

# 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
$2.9\text{mA} < I_s < 3.9\text{mA}$	ON	Normal	CLOSED
$I_s < 1.9\text{mA} \ \& \ I_s > 5.1\text{mA}$	OFF	Normal	CLOSED
$I_s < 50\mu\text{A}$	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

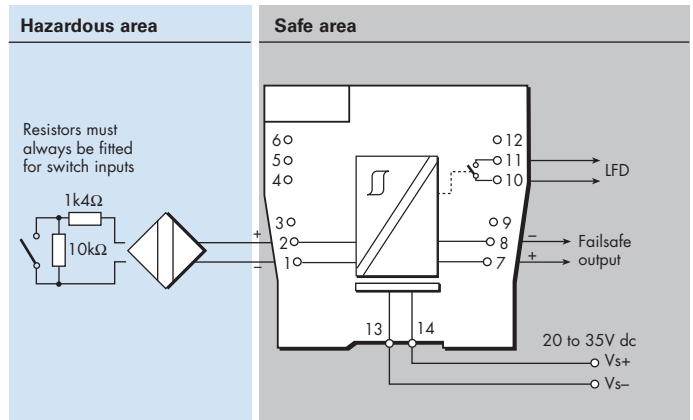
Green: power indication

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

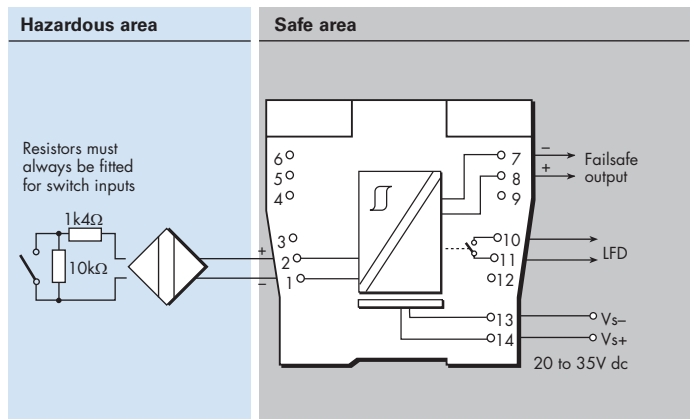
Red: LFD indication, flashing when line fault detected



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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

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



### 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.

The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.



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