

# MTL4501-SR – MTL5501-SR FAIL-SAFE SWITCH/PROXIMITY- DETECTOR INTERFACE with LFD

With the MTLx501-SR, a fail-safe switch/proximity detector located in the hazardous area can control an isolated fail-safe electronic output. The MTLx501-SR also provides relay alarm contacts to signal line-fault conditions. The MTLx501-SR is for use with approved fail-safe sensors in loops that require operation up to SIL3 according to the functional safety standard IEC 61508.

## SPECIFICATION

See also common specification

### Number of channels

One

### Location of switches

Zone 0, IIC, T6 hazardous area

Div. 1, Group A hazardous location

### Location of proximity detector

Zone 0, IIC, T4–6, hazardous location

Div 1, Group A, hazardous location

### Voltage applied to sensor

8.6V dc max from 1k $\Omega$

### Input/output characteristics

| Input value in sensor circuits | Fail-safe output | Operation    | LFD contacts |
|--------------------------------|------------------|--------------|--------------|
| 2.9mA < $I_s$ < 3.9mA          | ON               | Normal       | CLOSED       |
| $I_s$ < 1.9mA & $I_s$ > 5.1mA  | OFF              | Normal       | CLOSED       |
| $I_s$ < 50 $\mu$ A             | OFF              | Broken line  | OPEN         |
| $R_s$ < 100 $\Omega$           | OFF              | Shorted line | OPEN         |

Note:  $I_s$  = sensor current

### Fail-safe electronic output

Output on: 24V nominal

Output off: 0V dc, max < 5V dc

Load: 750 $\Omega$  to 10k $\Omega$

Maximum on-state current: 25mA (at 750 $\Omega$ )

Short-circuit current: 30mA

### Line fault detection (LFD)

LFD relay output: contacts open when line fault detected

Switch characteristics: 0.3A 110V ac/dc; 1A 35V dc; 30W/33VA

### LED indicators

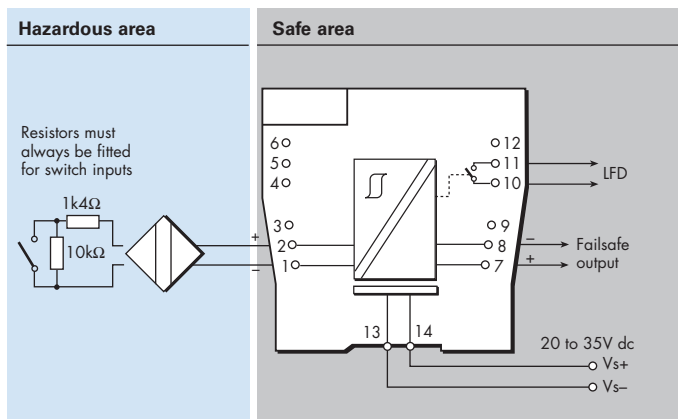
Green: power indication

Yellow: channel status, on when fail-safe output energised

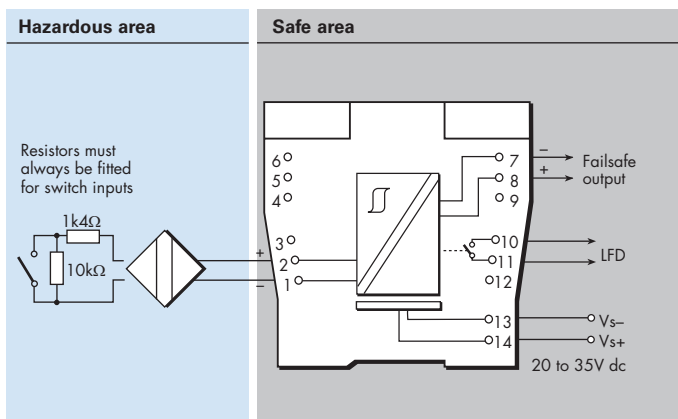
Red: LFD indication, flashing when line fault detected



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### Power requirements, $V_s$

| @ Supply voltage | 750 $\Omega$ load | typ. load |
|------------------|-------------------|-----------|
| 20V dc           | 100mA             | 70mA      |
| 24V dc           | 90mA              | 60mA      |
| 35V dc           | 65mA              | 45mA      |

### Power dissipation within unit

| @ Supply voltage | 750 $\Omega$ load | typ. load |
|------------------|-------------------|-----------|
| 20V dc           | 1232mW            | 1160mW    |
| 24V dc           | 1392mW            | 1200mW    |
| 35V dc           | 1507mW            | 1335mW    |

### Safety description

$U_o = \pm 9.7V$ ,  $I_o = 30mA$ ,  $P_o = 0.07W$ ,  $C_i = 0nF$ ,  $L_i = 0mH$   
 $U_m = 253V$



### SIL capable

Highest level in single in-line subsystem - SIL3 (in accordance with IEC61508-2)

See data on MTL web site and refer to the safety manual.



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In the interest of further technical developments, we reserve the right to make design changes.