

MTL5017 SWITCH/ PROXIMITY DETECTOR INTERFACE

two-channel, with line fault detection
and phase reversal



The MTL5017 enables two safe-area loads to be controlled by two switches or proximity detectors located in a hazardous area. Two single-pole relay outputs are provided. Independent phase reversal control is available on each channel, allowing an alarm condition (output open) to be signalled for either state of the sensor. The automatic line fault detect (LFD) facility detects an open or short circuit in either field circuit.

SPECIFICATION

See also common specification

Number of channels

Two

Location of switches

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

Location of proximity detectors

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

Safe-area output

Two relays with normally-open contacts signal status of input
An additional relay signals line faults

Hazardous-area input

Two inputs conforming to NAMUR/DIN 19234 standards for proximity detectors

Resistors must be fitted externally to contact inputs: 500Ω to 1kΩ in series with the switch, 20kΩ to 25kΩ in parallel with the switch.

Voltage applied to sensor

7.0 to 9.0V from 1kΩ ±10%

Output characteristics

Normal (reverse) phase:

output relay closed (open) if $I_{in} > 2.1\text{mA}$ or $R_{in} < 2\text{k}\Omega$
output relay open (closed) if $I_{in} < 1.2\text{mA}$ or $R_{in} > 10\text{k}\Omega$

Hysteresis: 250μA typical

Line fault detection (LFD)

Line faults are indicated by an LED and a safe-area relay. When a line fault is detected, the relay opens and the LED lights.

Open-circuit alarm on if $I_{in} < 100\mu\text{A}$

Open-circuit alarm off if $I_{in} > 250\mu\text{A}$

Short-circuit alarm on if $R_{in} < 100\Omega$

Short-circuit alarm off if $R_{in} > 360\Omega$

Note: For contact input, resistors must be fitted

500Ω to 1kΩ in series with switch

20kΩ to 25kΩ in parallel with switch

Phase reversal

Independent on each channel, selected by switches on the base of the unit

Relay type

Single-pole, normally-open contacts.

Note: reactive loads must be adequately suppressed.

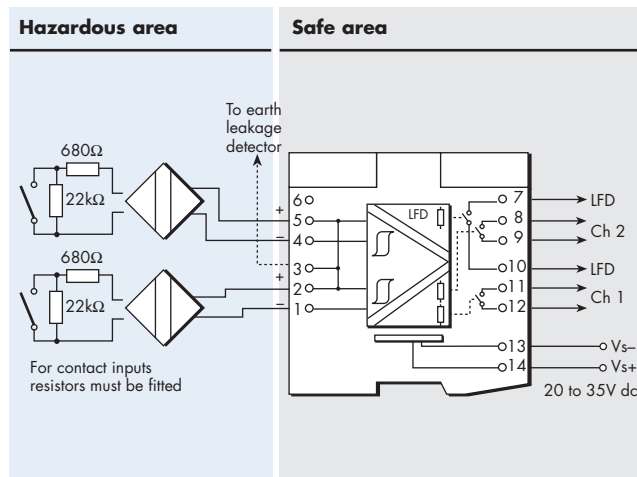
Relay characteristics

Response time: 2ms maximum

Contact rating: 10VA, 45mA, 250V ac

10W, 0.5A, 220V dc

Contact life expectancy: 10^7 operations at maximum load



Terminal	Function
1	Input -ve (channel 1)
2	Input +ve (channel 1)
3	Earth leakage detection
4	Input -ve (channel 2)
5	Input +ve (channel 2)
7	Line fault detection
8	Output (channel 2)
9	Output (channel 2)
10	Line fault detection
11	Output (channel 1)
12	Output (channel 1)
13	Supply -ve
14	Supply +ve

LED indicators

Green: power indication

Yellow: two: status of each channel, on when output relay is closed

Red: two: line fault detected in channel 1/channel 2

Supply voltage

20 to 35V dc

Maximum current consumption

50mA at 24V

55mA at 20V

40mA at 35V

Maximum power dissipation within unit

1.1W at 24V

1.25W at 35V

Safety description (each channel)

10.5V, 800Ω, 14mA, $U_m = 250\text{V rms or dc}$



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