

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
$2.9\text{mA} < I_s < 3.9\text{mA}$	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 Ω to 10k Ω

Maximum on-state current: 25mA (at 750 Ω)

Short-circuit current: 30mA

Line fault detection (LFD)

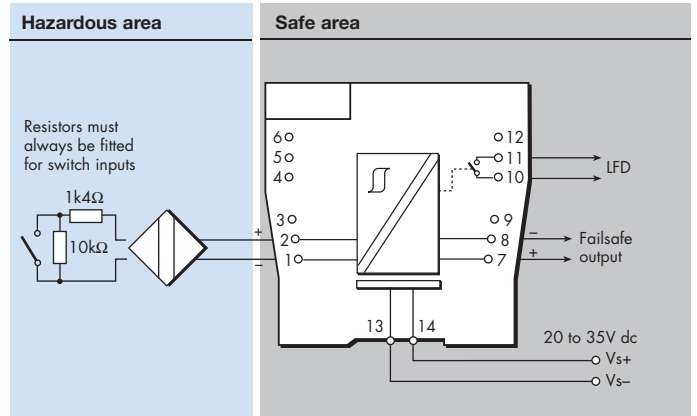
LFD relay output: contacts open when line fault detected

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

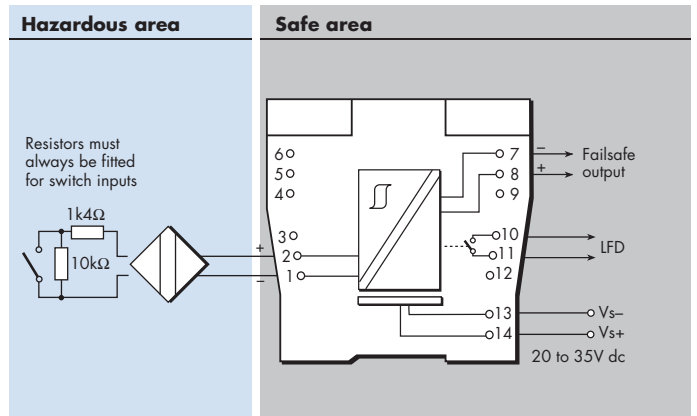
Safety integrity level (SIL)

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

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LED indicators

Green: power indication

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

Red: LFD indication, flashing when line fault detected

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

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

$U_m = 253V$

Note: switch-type sensors must be fitted with resistors as shown

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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EPSx501SR Rev2 080210