

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 Ω

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 μ A | OFF | Broken line | OPEN |
| R _s < 100 Ω | 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 Ω to 10k Ω
Maximum on-state current: 25mA (at 750 Ω)
Short-circuit current: 30mA

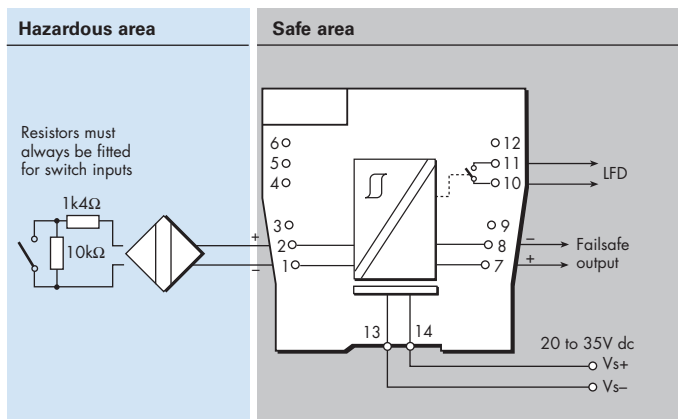
Line fault detection (LFD)

LFD relay output: contacts open when line fault detected
Switch characteristics: 0.3A 110V ac/dc; 1A 35V dc; 30W/33VA

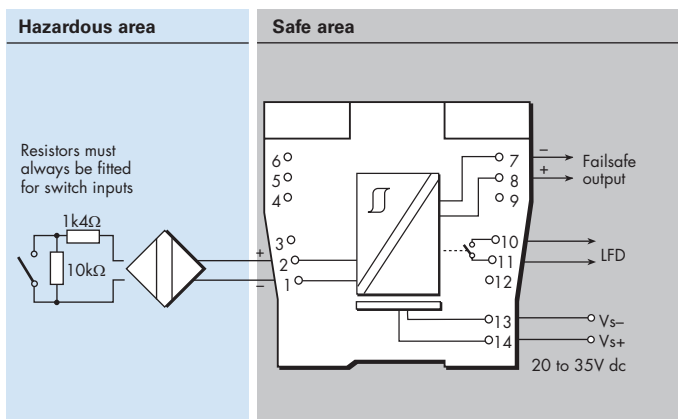
LED indicators

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 Ω load | typ. load |
|------------------|-------------------|-----------|
| 20V dc | 100mA | 70mA |
| 24V dc | 90mA | 60mA |
| 35V dc | 65mA | 45mA |

Power dissipation within unit

| @ Supply voltage | 750 Ω 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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