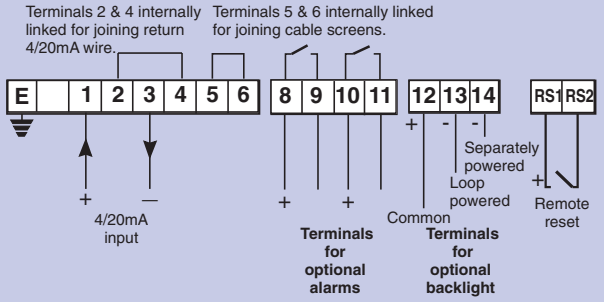
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Totaliser voltage 5V
Separately powered.	10.5V at 35mA from IS interface
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Output	Isolated solid state switch complying with requirements for *Simple apparatus.*
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.
Stainless steel legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

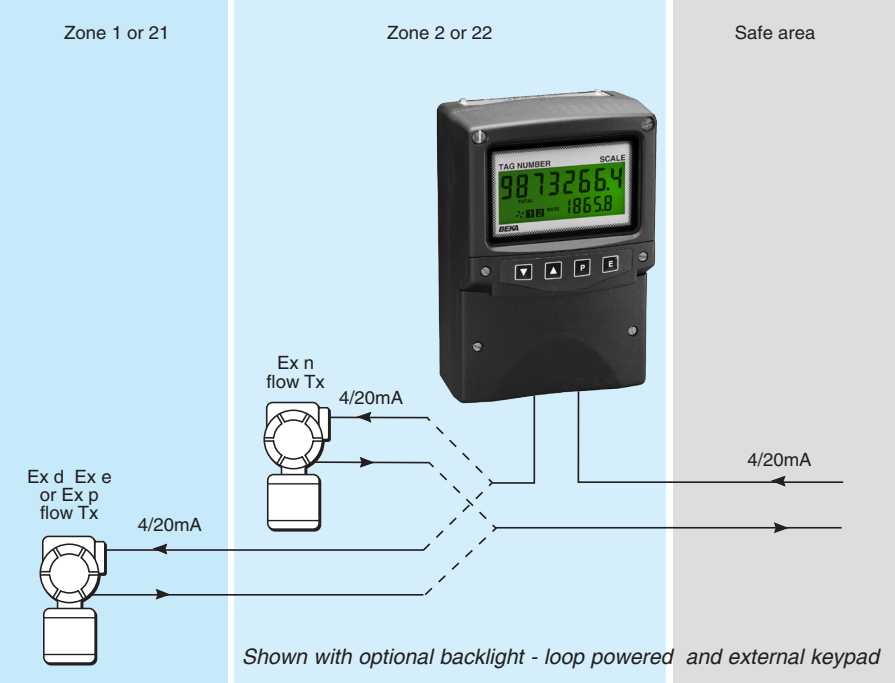
 # See accessory datasheet for details

HOW TO ORDER

		Please specify
Model number		BA354E
Certification		ATEX gas
	or	ATEX gas & dust — *All versions have IECEx certification.*
	or	FM, cFM & ATEX gas
Display mode		Linear, root or lineariser*
Rate display at:		
4.000mA		XXXXX — *Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**
20.000mA		XXXXX
Rate timebase		Seconds, minutes or hours*
Total scale factor		(Units of rate display)÷(Units of total display)*

Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

* *If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.*



Shown with optional backlight - loop powered and external keypad

BA354NE

2-wire 4/20mA rate totaliser

Type nA & tc certified for use in Zones 2 & 22 hazardous areas

- **Loop powered only 1.2V drop.**
- **Total display 8 digit 18mm high**
  Rate display 5 digit 12mm high
- **Ex nA gas and Ex tc dust ATEX & IECEx certification.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Uni-directional & bi-directional operation.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba324ne

The BA354NE loop powered 4/20mA rate totaliser is a third generation field mounting instrument that is electrically and mechanically compatible with the earlier BA354ND, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA354NE is housed in a robust IP66 GRP enclosure with a separate terminal compartment.

Main application of the BA354NE is to integrate the 4/20mA output from a hazardous area flow transmitter and display the flow rate and total flow in the same or different engineering units within Zone 2 or 22. When mounted in Zone 2 the BA354NE may be connected in series with the 4/20mA output from a flow transmitter installed in Zone 1 or 2 without the need for additional protection. Application Guide AG310, which may be downloaded from the BEKA website, describes how the BA354NE Ex nA rate totaliser may be directly connected to an Ex n, Ex e, Ex d or Ex p flow transmitter

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA354NE totaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

ATEX and IECEx non sparking Ex nA certification allows the BA354NE to be installed in a Zone 2 gas hazardous areas without the need for Zener barriers, galvanic isolators or a flameproof enclosure. For European and international Zone 2 applications the BA354NE offers a less expensive alternative to intrinsic safety and flameproof instrumentation.

Ex tc dust certification also allows the BA354NE to be installed in Zone 22 dust hazardous areas, again without the need for Zener barriers, galvanic isolators or a flameproof enclosure.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the indicator's voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarm outputs which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as high or low alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The indicator has been subjected to extensive vibration testing and is supported by a three year guarantee.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.

Display

Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10^{16}

~ Rate & Total can be shown on either display

Push buttons	*(Function in display mode)*
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy

Rate display at 20°C	Linear ±0.02% of span ±1digit Root extracting ±16µA at input ±1 digit.
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Total display	Updated every second

Certification

Europe ATEX	
Code	Group II Category 3GD Ex nA ic IIC T5 Gc Ex tc IIIC 80°C Dc IP66 Ta = -40 to 70°C
Input parameters	
Ii	100mA
Cert. No.	ITS11ATEX47255
International IECEx	
Code	Ex nA ic IIC T5 Gc Ex tc IIIC 80°C Dc IP66 Tamb = -40 to 70°C
Cert. No	IECEx ITS 11.0016

Environmental

Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive 2004/108/EC

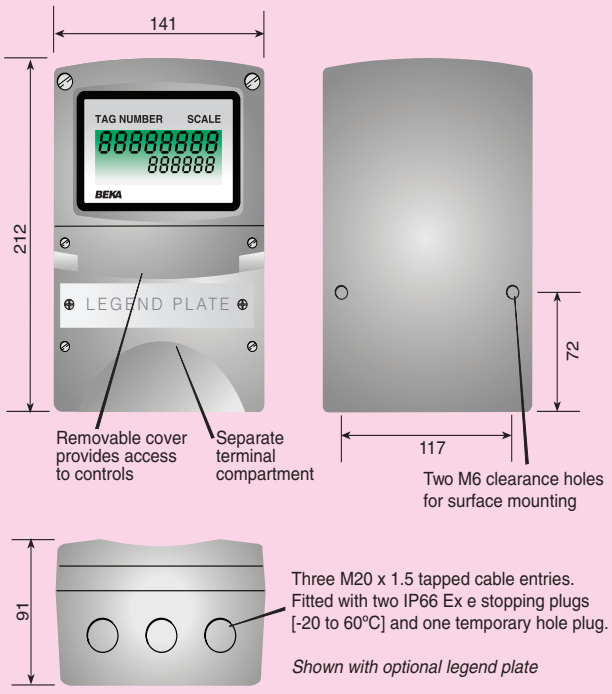
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg

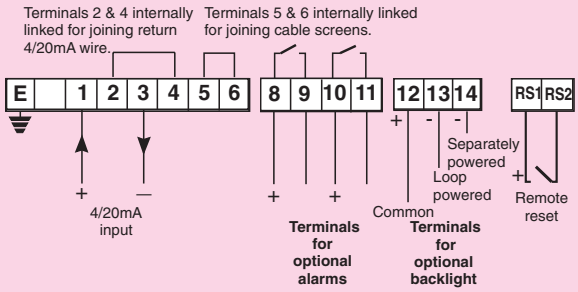
Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Input voltage increased to 5V
Separately powered.	10.5V min at 35mA
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Output	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



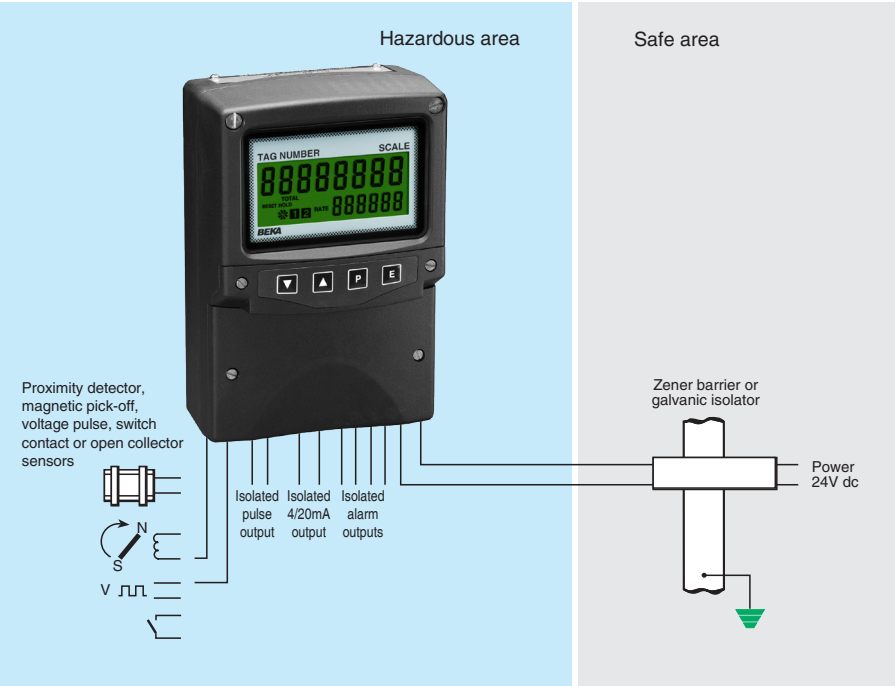
Tag legend	Tag number or application marked onto display escutcheon.
Stainless steel legend plate.	Stainless steel plate etched with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA354NE
Display mode	Linear, root or lineariser*
Rate display at:	
4.000mA	XXXXX] Include position of decimal point & sign if negative, plus intermediate points if linearisation is required. *
20.000mA	XXXXX]
Rate timebase	Seconds, minutes or hours*
Total scale factor	(Units of rate display)÷(Units of total display)*
Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

* *If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.*



BA384E

two input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays with backlight**
- **Intrinsically safe**
- **IP66 GRP enclosure with separate terminal compartment**
- **Linearisers**
- **Isolated dual alarms, pulse and 4/20mA outputs.**
- **3 year guarantee**

www.beka.co.uk/ba384e

The BA384E is a two input, field mounting, intrinsically safe rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384E is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. International intrinsic safety certification permits worldwide installation.

The main application of the BA384E is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the flowmeters within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384E will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

International intrinsic safety certification allows the BA384E rate totaliser to be installed in gas hazardous areas worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser, provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Dual alarms have galvanically isolated solid state outputs which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. Both may be independently configured as a rate or a total alarm monitoring either flowmeter, or the sum or difference of the two flowmeters. Annunciators on the BA384E display show the status of both alarm outputs.

Other field mounting rate totalisers include the BA384G which has the same functions as the BA384E, without a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Each input individually configurable

Input function	Input A + input b or Input A – input b
Flowmeter K-factor	Adjustable between 0.0001 and 99999 pulses/unit vol
Linearisers	16 K-factors may be entered
Total scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate scale factor	Adjustable between 0.0001 and 99999
Rate display filter	Adjustable digital filter

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

4/20mA output Isolated current sink, configurable to represent any part of the rate or total display.

Voltage drop	5 to 28V

Dual alarms Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	] USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	] USA
	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	] Canada

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
ETL Control No.	4008610

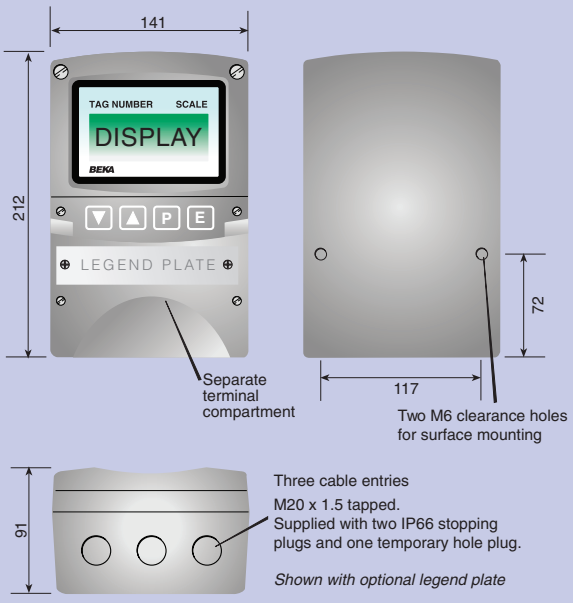
Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

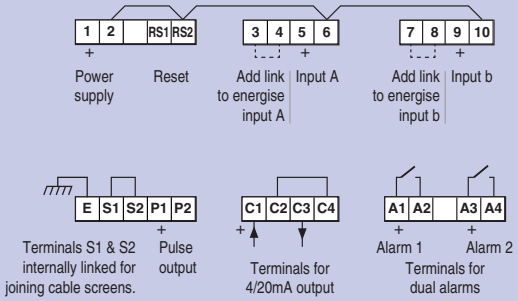
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate secured to the front of the instrument, laser engraved with tag number or application information. #
Pipe mounting kit	BA392D or BA393 #

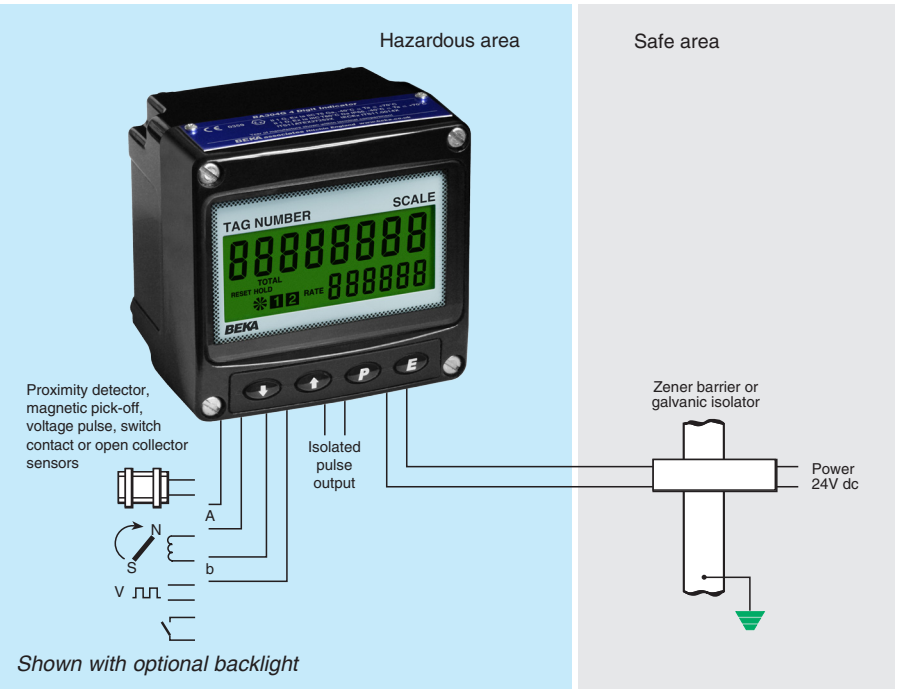
 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA384E
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for each inputs * *If linearisation is required, up to 16 K-factors may be specified at different flow rates.*
Total scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Rate scale factor	XXXXX *

Accessories	**Please specify if required**
Escutcheon marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds and direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA384G
two input rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **IP66 GRP enclosure**
- **Linearisers**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba384g

The BA384G is a two input, field mounting, intrinsically safe rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384G is easy to use and each input can be individually configured on-site to operate with flowmeters having a variety of pulse outputs. A slide-in scale card simplifies identification and international certification permits worldwide installation.

The main application of the BA384G is to process the pulse output from two hazardous area flowmeters, and to calculate and display the sum or difference of the two within a hazardous area. Rate and total can be simultaneously displayed in the same or different engineering units. The BA384G will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA384G rate totaliser to be installed in gas and dust hazardous area worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or galvanic isolator. Both may be independently configured as a rate or a total alarm. Annunciators on the BA384G display show the status of both alarm outputs.

Other field mounting rate totalisers include the BA384E which has the same functions as the BA384G, but incorporates a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width*
Other inputs	100kHz max	*and debounce setting.*
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Each input individually configurable

Input function	Input A + b or Input A – b
Flowmeter K-factor	Adjustable between 0.0001 and 99999 pulses/unit vol
Linearisers	16 K-factors may be entered
Total scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate scale factor	Adjustable between 0.0001 and 99999
Rate display filter	Adjustable digital filter

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Group II Category 1D Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	USA
	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ 70°C	Canada

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
ETL Control	No.4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

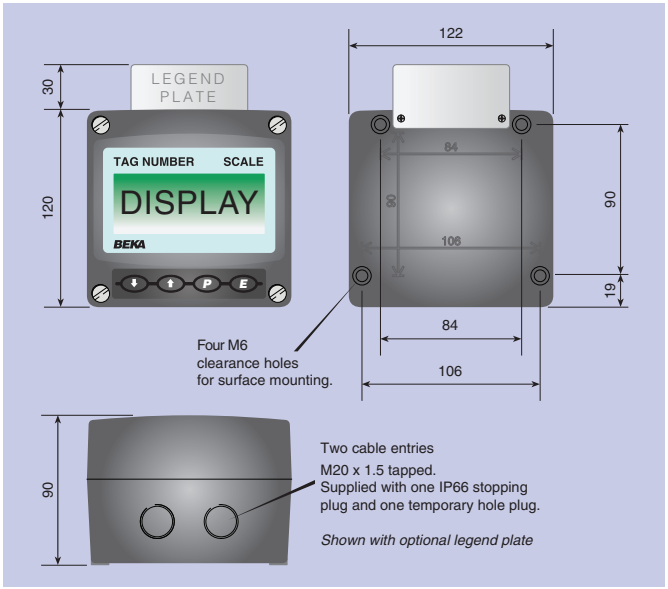
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

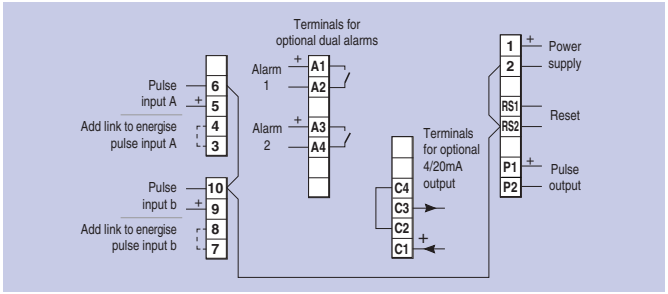
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink.
Voltage drop	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



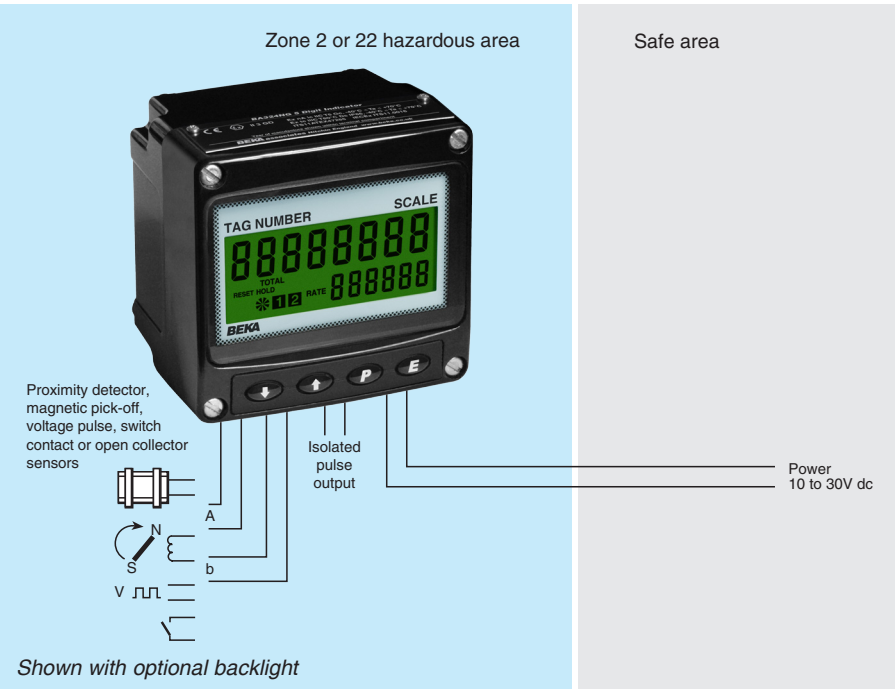
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA384G
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for both inputs * *If linearisation is required, up to 16 K-factors may be specified at different flow rates.*
Total scale factor	*XXXXX **
Rate timebase	Seconds, minutes or hours*
Rate scale factor	XXXXX *
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA384NG is a two input, field mounting, Ex nA and Ex tc certified rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA384NG is easy to use and each input can be individually configured on-site to operate with flowmeters having a variety of pulse outputs. A slide-in scale card simplifies identification and international certification permits worldwide installation.

International Ex nA and Ex tc certification allows the BA384NG rate totaliser to be installed in Zone 2 gas and Zone 22 dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The main application of the BA384NG is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a Zone 2 or 22 hazardous area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately. The BA384NG will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA384NG display show the status of both alarm outputs.

Other rate totalisers in this range include the single input BA334NG plus intrinsically safe, Ex n certified and general purpose models for field and panel mounting.

BA384NG

two input rate totaliser

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Linearisers**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba384ng

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency	
Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}
Remote reset	Contact closure with resistance less than 10kΩ
Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
Ui	30V dc
I max	10mA

Configurable functions

Each input individually configurable

Input function	Input A + b or Input A – b
Flowmeter K-factor	Adjustable between 0.0001 and 99999 pulses/unit vol
Linearisers	16 K-factors may be entered for each input
Total scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate scale factor	Adjustable between 0.0001 and 99999
Rate display filter	Adjustable digital filter

Certification **Note: Ex ic codes refer to instrument push button contacts which are nonincendive.**

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc	] USA
	Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C	] Canada
ETL Control No.	4008610	

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

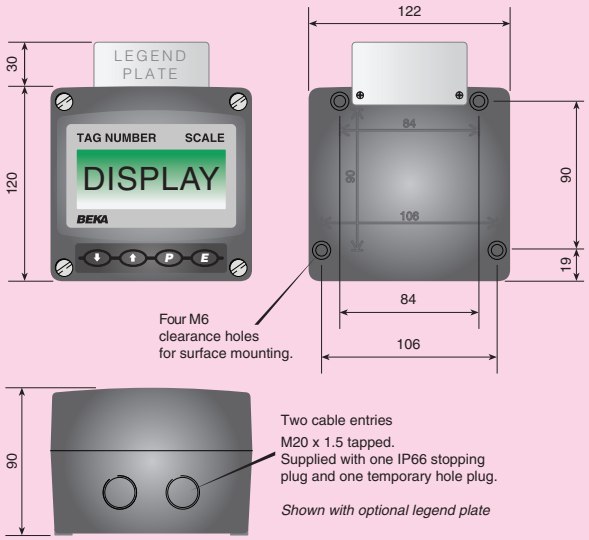
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

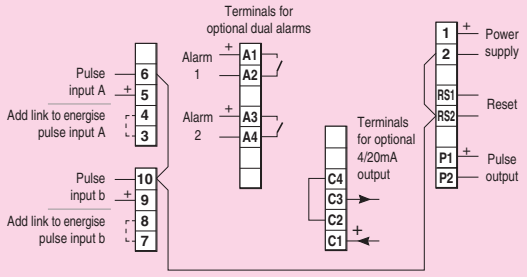
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Ui	30V dc
I max	10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA384NG
Input function	Input A + b or Input A – b *
Input	Type *
Flowmeter K-factor	XXXXX for both inputs * *If linearisation is required, up to 16 K-factors may be specified at different flow rates.*
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

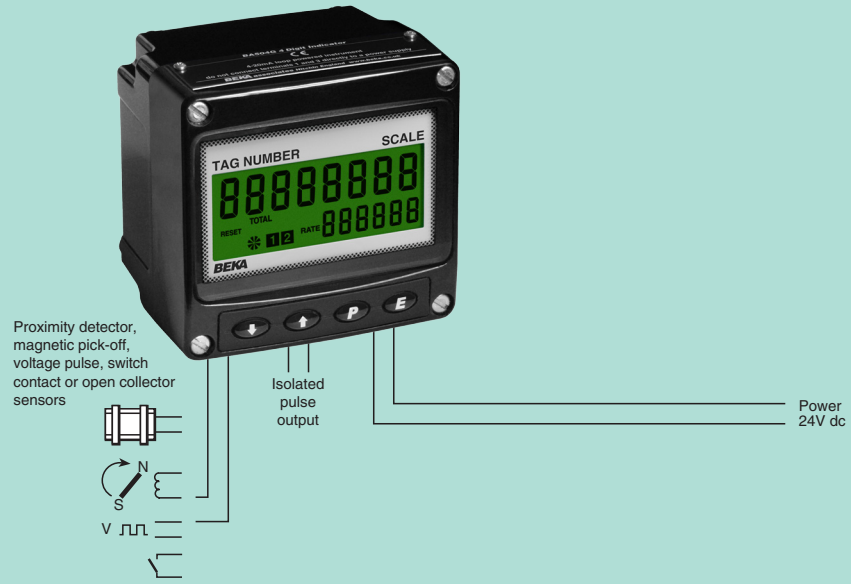
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

BA534G

one input rate totaliser

General purpose



Shown with optional backlight

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **IP66 GRP enclosure**
- **Linearliser**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba534g

The BA534G is a third generation, general purpose, field mounting rate totaliser housed in a compact IP66 GRP enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output.

Main application of the BA534G is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA534G will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit the pulse input to the rate totaliser, or a scaled pulse when the least significant digit of the total display is incremented.

The scale card which shows the Rate Totaliser's units of measurement and tag information, slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this information is not specified a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available, which can be supplied with custom specified engraving.

An isolated 4/20mA current sink output is available as a factory fitted option. It may be configured to represent any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA534G display show the status of both alarm outputs.

The BA584G is a two input version which enables the sum or difference of two flowmeters to be displayed. Other rate totalisers in this range include field and panel mounting models with intrinsic safety and Ex n certification, plus other general purpose models.

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typ.	*Depends upon pulse width & totaliser debounce setting.*
Other inputs	100kHz max.	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}
Remote reset	Contact closure with resistance less than 10kΩ.
Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30Vdc
I max	10mA

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Linearisation	16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

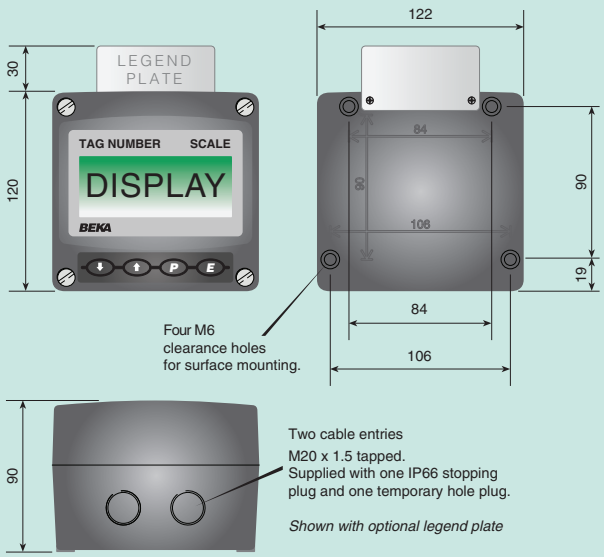
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

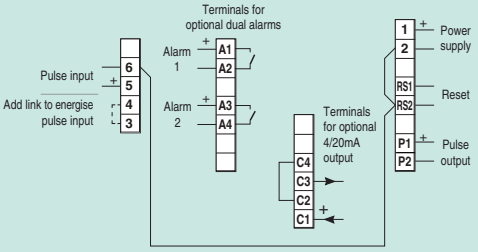
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30Vdc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Legend plate	316 Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA534G
Input Type *	
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *

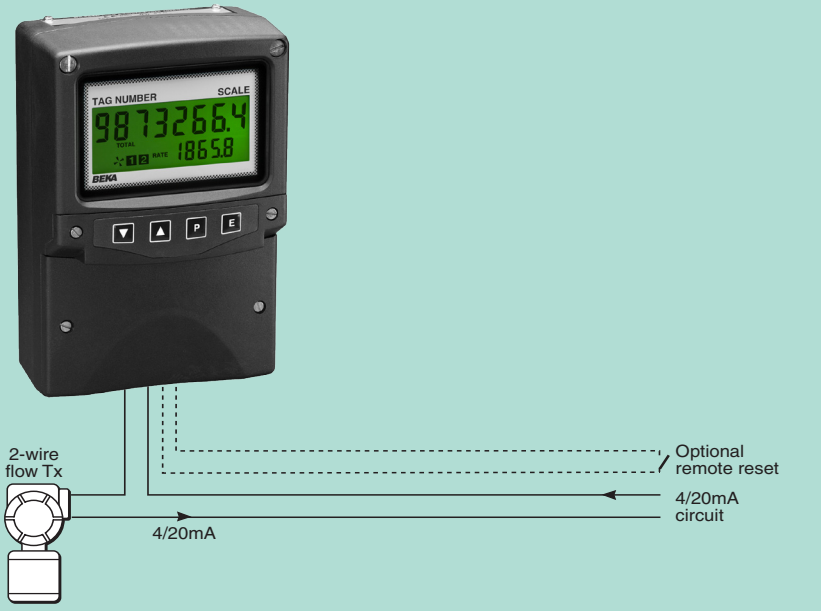
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

BA554E

2-wire 4/20mA rate totaliser

General purpose



Shown with optional backlight - loop powered and external keypad

- **Loop powered only 1.2V drop.**
- **Total display 8 digit 18mm high**
  Rate display 5 digit 12mm high
- **IP66 GRP enclosure with separate terminal compartment.**
- **Uni-directional & bi-directional operation.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight, alarms & external keypad.**
- **3 year guarantee**

www.beka.co.uk/ba554e

The BA554E loop powered 4/20mA rate totaliser is a third generation, general purpose, field mounting instrument that is electrically and mechanically compatible with the earlier BA554D, but it has a larger display, extended operating temperature and additional features such as a lineariser and bi-directional flow capabilities. Like its predecessor the BA554E is housed in a robust IP66 GRP enclosure with a separate terminal compartment

Main application of the BA554E is to integrate the 4/20mA output from a flow transmitter and display the rate and total flow in engineering units. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA554E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA554E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

The robust GRP enclosure has stainless steel fittings, silicone gaskets and an armoured glass window providing IP66 protection. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows the instrument to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing. Additional terminals are provided which may be used for linking the return 4/20mA conductor and the cable screens.

A backlight which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required but the totalisers voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarms which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to extensive vibration testing and is supported by a three year guarantee.

For panel mounting applications the BA558E has a similar specification but is housed in a 144 x 72 DIN panel mounting enclosure with an IP66 front panel.

If flammable atmospheres are present either the BA354E or the BA354NE should be used. Both have the same features as the BA554E but have been certified for use in hazardous areas.

BEKA associates

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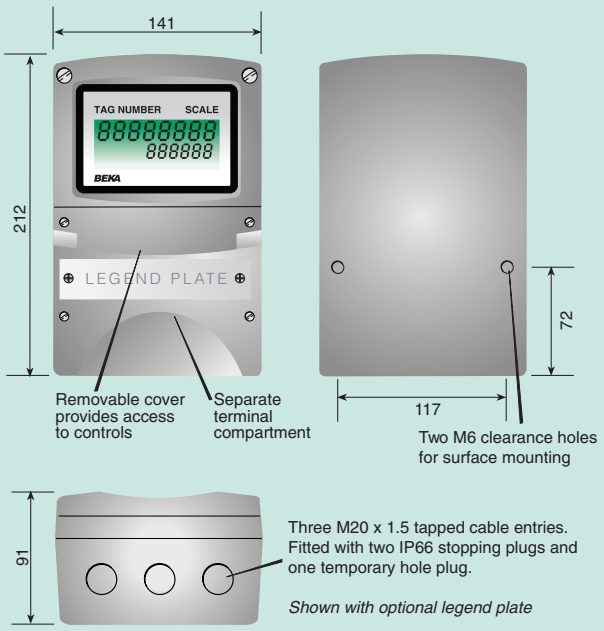
SPECIFICATION

Input	
Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.
Display	
Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10^{16}

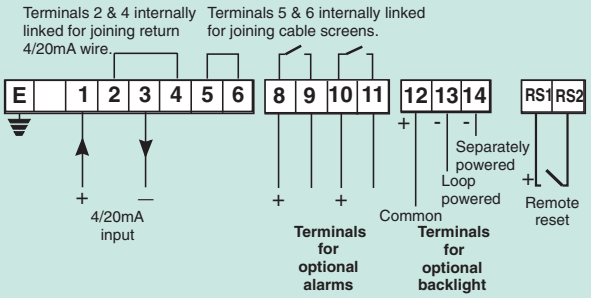
~ Rate & Total can be shown on either display

Push buttons	*(Function in display mode)*
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of when alarms are fitted.
'E'	Time since total display was reset
Accuracy	
Rate display at 20°C	
Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Total display	Updated every second
Remote total reset	Contact closure with resistance less than 1kΩ.
Environmental	
Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	IP66
EMC	Complies with EMC Directive
Mechanical	
Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.7kg
Accessories	
Backlight	Green, may be loop or separately powered
Loop powered	Totaliser voltage 5V
Separately powered.	10.5V at 35mA
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
External keypad	Membrane keypad enables totaliser to be controlled without removing cover.
Scale legend	Units of measurement marked onto display escutcheon.
Tag legend	Tag number or application marked onto display escutcheon.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Stainless steel legend plate	stainless steel plate etched with tag number or application attached to front of the instrument. #
Pipe mounting kit	BA392D or BA393 #

 # See accessory datasheet for details

HOW TO ORDER

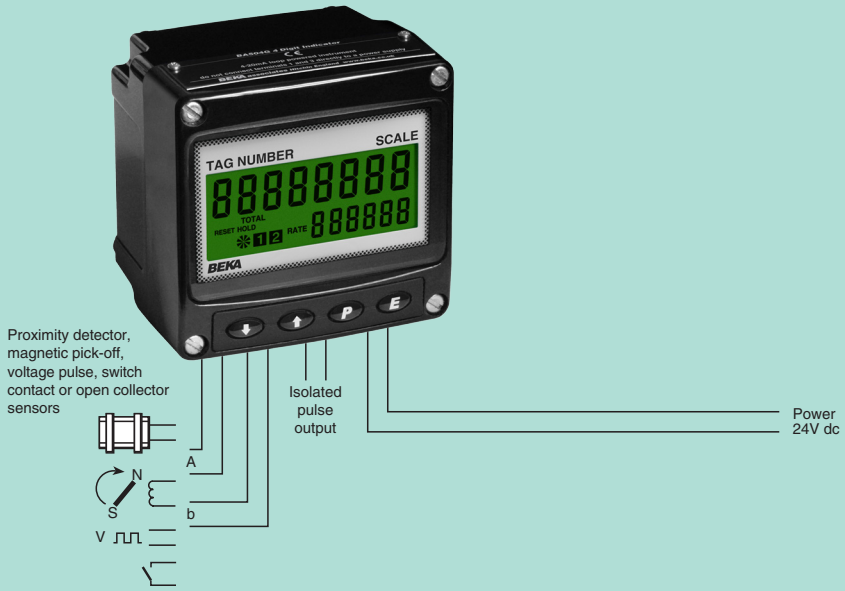
	Please specify
Model number	BA554E
Display mode	Linear, root or lineariser*
Rate display at:	
4.000mA	XXXXX
20.000mA	XXXXX
	*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**
Rate timebase	Seconds, minutes or hours*
Total scale factor display)*	(Units of rate display)÷(Units of total
Accessories	**Please specify if required**
External keypad	External keypad
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	
Scale	Legend required
Tag	Legend required
Stainless legend plate	Legend required
Pipe mounting kit	BA393D or BA393

* *If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.*

BA584G

two input rate totaliser

General purpose



Shown with optional backlight

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba584g

The BA584G is a two input, general purpose field mounting rate totaliser that can simultaneously display the total flow and rate of flow of either flowmeter, or the sum or difference of the two. The BA584G is easy to use and each input can be individually configured on-site to operate with a flowmeter having a variety of pulse outputs. A slide-in scale card simplifies identification.

Main application of the BA584G is to process the pulse output from two flowmeters and to calculate and display the sum or difference of the two within a process area. Using the front panel push buttons, the display can be scrolled to show the rate and total output of either flowmeter separately, or their sum or difference. The BA584G will compensate for the nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can easily be entered for each flowmeter on-site.

The large display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA584G display show the status of both alarm outputs.

Panel mounting rate totalisers with one or two inputs and a variety of display and enclosure sizes are available, see BA537E, BA537E-SS, BA538E and BA588E. For hazardous area applications certified field and panel mounting models are also available.

BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typ.	*Depends upon pulse width & totaliser debounce setting.*
Other inputs	100kHz max.	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 5 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or when least significant digit of total display is incremented. Divisible with selectable width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30V dc
I max	10mA

Configurable functions

Each input individually configurable

Input function	Input A + b or Input A – b
Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Lineariser	16 K-factors may be entered for each input
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

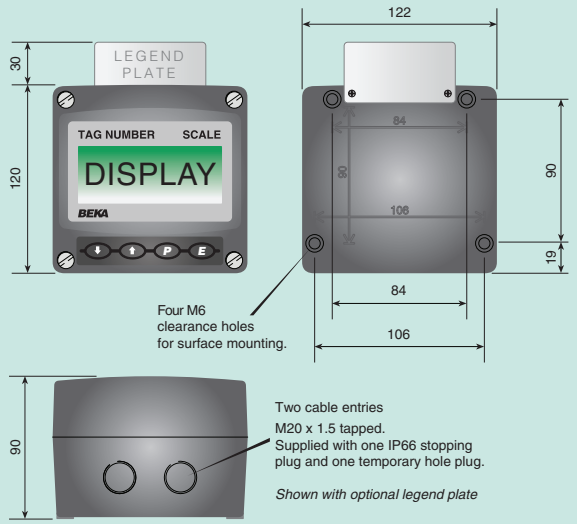
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

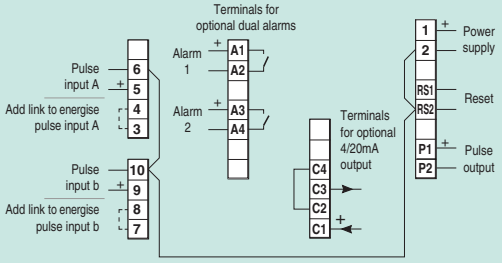
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA584G
Input function	Input A + b or Input A – b *
Input	Type *
Rate scale factor	XXXXX for both inputs *
flowmeter K-factor	*If linearisation is required, up to 16 K-factors may be specified at different flow rates.*
Rate timebase	*Seconds, minutes or hours**
Total scale factor	*XXXXX **

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with totaliser*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

Rate Totalisers
Panel Mounting

Includes one and two pulse input instruments and loop powered 4/20mA rate totalisers which can display rate and total flow separately. The pulse input instruments will operate with most types of sensor and all models include square root extraction and an adjustable lineariser. The rugged stainless steel totalisers can be safely mounted in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

> **Large high contrast displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety and
Ex nA non sparking certification.

> **Rugged stainless steel Ex ia models**
May be installed in a certified Ex e, Ex p or Ex t panel enclosure without invalidating the
enclosure's certification.

> **Isolated pulse output**

> **IP66 front panels**

> **-40 to +70˚C operating temperature range**

> **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
IP66 rear sealing kit.

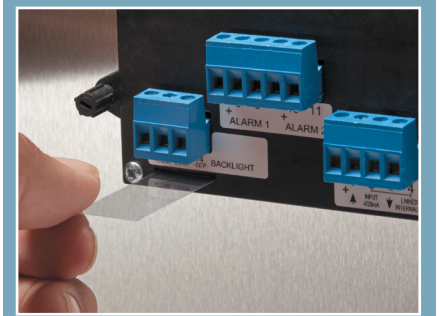
Intrinsically safe

Ex nA

General purpose

Gasket provides IP66 seal to panel

Sturdy panel clamps supplied with unit



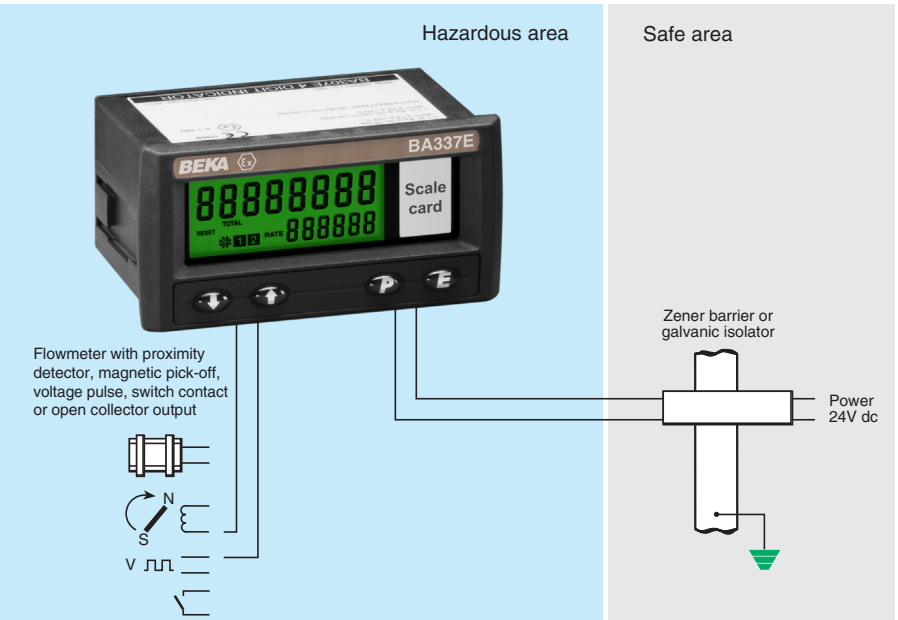
Easy scale card installation without the need to remove indicator from the panel.

Rate Totalisers. Panel mounting models available:

Model No.	Enclosure	Input	Powered	Display digits		Certification					
						Europe ATEX		International IECEx		USA & Canada	
				TOTAL No. x height	RATE No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified											
BA337E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm	✔	–	✔	–	✔	✔
BA337E-SS*	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
BA338E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA358E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm	✔	✔	✔	✔	✔	–
BA388E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators											
BA337NE	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
General Purpose - for use in safe areas											
BA537E	96 x 48	Pulse	External	8 x 9mm	6 x 6mm						
BA537E-SS	Rugged 105 x 60	Pulse	External	8 x 9mm	6 x 6mm						
BA538E	144 x 72	Pulse	External	8 x 18mm	6 x 12mm						
BA558E	144 x 72	4/20mA	Loop	8 x 18mm	5 x 12mm						
BA588E	144 x 72	2 x Pulse	External	8 x 18mm	6 x 12mm						

** Certification allows installation in an Ex e, or Ex p or Ex t panel enclosure without invalidating enclosure certification*

*A **Rate Totaliser***
*for every **application**. . . delivered ready for **installation***



Shown with optional backlight

The BA337E is a third generation intrinsically safe rate totaliser that has similar functions as the BA338E, but is housed in a smaller 96 x 48mm DIN enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

The main application of the BA337E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA337E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allows the BA337E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA337E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA337E rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337E display show the status of both alarm outputs.

Rugged versions and a larger display are available in other models within the range. The BA337E-SS is identical to the BA337E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e or Ex p panel enclosure without invalidating the enclosure's certification. The BA337NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA338E offers similar features as the BA337E in a 144 x 72mm enclosure.

BA337E

One input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Linearisation**
- **Optional:**
  Backlight
  dual alarms
  or 4/20mA output
  or pulse output
- **3 year guarantee**

www.beka.co.uk/ba337e

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width*
Other inputs	100kHz max	*and debounce setting.*
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Linearisers	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.15kg

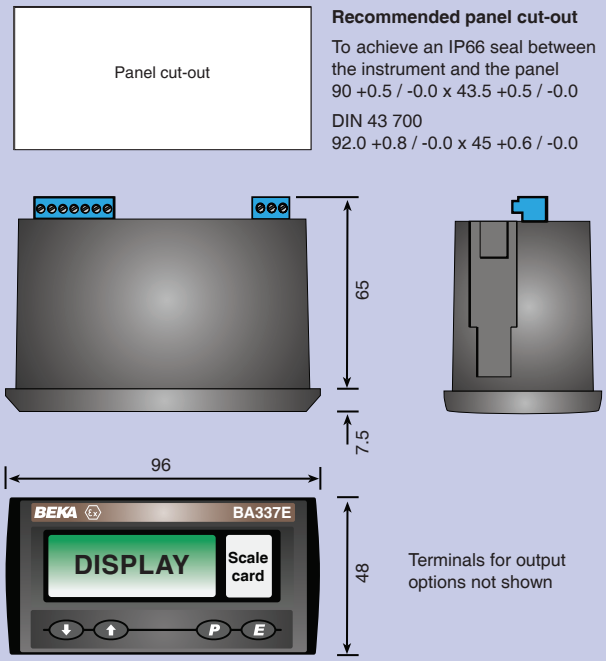
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus.*

Pulse output	Isolated open collector
Source	Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Voltage drop	5 to 28V

DIMENSIONS (mm)



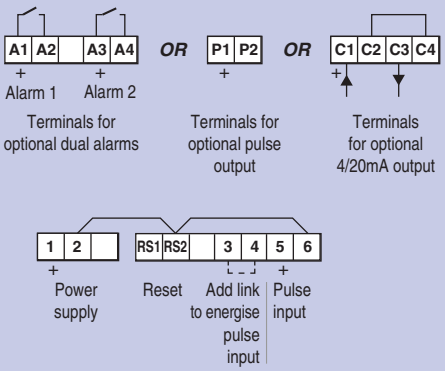
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

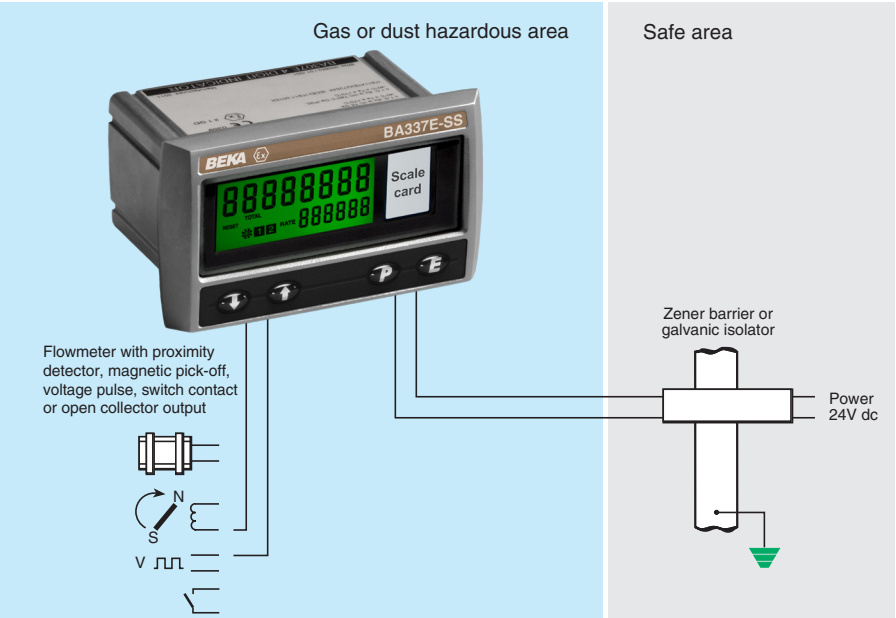
	Please specify
Model number	BA337E
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with totaliser.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

	Pulse output	Direct retransmission or scaled*
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

BA337E-SS

Rugged one input rate totaliser

Intrinsically safe gas and dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba337e-ss

The BA337E-SS is an intrinsically safe rate totaliser housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA337E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the panel enclosures certification. The intrinsically safe totaliser may also be installed in any uncertified panel enclosure located in Zone 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

The main application of the BA337E-SS is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA337E-SS will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

International intrinsic safety certification allows the BA337E-SS rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA337E-SS rate totaliser. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range. The BA337NE has the same features as the BA337E-SS, but is Ex nA and Ex tc certified allowing installation in Zones 2 or 22 without Zener barriers or galvanic isolators.

The BA338E offers similar features as the BA337E-SS in a 144 x 72mm Noryl enclosure with a larger display.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ø	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ø	6 digits 6mm high
Decimal point	1 of 4 positions or absent

ø Rate & Total can be shown on either 6 or 8 digit display

Grand total — Maximum count 10^{16}

Remote reset — Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Linearisers	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

‡ +70°C when **not** relying upon the certified impact and ingress protection provided by the front of the BA337E-SS enclosure to maintain the certification of the panel enclosure in which the BA337E-SS is mounted.

Environmental

Operating temp	-40 to +70°C* display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

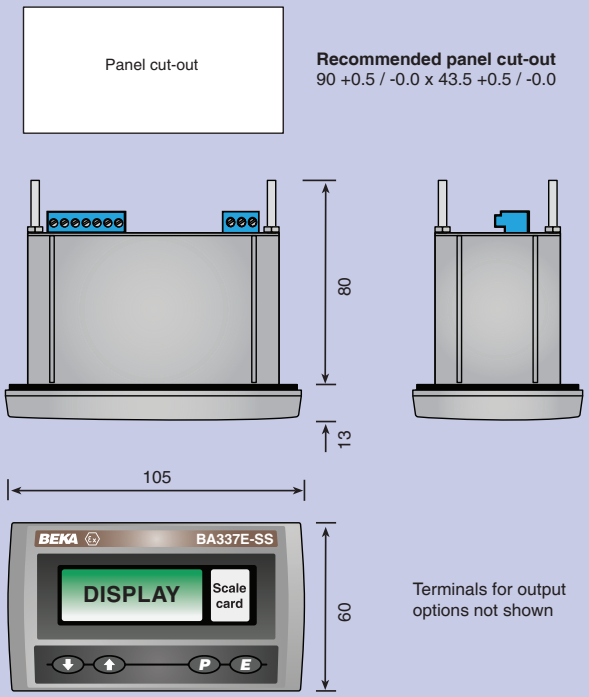
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

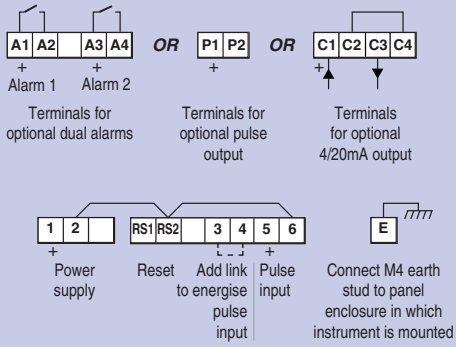
One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Source	Totaliser input: synchronous pulse output, 5kHz max or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



4/20mA output	Isolated current sink
Voltage drop	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

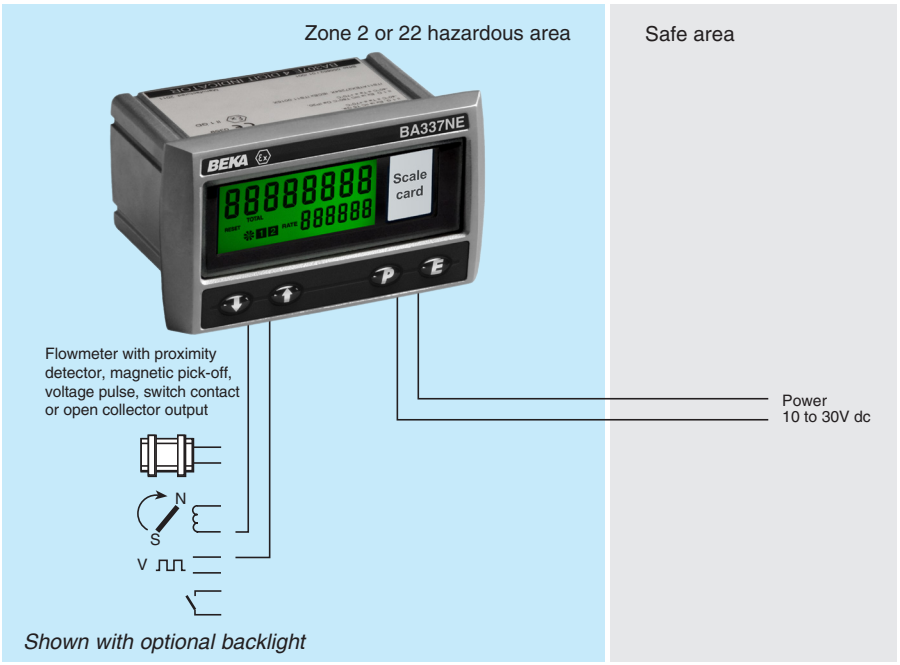
	Please specify
Model number	BA337E-SS
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours *
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with totaliser.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

	Pulse output	Direct retransmission or scaled
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA337NE rate totaliser has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22 without the need for Zener barriers or galvanic isolators. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card simplifies identification.

The main application of the BA337NE is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units in a Zone 2 or 22 hazardous area. The BA337NE can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

International Ex nA certification permits the BA337NE rate totaliser to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and rate totaliser may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly, the BA337NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA337NE rate totaliser.

Optional isolated pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA337NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA337E-SS has the same features as the BA337NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA337E offers similar features in a Noryl 96 x 48mm enclosure and the BA338E has similar features in a 144 x 72mm Noryl enclosure with a larger display.

BA337NE

Rugged Ex nA & Ex tc one input rate totaliser

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Ex nA & Ex tc certified**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional:**
  Backlight
  dual alarms
  or 4/20mA output
  or pulse output
- **3 year guarantee**

www.beka.co.uk/ba337ne

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit volume.
Linearisers	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Certification **Note:** Ex ic in codes refers to instrument push button contacts which are nonincendive

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada) -40°C ≤ Ta ≤ 60°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +60°C display -20 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

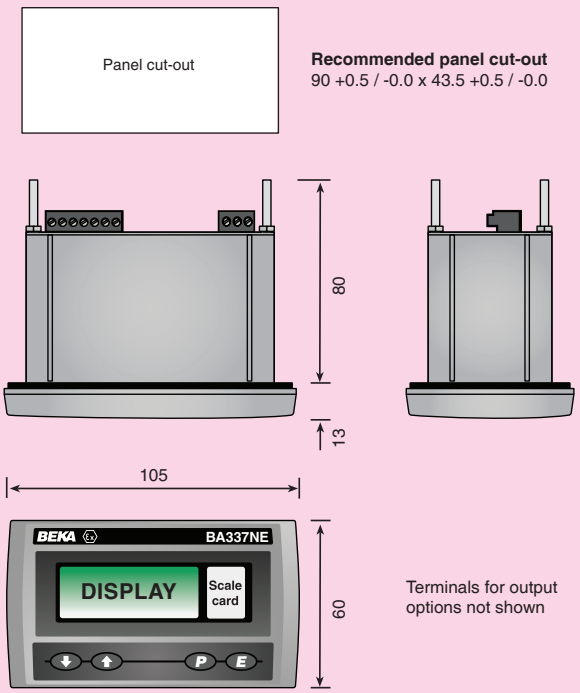
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

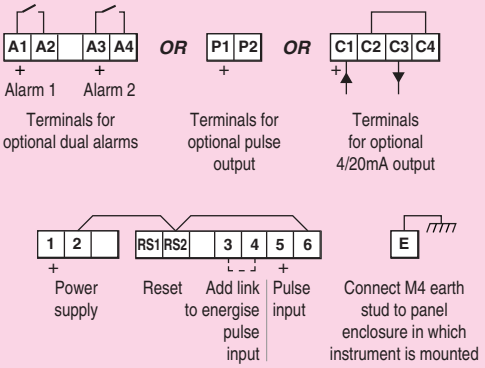
One of the following three output accessories may be factory fitted to each rate totaliser.

Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max **or** Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

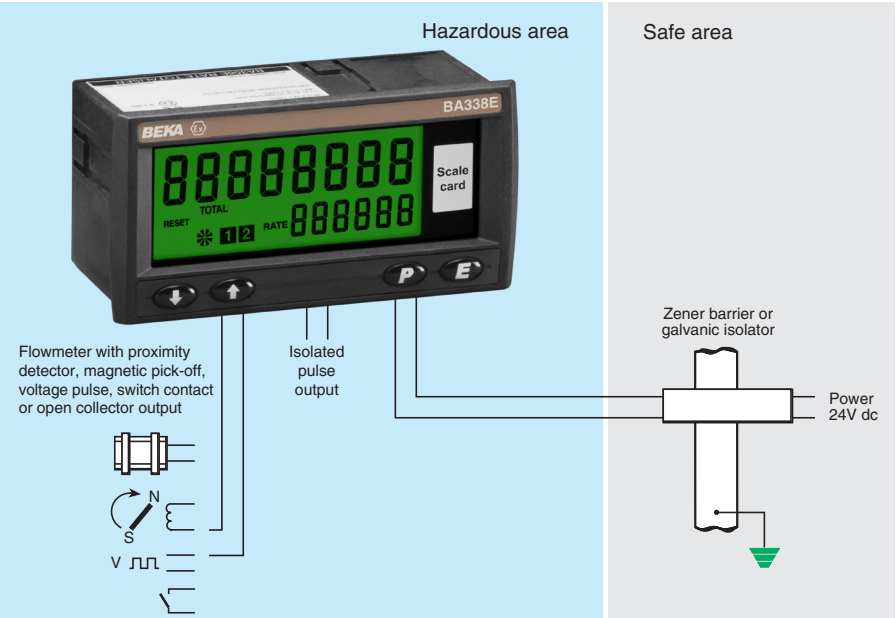
	Please specify
Model number	BA337NE
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.*
Rate timebase	Seconds, minutes or hours *
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with totaliser.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Direct retransmission or scaled *
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

* *Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

BA338E

One input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Linearisers**
- **Isolated pulse output**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba338e

The BA338E is a third generation intrinsically safe rate totaliser that is compatible with the earlier BA338C, but has a much larger display, a lineariser and an isolated synchronous pulse output. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA338E is to process the pulse output from a hazardous area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units within the hazardous area. The BA338E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA338E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

Open collector pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

International intrinsic safety certification allows the BA338E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA338C, thus allowing the BA338E to safely replace the earlier model.

Display backlighting, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA338E display show the status of both alarm outputs.

When panel space is limited the BA337E provides similar features in a smaller 94 x 48mm enclosure.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*

Source	Totaliser input: synchronous pulse output, 5kHz max. or Lease significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Rate scale factor	Adjustable between 0.0001 and
Flowmeter K-factor	99999 pulses/unit vol.
Linearisers	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

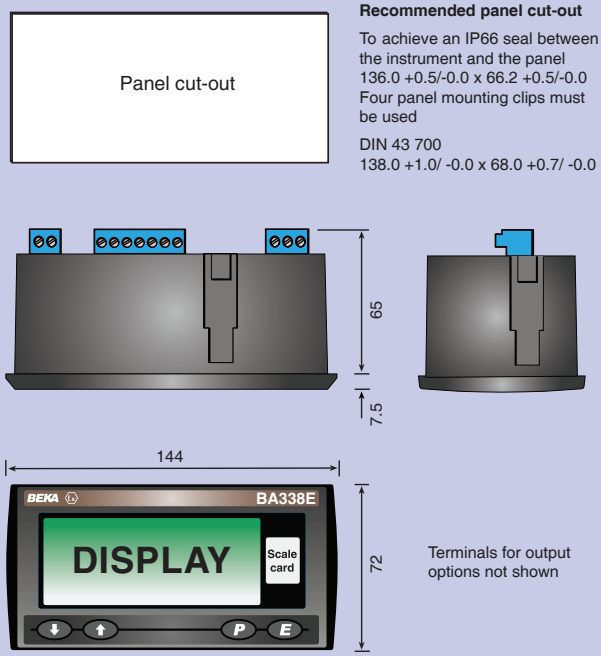
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for *simple apparatus.*
Voltage drop	5 to 28V
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch, each certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



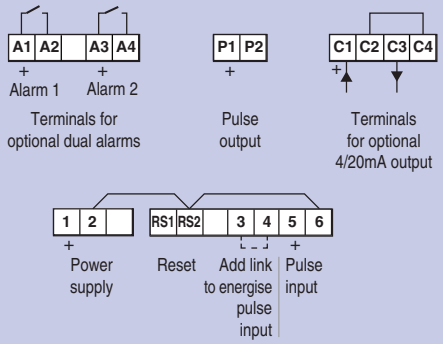
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

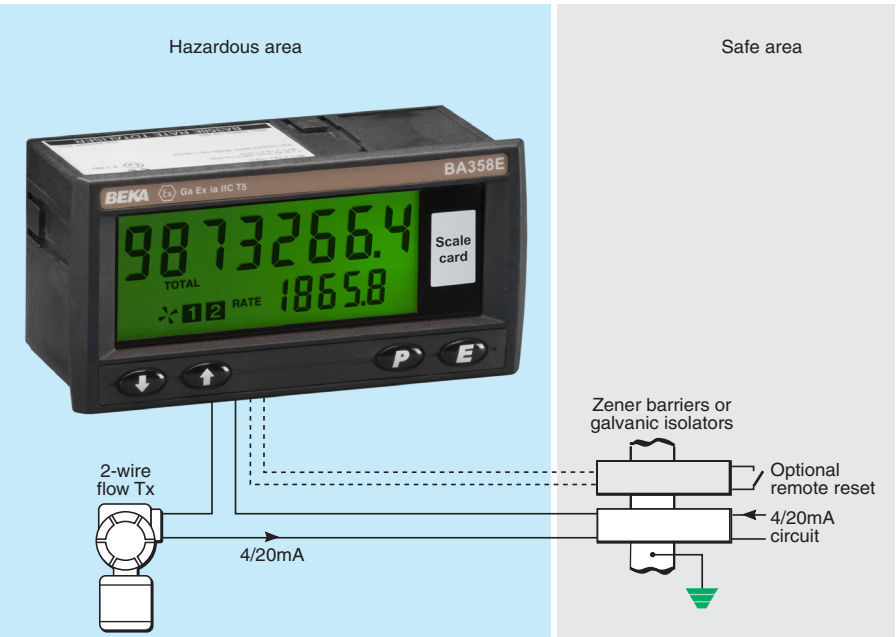
~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA338E
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with totaliser.*
Tag	Legend required

* *Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of minutes with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight - loop powered

BA358E

2-wire 4/20mA rate totaliser

Intrinsically safe for use in all gas & dust hazardous areas

- **Loop powered only 1.2V drop.**
- **Total display 8 digit 18mm high.**
  Rate display 5 digit 12mm high.
- **Intrinsically safe ATEX, FM, cFM & IECEx.**
- **Uni-directional & bi-directional operation.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba358e

The BA358E loop powered 4/20mA rate totaliser is a third generation instrument that is electrically and mechanically compatible with the earlier BA358C, but has a much larger display with a wider viewing angle providing maximum visibility from a 144 x 72mm instrument. The new model has an extended operating temperature range, dust certification and an even shorter enclosure depth than its predecessor. The scale card can easily be marked to show the units of measurement and can be installed on-site without dismantling the indicator enclosure or removing it from the panel.

The main application of the BA358E is to integrate the 4/20mA output from a hazardous area flow transmitter and display the rate and total flow in engineering units within the hazardous area. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA358E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA358E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

IP66 front panel protection and a neoprene gasket sealing the joint between the totaliser and the panel making the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA358E is installed.

International intrinsic safety certification permits the BA358E to be installed throughout the world. The 4/20mA input terminals comply with the requirements for simple apparatus which, together with the low voltage drop, allow the totaliser to be connected in series with most intrinsically safe 4/20mA loops. The BA358E may also be installed in dust hazardous areas. All input safety parameters are the same or greater than those for the preceding BA358C, thus allowing the BA358E to safely replace the earlier model.

A backlight that may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required and the indicator input remain compliant with the requirements for simple apparatus. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring.

Optional dual alarms which can switch hazardous or safe area loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to vibration testing and is supported by a three year guarantee.

For field mounting applications the BA354E has a similar specification as the BA358E, but is housed in a robust IP66 GRP enclosure suitable for external mounting. For safe area applications the BA554E and BA558E are equivalent uncertified field and panel mounting models.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.

Display

Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10^{16}

~ Rate & Total can be shown on either display

Push buttons *(Function in display mode)*

▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy

Rate display at 20°C

Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Total display	Updated every second

Remote total reset Contact closure with resistance less than 1kΩ.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Output parameters	Complies with requirements for *simple apparatus.*
Cert. No.	ITS11ATEX27254X (Special conditions only apply for use in Group IIIC conductive dusts)

USA FM

Standard	3610 Entity
Code	CL I: Div 1 Gp A, B, C, & D T5 @ 70°C
Standard	3611 Nonincendive
Code	CL I, II, III: Div 2 Gp A, B, C, D, E, F & G T5 @ 70°C
File	3041487

Canada cFM

File	3041487C

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS11.0015X (Special conditions only apply for use in Group IIIC conductive dusts)

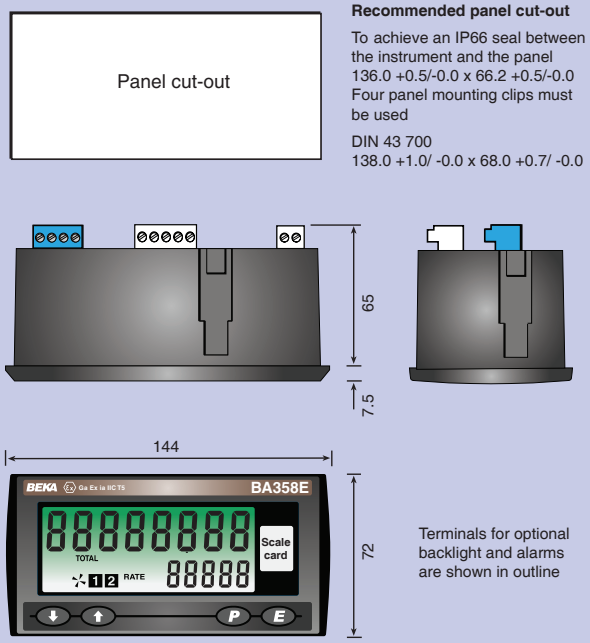
Environmental

Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

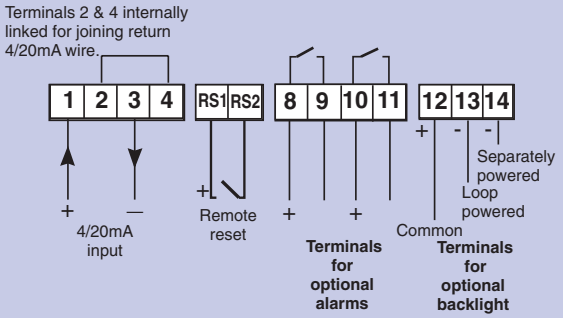
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.35kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

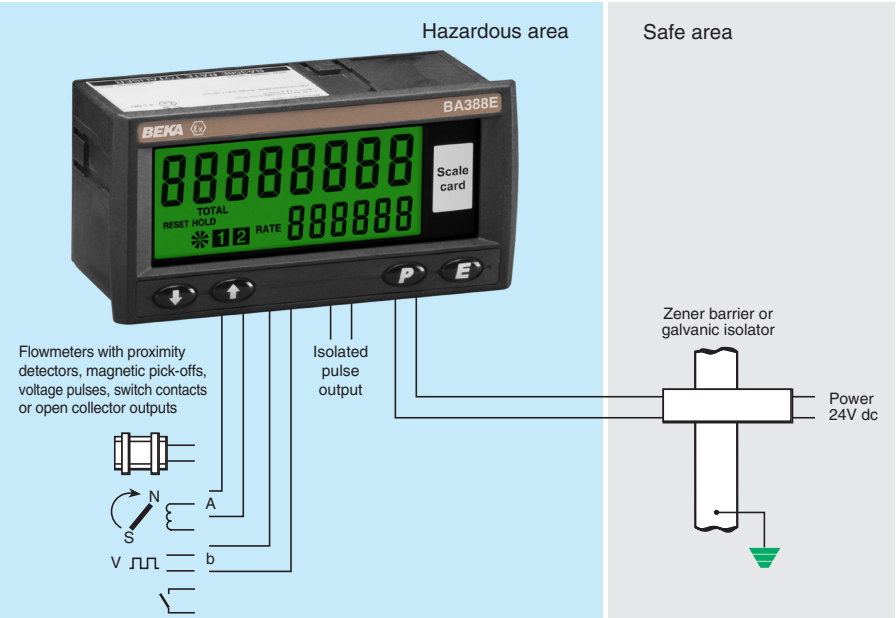
Backlight	Green, may be loop or separately powered.
Loop powered	Totaliser voltage 5V
Separately powered.	10.5V at 35mA from IS interface
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Output	Isolated solid state switch complying with requirements for Simple apparatus.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Printed scale card	Blank card fitted to each totaliser can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

HOW TO ORDER

	Please specify
Model number	BA358E
Display mode	Linear, root or linariser*
Rate display at:	
4.000mA	XXXXX
20.000mA	XXXXX
	*Include position of decimal point & sign if negative, plus intermediate points if linearisation is required.**
Rate timebase	Seconds, minutes or hours*
Total scale factor	(Units of rate display)÷(Units of total display)*

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legends required
Tag	Legend required

* *If calibration information is not supplied totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.*



Shown with optional backlight

BA388E

Two input rate totaliser

Intrinsically safe for use in all gas hazardous areas

- **Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated pulse output**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba388e

The BA388E is a two input intrinsically safe rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA388E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA388E is to process the pulse output from two hazardous area flowmeters and calculate and display the sum or difference of the two within a hazardous area. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each meter can also be shown. The BA388E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

An isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA388E to be installed in areas that will be washed down.

To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA388E rate totaliser to be installed worldwide. When configured to operate with a flowmeter having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the sum or difference of the two flowmeter rate or total displays. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

Dual alarms with galvanically isolated solid state outputs which can switch hazardous or safe area loads, such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA388E display show the status of both alarm outputs.

If panel space is limited the BA337E offers similar one input functions in a 96 x 48mm enclosure.

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	22mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent

‡ Rate or Total of either input can be shown on 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*

Source	Either input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions
Each input individually configurable

Input function	Input A + Input b: Input A - Input b:
Flowmeter K-factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999 pulses/unit vol
Linearisers	Up to16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

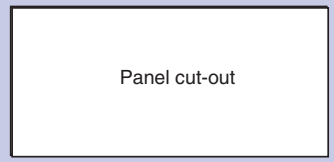
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink representing any part of the sum or difference of the two inputs, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*
Voltage drop	5 to 28V
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output operating on either input.
Outputs	Isolated single pole, voltage free solid state switch certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*
Ron	5Ω + 0.7V max
Roff	IMΩ min

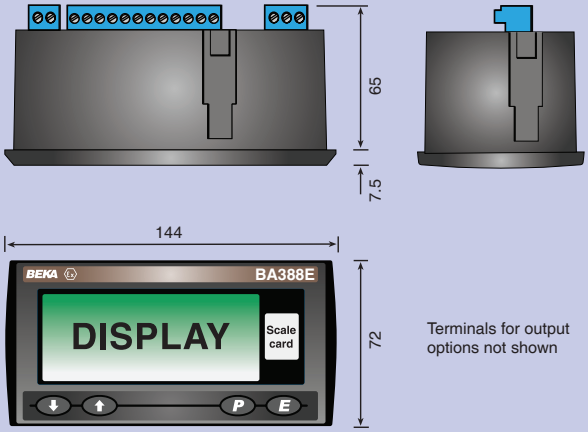
DIMENSIONS (mm)



Recommended panel cut-out

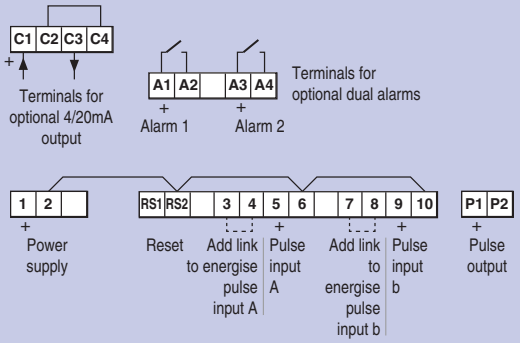
To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

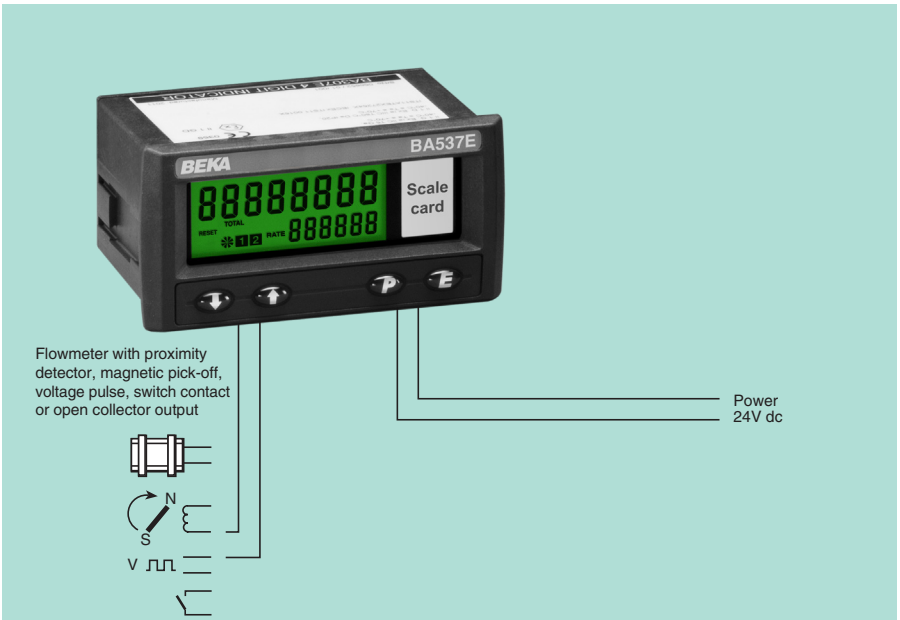
~ See accessory datasheet for details

HOW TO ORDER

	Please specify configuration for both inputs
Model number	BA388E
Input	Type *
Flowmeter K-factor	If linearisation is required, up to 16 K-factors may be entered each at a specified flow rate.
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission of either input or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with totaliser.*
Tag	Legend required

* *Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission of input A. Can easily be reconfigured on-site.*



Shown with optional backlight

BA537E

One input rate totaliser

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Lineariser**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  dual alarms
  or 4/20mA output
  or pulse output
- **3 year guarantee**

www.beka.co.uk/ba537e

The BA537E is a third generation general purpose rate totaliser that has similar functions as the BA538E, but is housed in a smaller 96 x 48mm DIN enclosure. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card shows the units of measurement and simplifies identification.

The main application of the BA537E is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA537E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can easily be entered on-site.

The display has high contrast and a wide viewing angle, enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA537E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

One of the following three isolated outputs may be fitted to a BA537E rate totaliser. All are factory fitted options.

Optional open collector pulse output will synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display,

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA537E display show the status of both alarm outputs.

Rugged version and a larger display are available in other models within the range. The BA537E-SS is identical to the BA537E but is housed in a rugged stainless steel enclosure with a 10mm thick window that is ideal for applications in hostile environments where the front of the instrument may be impacted. If a larger display is required, the BA538E offers similar features as the BA537E in a 144 x 72mm enclosure.

For applications in flammable atmospheres the BA337E, which is identical to the BA537E, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0mV	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset — Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor *(K-factor)*	Adjustable between 0.0001 and 99999 pulses/unit volume
Linearisier	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second,minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.15kg

Accessories

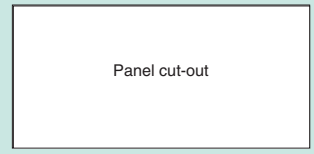
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three isolated output accessories may be factory fitted to each rate totaliser.

Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

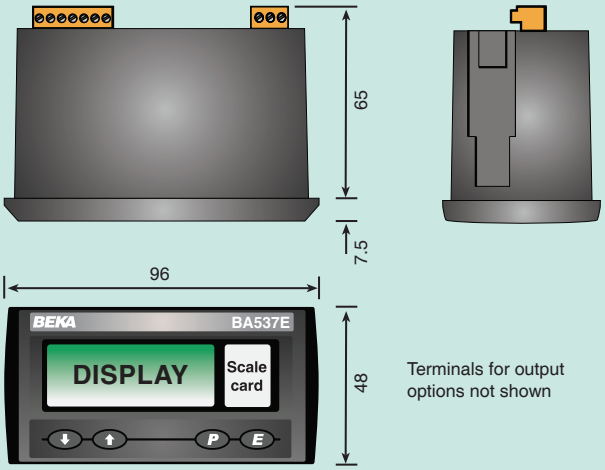
DIMENSIONS (mm)



Recommended panel cut-out

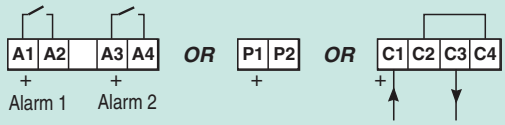
To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS



Terminals for optional dual alarms

Terminals for optional pulse output

Terminals for optional 4/20mA output

Power supply | Reset | Add link to energise pulse input | Pulse input

HOW TO ORDER

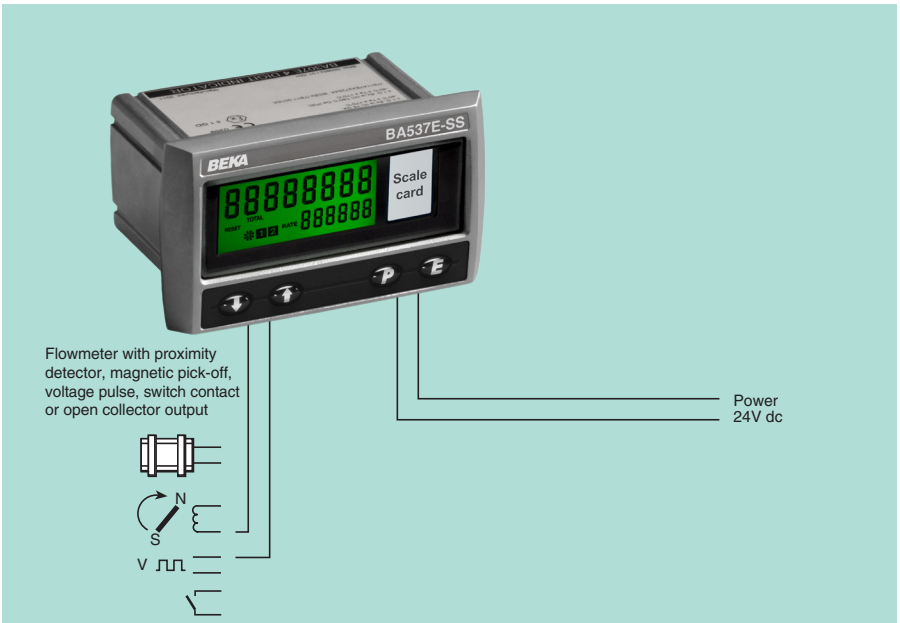
	Please specify
Model number	BA537E
Input	Type *
Rate scale factor	XXXXX * If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with totaliser*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Direct retransmission or scaled *
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA537E-SS

Rugged one input rate totaliser

General purpose

- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Linearisers**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba537e-ss

The BA537E-SS is a rugged general purpose rate totaliser housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is particularly suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. The rate totaliser is easy to use and can be configured on-site to operate with flowmeters having a wide variety of pulse outputs. A slide-in scale card shows the units of measurement and simplifies identification.

The main application of the BA537E-SS is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA537E-SS can compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The display has high contrast and a wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting which is internally powered from the totaliser is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three isolated outputs may be fitted to a BA537E-SS rate totaliser. All are factory fitted options.

Optional open collector pulse output may be configured to synchronously retransmit the rate totaliser input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display,

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA537E-SS display show the status of both alarm outputs.

For less hostile applications the BA537E is identical to the BA537E-SS but is housed in a Noryl enclosure also providing IP66 front of panel protection. If a larger display is required, the BA538E offers similar features in a 144 x 72mm Noryl enclosure.

For applications in flammable atmospheres the BA337E-SS, which is identical to the BA537E-SS, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0mV	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset — Contact closure with resistance less than 10kΩ

Configurable functions

Rate scale factor *(K-factor)*	Adjustable between 0.0001 and 99999 pulses/unit volume.
Linearisier	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.85kg

Accessories

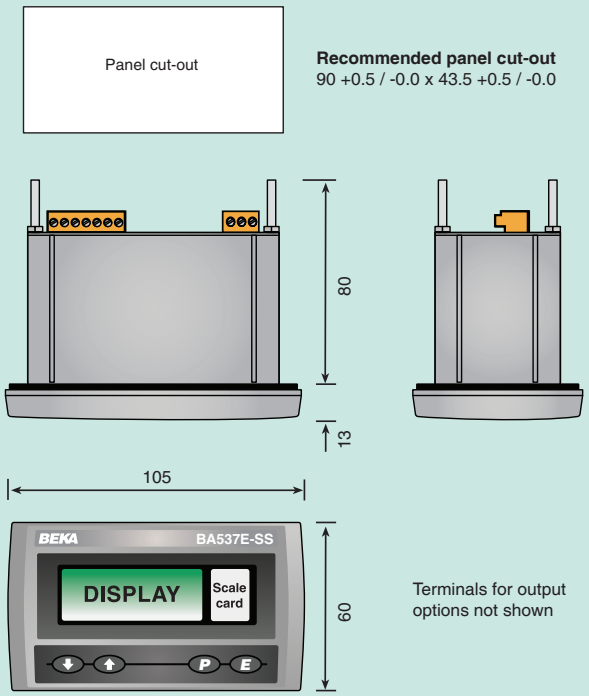
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each rate totaliser. All have isolated outputs.

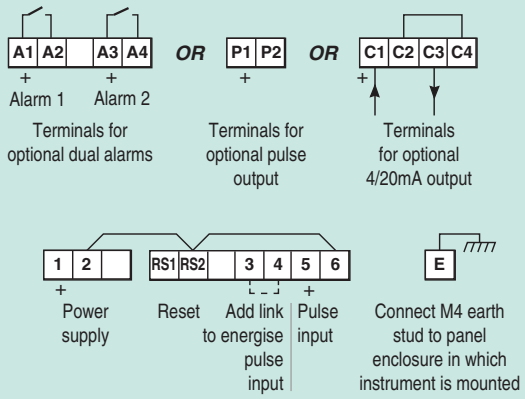
Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display output: divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

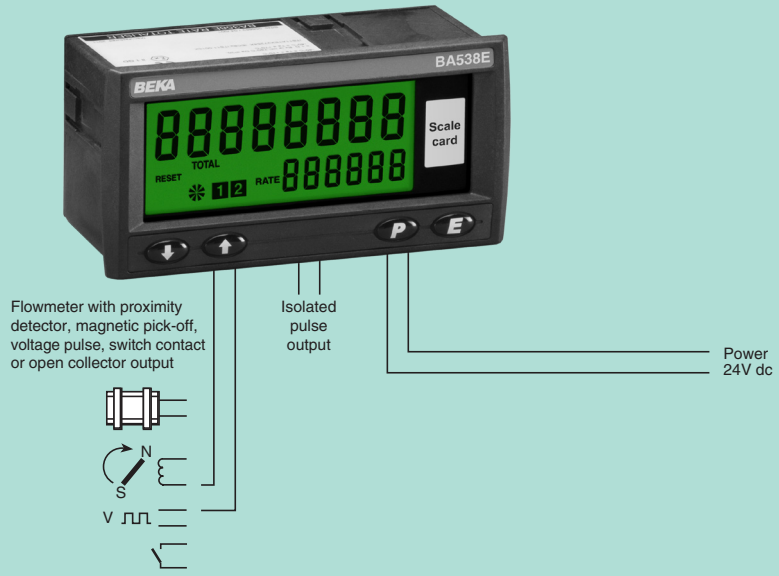
	Please specify
Model number	BA537E-SS
Input	Type *
Rate scale factor	XXXXX *
	If linearisation is required, up to 16 rate scale factors may be entered for different flow rates.
Rate timebase	Seconds, minutes or hours *
Total scale factor	XXXXX *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required
	No charge if ordered with totaliser
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

	Pulse output	Direct retransmission or scaled *
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA538E

One input rate totaliser

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Linearisers**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba538e

The BA538E is a third generation general purpose rate totaliser that is compatible with the earlier BA538C, but has a much larger display, a lineariser and an isolated synchronous pulse output. The totaliser is easy to use and can be configured on-site to operate with flowmeters having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. A slide-in scale card shows the units of measurement and simplifies identification.

Main application of the BA538E is to process the pulse output from a process area flowmeter such as a turbine meter and simultaneously display the rate and total flow in engineering units. The BA538E will compensate for flowmeter nonlinearity using up to sixteen flowmeter K-factors which can be entered on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rate of flow may be displayed in almost any units of measurement per second, minute or hour. Total flow may be shown in the same or in different units and the total display may be reset using the front panel push buttons or an external contact closure.

Display backlighting, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An open collector pulse output will synchronously retransmit the rate totaliser's input pulse to another instrument, or a pulse when the least significant digit of the total display is incremented.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA538E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA538E display show the status of both alarm outputs.

When panel space is limited the BA537E provides similar features in a smaller 96 x 48mm enclosure. A rugged version, the BA537E-SS, housed in a stainless steel enclosure is also available

For applications in flammable atmospheres the BA338E, which is identical to the BA538E, and the smaller BA337E have international intrinsic safety certification. For Zone 2 or 22 applications, the rugged stainless steel BA337NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0mV	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}
Remote reset	Contact closure with resistance less than 10kΩ
Pulse output	Isolated open collector
Source & output	Totaliser input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Rate scale factor *(K-factor)*	Adjustable between 0.0001 and 99999 pulses/unit volume.
Linearisers	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

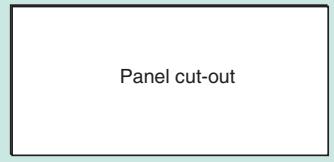
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	1MΩ min
V max	30V dc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ See accessory datasheet for details

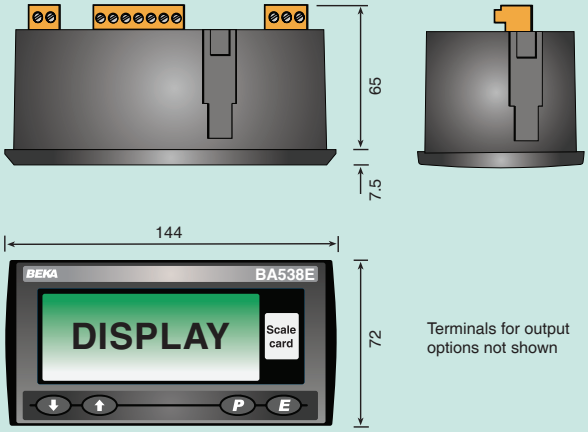
DIMENSIONS (mm)



Recommended panel cut-out

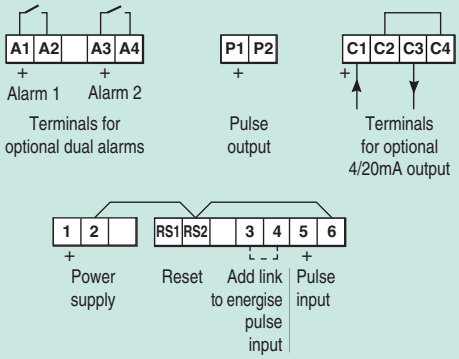
To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA538E
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*

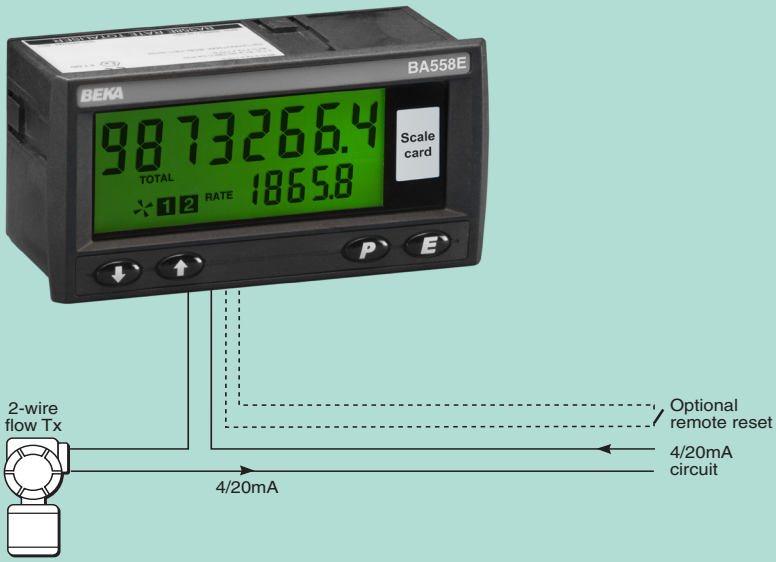
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with totaliser*
Tag	Legend required

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

BA558E

2-wire 4/20mA rate totaliser

General purpose



Shown with optional backlight - loop powered

- **Loop powered only 1.2V drop.**
- **Total display 8 digit 18mm high**
  Rate display 5 digit 12mm high
- **Uni-directional & bi-directional operation.**
- **Root extractor and 16 segment lineariser.**
- **Optional backlight & alarms.**
- **Easy on-site scale card installation.**
- **IP66 front**
- **144 x 72mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba558e

The BA558E loop powered 4/20mA rate totaliser is a third generation, general purpose, panel mounting instrument that is electrically and mechanically compatible with the earlier BA558C, but it has a larger display, extended operating temperature, and an even shorter enclosure depth than its predecessor. The new model has additional features such as a lineariser, bi-directional flow capabilities and a scale card that can easily be marked to show rate and total units of measurement and can be installed on-site without dismantling the totaliser enclosure, or removing it from the panel.

The main application of the BA558E is to integrate the 4/20mA output from a flow transmitter and display the rate and total flow in engineering units. A selectable square root extractor enables the output from differential flowmeters to be displayed in linear engineering units and a sixteen segment fully adjustable lineariser provides compensation for nonlinear flowmeters. When fitted with optional alarms the BA558E can detect high and low rates of flow and may be used for simple batching applications.

The large display provides maximum contrast and has a very wide viewing angle, allowing the BA558E itotaliser to be easily read in most lighting conditions over a wide temperature range. An optional factory fitted backlight is available for applications in poorly illuminated areas. The 18mm high eight digit total display may be configured to show total flow in any units of measurement. The display may be reset to zero using a front panel push button or an external contact closure. The rate display may be calibrated to show flow in the same or in different engineering units to those used for the total display.

IP66 front panel protection and a neoprene gasket sealing the joint between the totaliser and the panel make the instrument suitable for use in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the BA558E is installed.

A backlight that may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional field wiring is required and the totaliers voltage drop is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

Optional dual alarms which can switch low power loads, such as sounders, beacons or solenoid valves, are available as a factory fitted option. The two galvanically isolated solid state outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the display show the status of both alarm outputs.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The totaliser has been subjected to vibration testing and is supported by a three year guarantee.

For field mounting applications the BA554E has a similar specification as the BA558E, but is housed in a robust IP66 enclosure suitable for external mounting.

If flammable atmospheres are present the BA358E should be used. This has the same features as the BA558E but has been certified for use in hazardous areas.

BEKA associates

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SPECIFICATION

Input

Current	4 to 20mA
Voltage	Less than 1.2V at 20°C Less than 1.3V at -20°C Less than 5V with optional loop powered backlight.
Overrange	±200mA or ±30V will not damage the instrument.

Display

Type	Liquid crystal, multiplexed 2:1
Zero blanking	Blanked apart from 0 in front of decimal point.
Rate~	5 digits 12mm high.
Span	Adjustable between 0 & ±99999 for a 4/20mA input.
Zero	Adjustable between 0 & ±99999 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Total~	8 digits 18mm high
Scaling factor	Adjustable between 0.0001 & 99999
Decimal point	1 of 5 positions or absent
Grand total	Maximum count 10^{16}

~ Rate & Total can be shown on either display

Push buttons	*(Function in display mode)*
▼	Shows rate display with 4mA input
▲	Shows rate display with 20mA input
'P'	Displays input in mA or a % of span, has a modified function when alarms are fitted.
'E'	Time since total display was reset

Accuracy

Rate display at 20°C	
Linear	±0.02% of span ±1digit
Root extracting	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 25ppm of span/°C
Span	Less than 50ppm of span/°C
Series mode rejection.	Less than 0.05% of span error for 1mA pk to pk 50 or 60Hz interference.
Total display	Updated every second

Remote total reset — Contact closure with resistance less than 1kΩ.

Environmental

Operating temperature	-40 to 70°C
Display	-20 to 70°C
Storage temperature	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

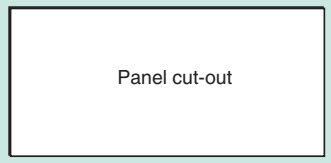
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable, removable.
Weight	0.35kg

Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Totaliser voltage 5V
Separately powered	10.5V at 35mA
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Output	Isolated solid state switch
Vmax	40V dc
Imax	200mA
Ron	5Ω + 0.7V max
Roff	1MΩ min
Printed scale card	Blank card fitted to each totaliser can be supplied printed with specified units of measurement.
Pack of printed scale cards	Contains 26 common units of measurement and four blanks.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

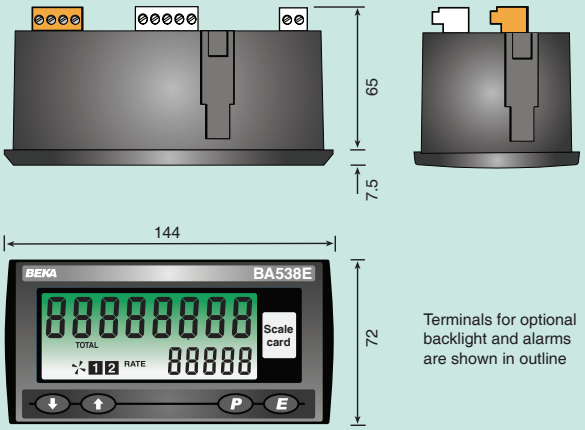
DIMENSIONS (mm)



Recommended panel cut-out

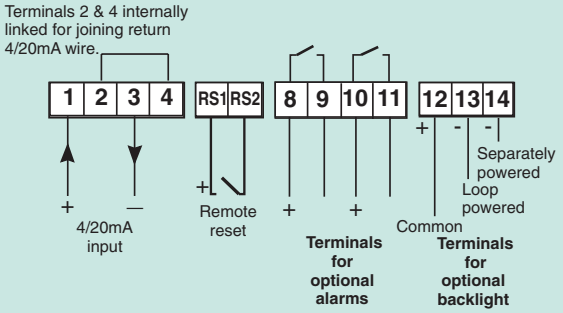
To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for optional backlight and alarms are shown in outline

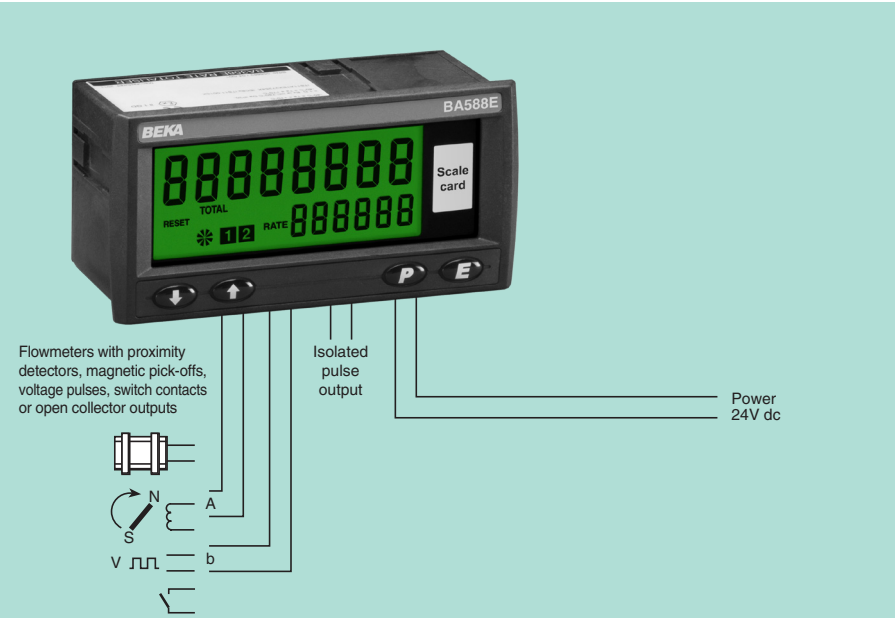
TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA558E
Display mode	Linear, root or lineariser*
Rate display at:	
4.000mA	XXXXX Include position of decimal point
20.000mA	XXXXX & sign if negative, plus intermediate points if linearisation is required.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	(Units of rate display)÷(Units of total display)*
Accessories	Please specify if required
Display backlight	Backlight
Dual alarms	Alarms
Scale card	Legends required
Tag	Legend required

** If calibration information is not supplied the totaliser will be set to display a rate of 0.00 at 4mA and 100.00 at 20mA with a linear display, a timebase of seconds and a total scale factor of 1. Can easily be recalibrated on-site.*



Shown with optional backlight

BA588E

Two input rate totaliser

General purpose

- **Each input independently configurable: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Separate lineariser for each input.**
- **Simple on-site scale card installation.**
- **Isolated pulse output**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba588e

The BA588E is a two input general purpose rate totaliser that can simultaneously display the total flow and the rate of flow of either flowmeter, or the sum or difference of the two inputs. Rate and total displays may have the same or different engineering units. The BA588E is easy to use and each input can be independently configured on-site to operate with a flowmeter having various pulse outputs. A slide-in scale card simplifies identification.

Main application of the BA588E is to process the pulse output from two process area flowmeters and calculate and display the sum or difference of the two. Rate and total flow can be simultaneously displayed in the same or different engineering units and the output from each flowmeter can also be shown. The BA588E will compensate for nonlinearity of each flowmeter using up to sixteen flowmeter K-factors which can be entered for each meter on-site.

The large display has high contrast and a very wide viewing angle enabling the rate totaliser to be read in most lighting conditions over a wide temperature range. Rates of flow may be displayed in almost any units of measurement per second, minute or hour. Total flows may be shown in the same or in different units and the total displays may be reset using the front panel push buttons or an external contact closure.

Display backlighting, which is internally powered from the totaliser, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the totaliser is installed in a poorly illuminated area.

An isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

IP66 front panel protection with a neoprene gasket to seal the joint between the totaliser and the instrument panel allow the BA588E to be installed in areas that will be washed down. To simplify installation and maintenance, the totaliser has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the sum or difference of the two flowmeter rate or total displays. The output is galvanically isolated allowing direct connection to other instruments.

Dual alarms with galvanically isolated solid state outputs which can switch loads such as sounders or solenoid valves, are available as a factory fitted option. Both may be independently configured as rate or total alarms operating on either flowmeter input, or on the sum or difference of the two inputs. Annunciators on the BA588E display show the status of both alarm outputs.

If only one input is required the BA538E has the same functions and display but only one input. When panel space is limited the BA537E is a single input rate totaliser in a 96 x 48mm enclosure.

For applications in flammable atmospheres the BA388E is identical to the BA588E but has international intrinsic safety certification. For one input applications the intrinsically safe BA338E and the smaller BA337E are also available.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	22mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0mV	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Rate‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent
Total‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent

‡ Rate or Total of either input can be shown on 6 or 8 digit display.

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Source & output	Either input: synchronous pulse output, 5kHz max. or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions
Each input individually configurable

Rate scale factor *(K-factor)*	Adjustable between 0.0001 and 99999 pulses/unit volume.
Linearisation	Up to 16 K-factors may be entered
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter
Total scale factor	Adjustable between 0.0001 and 99999

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

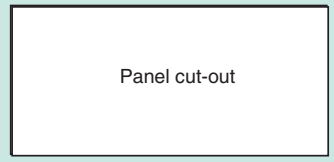
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink representing any part of the sum or difference of the two inputs.
Voltage drop	5 to 30V dc
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output operating on either input.
Outputs	Isolated solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ See accessory datasheet for details

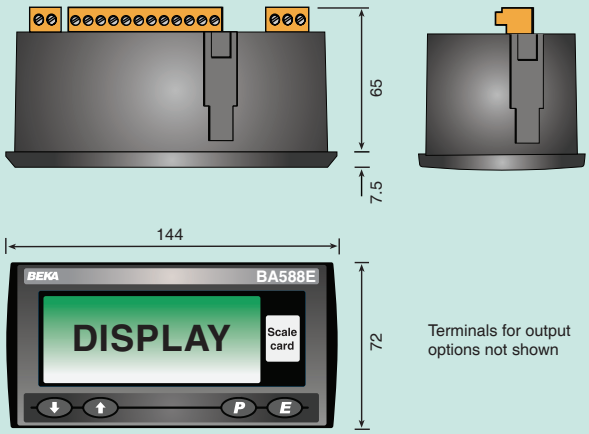
DIMENSIONS (mm)



Recommended panel cut-out

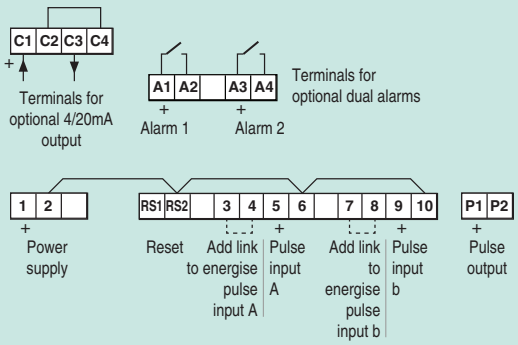
To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify configuration for both inputs
Model number	BA588E
Input	Type *
Rate scale factor	XXXXX * *If linearisation is required, up to 16 rate scale factors may be entered each at a specified flow rate for each input.*
Rate timebase	Seconds, minutes or hours*
Total scale factor	XXXXX *
Pulse output	Direct retransmission of either input or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with totaliser*
Tag	Legend required

** Totaliser can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission of input A. Can easily be reconfigured on-site.*

Counters
Counter and position indicator

Intrinsically safe

Ex nA

General purpose

An extensive range of one and two input pulse counters which can display total and rate on separate displays in the same or different engineering units. The two input models can display the sum or differences of the inputs and can also decode a quadrature detector and display position.

> **Large high contrast displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety
Ex nA non sparking
Dust certification

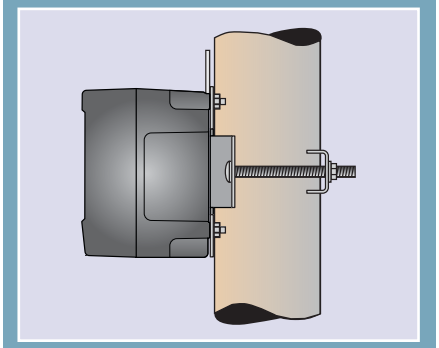
> **Field mounting models have IP66 GRP enclosure**
Compact 'G' models
'E' models with separate terminal compartment
Pipe and panel mounting accessories

> **Panel mounting models**
Choice of sizes all with IP66 front panels.
Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
Rear IP66 sealing kit

> **Isolated pulse output**
Synchronous with input for retransmission

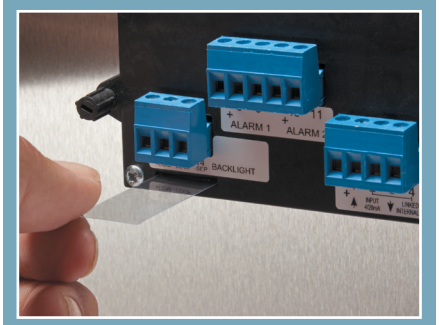
> **-40 to +70˚C operating temperature range**

> **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
Laser engraved stainless steel legend plates



BA393G Pipe mounting kit

Slide-in scale card can be supplied printed with customer specified information for no extra charge.

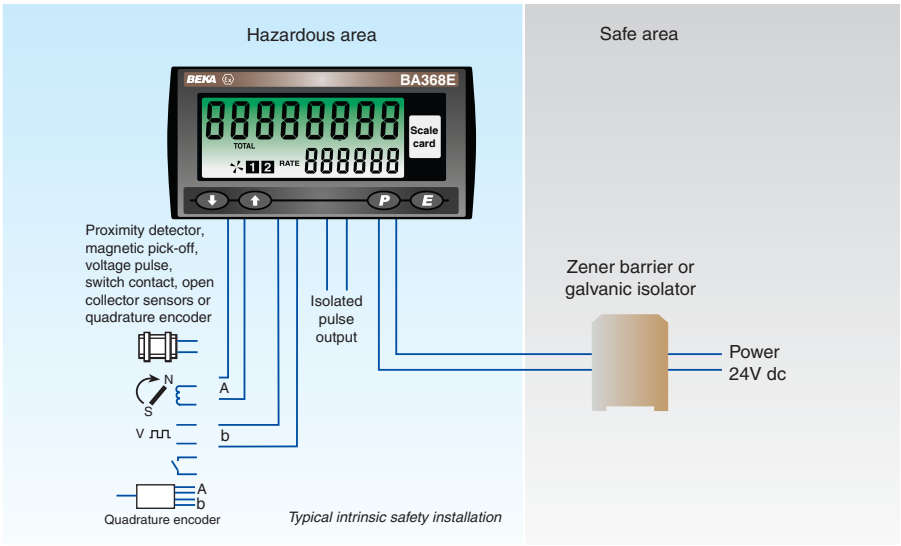


Easy scale card installation without the need to remove indicator from the panel.

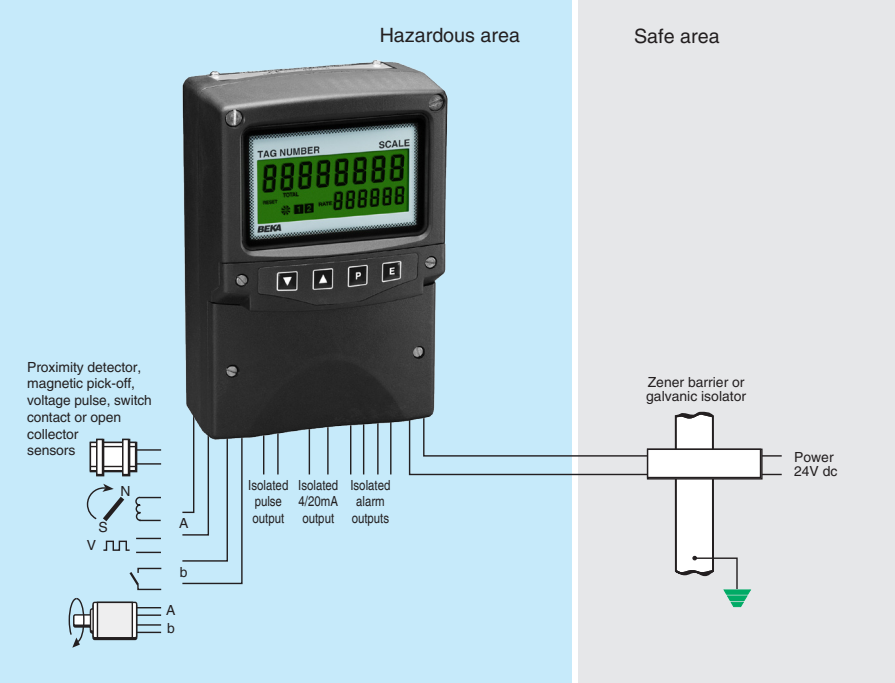
Counters available

Model No.	Mounting	Input	Display digits		Certification					
					Europe ATEX		International IECEx		USA & Canada	
			TOTAL No. x height	RATE No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified										
BA364G	Field compact	2 x Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA364E	Field - separate tml. compartment	2 x Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA367E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm	✔	–	✔	–	✔	✔
BA367E-SS*	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
BA368E	Panel 144 x 72	2 x Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators										
BA364NG	Field compact	2 x Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA367NE	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
General Purpose - for use in safe areas										
BA564G	Field compact	2 x Pulse	8 x 18mm	6 x 12mm						
BA567E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm						
BA567E-SS	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm						
BA568E	Panel 144 x 72	2 x Pulse	8 x 18mm	6 x 12mm						

** Certification allows installation in an Ex e, Ex p or Ex t panel enclosure without invalidating enclosure certification*



*A **Counter** for every **application** - delivered ready for **installation***



BA364E

two input counter

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.**
- **Separate displays with backlight**
- **Intrinsically safe**
- **IP66 GRP enclosure with separate terminal compartment**
- **Isolated dual alarms, pulse and 4/20mA outputs.**
- **3 year guarantee**

www.beka.co.uk/ba364e

The BA364E is a two input, field mounting, intrinsically safe counter which can display the sum or difference of the two pulse inputs, or the count direction of Input A may be controlled by input b, The output from a quadrature encoder can also be decoded to show speed and direction of movement. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. International intrinsic safety certification permits worldwide installation.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364E, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

International intrinsic safety certification allows the BA364E counter to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The large display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing enabling the counter to be read at night or when installed in a poorly illuminated area. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument's electronics.

Isolated pulse and 4/20mA outputs which comply with the requirements for *simple apparatus* are included. The pulse output can synchronously retransmit either of the pulse inputs, or a scaled pulse when the least significant digit of the total display is incremented. The 4/20mA output may be configured to produce an output proportional to any part of the rate or total display.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Dual alarms with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364E display show the status of both alarm outputs.

The escutcheon which shows the counters units of measurement and tag information can be changed on-site. New instruments are fitted with a printed escutcheon showing customer specified marking. If this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

The compact BA364G has the same functions as the BA364E without a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Backlight	Green LED internally powered
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 5 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total: Maximum count 10^{16}

Remote reset: Contact closure with resistance less than 10kΩ

Configurable functions: Each input individually configurable

Input function: Input A + b: Input A – b: Input A direction controlled by input b or quadrature encoder input (Inputs 90° out of phase).

Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Pulse output: Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*.

Source and output: Either input can be synchronously retransmitted, 5kHz max.
or
Least significant digit of total display pulse output divisible by 1, 10, 100, 1000 or 10000
Pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.

Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

4/20mA output: Isolated current sink. Configurable to represent any part of the rate or total display.

Voltage drop: 5 to 28V

Dual alarms: Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

Outputs: Isolated single pole, voltage free solid state switch

Ron	5Ω + 0.7V max
Roff	IMΩ min

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	USA
	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	Canada

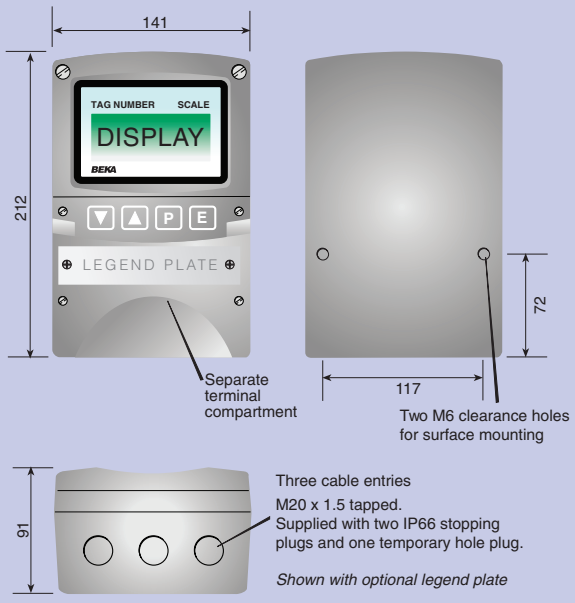
Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
ETL Control No.	4008610

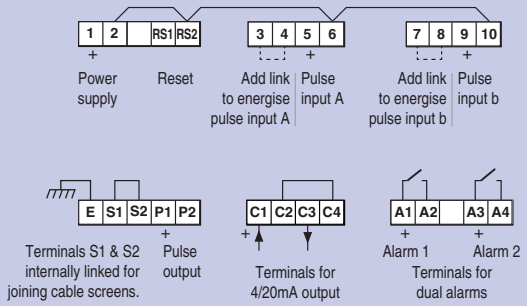
Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.7kg

Accessories

Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate secured to the front of the instrument, laser engraved with tag number or application information. #
Pipe mounting kit	BA392D or BA393 #

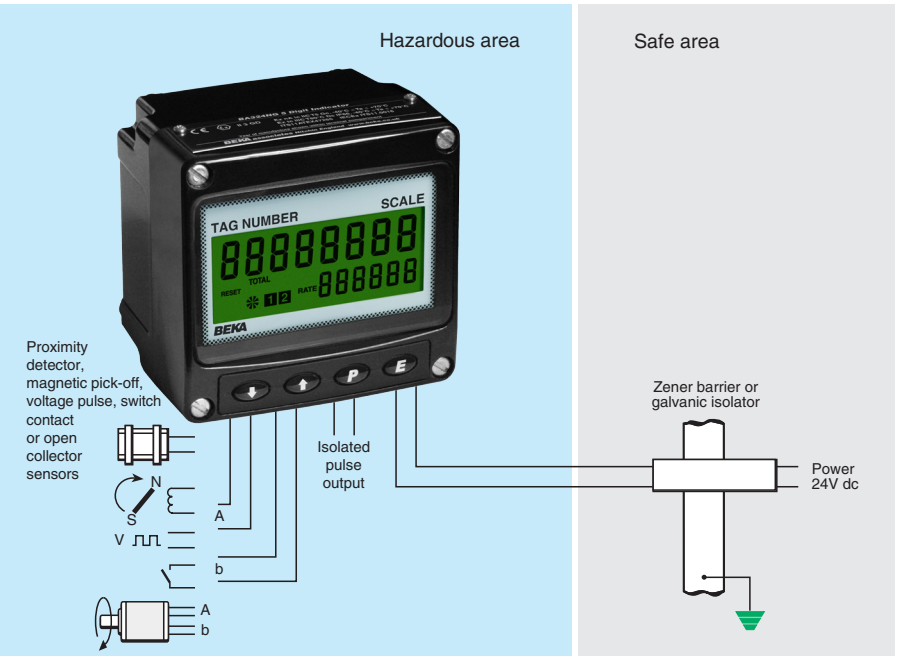
 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA364E
Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature encoder input *
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Escutcheon marking	
Units	Legend required
Tag	Legend required *No charge if ordered with counter*
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

* Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.



Shown with optional backlight

BA364G
two input counter

Intrinsically safe for use in all gas & dust hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.**
- **Separate displays**
- **Intrinsically safe**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba364g

The BA364G is a two input, field mounting, intrinsically safe counter which can display the sum or difference of the two pulse inputs, or the count direction of input A may be controlled by input b, The output from a quadrature encoder can also be decoded to show speed and direction of movement. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364G, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA364G counter to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms with galvanically isolated solid state outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364G display show the status of both alarm outputs.

Other field mounting counters include the BA364E which has the same functions as the BA364G, but incorporates a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 5 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*.

Source and output	Either input, synchronous pulse output 5kHz max or Least significant digit of total display pulse output divisible by 1, 10, 100, 1000 or 10000 Pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Each input individually configurable

Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature encoder input (Inputs 90° out of phase).
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Group II Category 1D Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	] USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	] USA
	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da	] Canada
	-40°C ≤ Ta ≤ 70°C	

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

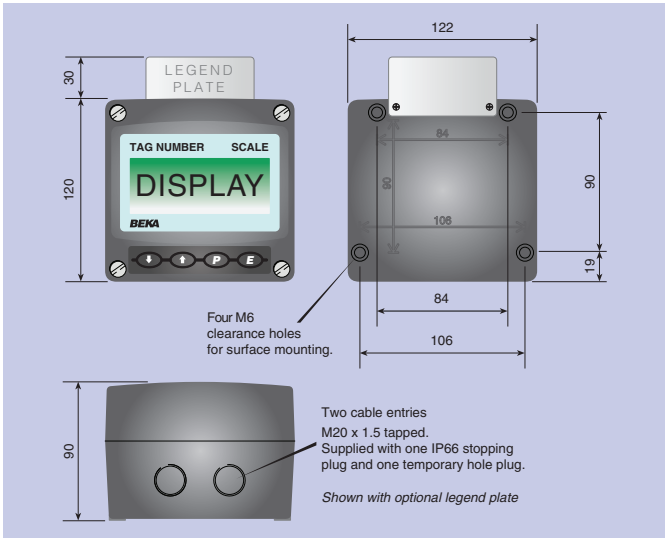
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

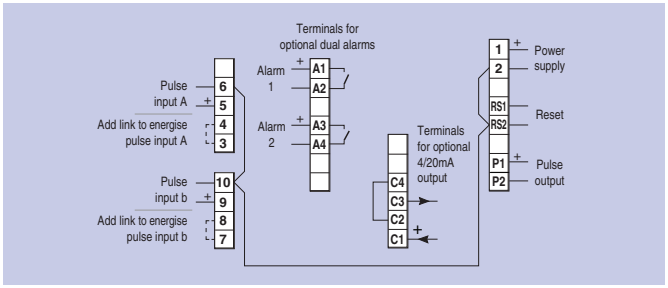
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 28V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

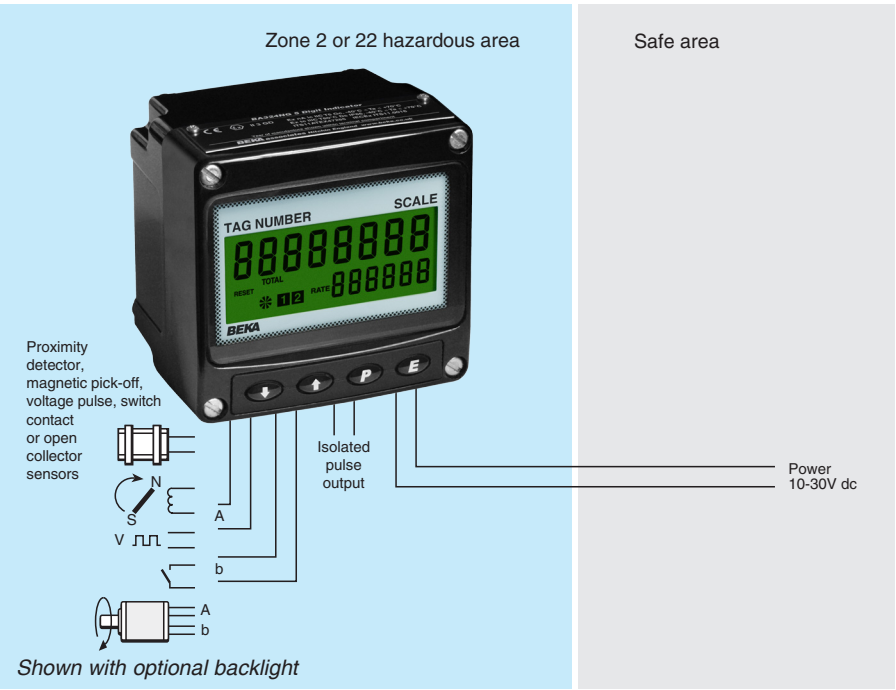
 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA364G
Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature encoder input (Inputs 90° out of phase). *
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with counter*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA364NG

Ex nA two input counter

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.**
- **Separate displays**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba364ng

The BA364NG is a third generation field mounting two input counter housed in a compact IP66 GRP enclosure. The counter is easy to use and each input can be individually configured on-site to operate with sensors having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation cost.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA364NG, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

International Ex nA and Ex tc certification allows the BA364NG counter to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

An optional isolated 4/20mA current sink output may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms with galvanically isolated solid state outputs can switch hazardous or safe area loads such as a sounder or solenoid valve. Both may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA364NG display show the status of both alarm outputs.

Other field mounting counters include the intrinsically safe BA364E and BA364G which have the same functions as the BA364NG. The BA564G is a general purpose model for use in safe areas.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30Vdc
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width*
Other inputs	100kHz max	*and debounce setting.*
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point.
Total ‡	8 digits 18mm high
Decimal point	1 of 5 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset — Contact closure with resistance less than 10kΩ

Pulse output — Isolated open collector

Source and output	Either input synchronous pulse output 5kHz max or Least significant digit of total display pulse output divisible by 1, 10, 100, 1000 or 10000 Pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Ui	30Vdc
I max	10mA

Configurable functions
Each input individually configurable

Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature input (Inputs 90° out of phase).
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Certification — **Note: Ex ic codes refer to instrument push button contacts which are nonincendive.**

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc	USA
	Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C	Canada
ETL Control No.	4008610	

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

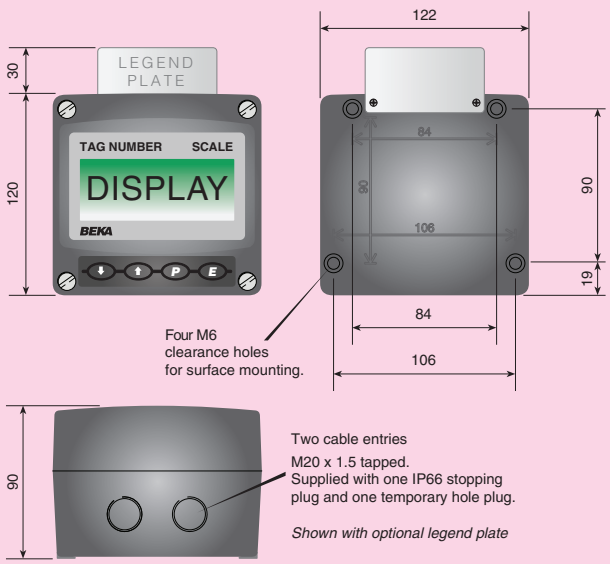
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

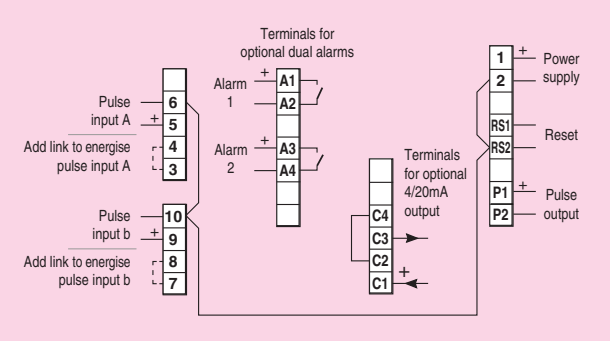
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Ui	30V dc
Ii	200mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

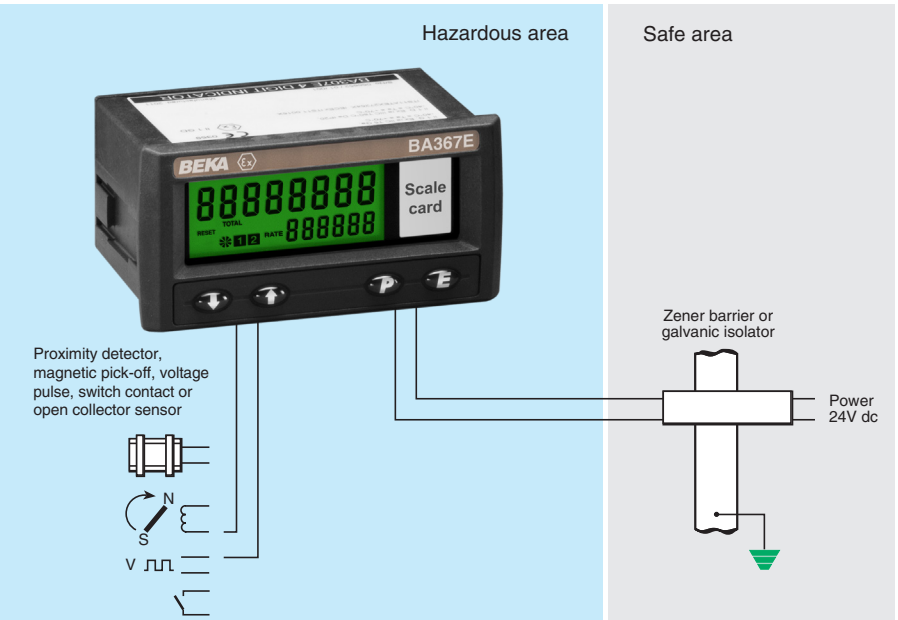
 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA364NG
Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature input (Inputs 90° out of phase). *
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with counter*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA367E

One input counter

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Optional:**
  Backlight
  dual alarms
  or 4/20mA output
  or pulse output
- **3 year guarantee**

www.beka.co.uk/ba367e

The BA367E is a one input intrinsically safe counter with one input that has similar functions as the two input BA368E, but is housed in a smaller 96 x 48mm DIN enclosure. The counter is easy to use and can be configured on-site to operate with magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA367E is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

IP66 front panel protection with a neoprene gasket to seal the joint between the counter and the instrument panel, allows the BA367E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA367E counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA367E counter. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the total or rate display,

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367E display show the status of both alarm outputs.

Rugged versions and a two input counter are available in other models within the range. The BA367E-SS is identical to the BA367E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. The BA367NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

The BA368E is a two input counter with a larger display in a 144 x 72mm DIN enclosure.

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X
ETL & cETL	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.15kg

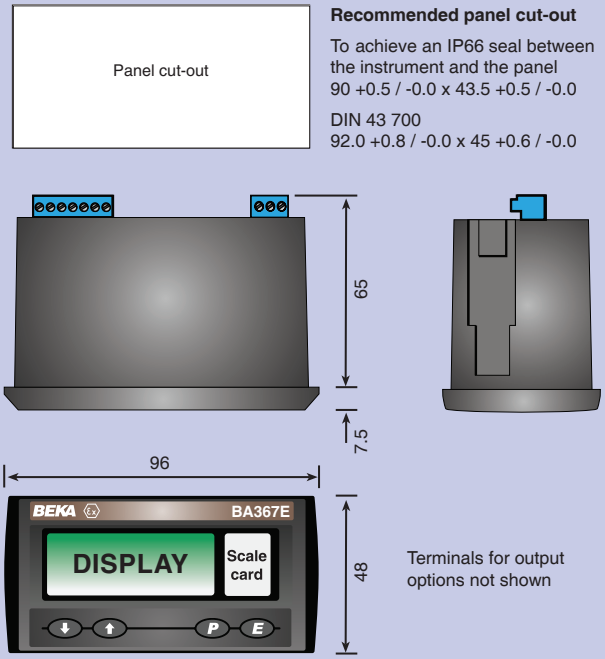
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each counter. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000. Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

DIMENSIONS (mm)



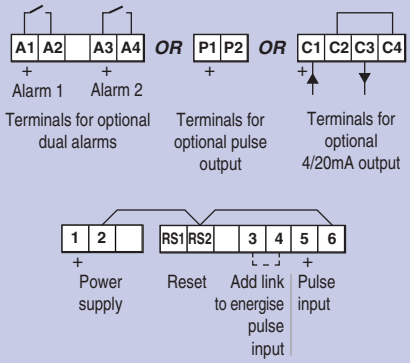
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



4/20mA output	Isolated current sink.
Source	Rate or total
Voltage	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

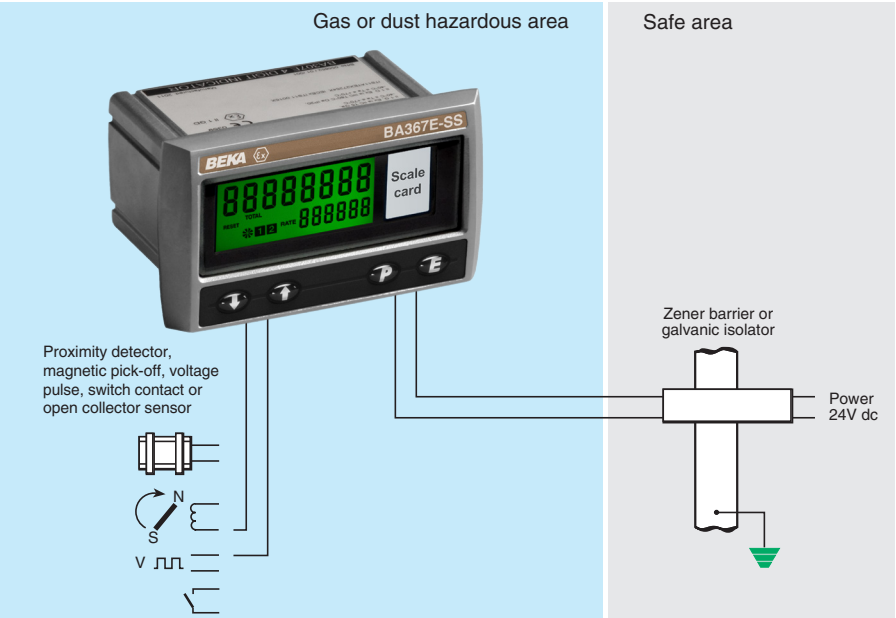
	Please specify
Model number	BA367E
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with counter.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

	Pulse output	Pulse output
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

BA367E-SS

Rugged one input counter

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous area

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba367e-ss

The BA367E-SS is an intrinsically safe counter housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA367E-SS to be safely installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification. The intrinsically safe counter may also be installed in any uncertified panel enclosure located in Zones 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA367E-SS is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the rate and total in engineering units within the hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

IP66 front panel protection with a silicone gasket to seal the joint between the counter and the instrument panel, allows the BA367E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification allows the BA367E-SS counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA367E-SS counter. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output synchronously retransmits the counter input pulse to other instruments or a pulse when the least significant digit of the total display is incremented. When transmitting a pulse representing the total count the output pulse frequency may be divided and the output pulse width may be defined.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the total or rate display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range. The BA367E which is identical to the BA367E-SS but is housed in a Noryl enclosure. The BA367NE is also identical to the BA367E-SS but has Ex nA and Ex tc certification allowing installation in Zone 2 or Zone 22 without Zener barriers or galvanic isolators.

For a larger display the BA368E is a two input counter in a 144 x 72mm DIN enclosure.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight.

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	IECEx ITS 16.0004X
ETL & cETL	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

‡ +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA367E-SS enclosure to maintain the certification of the panel enclosure in which the BA367E-SS is mounted.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

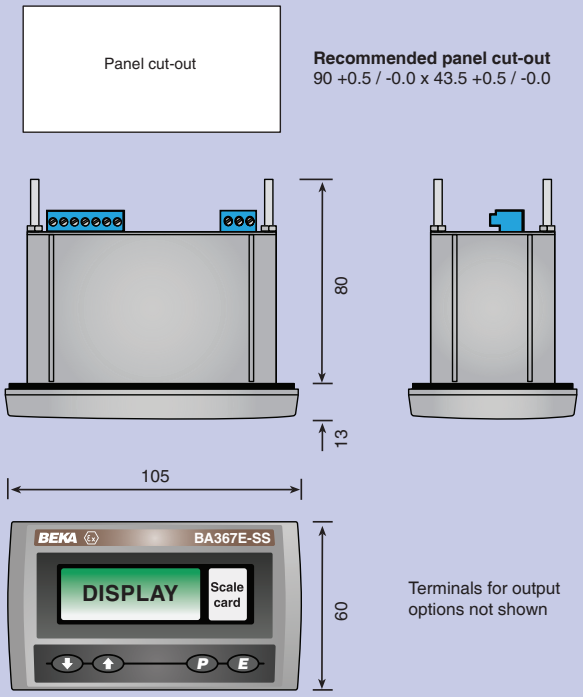
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

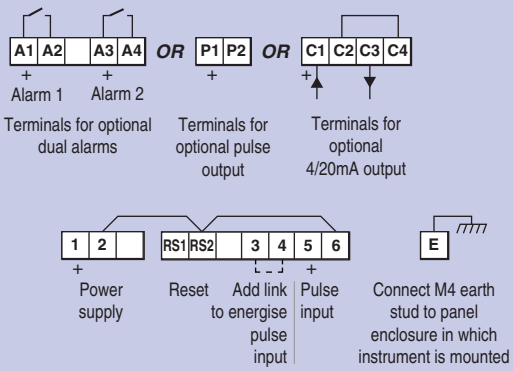
One of the following three output accessories may be factory fitted to each counter. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000. Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



4/20mA output	Isolated current sink.
Source	Rate or total
Voltage	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

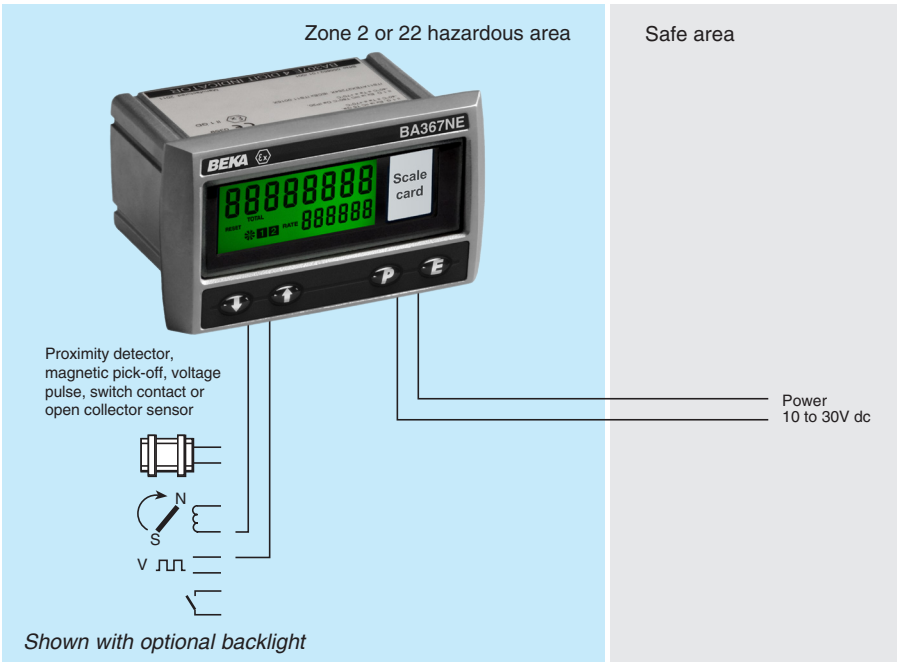
	Please specify
Model number	BA367E-SS
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with counter.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Pulse output
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

* counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.



Shown with optional backlight

The BA367NE has a rugged stainless steel enclosure with Ex nA and Ex tc certification allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 and 22, without the need for Zener barriers or galvanic isolators. The counter is easy to use and can be configured on-site to operate with a wide variety of sensors. A slide-in scale card simplifies identification.

Main application of the BA367NE is to count the number of pulses received from a hazardous area sensor such as a 2-wire proximity detector and simultaneously display the total number and their rate in engineering units within a Zone 2 or 22 hazardous area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

IP66 front panel protection with a silicone gasket to seal the joint between the counter and the instrument panel, allows the BA367NE to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

International Ex nA certification permits the BA367NE counter to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and counter may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly the BA367NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA367NE counter. All are isolated and have defined output parameters.

Optional isolated pulse output synchronously retransmits the counter input pulse to other instruments or a pulse when the least significant digit of the total display is incremented. When transmitting a pulse representing the total count the output pulse frequency may be divided and the output pulse width may be defined.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the total or rate display.

Optional dual alarms can switch suitably protected hazardous area loads such as an Ex e sounder or solenoid valve, or safe area loads. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA367NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA367E-SS has the same features as the BA367NE including a rugged stainless steel enclosure, but is intrinsically safe certified Ex ia.

The intrinsically safe BA367E offers similar features in a Noryl enclosure and the BA368E is a two input intrinsically safe counter in a 144 x 72mm Noryl enclosure with a larger display.

BA367NE

Rugged Ex nA & Ex tc one input counter

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Ex nA & Ex tc certified**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba367ne

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SPECIFICATION

Power supply
- Voltage: 10 to 30V dc
- Current: 16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency
- Switch contact: 150Hz typical
- Other inputs: 100kHz max

Depends upon pulse width and debounce setting.

- All inputs: 0.01Hz min

Display
- Type: Liquid crystal
- Zero blanking: Blanked apart from 0 in front of decimal point
- Total ‡: 8 digits 9mm high
  - Decimal point: 1 of 7 positions or absent
- Rate ‡: 6 digits 6mm high
  - Decimal point: 1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

- Grand total: Maximum count 10^{16}

Remote reset: Contact closure with resistance less than 10kΩ

Configurable functions
- Total scale factor: Adjustable between 0.0001 and 99999
- Rate scale factor: Adjustable between 0.0001 and 99999
- Rate timebase: Rate may be displayed per second, minute or hour
- Rate display filter: Adjustable digital filter

Certification

Note: Ex ic in codes refers to instrument push button contacts which are nonincendive

Europe ATEX
- Code: Group II Category 3G Ex nA ic IIC T5 Gc
  Group II Category 3D Ex ic tc IIIC T80°C Dc
  -40°C ≤ Ta ≤ +60°C
- Cert. No.: ITS16ATEX48409X

International IECEx
- Code: Ex nA ic IIC T5 Gc
  Ex ic tc IIIC T80°C Dc
  -40°C ≤ Ta ≤ +60°C
- Cert. No.: IECEx ITS 16.0005X

ETL & cETL
- Code: Class I Zone 2 AEx nA ic IIC T5 Gc (USA)
  Zone 22 AEx ic tc IIIC T80°C Dc (USA)
  Ex nA ic IIC T5 Gc (Canada)
  Ex n IIC T5 Gc (Canada)
  Ex ic tc IIIC T80°C Dc (Canada)
  -40°C ≤ Ta ≤ 60°C
- ETL Control No.: 4008610

Environmental
- Operating temp: -40 to +60°C display -20 to +60°C
- Storage temp: -40 to +85°C
- Humidity: to 95% at 40°C non condensing
- Vibration: Report available
- Enclosure
  - Ingress: Front IP66, rear IP20
  - Material: BS 3146-2:1977 ANC4B (316)
- EMC: Complies with 2014/30/EU

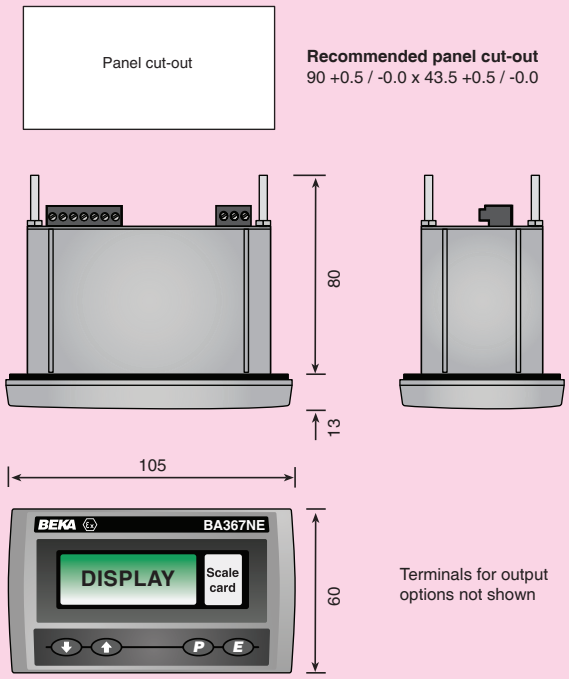
Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
- Weight: 0.85kg

Accessories
- Backlight: Green LED internally powered
- Scale card: Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
- Tag legend: Specified tag number or application laser etched onto rear of instrument. #
- BA495 rear cover and sealing kit: Provides impact and IP66 protection for rear of instrument. #

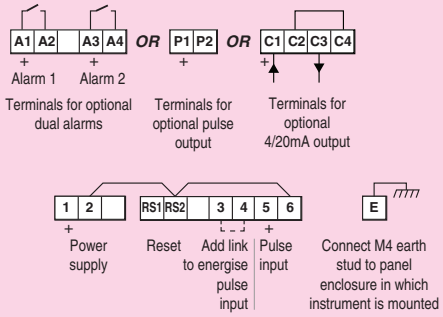
One of the following three output accessories may be factory fitted to each counter.

Pulse output: Isolated open collector
- Source & output: Counter input: synchronous pulse output, 5kHz max
  or
  Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000.
  Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
- Ron: 51Ω + 3V max
- Roff: 1MΩ min
- I max: 10mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



4/20mA output: Isolated current sink.
- Source: Rate or total
- Voltage: 5 to 30V

Dual alarms: Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.

Outputs: Isolated single pole, voltage free solid state switch
- Ron: 5Ω + 0.7V max
- Roff: IMΩ min

 # See accessory datasheet for details

HOW TO ORDER

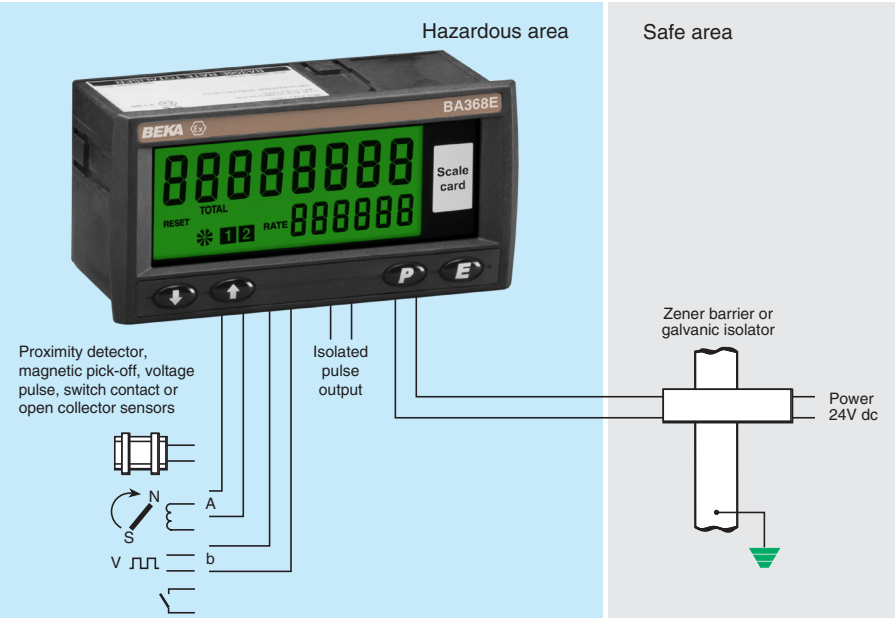
	Please specify
Model number	BA367NE
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with counter.*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

	Pulse output	Direct retransmission or scaled
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA368E is a two input intrinsically safe counter which can display the sum or difference between the two pulse inputs, or the count direction of Input A may be controlled by input b, The output from a quadrature sensor can also be counted. The BA368E is electrically compatible with the earlier BA368C but has a larger display and an isolated pulse output. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Any application requiring the sum or difference of pulse outputs from two sensors, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume pumped in engineering units, can be performed by the BA368E. The counter's quadrature input also enables the position of a shaft or cable to be displayed together with its speed and direction of movement.

The large display has high contrast and a very wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

IP66 front panel protection with a neoprene gasket to seal the joint between the counter and the instrument panel allow the BA368E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

The isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the lease significant digit of the total display is incremented.

International intrinsic safety certification allows the BA368E counter to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA368C, thus allowing the BA368E to safely replace the earlier model.

Display backlighting, which is internally powered from the counter, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing allowing the display to be easily read at night or when the counter is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the rate or total display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as total or rate alarms with normally open or closed outputs. Annunciators on the BA368E display show the status of both alarm outputs.

When panel space is limited the BA367E provides similar one input counting features in a smaller 94 x 48mm enclosure.

BA368E

Two input counter

Intrinsically safe for use in all gas hazardous areas

- **Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Intrinsically safe**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated pulse output**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba368e

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*.

Source & output	Either input: synchronous pulse output, 5kHz max. or Lease significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Input function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase).
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour
Rate display filter	Adjustable digital filter

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X
ETL & cETL	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

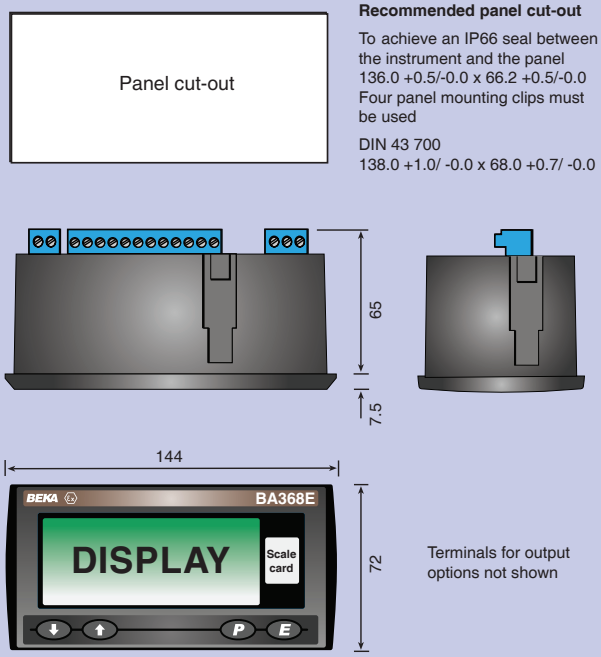
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for *simple apparatus*.
Voltage	5 to 28V
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch, each certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	1MΩ min

DIMENSIONS (mm)



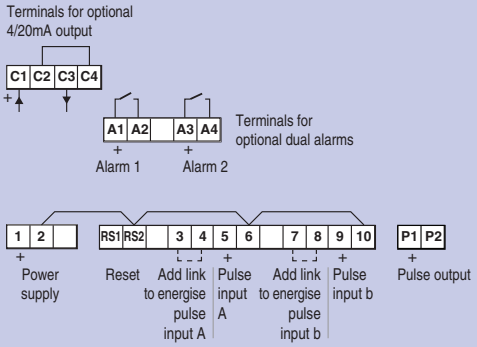
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



Scale card	Blank card fitted, can be supplied typeset with specified units of measurement for no additional charge if ordered with counter. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ *See accessory datasheet for details*

HOW TO ORDER

	Please specify
Model number	BA368E
Inputs	Type *
Function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase).*
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.*

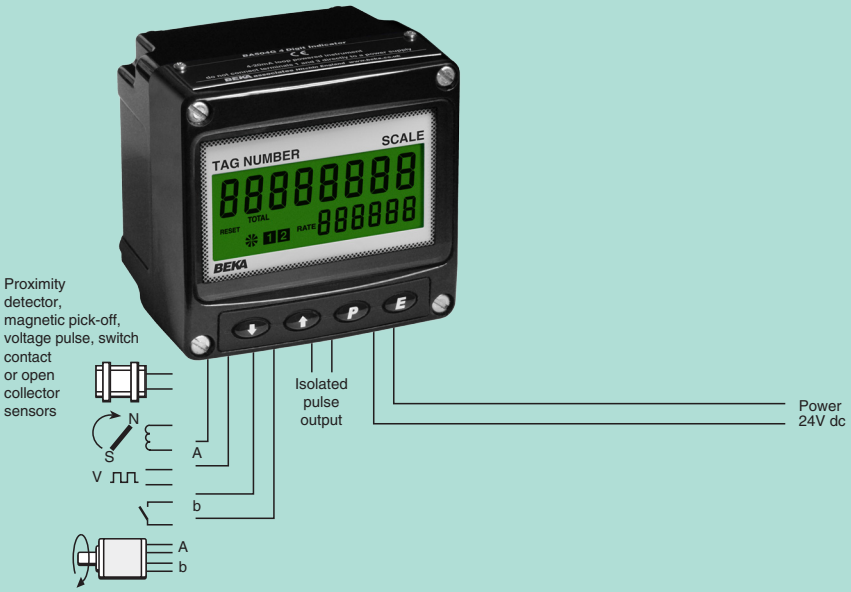
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with counter.*
Tag	Legend required

* *counter can be supplied configured as required for no additional charge.*
If configuration information is not supplied, instrument will be configured for open collector inputs, Input A + Input b with total and rate scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission.
Can easily be reconfigured on-site.

BA564G

two input counter

General purpose



Shown with optional backlight

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector, voltage pulse or quadrature decoder.**
- **Separate rate and total displays.**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba564g

The BA564G is a third generation, field mounting two input counter housed in a compact IP66 GRP enclosure. The counter is easy to use and each input can be individually configured on-site to operate with sensors having a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse output. Alternatively, the two counter inputs can be used for decoding the output from a quadrature position encoder.

Any display application requiring the sum or difference of pulse outputs from two sensors can be performed by the BA564G, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume and rate of pumping in engineering units. The counter's quadrature decoder also enables the position of a shaft or a cable to be displayed together with it's speed and direction of movement.

The large display has high contrast and a wide viewing angle, enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output may be configured to synchronously retransmit either pulse input, or a scaled pulse when the least significant digit of the total display is incremented.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

An optional isolated 4/20mA current sink output may be configured to produce an output proportional to any part of the rate or total display.

Optional dual alarms with galvanically isolated solid state outputs can switch loads such as a sounder or solenoid valve. Both alarms may be independently configured as a rate or a total alarm monitoring either input, or the sum or difference of the two inputs. Annunciators on the BA564G display show the status of both alarm outputs.

Panel mounting counters with one and two inputs and a variety of display and enclosure sizes are also available, see BA567E, BA567E-SS and BA568E. Field and panel mounting models with similar specifications are available for hazardous area applications.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 18mm high
Decimal point	1 of 5 positions or absent
Rate ‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Source and output	Either input, synchronous pulse output 5kHz max. or Least significant digit of total display output divisible by 1, 10, 100, 1000 or 10000 Pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30V dc
I max	10mA

Configurable functions

Each input individually configurable

Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature input (Inputs 90° out of phase).
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

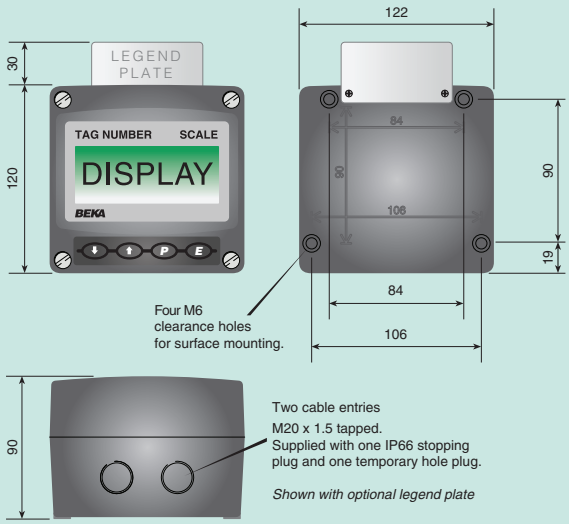
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

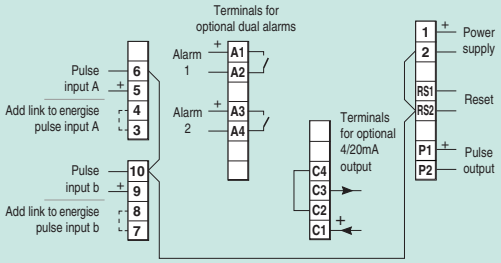
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

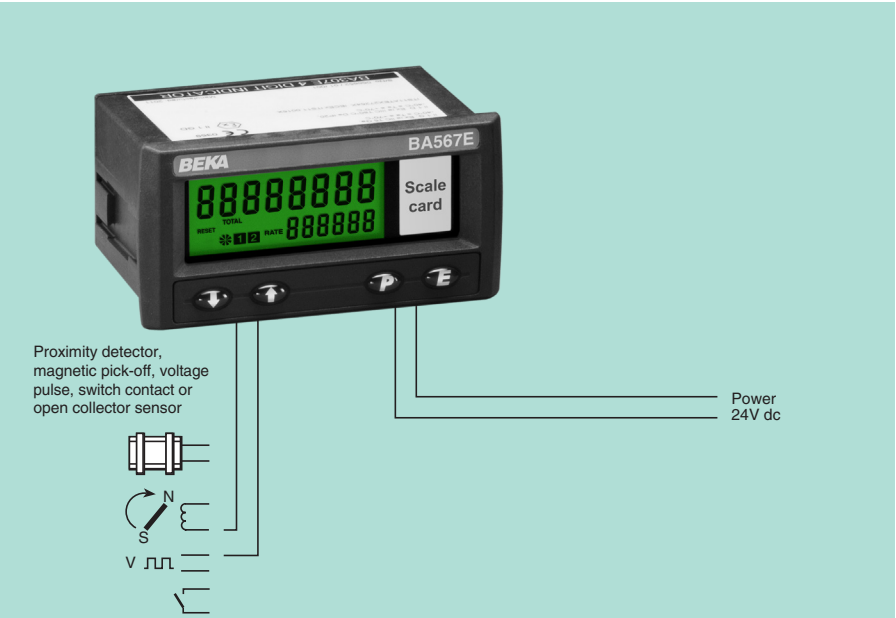
 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA564G
Input function	Input A + b: Input A – b: Input A direction controlled by input b or quadrature input (Inputs 90° out of phase). *
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with counter*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for Input A + b, open collector inputs with rate and total scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA567E

One input counter

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  dual alarms
  or 4/20mA output
  or pulse output
- **3 year guarantee**

www.beka.co.uk/ba567e

The BA567E is a general purpose counter with one input housed in a 96 x 48mm DIN enclosure. The counter is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card shows the units of measurement.

Main application of the BA567E is to count the number of pulses received from a process area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the process area or control room.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a neoprene gasket to seal the joint between the counter and the instrument panel, allows the BA567E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

One of the following three isolated outputs may be fitted to a BA567E counter. All are factory fitted options.

Optional open collector pulse output will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the total or rate display.

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state, voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA567E display show the status of both alarm outputs.

A rugged version and a two input counter with a larger display are available in other models within the range. The BA567E-SS is identical to the BA567E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window which is ideal for applications in marine or hostile environments where the front of the instrument may be impacted.

The BA368E is a two input counter with a larger display in a 144 x 72mm DIN enclosure. Both inputs can be displayed separately and, depending upon the configuration, their sum or difference.

For applications in flammable atmospheres the BA367E, which is identical to the BA567E, has international intrinsic safety certification. The BA367NE has Ex nA and Ex tc approval allowing use in Zone 2 or 22 without Zener barriers or galvanic isolators.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.15kg

Accessories

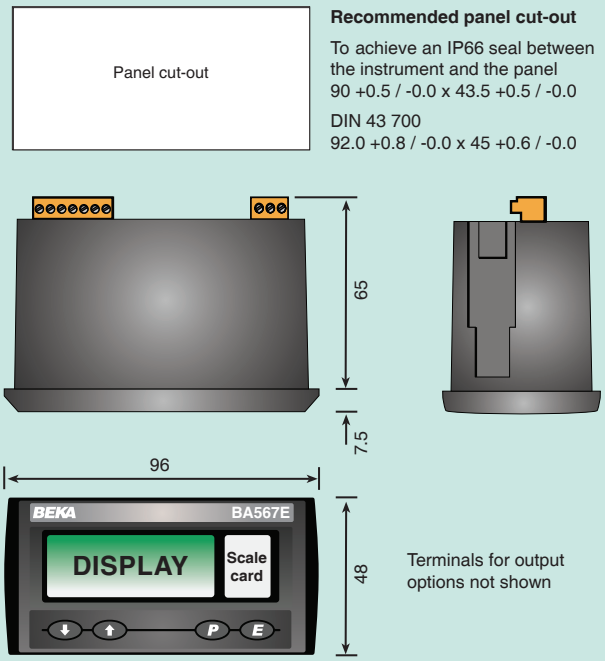
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each counter. All have isolated outputs.

Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max. or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000 Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Source	Rate or total
Voltage	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



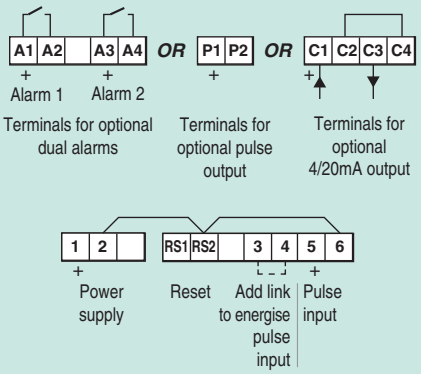
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

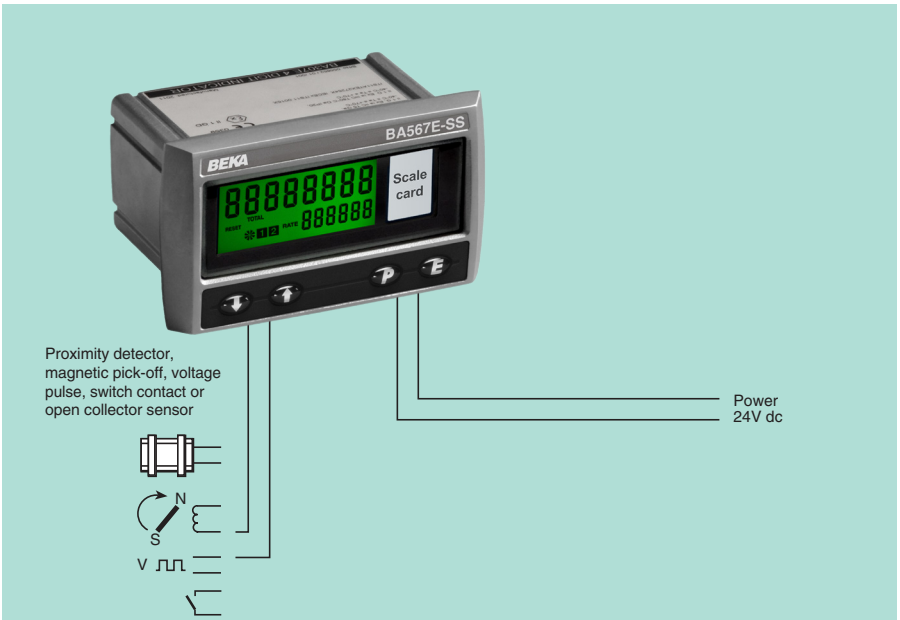
	Please specify
Model number	BA567E
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with counter*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Pulse output
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

** Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

BA567E-SS

Rugged one input counter

General purpose

- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Simple on-site scale card installation.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba567e-ss

The BA567E-SS is a one input general purpose counter housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is suitable for use in hostile and marine environments, or where the front of the instrument is likely to be impacted. The counter is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card shows the units of measurement.

Main application of the BA567E-SS is to count the number of pulses received from a process area sensor such as a 2-wire proximity detector and simultaneously display the rate and total number in engineering units within the process area.

The display has high contrast and a wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total number of pulses may be scaled and displayed in almost any units to represent the engineering variable being counted. The total display may be reset using the front panel push buttons or an external contact closure. The pulse rate may be shown in the same or different units per second, minute or hour.

Display backlighting which is internally powered from the counter is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three isolated outputs may be fitted to a BA567E-SS counter. All are factory fitted options.

Optional open collector pulse output will synchronously retransmit the counter input pulse, or a pulse when the least significant digit of the total display is incremented.

Optional 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the total or rate display,

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state, voltage free outputs may be independently conditioned as rate or total alarms with normally open or closed outputs. Annunciators on the BA567E-SS display show the status of both alarm outputs.

For less hostile environments the BA567E is identical to the BA567E-SS except that it is housed in a Noryl enclosure also providing IP66 front of panel protection.

The BA568E is a two input counter with a larger display in a 144 x 72mm DIN enclosure. Both inputs can be displayed separately and, depending upon the configuration, their sum or difference can also be shown.

For applications in flammable atmospheres the BA367E-SS, which is identical to the BA567E-SS, has international intrinsic safety certification. The BA367NE has Ex nA and Ex tc approval allowing use in Zone 2 or 22 without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total ‡	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Rate ‡	6 digits 6mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	BS 3146-2:1977 ANC4B (316)
Ingress	Front IP66, rear IP20
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.85kg

Accessories

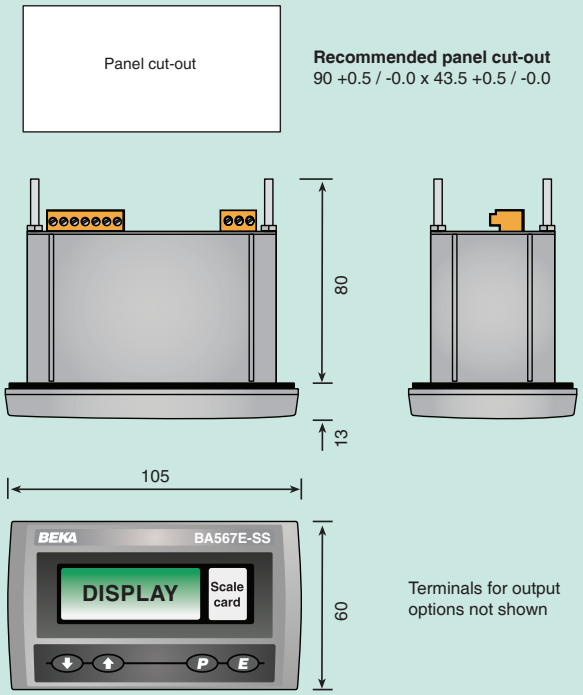
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each counter. All have isolated outputs.

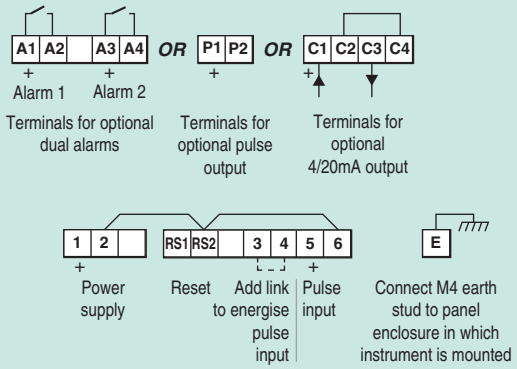
Pulse output	Isolated open collector
Source & output	Counter input: synchronous pulse output, 5kHz max. or Least significant digit of total display divisible by: 1, 10, 100, 1000 or 10000 Pulse width definable as: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Source	Rate or total
Voltage	5 to 30V
Dual alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

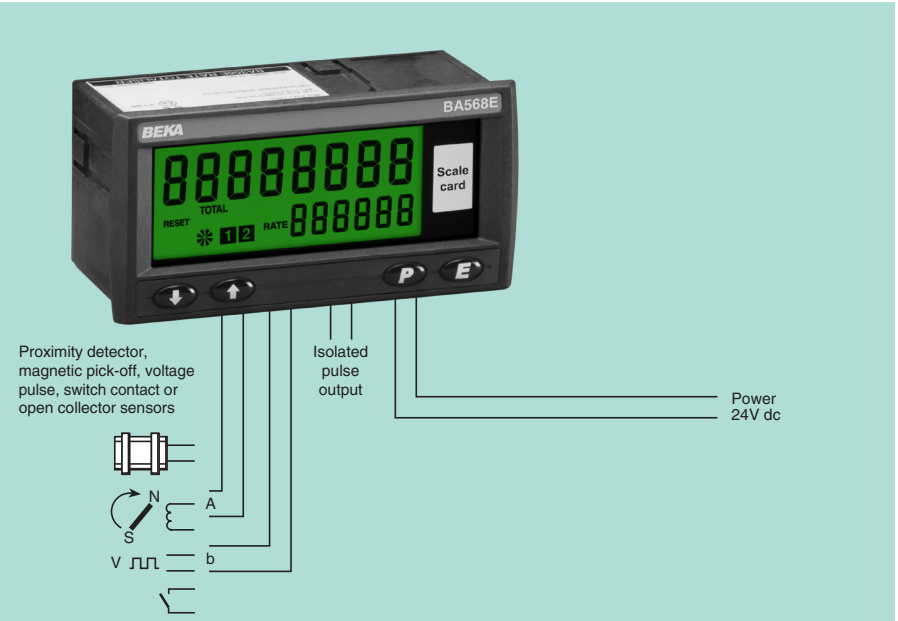
	Please specify
Model number	BA567E-SS
Input	Type *
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with counter*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Pulse output
or 4/20mA output	4/20mA output
or Dual alarms	Alarms
Rear cover and sealing kit	BA495

** Counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with total and rate scaling factors of 1.0 and a timebase of seconds. Can easily be reconfigured on-site.*



Shown with optional backlight

BA568E

Two input counter

General purpose

- **Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate rate and total displays.**
- **Can display position from quadrature sensor output.**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Simple on-site scale card installation.**
- **Isolated pulse output**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba568e

The BA568E is a two input general purpose counter which can display the sum or difference between the two pulse inputs, or the count direction of Input A may be controlled by input b. The output from a quadrature sensor can also be decoded to calculate and display position. The counter is easy to use and each input can be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a sensor with a voltage pulse output. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Any application requiring the sum or difference of pulse outputs from two sensors, such as counting the number of strokes performed by two reciprocating pumps and displaying total volume pumped in engineering units, can be performed by the BA568E. The counter's quadrature input also enables the position of a shaft or cable to be displayed together with its speed and direction of movement.

The large display has high contrast and a very wide viewing angle enabling the counter to be read in most lighting conditions over a wide temperature range. The total display may be shown in almost any engineering units and may be reset using the front panel push buttons or an external contact closure. Rate may be displayed in the same or different units of measurement per second, minute or hour.

IP66 front panel protection with a neoprene gasket to seal the joint between the counter and the instrument panel allow the BA568E to be installed in areas that will be washed down. To simplify installation and maintenance, the counter has removable terminal blocks allowing panel wiring to be completed before the instrument is installed.

The isolated open collector pulse output can be configured to synchronously retransmit either pulse input, or a pulse each time the least significant digit of the total display is incremented.

Display backlighting, which is internally powered from the counter, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the counter is installed in a poorly illuminated area.

An optional isolated 4/20mA current sink output may be configured to produce an analogue output proportional to any part of the rate or total display.

Optional dual alarms can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as total or rate alarms with normally open or closed outputs. Annunciators on the BA568E display show the status of both alarm outputs.

If panel space is limited the BA567E is a one input counter housed in a 96 x 48mm enclosure which has similar single input features as the BA568E. Alternatively for applications in severe environments, or where the front of the instrument may be impacted, the BA567E-SS is housed in a rugged 316 stainless steel enclosure.

For applications in flammable atmospheres the BA368E, which is identical to the BA568E, has international intrinsic safety certification. For Zone 2 or 22 applications the rugged stainless steel BA367NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolator.

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Total‡	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Rate‡	6 digits 12mm high
Decimal point	1 of 4 positions or absent

‡ Rate & Total can be shown on either 6 or 8 digit display

Grand total	Maximum count 10^{16}
Remote reset	Contact closure with resistance less than 10kΩ
Pulse output	Isolated open collector
Source & output	Either input: synchronous pulse output, 5kHz max or Least significant digit of total display: pulse output divisible by 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Input function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase).
Total scale factor	Adjustable between 0.0001 and 99999
Rate scale factor	Adjustable between 0.0001 and 99999
Rate timebase	Rate may be displayed per second, minute or hour.
Rate display filter	Adjustable digital filter

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

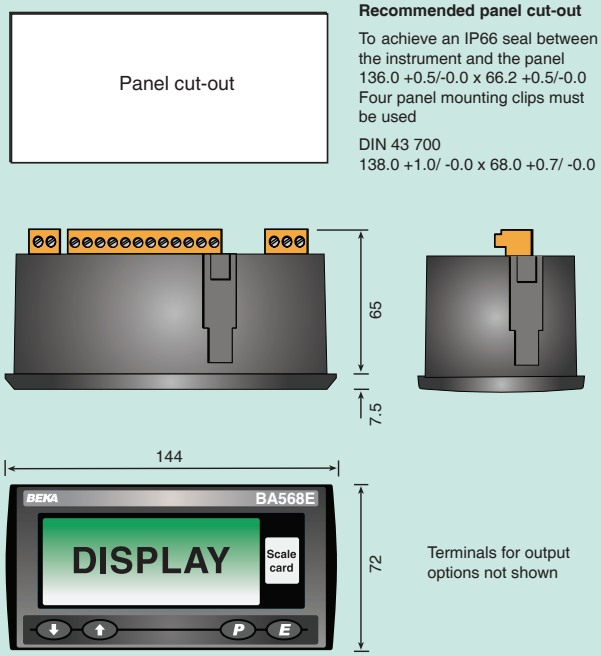
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output Voltage	Isolated current sink 5 to 30V
Alarms	Two alarms each of which may be independently configured as a rate or total, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	1MΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted, can be supplied printed with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ *See accessory datasheet for details*

DIMENSIONS (mm)



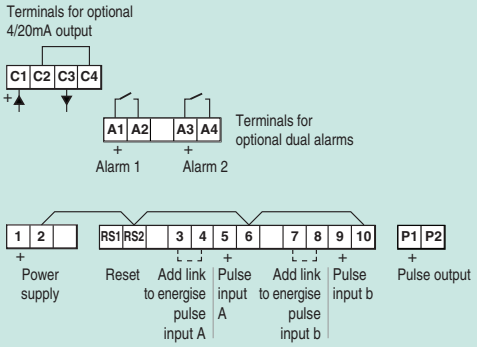
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA568E
Inputs	Type *
Function	Input A + Input b: Input A - Input b: Input A direction controlled by Input b. Quadrature sensor (90° out of phase).*
Total scale factor	XXXXX *
Rate scale factor	XXXXX *
Rate timebase	Seconds, minutes or hours*
Pulse output	Direct retransmission or derived from least significant digit of total display: pulse output divided by 1, 10, 100, 1000 or 10000; pulse width defined as 0.1, 0.5, 1, 2.5, 5, 10, 25, 50 100, 250 or 500ms.*

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with counter*
Tag	Legend required

** counter can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector inputs, Input A + Input b with total and rate scaling factors of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

Tachometers

Speed and hours run indication

Intrinsically safe

Ex nA

General purpose

A tachometer for every application which can display speed and run-time on separate displays.Operates with most transducers.

> **Large high contrast displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety
Ex nA non sparking
Dust certification.

> **Field mounting models have IP66 GRP enclosure**
Compact 'G' models
'E' models with separate terminal compartment
Pipe and panel mounting accessories

> **Panel mounting models**
Choice of sizes all with IP66 front panels
Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
Rear IP66 sealing kit

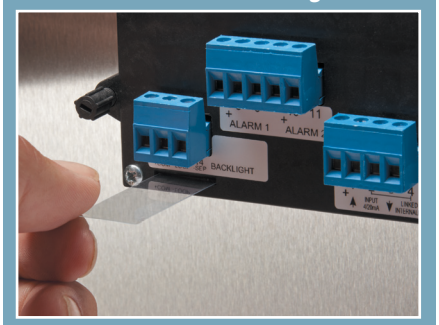
> **Isolated pulse output**
Synchronous with input for retransmission

> **-40 to +70˚C operating temperature range**

> **Accessories**
Dual isolated alarms
Isolated 4/20mA output
Backlight
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
Laser engraved stainless steel legend plates

Scale card with printed customer specified legend.

Slide-in scale card can be supplied printed with customer specified information for no extra charge.

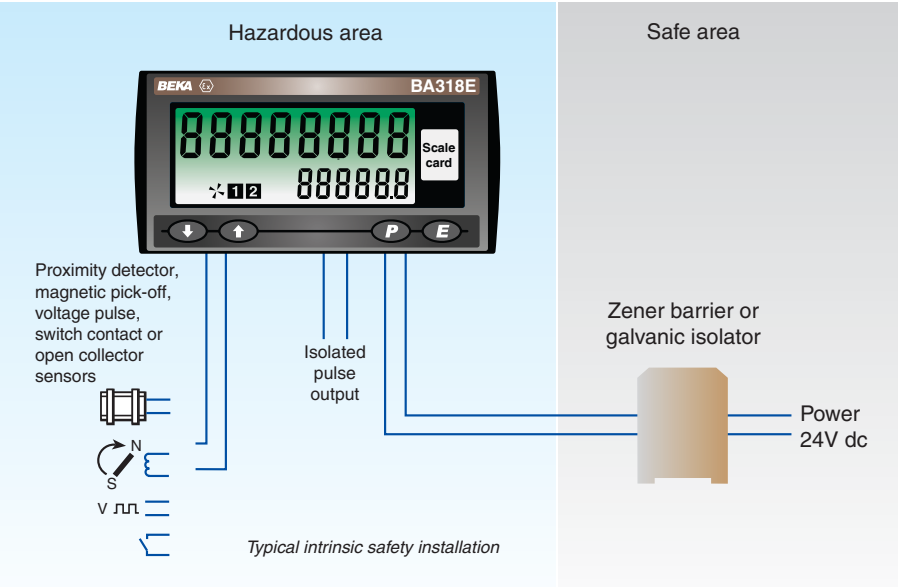


Easy scale card installation without the need to remove indicator from the panel.

Tachometers available

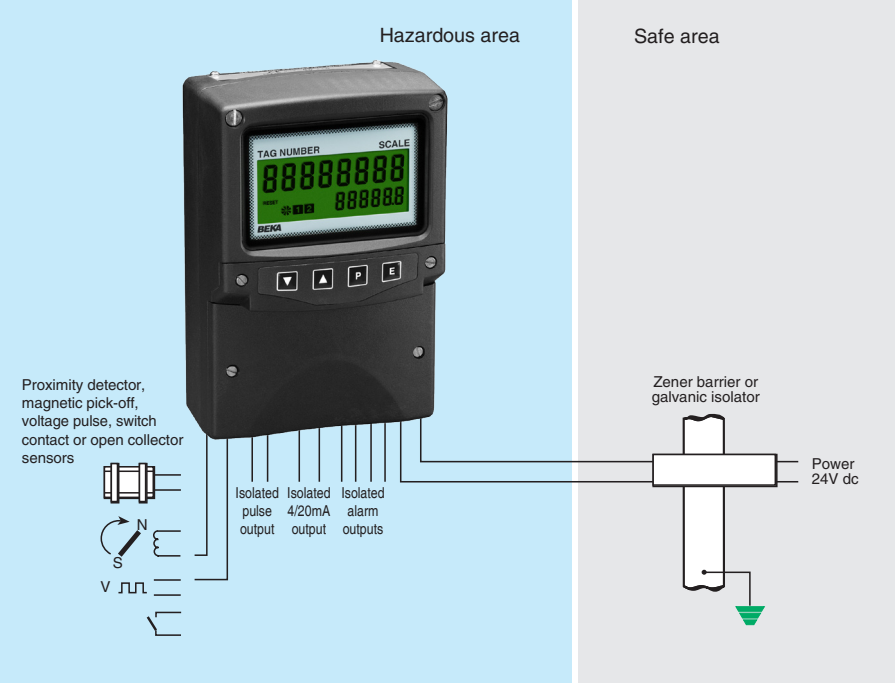
Model No.	Mounting	Input	Display digits		Certification					
					Europe ATEX		International IECEx		USA & Canada	
			SPEED No. x height	RUN-TIME No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified										
BA314G	Field compact	Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA314E	Field - separate tml. compartment	Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA317E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm	✔	–	✔	–	✔	✔
BA317E-SS*	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
BA318E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators										
BA314NG	Field compact	Pulse	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA317NE	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
General Purpose - for use in safe areas										
BA514G	Field compact	Pulse	8 x 18mm	6 x 12mm						
BA517E	Panel 96 x 48	Pulse	8 x 9mm	6 x 6mm						
BA517E-SS	Panel Rugged 105 x 60	Pulse	8 x 9mm	6 x 6mm						
BA518E	Panel 144 x 72	Pulse	8 x 18mm	6 x 12mm						

* *Certification allows installation in an Ex e, Ex p or Ex t panel enclosure without invalidating enclosure certification*



Typical intrinsic safety installation

Speed measurement *for every* ***application*** *- delivered ready for* ***installation***



BA314E

One input tachometer

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Intrinsically safe**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Isolated dual alarms, pulse and 4/20mA outputs.**
- **3 year guarantee**

www.beka.co.uk/ba314e

The BA314E is a third generation intrinsically safe field mounting tachometer housed in a robust IP66 GRP enclosure. The BA314E supersedes the BA364D. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. International intrinsic safety certification permits worldwide installation.

The main application of the BA314E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance, the BA314E tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314E tachometer to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer's input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing and allows the instrument to be easily read at night or when installed in a poorly illuminated area. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument electronics.

The isolated open collector pulse output which complies with the requirements for *simple apparatus*, synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

The isolated 4/20mA output which also complies with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed display.

Dual alarms can switch hazardous area loads such as a sounder or a solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms, with normally open or closed outputs. Annunciators on the tachometer display show the status of both alarm outputs.

The display escutcheon can be marked to show the BA314E tachometer's units of measurement and tag information. New instruments are supplied with a printed escutcheon showing customer specified marking, if this information is not supplied when the instrument is ordered, a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

When space is limited the compact BA314G is a smaller version of the BA314E, it has the same functions, but it does not have a separate terminal compartment.

For installation in Zone 2 or 22 without the need for Zener barriers or galvanic isolators, the BA314NG is similar to the BA314E but has Ex nA and Ex tc certification.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

BEKA associates

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SPECIFICATION

Power supply
- Voltage: 10 to 28V from a Zener barrier or galvanic isolator
- Current: 32mA

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency
- Switch contact: 150Hz typical
- Other inputs: 100kHz max
- All inputs: 0.01Hz min

Depends upon pulse width and debounce setting.

Display
- Type: Liquid crystal
- Zero blanking: Blanked apart from 0 in front of decimal point
- Speed: 8 digits 18mm high
- Decimal point: 1 of 7 positions or absent
- Run-time: 6 digits 12mm high, 99999.9 hours max
- Grand total run-time: 5 x 10^6 hours max

Remote reset: Contact closure with resistance less than 10kΩ

Configurable functions
- Speed scale factor: Adjustable between 0.0001 and 99999 pulses / revolution.
- Speed timebase: Speed may be displayed per second, minute or hour

Pulse output: Isolated open collector
- Frequency: 5kHz max, synchronous with input pulse, or divisable with defined pulse width.
- Divisible by: 1, 10, 100, 1000 or 10000
- Pulse width: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
- Ron: 51Ω + 3V max
- Roff: 1MΩ min
- I max: 10mA

4/20mA output: Isolated current sink, configurable to represent any part of the speed display.
- Voltage drop: 5 to 28V

Dual alarms: Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
- Outputs: Isolated single pole, voltage free solid state switch
  - Ron: 5Ω + 0.7V max
  - Roff: IMΩ min

Intrinsic safety

Europe ATEX
- Code: Group II Category 1G Ex ia IIC T5 Ga
  -40 ≤ Ta ≤ 70°C
- Cert. No.: ITS16ATEX28408X

International IECEx
- Code: Ex ia IIC T5 Ga
  -40 ≤ Ta ≤ 70°C
- Cert. No: IECEx ITS 16.0004X

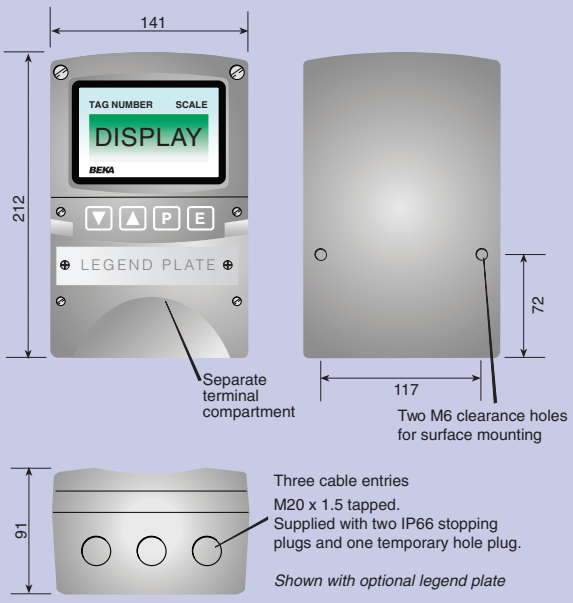
ETL & cETL
- Code:
  - Class I Div 1 Gp A, B, C, D T5] USA & Canada
  - Class II Div 1 Gp E, F, G Class III] USA & Canada
  - Class I Zone 0 AEx ia IIC T5 Ga] USA
  - Zone 20 AEx ia IIIC T80°C Da] USA
  - Ex ia IIC T5 Ga] Canada
  - -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL
- Code: Class I Div 2 Gp A, B, C, D T5
  Class II Div 2 Gp F, G
  Class III Div 2
  -40°C ≤ Ta ≤ 70°C
- ETL Control No.: 4008610

Environmental
- Operating temp: -40 to +70°C display -20 to +70°C
- Storage temp: -40 to +85°C
- Humidity: to 95% at 40°C non condensing
- Vibration: Report available
- Enclosure
  - Material: GRP
  - Ingress: IP66
- EMC: Complies with 2014/30/EU

Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm²
- Weight: 1.7kg

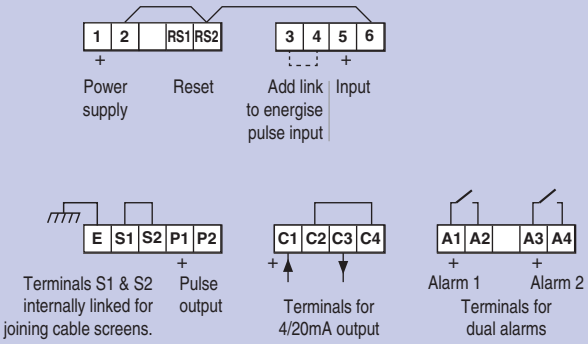
DIMENSIONS (mm)



Three cable entries
M20 x 1.5 tapped.
Supplied with two IP66 stopping plugs and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



Accessories
- Escutcheon: Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
- Legend plate: 316 stainless steel plate secured to the front of the instrument laser engraved with tag number or application information. #
- Pipe mounting kit: BA392D or BA393 #

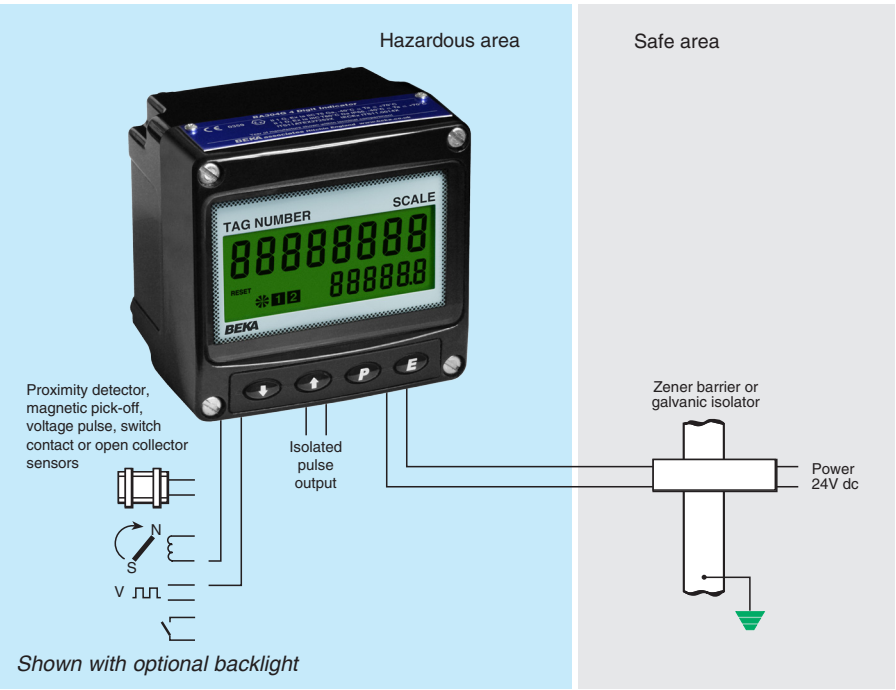
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*

Accessories	Please specify if required
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA314G

One input tachometer

Intrinsically safe for use in all gas & dust hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Intrinsically safe**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba314g

The BA314G is a third generation intrinsically safe field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International intrinsic safety certification permits worldwide installation.

The main application of the BA314G is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA314G tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International intrinsic safety certification allows the BA314G tachometer to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the tachometer input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot and can easily be changed on-site. New instruments are supplied with a printed scale card showing customer specified information, if this is not supplied a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output synchronously retransmits the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

An optional isolated 4/20mA current sink output, which has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*, may be configured to produce an output proportional to any part of the speed display.

Optional dual alarms can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314G display show the status of both alarm outputs.

Other field mounting tachometers include the BA314E which has the same functions as the BA314G, but incorporates a separate terminal compartment and supersedes the BA364D.

For installation in Zone 2 or 22 the BA314NG, which has the same functions as the BA314G, has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for use in hazardous and safe areas.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight.

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high, 99999.9 hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Group II Category 1D Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	] USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	] USA
	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da	] Canada
	-40°C ≤ Ta ≤ 70°C	

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

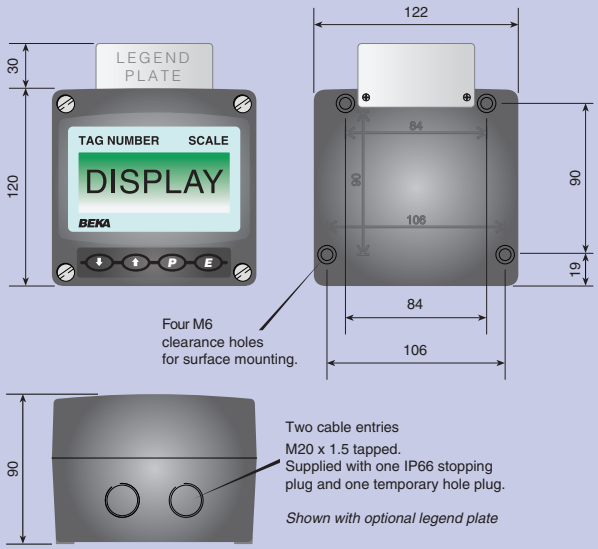
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

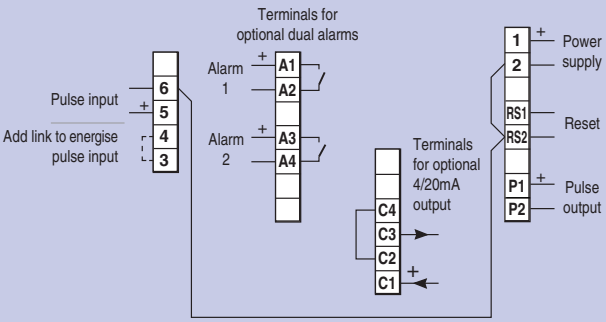
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 28V
Dual alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



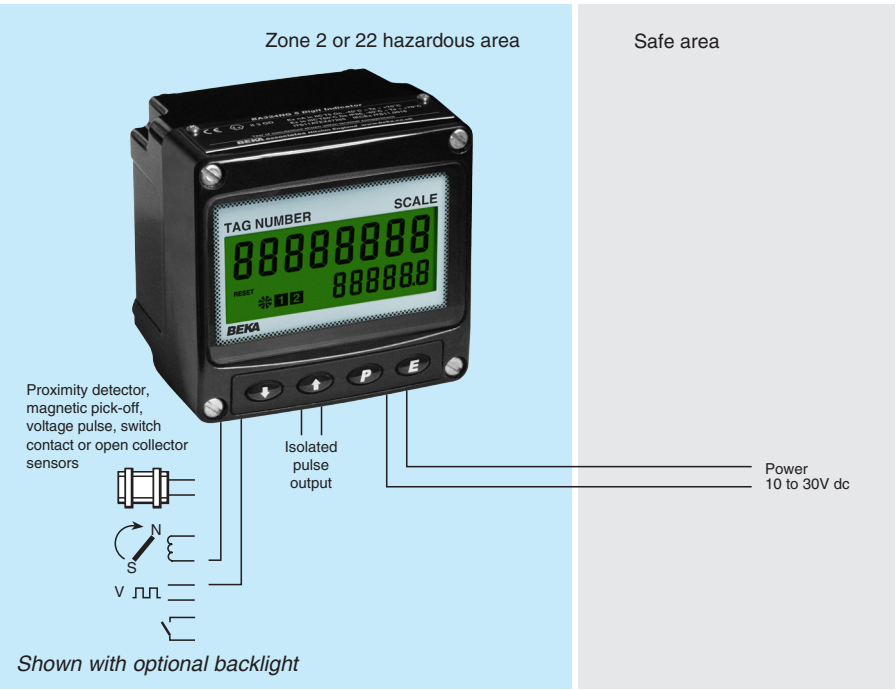
Legend plate	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314G
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

BA314NG

Ex nA one input tachometer

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba314ng

The BA314NG is a third generation field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or open collector sensor. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces installation costs.

The main application of the BA314NG is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA314NG tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

International Ex nA and Ex tc certification allows the BA314NG tachometer to be installed in gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the tachometer to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot allowing on-site removal and marking. New instruments are fitted with a printed scale card showing customer specified information, if this information is not supplied a blank card is fitted which can easily be marked on-site. For applications requiring external marking an optional stainless steel legend plate is available.

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

An isolated 4/20mA current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the speed display.

Optional dual alarms can switch hazardous or safe area loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA314NG display show the status of both alarm outputs.

Other field mounting tachometers include the intrinsically safe BA314E and BA314G, and the general purpose BA514G, all of which have the same functions as the BA314NG.

Panel mounting tachometers with similar specifications are available in a variety of sizes and material for hazardous and general purpose applications.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply
- Voltage: 10 to 30V dc
- Current: 16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency
- Switch contact: 150Hz typical
- Other inputs: 100kHz max
- All inputs: 0.01Hz min

Depends upon pulse width and debounce setting.

Display
- Type: Liquid crystal
- Zero blanking: Blanked apart from 0 in front of decimal point
- Speed: 8 digits 18mm high
- Decimal point: 1 of 7 positions or absent
- Run-time: 6 digits 12mm high, 99999.9 hours max
- Grand total run-time: 5 x 10^6 hours max

Remote reset: Contact closure with resistance less than 10k Ω

Pulse output: Isolated open collector
- Frequency: 5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
- Divisible by: 1, 10, 100, 1000 or 10000
- Pulse width: 0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
- Ron: 51Ω + 3V max
- Roff: 1MΩ min
- Ui: 30Vdc
- I max: 10mA

Configurable functions
- Speed scale factor: Adjustable between 0.0001 and 99999pulses/revolution
- Speed timebase: Speed may be displayed per second, minute or hour

Certification

Note: Ex ic codes refer to instrument push button contacts which are nonincendive.

Europe ATEX
- Code: Group II Category 3G Ex nA ic IIC T5 Gc
  Group II Category 3D Ex ic tc IIIC T80°C Dc
  -40 ≤ Ta ≤ 60°C
- Cert. No.: ITS16ATEX28409X

International IECEx
- Code: Ex nA ic IIC T5 Gc
  Ex ic tc IIIC T80°C Dc
  -40 ≤ Ta ≤ 60°C
- Cert. No: IECEx ITS 16.0005X

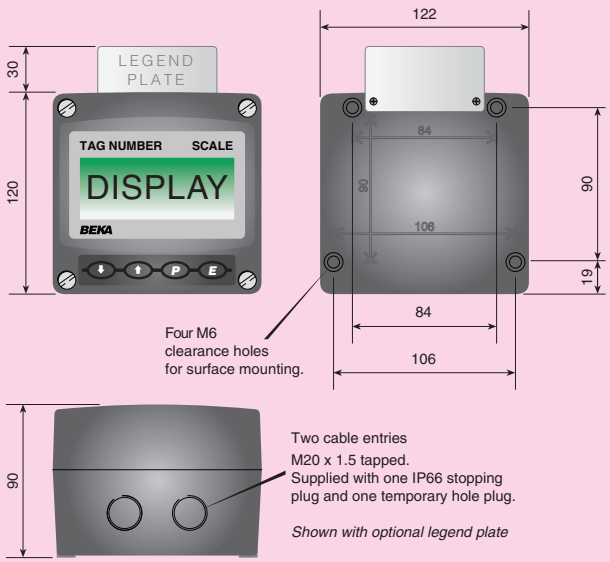
ETL & cETL
- Code: Class I Zone 2 AEx nA ic IIC T5 Gc
  Zone 22 AEx ic tc IIIC T80°C Dc — USA
  Ex nA ic IIC T5 Gc
  Ex n IIC T5 Gc
  Ex ic tc IIIC T80°C Dc
  Class III Div 2, Class II Div 2, Gp F, G — Canada
  -40°C ≤ Ta ≤ 60°C
- ETL Control No.: 4008610

Environmental
- Operating temp: -40 to +70°C display -20 to +70°C
- Certification temp: -40 to +60°C
- Storage temp: -40 to +85°C
- Humidity: to 95% at 40°C non condensing
- Vibration: Report available
- Enclosure
  - Material: GRP
  - Ingress: IP66
- EMC: Complies with 2014/30/EU

Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm²
- Weight: 1.1kg

Accessories
- Backlight: Green LED internally powered
- 4/20mA output: Isolated current sink
- Voltage drop: 5 to 30V
- Dual alarms: Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
- Outputs: Isolated single pole, voltage free solid state switch
  - Ron: 5Ω + 0.7V max
  - Roff: IMΩ min
  - Ui: 30V dc
  - Ii: 200mA
- Scale card: Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #

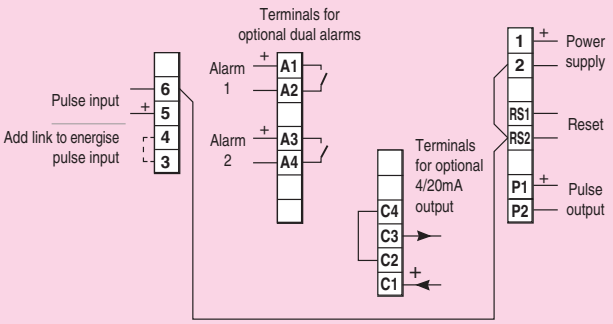
DIMENSIONS (mm)



Two cable entries
M20 x 1.5 tapped.
Supplied with one IP66 stopping plug and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



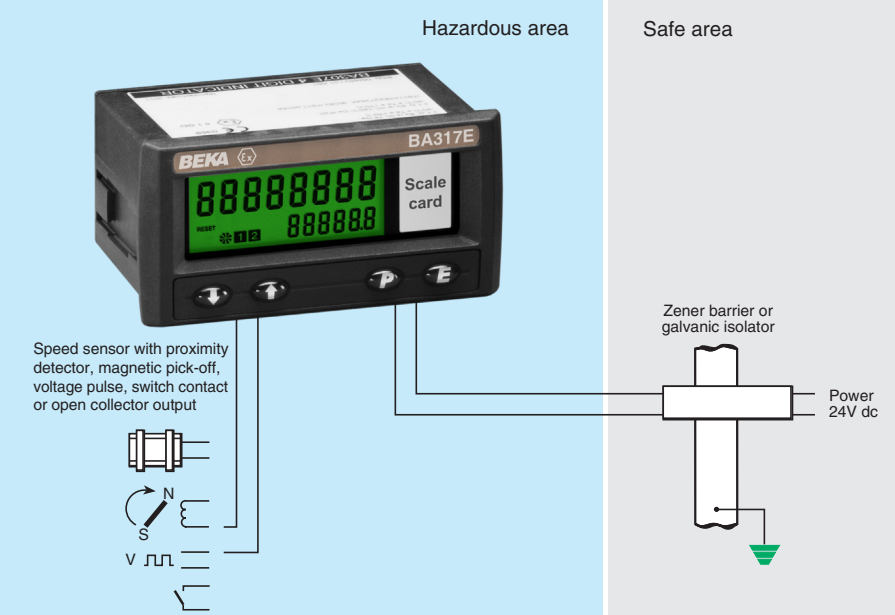
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA314NG
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA317E is a third generation intrinsically safe tachometer that has similar functions as the BA318E, but is housed in a smaller 96 x 48mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA317E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 front panel protection with a neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA317E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA317E tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA317E tachometer. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarms which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317E display show the status of both alarm outputs.

Rugged versions and a larger display are available in other models within the range. The BA317E-SS is identical to the BA317E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e or Ex p panel enclosure without invalidating the enclosure's certification. The BA317NE has Ex nA certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA318E offers similar features in a 144 x 72mm enclosure.

BA317E

One input tachometer

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Intrinsically safe**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba317e

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high, 99999.9 hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.15kg

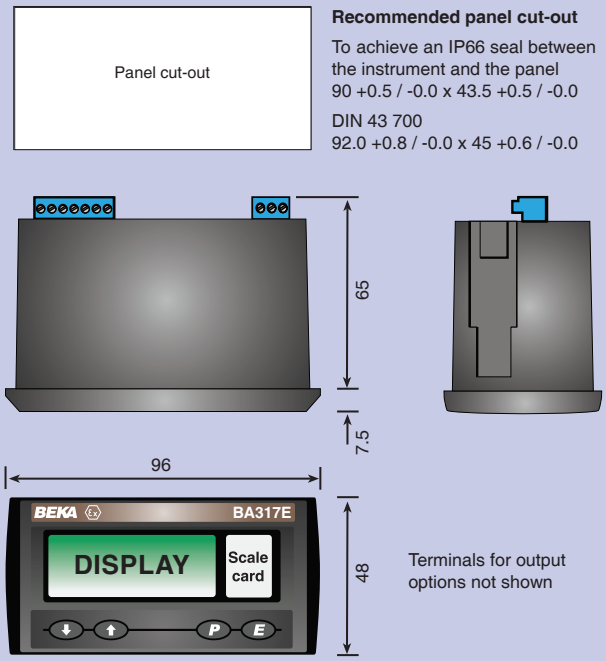
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

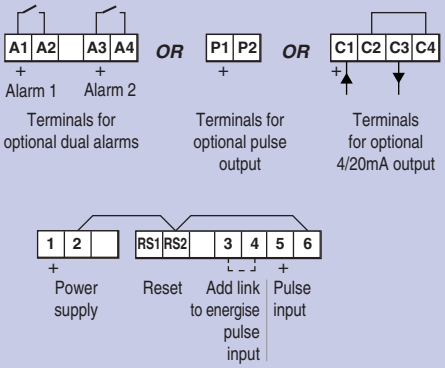
One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 28V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

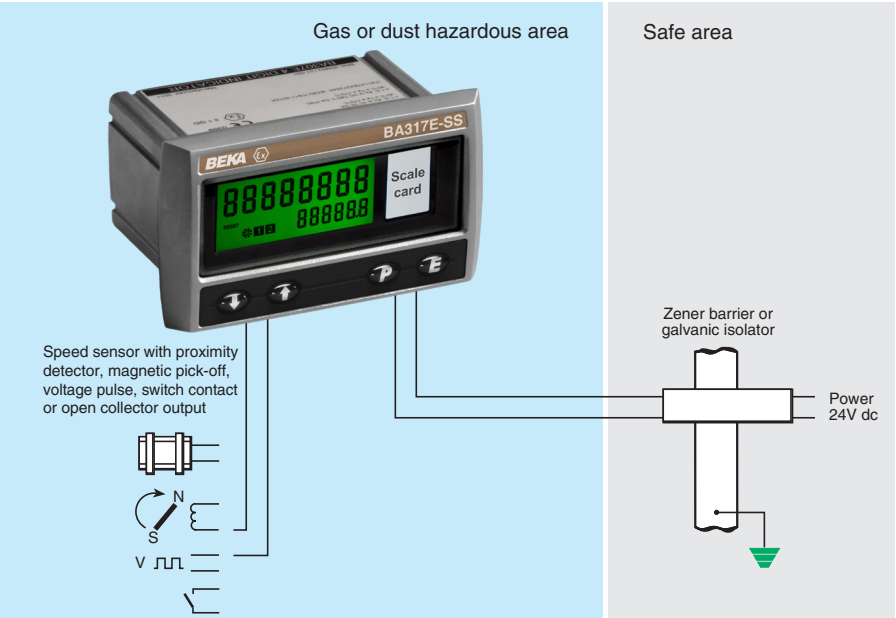
HOW TO ORDER

	Please specify
Model number	BA317E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
Tag	Legend required

One of following three output options:

	Pulse output	Direct retransmission or scaled*
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA317E-SS is an intrinsically safe tachometer housed in a rugged stainless steel enclosure. The intrinsic safety certification and the rugged enclosure allow the BA317E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the panel enclosures certification. The intrinsically safe tachometer may also be installed in any uncertified panel enclosure located in Zone 0, 1 or 2 and is particularly suitable for marine environments or where the front of the instrument is likely to be impacted. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA317E-SS is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the BA317E-SS tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 front panel protection with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA317E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA317E-SS tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA317E-SS tachometer. All are isolated and have been certified as separate intrinsically safe circuits complying with the requirements for *simple apparatus*.

Optional isolated pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarms which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317E-SS display show the status of both alarm outputs.

Zone 2 certification and a larger display are available in other models within the range including the BA317E which is functionally identical to the BA317E-SS in a Noryl enclosure.

The BA317NE has the same features as the BA317E-SS, but is Ex nA and Ex tc certified allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required, the BA318E offers similar features in a Noryl 144 x 72mm enclosure.

BA317E-SS

Rugged one input tachometer

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Intrinsically safe**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba317e-ss

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 28V from Zener barrier or galvanic isolator
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width*
Other inputs	100kHz max	*and debounce setting.*
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high, 99999.9 hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second,minute or hour.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

‡ +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA317E-SS enclosure to maintain the certification of the panel enclosure in which the BA317E-SS is mounted.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

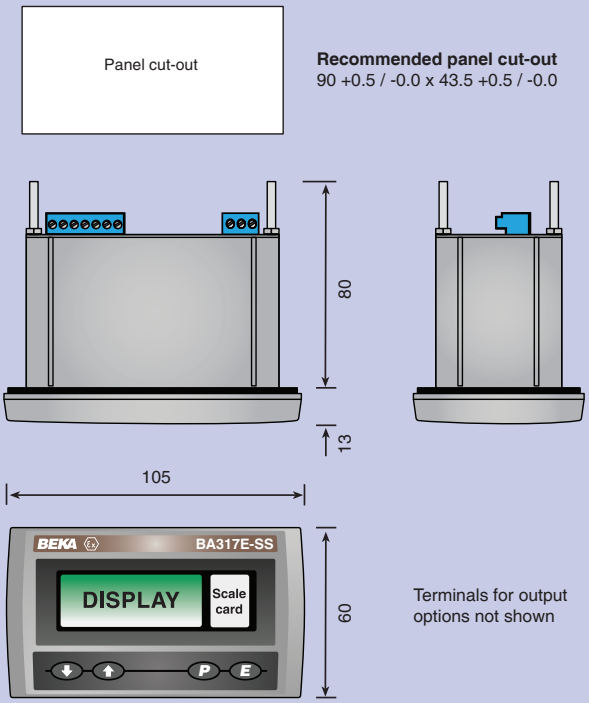
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~

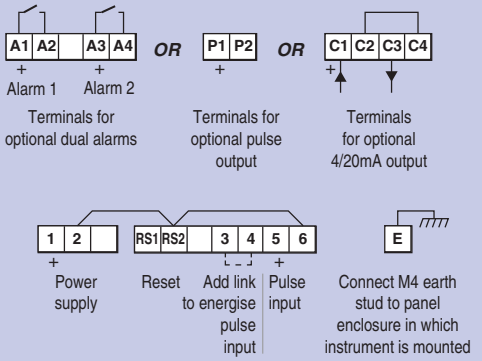
One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs which have been certified as separate intrinsically safe circuits and comply with the requirements for *simple apparatus*.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 28V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

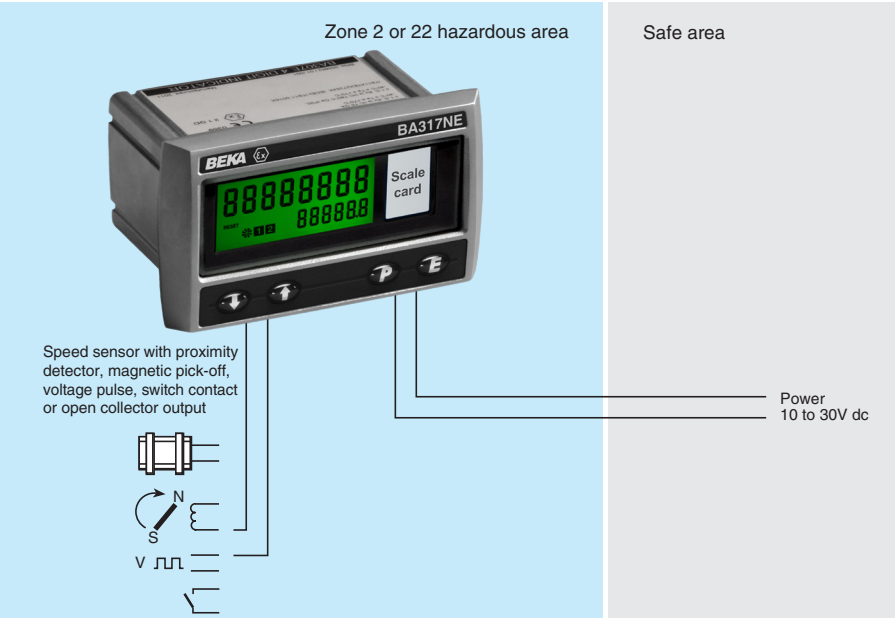
HOW TO ORDER

	Please specify
Model number	BA317E-SS
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
Tag	Legend required

One of following three output options:

	Pulse output	Direct retransmission or scaled*
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA317NE has a rugged stainless steel enclosure with Ex nA and Ex tc certification allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22, without the need for Zener barriers or galvanic isolators. The tachometer is easy to use and can be configured on-site to operate with a wide variety of speed sensors. A slide-in scale card simplifies identification.

Main application of the BA317NE is to measure and display rotational speed within a Zone 2 or 22 hazardous area. To assist with routine maintenance the BA317NE tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 front panel protection with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA317NE to be installed in areas that will be washed down.

International Ex nA certification permits the BA317NE tachometer to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and tachometer may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly the BA317NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA317NE tachometer. All are isolated and have defined output parameters.

Optional isolated pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

Optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarms which can switch suitably protected hazardous area loads such as an Ex e sounder or solenoid valve, or safe area loads. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA317NE display show the status of both alarm outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA317E-SS has the same features as the BA317NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA317E offers similar features in a Noryl enclosure and the BA318E has similar features in a 144 x 72mm Noryl enclosure with a larger display.

BA317NE

Rugged Ex nA & Ex tc one input tachometer

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Ex nA & Ex tc certified**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba317ne

BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K. Tel. (01462) 438301 Fax (01462) 453971 e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high 99999.9 hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Certification **Note:** Ex ic in codes refers to instrument push button contacts which are nonincendive

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada) -40°C ≤ Ta ≤ 60°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +60°C display -20 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

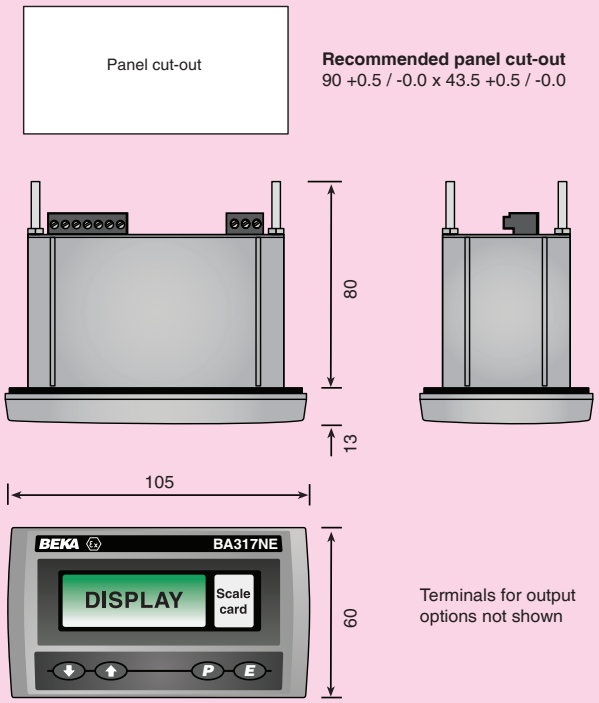
Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application laser etched onto rear of instrument. ~

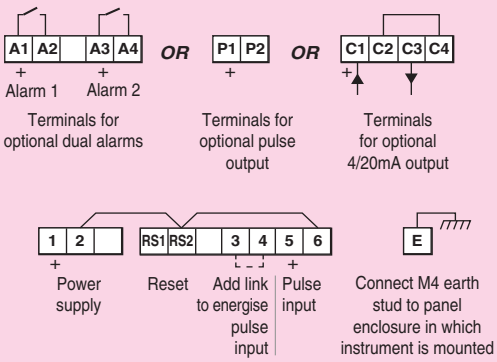
One of the following three output accessories may be factory fitted to each tachometer.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Voltage drop	5 to 30V

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min

~ See accessory datasheet for details

HOW TO ORDER

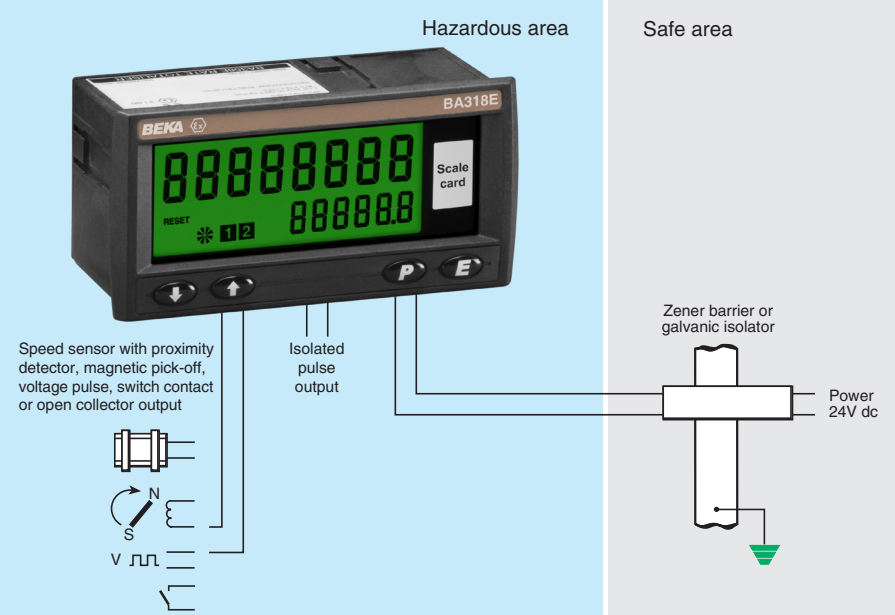
	Please specify
Model number	BA317NE
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer.*
Tag	Legend required

One of following three output options:

	Pulse output	Direct retransmission or scaled*
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms

* *Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*



Shown with optional backlight

BA318E

One input tachometer

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Intrinsically safe**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated pulse output**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba318e

The BA318E is a third generation intrinsically safe tachometer that is compatible with the earlier BA368C, but has a much larger display and an isolated synchronous pulse output. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Main application of the BA318E is to measure and display rotational speed within a hazardous area. To assist with routine maintenance the tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The large display has high contrast and a very wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. An optional backlight is available. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display may be disabled.

Open collector pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

IP66 front panel protection with a neoprene gasket to seal the joint between the tachometer and the instrument panel allows the BA318E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

International intrinsic safety certification permits the BA318E tachometer to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation. All input safety parameters are the same or greater than those for the preceding BA368C, thus allowing the BA318E to safely replace the earlier model.

Display backlighting, which is internally powered from the tachometer, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when the tachometer is installed in a poorly illuminated area.

An optional isolated 4/20mA output may be configured to produce an analogue output proportional to any part of the speed display. The output is galvanically isolated and has been certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus* thus simplifying connection to other instruments.

Optional dual alarms which can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator, are available as a factory fitted option. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA318E display show the status of both alarm outputs.

When panel space is limited the BA317E provides similar features in a smaller 94 x 48mm enclosure.

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high, 99999.9 hours
Grand total run-time	5 x 10^6 hours

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Rate scale factor	Adjustable between 0.0001 and 99999 pulses / revolution
Speed timebase	Speed may be displayed per second, minute or hour.

Intrinsic safety

Europe ATEX	
Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X
International IECEx	
Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X
ETL & cETL	
Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1(USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

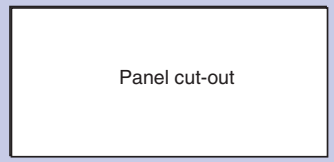
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink, certified as a separate intrinsically safe circuit complying with requirements for *simple apparatus*.
Voltage drop	5 to 28V
Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated, single pole, voltage free solid state switch certified as a separate intrinsically safe circuit complying with requirements for *simple apparatus*.
Ron	5Ω + 0.7V max
Roff	IMΩ min

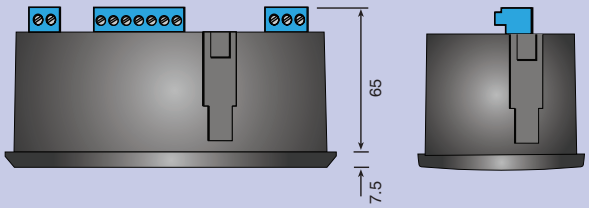
DIMENSIONS (mm)



Recommended panel cut-out

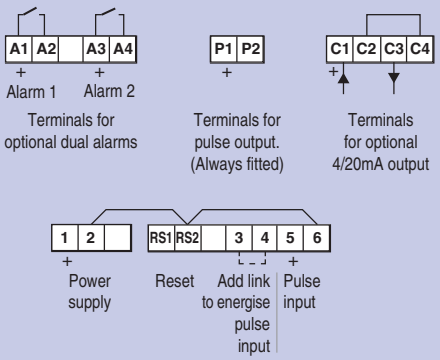
To achieve an IP66 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0 Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

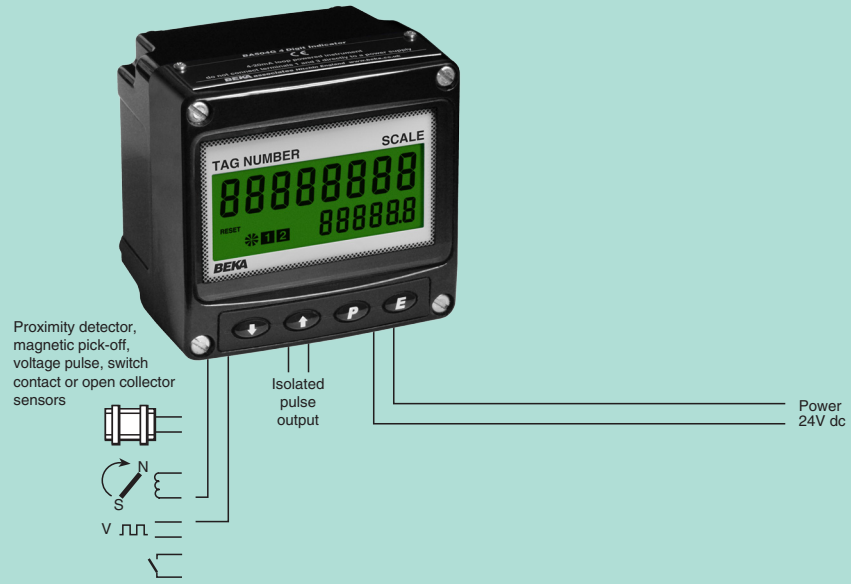
~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA318E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Pulse output	Direct retransmission or scaled*
If scaled:	
Dividing factor	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms

Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card	Legend required *No charge if ordered with tachometer.*
Tag	Legend required

* *Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*



Shown with optional backlight

BA514G

one input tachometer

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms 4/20mA output**
- **3 year guarantee**

www.beka.co.uk/ba514g

The BA514G is a third generation, general purpose field mounting tachometer housed in a compact IP66 GRP enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage pulse sensor.

Main application of the BA514G is to measure and display rotational speed within a process area. To assist with routine maintenance the BA514G tachometer includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The large display has high contrast with a wide viewing angle, enabling the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required the run-time display can be disabled.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the tachometer to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

The scale card which shows the tachometer's units of measurement and tag information slides into an internal slot allowing easy on-site removal and marking. New instruments are fitted with a printed scale card showing customer specified information, if this information is not supplied a blank card is fitted which can easily be marked on-site. For application requiring external marking an optional stainless steel legend plate is available which can be supplied engraved with customer specified information.

The isolated open collector pulse output can synchronously retransmit the tachometer's input pulse to other instruments. The retransmitted output pulse frequency may be divided and the output pulse width may be defined.

A 4/20mA isolated current sink output, which is available as a factory fitted option, may be configured to produce an output proportional to any part of the speed display.

Optional dual alarms can switch loads such as a sounder or a solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA514G display show the status of both alarm outputs.

Panel mounting tachometers with a variety of display and enclosure sizes are also available, see BA517E, BA517E-SS and BA518E. Certified field and panel mounting models are also available for hazardous area applications

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz typical] *Depends upon pulse width*
Other inputs	100kHz max] *and debounce setting.*
All inputs	0.01Hz min

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high, 99999.9 hours max.
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Frequency	5kHz max, synchronous with input pulse, or divisible with selectable pulse width.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30V dc
I max	10mA

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

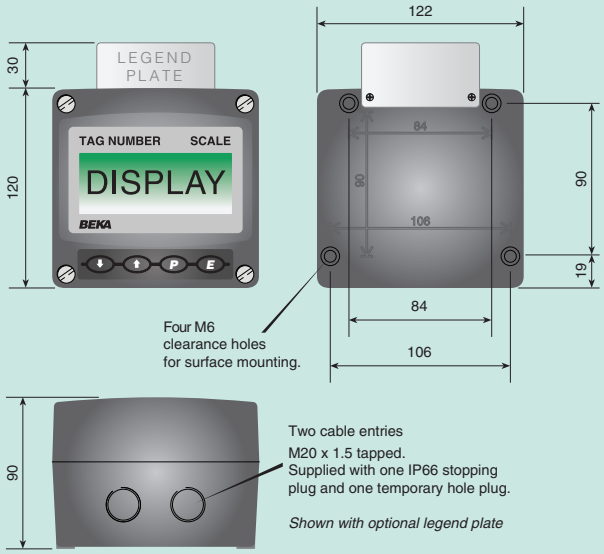
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

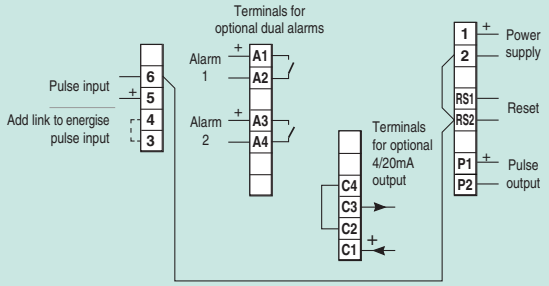
Accessories

Backlight	Green LED internally powered
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Dual alarms	Two alarms, each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	Stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

See accessory datasheet for details

HOW TO ORDER

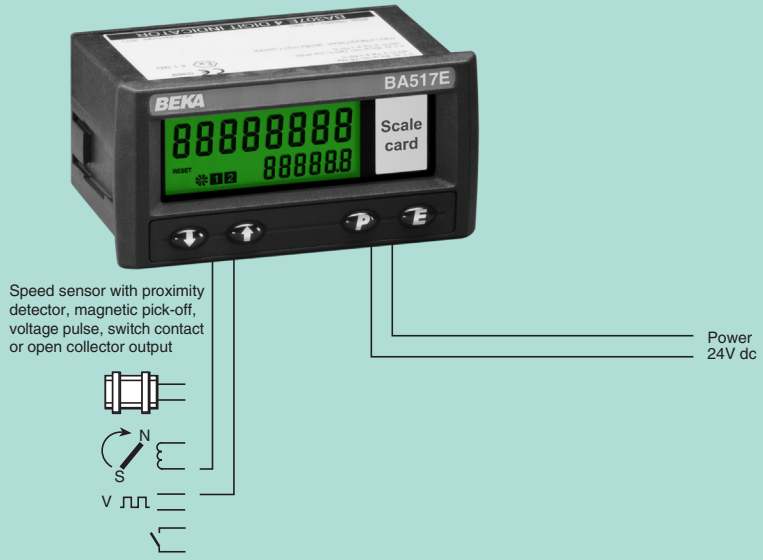
	Please specify
Model number	BA514G
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	**Please specify if required**
Display backlight	Backlight
4/20mA output	4/20mA output
Dual alarms	Alarms
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with tachometer*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of seconds with direct pulse retransmission. Can easily be reconfigured on-site.*

BA517E

One input tachometer

General purpose



Shown with optional backlight

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Simple on-site scale card installation.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba517e

The BA517E is a third generation general purpose tachometer that has similar functions as the BA518E, but is housed in a smaller 96 x 48mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Main application of the BA517E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA517E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA517E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

One of the following three optional outputs may be factory fitted to the BA517E tachometer. All are isolated.

Optional open collector pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

Optional 4/20mA current sink may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarms which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E display show the status of both alarm outputs.

A larger display and rugged version are available in other models within the range. The BA518E has the same functions as the BA517E with a larger display in a 144 x 72mm enclosure. For application in marine and hostile environments the rugged BA517E-SS, which has the same functions as the BA517E, is housed in a rugged stainless steel enclosure with a 10mm thick window.

For applications in flammable atmospheres the BA317E, which is identical to the BA517E, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.15kg

Accessories

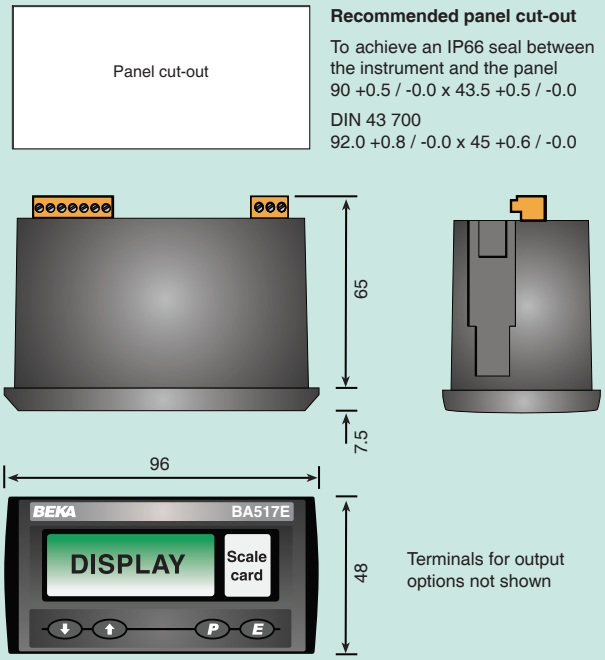
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of tachometer purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each tachometer, all have isolated outputs.

Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink
Voltage drop	5 to 30V
Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



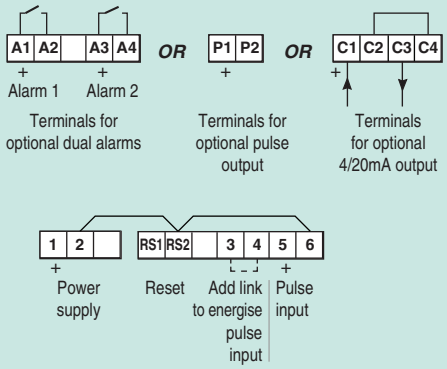
Recommended panel cut-out

To achieve an IP66 seal between the instrument and the panel
90 +0.5 / -0.0 x 43.5 +0.5 / -0.0

DIN 43 700
92.0 +0.8 / -0.0 x 45 +0.6 / -0.0

Terminals for output options not shown

TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA517E
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
Tag	Legend required

One of following three output options:

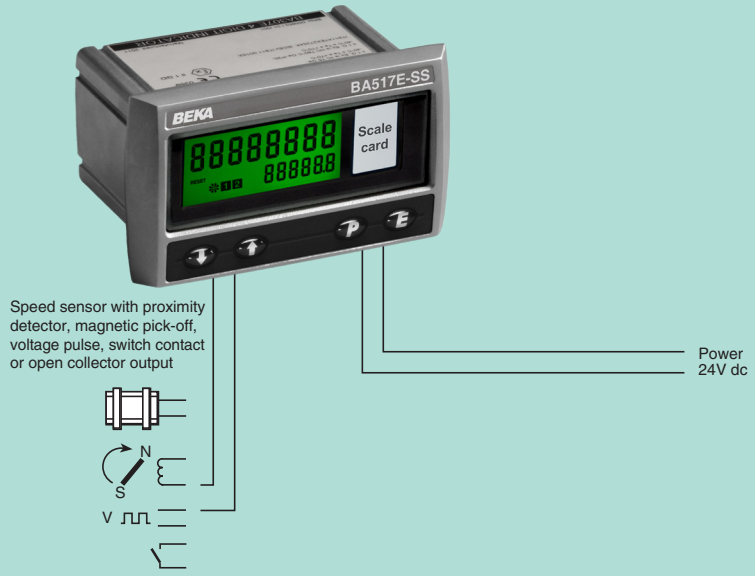
	Pulse output	Direct retransmission or scaled*
or	4/20mA output	4/20mA output
or	Dual alarms	Alarms
Rear cover and sealing kit		BA495

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*

BA517E-SS

Rugged one input tachometer

General purpose



Shown with optional backlight

- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **Simple on-site scale card installation.**
- **Optional: Backlight dual alarms or 4/20mA output or pulse output**
- **3 year guarantee**

www.beka.co.uk/ba517e-ss

The BA517E-SS is a rugged third generation general purpose tachometer housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window. The instrument has IP66 front of panel protection and is suitable for use in hostile and marine environments or where the front of the instrument is likely to be impacted. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site.

Main application of the BA517E-SS is to measure and display rotational speed within a hostile process area. To assist with routine maintenance the BA517E-SS tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 front panel protection with a silicone gasket to seal the joint between the tachometer and the instrument panel allows the BA517E-SS to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

One of the following three optional outputs may be factory fitted to the BA517E-SS tachometer. All are isolated and factory fitted options

Optional open collector pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

Optional 4/20mA current sink may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarms which can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA517E-SS display show the status of both alarm outputs.

For less hostile environments the BA517E is identical to the BA517E-SS except that it is housed in a Noryl enclosure also providing IP66 front of panel protection.

For applications in flammable atmospheres the BA317E-SS, which is identical to the BA517E-SS, has international intrinsic safety certification. For lower risk installations in Zone 2 and Zone 22, the rugged BA317NE has Ex nA and Ex tc approval allowing use without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency		
Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 9mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 6mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	BS 3146-2:1977 ANC4B (316)
Protection	Front IP66, rear IP20
EMC	Complies with 2014/30/EU

Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.85kg

Accessories

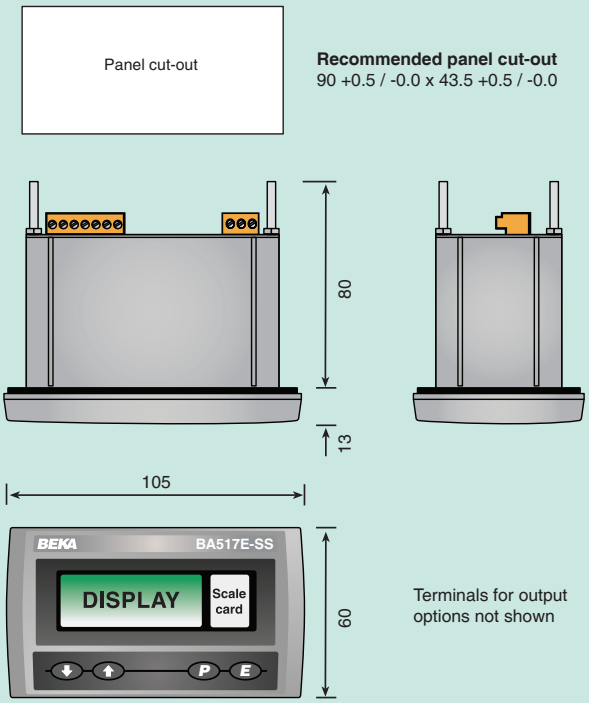
Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of tachometer purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

One of the following three output accessories may be factory fitted to each tachometer. All have isolated outputs.

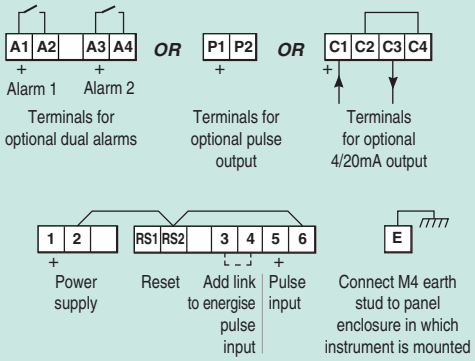
Pulse output	Isolated open collector
Frequency	5kHz max, synchronous with input pulse or divisible.
Divisible by	1, 10, 100, 1000 or 10000
Pulse width	0.1, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250 or 500ms
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

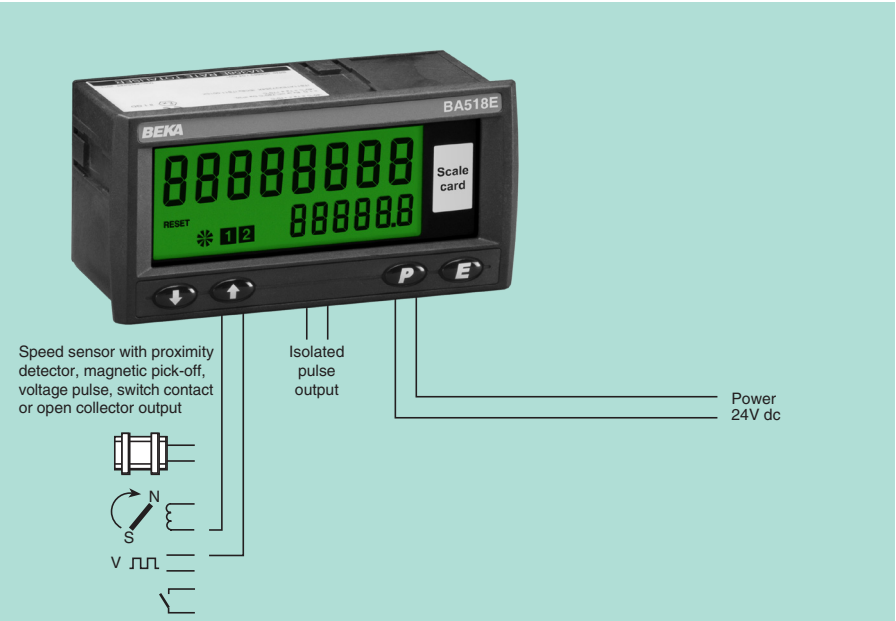
	Please specify
Model number	BA517E-SS
Input	Type *
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
Tag	Legend required
Rear cover and sealing kit	BA495

One of following three output options:

Pulse output	Direct retransmission or scaled*
or 4/20mA output	4/20mA output
or Dual alarms	Alarms

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*



Shown with optional backlight

BA518E

One input tachometer

General purpose

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate speed and run-time displays.**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional:**
  Backlight
  Dual alarms
  4/20mA output
- **3 year guarantee**

www.beka.co.uk/ba518e

The BA518E is a third generation general purpose tachometer that has similar functions as the BA517E, with a larger display housed in a 144 x 72mm DIN enclosure. The tachometer is easy to use and can be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse sensor. A slide-in scale card can be supplied printed with units of measurement, or can easily be marked on-site without removing the tachometer from the panel or opening the instrument enclosure.

Main application of the BA518E is to measure and display rotational speed within a process area. To assist with routine maintenance the BA518E tachometer also includes a run-time clock that records the number of hours that the monitored machinery has been operating.

The display has high contrast and a wide viewing angle, allowing the tachometer to be read in most lighting conditions over a wide temperature range. Speed may be displayed in almost any units of measurement per second, minute or hour. Run-time is shown on the lower display in hours with a tenth of an hour resolution. If not required, the run-time display may be disabled.

IP66 front panel protection with a neoprene gasket to seal the joint between the tachometer and the instrument panel allow the BA518E to be installed in areas that will be washed down. To simplify installation and maintenance, the tachometer has removable terminal blocks enabling panel wiring to be completed before the instrument is installed.

Display backlighting which is internally powered from the tachometer is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

The isolated open collector pulse output synchronously retransmits the tachometer input pulse to other instruments. The output pulse frequency may be divided and the pulse width may be defined.

A factory fitted optional 4/20mA current sink may be configured to produce an analogue output proportional to any part of the speed display.

Optional dual alarm outputs which can switch loads such as a sounder or solenoid valve are available as a factory fitted option. The two galvanically isolated, solid state voltage free outputs may be independently configured as speed or run-time alarms with normally open or closed outputs. Annunciators on the BA518E display show the status of both alarm outputs.

If panel space is limited the BA517E has similar functions but is housed in a smaller 96 x 48mm enclosure. Alternatively, for installation in marine or severe environments, or where the front of the instrument may be impacted, the BA517E-SS is housed in a rugged 316 stainless steel enclosure.

For applications in flammable atmospheres the BA318E, which is identical to the BA518E, has international intrinsic safety certification. For Zone 2 or 22 applications the rugged stainless steel BA317NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Frequency

Switch contact	150Hz typical	*Depends upon pulse width and debounce setting.*
Other inputs	100kHz max	
All inputs	0.01Hz min	

Display

Type	Liquid crystal
Zero blanking	Blanked apart from 0 in front of decimal point
Speed	8 digits 18mm high
Decimal point	1 of 7 positions or absent
Run-time	6 digits 12mm high 99999.9hours max
Grand total run-time	5 x 10^6 hours max

Remote reset Contact closure with resistance less than 10kΩ

Pulse output Isolated open collector

Source & output	Synchronous pulse output, 5kHz max. divisible by: 1, 10, 100, 1000 or 10000; pulse width definable as 0.1, 0.5, 1, 2.5, 5, 10 25, 50, 100, 250 or 500ms.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Configurable functions

Speed scale factor	Adjustable between 0.0001 and 99999 input pulses / revolution.
Speed timebase	Speed may be displayed per second, minute or hour.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

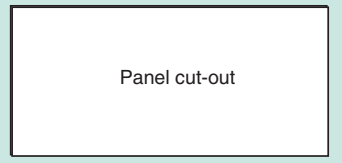
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable
Weight	0.35kg

Accessories

Backlight	Green LED internally powered
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement for no additional charge at time of tachometer purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~
4/20mA output	Isolated current sink.
Voltage drop	5 to 30V
Alarms	Two alarms each of which may be independently configured as a speed or run-time, high or low alarm with a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA

~ See accessory datasheet for details

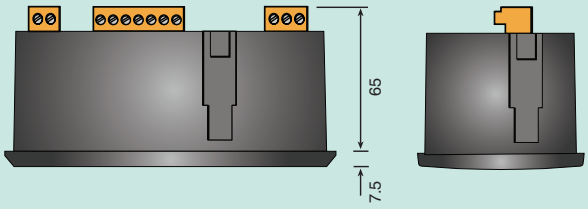
DIMENSIONS (mm)



Recommended panel cut-out

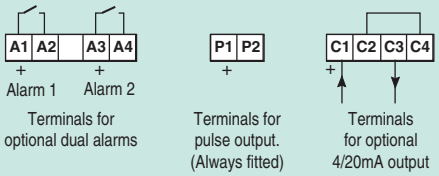
To achieve an IP66 seal between the instrument and the panel
136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

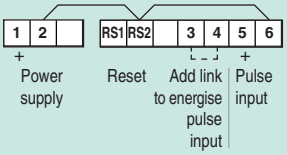
DIN 43 700
138.0 +1.0/ -0.0 x 68.0 +0.7/ -0.0



Terminals for output options not shown

TERMINAL CONNECTIONS





HOW TO ORDER

	Please specify
Model number	BA518E
Input Type *	
Speed scale factor	XXXXX *
Speed timebase	Seconds, minutes or hours*
Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required *No charge if ordered with tachometer*
Tag	Legend required
4/20mA output	4/20mA output
Dual alarms	Alarms

** Tachometer can be supplied configured as required for no additional charge. If configuration information is not supplied, instrument will be configured for open collector input with speed scaling factor of 1.0 and a timebase of minutes. Can easily be reconfigured on-site.*

Timers or clocks
Time based indicators

One and two input instruments that can be configured as a Timer or as a Clock. As a Timer they can measure and display elapsed time between events, or control events via optional control outputs. As a Clock local time is displayed and optional control outputs can be configured to turn on and off twice in each 24 hour period.

> **Large high contrast displays with wide viewing angle**

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety
Ex nA non sparking
Dust certification

> **Field mounting models have IP66 GRP enclosure**
Compact 'G' models
'E' models with separate terminal compartment
Pipe and panel mounting accessories

> **Panel mounting models**
Choice of sizes all with IP66 front panels
Rugged stainless steel Ex ia model may be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.
Rear IP66 sealing kit

> **-40 to +70˚C operating temperature range**

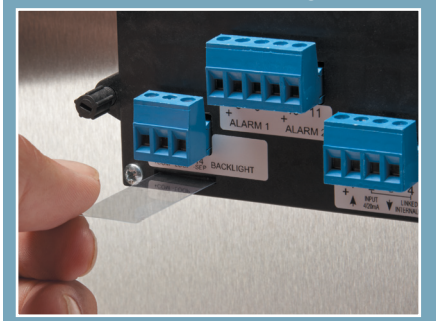
> **Accessories**
Dual isolated control outputs
Backlight
Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*
Laser engraved stainless steel legend plates

Intrinsically safe

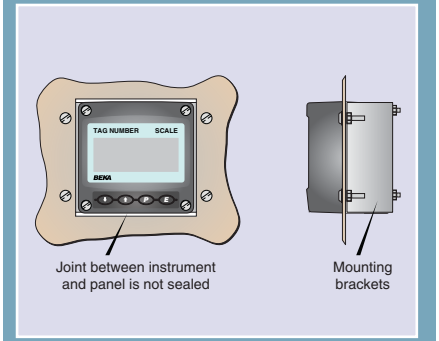
Ex nA

General purpose

Slide-in scale card can be supplied printed with customer specified information for no extra charge.



Easy scale card installation without the need to remove indicator from the panel.

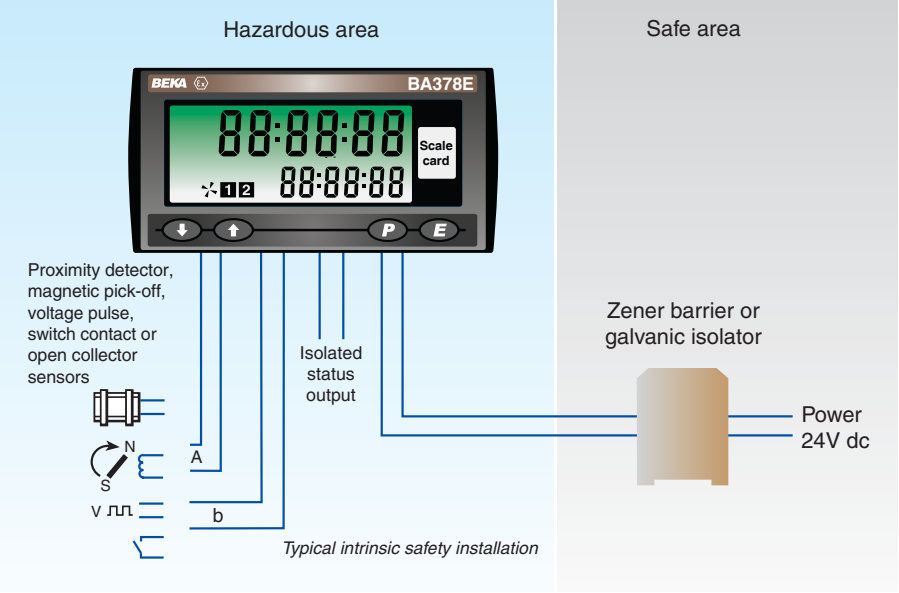


BA394G panel mounting kit

Timer/Clocks available

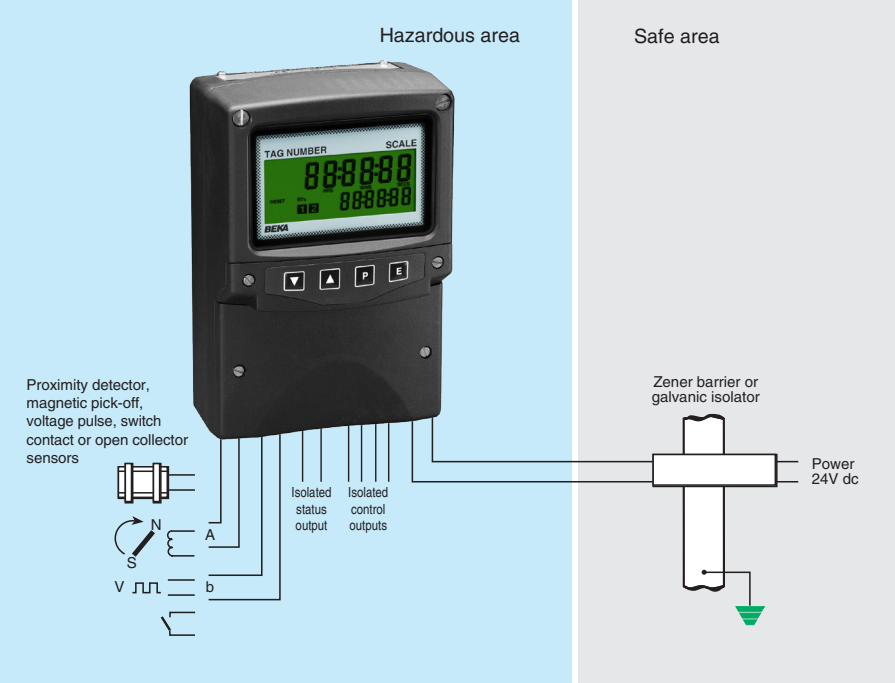
Model No.	Mounting	Input	Display digits		Certification					
					Europe ATEX		International IECEx		USA & Canada	
			PRIMARY No. x height	SECONDARY No. x height	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified										
BA374G	Field compact	2 x Sensors	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA374E	Field - separate tml. compartment	2 x Sensors	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
BA377E	Panel 96 x 48	Sensor	8 x 9mm	6 x 6mm	✔	–	✔	–	✔	✔
BA377E-SS*	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
BA378E	Panel 144 x 72	2 x Sensors	8 x 18mm	6 x 12mm	✔	–	✔	–	✔	✔
Ex nA & Ex tc - for use in Zones 2 and 22 without Zener barriers or galvanic isolators										
BA374NG	Field compact	2 x Sensors	8 x 18mm	6 x 12mm	✔	✔	✔	✔	✔	✔
BA377NE	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm	✔	✔	✔	✔	✔	✔
General Purpose - for use in safe areas										
BA574G	Field compact	2 x Sensors	8 x 18mm	6 x 12mm						
BA577E	Panel 96 x 48	Sensor	8 x 9mm	6 x 6mm						
BA577E-SS	Panel Rugged 105 x 60	Sensor	8 x 9mm	6 x 6mm						
BA578E	Panel 144 x 72	2 x Sensors	8 x 18mm	6 x 12mm						

* *Certification allows installation in an Ex e, Ex p or Ex t panel enclosure without invalidating enclosure certification*



Typical intrinsic safety installation

*A **Timer/clock** for every **application** - delivered ready for **installation***



BA374E

two input timer or clock

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays with backlight**
- **Intrinsically safe**
- **IP66 GRP enclosure with separate terminal compartment**
- **Isolated dual controls, and status outputs.**
- **3 year guarantee**

www.beka.co.uk/ba374e

The BA374E is a two input, field mounting, intrinsically safe instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. International intrinsic safety certification permits worldwide installation.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration.

International intrinsic safety certification allows the BA374E timer or clock to be installed in gas hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Applications as a Timer include displaying the time interval between two events detected by one or two hazardous area sensors. External events can also be controlled using the isolated open collector status and the dual isolated control outputs. The Timer is able to perform common industrial timing application, such as those associated with dosing or sampling requiring an intrinsically safe solenoid valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock the BA374E can display local time in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. The control outputs may be configured to switch loads on and off at pre-set times twice during each twenty four hour period.

The large display has high contrast and a wide viewing angle. Green backlighting enhances daylight viewing enabling the timer or clock to be read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, silicone gaskets and a 4mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek. A separate terminal compartment allows connection of field wiring without exposing the instrument's electronics.

The display escutcheon which shows the timer or clocks units of measurement and tag information can be changed on-site. New instruments are fitted with a printed escutcheon showing customer specified marking. If this information is not supplied a blank escutcheon is fitted which can easily be marked on-site. An optional laser engraved stainless steel legend plate secured to the front of the instrument is also available.

The compact BA374G has the same functions and large display as the BA374E without a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	32mA

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Display

Type	Liquid crystal
Backlight	Green LED internally powered
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset or Clock Sync	Contact closure with resistance less than 10kΩ

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format
Maximum delay between cycles	99h 59m and 59s or equivalent in any display format
Grand total run-time	5 x 10^6h maximum

Clock

Accuracy	Less than ±0.43s error per day over operating temperature range.

Status output Isolated, voltage free open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus.*

Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Dual control outputs Two outputs each of which may be independently configured as a NO or NC output.

Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	] USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	] USA
	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C	] Canada

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 -40 ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

Mechanical

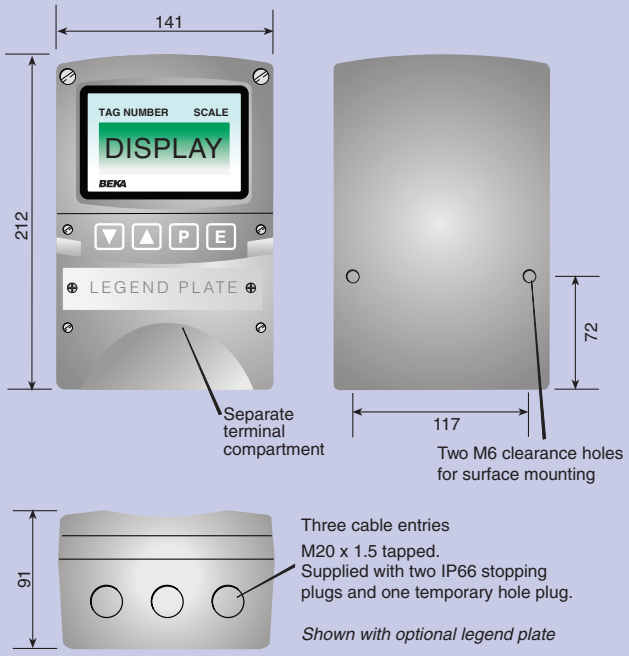
Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.7kg

Accessories

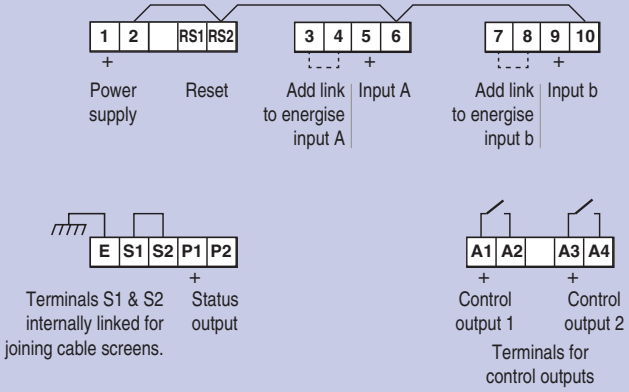
Escutcheon	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate secured to the front of the instrument, laser engraved with tag number or application information. #
Pipe mounting kit	BA393 #

See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS

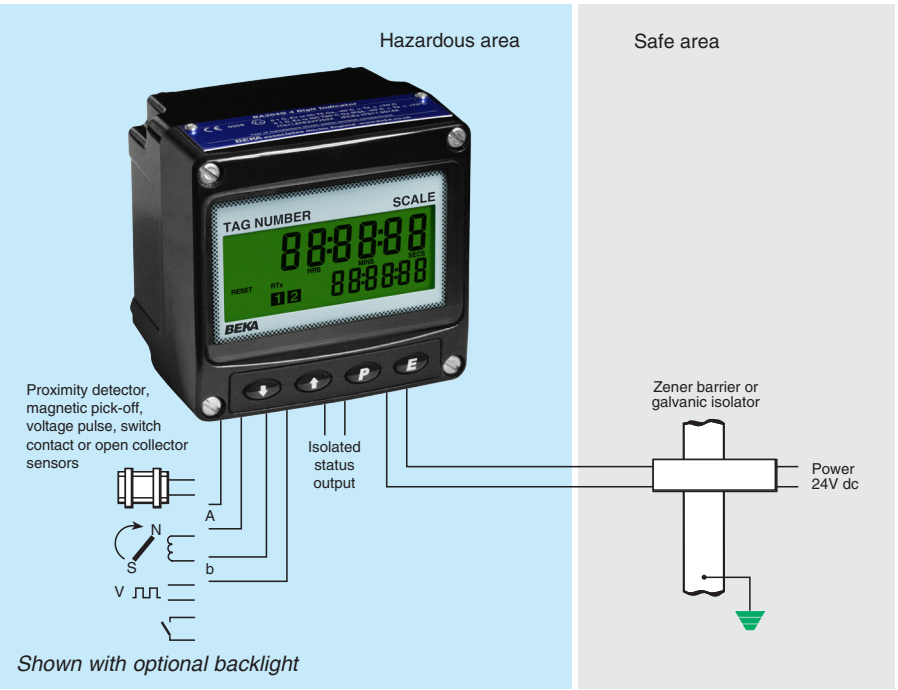


HOW TO ORDER

	Please specify for each input
Model number	BA374E
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Escutcheon marking	
Units	Legend required
Tag	Legend required *No charge if ordered with timer or clock.*
Stainless legend plate	Legend required
Pipe mounting kit	BA393

** BA374E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from* **www.beka.co.uk/ba374e** *for details. If configuration information is not supplied, instrument will be configured as a Timer with inputs configured for connection to open collector sensors. Can easily be reconfigured on-site.*



Shown with optional backlight

BA374G
two input timer or clock

Intrinsically safe for use in all gas & dust hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **IP66 GRP enclosure**
- **Isolated status output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual alarms**
- **3 year guarantee**

www.beka.co.uk/ba374g

The BA374G is a two input, field mounting, intrinsically safe instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374G is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. A slide-in scale card simplifies identification and international intrinsic safety certification permits worldwide installation.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA374G can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two hazardous area sensors. The Timer can control an external event using the isolated open collector status output. If more than one circuit is to be switched, additional isolated dual control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application, such as those associated with dosing or sampling requiring an intrinsically safe solenoid valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock the BA374G can display local time in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on and off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most most lighting conditions over a wide temperature range.

Display backlighting which is internally powered from the timer or clock is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International intrinsic safety certification allows the BA374G timer or clock to be installed in gas and dust hazardous areas worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Optional control outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA374G display show the status of both control outputs.

Other field mounting timer or clocks include the BA374E which has the same functions as the BA374G, but incorporates a separate terminal compartment.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Display

Type	Liquid crystal
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset or Clock Sync Contact closure with resistance less than 10kΩ

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format
Maximum delay between cycles	99h 59m and 59s or equivalent in any display format
Grand total run-time	5 x 10^6h maximum

Clock

Accuracy	Less than ±0.43s error per day over operating temperature range.

Status output Isolated, voltage free open collector, certified as a separate intrinsically safe circuit complying with the requirements for *simple apparatus*.

Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Group II Category 1D Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40 ≤ Ta ≤ 70°C Ex ia IIIC T80°C Da -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 Class II Div 1 Gp E, F, G Class III	USA & Canada
	Class I Zone 0 AEx ia IIC T5 Ga Zone 20 AEx ia IIIC T80°C Da	USA
	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ 70°C	Canada

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C & D T5 Class II Div 2 Gp F, G. Class III Div 2 -40 ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

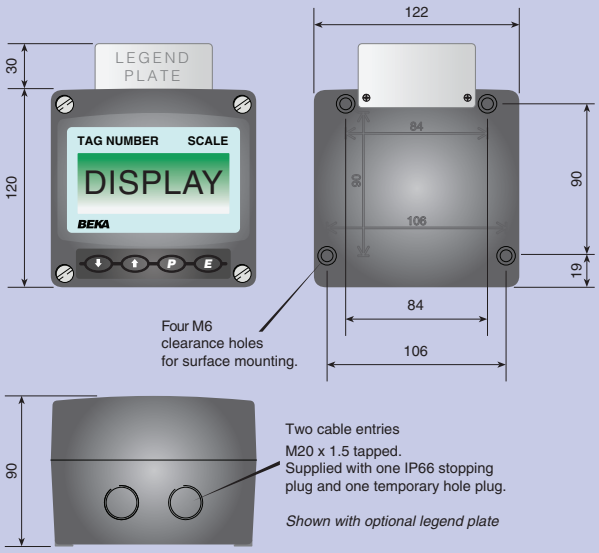
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

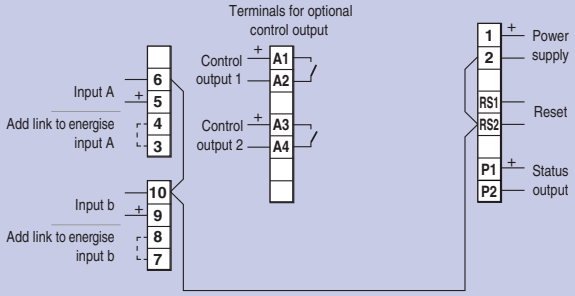
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



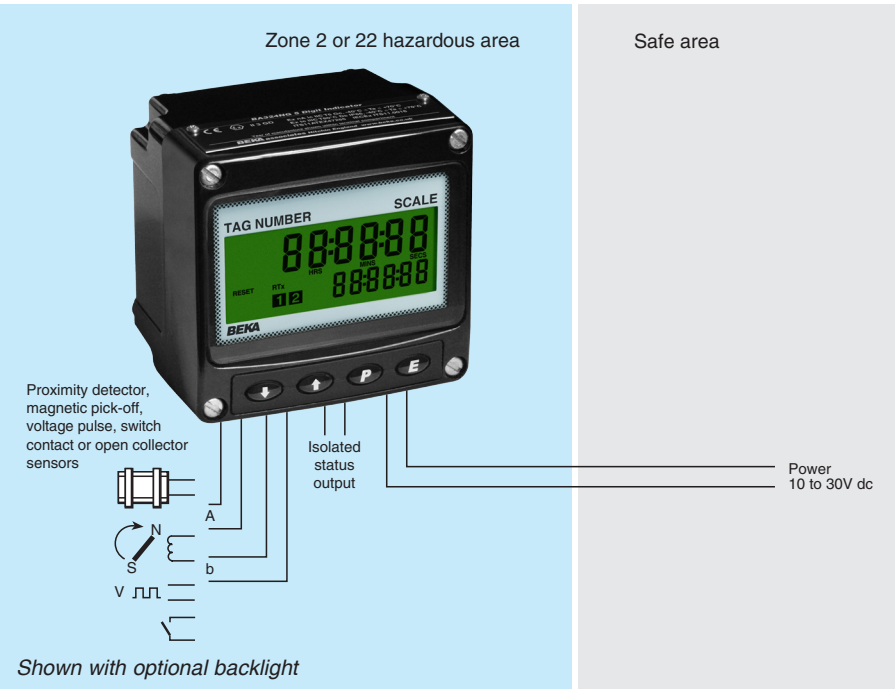
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify for each input
Model number	BA374G
Function	Timer or Clock
Input	Type *
Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with instrument.*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** BA374G can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba374g for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA374NG is a two input, field mounting instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA374NG is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor. International Ex nA and Ex tc certification permits worldwide installation in Zones 2 or 22 without Zener barriers or galvanic isolators which significantly reduces the installation cost.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA374NG can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors in Zone 2 or 22. The Timer can also control an external event using the isolated open collector status output. If more than one circuit is to be controlled, dual isolated control outputs are available as a factory fitted option. The Timer is able to perform many common industrial timing application, such as those associated with dosing or sampling requiring a valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

When configured as a Clock the BA374NG can display local time in various twelve or twenty four hour formats, and may be synchronised to a pre-set time via the external reset input. The isolated open collector status output can be configured to switch on and off twice at pre-set times during each twenty four hour period and may be used for repetitive timing functions. If more than one circuit is to be controlled, optional factory fitted isolated dual control outputs are available. Each output may be independantly configured to switch on and off twice at pre-set times during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

Display backlighting which is internally powered from the timer or clock, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

International Ex nA and Ex tc certification allows the BA374NG timer or clock to be installed in Zones 2 and 22 gas and dust hazardous areas worldwide. BEKA Application Guide AG310 contains Ex nA installation recommendations.

Other timers or clocks in the range include the panel mounting BA377NE and an extensive range of field and panel mounting intrinsically safe and general purpose models.

BA374NG

Ex nA two input timer or clock

Can be installed in Zone 2 or 22 without Zener barriers or galvanic isolators

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate primary and secondary displays.**
- **Ex nA & Ex tc certified**
- **IP66 GRP enclosure**
- **Isolated status output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual outputs**
- **3 year guarantee**

www.beka.co.uk/ba374ng

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V
Current	16mA max plus 16mA for optional backlight

Input

	Lower	Upper switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Timer reset or Clock sync — Contact closure with resistance less than 10kΩ

Status output — Isolated, open collector

Ron	51Ω + 3V max
Roff	1MΩ min
Ui	30V dc
I max	10mA

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles	99h 59m and 59s or equivalent in any display format
Grand total run-time	5 x 10^8h maximum

Clock

Accuracy	Less than ±0.43s error per day over operating temperature range.

Certification — **Note: Ex ic codes refer to instrument push button contacts which are nonincendive.**

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T80°C Dc -40 ≤ Ta ≤ 60°C
Cert. No	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc Zone 22 AEx ic tc IIIC T80°C Dc	USA
	Ex nA ic IIC T5 Gc Ex n IIC T5 Gc Ex ic tc IIIC T80°C Dc Class III Div 2, Class II Div 2, Gp F, G -40°C ≤ Ta ≤ 60°C	Canada
ETL Control No.	4008610	

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Certification temp	-40 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

Mechanical

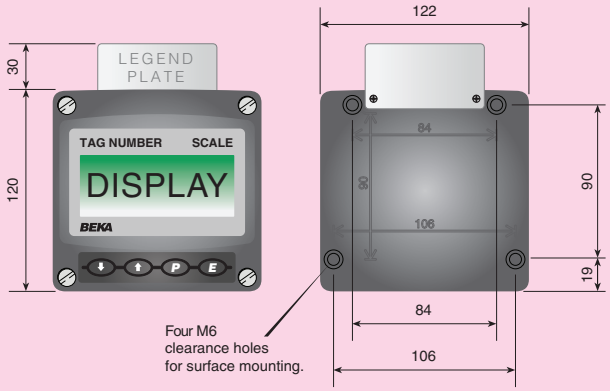
Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

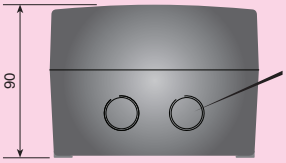
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch
Ron	5Ω + 0.7V max
Roff	IMΩ min
Ui	30V dc
I max	10mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing #

 # See accessory datasheet for details

DIMENSIONS (mm)

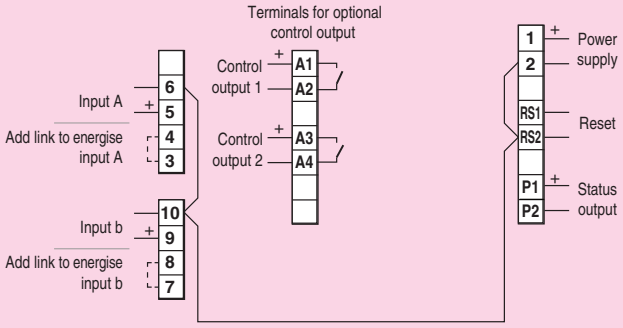




Two cable entries
M20 x 1.5 tapped.
Supplied with one IP66 stopping plug and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS

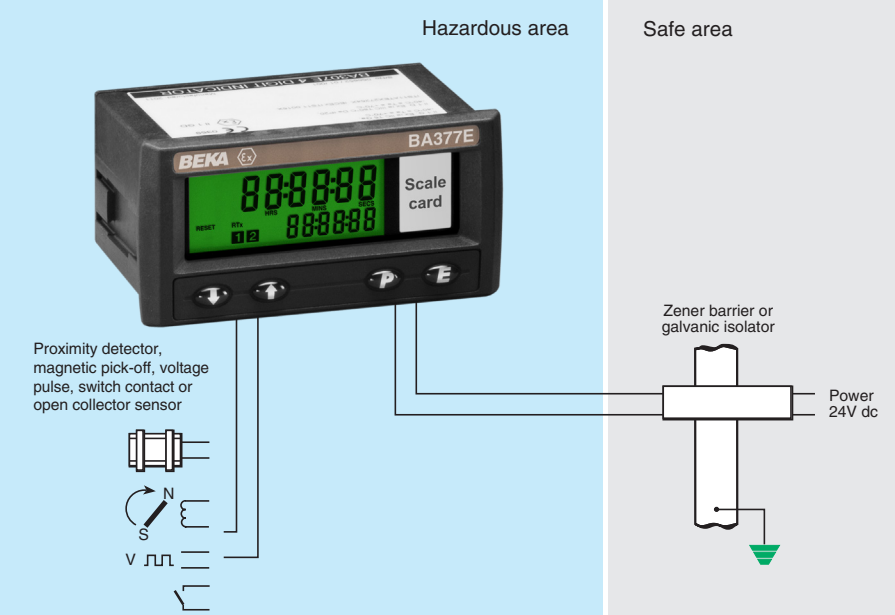


HOW TO ORDER

	Please specify for each input
Model number	BA374NG
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card marking	
Units	Legend required
Tag	Legend required *No charge if ordered with instrument*
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G

** BA374NG can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba374ng for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.*



Shown with optional backlight

BA377E

One input timer or clock

Intrinsically safe for use in all gas hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba377e

The BA377E is an intrinsically safe instrument with one input that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA377E is controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor. International intrinsic safety certification permits worldwide installation and a slide-in scale card simplifies identification.

Configuration may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA377E can be supplied configured to customer's requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by a hazardous area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

IP66 front panel protection with a neoprene gasket to seal the joint between the instrument and the instrument panel, allow the BA377E to be installed in areas that will be washed down.

International intrinsic safety certification permits the BA377E to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

Optional control outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377E display show the status of both control outputs.

Rugged versions and a two input instrument are available in other models within the range. The intrinsically safe BA377E-SS is identical to the BA377E except that it is housed in an impact resistant rugged stainless steel enclosure. The BA377NE has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required the BA378E is a two input intrinsically safe Timer or Clock housed in a 144 x 72mm plastic DIN enclosure.

BEKA associates

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Tel. (01462) 438301 Fax (01462) 453971
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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator.
Current	16mA max plus 22.5mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync.	Contact closure with resistance less than 10kΩ.

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total runtime	5 x 10^6 hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

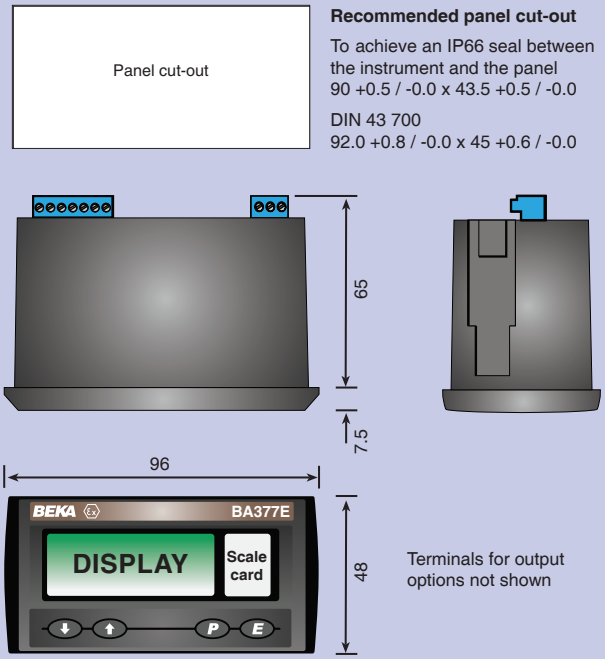
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.15kg

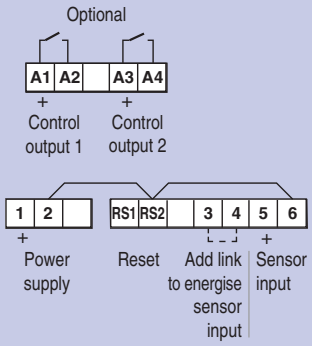
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

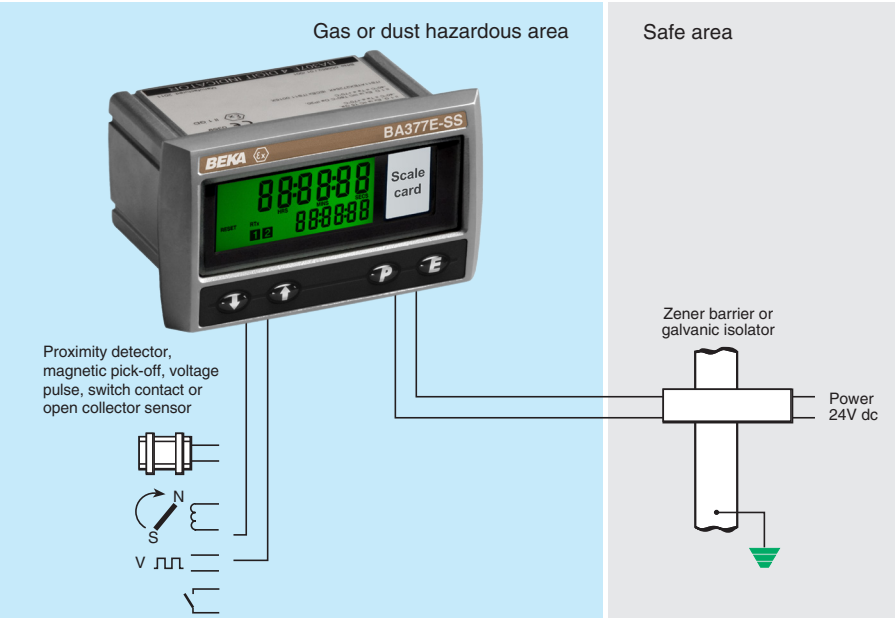
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA377E
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument.*
Tag	Legend required
Rear cover and sealing kit	BA495

* *BA377E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*



Shown with optional backlight

BA377E-SS

Rugged one input timer or clock

Intrinsically safe gas & dust certified for use in an Ex e, Ex n, Ex p or Ex t panel enclosure or in harsh hazardous areas

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba377e-ss

The BA377E-SS is an intrinsically safe instrument with one input housed in a rugged stainless steel enclosure that may be configured as a Timer or as a Clock. The intrinsic safety certification and the rugged enclosure allow the BA377E-SS to be safely installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the panel enclosure's certification.

Configuration may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA377E-SS can be supplied configured to customers requirements including a customer defined printed slide-in scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by a hazardous area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance repetitively opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

IP66 front panel protection with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA377E-SS to be installed in areas that will be washed down.

International intrinsic safety certification permits the BA377E-SS to be installed worldwide. When configured to operate with a sensor having a voltage or magnetic pick-off output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

Optional control outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377E-SS display show the status of both control outputs.

Zone 2 certification and a larger display are available in other models within the range, including the intrinsically safe BA377E which is identical to the BA377E-SS but is housed in a Noryl enclosure.

The BA377NE is also identical to the BA377E-SS but has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

If a larger display is required the intrinsically safe BA378E is a two input timer or clock in a 144 x 72mm DIN enclosure.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator.
Current	16mA max plus 22.5mA for optional backlight.

Input

	Lower	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync. Contact closure with resistance less than 10kΩ.

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10^6 hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga Group II Category 1D Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da -40°C ≤ Ta ≤ +60°C ‡
Cert. No.	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Zone 20 AEx ia IIIC T80°C Da (USA) Ex ia IIC T5 Ga (Canada) Ex ia IIIC T80°C Da (Canada) -40°C ≤ Ta ≤ 60°C ‡

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

‡ +70°C when not relying upon the certified impact and ingress protection provided by the front of the BA377E-SS enclosure to maintain the certification of the panel enclosure in which the BA377E-SS is mounted.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

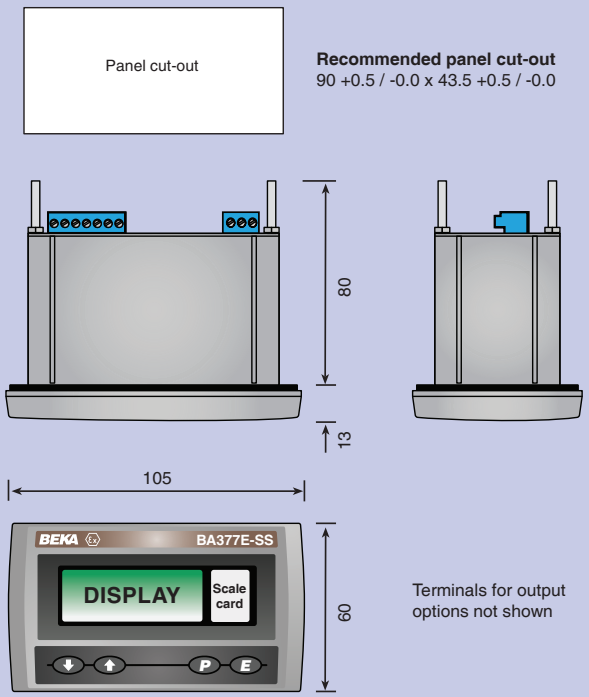
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

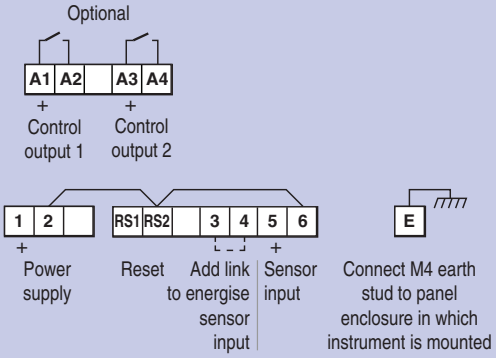
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

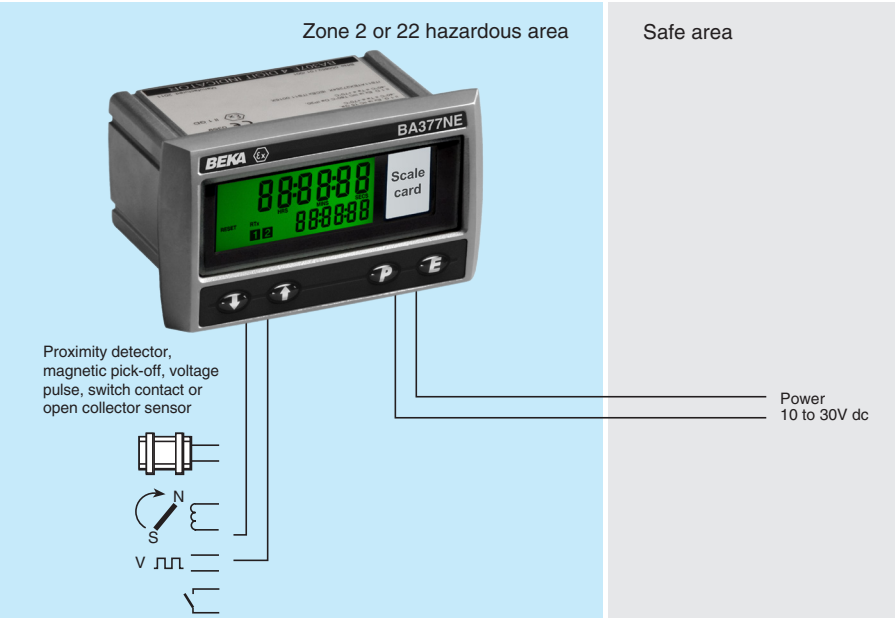
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA377E-SS
Function Timer or Clock Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument.*
Tag	Legend required
Rear cover and sealing kit	BA495

* *BA377E-SS can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377e-ss for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA377NE timer or clock has a rugged stainless steel enclosure allowing it to be safely installed in an Ex n or Ex tc panel enclosure located in Zones 2 or 22 without the need for Zener barriers or galvanic isolators. The instrument is easy to use and can be configured on-site to operate with sensors having a wide variety of outputs. A slide-in scale card simplifies identification.

Configuration may be performed on-site via the front panel push buttons using simple well documented menus. The Timer employs a state and event structure to simplify configuration. If required the BA377NE can be supplied configured to customer's requirements including a customer defined printed slide-in scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by a hazardous area sensor, such as a 2-wire proximity detector, connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions, for instance opening a hazardous area solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads *on* or *off* at pre-set times twice during each twenty four hour period. The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

IP66 front panel protection with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA377NE to be installed in areas that will be washed down.

International Ex nA certification permits the BA377NE timer or clock to be installed worldwide. When mounted in a panel enclosure complying with Ex n (non sparking) impact and ingress requirements, the enclosure and instrument may be installed in a Zone 2 hazardous area without barriers or isolators. Certified Ex n or Ex e enclosures are often used. Similarly, the BA377NE can be mounted in an Ex tc enclosure located in Zone 22. BEKA Application Guide AG310 provides Ex nA installation recommendations.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

Optional dual control outputs can switch hazardous or safe area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA377NE display show the status of both control outputs.

Intrinsically safety models and instruments with larger displays are available within the range. The BA377E-SS has the same features as the BA377NE including a rugged stainless steel enclosure, but is certified intrinsically safe Ex ia.

The intrinsically safe BA377E offers similar features in a Noryl enclosure and the BA378E is an intrinsically safe two input timer or clock in a 144 x 72mm Noryl enclosure with a larger display.

BA377NE

Rugged Ex nA & Ex tc one input timer or clock

Can be installed in Zones 2 or 22 without Zener barriers or galvanic isolators.

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Ex nA & Ex tc certified**
- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba377ne

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight.

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync.	Contact closure with resistance less than 10kΩ.

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time.	5 x 10^6 hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Certification

Note: Ex ic in codes refers to instrument push button contacts which are nonincendive.

Europe ATEX

Code	Group II Category 3G Ex nA ic IIC T5 Gc Group II Category 3D Ex ic tc IIIC T80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	ITS16ATEX48409X

International IECEx

Code	Ex nA ic IIC T5 Gc Ex ic tc IIIC T°80°C Dc -40°C ≤ Ta ≤ +60°C
Cert. No.	IECEx ITS 16.0005X

ETL & cETL

Code	Class I Zone 2 AEx nA ic IIC T5 Gc (USA) Zone 22 AEx ic tc IIIC T80°C Dc (USA) Ex nA ic IIC T5 Gc (Canada) Ex n IIC T5 Gc (Canada) Ex ic tc IIIC T80°C Dc (Canada) -40°C ≤ Ta ≤ 60°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +60°C display -20 to +60°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress	Front IP66, rear IP20
Material	BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU

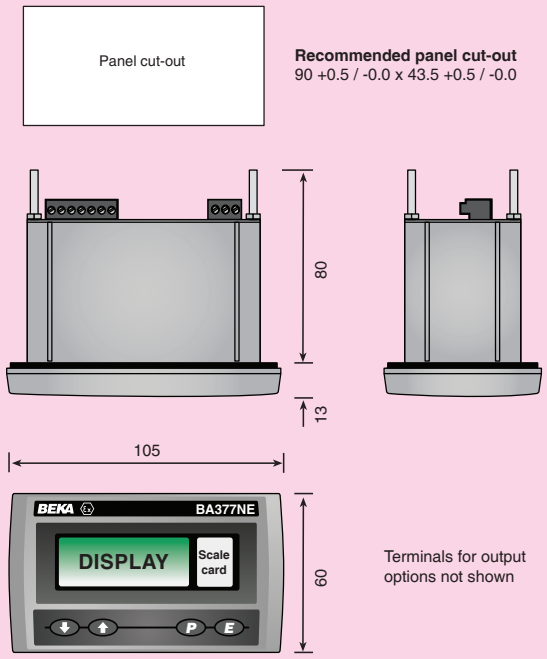
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.85kg

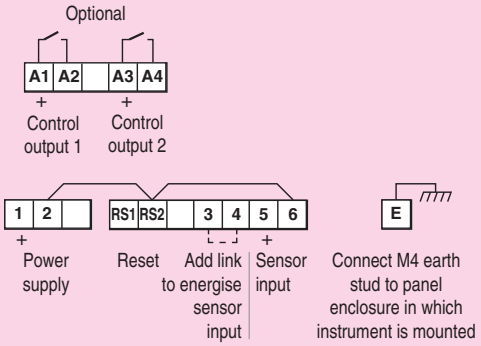
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. #
Tag legend	Specified tag number or application laser etched onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

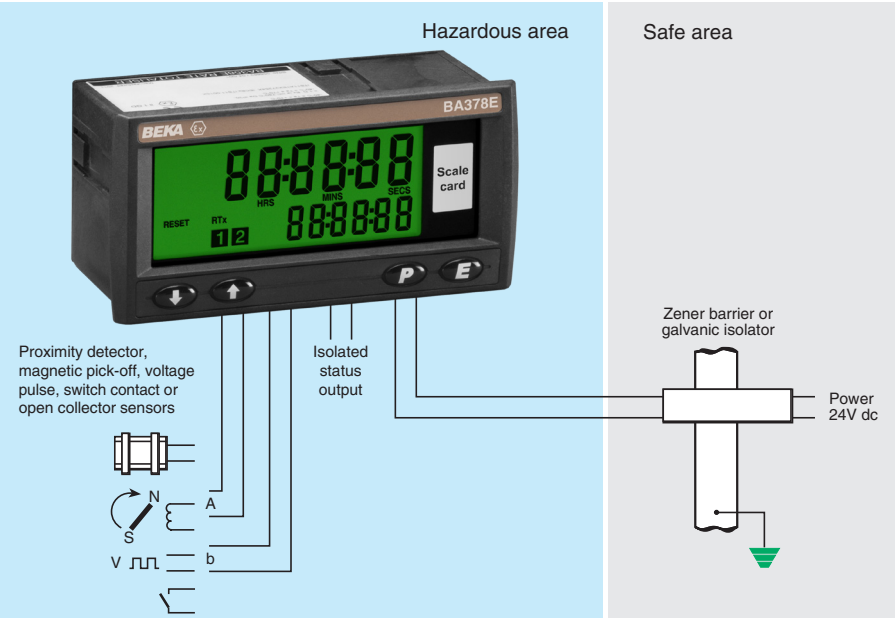
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA377NE
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument.*
Tag	Legend required
Rear cover and sealing kit	BA495

* *BA377NE can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba377ne for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*



Shown with optional backlight

The BA378E is a two input intrinsically safe instrument that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA378E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor. International intrinsic safety certification permits worldwide installation, and a slide-in scale card simplifies identification.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a *state* and *event* structure to simplify configuration. The BA378E can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include simply displaying the time interval between two events detected by one or two hazardous area sensors such as 2-wire proximity detectors. The Timer can control an external event using the isolated open collector status output if only a single output is required. If it is required to switch more than one circuit, additional dual isolated control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application such as those associated with dosing or sampling where an intrinsically safe solenoid valve is required to be opened for a defined time. The Timer includes a powerful cycle function which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input.

Optional control outputs may be configured to switch loads *on* or *off* at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

IP66 front panel protection with a neoprene gasket to seal the joint between the instrument and the instrument panel allows the BA378E to be installed in areas that will be washed down.

International intrinsic safety certification permits the BA378E to be installed worldwide. When configured to operate with a sensors having a voltage or magnetic pick-up output, the input terminals comply with the requirements for *simple apparatus* reducing system design and documentation.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

Optional control outputs can switch hazardous area loads such as a sounder or solenoid valve, or safe area loads via a Zener barrier or isolator. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA378E display show the status of both control outputs.

When panel space is limited the intrinsically safe BA377E single input Timer or Clock provide similar features in a smaller 94 x 48mm enclosure. The BA377E-SS is identical to the BA377E except that it is housed in a rugged stainless steel enclosure with a 10mm thick window that may be installed in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure's certification. The BA377NE has Ex nA and Ex tc certification allowing installation in Zone 2 or 22 without Zener barriers or galvanic isolators.

BA378E

Two input timer or clock

Intrinsically safe for use in all gas hazardous areas

- **Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate displays**
- **Intrinsically safe**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated status output**
- **Optional: Backlight Dual controls outputs**
- **3 year guarantee**

www.beka.co.uk/ba378e

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SPECIFICATION

Power supply

Voltage	10 to 28V from a Zener barrier or galvanic isolator.
Current	22mA max plus 16mA for the optional backlight.

Input A & b	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 28V max
Voltage pulse (high)	3V	10V 28V max

Display

Type	Liquid crystal
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync. Contact closure with resistance less than 10kΩ.

Timer

Status output	Isolated, voltage free, open collector, certified as a separate intrinsically safe complying with the requirements for *simple apparatus*.
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	$5x10^6$ hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No.	ITS16ATEX28408X

International IECEx

Code	Ex ia IIC T5 Ga -40°C ≤ Ta ≤ 70°C
Cert. No	IECEx ITS 16.0004X

ETL & cETL

Code	Class I Div 1 Gp A, B, C, D T5 (USA & Canada) Class II Div 1 Gp E, F, G. Class III Div 1 (USA & Canada) Class I Zone 0 AEx ia IIC T5 Ga (USA) Ex ia IIC T5 Ga (Canada) -40°C ≤ Ta ≤ 70°C

Nonincendive USA & Canada ETL & cETL

Code	Class I Div 2 Gp A, B, C, D T5 Class II Div 2 Gp F, G. Class III Div 2 -40°C ≤ Ta ≤ 70°C
ETL Control No.	4008610

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Noryl SE1GFN3. Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

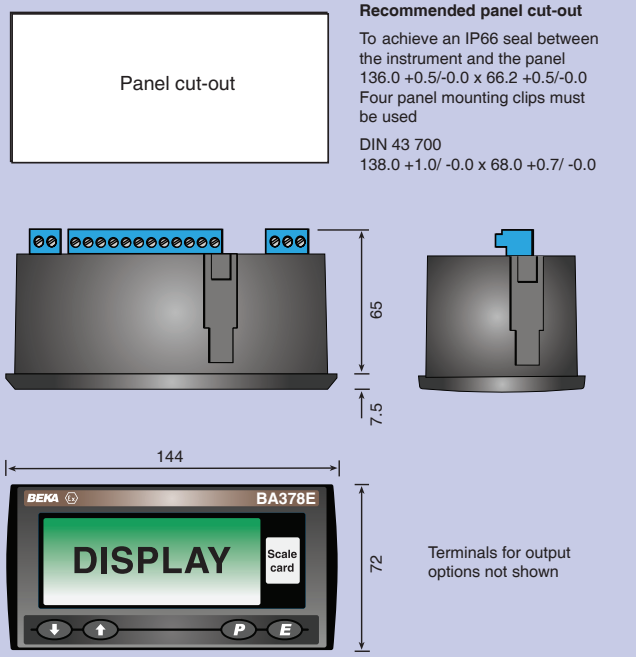
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable terminal blocks.
Weight	0.35kg

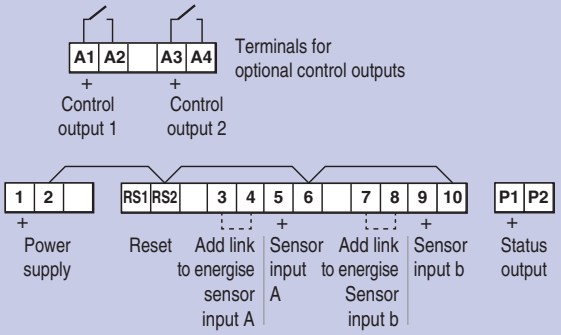
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Scale card	Blank card fitted to all instruments. Can be supplied typeset with specified units of measurement for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ *See accessory datasheet for details*

HOW TO ORDER

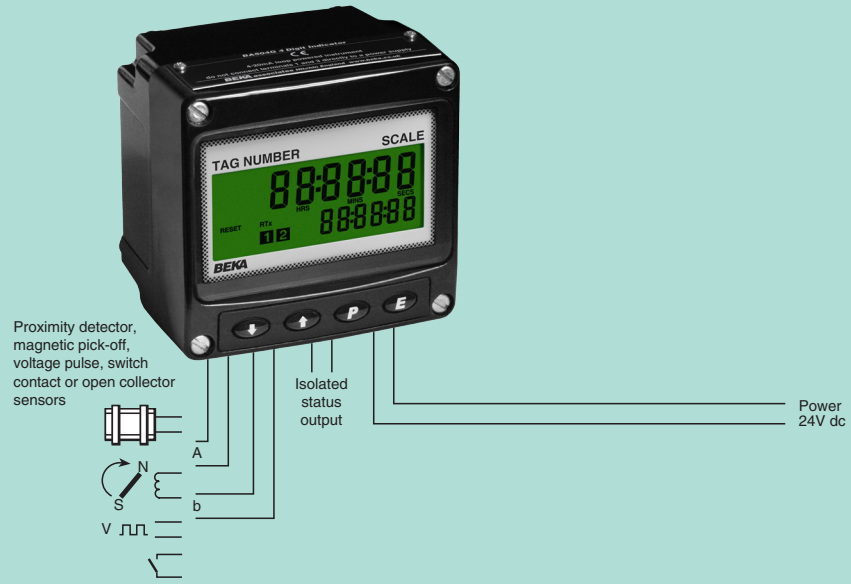
	Please specify
Model number	BA378E
FunctionTimer or Clock Input	Type for each input *
Accessories	Please specify if required
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument.*
Tag	Legend required

* *BA378E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba378e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*

BA574G

two input timer or clock

General purpose



Shown with optional backlight

- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Separate primary and secondary displays.**
- **IP66 GRP enclosure**
- **Isolated pulse output**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba574g

The BA574G is a two input, general purpose field mounting instrument that can be configured as a Timer or as a Clock. As a Timer it is able to measure the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA574G is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector or a voltage output sensor.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA574G can be supplied configured to customers requirements including a customer defined printed scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors. The Timer can also control an external event using the isolated open collector status output. If more than one circuit is to be controlled, dual isolated control outputs are available as a factory fitted option. The Timer is able to perform many common industrial timing applications, such as those associated with dosing or sampling requiring a valve to be regularly opened for a defined time. A powerful cycle function is included which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

When configured as a Clock the BA574G can display local time in various twelve or twenty four hour formats, and may be synchronised to a pre-set time via the external reset input. The isolated open collector status output can be configured to switch on and off twice at pre-set times during each twenty four hour period and may be used for repetitive timing functions. If more than one circuit is to be controlled, optional factory fitted isolated dual control outputs are available. Each output may be independently configured to switch on and off twice at pre-set times during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most most lighting conditions over a wide temperature range.

Display backlighting which is internally powered from the timer or clock, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 protection is provided by the robust GRP enclosure which has stainless steel fittings, a silicone gasket and an 8mm thick armoured glass window. Ingress and impact protection have been independently assessed by Intertek.

Panel mounting timers or clocks with a variety of display and enclosure sizes are also available, see BA577E, BA577E-SS and BA578E. For applications in hazardous areas certified field and panel mounting timers or clocks are also available.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 16mA for optional backlight

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s
Timer reset or Clock sync	Contact closure with resistance less than 10kΩ

Status output

	Isolated, open collector
Ron	51Ω + 3V max
Roff	1MΩ min
Vmax	30V dc
I max	10mA

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10^6h maximum

Clock

Accuracy	Less than ±0.43s error per day over operating temperature range.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	GRP
Ingress	IP66
EMC	Complies with 2014/30/EU

Mechanical

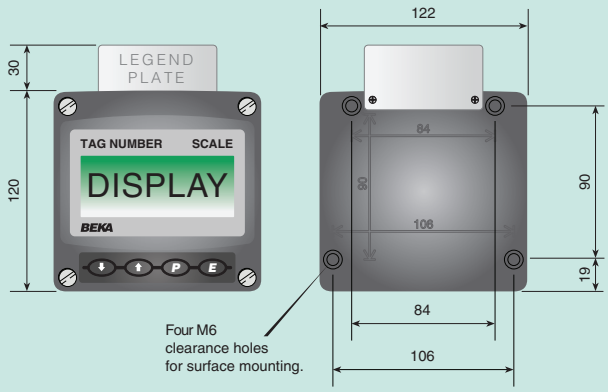
Terminals	Screw clamp for 0.5 to 1.5mm²
Weight	1.1kg

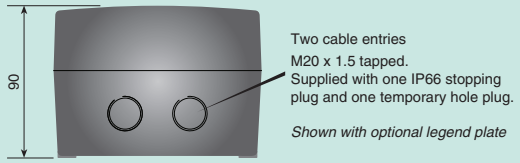
Accessories

Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
Vmax	30V dc
Imax	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of measurement and tag information for no additional charge at time of purchase. #
Legend plate	316 stainless steel plate laser engraved with tag number or application information attached to rear of the instrument, visible from the front. #
Pipe mounting kit	BA393G 316 stainless steel #
Panel mounting kits	BA394G 316 stainless steel not sealing # BA494G GRP sealing #

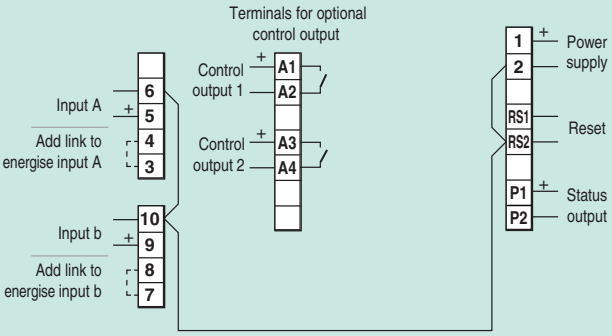
 # See accessory datasheet for details

DIMENSIONS (mm)





TERMINAL CONNECTIONS

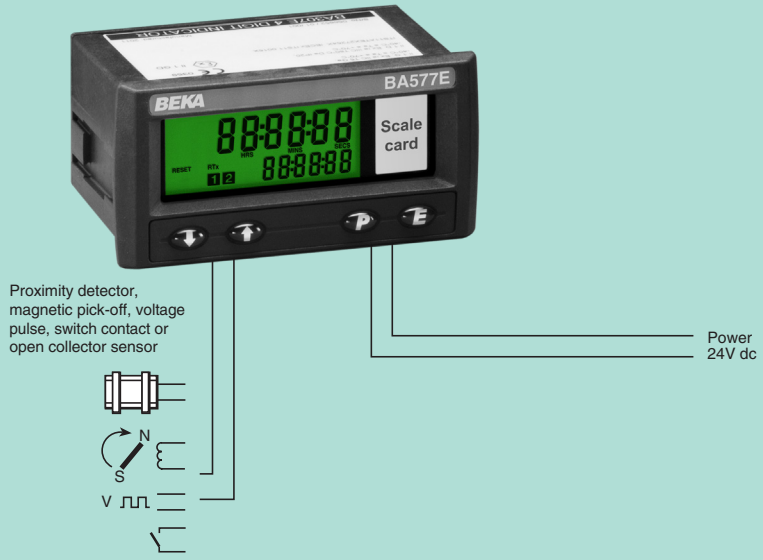


HOW TO ORDER

	Please specify for each input
Model number	BA574G
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card marking	
Units	Legend required
Tag	Legend required
	No charge if ordered with instrument
Stainless legend plate	Legend required
Pipe mounting kit	BA393G
Panel mounting kit	BA394G or BA494G

** BA574G can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from* **www.beka.co.uk/ba574g** *for details. If configuration information is not supplied, instrument will be configured as a Timer with open collector inputs. Can easily be reconfigured on-site.*



Shown with optional backlight

BA577E

One input timer or clock

General purpose

- **May be configured as a Timer or as a Clock.**
- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Two separate displays**
- **96 x 48mm DIN enclosure with IP66 front protection.**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba577e

The BA577E is a general purpose instrument with one input that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA577E is controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

Configuration may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA577E can be supplied configured to customers requirements including a customer defined printed slide-in scale card for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by a process area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions such as repetitively opening a solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a neoprene gasket to seal the joint between the instrument and the instrument panel, allows the BA577E to be installed in areas that will be washed down.

Optional control outputs can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently conditioned with normally open or closed outputs. Annunciators on the BA577E display show the status of both control outputs.

If a larger display is required the BA578E is a two input Timer or Clock housed in a Noryl 144 x 72mm DIN enclosure. For installations in marine or hostile environments the BA577E-SS is functionally identical to the BA577E but is housed in an impact resistant rugged stainless steel enclosure with a 10mm thick toughened glass window.

For applications in flammable atmospheres the BA377E, which is identical to the BA577E, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA377NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight.

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync.	Contact closure with resistance less than 10kΩ

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10^6 hours maximum

Clock

Timekeeping accuracy	Less than ±0.43s error per day over operating temperature range.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Protection	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

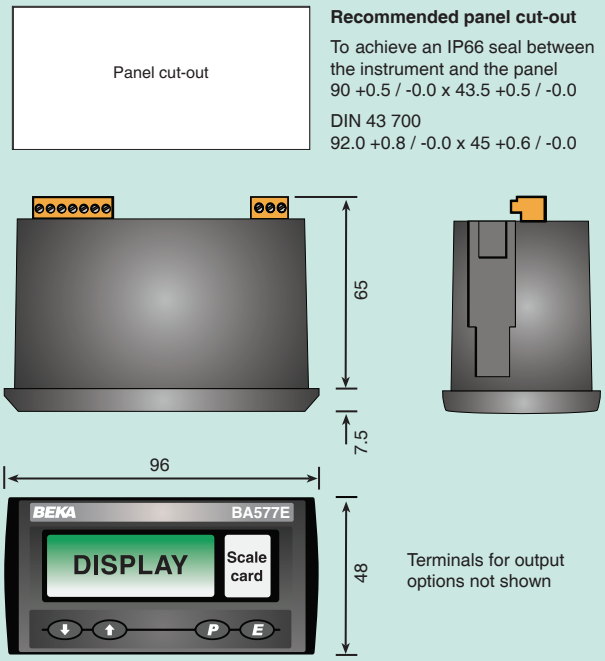
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.15kg

Accessories

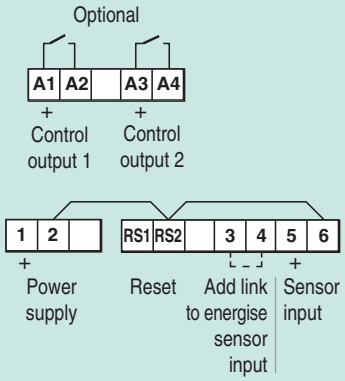
Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of time for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA577E
Function	Timer or Clock
Input	Type *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument*
Tag	Legend required
Rear cover and sealing kit	BA495

** BA577E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba577e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*

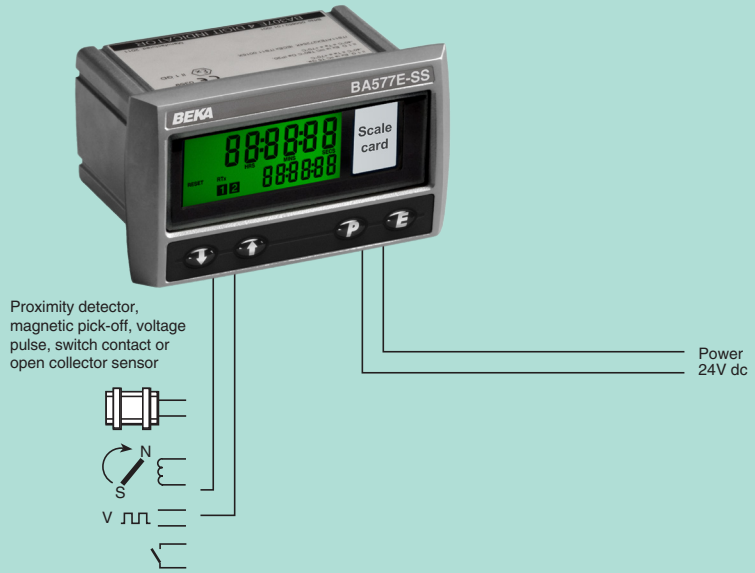
BA577E-SS

Rugged one input timer or clock

General purpose

- **105 x 60mm rugged 316 stainless steel enclosure with IP66 front protection.**
- **May be configured as a Timer or as a Clock.**
- **Configurable input: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Two Separate displays**
- **Simple on-site scale card installation.**
- **Optional: Backlight Dual control outputs**
- **3 year guarantee**

www.beka.co.uk/ba577e-ss



Shown with optional backlight

The BA577E-SS is a rugged general purpose instrument that may be configured as a Timer or as a Clock. Housed in a 316 stainless steel enclosure with a 10mm thick toughened glass window, it has IP66 front of panel protection and is suitable for use in hostile and marine environments, or where the front of the instrument is likely to be impacted.

As a Timer the BA577E-SS can measure and display the elapsed time between external events, or control external events via two optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA577E-SS is controlled by a single input which may be configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

Configuration may be performed on-site via the front panel push buttons using easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA577E-SS can be supplied configured to customers requirements including a customer defined printed slide-in scalecard for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by a process area sensor such as a 2-wire proximity detector connected to the single input. With the addition of optional dual control outputs, the Timer can perform control functions such as repetitively opening a solenoid valve for a defined time. The Timer includes a powerful cycle function which can be configured to repeat a timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional dual control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle enabling the instrument to be read in most lighting conditions over a wide temperature range.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a silicone gasket to seal the joint between the instrument and the instrument panel, allow the BA577E-SS to be installed in areas that will be washed down.

Optional control outputs can switch loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured with normally open or closed outputs. Annunciators on the BA577E-SS display show the status of both control outputs.

For less hostile applications the BA577E is functionally identical to the BA577E-SS but is housed in a Noryl enclosure also providing IP66 front of panel protection. If a larger display is required, the BA578E offers similar features with two inputs in a 144 x 72mm Noryl enclosure.

For applications in flammable atmospheres the BA377E-SS, which is functionally identical to the BA577E-SS, has international intrinsic safety certification. For applications in Zone 2 or 22 the rugged stainless steel BA377NE has Ex nA and Ex tc certification allowing installation without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	16mA max plus 22.5mA for optional backlight.

Input	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	9mm high
Secondary	6mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync.	Contact closure with resistance less than 10kΩ

Timer

Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10^6 hours maximum

Clock

Timekeeping	Less than ±0.43s error per day accuracy over operating temperature range.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	BS 3146-2:1977 ANC4B (316)
Protection	Front IP66, rear IP20
EMC	Complies with 2014/30/EU

Mechanical

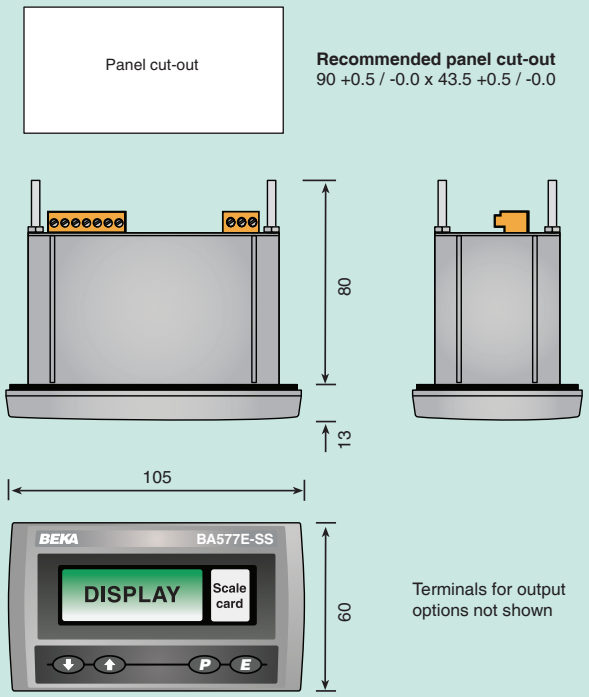
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.85kg

Accessories

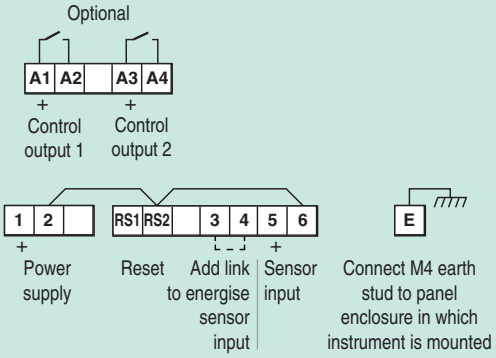
Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of time for no additional charge at time of purchase. #
Tag legend	Specified tag number or application printed onto rear of instrument. #
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA577E-SS
Function	Timer or Clock
Input	Type *

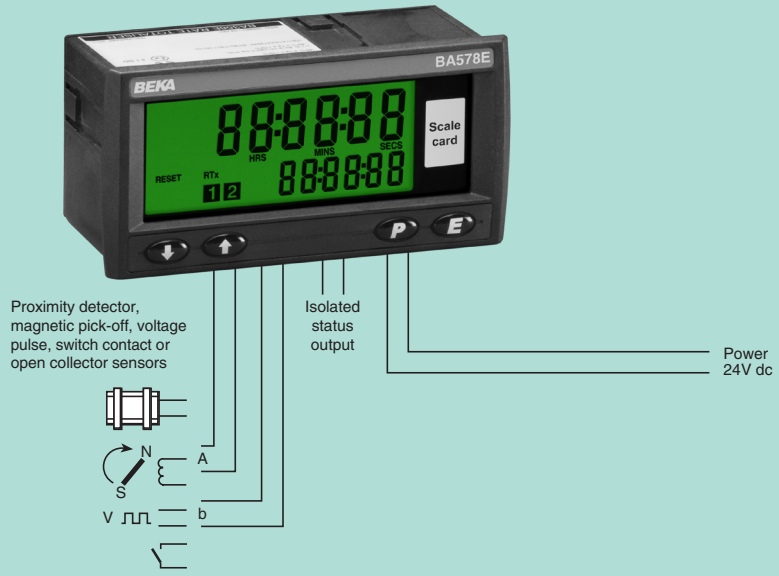
Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required *No charge if ordered with instrument*
Tag	Legend required
Rear cover and sealing kit	BA495

** BA577E-SS can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba577e-ss for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*

BA578E

Two input timer or clock

General purpose



Shown with optional backlight

- **May be configured as a Timer or as a Clock.**
- **Configurable inputs: magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse.**
- **Two Separate displays**
- **144 x 72mm DIN enclosure with IP66 front protection.**
- **Isolated status output**
- **Optional: Backlight Dual controls outputs**
- **3 year guarantee**

www.beka.co.uk/ba578e

The BA578E is a two input general purpose instrument that may be configured as a Timer or as a Clock. As a Timer it is able to measure and display the elapsed time between external events, or control external events via the status and optional control outputs. When configured as a Clock the instrument can display time in a variety of formats. The BA578E is controlled by two inputs which may be independently configured on-site to operate with a magnetic pick-off, switch contact, proximity detector, open collector or a voltage output sensor.

Configuration may be performed on-site via the front panel push buttons using the easy to use and well documented menus. The Timer employs a state and event structure to simplify configuration. The BA578E can be supplied configured to customers requirements including a customer defined printed scale card for no additional charge.

Applications as a Timer include displaying the time interval between two events detected by one or two sensors such as 2-wire proximity detectors. The Timer can control an external event using the isolated open collector status output if only a single output is required. If it is required to switch more than one circuit, additional dual isolated control outputs are available as a factory fitted option. The Timer is able to perform common industrial timing application such as those associated with dosing or sampling where a solenoid valve is required to be regularly opened for a defined time. The Timer includes a powerful cycle function which can be configured to repeat the timing function up to 99 times or continuously, with up to 100 hours delay between timed periods.

As a Clock local time can be displayed in various twelve or twenty four hour formats and the display may be synchronised to a pre-set time via the external reset input. Optional control outputs may be configured to switch loads on or off at pre-set times twice during each twenty four hour period.

The display has high contrast and a wide viewing angle, enabling the instrument to be read in most lighting conditions over a wide temperature range.

Display backlighting which is internally powered, is available as a factory fitted option. It provides green background illumination enhancing daylight viewing and allowing the display to be easily read at night or when installed in a poorly illuminated area.

IP66 front panel protection with a neoprene gasket to seal the joint between the instrument and the instrument panel allows the BA578E to be installed in areas that will be washed down.

Optional control outputs can switch process area loads such as a sounder or solenoid valve. The two galvanically isolated, solid state voltage free outputs may be independently configured with normally open or closed outputs. Annunciators on the BA578E display show the status of both control outputs.

When panel space is limited the BA577E single input Timer or Clock provides similar features in a smaller 96 x 48mm DIN enclosure. For installations in marine or hostile environments the BA577E-SS is functionally identical to the BA577E but has a rugged stainless steel enclosure with a 10mm thick window.

For applications in flammable atmospheres the BA378E, which is functionally identical to the BA578E, has international intrinsic safety certification. The one input BA377E also has intrinsic safety certification and the rugged BA377NE has Ex nA and Ex tc allowing installation in Zones 2 or 22 without Zener barriers or galvanic isolators.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 30V dc
Current	22mA max plus 16mA for the optional backlight.

Input A & b	**Lower**	**Upper** switching thresholds
Switch contact	100Ω	1kΩ
Proximity detector (NAMUR)	1.2mA	2.1mA
Open collector	2kΩ	10kΩ
Magnetic pick-off	0	+40mV
Voltage pulse (low)	1V	3V 30V max
Voltage pulse (high)	3V	10V 30V max

Display

Type	Liquid crystal
Primary	18mm high
Secondary	12mm high
Format	hh:mm:ss ; hh:mm ; mm:ss or s

Remote Timer reset & Clock sync.	Contact closure with resistance less than 10kΩ

Timer

Status output	Isolated, voltage free, open collector
Ron	51Ω + 3V max
Roff	1MΩ min
I max	10mA
Maximum duration	99h 59m and 59s or equivalent in any display format.
Maximum delay between cycles.	99h 59m and 59s or equivalent in any display format.
Grand total run-time	5 x 10^6 hours maximum

Clock

Timekeeping accuracy.	Less than ±0.43s error per day over full operating temperature range.

Environmental

Operating temp	-40 to +70°C display -20 to +70°C
Storage temp	-40 to +85°C
Humidity	To 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Material	Noryl SE1GFN3
Ingress	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

Mechanical

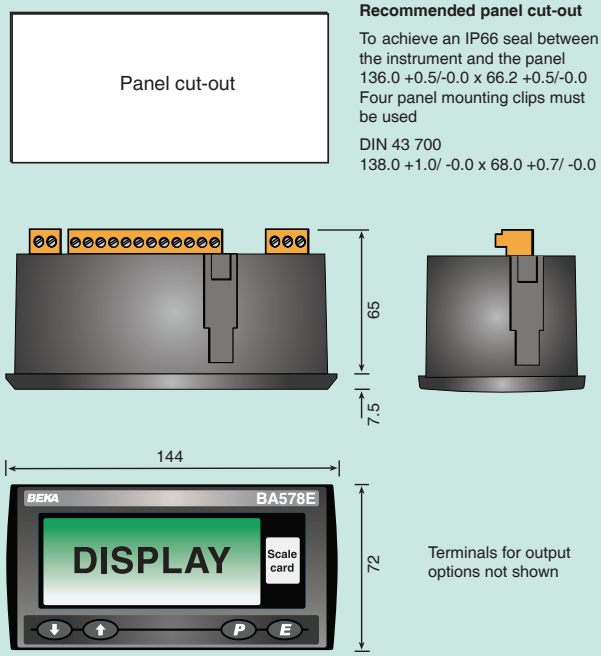
Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.35kg

Accessories

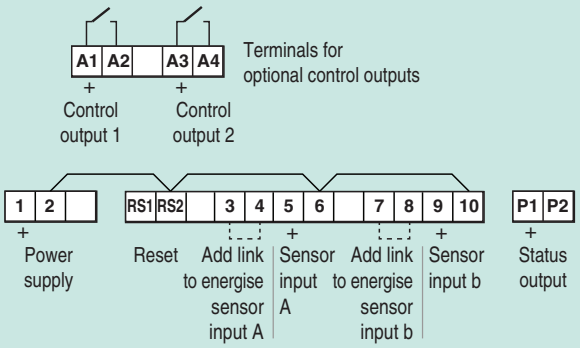
Backlight	Green LED internally powered
Control outputs	Two outputs each of which may be independently configured as a NO or NC output.
Outputs	Isolated single pole, voltage free solid state switch.
Ron	5Ω + 0.7V max
Roff	IMΩ min
V max	30V dc
I max	200mA
Scale card	Blank card fitted to all instruments. Can be supplied printed with specified units of time for no additional charge at time of purchase. ~
Tag legend	Specified tag number or application printed onto rear of instrument. ~

~ *See accessory datasheet for details*

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA578E
Function	Timer or Clock
Input	Type for each input *

Accessories	**Please specify if required**
Display backlight	Backlight
Control outputs	Control outputs
Scale card	Legend required
	No charge if ordered with instrument
Tag	Legend required

** BA578E can be supplied configured as required for no additional charge, see instruction manual, which can be downloaded from www.beka.co.uk/ba578e for details. If configuration information is not supplied, instrument will be configured as a Timer with an open collector input. Can easily be reconfigured on-site.*

Flow Batch Controllers

Very easy to use, stand alone batch controllers for dispensing and sampling. Graphical display that can be configured to suit applications including up to 9 named batch setpoints.

> **Graphical display with backlight**

> **General purpose and certified hazardous area models**
ATEX and North American Ex ia intrinsic safety gas and dust certification.

> **Field mounting models have IP66 impact resistant GRP enclosure**
Separate terminal compartment
Pipe mounting accessories.

> **Panel mounting models**
IP66 front panel

> **Input**
Pulse or 4/20mA

> **Three isolated outputs**
Output 1:
control output

Outputs 2 & 3 configurable:
control outputs
flow alarm
reset alarm
reset status
batch state
scaled pulse output

> **Single or two-stage control with overrun compensation**

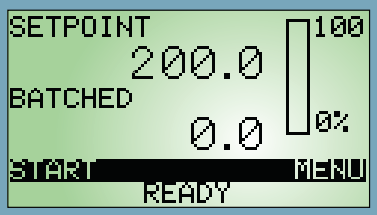
> **Provision for external push buttons**
Push button control may be transferred to external switches.

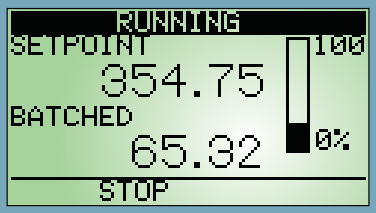
> **-20 to +60˚C operating temperature range**

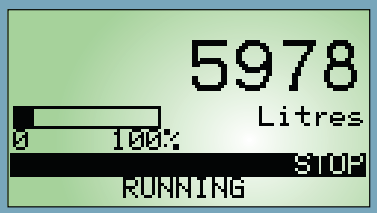
> **Accessories**
Three additional configurable isolated outputs.
Laser engraved stainless steel legend plates.

Intrinsically safe

General purpose



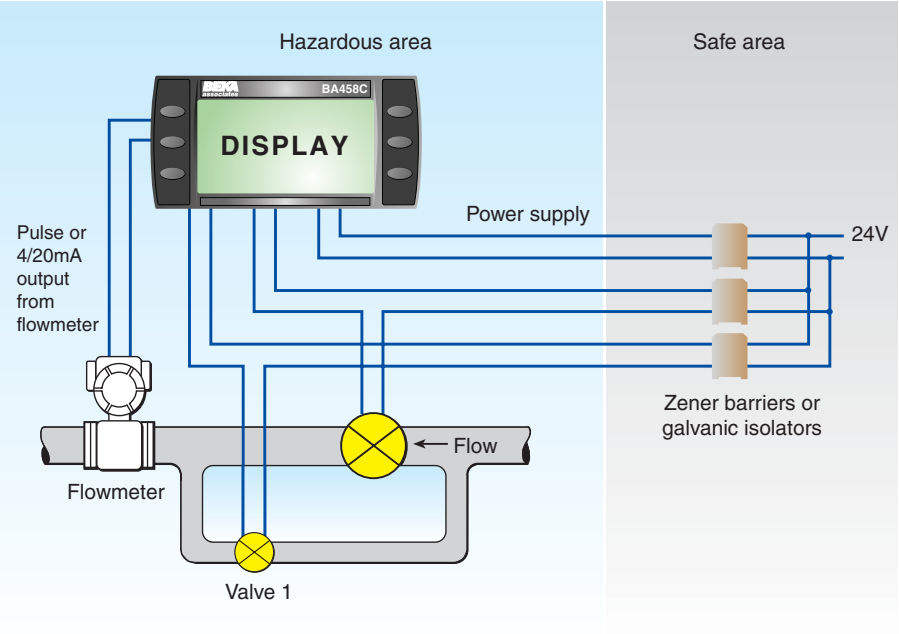


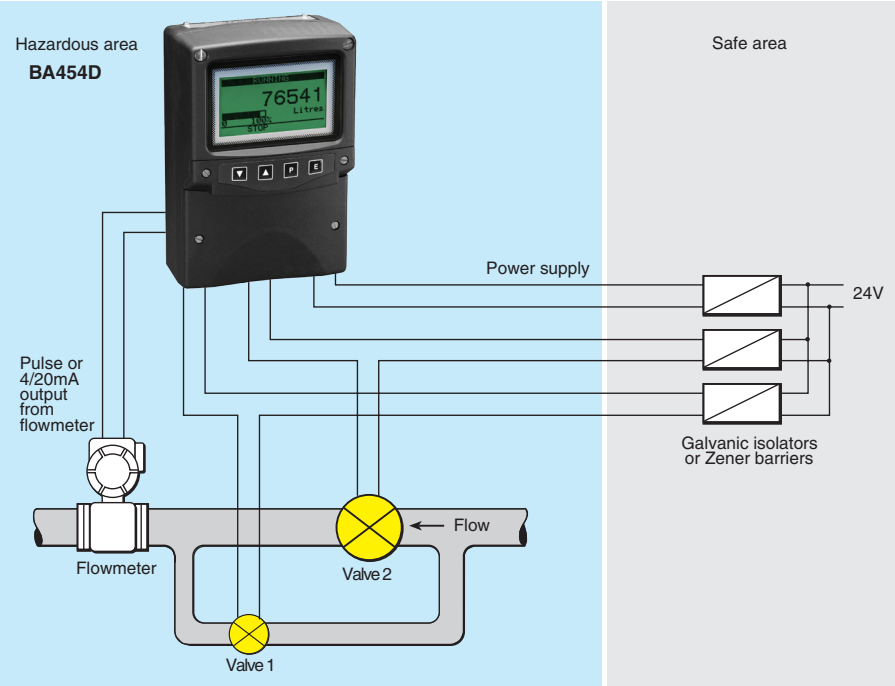


Flow Batch Controllers available

Model No.	Mounting	Certification					
		Europe ATEX		International IECEx		USA & Canada	
		Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22							
BA454D	Field	✔	✔	–	–	✔	✔
BA458C	Panel	✔	–	–	–	✔	–
General Purpose - for use in safe areas							
BA654D	Field						
BA658C	Panel						

*A **Flow Batch Controller** for every **application**..... delivered ready for **installation***





BA454D

Flow batch controller

Intrinsically safe for use in gas and dust hazardous areas

- **Easy to use**
- **Intrinsically safe ATEX gas *or* ATEX gas & dust *or* FM, cFM & ATEX gas**
- **High contrast display with backlight.**
- **Pulse or 4/20mA current source input.**
- **3 or 6 outputs**
- **9 selectable batch setpoints.**
- **IP66 field mounting GRP enclosure with separate terminal compartment.**
- **3 year guarantee**

www.beka.co.uk/ba454d

The BA454D is an intrinsically safe, second generation batch controller based on the successful BA350B. This field mounting controller is ideal for accurately dispensing liquids, solids or components in a hazardous area and despite its sophisticated control functions, it is easy to use and configure. Carefully designed display screens annotated in English, French, or German, lead the user intuitively through the available options. The BA454D accepts a pulse or 4/20mA analogue input and incorporates a square root extractor and sixteen point lineariser allowing use with almost any flowmeter or sensor. Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

Single or two-stage control can be performed by the BA454D with a third output available to control an additional valve or pump. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of total product dispensed is maintained as a grand total together with a history of the last ten batches.

Up to nine setpoints may be pre-entered and selected by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters.

The three isolated outputs are individually configured as control or status outputs. If more are required, a factory fitted option provides three additional identical isolated outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

Counting may be inhibited during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA454D batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

ATEX certification permits the BA454D to be installed in gas and dust hazardous areas. The magnetic pick-off, voltage pulse and 4/20mA inputs comply with the requirements for simple apparatus, allowing direct connection to most certified flowmeters. Switch contacts and a wide range of certified proximity detectors may also be directly connected to the BA454D. All three control outputs are galvanically isolated and certified as separate intrinsically safe circuits with output parameters complying with the requirements for simple apparatus. This allows most certified hazardous area loads such as valves, lamps, and sounders to be controlled, or the output may be transferred to the safe area via a wide range of Zener barriers or galvanic isolators.
For use in the USA and Canada the BA454D has FM and cFM intrinsic safety and nonincendive approval.

Controller configuration may be performed via the front panel push buttons or optional external switches. To prevent accidental or unauthorised adjustment, access to the configuration menus is restricted by an external security link and an optional user definable four digit security code.

The GRP enclosure has stainless steel fittings, neoprene gaskets and an armoured glass window. The robust construction provides IP66 protection which has been independently assessed by ITS – report available. A separate terminal compartment allows the instrument to be installed and terminated without exposing the electronic assembly. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are both forward facing.

BEKA associates

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SPECIFICATION

Power supply
- Voltage: Must be powered via a Zener barrier or galvanic isolator, 11V min required between terminals 1 and 2.
- Current: 33 mA typical when powered from 24V via 28V 300Ω Zener barrier

Pulse inputs: Linear or via 16 point lineariser
- Switch contact
  - Closed: Less than 100Ω
  - Open: Greater than 1kΩ
- Proximity detector: 2-wire NAMUR
- Magnetic pick-off: 40mV peak to peak min
- Voltage pulse (low)
  - Low: Less than 1V
  - High: Greater than 3V; 30V max.
- Voltage pulse (high)
  - Low: Less than 3V
  - High: Greater than 10V; 30V max.
- Open collector
  - Closed: Less than 2kΩ
  - Open: Greater than 10kΩ
- Frequency
  - Switch contact: 100Hz maximum
  - All other pulse I/P: 5kHz maximum

4/20mA input: From current source
- Function: Linear or root extracting
- Voltage drop: 0.6V at 20mA
- Accuracy at 20°C
  - Linear: 0.3 % of span
  - Root extracting: ±16 µA at input ±0.3 % of span
- Frequency: 2Hz maximum
- Temperature effect: Less than 0.025%/°C

Inhibit: Linking terminals 18 & 20 prevents input signal being counted.

Display
- Size: 86.5 mm x 45 mm LCD
- Backlight: Green
- 6 selectable operator screens showing combinations of: Batch controller status, Quantity dispensed, Batch setpoint, Rate of dispensing, Status of control outputs

Outputs: Three galvanically isolated solid state dc switches.
- On: Less than 5Ω + 0.7V
- Off: Greater than 1MΩ
- IS parameters: Ui=28V; Ii=200mA; Pi=0.85W
- Switching time: 0.2s max
- Control 1: Closes when start button is operated and opens when dispensed quantity equals the batch setpoint.
- Outputs 2 & 3 may be configured as:

Control 2 or Control 3 (parameters for each are separately adjustable)
Closes a pre-set time after Control 1 closes and open a pre-set dispensed quantity before the dispensed quantity equals the batch setpoint.

Flow alarm
Closes when the rate of dispensing falls below a pre-set value. Also causes batch controller to pause.

Reset status
Closes when controller is reset and opens when batch is started.

Batch status
Opens when batch is started and closes when batch is complete.

Pulse output
Scaled number of pulses proportional to quantity dispensed. Frequency 4 Hz max.

Front panel push buttons

(Control may be transferred to external switches with or without disabling the front panel push buttons.)

- Start: Energises Control 1
- Stop: During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
- Reset: Resets the batch display to zero or to the batch setpoint if the controller is counting down.
- Menu: Provides access to four functions if they are enabled:
  - Select pre-entered batch setpoint
  - Adjust batch setpoint
  - View size of last 10 batches
  - Configuration menu

Security
- Operator menu: May be protected by an optional four digit code.
- Configuration menus: Protected by external link or switch, plus optional four digit code.

Intrinsic safety

Europe ATEX
- Code: Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40 to 60°C)
- **or**: Group II Category 1D Ex ia IIIC T80°C Da (Tamb = -40 to 60°C) IP66 — *Dust option, see How to order*
- Cert. No.: ITS03ATEX21378
- System: Ex03E21380 & Ex03E21381
- Location: Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22

USA FM
- Standard: 3610 Entity
- Code: CL I, II, III; Div 1 GP A, B, C, D, E, F & G T4; Ta = 60°C
- Standard: 3611 Nonincendive
- Code: CL I, II, III; Div 2 GP A, B, C, D, E, F & G T4; Ta = 60°C
- File: 3033262

Canada cFM
- File: 3033262C

Environmental
- Operating temp: -20 to 60°C (ATEX gas certification -40 to 60°C)
- Storage temp: -40 to 85°C
- Humidity: To 95% @ 40°C
- Enclosure: IP66
- EMC: In accordance with EU Directive 2004/108/EC
  - Immunity: No error for 10V/m field strength between 150kHz and 1GHz.
  - Emissions: Complies with the requirements for Class B equipment.

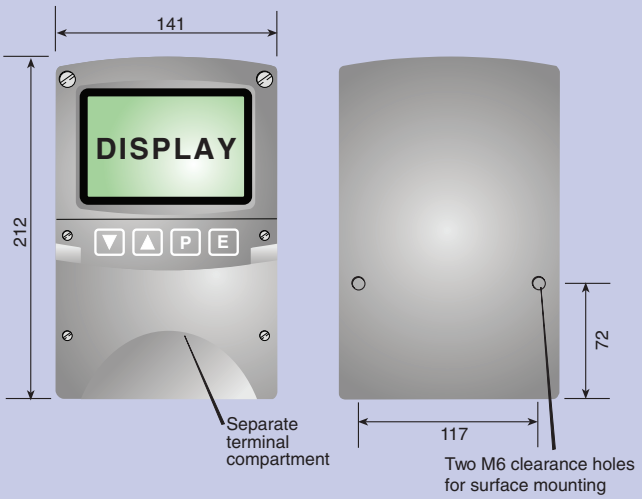
Mechanical: See page 147 for enclosure & terminal details.
- Terminals: Screw clamp for 0.5 to 1.5mm^2 cable. See page 119.
- Weight: 1.6 kg

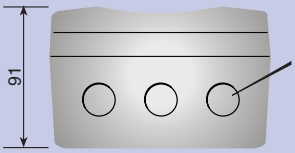
Accessories
- Additional outputs: Three programmable outputs having the same specification as outputs 2 & 3.
- Stainless legend plate: Stainless steel plate secured to front of instrument etched with tagging or applicational information.
- Pipe mounting kit: BA392D or BA393

HOW TO ORDER

	Please specify
Model number	BA454D
Certification	ATEX gas
or	ATEX gas & dust
or	FM, cFM & ATEX gas
Accessories	**Please specify if required**
Outputs 4, 5 & 6	Additional 3 outputs
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

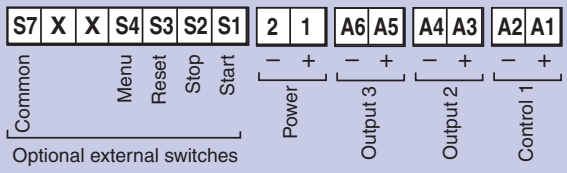
DIMENSIONS (mm)

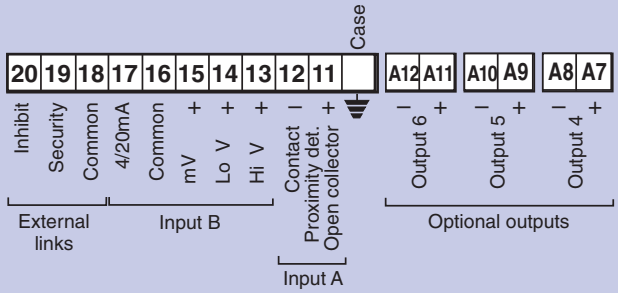




Three cable entries
ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug.
FM certification 22.25 Ø plain holes

TERMINAL CONNECTIONS





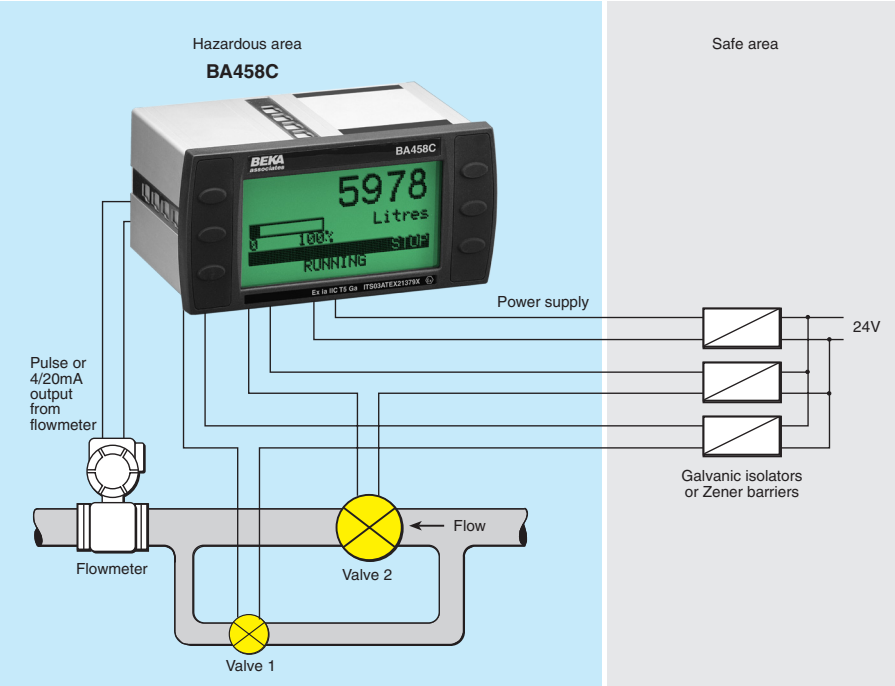
'X' Do not use

TERMINAL DESCRIPTIONS

Case		For earthing the enclosure	
1	+	Power supply	
2	–		
11	+	Proximity detector, switch	Input A
12	–	contact or open collector	
13	+	High voltage	Input B
14	+	Low voltage	
15		mV (Magnetic pick-off)	
16	–	Common for input B	
17	+	4/20mA	
18		Common for links	Externals Links
19		Configure security link	
20		Inhibit input link	
S1		Start	External Switches
S2		Stop	
S3		Reset	
S4		Menu	
S5		Do not use	
S6		Do not use	
S7		Common for switches	

only one input may be used

Case		For earthing the enclosure	
A1	+	Control 1	
A2	–		
A3	+	Output 2	Outputs 2 and 3 may each be configured to have one of six functions
A4	–		
A5	+	Output 3	
A6	–		
A7	+	Output 4	If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions.
A8	–		
A9	+	Output 5	
A10	–		
A11	+	Output 6	
A12	–		



BA458C

Flow batch controller

Intrinsically safe for use in all gas hazardous areas

- **Easy to use**
- **Intrinsically safe ATEX, FM & cFM certification.**
- **High contrast display with backlight.**
- **Pulse or 4/20mA current source input.**
- **3 or 6 outputs**
- **9 selectable batch setpoints.**
- **IP66 front panel**
- **3 year guarantee**

www.beka.co.uk/ba458c

The BA458C is an intrinsically safe second-generation flow batch controller that supersedes the successful BA350BP and BA350BC. This controller is ideal for accurately dispensing liquids, solids or components in a hazardous area and despite its sophisticated control functions, it is very easy to configure and use. Carefully designed display screens, annotated in English, French, or German, lead the user intuitively through the available options. The BA458C accepts a pulse or 4/20mA analogue input and incorporates a square root extractor and sixteen point lineariser allowing use with almost any flowmeter or sensor. Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

Single or two-stage control can be performed by the BA458C with a third output available to control an additional valve or pump. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of total product dispensed is maintained as a grand total together with a history of the last ten batches.

Up to nine setpoints may be pre-entered and selected by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters.

The three isolated outputs are individually configured as control or status outputs. If more are required, a factory fitted option provides three additional identical isolated outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

Counting may be inhibited during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA458C batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

ATEX certification permits the BA458C to be installed in all hazardous gas areas. The magnetic pick-off, voltage pulse and 4/20mA inputs comply with the requirements for simple apparatus, allowing direct connection to most certified flowmeters. Switch contacts and a wide range of certified proximity detectors may also be directly connected to the BA458C. All three control outputs are galvanically isolated and certified as separate intrinsically safe circuits with output parameters complying with the requirements for simple apparatus. This allows most certified hazardous area loads such as valves, lamps, and sounders to be controlled, or the output may be transferred to the safe area via a wide range of Zener barriers or galvanic isolators.
For use in the USA and Canada the BA458C has FM and cFM intrinsic safety and nonincendive approval.

Controller configuration may be performed via the front panel push buttons or optional external switches. To prevent accidental or unauthorised adjustment, access to the configuration menus is restricted by an external security link and an optional user definable four digit security code.

For field mounting applications the BA454D provides the same batching facilities but is housed in a robust IP66 GRP enclosure suitable for external mounting. A complementary range of non-certified models for use in safe areas is also available.

BEKA associates

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SPECIFICATION

Power supply

Voltage	Must be powered via a Zener barrier or galvanic isolator, 11V min required between terminals 1 and 2.
Current	33 mA typical when powered from 24V via 28V 300Ω Zener barrier

Pulse inputs Linear or via 16 point lineariser

Switch contact	
Closed	Less than 100Ω
Open	Greater than 1kΩ
Proximity detector	2-wire NAMUR
Magnetic pick-off	40mV peak to peak min
Voltage pulse (low)	
Low	Less than 1V
High	Greater than 3V; 30V max.
Voltage pulse (high)	
Low	Less than 3V
High	Greater than 10V; 30V max.
Open collector	
Closed	Less than 2kΩ
Open	Greater than 10kΩ
Frequency	
Switch contact	100Hz maximum
All other pulse I/P	5kHz maximum

4/20mA input From current source

Function	Linear or root extracting
Voltage drop	0.6V at 20mA
Accuracy at 20°C	
Linear	0.3 % of span
Root extracting	±16 µA at input ±0.3 % of span
Frequency	2Hz maximum
Temperature effect	Less than 0.025%/°C

Inhibit Linking terminals 18 & 20 prevents input signal being counted.

Display

Size	86.5 mm x 45 mm LCD
Backlight	Green
6 selectable operator screens showing combinations of:	Batch controller status Quantity dispensed Batch setpoint Rate of dispensing Status of control outputs

Outputs Three galvanically isolated solid state dc switches.

On	Less than 5Ω + 0.7V
Off	Greater than 1MΩ
IS parameters	Ui=28V; Ii=200mA; Pi=0.85W
Switching time	0.2s max
Control 1	Closes when start button is operated and opens when dispensed quantity equals the batch setpoint.
Outputs 2 & 3 may be configured as:	*Control 2 or Control 3 (parameters for each are separately adjustable)* Closes a pre-set time after Control 1 closes and open a pre-set dispensed quantity before the dispensed quantity equals the batch setpoint. *Flow alarm* Closes when the rate of dispensing falls below a pre-set value. Also causes batch controller to pause. *Reset status* Closes when controller is reset and opens when batch is started. *Batch status* Opens when batch is started and closes when batch is complete. *Pulse output* Scaled number of pulses proportional to quantity dispensed. Frequency 4 Hz max.

Front panel push buttons

(Control may be transferred to external switches with or without disabling the front panel push buttons.)

Start	Energises Control 1
Stop	During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting down.
Menu	Provides access to four functions if they are enabled: Select pre-entered batch setpoint Adjust batch setpoint View size of last 10 batches Configuration menu

Security

Operator menu	May be protected by an optional four digit code.
Configuration menus	Protected by external link or switch, plus optional four digit code.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T5 Ga (Tamb = -40°C to 60°C)
Cert. No.	ITS03ATEX21379X *Special condition only apply for installations in Zone 0*
Location	Zone 0, 1 or 2

USA FM

Standard	3610 Entity
Code	CL I; Div 1; GP A, B, C D T4; Ta = 60°C
Standard	3611 Nonincendive
Code	CL I; Div 2 GP A, B, C & D T4; Ta = 60°C
File	3033262

Canada cFM

File	3033262C

Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment.

Mechanical See page 148 for enclosure & terminal details

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7 kg

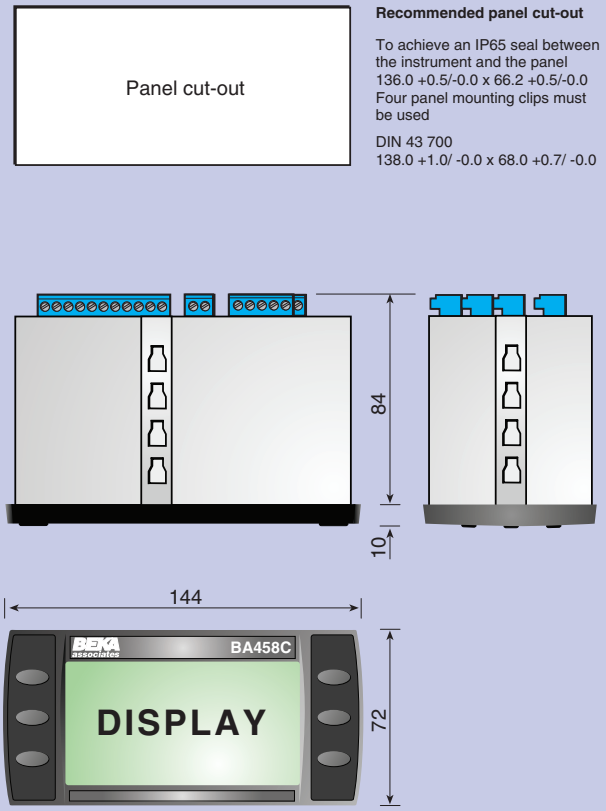
Accessories

Additional outputs	Three programmable outputs having the same specification as outputs 2 & 3.
Tag number	Thermally printed strip on rear of instrument.

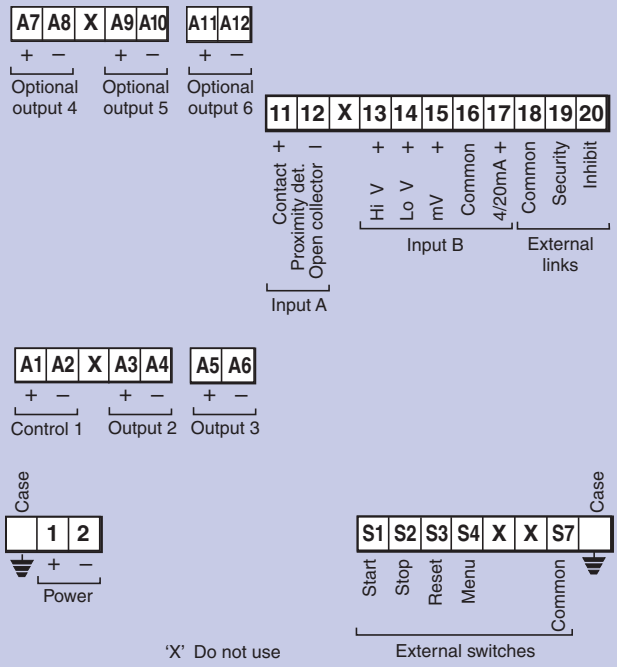
HOW TO ORDER

	Please specify
Model number	BA458C
Accessories	**Please specify if required**
Outputs 4, 5 & 6	Additional 3 outputs
Tag strip	Legend

DIMENSIONS (mm)

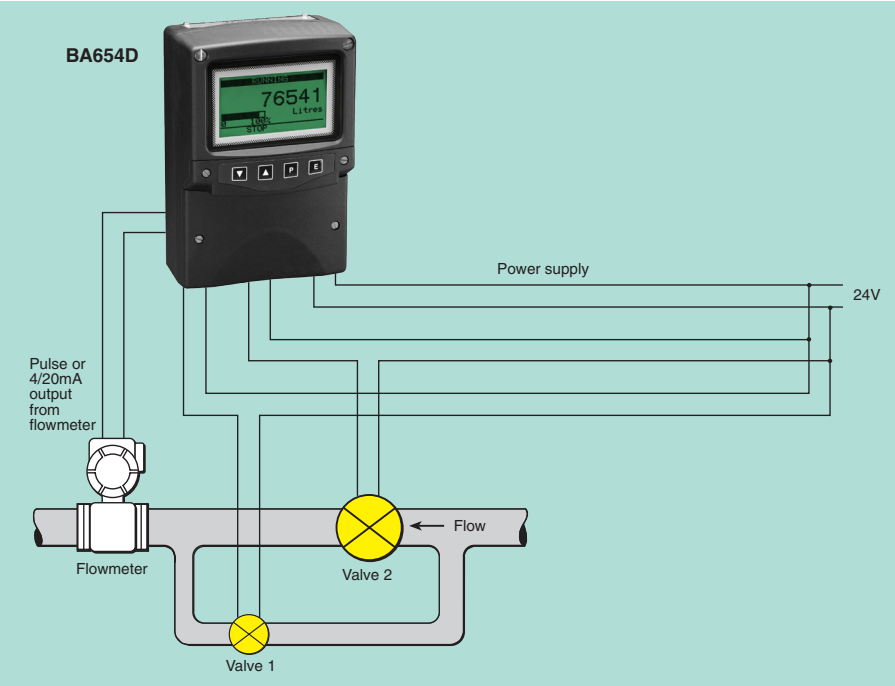


TERMINAL CONNECTIONS



TERMINAL DESCRIPTIONS

Case		For earthing the enclosure		
1	+	Power supply		
2	–			
11	+	Proximity detector, switch	Input A	*only one input may be used*
12	–	contact or open collector		
13	+	High voltage	Input B	
14	+	Low voltage		
15		mV (Magnetic pick-off)		
16	–	Common for input B		
17	+	4/20mA		
18		Common for links	Externals Links	
19		Configure security link		
20		Inhibit input link		
S1		Start	External Switches	
S2		Stop		
S3		Reset		
S4		Menu		
S5		Do not use		
S6		Do not use		
S7		Common for switches		
Case		For earthing the enclosure		
A1	+	Control 1		
A2	–			
A3	+	Output 2	Outputs 2 and 3 may each be configured to have one of six functions	
A4	–			
A5	+	Output 3		
A6	–			
A7	+	Output 4	If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions.	
A8	–			
A9	+	Output 5		
A10	–			
A11	+	Output 6		
A12	–			



BA654D

Flow batch controller

General purpose

- **Easy to use**
- **High contrast display with backlight.**
- **Pulse or 4/20mA current source input.**
- **3 or 6 outputs**
- **9 selectable batch setpoints.**
- **IP66 field mounting GRP enclosure with separate terminal compartment.**
- **3 year guarantee**

www.beka.co.uk/ba654d

The BA654D is a second-generation, field mounting, general-purpose flow batch controller based on the successful BA550. This controller is ideal for accurately dispensing liquids, solids or components and despite its sophisticated control functions, it remains very easy to use and configure.

The backlit display is readable in all lighting conditions and the user screen may be selected so that the operator is only presented with essential process information. Displayed variables include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of the total product dispensed is maintained as a grand total, together with a history of the last ten batches.

Up to nine setpoints may be pre-entered for selection by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters. The controller can also be configured so that the operator can adjust an existing setpoint or enter a new value.

Single or two-stage control can be performed by the BA654D with a third output available to control an additional valve or pump, or even to provide three-stage control. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays.

Pulse and analogue 4/20mA signals are accepted by the batch controller. All inputs are galvanically isolated allowing earthed or floating signals to be connected. Pulse inputs may be from switch contacts, a 2-wire proximity detector or a wide range of voltage sources. An easily adjustable sixteen-point lineariser will accurately correct almost any flowmeter non-linearity. The BA654D also incorporates a root-extractor so 4/20mA analogue inputs may be linear, or have a square law relationship with flow.

Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

The three relay contact outputs may be individually configured as control or status outputs. If more are required, a factory fitted option provides three additional galvanically isolated solid state outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

Counting may be inhibited during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA654D batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

Controller configuration is performed via the front panel push buttons or optional external switches. Carefully designed configuration menus lead the installer intuitively through the available functions. Configuration menus and user screens may be displayed in English, French or German.

A security link and an optional user definable four digit security code prevent accidental or unauthorised access to the configuration menus.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings and provides IP66 protection. A separate terminal compartment allows the instrument to be installed and terminated without exposing the instrument electronics. To further simplify installation and subsequent inspection, the terminal cable entries and the clamping screws are both forward facing.

For panel mounting applications the BA658C provides the same batching facilities as the BA654D but is housed in a 144 x 72mm DIN enclosure. A complementary range of intrinsically safe models is also available.

BEKA associates

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SPECIFICATION

Power supply

Voltage	20 to 36V dc.
Current	95mA max

Pulse Inputs Linear or via 16 point lineariser

Switch contact	
Closed	Less than 100Ω
Open	Greater than 1kΩ
Proximity detector	2-wire NAMUR
Magnetic pick-off	40mV peak to peak min
Voltage pulse (low)	
Low	Less than 1V
High	Greater than 3V; 30V max.
Voltage pulse (high)	
Low	Less than 3V
High	Greater than 10V; 30V max.
Open collector	
Closed	Less than 2kΩ
Open	Greater than 10kΩ
Frequency	
Switch contact	100Hz maximum
All other pulse I/P	5kHz maximum

4/20mA input From current source

Function	Linear or root extracting
Voltage drop	0.6V at 20mA
Accuracy at 20°C	
Linear	0.3 % of span
Root extracting	±16 µA at input ±0.3 % of span
Temperature effect	Less than 0.025%/°C
Frequency	2Hz maximum

Inhibit Linking terminals 18 & 20 prevents input signal being counted.

Display

Size	86.5 mm x 45 mm LCD
Backlight	Green
6 selectable operator screens showing combinations of:	Digital & bargraph display of quantity dispensed. Batch setpoint Rate of dispensing Status of control outputs Batch controller status

Outputs Three single pole relay contacts.

Rating	250V; 5A; 1.25kVA ac 30V; 5A; 150W dc Reactive loads must be suppressed.
Switching time	0.2s max
Control 1	Closes when start button is operated and opens when batched quantity equals the batch setpoint.
Outputs 2 & 3 may be configured as:	*Control 2 or Control 3 (parameters for each are individually adjustable)* Closes a programmable time after Control 1 closes and open a programmable dispensed quantity before the dispensed quantity equals the batch setpoint. *Flow alarm* Closes when the rate of dispensing falls below a pre-entered value. Also causes batch controller to pause. *Reset status* Closes when controller is reset and opens when batch is started. *Batch status* Opens when batch is started and closes when batch is complete. *Pulse output* Scaled output proportional to total volume dispensed. Frequency 4 Hz max.

Front panel push buttons

Start	Energises Control 1
Stop	During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
Reset	Resets the batch display to zero or to the batch setpoint if the controller is counting down.
Menu	Provides access to four functions if they are enabled: Select pre-entered batch setpoint Adjust batch setpoint View size of last 10 batches Configuration menu

Security

Operator menu	May be protected by an optional four digit code.
Configuration menus	Protected by external link or switch, plus optional four digit code.

Environmental

Operating temp	-20 to 60°C
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	Front IP66
EMC	In accordance with EU Directive 2004/108/EC
Immunity	No error for 10V/m field strength between 150kHz and 1GHz.
Emissions	Complies with the requirements for Class B equipment.

Mechanical See page 147 for enclosure & terminal details.

Terminals	Screw clamp for 0.5 to 1.5 mm^2 cable.
Weight	1.6 kg

Accessories

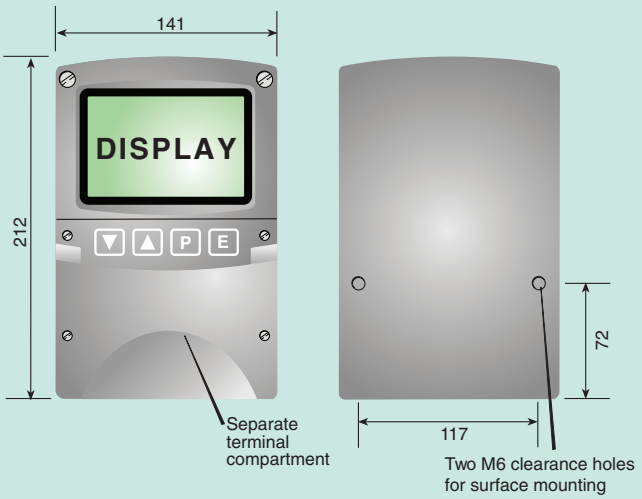
Additional outputs	Three configurable galvanically isolated, single pole solid state dc switch outputs. Rating: 30V; 100mA dc
Stainless legend plate	Stainless steel plate secured to front of instrument etched with tagging or applicational information.
Pipe mounting kit	BA392D or BA393

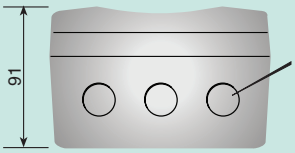
HOW TO ORDER

	Please specify
Model number	BA654D

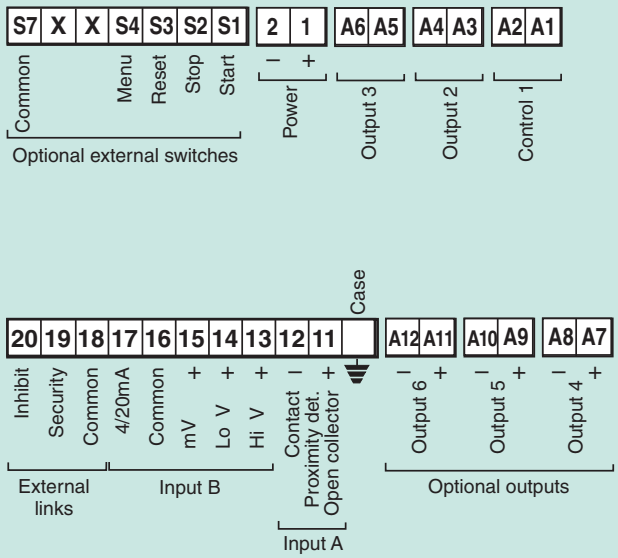
Accessories	**Please specify if required**
Outputs 4, 5 & 6	Additional 3 solid state dc outputs
Stainless legend plate	Legend required
Pipe mounting kit	BA392D or BA393

DIMENSIONS (mm)





TERMINAL CONNECTIONS



'X' Do not use

TERMINAL DESCRIPTIONS

Case		For earthing the enclosure	
1	+	Power supply	
2	–		
11	+	Proximity detector, switch	Input A
12	–	contact or open collector	
13	+	High voltage	Input B
14	+	Low voltage	
15		mV (Magnetic pick-off)	
16	–	Common for input B	
17	+	4/20mA	
18		Common for links	Externals Links
19		Configure security link	
20		Inhibit input link	
S1		Start	External Switches
S2		Stop	
S3		Reset	
S4		Menu	
S5		Do not use	
S6		Do not use	
S7		Common for switches	

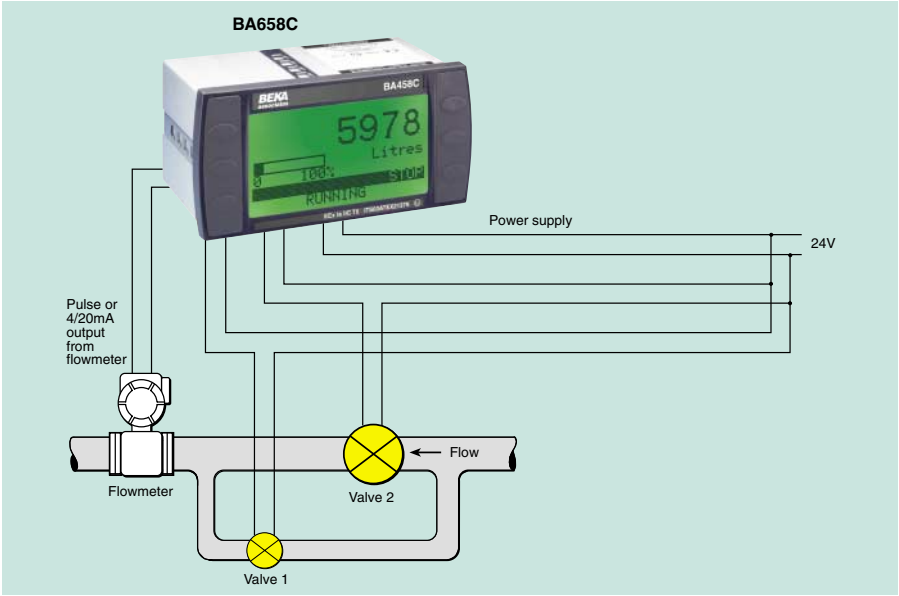
only one input may be used

Case		For earthing the enclosure	
A1	+	Control 1	
A2	–		
A3	+	Output 2	Outputs 2 and 3 may each be configured to have one of six functions
A4	–		
A5	+	Output 3	
A6	–		
A7	+	Output 4	If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions.
A8	–		
A9	+	Output 5	
A10	–		
A11	+	Output 6	
A12	–		

BA658C

Flow batch controller

General purpose



- **Easy to use**
- **High contrast display with backlight**
- **Pulse or 4/20mA current source input**
- **3 or 6 outputs**
- **9 selectable batch setpoints**
- **IP66 front panel**
- **3 year guarantee**

The BA658C is a second-generation, general-purpose flow batch controller that supersedes the successful BA550P and BA550C. This controller is ideal for accurately dispensing liquids, solids or components and despite its sophisticated control functions, it remains very easy to use and configure.

The backlit display is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of the total product dispensed is maintained as a grand total, together with a history of the last ten batches.

Up to nine setpoints may be pre-entered for selection by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters. The controller can also be configured so that the operator can adjust an existing setpoint or enter a new value.

Single or two-stage control can be performed by the BA658C with a third output available to control an additional valve or pump, or even to provide three-stage control. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays

Pulse and analogue 4/20mA signals are accepted by the batch controller. All inputs are galvanically isolated from the controller power supply and outputs so that earthed signals may be connected. Pulse inputs may be from switch contacts, a 2-wire proximity detector or a wide range of voltage sources. An easily adjustable sixteen point straight line lineariser will accurately correct almost any flowmeter non-linearity. The BA658C also incorporates a root-extractor so 4/20mA analogue inputs may be linear, or have a square law relationship with the rate of flow.

Separate total and rate scaling factors enable the dispensed quantity and the rate of dispensing to be displayed in the same or in different engineering units.

The three relay contact outputs may be individually configured as control or status outputs. If more are required, a factory fitted option provides three additional galvanically isolated solid state outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

Counting may be inhibited during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA658C batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

Controller configuration is performed via the front panel push buttons or optional external switches. Carefully designed configuration menus lead the installer intuitively through the available functions. Configuration menus and user screens may be displayed in English, French or German.

A security link and an optional user definable four digit security code prevent accidental or unauthorised access to the configuration menus.

For field mounting applications the BA654D provides the same batching facilities as the BA658C but is housed in a robust IP66 GRP enclosure suitable for external mounting. A complementary range of field and panel mounting intrinsically safe models is also available for use in potentially flammable atmospheres.

BEKA associates

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SPECIFICATION

Power supply
- Voltage: 20 to 36V dc.
- Current: 95mA max

Pulse Inputs: Linear or via 16 point lineariser
- Switch contact
  - Closed: Less than 100Ω
  - Open: Greater than 1kΩ
- Proximity detector: 2-wire NAMUR
- Magnetic pick-off: 40mV peak to peak min
- Voltage pulse (low)
  - Low: Less than 1V
  - High: Greater than 3V; 30V max.
- Voltage pulse (high)
  - Low: Less than 3V
  - High: Greater than 10V; 30V max.
- Open collector
  - Closed: Less than 2kΩ
  - Open: Greater than 10kΩ
- Frequency
  - Switch contact: 100Hz maximum
  - All other pulse I/P: 5kHz maximum

4/20mA input: From current source
- Function: Linear or root extracting
- Voltage drop: 0.6V at 20mA
- Accuracy at 20˚C
  - Linear: 0.3 % of span
  - Root extracting: ±16 µA at input ±0.3 % of span
- Temperature effect: Less than 0.025%/˚C
- Frequency: 2Hz maximum

Inhibit: Linking terminals 18 & 20 prevents input signal being counted.

Display
- Size: 86.5 mm x 45 mm LCD
- Backlight: Green
- 6 selectable operator screens showing combinations of: Digital & bargraph display of quantity dispensed.
  Batch setpoint
  Rate of dispensing
  Status of control outputs
  Batch controller status

Outputs: Three single pole relay contacts.
- Rating: 250V; 5A; 1.25kVA ac
  30V; 5A; 150W dc
  Reactive loads must be suppressed.
- Switching time: 0.2s max
- Control 1: Closes when start button is operated and opens when batched quantity equals the batch setpoint.
- Outputs 2 & 3 may be configured as:

Control 2 or Control 3 (parameters for each are individually adjustable)

Closes a programmable time after Control 1 closes and open a programmable dispensed quantity before the dispensed quantity equals the batch setpoint.

Flow alarm
Closes when the rate of dispensing falls below a pre-entered value. Also causes batch controller to pause.

Reset status
Closes when controller is reset and opens when batch is started.

Batch status
Opens when batch is started and closes when batch is complete.

Pulse output
Scaled output proportional to total volume dispensed.
Frequency 4 Hz max.

Front panel push buttons
- Start: Energises Control 1
- Stop: During a batch de-energises Control 1, 2 & 3 causing the batch to pause.
- Reset: Resets the batch display to zero or to the batch setpoint if the controller is counting down.
- Menu: Provides access to four functions if they are enabled:
  Select pre-entered batch setpoint
  Adjust batch setpoint
  View size of last 10 batches
  Configuration menu

Security
- Operator menus: May be protected by an optional four digit code.
- Configuration menus: Protected by external link or switch, plus optional four digit code.

Environmental
- Operating temp: -20 to +60˚C
- Storage temp: -40 to 85˚C
- Humidity: To 95% @ 40˚C
- Enclosure: Front IP66, rear IP20
- EMC: Complies with EMC Directive 2014/30/EU.
  - Immunity: No error for 10V/m field strength between 150kHz and 1GHz.
  - Emissions: Complies with the requirements for Class B equipment.

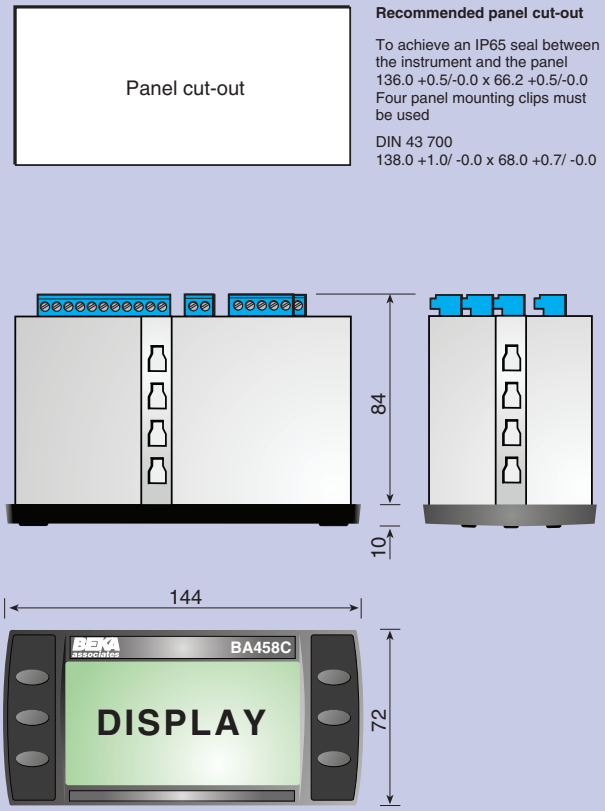
Mechanical: See page 148 for enclosure & terminal details
- Terminals: Removable with screw clamp for 0.5 to 1.5 mm² cable.
- Weight: 0.7 kg

Accessories
- Additional outputs: Three configurable galvanically isolated, single pole solid state dc switch outputs. Rating: 30V; 100mA dc
- Tag number: Thermally printed strip on rear of instrument.

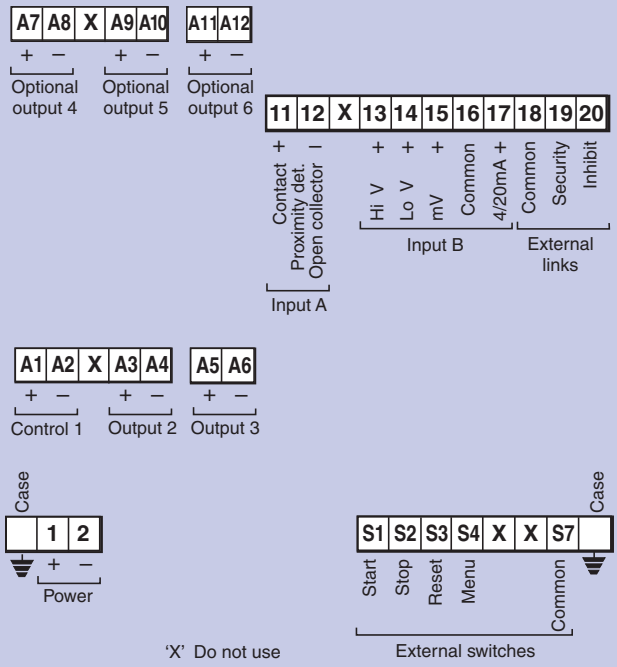
HOW TO ORDER

	Please specify
Model number	BA658C
Accessories	**Please specify if required**
Outputs 4, 5 & 6	Additional 3 solid state dc outputs
Tag Strip	Legend

DIMENSIONS (mm)



TERMINAL CONNECTIONS



TERMINAL DESCRIPTIONS

Case		For earthing the enclosure		
1	+	Power supply		
2	–			
11	+	Proximity detector, switch	Input A	*only one input may be used*
12	–	contact or open collector		
13	+	High voltage	Input B	
14	+	Low voltage		
15		mV (Magnetic pick-off)		
16	–	Common for input B		
17	+	4/20mA		
18		Common for links	Externals Links	
19		Configure security link		
20		Inhibit input link		
S1		Start	External Switches	
S2		Stop		
S3		Reset		
S4		Menu		
S5		Do not use		
S6		Do not use		
S7		Common for switches		

Case		For earthing the enclosure	
A1	+	Control 1	
A2	–		
A3	+	Output 2	Outputs 2 and 3 may each be configured to have one of six functions
A4	–		
A5	+	Output 3	
A6	–		
A7	+	Output 4	If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions.
A8	–		
A9	+	Output 5	
A10	–		
A11	+	Output 6	
A12	–		

Set Point Station [Generator]

Intrinsically safe

General purpose

For manually adjusting a 4/20mA process variable or controller set point from within a hazardous or safe area using the instrument's push buttons. These loop powered instruments incorporate a display to show the operator the 4/20mA current in engineering units.

> **General purpose and certified hazardous area models**
International Ex ia intrinsic safety certification.

> **Rugged stainless steel Ex ia models**
May be installed in certified Ex e, Ex p or Ex t panel enclosure without invalidating the enclosure's certification.

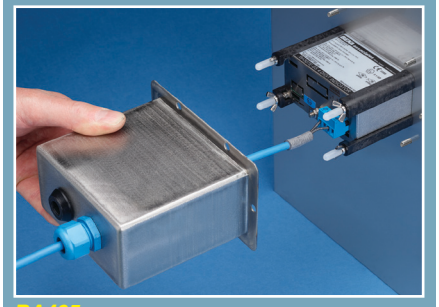
> **IP66 front panels**

> **BA490 Quadrature rotary encoder**
Alternative to using the set point station's push buttons, current can be controlled by an external rotary encoder such as the BA490.

> **-40 to +70˚C operating temperature range**

> **Accessories**
Display backlight may be loop or separately powered
Scale card - *can be supplied printed with units of measurement and tag information for no additional charge*
Rear IP66 sealing kit

BA490
Quadrature Rotary Encoder - optional

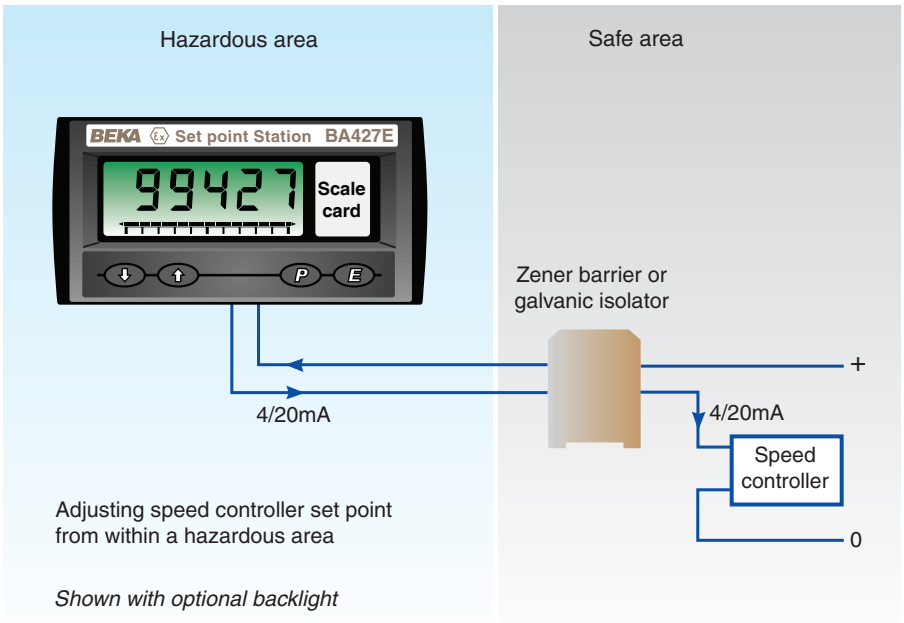


BA495
Rear IP66 sealing kit

Set Point Stations [Generators] available

Model No.	Mounting	Display digits No. x height	Certification					
			Europe ATEX		International IECEx		USA & Canada	
			Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified								
BA427E	Panel 96 x 48	5 x 11mm bargraph	✔	✔	✔	✔	✔	–
BA427E-SS	Panel Rugged 105 x 60	5 x 11mm bargraph	✔	✔	✔	✔	–	–
General Purpose - for use in safe areas								
BA627E	Panel 96 x 48	5 x 11mm bargraph						
BA627E-SS	Panel Rugged 105 x 60	5 x 11mm bargraph						

*A **Set Point Station** for every **application**.....*
*delivered ready for **installation***



Shown with optional loop powered backlight

BA427E

4/20mA manual set point station [set point generator]

Intrinsically safe for use in all gas and dust hazardous areas

- **Loop powered**
- **Intrinsically safe ATEX, IECEx ETL & cETL.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & BA490 external rotary encoder.**
- **IP66 front**
- **Easy on-site scale card installation.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba427e

The BA427E is an intrinsically safe panel mounting set point station that enables the current flowing in a 4/20mA loop to be manually adjusted via the front panel push buttons from within the hazardous area. It is a second generation instrument that is mechanically and electrically compatible with the earlier BA405C, but has more display digits plus additional functions.

Main application of the BA427E is the adjustment of a 4/20mA plant parameter from within a hazardous area. For example, used as the remote set point generator for a speed controller the BA427E enables speed adjustments from within the hazardous process area. The BA427E may also be used to position an actuator or valve with a 4/20mA input. The BA427E incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

International intrinsic safety certification permits the BA427E to be installed throughout the world. All input safety parameters are the same or greater than those for the preceding BA405C, thus allowing the BA427E to safely replace the earlier model.

Five pre-set output values may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

The bold 11mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA427E set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign, may be configured to display any variable represented by the 4/20mA output current between -99999 and 99999.

Engineering units represented by the 4/20mA output current are shown on the scale card viewed through a window on the right hand side of the display. If the units are specified when the BA427E is ordered a printed scale card will be fitted. If units are not specified, a blank card will be supplied which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring is required. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

IP66 front panel protection and a neoprene gasket to seal the joint between the set point station and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the set point station has a removable terminal block allowing panel wiring to be completed before the BA427E is installed.

A BA490 panel mounting external rotary encoder may be directly connected to the BA427E set point station to provide analogue control of the output current. The encoder complies with the requirements for *Simple Aparatus* and can be installed in the same hazardous area as the set point station.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

BEKA associates

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SPECIFICATION

Output

Current	3.0 to 22.0mA
Resistance	Greater than 1MΩ

Power supply

Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.

Accuracy

Control resolution	1 least significant digit of the display, or 0.3µA whichever is greater.
Temperature effect	Less than 2µA/°C

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high with 31 segment bargraph.
Zero	Adjustable between 0 & ±99999 with 4mA output.
Span	Adjustable between 0 & ±99999 with 20mA output.
Decimal point	1 of 4 positions or absent
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA output.

Push buttons

	(Function in operating mode)
'E' and ▼ or ▲	Scrolls output current down or up. Pressing ***'E'*** prevents output current being accidentally adjusted if ▼ or ▲ buttons or optional rotary encoder are inadvertently operated. This function can be disabled in the configuration menu.
▼	Shows display calibration with 4mA output.
▲	Shows display calibration with 20mA output.
'P'	Displays output current in mA, as a % of span or provides access to pre-set outputs.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Cert. No.	ITS12ATEX27718X (Special conditions only apply for use in Group IIIC conductive dusts)

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 70°C
Cert. No	IECEx ITS12.0084X (Special conditions only apply for use in Group IIIC conductive dusts)

USA ETL

Standards	ANSI/ISA 60079-0 &11 conforms to UL 913 7th edition & UL 60079-0 & 11.
IS Code	IS CL I, Div 1, GP A, B, C, & D: CL I, ZN 0, AEx ia IIC T5 Ga.
NI Code	NI CL I, DIV 2, GP A, B, C & D: CL II, DIV 2, GP E, F & G: CL III, T5. CL I, ZN 2, GP IIA, IIB, IIC, T5 Ta = 70°C
File	4008610

Canada cETL

File	4008610

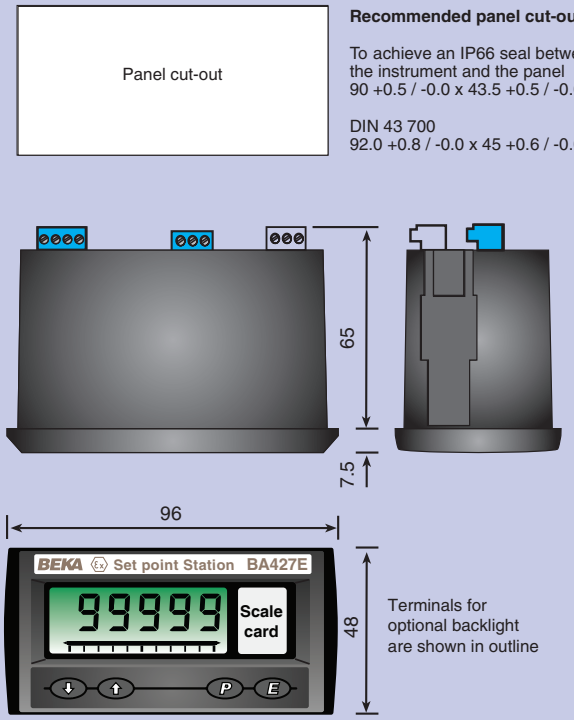
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

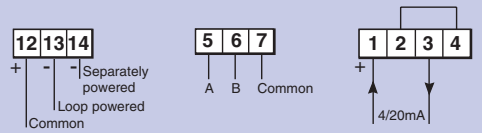
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.2kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Terminals for optional backlight | **Terminals for optional external rotary encoder** | **Terminals 2 & 4 are internally linked for joining return 4/20mA wire**

Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Set point station + backlight supply 10 to 30V.
Separately powered	9 to 30V at 22mA from IS interface
Printed scale card	Blank card fitted to each Set Point Station can be supplied typeset with specified engineering units.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.
BA490 rotary encoder	Panel mounting IP65 sealed rotary encoder which provides analogue control of the BA427E output current. Complies with the requirements for *Simple Apparatus*. See separate datasheet.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA427E
Display at:	
4.000mA	XXXXX Include position of
20.000mA	XXXXX decimal point & sign if negative *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required
Tag	Legend required
External rotary encoder	BA490
Rear cover and sealing kit	BA495

** Will be set to display 0.00 at 4mA output and 100.00 at 20mA output if calibration information is not supplied. Calibration can easily be changed on-site.*

Shown with optional backlight - loop powered

BA427E-SS

Rugged 4/20mA manual set point station [set point generator]

Intrinsically safe suitable for use in a Ex e, Ex n, Ex p or Ex t panel enclosure and in harsh environments

- **Loop powered**
- **Front of instrument maintains Ex e, Ex p, Ex n and Ex t panel enclosure certification.**
- **Rugged IP66 stainless steel enclosure.**
- **Intrinsically safe ATEX & IECEx.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight and BA490 external rotary encoder.**
- **3 year guarantee**

www.beka.co.uk/ba427e-ss

The BA427E-SS set point station enables the current flowing in a 4/20mA loop to be manually adjusted from within a hazardous area via the front panel push buttons. Intrinsic safety certification and a rugged stainless steel housing allows the BA427E-SS to be safely installed in an Ex e, Ex p, Ex n or Ex t panel enclosure without invalidating the enclosures certification. It is also suitable for intrinsically safe applications in uncertified panels, in marine environments or where the front of the instrument is likely to be impacted.

Main application of the BA427E-SS is the manual adjustment of a 4/20mA plant parameter such as a controller set point from within a hazardous area. To simplify adjustment, the display may be calibrated to show the output current in engineering units. The front of the set point station has IP66 ingress and impact protection which has been certified to allow installation in an Ex e, Ex n, Ex p or Ex t panel enclosure without invalidating the enclosure certification.

ATEX and IECEx intrinsic safety certification permits the BA427E-SS to be installed throughout the world. Both certificates clearly specify where the set point station may be installed and a detailed explanation is contained in the instruction manual.

A large digital display and 31 segment bargraph may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

Up to five pre-set output values may be rapidly selected using the instrument's front panel push buttons for applications where the same output currents are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

Units of measurement represented by the 4/20mA output current may be shown on the slide-in scale card which is viewed through the window on the right hand side of the display. If the units are specified when the BA427E-SS is ordered a printed scale card will be fitted. If units are not specified, a blank card will be fitted which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop no additional intrinsically safe interface or wiring are required. Powering from a separate supply produces a brighter backlight but requires an additional intrinsically safe interface and field wiring. Two backlights may be separately powered from one intrinsically safe interface.

An external quadrature encoder may be directly connected to the BA427E-SS set point station to provide analogue control of the output current. Most three wire devices, such as the BEKA BA490 panel mounting rotary encoder may be located up to 1m from the BA427E-SS.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

BEKA associates

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SPECIFICATION

Output

Current	3.0 to 22.0mA
Resistance	Greater than 1MΩ

Power supply

Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.

Accuracy

Control resolution	1 least significant digit of the display, or 0.3µA whichever is greater.
Temperature effect	Less than 2µA/°C

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high with 31 segment bargraph.
Zero	Adjustable between 0 & ±99999 with 4mA output.
Span	Adjustable between 0 & ±99999 with 20mA output.
Decimal point	1 of 4 positions or absent
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing 4/20mA output.

Push buttons

	(Function in operating mode)
E and ▼ or ▲	Scrolls output current down or up. Two handed activation prevents output current being accidentally adjusted if ▼ or ▲ button or external encoder are inadvertently operated. Can be set to single handed operation in configuration menu.
▼	Shows display calibration with 4mA output
▲	Shows display calibration with 20mA output
P	Displays output current in mA, as a % of span or provides access to pre-set outputs.

Intrinsic safety

Europe ATEX

Code	Group II Category 1GD Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to +60°C (-40 to +70°C when not mounted in certified enclosure).
Input parameters	
Ui	30V dc
Ii	200mA
Pi	0.84W
Cert. No.	ITS15ATEX28365X (Special conditions permit installation in Ex e, Ex n, Ex p and Ex t enclosures and apply for use in Group IIIC conductive dusts).

International IECEx

Code	Ex ia IIC T5 Ga Ex ia IIIC T80°C Da IP20 Tamb = -40 to 60°C (-40 to +70°C when not mounted in certified enclosure).
Cert. No	IECEx ITS15.0056X (As ATEX special conditions).

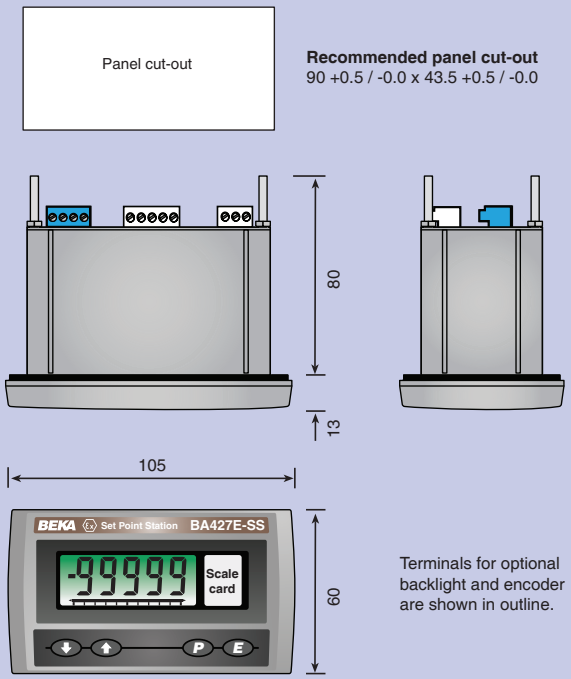
Environmental

Operating temp	-40 to +70°C (May be limited to -40 to +60°C when mounted in certified enclosure - see intrinsic safety certificates).
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Material	Stainless steel BS 3146-2:1977 ANC4B (316)
EMC	Complies with 2004/108/EC

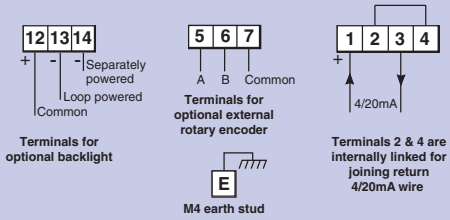
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.85kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Backlight	Green, may be loop or separately powered
Loop powered	Set point station + backlight 10 to 30V
Separately powered	9 to 30V at 22mA from IS interface
Printed scale card	Blank card fitted to each Set Point Station, can be supplied typeset with specified engineering units.
Tag legend	Specified tag number or application laser etched onto rear of the instrument.
External encoder	BA490 panel mounting rotary quadrature encoder which may be located up to 1m away from the BA427E-SS. See separate datasheet.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA427E-SS
Display at:	
4.000mA	XXXXX] Include position of decimal point
20.000mA	XXXXX] & sign if negative *

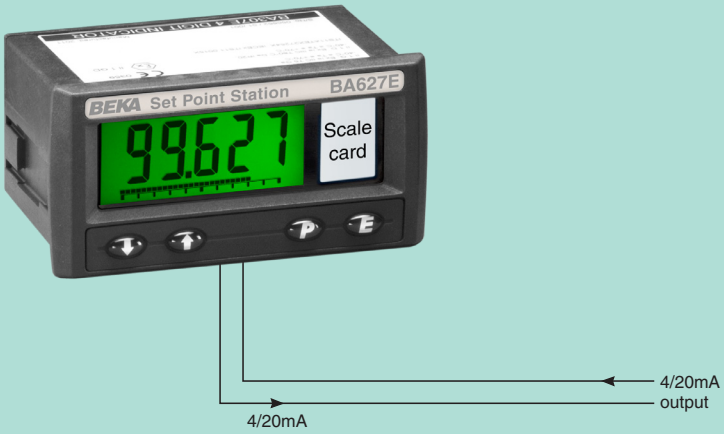
Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required - No Charge if ordered with Set Point Station.
Tag	Legend required
External rotary encoder	BA490
Rear cover and sealing kit	BA495

* *Will be set to display 0.00 at 4mA output and 100.00 at 20mA output if calibration information is not supplied. Calibration can easily be changed on-site.*

BA627E

4/20mA manual set point station [set point generator]

General purpose



Shown with optional loop powered backlight

- **Loop powered**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & BA490 external rotary encoder.**
- **IP66 front**
- **Easy on-site scale card installation.**
- **96 x 48mm DIN enclosure.**
- **3 year guarantee**

www.beka.co.uk/ba627e

The BA627E is a panel mounting set point station that enables the current flowing in a 4/20mA loop to be manually adjusted via the front panel push buttons from within the process area. It is a second generation instrument that is mechanically and electrically compatible with the earlier BA505C, but has more display digits plus additional functions.

Main application of the BA627E is the adjustment of a 4/20mA plant parameter from within a process area. For example, as the remote set point generator for a speed controller or for positioning an actuator or valve with a 4/20mA input. The BA627E incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA current, allowing an operator to easily set the process variable to the required value.

Five pre-set output values may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that an operator can only adjust the plant variable within safe limits.

The bold 11mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA627E set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign, may be configured to display any variable represent by the 4/20mA output current between -99999 and 99999.

Engineering units represented by the 4/20mA output current are shown on the scale card viewed through a window on the right hand side of the display. If the units are specified when the BA627E is ordered a printed scale card will be fitted. If units are not specified, a blank card will be supplied which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop the minimum operating voltage of the BA627E is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

IP66 front panel protection and a neoprene gasket to seal the joint between the set point station and the panel make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the set point station has a removable terminal block allowing panel wiring to be completed before the BA627E is installed.

A BA490 panel mounting rotary encoder may be directly connected to the BA627E set point station to provide analogue control of the output current. Although the BEKA BA490 has been designed for this application, almost any quadrature encoder with a contact output may be used.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

For applications in hazardous areas the BA427E, which has similar features as the BA627E, has ATEX and IECEx certification allowing installation in most gas and dust hazardous area.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Output

Current	3.0 to 22.0mA
Resistance	Greater than 1MΩ

Power supply

Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.

Accuracy

Control resolution	1 least significant digit of the display, or 0.3µA whichever is greater.
Temperature effect	Less than 2µA/°C

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high with 31 segment bargraph.
Zero	Adjustable between 0 & ±99999 with 4mA output.
Span	Adjustable between 0 & ±99999 with 20mA output.
Decimal point	1 of 4 positions or absent
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA output.

Push buttons

	(Function in operating mode)
'E' and ▼ or ▲	Scrolls output current down or up. Pressing ***'E'*** prevents output current being accidentally adjusted if ▼ or ▲ buttons or optional rotary encoder are inadvertently operated. This function can be disabled in the configuration menu.
▼	Shows display calibration with 4mA output.
▲	Shows display calibration with 20mA output.
'P'	Displays output current in mA, as a % of span or provides access to pre-set outputs.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with EMC Directive 2014/30/EU

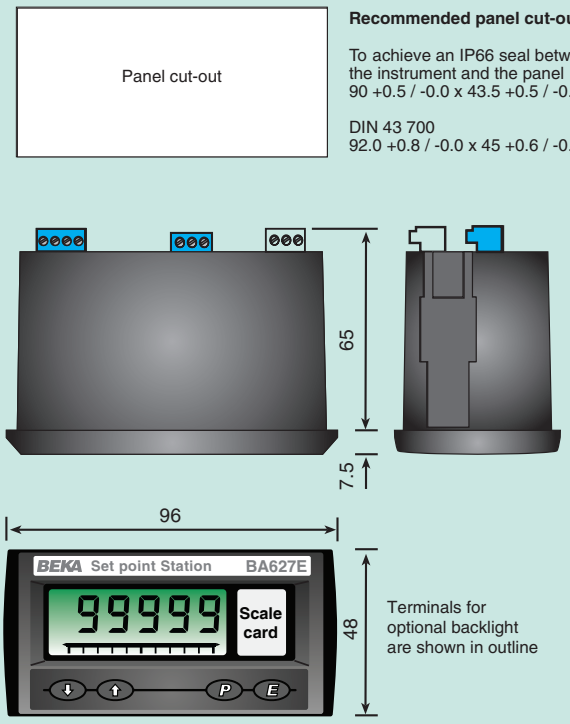
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.2kg

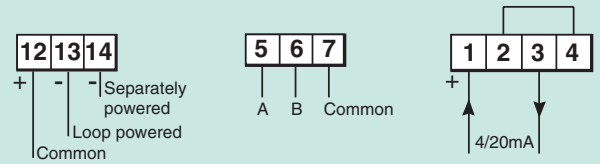
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Set point station + backlight supply 10 to 30V.
Separately powered.	9 to 30V at 22mA
Printed scale card	Blank card fitted to each Set Point Station can be supplied typeset with specified engineering units.
Tag legend	Specified tag number or application thermally printed onto rear of the instrument.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Terminals for optional backlight

Terminals for optional external rotary encoder

Terminals 2 & 4 are internally linked for joining return 4/20mA wire

BA490 Rotary encoder	Panel mounting IP65 sealed rotary encoder which provides analogue control of the BA627E output current. See separate datasheet.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

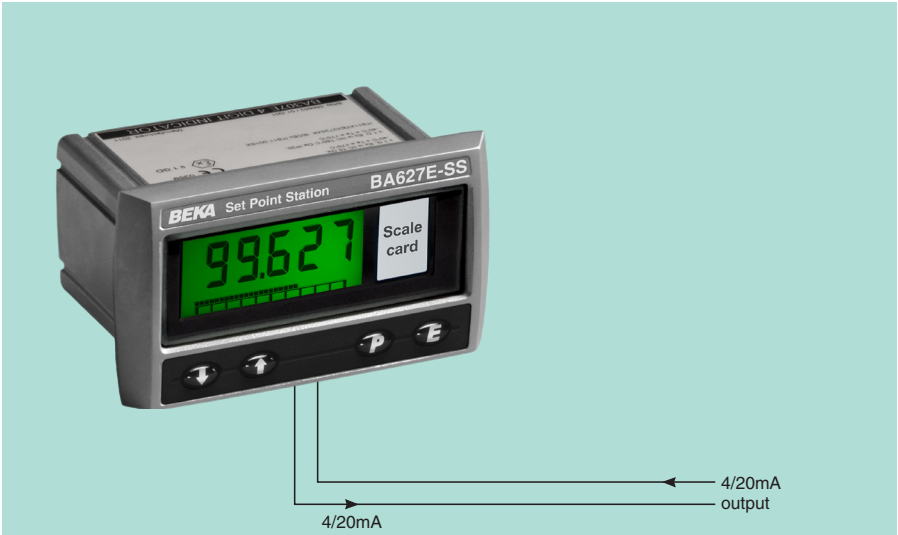
HOW TO ORDER

	Please specify
Model number	BA627E
Display at:	
4.000mA	XXXX
20.000mA	XXXX

Include position of decimal point & sign if negative *

Accessories	**Please specify if required**
Display backlight	Backlight
Scale card	Legend required
Tag	Legend required
External rotary encoder	BA490
Rear cover and sealing kit	BA495

** Will be set to display 0.00 at 4mA output and 100.00 at 20mA output if calibration information is not supplied. Calibration can easily be changed on-site.*



Shown with optional backlight - loop powered

BA627E-SS

Rugged 4/20mA manual set point station [set point generator]

General purpose for use in harsh and marine environments

- **Loop powered**
- **Rugged IP66 stainless steel enclosure.**
- **5 digit 11mm high display & 31 segment bargraph.**
- **Optional backlight & BA490 external rotary encoder.**
- **Easy on-site scale card installation.**
- **3 year guarantee**

www.beka.co.uk/ba627e-ss

The BA627E-SS set point station enables the current flowing in a 4/20mA loop to be manually adjusted from within a process area via the front panel push buttons. Housed in a rugged stainless steel enclosure with a toughened glass window the BA627E-SS is ideal for installations in harsh industrial and marine environments and where the front of the instrument is likely to be impacted.

Main application of the BA627E-SS is the manual adjustment of a 4/20mA plant parameter such as a controller set point from within a process area. For example, as the remote set point generator for a speed controller or for positioning a 4/20mA actuator or valve. The BA627E-SS incorporates a five digit display plus a bargraph that may be calibrated to show the engineering units represented by the 4/20mA output current, enabling an operator to easily set the process variable to the required value.

Up to five pre-set output values may be rapidly selected using the instrument's front panel push buttons for applications where the same output values are repeatedly required. To minimise plant disturbance when the output is adjusted or switched between pre-sets, the maximum rate of output current change may be defined. The 4/20mA output range may also be restricted so that operators can only adjust the plant variable within safe limits.

The bold 11mm high liquid crystal display provides maximum contrast and has a very wide viewing angle, allowing the BA627E-SS set point station display to be read easily in most lighting conditions over a wide temperature range. The five digits, with four decimal points and a negative sign may be configured to display any variable represented by the 4/20mA output current between -99999 and 99999.

Engineering units represented by the 4/20mA output current may be shown on the slide-in scale card which is viewed through the window on the right hand side of the display. If the units are specified when the BA627E-SS is ordered a printed scale card will be fitted. If units are not specified, a blank card will be fitted which can easily be marked and installed on-site without dismantling the set point station enclosure or removing it from the panel.

Display backlighting which may be loop or separately powered is available as a factory fitted option. It provides green background illumination allowing the display to be read at night or in poorly illuminated areas. When powered from the 4/20mA loop the minimum operating voltage of the BA627E-SS is increased. Powering from a separate supply produces a brighter backlight but requires additional field wiring.

An external quadrature encoder may be directly connected to the BA627E-SS set point station to provide analogue control of the output current. Most three wire devices, such as the BEKA BA490 panel mounting rotary encoder may be located up to 1m from the BA627E-SS.

Reliability is ensured by component conformal coating, protection from incorrect connection and radio frequency interference. The set point station has been subjected to vibration testing and is supported by a three year guarantee.

For applications in hazardous areas the BA427E-SS, which has similar features as the BA627E-SS, has IECEx and ATEX certification allowing installation in most gas and dust hazardous areas. It may also be installed in Ex e, Ex n, Ex p and Ex t panel enclosures without invalidating the enclosure certification.

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SPECIFICATION

Output

Current	3.0 to 22.0mA
Resistance	Greater than 1MΩ

Power supply

Voltage	6.1 to 30V 10 to 30V when optional backlight is loop powered.

Accuracy

Control resolution	1 least significant digit of the display, or 0.3µA whichever is greater.
Temperature effect	Less than 2µA/°C

Display

Type	Liquid crystal, non-multiplexed 5 digit 11mm high with 31 segment bargraph.
Zero	Adjustable between 0 & ±99999 with 4mA output.
Span	Adjustable between 0 & ±99999 with 20mA output.
Decimal point	1 of 4 positions or absent
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing 4/20mA output.

Push buttons	(Function in operating mode)
E and ▼ or ▲	Scrolls output current down or up Two handed activation prevents output current being accidentally adjusted if ▼ or ▲ button or external encoder are inadvertently operated. Can be set to single handed operation in configuration menu.
▼	Shows display calibration with 4mA output.
▲	Shows display calibration with 20mA output.
P	Displays output current in mA, as a % of span or provides access to pre-set outputs.

Environmental

Operating temp	-40 to +70°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C noncondensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Material	Stainless steel BS 3146-2:1977 ANC4B (316).
EMC	Complies with 2004/108/EC

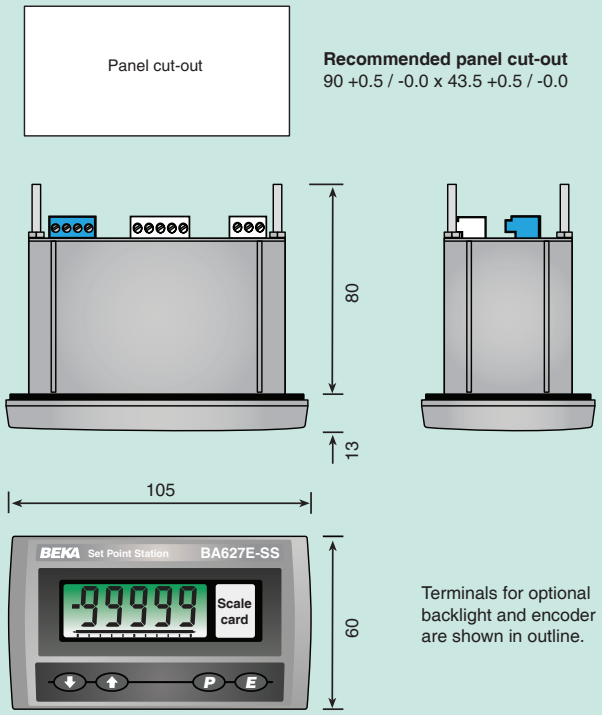
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable, removable.
Weight	0.85kg

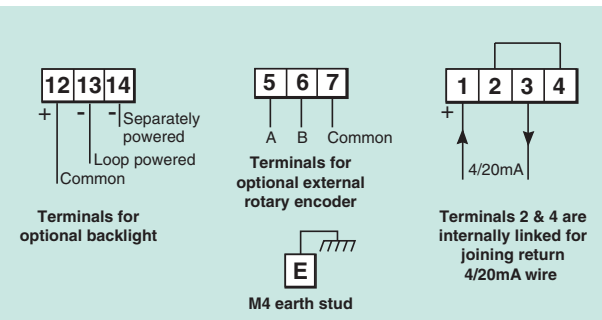
Accessories

Backlight	Green, may be loop or separately powered.
Loop powered	Set point station + backlight supply 10 to 30V.
Separately powered	9 to 30V at 22mA
Printed scale card	Blank card fitted to each Set Point Station, can be supplied typeset with specified engineering units.
Tag legend	Specified tag number or application laser etched onto rear of the instrument.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



External encoder	BA490 panel mounting rotary quadrature encoder which may be located up to 1m away from the BA627E-SS. See separate datasheet.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

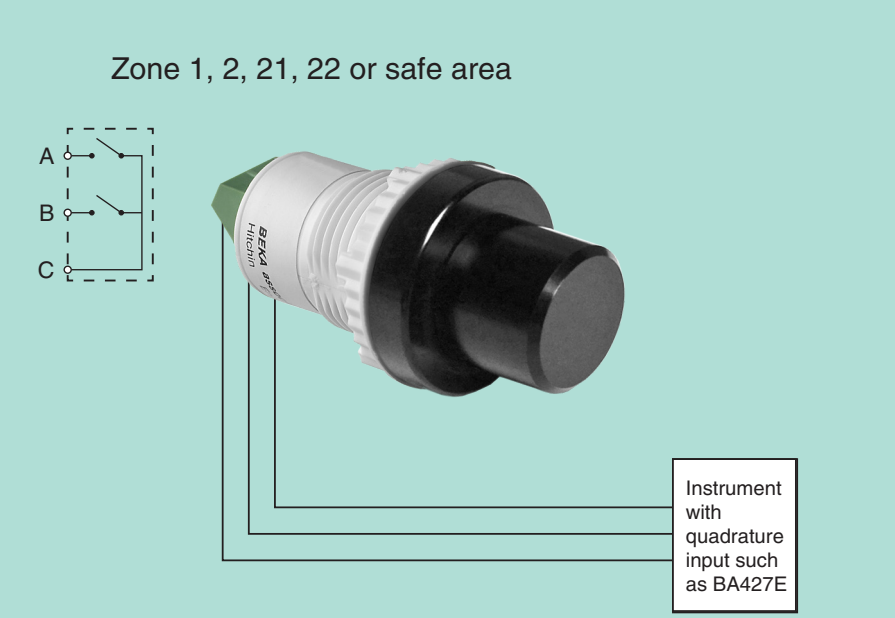
 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA627E-SS
Display at:	
4.000mA	XXXXX ⎫ Include position of decimal
20.000mA	XXXXX ⎭ point & sign if negative *

Accessories	Please specify if required
Display backlight	Backlight
Scale card	Legend required - No Charge if ordered with Set Point Station.
Tag	Legend required
External rotary encoder	BA490
Rear cover and sealing kit	BA495

* Will be set to display 0.00 at 4mA output and 100.00 at 20mA output if calibration information is not supplied. Calibration can easily be changed on-site.



BA490

Rotary encoder

Robust control knob with quadrature output

General purpose

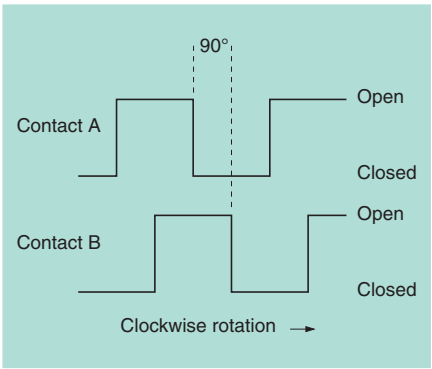
- **Quadrature switch contact output.**
- **Robust construction**
- ***Simple Apparatus* allows installation in a hazardous area.**
- **IP65 front of panel protection.**
- **22.5mm hole mounting.**
- **3 year guarantee**

www.beka.co.uk/ba490

The BA490 encoder is a robust panel mounting rotary control knob with a quadrature switch contact output, suitable for installation in hazardous or safe process areas. It is designed for easy adjustment by a gloved hand and may be directly connected to almost any instrument that accepts a three-wire quadrature input to provide a simple way of making adjustments from within the process area.

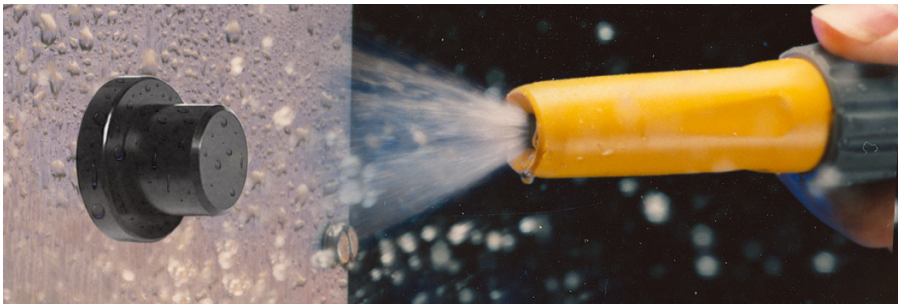
The encoder contains two single pole switches that open and close 90 degrees out of phase with each other as the control knob is rotated. This enables both the position and direction of rotation to be determined. If switch 'A' leads switch 'B', the knob is rotating in a clockwise direction, if 'B' leads 'A', the knob is rotating in a counter-clockwise direction.

A common application for the BA490 encoder is to provide rotary manual control of a BEKA BA427E or BA627E 4/20mA output Set Point Station. Normally the output current of these generators is controlled by the front panel ▼ and ▲ push buttons, but direct connection of the BA490 rotary encoder enables an operator to make adjustments via the conventional rotary control knob.



Compliance with *Simple Apparatus* requirements specified in Clause 5.7 of the international intrinsic safety standard IEC 60079-11 allows the BA490 encoder to be installed in Zones 1, 2, 21 and 22 and to be directly connected to intrinsically safe apparatus located in the same hazardous area.

IP65 sealing of the control knob and the joint between the encoder and the panel prevents ingress when installed in a panel that will be hosed, washed or splashed. When environmental protection behind the panel is also required the BA599 rear sealing assembly accessory provides IP65 protection allowing the encoder to be fitted in a panel with an open back.



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SPECIFICATION

Contacts

Rating	5V; 0.5mA
Current	10mA max (resistive load)

Output

Phase	Switch ‘A’ leads switch ‘B’ by 90° for clockwise rotation of the control knob.
Resolution	12 pulses per 360° rotation of the control knob.

Insulation

Voltage to conductive panel.	500V ac for 1 minute

Intrinsic safety

Code	Complies with the requirements for *Simple Apparatus* specified in Clause 5.7 of IEC 60079-11.
Location	Zone 1, 2, 21 or 22

Environmental

Operating temp	-10 to 70°C
Storage temp	-40 to 85°C
Humidity	to 95% at 40°C noncondensing
Enclosure	Front IP65, rear IP20, see accessories for optional BA599 IP65 rear sealing assembly.
EMC	Complies with 2004/108/EC Electromagnetically benign.

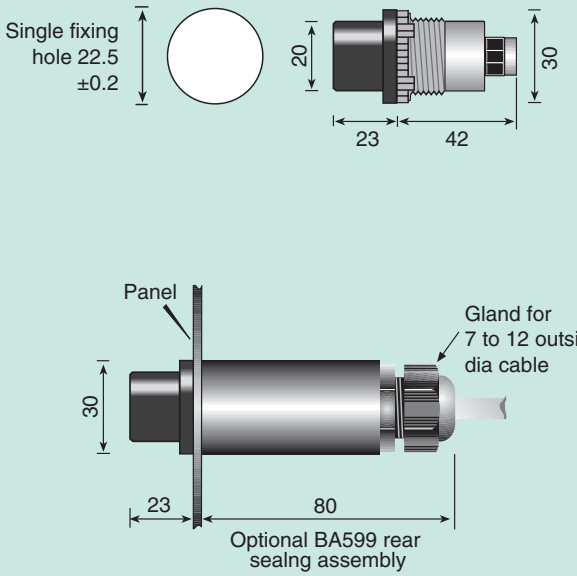
Mechanical

Terminals	Screw clamp for 0.14 to 1mm^2 stranded cable.
Weight	50g

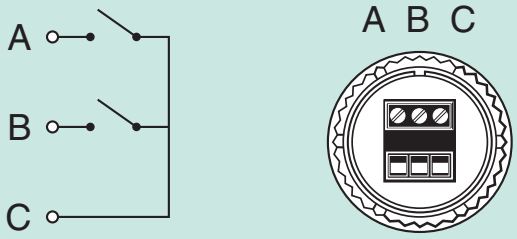
Accessories

BA599	Rear sealing assembly provides IP65 protection for the rear of the encoder. Supplied with gland for 7 to 12mm diameter cable.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Model number	BA490

Accessories	**Please specify if required**
Rear sealing assembly	BA599

Indicating Temperature Transmitters

Intrinsically safe

Ex nA

Flameproof

General purpose

HART COMMUNICATION PROTOCOL

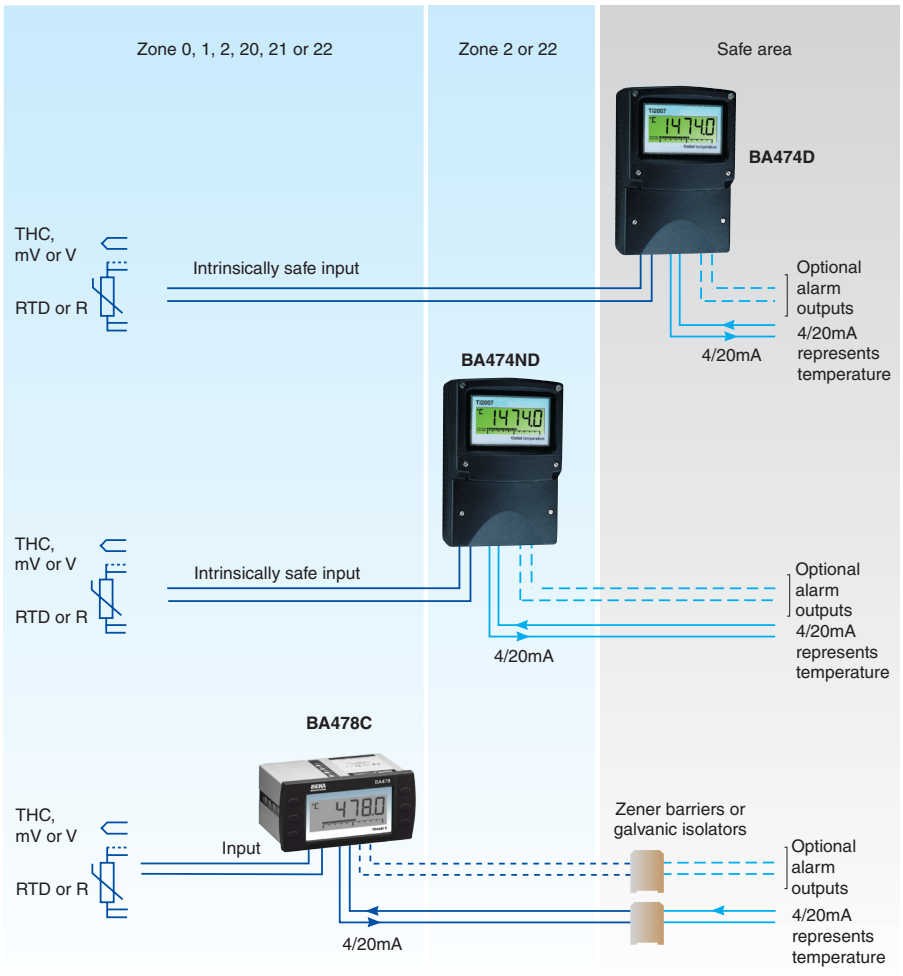
Field and panel mounting loop powered HART enabled temperature transmitters which incorporate a large easy to read temperature display. In addition to conventional Ex ia intrinsic safety certification, the field mounting BA474D also has associated apparatus certification. When installed in a safe area this permits it to be connected to a primary element in the hazardous area without the need for a Zener barrier or galvanic isolator. Similarly, when installed in Zone 2 the BA474ND may be connected to a primary element in Zone 0, 1 or 2, again without a Zener barrier or galvanic isolator.

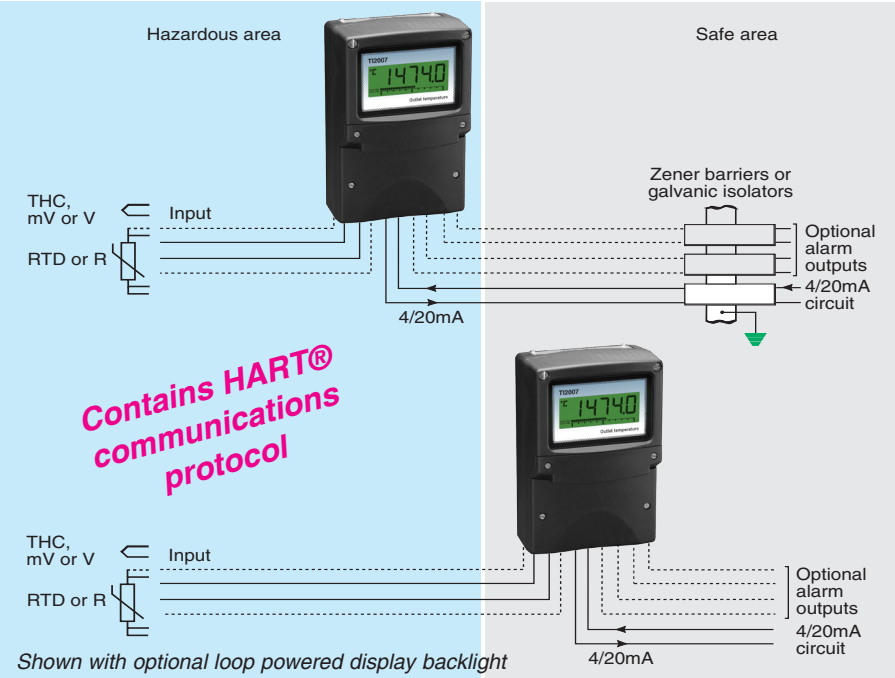
- **Large high contrast temperature display**
- **General purpose and certified hazardous area models**
  International Ex ia intrinsic safety and Ex nA non sparking certification
- **Field mounting models**
  Separate terminal compartment.
  Innovative certification eliminates need for barrier or isolator
- **Panel mounting models**
  IP66 front panels
- **HART communication**
  Sensor diagnostics
- **-20 to +60˚C operating temperature range**
- **Accessories**
  Dual isolated alarms
  Backlight loop powered
  Scale card - *can be supplied printed with units of measurement and tag information for no additional charge*
  Laser engraved stainless steel legend plates
  Pipe mounting kits

Models available

Model No.	Mounting	Certification					
		Europe ATEX		International IECEx		USA & Canada	
		Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2 and 20, 21 & 22 where certified							
BA474D	Field	✔	✔	✔	✔	✔	✔
BA478C	Panel 144 x 72	✔	–	✔	–	✔	–
Ex nA - intrinsically safe input							
BA474ND	Field	✔	✔	✔	✔	–	–
General Purpose - for use in safe areas							
BA674D	Field						
BA678C	Panel 144 x 72						

*An **Indicating Temperature Transmitter***
*for every **application**. . . .delivered ready for **installation***





Shown with optional loop powered display backlight

BA474D

Indicating temperature transmitter

Intrinsically safe for use in gas & dust hazardous areas

AND

Associated apparatus for safe area mounting with RTD/THC in hazardous area without a Zener barrier or galvanic isolator

- **Large display**
- **4/20mA loop powered**
- **HART® communication**
- **Intrinsically safe**
  ATEX gas
  ***or* ATEX gas & dust**
  ***or* FM, cFM & ATEX gas**
- **Certified galvanic isolation.**
- **RTD, THC, voltage or resistance input.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Optional:**
  Loop powered backlight
  External push buttons
  Dual alarms
- **3 year guarantee**

www.beka.co.uk/ba474d

The new BA474D is a second generation, intrinsically safe, loop powered indicating temperature transmitter which replaces the BA374C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Incorporating new facilities such as HART® digital communication, associated apparatus certification and a robust GRP enclosure with a separate terminal compartment, the BA474D remains electrically compatible with the earlier model.

The main application of the BA474D is to display temperature in a hazardous process area and to transmit a linearised 4/20mA current to the safe area. Associated apparatus certification also allows the BA474D to be installed in a safe area with the sensor in Zone 0, 1, 2, 20, 21 or 22 without the need for a Zener barrier or galvanic isolator greatly reducing the loop cost. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and configuration, including input type, may be performed via HART® communication or push buttons located behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. The BA474D also accepts voltage and resistance inputs so that pressure, weight or position tranducer outputs may be displayed in engineering units and transmitted as a 4/20mA current.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

Sensor diagnostics are continuously performed by the BA474D transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART® communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

International intrinsic safety certification allows the BA474D to be installed worldwide in most hazardous areas and to be used with most flammables gases and combustible dusts. Associates apparatus certification also permits a hazardous area RTD/THC to be connected to a safe area BA474D transmitter without the need for Zener barriers or galvanic isolators.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively the instrument can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

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SPECIFICATION

Supply voltage

Without backlight	9 to 28V
With backlight	15.5 to 28V

Output

Operating range	3.8 to 20.5mA
Resistance	5MΩ min

Display

Type	Liquid crystal 20mm high -99999 to 99999 31 segment bargraph
Reading rate	2 per second
Resolution	
RTD & THC input	Selectable 0.1° or 1°
Voltage & resistance input	Fully selectable

Input

Resistance thermometer

Pt100 or Pt1000	-200 to 850°C
Connection	3 or 4 wires, or differential
Excitation current	175µA
Resistance	Adjustable between 0 & 5kΩ
Min span	10Ω

Thermocouple

Type	Range °C
B	200 to 1820
E	-200 to 1000
J	-210 to 1200
K	-200 to 1372
N	-200 to 1300
R	-50 to 1768
S	-50 to 1768
T	-200t o 400

Voltage	Adjustable between ±1.9V
Minimum span	2mV

HART® communication HART Registered, compliant with HART protocol standard revision 7.

Diagnostics Generally as NAMUR NE 107. Output via HART® and under or over range output current

Performance

Accuracy RTD input	±0.1°C		
THC input	±10µV		
Effect of temperature on display	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C+0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C
Effect of temperature on 4/20mA output			
Zero drift	<20ppm/ °C		
Span drift	<50ppm/ °C		
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz.		
Common mode ac rejection	<0.1% error for 250V 50 or 60Hz.		

Intrinsic safety

Europe ATEX

Code	for gas	II 1G, Ga Ex ia IIC T5 II (1)G, (Ga) [Ex ia] IIC *(associated apparatus)* Ta = -40 to 70°C
or	for dust	II 1D, Ex iaD 20 T80°C IP66 II (1) D, [Ex iaD] *(associated apparatus)* Ta = -20 to 60°C
Certificate No.		ITS09ATEX26155

USA FM

Standard	3610 Entity
Code	CL I, II, III; Div 1; GP A, B, C, D, E, F & G T4 @ 70°C
Associated apparatus	Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G
File	3035396
Standard	3611 Nonincendive
Code	CL I; Div 2; GP A, B, C, D, E, F & G T4 @ 70°C
Intrinsically safe input	Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G
File	3035396

Canada cFM

File	3035396C

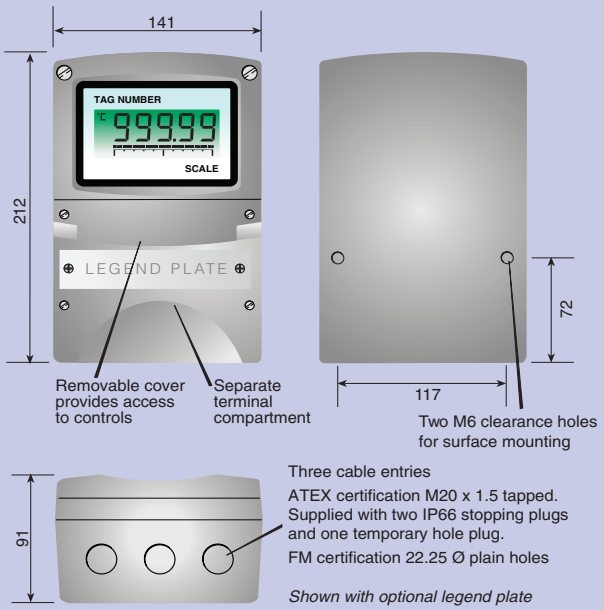
International IECEx

Code	for gas	Ga Ex ia IIC T5 [Ex ia Ga] IIC *(associated apparatus)* Ta = -40 to 70°C
or	for dust	Ex ia IIIC T80°C Da IP66 [Ex ia Da]IIIC *(associated apparatus)* Ta = -20 to 60°C
Certificate No.		IECExITS 09.0005 *Option see How to Order*

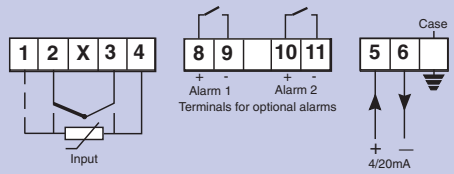
Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95%
Enclosure	IP66 (see ITS report C871V0383)
EMC	In accordance with EU Directive 2004/108/EC.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm² cable
Weight	1.6kg

Accessories

Loop powered backlight	Operating voltage increased to 15.5V min
Dual alarm	Isolated, solid state single pole
Ron	< 8Ω + 1.2V
Roff	> 180k
External push buttons	Membrane keypad~
Scale legend	Units marked onto display escutcheon. ~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument display.*
Stainless legend plate	Etched with tag number on front of instrument. ~
Pipe mounting kit	BA392D or BA393. ~

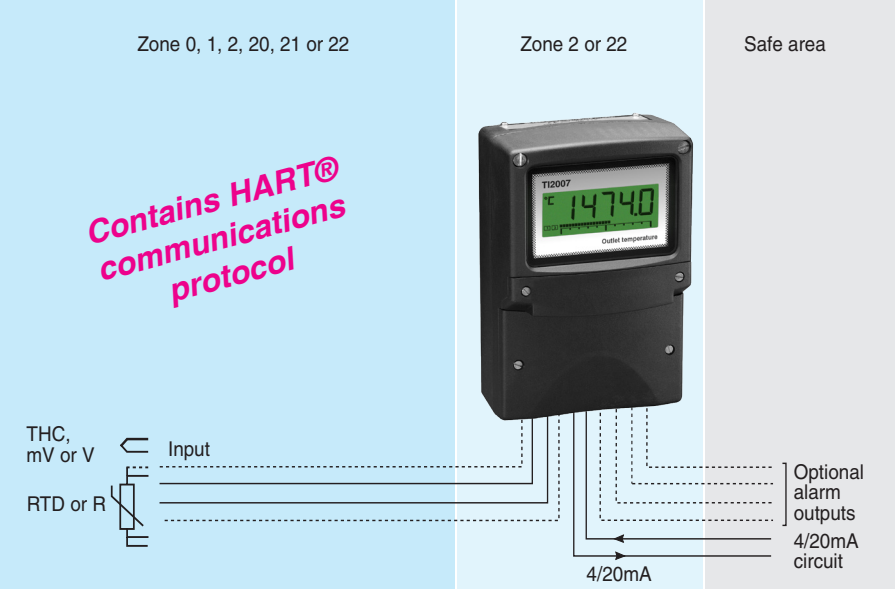
~ See accessory datasheet for details

HOW TO ORDER

		Please specify
Model number		BA474D
Certification		ATEX & IECEx gas
	or	ATEX & IECEx gas & dust
	or	FM, cFM & ATEX gas
Input		RTD; THC & type; V or R*
CJ compensation		On or Off. [THC input only]*
Display units		°C or °F [RTD/THC only]*
Display at which output is:		
4mA		XXXXX
20mA		XXXXX
Display at which bargraph:		
Starts		XXXXX
Finishes		XXXXX
Fault indication		Off; under range or over range

Accessories	**Please specify if required**
Backlight	Backlight
Dual alarm	Alarms
External push buttons	External push buttons
Scale legend	Legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

* *If calibration is not requested, BA474D will be set for 3 wire Pt100 RTD input with 4/20mA output and bargraph corresponding to a display of 0.0 to 100.0°C, with no fault indication.*



Shown with optional loop powered display backlight

BA474ND

Indicating temperature transmitter

Type nA certified for installation in Zone 2 & 22 hazardous areas

Intrinsically safe input allows sensor to be installed in any gas or dust hazardous area

- **Large display**
- **4/20mA loop powered**
- **HART® communication**
- **ATEX & IECEx certification**
  - **Transmitter: Ex nA**
  - **Sensor input: Ex ia & Ex iaD**
- **RTD, THC, voltage or resistance input.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Optional:**
  - **Loop powered backlight**
  - **External push buttons**
  - **Dual alarms**
- **3 year guarantee**

www.beka.co.uk/ba474nd

The new BA474ND is a second generation Type n loop powered indicating temperature transmitter which provides an accurate local digital temperature display plus a 4/20mA output. Incorporating a galvanically isolated intrinsically safe input that permits direct connection to measuring elements in any gas or dust hazardous Zone, this new instrument will cost effectively satisfy many hazardous area temperature measuring and display applications. HART® digital communication and a robust GRP enclosure with a separate terminal compartment further extend the many applications.

The main application of the BA474ND is to display temperature in a Zone 2 hazardous process area and to transmit a linearised 4/20mA current to the safe area. For installations where the operator and instrumentation are located in Zone 2 or 22, but the measuring element is in Zone 0, 20, 1 or 21, the BA474ND certified isolation allows direct connection to the sensor without the need for barriers or isolators, thus significantly simplifying installation and reducing cost. Easy on-site conditioning enables the transmitter to operate with three or four wire resistance thermometers or with most common types of thermocouple. Differential measurements can also be made. Voltage and resistance inputs from pressure, weight or position transducers may be displayed in engineering units and transmitted as a 4/20mA current and HART® digital signal.

Calibration and conditioning may be performed via HART® communication or from the four internal push buttons that are located behind a sealed front cover. For applications requiring frequent adjustments, the instrument can be supplied with optional external membrane push buttons. All instrument functions and calibration, including the type of input, are configurable on-site which reduces the instrument inventory.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the measuring element and the transmitter. HART® communication also enables the BA474ND to be configured and calibrated from a portable HART® communicator or from the system host. If HART® digital communication is not required, the BA474ND will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA474ND transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART® communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

Ex nA and tD certification permits the BA474ND transmitter to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The transmitter has certified internal galvanic isolation and an intrinsically safe Ex ia sensor input allowing direct connection to resistance thermometers and thermocouples installed in Zones 0, 1, 2. 20, 21 & 22.

The liquid crystal display has large digits plus a 31 segment bargraph which are designed to provide maximum contrast and a wide viewing angle. An optional loop powered backlight provides green background illumination making the display readable at night and in poor lighting conditions. The backlight does not require additional field wiring or a power supply, but the minimum operating voltage of the transmitter is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively, for customers who prefer an etched stainless steel label, the transmitter can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

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Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Supply voltage
- Without backlight: 9 to 30V
- With backlight: 15.5 to 30V

Output
- Operating range: 3.8 to 20.5mA
- Resistance: 5MΩ min

Display
- Type: Liquid crystal 20mm high -99999 to 99999, 31 segment bargraph
- Reading rate: 2 per second

Input
- Resistance thermometer
  - Pt100 or Pt1000: -200 to 850°C
  - Connection: 3 or 4 wires, or differential
  - Excitation current: 175µA
- Resistance: Adjustable between 0 & 5kΩ
  - Min span: 10Ω
- Thermocouple

Type	Range °C
B	200 to 1820
E	-200 to 1000
J	-210 to 1200
K	-200 to 1372
N	-200 to 1300
R	-50 to 1768
S	-50 to 1768
T	-200 to 400

- Voltage: Adjustable between ±1.9V
  - Min span: 2mV

HART® communication: HART Registered, compliant with HART protocol standard revision 7.

Diagnostics: Generally as NAMUR NE107. Output via HART® and under or over range output current

Performance
- Accuracy
  - RTD input: ±0.1°C
  - THC input: ±10µV
- Effect of temperature on display

	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C + 0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C

- Effect of temperature on 4/20mA output
  - Zero drift: <20ppm/°C
  - Span drift: <50ppm/°C
- Series mode ac rejection: <0.1% error for 150mV rms 50 or 60Hz
- Common mode ac rejection: <0.1% error for 250V rms 50 or 60Hz

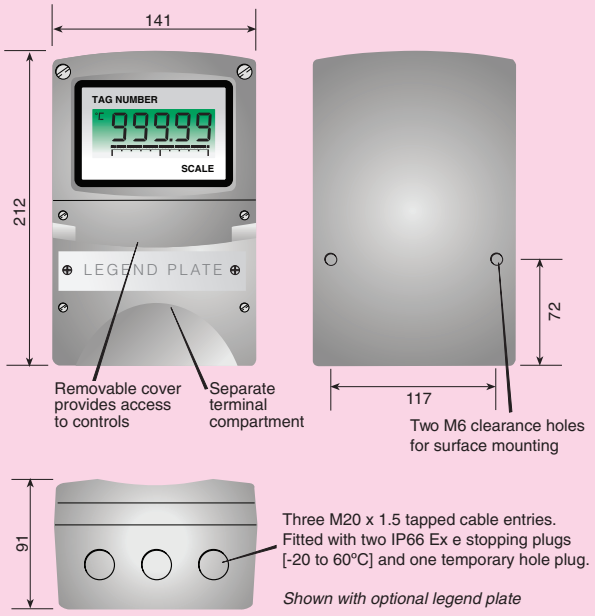
Certification
Europe ATEX
- Transmitter
  - Code: II 3 GD, Ex nA nL [ia] IIC T5; Ex tD [iaD] A22 IP66 T80°C; Ta = -20 to 60°C
- Sensor input
  - Code: II (1) G [ia] IIC T5; II (1) D [iaD]
- Certificate No.: ITS09ATEX46157

International IECEx
- Transmitter
  - Code: Ex nA nL [ia] IIC T5; Ex tD [iaD] A22 IP66 T80°C; Ta = -20 to 60°C
- Sensor input
  - Code: [ia] IIC T5; [iaD]
- Certificate No.: IECEx ITS 09.0007

Environmental
- Operating temp: -20 to 60°C
- Storage temp: -40 to 85°C
- Humidity: To 95%
- Enclosure: IP66 (see ITS report C871V0383)
- EMC: In accordance with EU Directive 2004/108/EC

Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm^2 cable
- Weight: 1.6kg

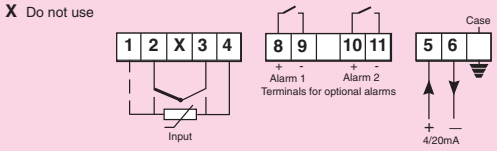
DIMENSIONS (mm)



Three M20 x 1.5 tapped cable entries. Fitted with two IP66 Ex e stopping plugs [-20 to 60ºC] and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS



Accessories

Loop powered backlight	Transmitter operating voltage increased to 15.5V min
Dual alarm	Isolated, solid state single pole
Ron	< 8Ω + 1.2V
Roff	> 180k
External push buttons	Membrane keypad ~
Scale legend	Units of measurement marked onto display escutcheon. ~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument* display.
Stainless legend	Etched with tag number on front of instrument. ~
Pipe mounting kit	BA392D or BA393.~

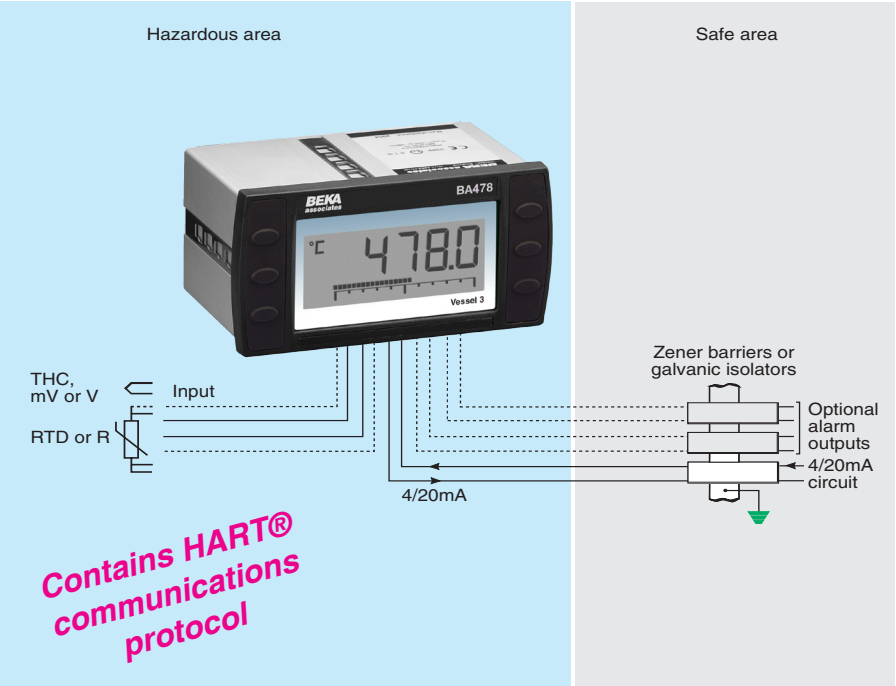
~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA474ND
Input	RTD; THC & type; V or R*
CJ compensation	On or Off [THC input only]*
Display units	°C or °F* [For RTD or THC input]
Display at which output is:	
4mA	XXXXX
20mA	XXXXX
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Fault indication	Off; under range or over range

Accessories	**Please specify if required**
Backlight	Backlight
Dual alarm	Alarms
External push buttons	External push buttons
Scale legend	Legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393
Application Guide AG310 Installation of [extra low voltage dc] Ex nA instrumentation	AG310

* *If calibration information is not supplied, the BA474ND will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output and bargraph corresponding to a display of 0.0 to 100.0°C with no fault indication.*



BA478C

Indicating temperature transmitter

Intrinsically safe for use in all gas hazardous areas

- **Large display with bargraph.**
- **4/20mA loop powered**
- **HART® communication & sensor diagnostics.**
- **Intrinsically safe ATEX, FM, cFM & IECEX.**
- **RTD, THC, voltage or resistance input.**
- **Optional:**
  Loop powered backlight
  Dual alarms
- **144 x 72mm DIN enclosure with IP66 front.**
- **3 year guarantee**

www.beka.co.uk/ba478c

The new BA478C is a second generation panel mounting intrinsically safe loop powered indicating temperature transmitter which replaces the BA378C. It provides an accurate local digital temperature display, plus a 4/20mA output that may be scaled to represent any temperature range. Although incorporating new facilities such as HART® digital communication, diagnostics and a robust enclosure with an IP66 front, the BA478C remains electrically and mechanically compatible with the earlier model.

The main application of the BA478C is to display temperature in a hazardous process area and to transmit a linearised 4/20mA current to the safe area. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via HART® communication or the front panel push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential measurements can also be made. The BA478C accepts voltage and resistance inputs allowing pressure, weight or position tranducer outputs to be displayed in engineering units and transmitted as a 4/20mA current and HART® signal.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

Sensor diagnostics are continuously performed by the BA478C transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART® communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

International intrinsic safety certification allows the BA478C and the associated sensor to be installed in most gas hazardous areas. The transmitter may be powered from a certified Zener barrier, or from a certified galvanic isolator that must be a 'smart' device if HART® communication is used.

The front panel is a robust Noryl moulding containing an armoured glass window which provides IP66 protection. A neoprene gasket seals the joint between the BA478C and the mounting panel allowing the transmitter to be installed in areas that will be cleaned with a hose.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Degrees Centigrade or Fahrenheit may be shown on the instruments display when thermocouple or resistance thermometer inputs are selected. Other units of measurement and tag or applicational information can be economically marked onto the display escutcheon prior to despatch or after installation on-site.

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SPECIFICATION

Supply voltage
- Without backlight: 9 to 28V
- With backlight: 15.5 to 28V

Output
- Operating range: 3.8 to 20.5mA
- Resistance: 5MΩ min

Display
- Type: Liquid crystal 20mm high -99999 to 99999 31 segment bargraph
- Reading rate: 2 per second
- Resolution
  - RTD & THC input: Selectable 0.1° or 1°
  - Voltage & Resistance input.: Fully selectable

Input
- Resistance thermometer
  - Pt100 or Pt1000: -200 to 850°C
  - Connection: 3 or 4 wires, or differential
  - Excitation current: 175µA
- Resistance: Adjustable between 0 & 5kΩ
  - Min span: 10Ω
- Thermocouple

Type	Range °C
B	200 to 1820
E	-200 to 1000
J	-210 to 1200
K	-200 to 1372
N	-200 to 1300
R	-50 to 1768
S	-50 to 1768
T	-200 to 400

- Voltage: Adjustable between ±1.9V
  - Minimum span: 2mV

HART® communication: HART Registered, compliant with HART protocol standard revision 7.

Diagnostics: Generally as NAMUR NE107. Output via HART® and under or over range output current.

Performance
- Accuracy
  - RTD input: ±0.1°C
  - THC input: ±10µV
- Effect of temperature on display

	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C+0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C

- Effect of temperature on 4/20mA output
  - Zero drift: <20ppm/°C
  - Span drift: <50ppm/°C
- Series mode ac rejection: <0.1% error for 150mV rms 50 or 60Hz
- Common mode ac rejection: <0.1% error for 250V rms 50 or 60Hz

Intrinsic safety

Europe ATEX
- Code: II 1 G, Ex ia IIC T5 Ga; Ta = -40 to 70°C
- Certificate No.: ITS09ATEX26156X

USA FM
- Standard: 3610 Entity
- Code: CL I, II, III; Div 1; GP A, B, C & D T4 @ 70°C
- File: 3035396
- Standard: 3611 Nonincendive
- Code: CL I; Div 2; GP A, B, C & D T4 @ 70°C
- File: 3035396

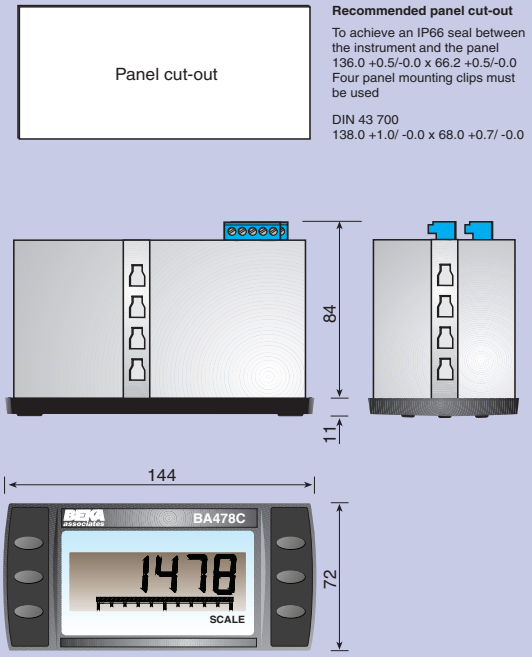
Canada cFM
- File: 3035396C

International IECEx
- Code: x ia IIC T5 Ga; Ta = -40 to 70°C
- Certificate No.: IECEx ITS 09.0006X

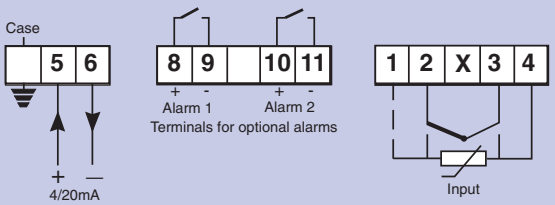
Environmental
- Operating temp: -40 to 70°C
- Storage temp: -40 to 85°C
- Humidity: To 95% non condensing
- Enclosure
  - Front: IP66
  - Rear: IP20
- EMC: Complies with EMC Directive 2014/30/EU

Mechanical
- Terminals: Screw clamp for 0.5 to 1.5mm^2 cable
- Weight: 0.7kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Loop powered backlight	Operating voltage increased to 15.5V min.
Dual alarm	Isolated, solid state single pole
Ron	< 5Ω + 0.6V
Roff	> 180k
Scale legend	Units of measurement or application marked onto display escutcheon. ~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument display.*
Tag strip	Thermally printed legend on rear of instrument

~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA478C
Input	RTD; THC & type; V or R*
CJ compensation	On or Off *[THC input only]**
Display units	°C or °F* [RTD or THC inputs]
Display at which output is:	
4mA	XXXXX
20mA	XXXXX
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Fault indication	Off; under range or over range

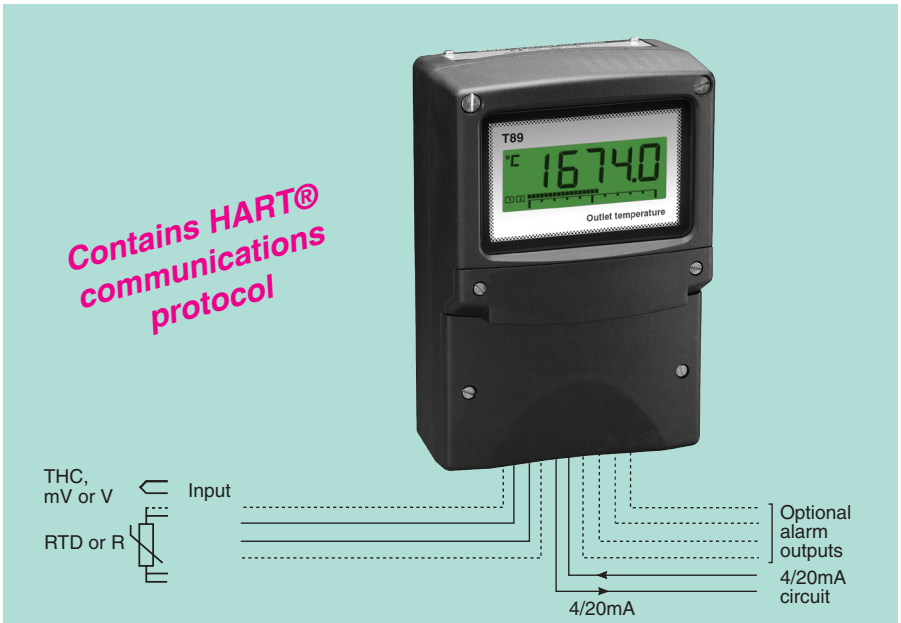
Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	Legend *Note: For RTD & THC inputs, °C or °F may be shown on the instrument* display.
Tag strip	Legend

** If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output and bargraph corresponding to a display of 0.0 to 100.0°C, with no fault indication.*

BA674D

Indicating temperature transmitter

General purpose



Shown with optional loop powered backlight

- **Large display with bargraph.**
- **4/20mA loop powered**
- **HART® communication & sensor diagnostics.**
- **RTD, THC, voltage or resistance input.**
- **Galvanically isolated sensor input.**
- **IP66 GRP enclosure with separate terminal compartment.**
- **Optional:**
  - **Loop powered backlight**
  - **External push buttons**
  - **Dual alarm.**
- **3 year guarantee**

www.beka.co.uk/ba674d

The new BA674D is a second generation, loop powered indicating temperature transmitter which replaces the BA574C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Incorporating new facilities such as HART® digital communication and a robust GRP enclosure with a separate terminal compartment, the BA674D remains electrically compatible with the earlier model.

The main application of the BA674D is to display temperature in a process area and to transmit a linearised 4/20mA current to other instruments. The digital display may be in °C or °F with the units of measurement shown on the display. A separately configurable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via HART® communication or four push buttons protected from damage and tampering behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential and average measurements can also be made. The BA674D also accepts voltage and resistance inputs so that pressure, weight or position transducer outputs may be displayed in engineering units and transmitted as a 4/20mA current.

Input galvanic isolation eliminates errors caused by common mode voltages up to 250V, allowing accurate measurement from earthed thermocouples in electrically noisy environments. Isolation also allows the transmitter to accurately display the output from earthed bridges.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter. HART® communication also enables the BA674D to be configured and calibrated from a portable calibrator or from the system host. If HART® digital communication is not required, the BA674D will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA674D transmitter generally as recommended by NAMUR standard NE 107 and the results transmitted via the HART® communication link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively, for customers who prefer an etched stainless steel label, the transmitter can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure. When the transmitter is conditioned for a resistance thermometer or thermocouple input, degrees Centigrade or degrees Fahrenheit can be shown on the liquid crystal display.

If explosive atmospheres are present either the intrinsically safe BA474D or the Type nL BA474ND should be used. Both have the same features as the BA674D but have been certified for use in gas and dust hazardous areas.

BEKA associates

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SPECIFICATION

Supply voltage

Without backlight	9 to 28V
With backlight	15.5 to 28V

Output

Operating range	3.8 to 20.5mA
Resistance	5MΩ min

Display

Type	Liquid crystal 20mm high -99999 to 99999 31 segment bargraph
Reading rate	2 per second
Resolution	
RTD & THC input	Selectable 0.1° or 1°
Voltage & resistance input	Fully selectable

Input

Galvanic isolation	500V
Resistance thermometer	
Pt100 or Pt1000	-200 to 850°C
Connection	3 or 4 wires, or differential
Excitation current	175µA
Resistance	Adjustable between 0 & 5kΩ
Min span	10Ω

Thermocouple

Type	Range °C
B	200 to 1820
E	-200 to 1000
J	-210 to 1200
K	-200 to 1372
N	-200 to 1300
R	-50 to 1768
S	-50 to 1768
T	-200 to 400

Voltage	Adjustable between ±1.9V
Minimum span	2mV

HART® communication HART Registered, compliant with HART protocol standard revision 7.

Diagnostics Generally as NAMUR NE 107. Output via HART® and under or over range output current.

Performance

Accuracy RTD input	±0.1°C
THC input	±10µV

Effect of temperature on display

	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C+0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C

Effect of temperature on 4/20mA output	
Zero drift	<20ppm/ °C
Span drift	<50ppm/ °C
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz.
Common mode ac rejection	<0.1% error for 250V 50 or 60Hz.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95%
Enclosure	IP66 (see ITS report C871V0383)
EMC	In accordance with EU Directive 2004/108/EC

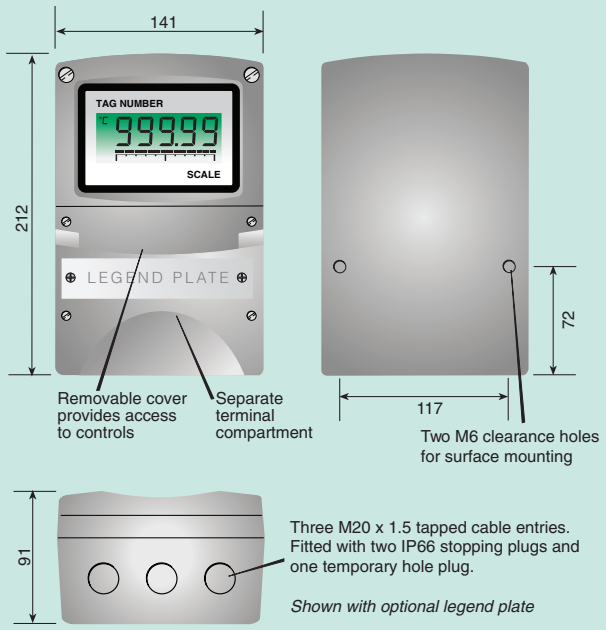
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	1.6kg

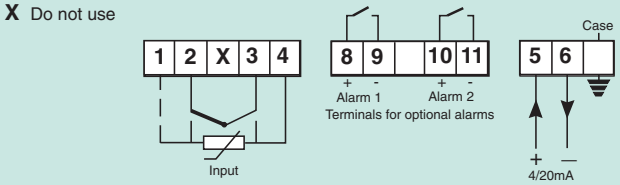
Accessories

Loop powered backlight	Green background illumination, increases operating voltage to 15.5V min.
Dual alarm	Isolated, solid state single pole
Ron	< 8Ω + 1.2V
Roff	>180k
Rating	30V dc; 100mA
External push buttons	Membrane keypad ~
Scale legend	Units marked onto display escutcheon~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument display.*

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Stainless legend plate.	Etched with tag number on front of instrument. ~
Pipe mounting kit	BA392D or BA393. ~

~ *See accessory datasheet for details*

HOW TO ORDER

	Please specify
Model number	BA674D
Input	RTD, THC & type; V or R*
CJ compensation	On or Off [THC input only]*
Display units	°C or °F* [RTD or THC inputs]
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Display at which output is:	
4mA	XXXXX
20mA	XXXXX
Fault indication	Off; underrange or overrange

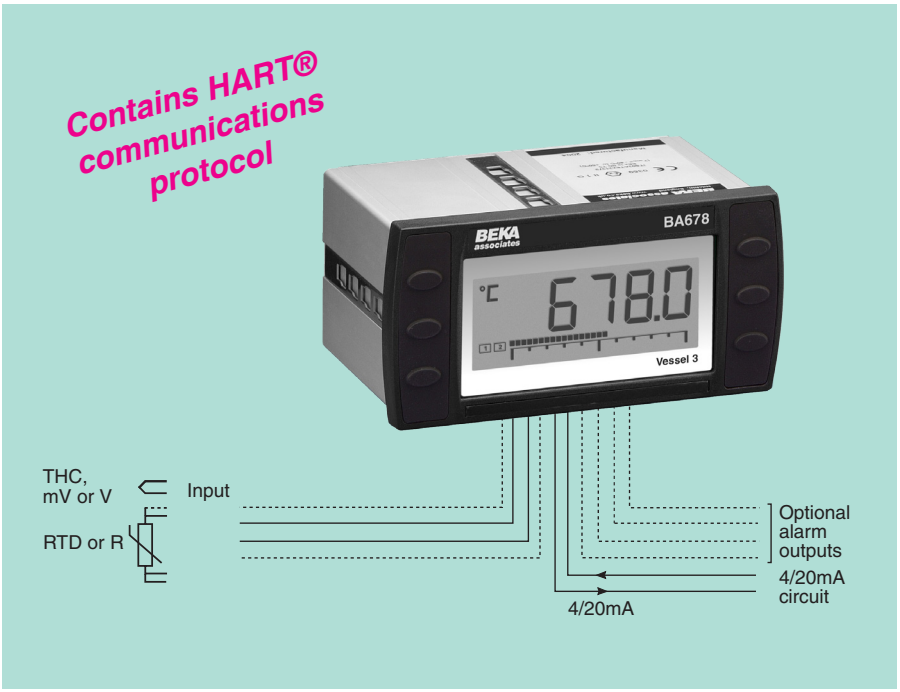
Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
External push buttons	External push buttons
Scale legend	Legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

* *If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output corresponding to a display of 0.0 to 100.0°C.*

BA678C

Indicating temperature transmitter

General purpose



- **Large display with bargraph.**
- **4/20mA loop powered**
- **HART® communication & sensor diagnostics.**
- **RTD, THC, voltage or resistance input.**
- **Galvanically isolated sensor input.**
- **144 x 72mm DIN enclosure with IP66 front.**
- **Optional:**
  - **Loop powered backlight**
  - **Dual alarm**
- **3 year guarantee**

www.beka.co.uk/ba678c

The new BA678C is a second generation panel mounting, loop powered indicating temperature transmitter which replaces the BA578C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Although incorporating new facilities such as HART® digital communication, diagnostics and a robust enclosure with a IP66 front panel, the BA678C remains electrically compatible with the earlier model.

The main application of the BA678C is to display temperature in a process area and to transmit a linearised 4/20mA current to other instruments. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via HART® communication or the front panel push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential and average measurements can also be made. The BA678C accepts voltage and resistance inputs allowing pressure, weight or position tranducer outputs to be displayed in engineering units and transmitted as a 4/20mA current and HART® digital signal.

Input galvanic isolation eliminates errors caused by common mode voltages up to 250V, allowing accurate measurement from earthed thermocouples in electrically noisy environments. Isolation also allows the transmitter to accurately display the output from earthed bridges.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the primary element and the transmitter. HART® communication also enables the BA678C to be configured and calibrated from a portable calibrator or from the system host. If HART® digital communication is not required, the BA678C will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA678C transmitter generally as recommended by NAMUR standard NE 107 and the results transmitted via the HART® communication link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

The front panel is a robust Noryl moulding containing an armoured glass window that provides IP66 protection. A neoprene gasket seals the joint between the BA678C and the mounting panel allowing the transmitter to be installed in areas that will be cleaned with a hose.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Degrees Centigrade or Fahrenheit may be shown on the instruments display when thermocouple or resistance thermometer inputs are selected. Other units of measurement and tag or applicational information can be economically marked onto the display escutcheon prior to despatch or after installation on-site.

If explosive atmospheres are present the intrinsically safe BA478C should be used, this has the same features as the BA678C but has been certified for use in gas hazardous areas.

BEKA associates

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SPECIFICATION

Supply voltage

Without backlight	9 to 28V
With backlight	15.5 to 28V

Output

Operating range	3.8 to 20.5mA
Resistance	5MΩ min

Display

Type	Liquid crystal 20mm high -99999 to 99999 31 segment bargraph
Reading rate	2 per second
Resolution	
RTD & THC input	Selectable 0.1° or 1°
Voltage & resistance input	Fully selectable

Input

Galvanic isolation	500V
Resistance thermometer	
Pt100 or Pt1000	-200 to 850°C
Connection	3 or 4 wires, or differential
Excitation current	175µA
Resistance	Adjustable between 0 & 5kΩ
Min span	10Ω

Thermocouple

Type	Range °C
B	200 to 1820
E	-200 to 1000
J	-210 to 1200
K	-200 to 1372
N	-200 to 1300
R	-50 to 1768
S	-50 to 1768
T	-200 to 400

Voltage	Adjustable between ±1.9V
Minimum span	2mV

HART® communication HART Registered, compliant with HART protocol standard revision 7.

Diagnostics Generally as NAMUR NE 107. Output via HART® and under or over range output current.

Performance

Accuracy RTD input	±0.1°C
THC input	±10µV

Effect of temperature on display

	Voltage	THC	RTD
Zero drift	<1µV/°C	<1µV/°C+0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C

Effect of temperature on 4/20mA output

Zero drift	<20ppm/ °C
Span drift	<50ppm/ °C
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz.
Common mode ac rejection	<0.1% error for 250V 50 or 60Hz.

Environmental

Operating temp	-40 to 70°C
Storage temp	-40 to 85°C
Humidity	To 95%
Enclosure	
Front	IP66
Rear	IP20
EMC	Complies with EMC Directive 2014/30/EU

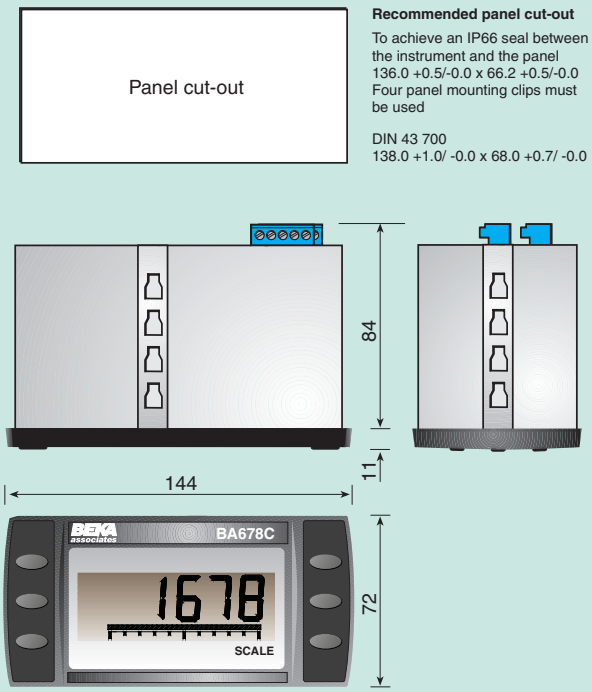
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.7kg

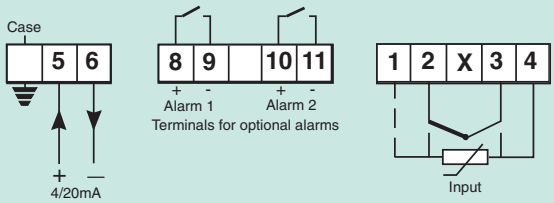
Accessories

Loop powered backlight	Green background illumination, increases operating voltage to 15.5V min.
Dual alarm	Isolated, solid state single pole
Ron	< 5Ω + 0.6V
Roff	>180k
Rating	30V dc; 100mA

DIMENSIONS (mm)



TERMINAL CONNECTIONS



X Do not use

Scale legend	Units marked onto display escutcheon. ~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument display.*
Tag strip	Thermally printed legend on rear of instrument. ~

~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA678C
Input	RTD, THC & type; V or R*
CJ compensation	On or Off [THC input only]*
Display units	°C or °F* [RTD or THC inputs]
Display at which output is:	
4mA	XXXXX
20mA	XXXXX
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Fault indication	Off; under range or over range

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
Escutcheon marking	Legend *Note: For RTD & THC inputs °C or °F may be shown on the instrument* display.
Tag strip	Legend

** If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output corresponding to a display of 0.0 to 100.0°C.*

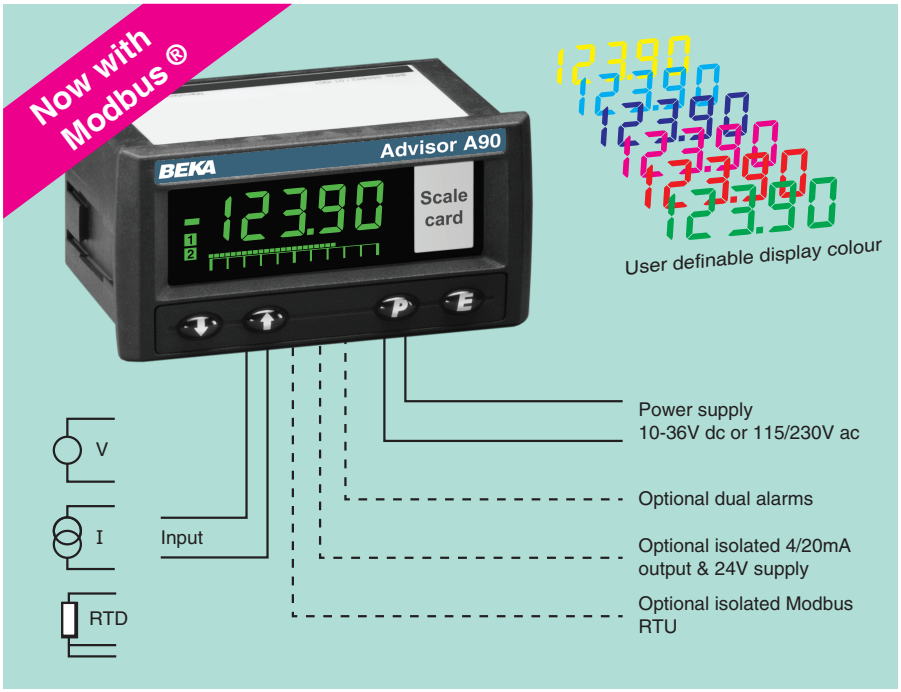
Universal process panel meters with MULTICOLOUR displays

General purpose

New, high quality universal process panel meters featuring multicoloured, negative liquid crystal five digit and bargraph displays which are visible in all lighting conditions from bright sunlight to total darkness. The display colour is fully adjustable and can be linked to the meter's optional alarms, providing operators with a very conspicuous status warning. Display colours and brighness can easily be adjusted on-site to match other instrumentation on the panel.

- **High quality**
  UK designed and manufactured
- **Large high contrast multicolour 5 digit display with bargraph**
  Fully adjustable display colour, visible in all lighting conditions
  Negative liquid crystal technology
- **Input - may be configured on-site**
  4-20mA or 0-50mA
  0-100mV, 0-1V or 0-10V
  Pt100 2-wire or 3-wire RTD
- **Power supply - separate versons for:**
  10 to 36V dc
  90 to 264V ac 47-63Hz
- **IP66 front of panel protection with toughened glass window**
- **A90-SS has stainless steel enclosure and 10mm thick toughened glass window**
  For harsh and marine environments
- **-40 to +55˚C operating temperature range**
- **Accessories**
  Isolated Modbus RTU
  Dual isolated alarms with changeover contacts, alarms can be linked to display colour.
  Isolated 4/20mA output
  Isolated 24V transmitter power supply
  IP66 rear sealing kit
  Scale cards - *can be supplied printed with units of measurement and tag information for no additional charge.*

General Purpose - for use in safe areas	
Model No.	***Separate versions for 10-36V dc or 90 to 264V ac supplies***
A90	Universal process meter
A90-SS	Rugged universal process meter in stainless steel enclosure



Advisor A90

Universal process panel meter with multicolour display

- **Multicolour display visible in all lighting conditions.**
- **5 digit 11mm and 31 segment bargraph display.**
- **dc and mains powered models.**
- **Current, voltage or RTD input.**
- **Optional:**
  - **Alarms**
  - **Isolated 4/20mA output**
  - **Transmitter power supply**
  - **Modbus RTU**
- **Easy on-site scale card installation.**
- **Max and min display**
- **96 x 48mm DIN enclosure with IP66 front.**
- **3 year guarantee**

www.beka.co.uk/a90

The A90 is a universal input panel meter that can display current or voltage process signals in engineering units and temperature directly from a resistance thermometer. The display, which can be configured to be any colour with adjustable brightness, has a high contrast allowing the meter to be read in all lighting conditions from bright sunlight to total darkness.

This second generation instrument has been designed and built using the same high quality techniques developed for our industry standard hazardous area products. The A90 is a tough instrument supported by a three year guarantee.

The main application of the A90 is to display a process variable or temperature in meaningful engineering units within a process area. The zero and span of the display are independently adjustable allowing the meter to be calibrated to display any linear variable represented by the input voltage or current. Maximum and minimum display values can be shown and a root extractor enables flow measurements to be displayed in linear engineering units. For weighing applications the A90 incorporates a tare function, including a front panel tare annunciator.

A two or three wire resistance thermometer may be directly connected to an A90 which can display temperature in a variety of units including °C and °F. The differential output from two resistance thermometers can also be displayed.

The A90 meter is configured via four front panel push buttons using a simple intuitive menu structure. An optional security code prevents accidental adjustment. Display calibration may be performed using the meter's internal references or external standards.

The colourful 11mm five digit display and 31 segment bargraph employ a novel technique that allows the display digits to be in any colour on a black background. When fitted with alarms the display colour can be linked to the alarm status. For example, a green display could indicate normal operation, the display changing to red when a high alarm occurs and to blue for a low alarm. The display intensity is fully adjustable preventing dazzle and preserving operators night vision.

IP66 front panel protection and a neoprene gasket to seal the joint between the panel meter and the instrument panel, make the instrument suitable for use in areas that will be cleaned with a hose. To simplify installation and maintenance, the A90 meter has removable terminal blocks allowing panel wiring to be completed before the A90 meter is installed.

Units of measurement are shown on the slide-in scale card which can be changed on-site without removing the meter from the instrument panel. Meters can be supplied with a printed customer specified scale card for no additional charge.

Optional alarms provide two channels, each with a change over relay output which may be independently configured as a high or low alarm. The alarm set points may be adjusted from within the configuration menu, or from the meter display mode via a separate optional security code. In addition to changing the display colour when an alarm is activated, display annunciators show the status of both alarms.

An isolated 4/20mA output is available as a factory fitted option. The output comprises a 4/20mA current sink and a 24V isolated power supply. The output may be wired as a current sink or as a current source and may be configured to represent any part of the meter display. When used as a current sink, the isolated 24V supply may be used to power a remote transmitter.

An isolated Modbus RTU interface is available as a factory fitted option enabling a modbus master to monitor the variable measured by the A90 and the instrument's status. The A90 panel meter can also be configured via the modbus interface.

Other models in this range include the A90-SS which has the same specification but is housed in an impact resistant IP66 stainless steel panel mounting enclosure.

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SPECIFICATION

Supply Voltage

dc model	10 to 36V dc
ac model	90 to 264V ac 47 - 63Hz

Display

Type	Negative liquid crystal with multicolour backlight. 5 digits 11mm high and 31 segment bargraph.
Span	Adjustable between 0 and ±99999
Zero	Adjustable between 0 and ±99999
Decimal point	1 of 4 fixed positions, absent or automatic
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point
Direction	Display may increase or decrease with increasing input.
Reading rate	4 per second
Overrange	99999 or -99999 with all decimal points and bargraph flashing.

Input (Selectable on-site)

Current	4 - 20mA or 0 - 50mA
Voltage	0 - 100mV; 0 - 1V or 0 - 10V
RTD	Pt100 2-wire, 3-wire or differential, includes configurable fault detection.

Push buttons (Function in display mode)

▼	Shows minimum diplay - other functions configurable.
▲	Shows maximum diplay - other functions configurable.
P	Displays analogue input or a % of span
E	Tare function - when enabled

Accuracy at 20°C

Linearity	Current & voltage ±0.02% of span ±1 digit 2 wire & 3 wire RTD ±0.05% of span ±1 digit Differential RTD ±0.1% of span ±1 digit
Root extracting (current input only).	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 50ppm of span/°C
Span	Less than 100ppm of span/°C

Environmental

Operating temp	-40 to +55°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	Front IP66, rear IP20
EMC	Complies with 2014/30/EU
LVD	Complies with 2014/35/EU
Isolation	ac supply 3kV rms dc supply 1.5kV Alarm contact 4kV rms All other ciruits 500V rms

Mechanical

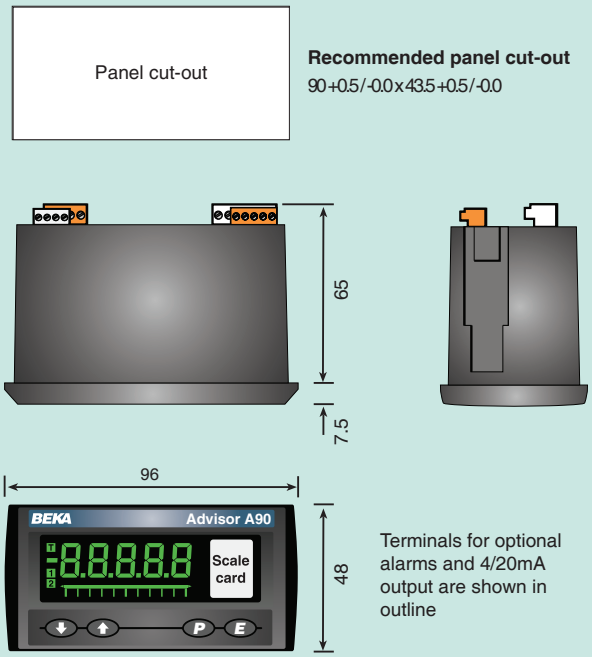
Terminals	Removable with screw clamp
Power & alarms	0.5 to 2.5mm² cable
Others	0.5 to 1.5mm² cable
Weight	0.25kg

Accessories

Alarms	Two alarm output relays each of which may be independently configured as a high or low, latching or non-latching alarms.
Output	Single pole change over contact
Contact rating	250V 5A ac, 30V 5A dc
4/20mA output including 24V transmitter supply.	Isolated 4/20mA current sink. Can be wired in series with 24V supply to produce current source. When current source is not required, 24V supply may be used to power remote transmitter.
Isolated Modbus RTU	RS485 Baud rate 9.6, 19.2, 38.4, 57.6, 115.2kbaud
Scale card	Blank card fitted to each meter can be supplied printed with specified units of measurement for no additional charge.
Tag legend	Specified tag number or application printed onto rear of the meter.
BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

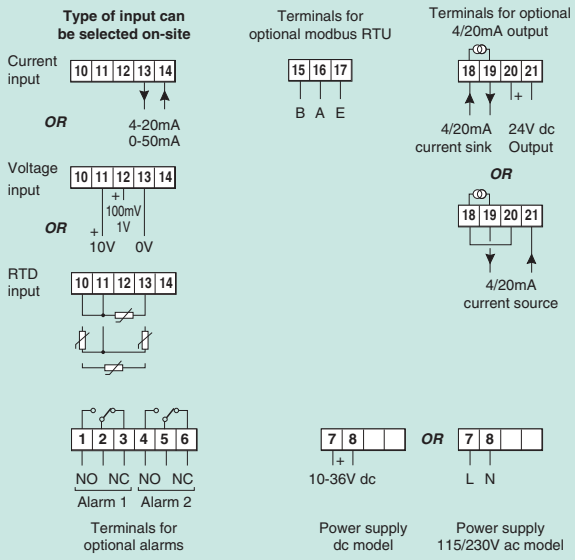
 # See accessory datasheet for details

DIMENSIONS (mm)



Terminals for optional alarms and 4/20mA output are shown in outline

TERMINAL CONNECTIONS

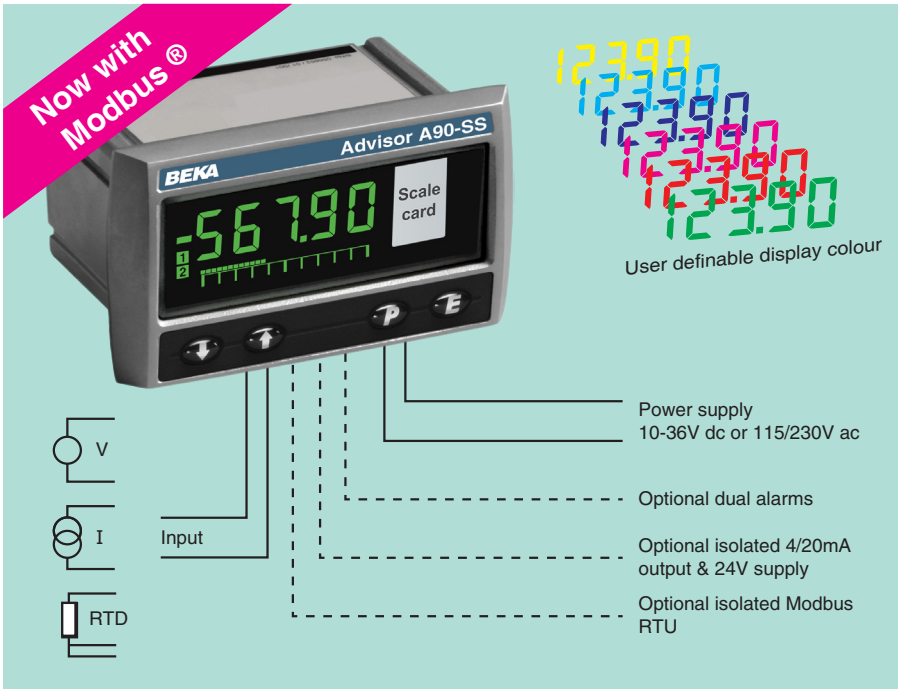


HOW TO ORDER

	Please specify
Model number	A90 panel meter
Supply	24V dc or 115/230V ac
Display mode	Linear or root extracting *
Input	Required input range
Display at:	
Zero	XXXXX] *Include position of decimal*
Span	XXXXX] *point & sign if negative. **
Colour	Required colour*

Accessories	**Please specify if required**
Dual alarms	Alarms
4/20mA output including 24V transmitter supply.	4/20mA output with Tx supply
Modbus RTU	Modbus
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display in green 0.00 at 4mA and 100.00 at 20mA with linear input if calibration information is not supplied. Can easily be reconfigured on-site.*



Advisor A90-SS

Rugged universal process panel meter with multicolour display

- **Multicolour display visible in all lighting conditions.**
- **Rugged IP66 stainless steel enclosure.**
- **5 digit 11mm and 31 segment bargraph display.**
- **dc and mains powered models.**
- **Current, voltage or RTD input.**
- **Optional:**
  Alarms
  Isolated 4/20mA output
  Transmitter power supply
  Modbus RTU
- **Easy on-site scale card installation.**
- **Max and min display**
- **3 year guarantee**

www.beka.co.uk/a90-ss

The A90-SS is a rugged universal input panel meter that can display current or voltage process signals in engineering units and temperature directly from a resistance thermometer. The display, which can be configured to be any colour with adjustable brightness, has a high contrast allowing the meter to be read in all lighting conditions from bright sunlight to total darkness. This A90-SS has been designed and built using the same high quality techniques developed for our industry standard hazardous area products. It is a tough instrument supported by a three year guarantee.

The stainless steel cast enclosure provides IP66 front of panel ingress protection and a captive silicone gasket seals the joint between the A90-SS and the panel in which it is mounted. The impact and ingress protection provided by the stainless steel enclosure together with the 10mm thick glass window have been independently tested.

The main application of the A90-SS is to display a process variable or temperature within a industrial process area. The rugged stainless steel enclosure and robust construction allow the meter to be installed in panel enclosures located in industrial and marine environments, or where the front of the instrument is likely to be impacted. The zero and span of the display are independantly adjustable allowing the A90-SS to be calibrated to show any linear variable represented by the input current or voltage. Maximum and minimum display values can be stored and a root extractor enables flow measurements to be displayed in linear engineering units. For weighing applications the A90-SS incorporates a tare function, including a front panel tare annuciator.

A two or three wire resistance thermometer may be directly connected to an A90-SS which can display temperature in a variety of units including °C and °F. The differential output from two resistance thermometers can also be displayed.

The A90-SS meter is configured via four front panel push buttons using a simple intuitive menu structure. An optional security code prevents accidental adjustment. Display calibration may be performed using the meter's internal references or external standards.

The colourful 11mm five digit display and 31 segment bargraph employ a novel technique that allows the display digits to be in any colour on a black background. When fitted with alarms the display colour can be linked to the alarm status. For example, a green display could indicate normal operation, the display changing to red when a high alarm occurs and to blue for a low alarm. The display intensity is fully adjustable preventing dazzle and preserving operators night vision.

Units of measurement are shown on the slide-in scale card which can be changed on-site without removing the meter from the instrument panel. Meters can be supplied with a printed customer specified scale card for no additional charge.

Optional alarms provide two channels, each with a change over relay output which may be independently configured as a high or low alarm. The alarm set points may be adjusted from within the configuration menu, or from the meter display mode via a separate optional security code. In addition to changing the display colour when an alarm is activated, display annunciators show the status of both alarms.

An isolated 4/20mA output is available as a factory fitted option. The output comprises a 4/20mA current sink and a 24V isolated power supply. The output may be wired as a current sink or as a current source and may be configured to represent any part of the meter display. When used as a current sink, the isolated 24V supply may be used to power a remote transmitter.

An isolated Modbus RTU interface is available as a factory fitted option enabling a modbus master to monitor the variable measured by the A90-SS and the instrument's status. The A90-SS panel meter can also be configured via the modbus interface.

Other models in this range include the A90 which has the same electrical specification but is housed in an IP66 Noryl enclosure.

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SPECIFICATION

Supply Voltage

dc model	10 to 36V dc
ac model	90 to 264V ac 47 - 63Hz

Display

Type	Negative liquid crystal with multicolour backlight. 5 digits 11mm high and 31 segment bargraph.
Span	Adjustable between 0 and ±99999
Zero	Adjustable between 0 and ±99999
Decimal point	1 of 4 fixed positions, absent or automatic
Polarity	Automatic minus sign
Zero blanking	Blanked apart from 0 in front of decimal point.
Direction	Display may increase or decrease with increasing input.
Reading rate	4 per second
Overrange	99999 or -99999 with all decimal points and bargraph flashing.

Input (Selectable on-site)

Current	4 - 20mA or 0 - 50mA
Voltage	0 - 100mV; 0 - 1V or 0 - 10V
RTD	Pt100 2-wire, 3-wire or differential, includes configurable fault detection.

Push buttons (Function in display mode)

▼	Shows minimum diplay - other functions configurable.
▲	Shows maximum diplay - other functions configurable.
P	Displays analogue input or a % of span
E	Tare function - when enabled

Accuracy at 20°C

Linearity	Current & voltage ±0.02% of span ±1 digit 2 wire & 3 wire RTD ±0.05% of span ±1 digit Differential RTD ±0.1% of span ±1 digit
Root extracting (current input only).	±16µA at input ±1 digit
Temperature effect on:	
Zero	Less than 50ppm of span/°C
Span	Less than 100ppm of span/°C

Environmental

Operating temp	-40 to +55°C
Storage temp	-40 to +85°C
Humidity	to 95% at 40°C non condensing
Vibration	Report available
Enclosure	
Ingress protection	Front IP66, rear IP20
Inpact protection	Front 7J, window 4J
Material	Stainless steel BS3146-2:1977 ANC4B (316)
EMC	Complies with 2014/30/EU
LVD	Complies with 2014/35/EU
Isolation	ac supply 3kV rms dc supply 1.5kV Alarm contact 4kV rms All other ciruits 500V rms

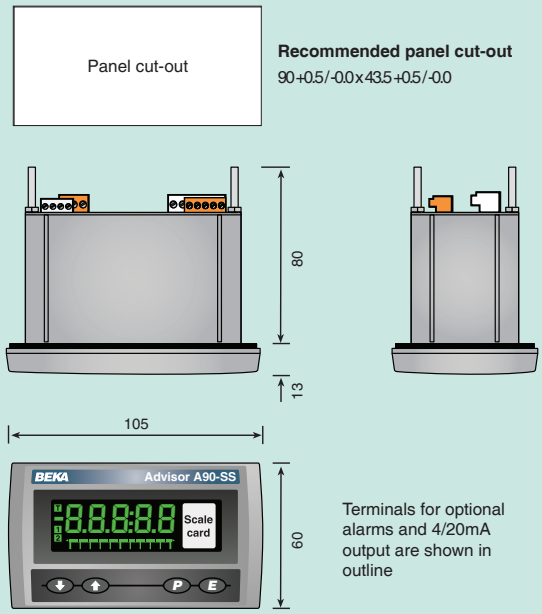
Mechanical

Terminals	Removable with screw clamp
Power & alarms	0.5 to 2.5mm² cable
Others	0.5 to 1.5mm² cable
Weight	0.9kg

Accessories

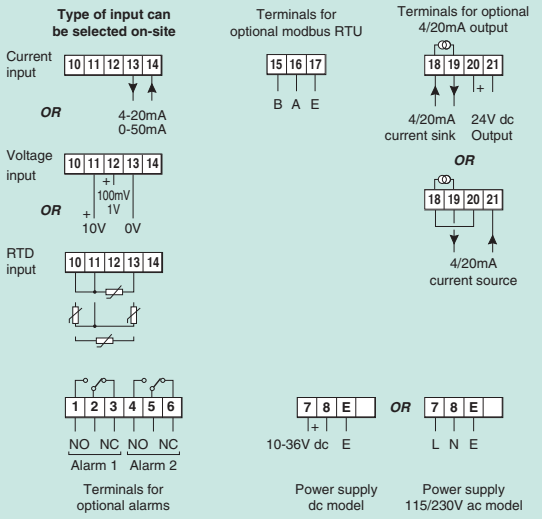
Alarms	Two alarm output relays each of which may be independently configured as a high or low, latching or non-latching alarms.
Output	Single pole change over contact
Contact rating	250V 5A ac, 30V 5A dc
4/20mA output including 24V transmitter supply.	Isolated 4/20mA current sink. Can be wired in series with 24V supply to produce current source. When current source is not required, 24V supply may be used to power remote transmitter.
Isolated Modbus RTU	RS485 Baud rate 9.6, 19.2, 38.4, 57.6, 115.2kbaud
Scale card	Blank card fitted to each meter can be supplied printed with specified units of measurement for no additional charge.
Tag legend	Specified tag number or application printed onto rear of the meter.

DIMENSIONS (mm)



Terminals for optional alarms and 4/20mA output are shown in outline

TERMINAL CONNECTIONS



BA495 rear cover and sealing kit	Provides impact and IP66 protection for rear of instrument. #

 # See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	A90-SS panel meter
Supply	24V dc or 115/230V ac
Display mode	Linear or root extracting *
Input	Required input range
Display at:	
Zero	XXXXX] *Include position of decimal*
Span	XXXXX] *point & sign if negative. **
Colour	Required colour*

Accessories	**Please specify if required**
Dual alarms	Alarms
4/20mA output including 24V transmitter supply.	4/20mA output with Tx supply
Modbus RTU	Modbus
Scale card	Legend required
Tag	Legend required
Rear cover and sealing kit	BA495

** Will be set to display in green 0.00 at 4mA and 100.00 at 20mA with linear input if calibration information is not supplied. Can easily be reconfigured on-site.*

Sounders, Beacons and Panel Lamps

Intrinsically safe

Ex d

General purpose

SOUNDERS & BEACONS

Ex ia

BR385 SOUNDER
> 49 different sounds
> 3 stage alarm
> Up to 105dBA output
> IP66 enclosure

BA386 BEACON
> Red, Amber, Green, Blue & White models
> 2 double flashes per second
> Alarm accept function silences sounder for pre-set time.
> Steady state BA386S version also available

Ex d

SOUNDER
> 32 different sounds
> 3 stage alarm
> Up to 123dBA output
> IP67 enclosure

BEACON
> Red, Amber, Yellow, Green, Blue & White models
> Up to 21 joule output
> IP67 enclosure
> Xenon flash or LED light source

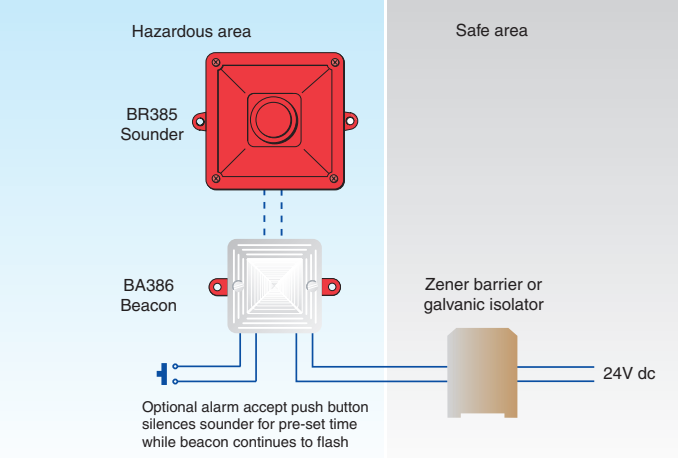
PANEL LAMPS

> Red, Amber, Green, Blue & White models
> **BA390** lamps have 20mA constant current consumption
> **BA390S** lamps have specified performance at 4mA
> **BA590** for safe area applications
> **BA599** rear sealing kit includes cable gland

Now IECEx & ATEX dust certified

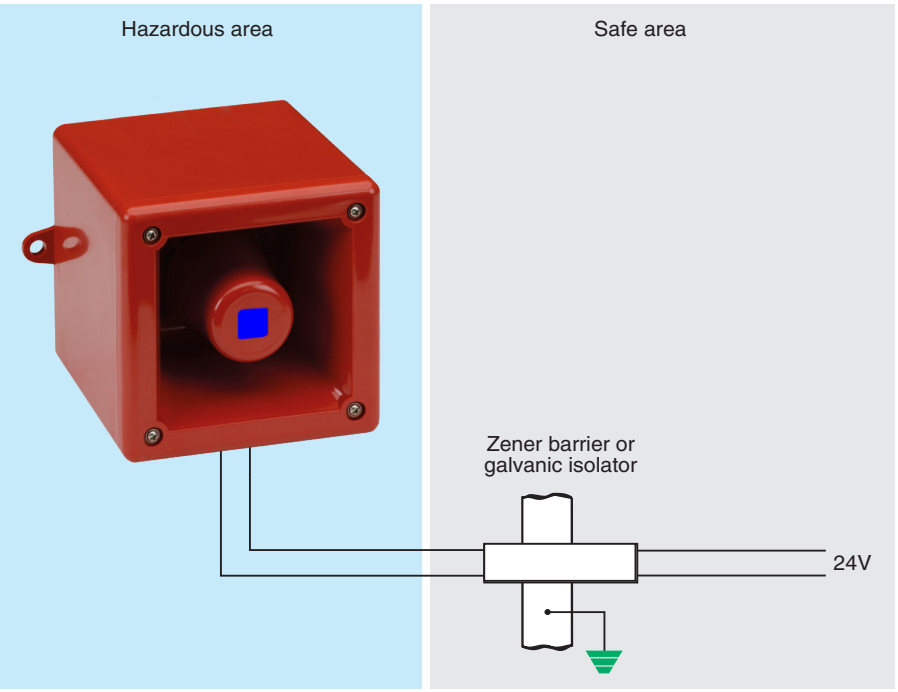
Models available

Model No.	Certification					
	Europe ATEX		International IECEx		USA	
	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 & 2						
BR385 Sounder	✔	–	✔	–	✔	–
BA386 Beacon	✔	–	✔	–	✔	–



Models available

Model No.	Certification					
	Europe ATEX		International IECEx		USA	
	Gas	Dust	Gas	Dust	Gas	Dust
Ex ia intrinsically safe - for use in Zones 0, 1 and 20, 21 & 22						
BA390 20mA constant current	✔	✔	✔	✔	✔	–
BA390S Low current specified performance at 4mA	✔	✔	✔	✔	✔	–
General Purpose - for use in safe areas						
BA590 20mA constant current						



BR385

Audible Sounder

Intrinsically safe for use in all gas hazardous areas

- **ATEX, IECEx & FM certification.**
- **49 first stage, 21 second stage & 9 third stage alarm sounds.**
- **PFEER compliant**
- **Up to 105dB(A) output.**
- **Input overload protection.**
- **Volume control**
- **IP66 enclosure**
- **Can be powered from BA386 flashing beacon.**
- **3 year guarantee**

www.beka.co.uk/br385

The BR385 is a third generation intrinsically safe field mounting sounder which supersedes the BA385-IIC and BA385-IIB. The new sounder, which produces a loud audible warning signal in a hazardous area has forty nine different first stage alarm sounds selectable by internal switches. Each first stage tone can be changed to a second or a third stage alarm sound by an external contact which may be in the safe or hazardous area. Selectable outputs include DIN, NFS, PFEER, Australian and Singaporean defined warning, alert and evacuation tones.

Main application of the BR385 sounder is the generation of unique audible warnings within a hazardous area. The sounder may be powered from a wide range of Zener barriers or galvanic isolators and may be controlled by any contact or dc supply in the safe area. The BR385 may also be switched in the hazardous area by an intrinsically safe relay, or any equipment with an intrinsically safe, simple apparatus switch output, such as a BEKA Intrinsically safe loop powered indicator or a serial text display.

The selected first stage tone can be changed to a different second or third stage tone by inter-connecting sounder terminals using a switch contact, which may be in the safe or hazardous area. This enables one sounder to announce up to three different conditions, for example, alarms warning, alarm and automatic shut-down.

A crystal controlled oscillator accurately defines the frequency and repetition rate of each alarm signal. This ensures that when multiple BR385 sounders are activated at the same time the output tones from all the sounders remain synchronised.

ATEX, IECEx and FM intrinsic safety certification permits installation in all gas hazardous zones and all gas groups. Input safety parameters allow use with a wide range of Zener barriers and galvanic isolators, and zero output parameters simplify intrinsic safety system design.

A BA386 LED flashing beacon may be powered from the same Zener barrier or galvanic isolator as the sounder. This significantly reduces installation costs of a combined sounder and beacon system and includes an alarm accept function, while only marginally reducing the sound output, but may only be used for ATEX systems. See the BA386 datasheet for full information.

The robust ABS enclosure which is flame-retardant provides IP66 protection and is suitable for external mounting. Cable entry is via a single untapped hole which will accept a 20mm gland or conduit fitting. A 20mm knock-out is also provided in the rear of the enclosure.

The BR385 contains overvoltage protection to prevent damage during commissioning and to allow the sounder to be tested in a safe area without the need for a Zener barrier or galvanic isolator.

BEKA associates

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SPECIFICATION

Power supply

Voltage	16V min via 28V 93mA Zener barrier 8 to 28V between – and + terminals. **Not** damaged by direct connection to the supply without a Zener barrier or galvanic isolator in circuit.
Current	25mA typical when powered from 24Vdc via a 28V, 93mA Zener barrier.

Second and third stage alarms

Second stage	Connect terminal S2 to '-' terminal*
Third stage	Connect terminal S3 to '-' terminal*

** If diode return barrier is used voltage drop must be less than 0.9V.*

Output

Sound level at 1m	Up to 105dB(A)
Volume control	Max 105, Min 96dB

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia IIC T4 Ga Ta -40 to 60C
Cert. No.	Sira06ATEX2032X
Installation	The BR385 may be powered from any ATEX certified Zener barrier or galvanic isolator whose output parameters do not exceed: Uo = 28Vdc Io = 93mA Po = 0.66W
Location	Zone 0, 1 or 2

USA FM

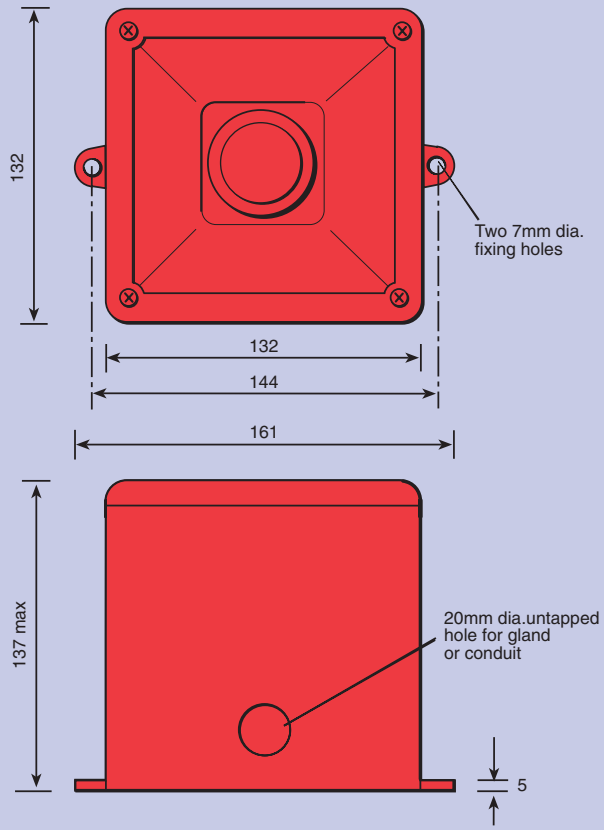
Standard	3610 Entity
Code	CLI, Div. 1, Gp A, B, C, and D CLI Zone 0 AEx ia IIC
Temperature code	T4 at 60°C
File No.	3027157

International IECEx

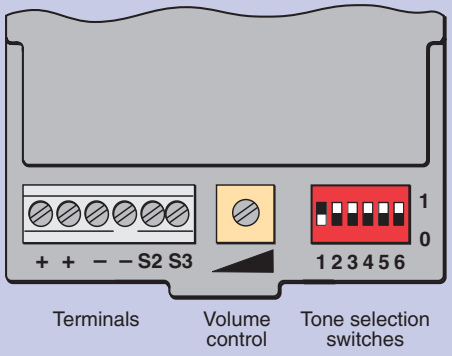
Code	Ex ia IIC T4 Ga -40°C ≤ Ta ≤ +60°C
Temperature code	IECEx SIR 17.0014X

Tone Number		Switch Settings 1 2 3 4 5 6	Second Stage Alarm	Third Stage Alarm
Tone 1	Continuous 340Hz	0 0 0 0 0 0	Tone 2	Tone 5
Tone 2	Alternating 800/1000Hz @ 0.25s intervals	1 0 0 0 0 0	Tone 17	Tone 5
Tone 3	Slow whoop 500/1200Hz @ 0.3Hz with 0.5s gap repeated	0 1 0 0 0 0	Tone 2	Tone 5
Tone 4	Sweeping 500/1000Hz @ 1Hz	1 1 0 0 0 0	Tone 6	Tone 5
Tone 5	Continuous 2400Hz	0 0 1 0 0 0	Tone 3	Tone 20
Tone 6	Sweeping 2400/2900Hz @ 7Hz	1 0 1 0 0 0	Tone 7	Tone 5
Tone 7	Sweeping 2400/2900Hz @ 1Hz	0 1 1 0 0 0	Tone 10	Tone 5
Tone 8	Siren 500/1200/500Hz @ 0.3Hz	1 1 1 0 0 0	Tone 2	Tone 5
Tone 9	Sawtooth 1200/500Hz @ 1Hz - *D.I.N*	0 0 0 1 0 0	Tone 15	Tone 2
Tone 10	Alternating 2400/2900Hz @ 2Hz	1 0 0 1 0 0	Tone 7	Tone 5
Tone 11	Intermittent 1000Hz @ 1Hz	0 1 0 1 0 0	Tone 2	Tone 5
Tone 12	Alternating 800/1000Hz @ 0.875Hz	1 1 0 1 0 0	Tone 4	Tone 5
Tone 13	Intermittent 2400Hz @ 1Hz	0 0 1 1 0 0	Tone 15	Tone 5
Tone 14	Intermittent 800Hz 0.25s ON, 1s OFF	1 0 1 1 0 0	Tone 4	Tone 5
Tone 15	Continuous 800Hz	0 1 1 1 0 0	Tone 2	Tone 5
Tone 16	Intermittent 660Hz 150Ns ON, 150ms OFF	1 1 1 1 0 0	Tone 18	Tone 5
Tone 17	Alternating 544Hz (100ms) / 440Hz (400ms) – *NFS 32-001*	0 0 0 0 1 0	Tone 2	Tone 27
Tone 18	Intermittent 660Hz 1.8s ON, 1.8s OFF	1 0 0 0 1 0	Tone 2	Tone 5
Tone 19	Sweep 1400Hz to1600Hz up 1s 1600Hz to 1400Hz down 0.5s	0 1 0 0 1 0	Tone 2	Tone 5
Tone 20	Continuous 660Hz	1 1 0 0 1 0	Tone 2	Tone 5
Tone 21	Alternating 554/440Hz @ 1Hz	0 0 1 0 1 0	Tone 2	Tone 5
Tone 22	Intermittent 544Hz @ 0.875Hz	1 0 1 0 1 0	Tone 2	Tone 5
Tone 23	Intermittent 800Hz @ 2Hz	0 1 1 0 1 0	Tone 6	Tone 5
Tone 24	Sweeping 800/1000Hz @ 50Hz	1 1 1 0 1 0	Tone 29	Tone 5
Tone 25	Sweeping 2400/2900Hz @ 50Hz	0 0 0 1 1 0	Tone 29	Tone 5
Tone 26	Simulated bell	1 0 0 1 1 0	Tone 2	Tone 15
Tone 27	Continuous 554Hz	0 1 0 1 1 0	Tone 26	Tone 5
Tone 28	Continuous 440Hz	1 1 0 1 1 0	Tone 2	Tone 5
Tone 29	Sweeping 800/1000Hz @ 7Hz	0 0 1 1 1 0	Tone 7	Tone 5
Tone 30	Continuous 300Hz	1 0 1 1 1 0	Tone 2	Tone 5
Tone 31	Sweeping 660/1200 @ 1Hz	0 1 1 1 1 0	Tone 26	Tone 5
Tone 32	Two Tone Chime	1 1 1 1 1 0	Tone 26	Tone 15
Tone 33	Intermittent 745Hz	0 0 0 0 0 1	Tone 2	Tone 5
Tone 34	Alternating 1000/2000Hz @ 0.5s – *Singapore*	1 0 0 0 0 1	Tone 38	Tone 45
Tone 35	420Hz @ 0.625s - *Australian Alert*	0 1 0 0 0 1	Tone 36	Tone 5
Tone 36	500-1200Hz 3.75s / 0.25s - *Australian Evacuate*	1 1 0 0 0 1	Tone 35	Tone 5
Tone 37	Continuous 1000Hz	0 0 1 0 0 1	Tone 9	Tone 45
Tone 38	Continuous 2000Hz	1 0 1 0 0 1	Tone 34	Tone 45
Tone 39	Intermittent 800Hz 0.25s ON 1s OFF	0 1 1 0 0 1	Tone 23	Tone 17
Tone 40	Alternating 544Hz (100ms) / 440Hz (400ms) – *NFS 32-001*	1 1 1 0 0 1	Tone 31	Tone 27
Tone 41	Motor Siren – Slow rise to 1200Hz	0 0 0 1 0 1	Tone 2	Tone 5
Tone 42	Motor Siren – Slow rise to 800Hz	1 0 0 1 0 1	Tone 2	Tone 5
Tone 43	Continuous 1200Hz	0 1 0 1 0 1	Tone 2	Tone 5
Tone 44	Motor Siren – Slow rise to 2400Hz	1 1 0 1 0 1	Tone 2	Tone 5
Tone 45	Intermittent 1000Hz 1s ON, 1s OFF	0 0 1 1 0 1	Tone 38	Tone 34
Tone 46	Sawtooth 1200/500Hz @ 1Hz - *D.I.N. (PFEER P.T.A.P)*	1 0 1 1 0 1	Tone 47	Tone 37
Tone 47	Intermittent 1000Hz 1s ON, 1s OFF – *PFEER General Alarm*	0 1 1 1 0 1	Tone 46	Tone 37
Tone 48	420Hz @ 0.625s - *Australian Alert*	1 1 1 1 0 1	Tone 49	Tone 5
Tone 49	500-1200Hz 3.75s / 0.25s - *Australian Evacuate*	0 0 0 0 1 1	Tone 26	Tone 37

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Environmental

Operating temp	-40 to 60°C
Storage temp	-40 to 70°C
Humidity	To 95% @ 40°C
Enclosure	IP66
EMC	In accordance with EU Directive 89/336/EEC

Mechanical

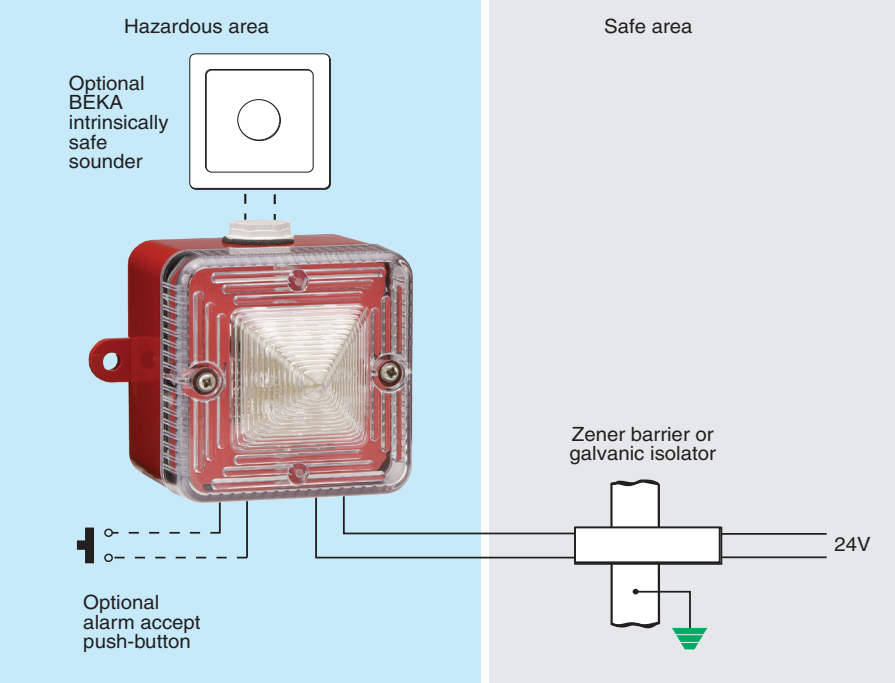
Terminals	Screw clamp for 0.5 to 2.5 mm^2 cable.
Weight	0.75 kg

Accessories

Tag number	Thermally printed tag strip

HOW TO ORDER

	Please specify
Model number	BR385
Accessories	**Please specify if required**
Tag number	Legend



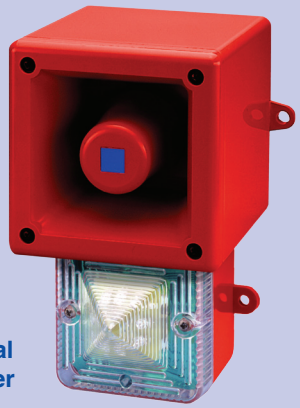
BA386

LED flashing beacon

Intrinsically safe for use in all hazardous gas areas

- **Intrinsically safe ATEX, IECEx & FM certification.**
- **Red, amber, green blue & white models.**
- **Two double flashes per second.**
- **Will power BEKA intrinsically safe sounder.**
- **IP66 enclosure**
- **Incorporates alarm accept function to silence sounder.**
- **3 year guarantee**

www.beka.co.uk/ba386



Shown with optional sounder

The BA386 is an intrinsically safe field mounting beacon which produces a bright flashing warning signal in a hazardous area. This beacon is significantly less expensive than the traditional Xenon devices, although it has a similar light output, flashes more frequently and is available in five different colours.

The beacon may be used alone, or in conjunction with a BEKA intrinsically safe sounder. The high efficiency of the BA386 enables the beacon and the sounder to be powered from a common Zener barrier or galvanic isolator. In combined systems this eliminates one barrier or isolator and associated wiring, thus simplifying the installation and further reducing cost.

Alarm accept is another unique feature of the BA386 which in combined systems enables the sounder to be silenced for a pre-set time leaving the beacon flashing twice per second. The alarm is accepted by momentarily closing a pair of external contacts, such as a push-button which may be located in the hazardous or the safe area. The sounder silence time may be pre-set for between 1 and 30 minutes.

Main application of the BA386 beacon is to provide a visible warning in a noisy hazardous process area where a sounder is not easily identified. The beacon may be powered from a wide variety of Zener barriers or galvanic isolators and may be controlled by any contact or dc supply in the safe area. It may also be switched in the hazardous area by an intrinsically safe relay or any equipment with an intrinsically safe output such as the alarm output of a BEKA indicator or totaliser.

When the BA386 beacon is used in conjunction with a BEKA intrinsically safe sounder it forms a combined audio visual alarm with integral sounder silence facilities. It is ideal where an operator needs to be advised that an alarm condition has occurred, but wishes to silence the intrusive audible warning. If the alarm condition is not corrected during the silence period, the sounder will be re-activated when the pre-set silence time has expired.

IECEx and ATEX certification permits installation in Zones 0, 1 or 2. For applications in the USA, the BA386 also has FM intrinsic safety and nonincendive approval.

The flame retardant enclosure provides IP66 protection and is suitable for external mounting in sheltered locations. Cable entry is via 20mm untapped holes in the sides of the enclosure and there is a 'knock-out' in the rear for an additional entry.

When used with a BEKA BR385 sounder, the beacon may be mounted onto the base of the sounder to form a combined assembly, or may be mounted separately.

A complementary intrinsically safe steady state beacon with five different colour output options is also available. These BA386S beacons provide a continuous status indication when a flashing warning is not required.

BEKA associates

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SPECIFICATION

Power supply

Voltage	10 to 28V (across terminals 1 & 2) Not damaged by temporary connection to the supply without a Zener barrier or galvanic isolator in circuit.
Current	When powered from 24V supply via 28V 93mA Zener barrier.
Alone	25mA typical
With BR385 sounder	40mA typical

Output

Brightness	Equivalent to 0.5 Joule xenon beacon
Frequency	
Alone	2Hz (2 double flashes per second)
With BR385 sounder	
on	1Hz (1 double flash per second)
silenced (alarm accepted)	2Hz (2 double flashes per second)
Sounder output	Reduced by typically 2dB when used with beacon.
Response	
On time	First flash within 2 seconds of supply being connected.
Off time	Last flash less than 5 seconds after supply is removed.
Repeat alarm	To guarantee alarm accept status, supply should not be reconnected within 5 seconds of disconnection.

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia op is IIC T4 Ga -40°C ≤ Ta ≤ 60°C
Cert. No.	ITS02ATEX2006X

International IECEx

Code	Ex ia op is IIC T4 Ga -40°C ≤ Ta ≤ 60°C
Cert. No.	IECEx ITS 17.0052X

Installation

May be powered from any certified Zener barrier or galvanic isolator whose output parameters do not exceed:

	Alone	With BR385
Uo	28Vdc	28Vdc
Io	110mA	93mA
Po	0.8W	0.66W

Location	Zone 0, 1 or 2
Accept input terminals 5 & 6.	May be connected to any mechanically activated switch having IP20 protection which is capable of withstanding an ac test voltage of 500Vrms to earth for one minute.

USA FM

Does not include use with BR385 sounder

Standard	3610 Entity
Code	CL.1, Div. 1, Gp. A, B, C and D CL 1, Zone 0, AEx ia IIC T4
Temperature code	T4 at 60°C
File No	3014996
Standard	3611 Nonincendive.
Code	CL.1, Div. 2, Gp. A, B, C and D CL 1, Zone 2, IIC T4
Temperature code	T4 at 60°C
File No	3014996

Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66

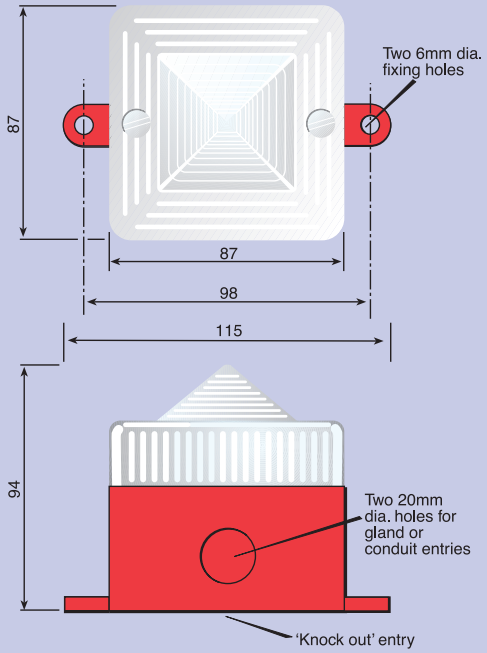
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.4kg

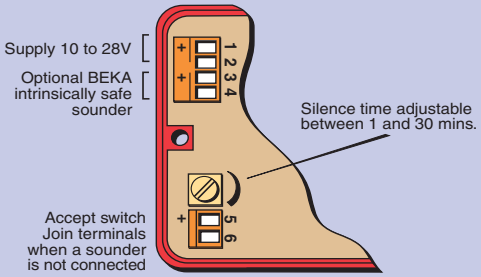
Accessories

Tag strip	Thermally printed tag strip secured by screws.
Combining kit	Gasket and conduit fitting for mounting BA386 beacon onto bottom of BR385 sounder.

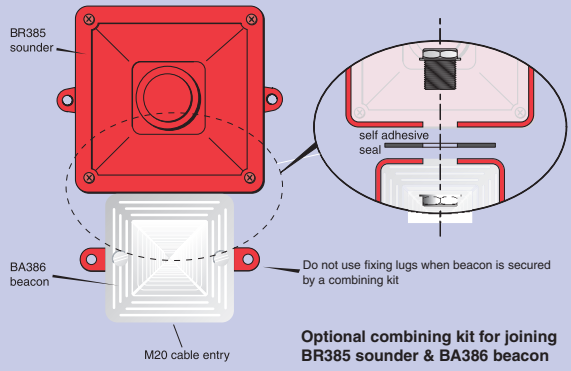
DIMENSIONS (mm)



TERMINAL CONNECTIONS



COMBINING KIT



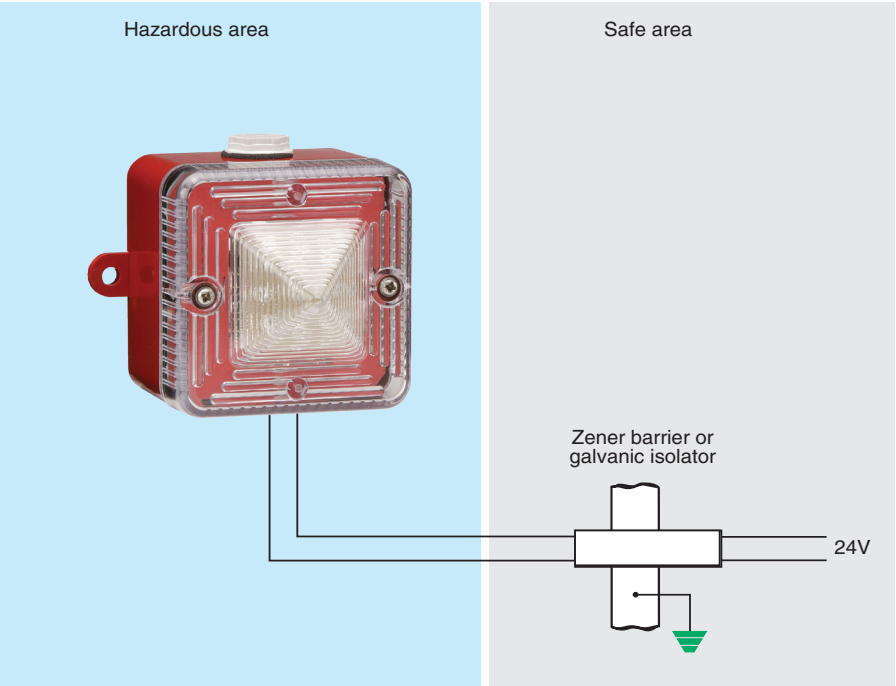
Optional combining kit for joining BR385 sounder & BA386 beacon

HOW TO ORDER

Colour	Please specify Model number
Red	BA386R
Amber	BA386A
Green	BA386G
Blue	BA386B
White	BA386W

Accessories	Please specify if required
Tag strip	Legend
Combining kit for joining beacon & BR385 sounder. *	Combining kit

* Supplied free of charge on request when sounder and beacon are purchased at the same time



BA386S

LED Steady state beacon

Intrinsically safe for use in all hazardous gas areas

- **Intrinsically safe ATEX, IECEx & FM certification.**
- **Red, amber, green blue & white models.**
- **2 beacons can be powered by 1 barrier or isolator.**
- **IP66 enclosure**
- **3 year guarantee**

www.beka.co.uk/ba386s

The BA386S LED steady state beacon is an intrinsically safe field mounting beacon which produces a bright continuous output in a hazardous area. Models with five different colour outputs are available.

Main application of the BA386S beacon is to provide a visible indication in a noisy hazardous process area where a sounder is not easily identified. The continuous output is particularly useful for status indication. The beacon may be powered from a wide variety of Zener barriers or galvanic isolators and may be controlled by any contact or switchable dc supply in the safe area. The BA386S beacon may also be switched *on* and *off* in the hazardous area by an intrinsically safe relay or any equipment with an intrinsically safe output such as the alarm output of a BEKA indicator or totaliser.

Providing a small reduction in brilliance can be tolerated, two BA386S steady state beacons can be powered in parallel from one common Zener barrier or galvanic isolator. Each beacon can be independently controlled by a separate hazardous area switch, or from the safe area via a diode return barrier.

IECEx and ATEX certification permits installation in Zones 0, 1 or 2. For applications in the USA, the BA386S also has FM intrinsic safety and nonincendive approval.

The flame retardant enclosure provides IP66 protection and is suitable for external mounting in sheltered locations. Cable entry is via 20mm untapped holes in the sides of the enclosure and there is a 'knock-out' in the rear for an additional entry.

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee. The BA386S is protected from input overloads and reverse connection and complies with the European EMC Directive.

A complementary intrinsically safe flashing beacon is also available. This has five different colour output options and can be used in conjunction with a BA385 sounder to form a combined audio & visual alarm system. See BA385 and BA386 datasheets.

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SPECIFICATION

Power supply

Voltage	10 to 28V (across terminals 1 & 2) Not damaged by temporary connection to the supply without a Zener barrier or galvanic isolator in circuit.
Current	When powered from 24V supply via 28V 93mA Zener barrier. 25mA typical

Output

Brightness	Equivalent to 0.5 Joule xenon beacon

Intrinsic safety

Europe ATEX

Code	Group II Category 1G Ex ia op is IIC T4 Ga -40°C ≤ Ta ≤ 60°C
Cert. No.	ITS02ATEX2006X

International IECEx

Code	Ex ia op is IIC T4 Ga -40°C ≤ Ta ≤ 60°C
Cert. No.	IECEx ITS 17.0052X

USA FM

Standard	3610 Entity
Code	CL.1, Div. 1, Gp. A, B, C and D CL 1, Zone 0, AEx ia IIC T4
Temperature code	T4 at 60°C
File No	3014996
Standard	3611 Nonincendive.
Code	CL.1, Div. 2, Gp. A, B, C and D CL 1, Zone 2, IIC T4
Temperature code	T4 at 60°C
File No	3014996

Installation

May be powered from any certified Zener barrier or galvanic isolator whose output parameters do not exceed:

Uo	28Vdc
Io	110mA
Po	0.8W

Location: Zone 0, 1 or 2

Environmental

Operating temp	-20 to 60°C (certified for use at -40°C)
Storage temp	-40 to 85°C
Humidity	To 95% @ 40°C
Enclosure	IP66

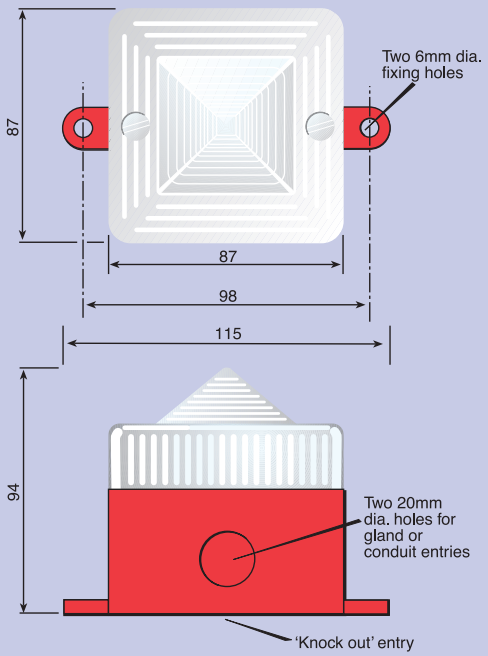
Mechanical

Terminals	Removable with screw clamp for 0.5 to 1.5mm^2 cable.
Weight	0.4kg

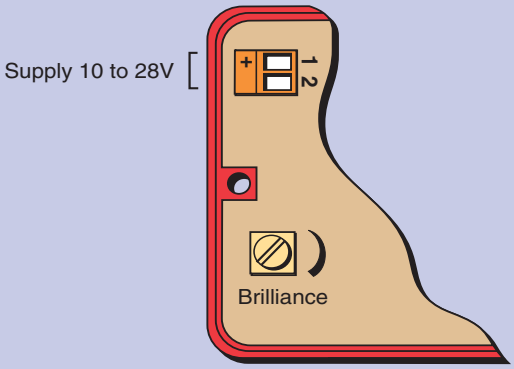
Accessories

Tag strip: Thermally printed tag strip secured by screws.

DIMENSIONS (mm)



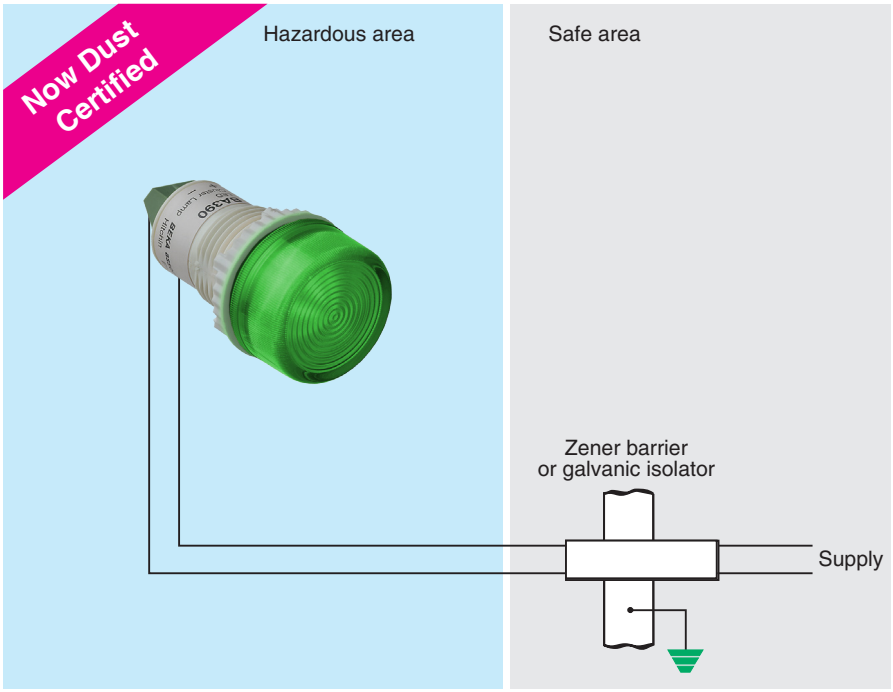
TERMINAL CONNECTIONS



HOW TO ORDER

	Please specify
Colour	Model number
Red	BA386SR
Amber	BA386SA
Green	BA386SG
Blue	BA386SB
White	BA386SW

Accessories	**Please specify if required**
Tag strip	Legend



BA390

LED Panel Lamp

Intrinsically safe for use in all gas and dust hazardous areas

- **Intrinsically safe IECEx, ATEX & FM certification.**
- **Red, amber, green, blue & white models.**
- **20mA constant current & brilliance.**
- **IP66 front**
- **IIC isolator will power two lamps.**
- **3 year guarantee**

www.beka.co.uk/ba390

BA390 panel lamps provide reliable cost effective visual status indication in all hazardous gas and dust areas. Each BA390 lamp produces a bright, uniform output with a typical life greater than ten years. All models contain a 20mA current regulator therefore they consume a constant current and hence have a constant brilliance independent of supply voltage. Protection against excess voltage and reverse connection is included in each lamp.

IECEx and ATEX intrinsic safety certification allows BA390 LED panel lamps to be installed in all gas and dust hazardous areas. Two lamps may be powered from a single IIC intrinsically safe galvanic isolator. FM gas approval allows BA390 lamps to be installed in the USA.

Five well defined lamp colours - red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified.

IP66 sealing of the lamp front and the joint between the lamp and the panel allow the BA390 to be installed in areas that will be hosed, washed or splashed. When rear of panel environmental protection is also required, the optional BA599 rear sealing kit provides IP66 protection and includes a cable gland to seal and support the supply cable.

Mounting is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

To aid identification from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee.

For low current applications complementary BA390S panel lamps, which have the same features and certifications as BA390 lamps, but without a current regulator, can be used with currents as low as 4mA. These lamps are ideal for use with low current sources such as fieldbus multiple output modules. See the BA390S datasheet for details.

For safe area installations, please refer to the BA590 datasheet which describes a range of non certified 24V dc powered panel lamps.

Application Guide AG390 includes additional information about how to use both BA390 and BA390S lamps.

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SPECIFICATION

Power supply

Voltage	
Operating	14 to 30V dc
Reverse 60V max	
Current	18 to 22mA

Output

Lamp colour	Typical illuminance at 150mm
Red	160 lux
Amber	230 lux
Green	230 lux
Blue	530 lux
White	270 lux

Intrinsic Safety

International IECEx

Code gas	Ex ia IIC T4 Ga
dust *	Ex ia IIIC T135°C Da
	-20°C ≤ Ta ≤ +60°C
Input safety parameters	
Ui	30V
Ii	159mA
Pi gas	1.2W
Pi dust *	0.683W
Certification number	IECEx ITS 08.0030X

Europe ATEX

Code gas	Group II Category 1G
	Ex ia IIC T4 Ga
dust *	Group II Category 1D
	Ex ia IIIC T135°C Da
	-20°C ≤ Ta ≤ +60°C
Input safety parameters	
Ui	30V
Ii	159mA
Pi gas	1.2W
Pi dust *	0.683W
Certificate numbers	ITS13ATEX27822X

* Dust certification is an option

USA FM *only gas certification*

Standard	3610 Entity intrinsic safety
Code	CL I: Div 1: GP A, B, C & D: T4 @ 60°C
	AEx ia IIC T4 Ta = 60°C
File	3022662
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D: T4 @ 60°C
File	3022662

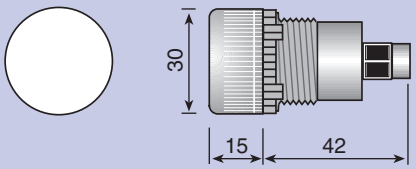
Environmental

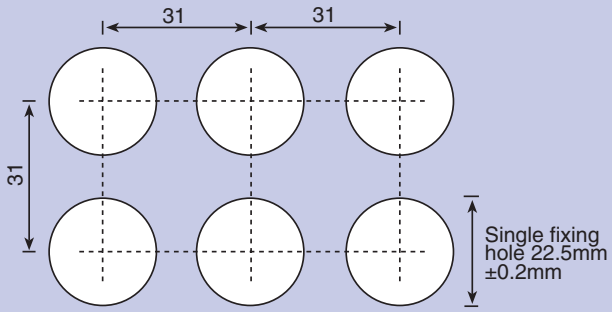
Operating temperature	-20 to 60°C
Storage temperature	-40 to 85°C
Relative humidity	5 to 95% non condensing
Operating life	100,000 hours typical
Enclosure Front	IP66
Rear	IP20 - see accessories for BA599 optional IP66 rear sealing kit.
EMC	Complies with EMC Directive 2014/30/EU.

Mechanical

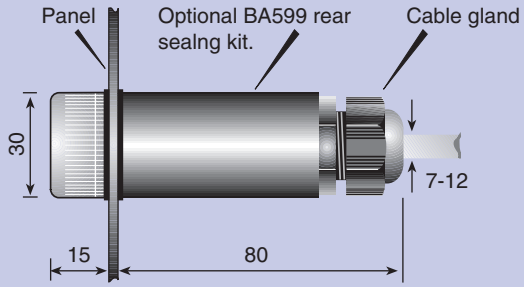
Terminals	Screw clamp for 1.5mm²
Diffuser material	Polycarbonate
Body material	Nylon 6
Weight	18g

DIMENSIONS (mm)

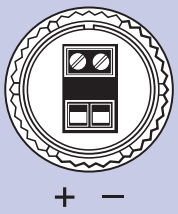




Fixing centres for maximum packing density.
Special tool may be required to tighten fixing nuts when minimum spacing is used.



TERMINAL CONNECTIONS



Accessories

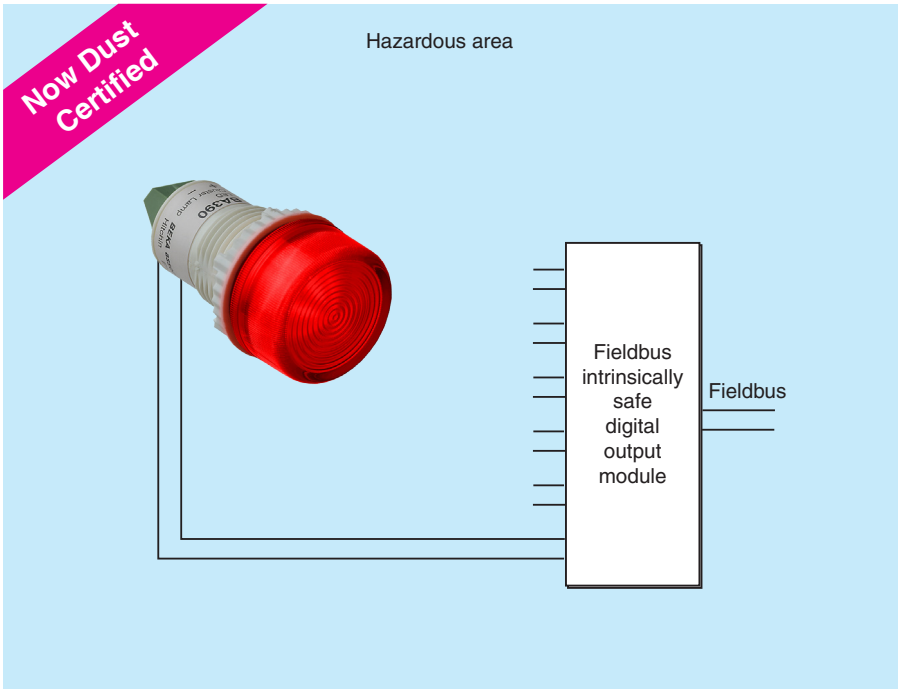
Dust certifcation	IECEx and ATEX dust certification
Rear sealing kit	BA599 provides IP66 protection for terminals and rear of the lamp. Supplied with gland for 7 to 12mm diameter cable.

HOW TO ORDER

Lamp colour	Please specify
Red	BA390R
Amber	BA390A
Green	BA390G
Blue	BA390B
White	BA390W

Accessories	Please specify if required
IECEx & ATEX certification	Dust certification
Rear sealing kit	BA599

Now Dust Certified



BA390S

Low Current LED Panel Lamp

Intrinsically safe for use in all gas and dust hazardous areas

- **Intrinsically safe IECEx, ATEX & FM certification.**
- **Red, amber, green, blue & white models.**
- **Guaranteed operation at 4mA.**
- **Operates from any current limited intrinsically safe source**
- **IP66 front**
- **3 year guarantee**

www.beka.co.uk/ba390s

BA390S low current panel lamps provide reliable, cost effective visual status indication in all gas and dust hazardous areas. Each BA390S lamp produces a uniform output with just a few milliamps of input current and has a typical life greater than ten years.

Optimised for use at low currents BA390S lamps may be powered from almost any intrinsically safe supply. Their high efficiency results in a useful visible output with an input current of only a few milliamps. Lamps can therefore be powered from a current limited intrinsically safe supply, such as a digital output on a multiple output fieldbus module. Several lamps can also be powered, with suitable current limiting, from a Zener barrier or galvanic isolator.

IECEx and ATEX intrinsic safety certification permits BA390S LED panel lamps to be installed in all gas and dust hazardous areas. For use in the USA all models also have FM gas certification.

Five well defined lamp colours - red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified.

IP66 sealing of the lamp front and the joint between the lamp and the panel enclosure, enable BA390S lamps to be successfully installed in areas that will be hosed, washed or splashed. When rear of panel environmental protection is also required, the optional BA599 rear sealing kit provides IP66 protection and includes a cable gland to seal and support the supply cable.

Mounting is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

To aid identification from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee.

Complementary certified panel lamps incorporating an internal 20mA current regulator that may be powered directly from a Zener barrier or galvanic isolator are also available, please see BA390 datasheet. For safe area applications, the uncertified BA590 lamps incorporate a 20mA regulator and have similar features as the BA390 lamps.

BEKA associates

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SPECIFICATION

Power supply

Current		4mA for specified performance. Current must be defined by an external resistor or current regulator. See Application Guide AG390.
Max		22mA
Voltage		
Operating		8V typical, 8.7V max
Reverse		60V max

Output at 4mA

Lamp colour	Typical illuminance at 150mm
Red	60 lux
Amber	45 lux
Green	45 lux
Blue	80 lux
White	60 lux

Intrinsic Safety

International IECEx

Code	gas	Ex ia IIC T4 Ga
	dust *	Ex ia IIIC T135°C Da
		-20°C ≤ Ta ≤ +60°C
Input safety parameters		
	Ui	30V
	Ii	159mA
	Pi gas	1.2W
	Pi dust *	0.683W
Certification number		IECEx ITS 08.0030X

Europe ATEX

Code	gas	Group II Category 1G Ex ia IIC T4 Ga
	dust *	Group II Category 1D Ex ia IIIC T135°C Da -20°C ≤ Ta ≤ +60°C
Input safety parameters		
	Ui	30V
	Ii	159mA
	Pi gas	1.2W
	Pi dust *	0.683W
Certificate number		ITS13ATEX27822X

* Dust certification is an option

USA FM *only gas certification*

Standard	3610 Entity intrinsic safety
Code	CL I: Div 1: GP A, B, C & D: T4 @ 60°C AEx ia IIC T4 Ta = 60°C
File	3022662
Standard	3611 Nonincendive
Code	CL I: Div 2: GP A, B, C & D: T4 @ 60°C
File	3022662

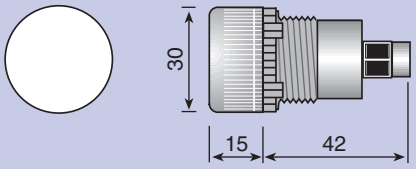
Environmental

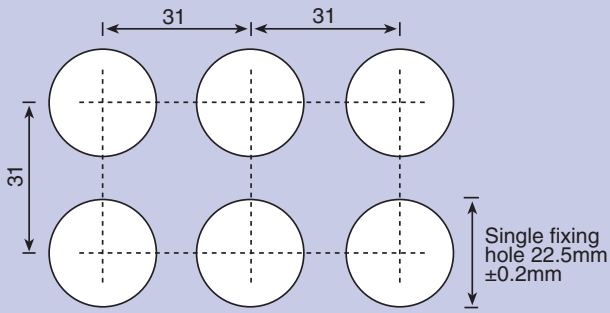
Operating temperature		-20 to 60°C
Storage temperature		-40 to 85°C
Relative humidity		5 to 95% non condensing
Operating life		100,000 hours typical
Enclosure	Front	IP66
	Rear	IP20 - see accessories for BA599 optional IP66 rear sealing kit.
EMC		Complies with EMC Directive 2014/30/EU.

Mechanical

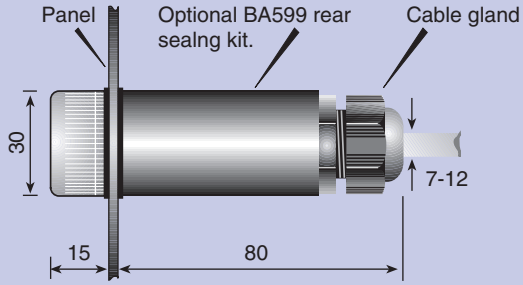
Terminals	Screw clamp for 1.5mm²
Diffuser material	Polycarbonate
Body material	Nylon 6
Weight	18g

DIMENSIONS (mm)

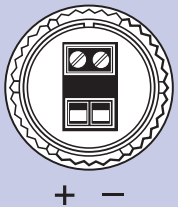




Fixing centres for maximum packing density.
Special tool may be required to tighten fixing nuts when minimum spacing is used.



TERMINAL CONNECTIONS



Accessories

Dust certifcation	IECEx and ATEX dust certification
Rear sealing kit	BA599 provides IP66 protection for terminals and rear of the lamp. Supplied with gland for 7 to 12mm diameter cable.

HOW TO ORDER

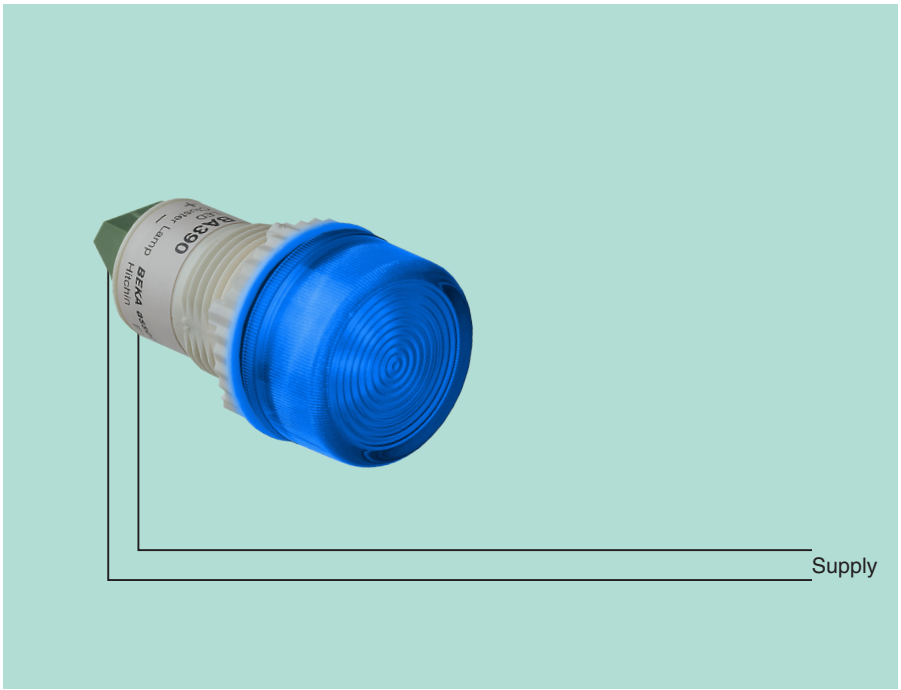
Lamp colour	**Please specify**
Red	BA390RS
Amber	BA390AS
Green	BA390GS
Blue	BA390BS
White	BA390WS

Accessories	**Please specify if required**
IECEx & ATEX certification	Dust certification
Rear sealing kit	BA599

BA590

LED Panel Lamp

General purpose



- **Red, amber, green, blue & white models.**
- **Long life - typically more than 10 years.**
- **Low cost**
- **IP66 front**
- **22.5mm hole mounting**
- **3 year guarantee**

www.beka.co.uk/ba590

BA590 series panel lamps are solid state panel mounting indicators which offer a high reliability alternative to conventional panel lamps incorporating a filament bulb. Very low current consumption and a ten year life minimise maintenance costs by totally eliminating routine bulb replacement. Each BA590 contains a group of high efficiency light emitting diodes mounted behind a coloured diffuser to produce a bright, uniform output with a typical life greater than ten years. All BA590 models contain a 20mA current regulator which maintains constant brilliance over a wide range of supply voltages.

Five well defined lamp colours - red, amber, green, blue and white allow lamps to be selected to comply with the indicator light colours recommended by IEC 73. When not powered, the front of panel coloured diffuser enables the lamp colour to be easily identified.

IP66 sealing of the lens and the joint between the lamp and the panel makes the BA590 ideal for installations in areas that will be hosed, washed or splashed. When environmental protection behind the panel is also required, an optional rear sealing assembly is available.

Mounting is via a single industry standard 22.5mm diameter hole. The lamp housing, fixing nut and terminals have a maximum diameter of 30mm which permits a very high packing density on the panel.

To aid identification from the rear of the panel, the model number and suffix which identifies the colour are marked on the lamp body close to the terminals.

Reliability is ensured by an ISO9001 approved quality control system supported by a three year guarantee.

If flammable atmospheres are present the complementary BA390 or BA390S intrinsically safe panel lamps should be used. These have the same features as the BA590 but have been certified for installation in all gas and dust hazardous areas.

BEKA associates

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e-mail sales@beka.co.uk www.beka.co.uk

SPECIFICATION

Power supply

Voltage	14 to 30V dc
Current	18 to 22mA
Reverse voltage	60V max

Output

Lamp colour	Typical at 150mm
Red	160 lux
Amber	230 lux
Green	230 lux
Blue	530 lux
White	270 lux

Environmental

Operating temperature	-20 to 60°C
Storage temperature	-40 to 60°C
Humidity	To 95% at 40°C non-condensing
Operating life	Typically 100,000 hours
Enclosure	Front IP66 Rear IP20 - see accessories for optional IP66 rear sealing assembly.
EMC	In accordance with EU Directive 2014/30/EU
Immunity	No degradation of brightness for 10V/m .
Emissions	Electromagnetically benign.

Mechanical

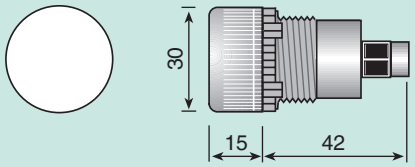
Terminals	Screw clamp for 1.5mm².
Lens material	Polycarbonate
Lamp body	Nylon 6
Weight	18g

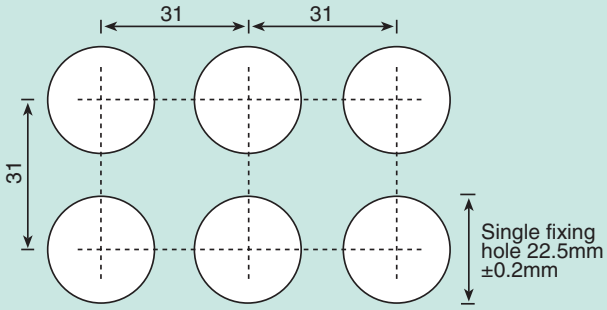
HOW TO ORDER

Lamp colour	**Please specify**
Red	BA590R
Amber	BA590A
Green	BA590G
Blue	BA590B
White	BA590W

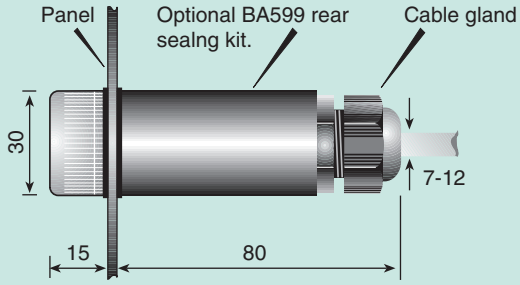
Accessories	**Please specify if required**
Rear sealing kit	BA599

DIMENSIONS (mm)

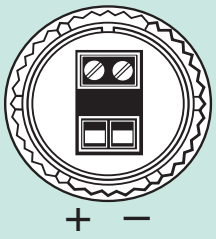




Fixing centres for maximum packing density.
Special tool may be required to tighten fixing nuts when minimum spacing is used.



TERMINAL CONNECTIONS



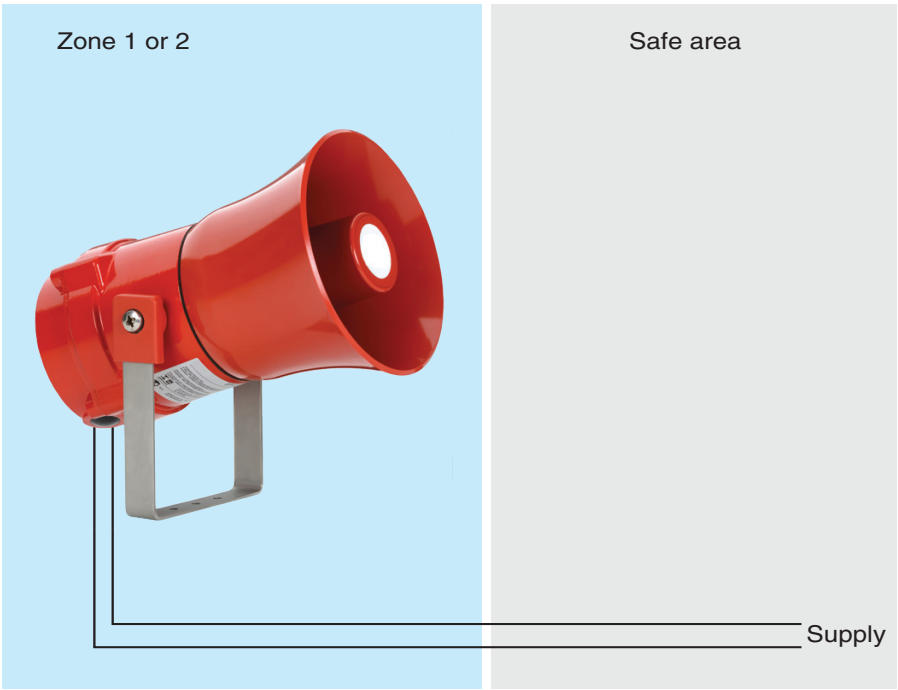
BExS110D

Flameproof sounder

Flameproof for use in gas & dust hazardous areas

- **Up to 113dB(A) output.**
- **32 different sounds**
- **IP66/67 protection**
- **PFEER compliant**
- **Flameproof ATEX & IECEx gas & dust**
- **12V dc, 24V dc, 48V dc, 115V ac and 230V ac models.**
- **Second & third stage outputs.**
- **Auto-synchronised sound output.**

www.beka.co.uk/bexs110d



The BExS110D solid state electronic sounder produces a loud audible warning signal within a hazardous area. To avoid confusion between alarm signals, the sounder can be conditioned by internal switches to generate any one of thirty two unique alarm sounds. Maximum continuous output is 117dB(A) at 1m.

ATEX flameproof certification allows all models to be installed in Zone 1 or 2, and to be used with gases in groups IIA, IIB and IIC.

Second and third stage alarms are available on all models. This enables the alarm sound to be changed from within the safe or hazardous area, so that one sounder may be used to indicate three different alarm conditions.

Tone number	Tone description	Switch settings 1 2 3 4 5	Second stage alarm	Third stage alarm
Tone 1	Continuous 1000Hz *Toxic gas alarm*	0 0 0 0 0	Tone 31	Tone 11
Tone 2	Alternating 800/1000Hz at 0.25s intervals	1 0 0 0 0	Tone 17	Tone 5
Tone 3	Slow whoop 500/1200Hz at 0.3Hz with 0.5s gap repeated	0 1 0 0 0	Tone 2	Tone 5
Tone 4	Sweeping 500/1000Hz at 1Hz	1 1 0 0 0	Tone 6	Tone 5
Tone 5	Continuous 2400Hz	0 0 1 0 0	Tone 3	Tone 20
Tone 6	Sweeping 2400/2900Hz at 7Hz	1 0 1 0 0	Tone 7	Tone 5
Tone 7	Sweeping 2400/2900Hz at 1Hz	0 1 1 0 0	Tone 10	Tone 5
Tone 8	Siren 500/1200/500Hz at 0.3Hz	1 1 1 0 0	Tone 2	Tone 5
Tone 9	Sawtooth 1200/500Hz at 1Hz	0 0 0 1 0	Tone 15	Tone 2
Tone 10	Alternating 2400/2900Hz at 2Hz	1 0 0 1 0	Tone 7	Tone 5
Tone 11	Intermittent 1000Hz at 0.5Hz *General alarm*	0 1 0 1 0	Tone 31	Tone 1
Tone 12	Alternating 800/1000Hz at 0.875Hz	1 1 0 1 0	Tone 4	Tone 5
Tone 13	Intermittent 2400Hz at 1Hz	0 0 1 1 0	Tone 15	Tone 5
Tone 14	Intermittent 800Hz 0.25s on. 1s off	1 0 1 1 0	Tone 4	Tone 5
Tone 15	Continuous 800Hz	0 1 1 1 0	Tone 2	Tone 5
Tone 16	Intermittent 550Hz 150mS on, 150ms off	1 1 1 1 0	Tone 18	Tone 5
Tone 17	Alternating 544Hz (100ms)/440Hz(400ms)	0 0 0 0 1	Tone 2	Tone 20
Tone 18	Intermittent 660Hz 1.8s on, 1.8s off	1 0 0 0 1	Tone 2	Tone 5
Tone 19	1400Hz to 1600Hz sweep up over 1s 1600Hz to 1400Hz sweep down over 0.5s	0 1 0 0 1	Tone 2	Tone 5
Tone 20	Continuous 660Hz	1 1 0 0 1	Tone 2	Tone 5
Tone 21	Alternating 554/440Hz at 1Hz	0 0 1 0 1	Tone 2	Tone 5
Tone 22	Intermittent 544Hz at 0.875Hz	1 0 1 0 1	Tone 2	Tone 5
Tone 23	800Hz pulsing at 2Hz	0 1 1 0 1	Tone 6	Tone 5
Tone 24	Sweeping 800/1000Hz at 50Hz	1 1 1 0 1	Tone 29	Tone 5
Tone 25	Sweeping 2400/2900Hz at 50Hz	0 0 0 1 1	Tone 29	Tone 5
Tone 26	Simulated bell	1 0 0 1 1	Tone 2	Tone 1
Tone 27	Continuous 554Hz	0 1 0 1 1	Tone 26	Tone 5
Tone 28	Continuous 440Hz	1 1 0 1 1	Tone 2	Tone 5
Tone 29	Sweeping 800/1000Hz at 7Hz	0 0 1 1 1	Tone 7	Tone 5
Tone 30	420Hz repeating 0.626s on, 0.625s off *Australian alert signal*	1 0 1 1 1	Tone 32	Tone 5
Tone 31	1200/400Hz at 1Hz *Prepare to abandon platform*	0 1 1 1 1	Tone 11	Tone 1
Tone 32	Sweeping 500/1200Hz 3.75s on, 0.25s off 15Hz *Australian evacuation signal*	1 1 1 1 1	Tone 26	Tone 1

Visit www.beka.co.uk to hear these tones

Robust construction and IP66/67 protection allows BExS110D sounders to function reliably in severe environments. An adjustable wall mounting 'U' bracket is provided with every unit, and a stainless steel pipe mounting kit is available as an accessory.

An optional tie-on stainless steel tag plate may be engraved with any tag number or applicational information.

A loudspeaker version of this sounder for use with 100V public address systems is also available.

An optional SIL2 version available (24V dc only)

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SPECIFICATION

Power supply

Model	12V dc	24V dc	48V dc	115V ac	230V ac
Voltage	± 25%	± 25%	± 25%	±10%	±10%
Current	195mA	265mA	130mA	110mA	56mA

Output

Continuously rated sound level at 1m	110 ± 3dB(A) @ 1m
Volume control	Max 110dB(A); min 72dB(A) (Tone 2)
Second & third stage alarms	
dc models	By application of positive or negative dc voltage.
ac models	By interconnection of sounder terminals.

Certification

Europe ATEX

Code	II 2 G Ex d IIB T4 Ta -50°C to +70°C II 2 G Ex d IIC T4 Ta -50°C to +55°C II 2 D Ex tb IIIC T100°C Db Ta -50°C to +55°C II 2 D Ex tb IIIC T115°C Db Ta -50°C to +70°C.
Certificate number	KEMA 99ATEX6312X
Location	
Gas	Zone 1 or 2
Dust	Zone 21 or 22
End of line monitoring (24V model only)	A resistor or diode (dc only) may be fitted inside the enclosure for monitoring line continuity. Resistor value of 3,300Ω and a minimum power rating of 0.5W, or of 500Ω and a minimum power rating of 2W.

International IECEx

Code	II 2 G Ex d IIB T4 Ta -50°C to +70°C II 2 G Ex d IIC T4 Ta -50°C to +55°C II 2 D Ex tb IIIC T100°C Db Ta -50°C to +55°C II 2 D Ex tb IIIC T115°C Db Ta -50°C to +70°C.
Certificate number	IECEx KEM 10.0003X

Environmental

Operating temp.	-50 to 70°C *See certificate for details*
Storage temp.	-50 to 70°C
Enclosure	IP66/67
EMC	In accordance with EU Directive 2014/30/EU

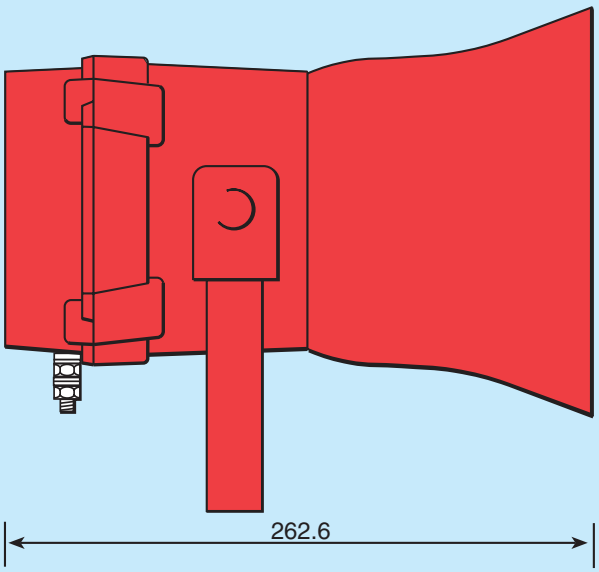
Mechanical

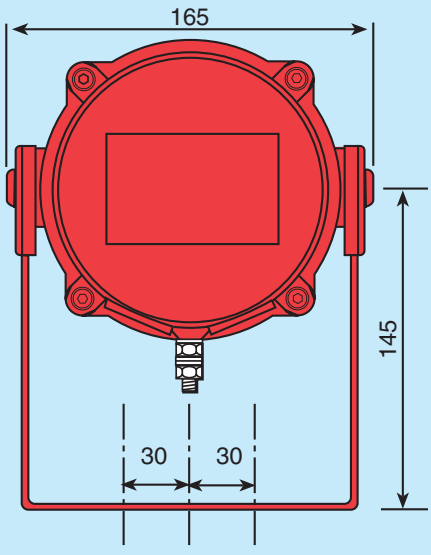
Enclosure material	
Body	Marine grade LM6 aluminium, phosphated & powder coated finish providing good resistance to high humidity and salt spray.
Horn	High impact UL94, V0 & 5VA FR ABS
Terminals	Screw clamp for 0.5 - 2.5mm^2 conductors.
Cable entry	Two tapped M20
Weight	DC: 3.0 AC: 3.2kg

Accessories

Tag plate	Tie-on engraved stainless steel plate - supplied loose.
Pipe mounting kit	BA393 stainless steel heavy duty using 'V' bolt for 40-80mm outside diameter vertical or horizontal pipe.

DIMENSIONS (mm)

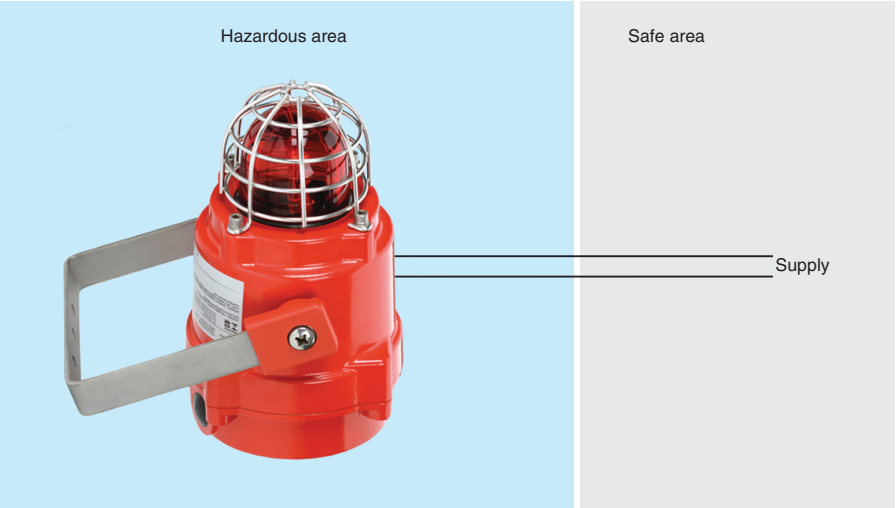




3 x 7mm dia. mounting holes

HOW TO ORDER

	Please specify
Certification & Model No. ATEX & IECEx gas & dust certification.	BExS110D
Voltage	12V dc; 24V dc; 48V dc; 115V ac or 230V ac.
Tag plate	Legend required
Pipe mounting kit	BA393



BExBG05D

Flashing beacon

Flameproof for use in gas & dust hazardous areas

- **Flameproof ATEX & IECEx gas and dust certification.**
- **5 joule output**
- **Rugged IP67 enclosure.**
- **Stainless steel lens guard.**
- **Auto synchronised flash.**

www.beka.co.uk/bexbg05d

The BExBG05D is a bright flashing xenon beacon for use in hazardous areas. Housed in a robust IP67 enclosure it is suitable for exterior mounting and is available with coloured lenses to aid alarm identification.

Main application of the BExBG05D is to provide a visual warning in noisy areas where a sounder may not be heard, or to supplement a sounder warning. The beacon produces a regular bright flash once every second and will attract attention in most ambient lighting conditions.

ATEX and IECEx flameproof certification allows the beacon to be installed in Zones 1, 2, 21 & 22 and to be used with most industrial gases.

Higher output 10 and 15 joule beacons are also available.

SPECIFICATION

Power Supply

Model	12V dc	24V dc	48V dc	115V ac	230V ac
Voltage	10-14V dc	20-28V dc	42-54V dc	±10%	±10%
Current	750mA	300mA	180mA	140mA	55mA

Output

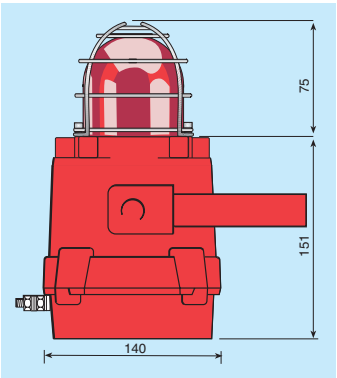
Energy	5 Joules
Colour	Xenon flash through clear or coloured lens.
Frequency	1Hz (Synchronised).

Certification
Europe ATEX

Code	II 2 G Ex d IIC T5 Gb Ta -50°C to +45° II 2 G Ex d IIC T4 Gb Ta. -50°C to +70°C II 2 D Ex tb IIIC T90°C Db Ta. -50°C to +40°C II 2 D Ex tb IIIC T105°C Db Ta. -50°C to +55°C II 2 D Ex tb IIIC T120°C Db Ta. -50°C to +70°C
Certificate no.	KEMA 00ATEX2006X
Location	
Gas	Zone 1 or 2
Dust	Zone 21 or 22
End of line monitoring	A resistor or diode (dc only) may be fitted inside the enclosure monitoring for line continuity. The resistor must have a minimum value of 3,300Ω and a minimum power rating of 0.5W, or 500Ω and a minimum power rating of 2W.

International IECEx

Code	II 2 G Ex d IIC T5 Gb Ta -50°C to +45° II 2 G Ex d IIC T4 Gb Ta. -50°C to +70°C II 2 D Ex tb IIIC T90°C Db Ta. -50°C to +40°C II 2 D Ex tb IIIC T105°C Db Ta. -50°C to +55°C II 2 D Ex tb IIIC T120°C Db Ta. -50°C to +70°C
Certificate no.	IECEx KEM 10.0002X



Environmental

Operating temp	-50 to 70°C (See certificate)
Storage	-50 to 70°C
Humidity	To 95%
Enclosure	IP66/67 with two M20 tapped cable entries.
EMC	In accordance with EU Directive 2014/30/EU

Mechanical

Enclosure	
Body	Marine grade LM6 phosphated and powder coated, providing good resistance to high humidity and salt spray
Lens	Glass with external user replaceable UV stable polycarbonate coloured lens.
Glass guard & fittings	Stainless steel
Terminals	Screw clamp for 0.5 - 2.5mm^2 cables
Cable entry	Two tapped M20
Weight	DC: 2.45kg AC: 2.75kg

Accessories

Pipe mounting kit.	BA393 stainless steel heavy duty using 'V' bolt for 40 - 80mm outside diameter vertical or horizontal pipe.
Tag plate	Tie-on engraved stainless steel plate, supplied loose.

HOW TO ORDER

	Please specify
Voltage	12V dc, 24V dc, 48V ac, 115V ac or 230V ac
Lens colour	Red; amber; yellow; green; blue or clear
SIL	Optional SIL2 version available (24V dc only)

Accessories

Pipe mounting kit	BA393

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

BExCS110-05D

Combined sounder and flashing beacon

Flameproof for use in gas & dust hazardous areas

- **Flameproof ATEX & IECEx gas and dust certification.**
- **High output sounder 110dB(A) typical 5 joule Beacon.**
- **IP66/67 protection**
- **32 different sounds**
- **Second & third stage sounds.**

www.beka.co.uk/bexcs110-05d

The BExCS110-05D is a flameproof combined sounder and flashing beacon for use in hazardous areas. Separate terminals for the sounder and beacon enable each to be controlled individually and a wide selection of lens colours plus 32 different sound outputs result in a versatile device which will satisfy most applicational requirements.

Three different sounds may be remotely selected so that one combined sounder and beacon can indicate three different alarm conditions. When maximum loudness is not required, the level may be reduced by an internal volume control.

The beacon produces a regular bright flash once every second and will attract attention in most lighting conditions.

SPECIFICATION

Power Supply

Model		12V dc	24V dc	48V dc	115V ac	230V ac
Voltage	sounder	±25%	±25%	±25%	±10%	±10%
	beacon	±16%	±16%	±12%	±10%	±10%
Current	sounder	195mA	265mA	130mA	110mA	56mA
	beacon	750mA	300mA	180mA	140mA	55mA

Output

Sounder: 110dB(A) nominal ±3dB at 1m
32 selectable sounds
Three stage output

Beacon: 5 joule Xenon at 1Hz
Choice of six lens colours: amber, blue, clear, green, red, yellow

Certification
Europe ATEX

Code: II 2 G Ex d IIB T5 Gb Ta. -50°C to +40°C
II 2 G Ex d IIB T4 Gb Ta. -50°C to +70°C
II 2 D Ex tb IIIC T110°C Db Ta. -50°C to +55°C
II 2 D Ex tb IIIC T125°C Db Ta. -50°C to +70°C

Certificate no.: KEMA 01ATEX2223X

Location
Gas: Zone 1 or 2
Dust: Zone 21 or 22

End of line monitoring.: A resistor or diode may be fitted inside the enclosure monitoring or line continuity. The resistor must have a minimum value of 3,300W and a minimum power rating of 0.5W, or a minimum value of 500W and a minimum power rating of 2W. (24V model only)

International IECEx

Code: II 2 G Ex d IIB T5 Gb Ta. -50°C to +40°C
II 2 G Ex d IIB T4 Gb Ta. -50°C to +70°C
II 2 D Ex tb IIIC T110°C Db Ta. -50°C to +55°C
II 2 D Ex tb IIIC T125°C Db Ta. -50°C to +70°C

Certificate no.: IECEx KEM 10.0025X

Environmental

Operating temp.: -50 to 70°C See certificate for details
Storage temp.: -50 to 70°C
Enclosure: IP66/67
EMC: In accordance with EU Directive 2014/30/EU

Mechanical

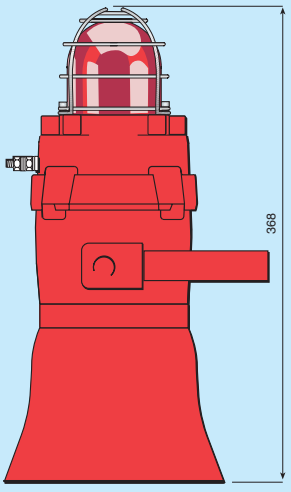
Enclosure material
Body: Marine grade LM6 aluminium, phosphated & powder coated finish providing good resistance to high humidity and salt spray.
Horn: High impact UL94, V0 & 5VA FR ABS
Lens: Glass with external user replaceable UV stable polycarbonate coloured lens.
Lens guard & fittings.: Stainless steel
Terminals: Screw clamp for 0.5 - 2.5mm^2 cables
Cable entry: Two M20, one fitted with stopping plug
Weight: DC:4.8kg AC: 5kg

Accessories

Pipe mounting kit: BA393 stainless steel heavy duty using 'V' bolt for 40 - 80mm outside diameter vertical or horizontal pipe.

Tag plate: Tie-on engraved stainless steel plate, supplied loose.

DIMENSIONS



HOW TO ORDER

Please specify

Cert. & Model No.: BExCS110-05D
ATEX & IECEx
Gas & dust certification

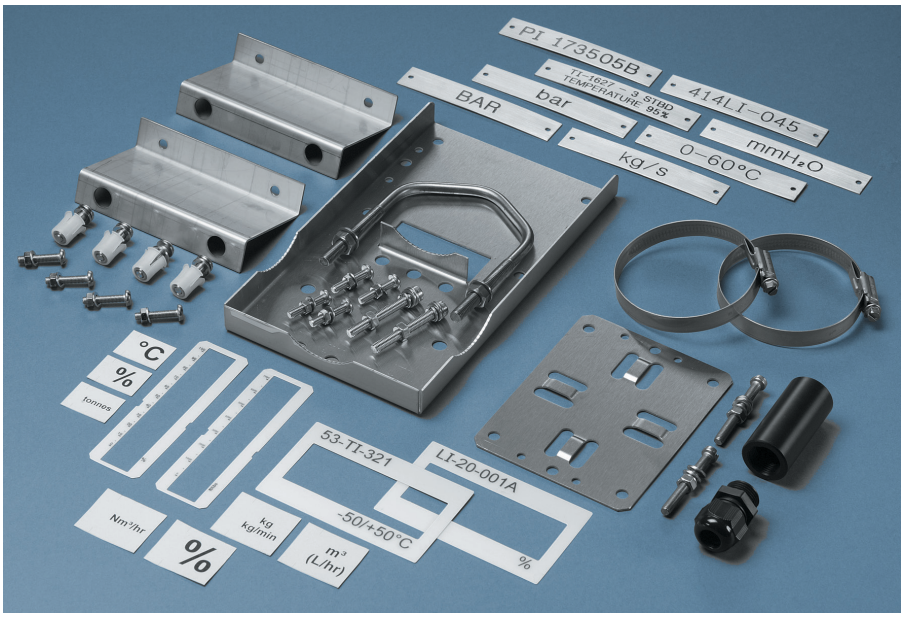
Voltage: 12Vdc, 24V dc, 48V dc, 115V ac or 230V ac
Lens colour: Red; amber; yellow; green; blue or clear

Accessories

Tag plate: Legend required
Pipe mount kit: BA393

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

Accessories



Accessories are available for mounting and marking BEKA products. These include:

Pipe mounting kits for field instruments

Laser etched stainless steel scale & tag plates

Thermally printed scale cards and escutcheons

All BEKA instruments can be supplied with a thermally printed scale card or a laser etched scale plate to show the units of measurement. Although we can supply any legend, we suggest that for consistency the symbols and multipliers defined in ISO 1000-1992 are used. These are shown on the following page.

If requested, instruments can also be supplied marked with a tag number and applicational information.

Recommended symbols for scale plates and cards:

SI UNITS

Quantity	SI	Symbol
length	metre	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
frequency	hertz	Hz
pressure, stress	pascal	Pa
energy, work, quantity of heat	joule	J
power	watt	W
electric potential	volt	V
electric resistance	ohm	Ω
electric conductance	siemens	S
flux of magnetic induction	weber	Wb
magnetic flux density	tesla	T
Celsius temperature	degree	˚C

Compound units

Compound units formed by multiplication or division of two or more units will be represented as shown in the following examples:

N.m m³/s L/h

NON SI UNITS

Quantity	Unit	Symbol
time	minute	min
	hour	h
volume	litre	L
mass	tonne	t, te
pressure	bar	bar
gauge		barg
atmospheric		bara

Common abbreviations

Gallons	Gal
Inches water gauge	in.wg
Parts per million	ppm
Potential hydrogen	pH
Pounds per square inch	psi
Relative humidity	%RH

MULTIPLIERS

Factor	Prefix	Symbol
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto	h
10	deca	da
10^{-1}	deci	d
10^{-2}	centi	c
10^{-3}	milli	m
10^{-6}	micro	µ
10^{-9}	nano	n
10^{-12}	pico	p

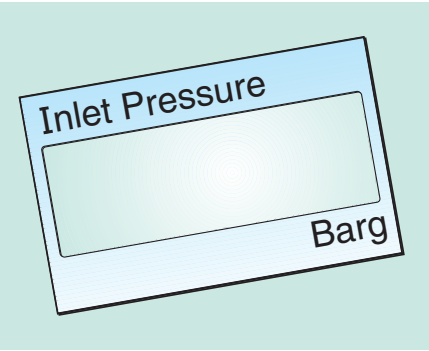
BEKA field mounting instruments are housed in two styles of enclosure. Instruments with a ‘D’ or 'E' suffix e.g. BA484D or BA304E have a 212 x 141mm GRP enclosure incorporating a separate terminal compartment.

Field mounting instruments with a 'G' suffix have a compact 120 x 122mm GRP or Stainless Steel enclosure.

'D' AND 'E' INSTRUMENTS

MARKING

Escutcheon Scale and Tag Marking
All field mounting instruments with a ‘D’ or 'E' suffix apart from serial [data] text displays, fieldbus displays and batch controllers have an internal escutcheon around the display to accommodate scale and tag marking. If requested the instrument can be supplied with the escutcheon printed to show customer specified units of measurement, tag or application information.



Escutcheon printed with customer specified information.

External stainless steel legend plate
For customers requiring traditional labelling, all ‘D’ and 'E' instruments can be supplied with a laser engraved stainless steel legend plate showing customer specified information fitted to the front of the captive terminal cover.

Each plate can accommodate:
1 row of 10 alphanumeric characters 10mm high.

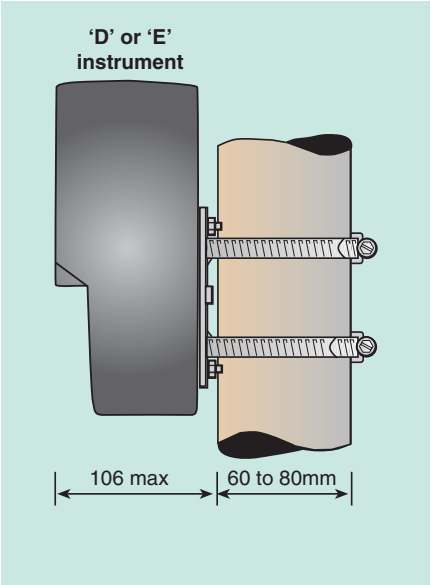
or 2 rows each of 15 alphanumeric characters 7mm high.

or 3 rows each of 24 alphanumeric characters 5mm high.

Etched legend plate

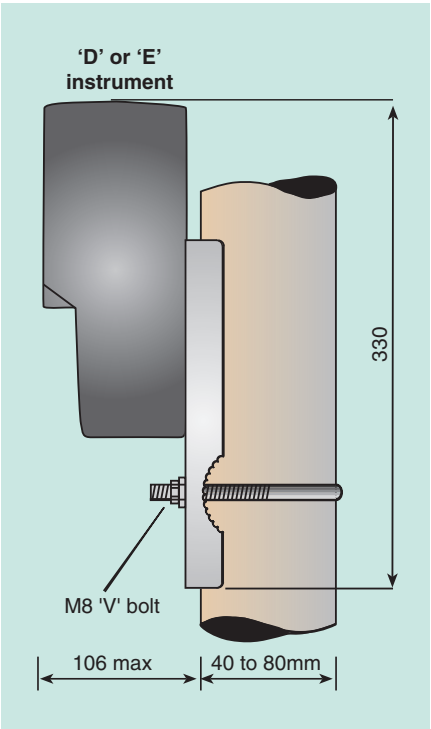
PIPE MOUNTING KITS

BA392D Standard duty stainless steel bracket secured by two stainless steel worm drive hose clips which attach instrument to any 60 to 80mm outside diameter vertical or horizontal pipe. Usually suitable for clamping to a 2 inch internal diameter metal pipe.



BA392D pipe mounting kit

BA393 Heavy duty 316 stainless steel pipe mounting bracket using a single ‘V’ bolt which attaches instrument to any vertical or horizontal pipe with an outside diameter between 40 and 80mm. Will also support BEx series flameproof sounders and beacons.



BA393 pipe mounting kit

Accessories

For field mounting instruments

www.beka.co.uk/accessories

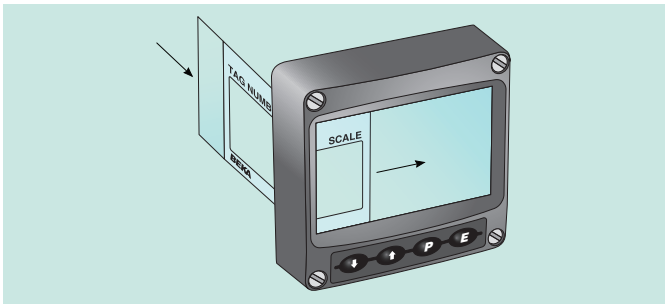
BEKA associates

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

'G' GRP & STAINLESS STEEL INSTRUMENTS

MARKING

Slide-in scale card
All 'G' suffix field mounting instruments have a slide-in scale card which can accommodate scale and tag marking. If requested the instrument can be supplied with the scale card printed to show customer specified units of measurement, tag and application information for no additional charge.



Slide-in scale card

External stainless steel legend plate
For customers requiring traditional labelling, 'G' instruments can be supplied with a laser engraved stainless steel legend plate showing customer specified information.

Each plate can accommodate:

1 row of 4 alphanumeric characters 15mm high.

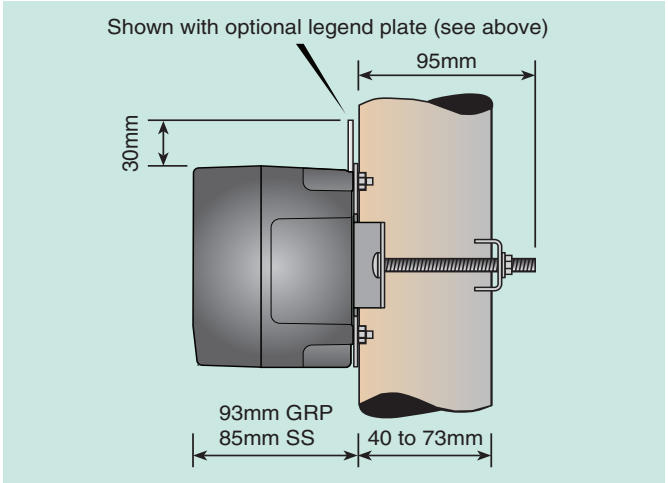
or 2 rows each of 8 alphanumeric characters 10mm high.

or 3 rows each of 17 alphanumeric characters 6.3mm high.

Engraved legend plate

PIPE MOUNTING KIT

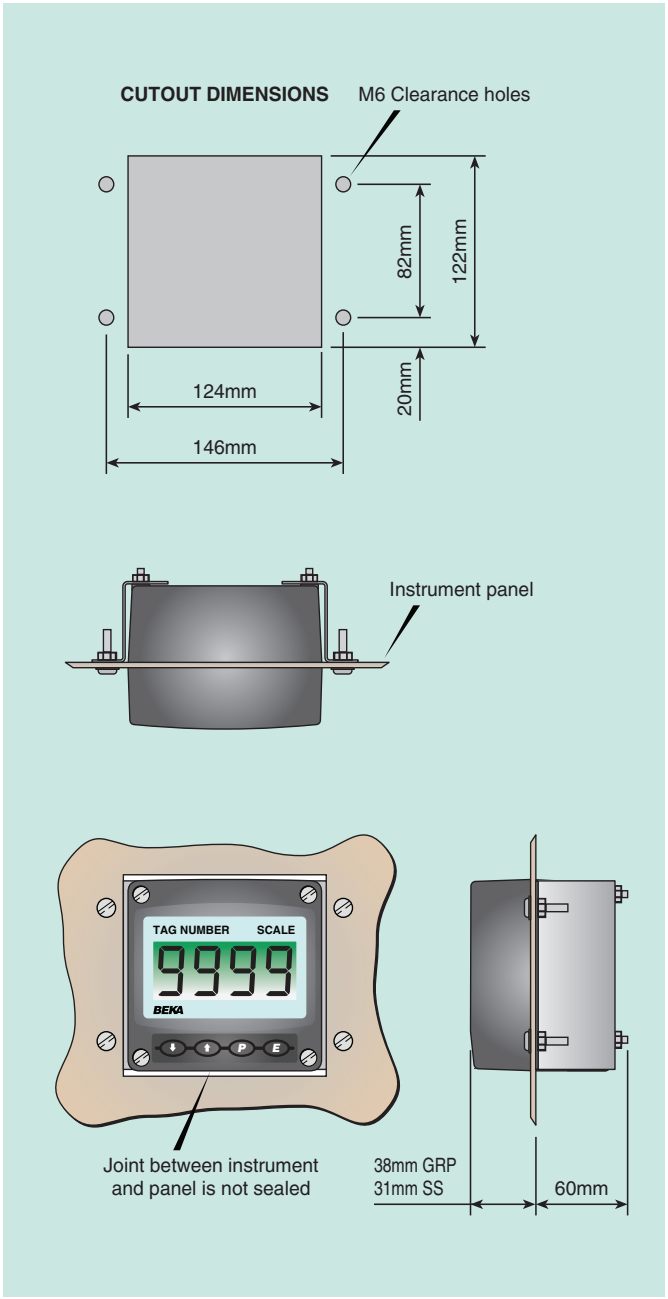
BA393G 316 stainless steel pipe mounting bracket attaches a GRP or Stainless Steel instrument to any vertical or horizontal pipe with an outside diameter between 40 and 73mm.



BA393G pipe mounting kit

PANEL MOUNTING KITS

The **BA394G** 316 stainless steel panel mounting kit secures a 'G' field mounting GRP or Stainless Steel instrument into an aperture in an instrument panel. It maintains the ingress integrity of the 'G' instrument but does not seal the joint between the instrument and the panel, it is therefore suitable for use on an open panel. If a seal is required between the front and rear of the instrument panel, a BA494G or BA494G-SS panel mounting kit should be used.



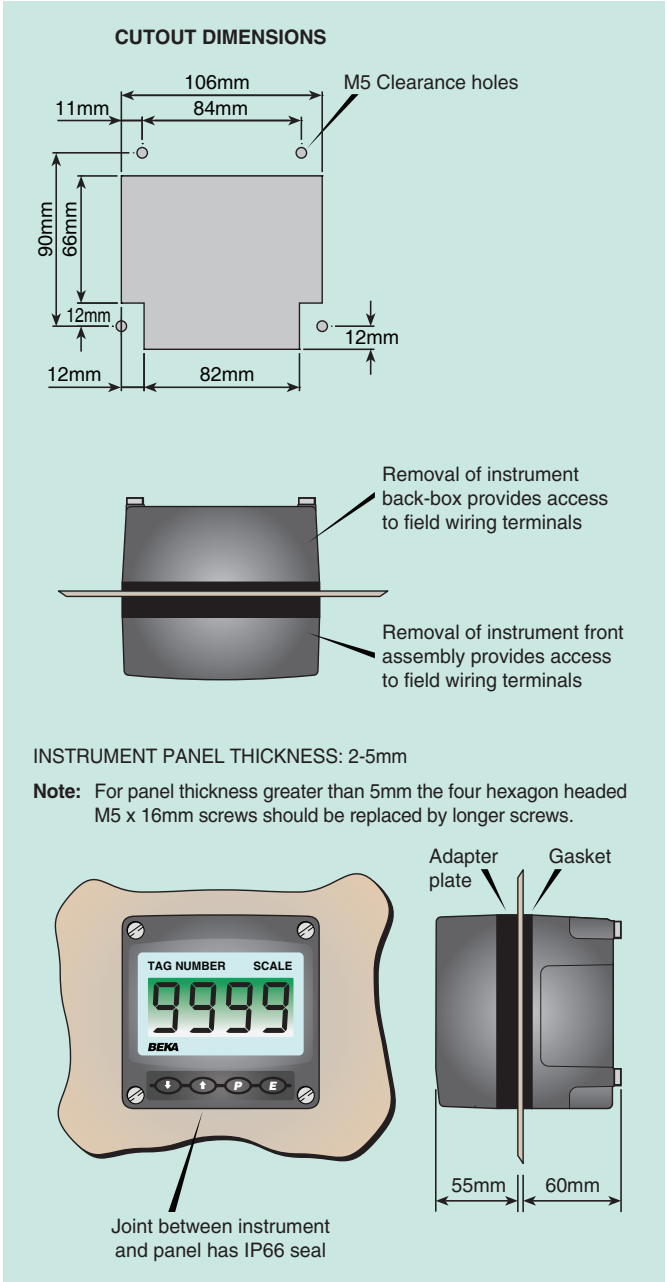
BA394G panel mounting kit

PANEL MOUNTING KITS FOR 'G' INSTUMENTS WITH GRP ENCLOSURE

The **BA494G** panel mounting kit secures a 'G' field mounting GRP instrument in an instrument panel aperture. The kit maintains the instrument's IP66 integrity and provides an IP66 seal between the front and rear of the instrument panel. Sealing has been independently verified by a UKAS registered test house Parc. See http://www.beka.co.uk/certificates_ingress_protection.html for their test certificate.

The BA494G is manufactured from the same compression moulded carbon loaded material as the 'G' enclosure and has 316 stainless steel fittings and silicone gaskets. The BA494G has IECEx and ATEX certification confirming that it will not invalidate the intrinsic safety gas certification of any 'G' instrument that it is supporting. It is not certified for use in dust atmospheres or with 'NG' instruments.

Installation of the panel mounting kit and 'G' GRP instrument only requires access to one side of the panel at a time and may therefore be performed by a single technician. After installation access to the instrument terminals is available from both sides of the panel.



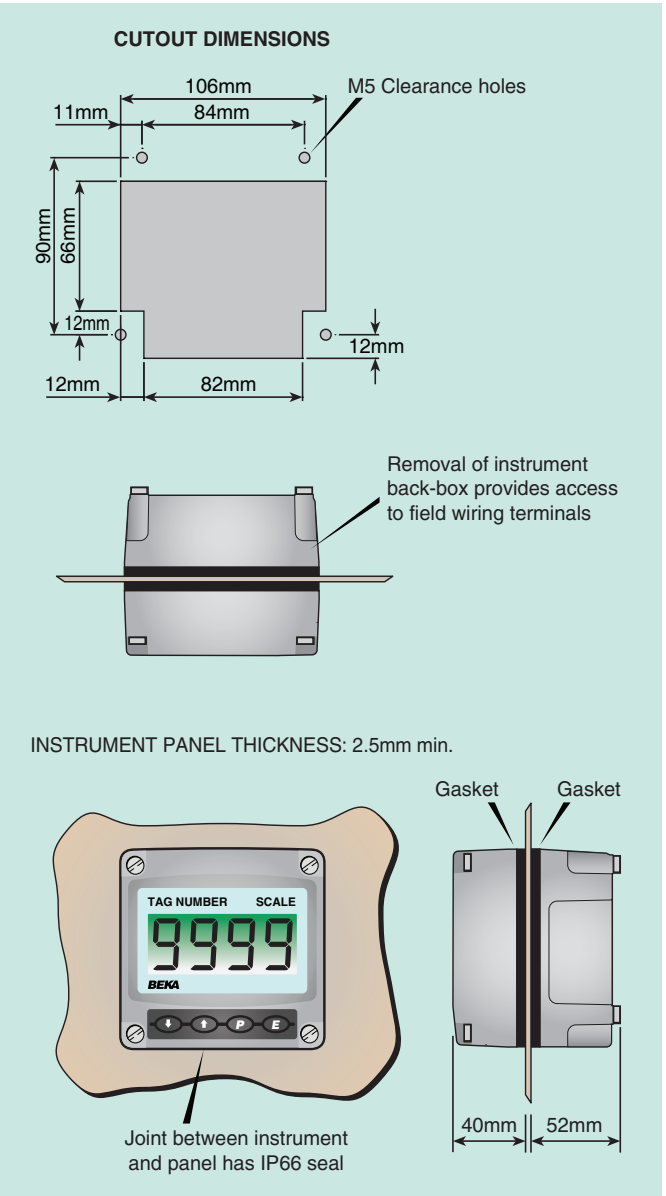
BA494G panel mounting kit for GRP enclosure

PANEL MOUNTING KITS FOR 'G' INSTUMENTS WITH STAINLESS STEEL ENCLOSURE

The **BA494G-SS** panel mounting kit secures a 'G' field mounting stainless steel instrument in an instrument panel aperture. The kit maintains the instrument's IP66 integrity and provides an IP66 seal between the front and rear of the instrument panel.

The kit consists of two silicone gaskets and pillars to secure the instrument assembly to the outside of the panel. The kit also contains screws to mount the instrument's back-box to the rear of the instrument panel.

The stainless steel enclosure has IECEx component certification confirming that it provides IP66 ingress protection after impact and thermal endurance testing.



BA494G panel mounting kit for Stainless Steel enclosure

HOW TO ORDER

'D' and 'E' instruments

	Please specify
Escutcheon marking	
Scale	Legend required
Tag or application	Legend required
Stainless steel legend plate	Legend required
Pipe mounting kit	Model number BA392D or BA393.

'G' instruments

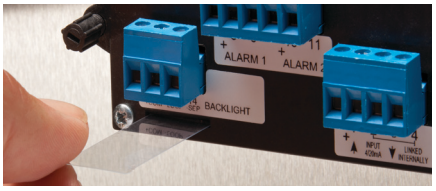
	Please specify
Scale card marking	
Scale	Legend required
Tag or application	Legend required
Stainless steel legend plate	Legend required
Pipe mounting kit for a GRP or a stainless steel 'G' enclosure.	BA393G
Panel mounting kit for a GRP or a stainless steel 'G' enclosure. Front to rear of the instrument panel is not sealed.	BA394G
Panel mounting kit for a GRP 'G' enclosure. Front to rear of the instrument panel is sealed.	BA494G
Panel mounting kit for a stainless steel 'G' enclosure. Front to rear of the instrument panel is sealed.	BA494G-SS

'E' INSTRUMENTS AND ADVISORS

Includes instruments in 96 x 48 and 144 x 72mm plastic enclosures and 105 x 60mm rugged stainless steel enclosures.

Scale card

A slide-in scale card can be fitted without removing the instrument from the panel or opening the instrument enclosure. A customer specified scale card is a no cost accessory when an 'E' or Advisor instrument is ordered. A pack of 30 scale cards pre-printed with common legends is available for on-site configuration.

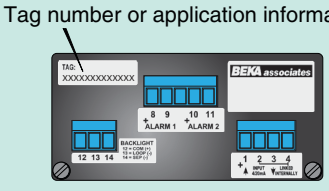


Scale card for 'E' suffix instruments is inserted from the rear of the instrument.

Pre-printed scale cards

Tag number

Customer specified tag number or application information can be thermally printed or laser etched onto the instrument rear panel adjacent to the terminals.



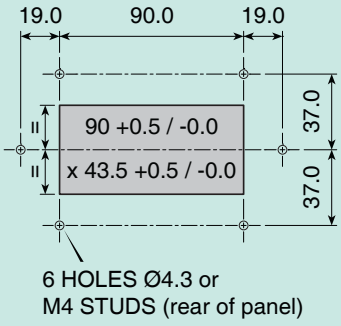
Tag number or application printed on rear panel of instrument.

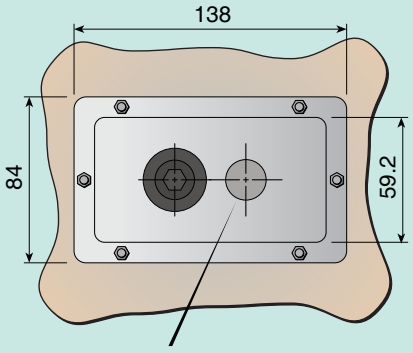
All instruments can typically accommodate up to 2 rows of 18 characters

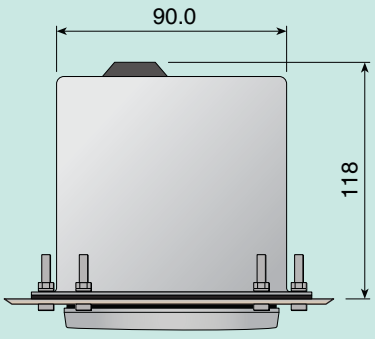
Rear cover and sealing kit

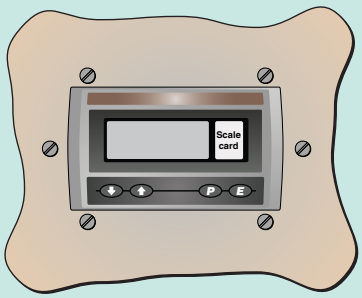
The BA495 rear cover and sealing kit provides impact and IP66 ingress protection for a single 96 x 48mm or a 105 x 60mm rugged instrument. The 316 stainless steel rear cover has two M20 cable entries, one fitted with a blanking plug. Note, cannot be used with Stainless steel support plate.

CUTOUT DIMENSIONS









Accessories

For panel mounting instruments

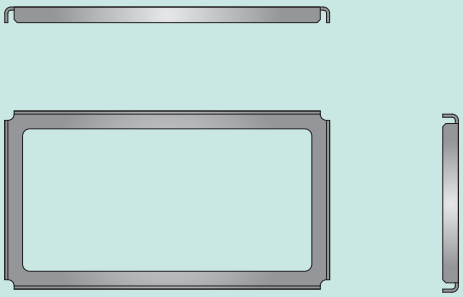
www.beka.co.uk/accessories

BEKA associates Ltd. Old Charlton Rd. Hitchin, Hertfordshire, SG5 2DA, U.K.
Tel. (01462) 438301 Fax (01462) 453971
e-mail sales@beka.co.uk www.beka.co.uk

RUGGED PANEL MOUNTING INSTRUMENTS

Incudes instruments in 105 x 60mm rugged stainless steel enclosures.

Stainless steel support plate
Rugged panel mounting instruments have a stainless steel enclosure. If mounted in a panel which is less than 1.0mm thick, or is non-metallic, a support plate should be slid over the body of the rugged instrument to ensure that the panel enclosure is not distorted when clamps are tightened. Note, cannot be used with BA495 rear cover and sealing kit.

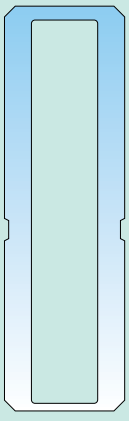


Stainless steel support plate

COMBINED ANALOGUE AND DIGITAL INDICATORS

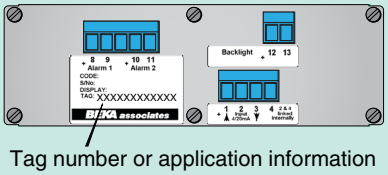
Includes BA326C and BA526C.

Scale card
The factory fitted internal scale card can be printed with a customer specified scale for the analogue bargraph and with the units of measurement for the digital display.



Combined indicator scale card

Tag number
Customer specified tag number or application information can be thermally printed onto the instrument rear panel adjacent to the terminals.

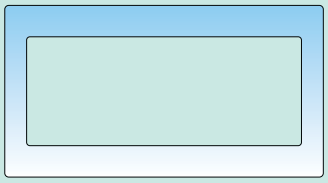


Tag number or application printed on rear panel of instrument

Typically 2 rows of up to 18 characters can be accommodated.

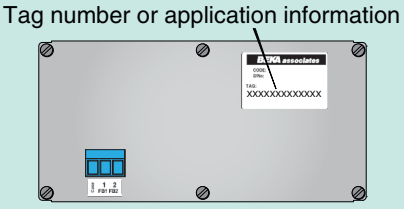
FIELDBUS INSTRUMENTS & INDICATING TEMPERATURE TRANSMITTERS

Scale card marking
Panel mounting Indicating Temperature Transmitters and Fieldbus indicators have an internal scale card around the display which can be supplied printed with customer specified application information.



Scale card can be printed with customer specified information

Tag number
Customer specified tag number or application information can be thermally printed or laser etched onto the instrument rear panel adjacent to the terminals.



Tag number printed on rear panel of instrument

Instruments can typically accommodate up to 2 rows of 18 characters.

HOW TO ORDER

'E' and Advisor instruments

	Please specify
Scale card	Legend required
Tag number etched on rear panel.	Legend required
For on-site configuration Pack of 30 common units of measurement.	Replacement scale card kit SCK.
Rear cover and sealing kit	BA495

Combined analogue & digital instruments

	Please specify
Bargraph scale	Cardinal points
Units of measurement	Legend required
Tag number etched on rear panel.	Legend required

Fieldbus instruments and indicating temperature transmitters

	Please specify
Scale card	Legend required
Tag	Legend required

Product Index

Product Index

BEKA associates

www.beka.co.uk

sales@beka.co.uk

Sales & Technical direct line:

+44 1462 438301

Loop Powered Indicators

Panel Meters

Set Point Stations [Generators]

Rate Totalisers

Counters

Tachometers

Timers or Clocks

Serial Text Displays

Fieldbus Indicators & Displays

Flow Batch Controllers

Indicating Temperature Transmitters

Sounders & Beacons

LED Cluster Lamps

BEKA associates Ltd
Old Charlton Road,
Hitchin, Hertfordshire
SG5 2DA, UK

Tel: +44 1462 438301
Fax: +44 1462 453971

ISO 9001 BUREAU VERITAS Certification

Inst MC Companion Company

GAMBICA

EIC

LinkedIn