

MTL4017 SWITCH/ PROXIMITY DETECTOR INTERFACE



two-channel with line fault detection

With the MTL4017, two switches or proximity detectors located in a hazardous area can each control a safe-area load through a relay. Line faults are signalled through a separate relay. Line fault detection (LFD) can be used with proximity detectors or switches provided in the latter case suitable resistors are added as shown in the circuit diagram. 'No-fail' earth fault detection on either line of each channel can be provided by connecting an MTL4220 earth leakage detector to terminal 6.

SPECIFICATION

See also common specification, cable parameters and approvals

Number of channels

Two

Location of switch

Zone 0, IIC, T6 hazardous area
Div.1, Group A, hazardous location

Location of proximity detector

Zone 0, IIC, T4-6 if suitably certified
Div.1, Group A, hazardous location

Voltage applied to sensor

7.0V – 9.0V dc from 1k Ω nominal

Input/output characteristics

Output closed if input >2.1mA* (<2k Ω)
Output open if input <1.2mA* (>10k Ω)

Hysteresis: 200 μ A (650 Ω) nominal

*NAMUR and DIN 19234 standards for proximity detectors

Line fault detection (LFD)

Line fault relay and channel relay open if input
<50 μ A (broken line)
or <100 Ω (shorted lines)

Note: switch-type sensors must be fitted with resistors as shown in the diagram. LFD cannot be disabled.

'No-fail' earth fault protection

Enabled by connecting terminal 6 to an MTL4220 earth leakage detector
Fault on either line of each channel proclaimed: unit continues working

Relay output characteristics

Single-pole on/off, open when relay de-energised
Response time: 2ms maximum
Contact rating: 10W, 0.5A, 35V (dc)
Contact life expectancy: 10⁷ operations at maximum load
Note: reactive loads must be adequately suppressed

LED indicators

Amber: one provided for each channel, ON when output circuit is closed
Red: one provided for each channel, ON when line fault is detected
Green: one provided for power indication

Power requirement, V_s

52mA at 24V dc
62mA at 20V dc
42mA at 35V dc

Power dissipation within unit

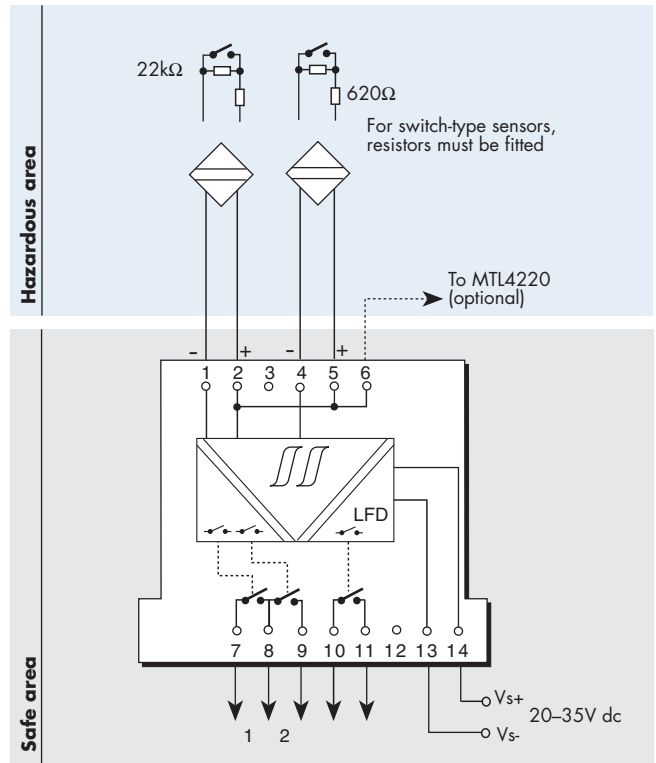
1.25W at 24V
1.5W at 35V

Isolation

250V ac between safe and hazardous area circuits

Safety description for each channel

10.5V, 800 Ω , 14mA



Terminal	Function
1	Input 1 -ve
2	Input 1 +ve
4	Input 2 -ve
5	Input 2 +ve
6	Optional link to MTL4220
7, 8	Output 1
8, 9	Output 2
10, 11	Line fault signal
13	Supply -ve
14	Supply +ve

FM entity parameters

Each channel without line fault detection:
V_{OC} = 10.5 V dc, I_{SC} = 14mA, C_a = 2.4 μ F, L_a = 165mH
Each channel with earth leakage detection:
V_f = 17.4 V dc, I_f = 14mA, C_a = 0.36 μ F, L_a = 165mH

