

MTL5014 SWITCH/ PROXIMITY DETECTOR INTERFACE

single-channel, dual-output, with phase reversal and line fault detection



The MTL5014 enables two safe-area loads to be controlled by a single switch or proximity detector located in the hazardous area. The safe-area interface has two changeover relays: output 1 and output 2. The output 1 relay reflects the status of the input and may be configured to operate in reverse phase. The output 2 relay may be configured either to repeat (slave) the output 1 relay, or to act as a line integrity monitor. A selectable line-fault-detect (LFD) facility enables an open- or short-circuit fault to be detected in the field wiring.

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 detectors

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

Safe-area output

Two relays with changeover contacts

Hazardous-area input

One input conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor

7.0 to 9.0V from $1k\Omega \pm 10\%$

Input/output characteristics

Normal (reverse) phase:

- output energised (de-energised) if $I_{in} > 2.1mA$ or $R_{in} < 2k\Omega$
- output de-energised (energised) if $I_{in} < 1.2mA$ or $R_{in} < 10k\Omega$

Hysteresis: 250 μ A typical

Phase reversal

User selectable

Relay type

Single pole, changeover contacts

Note: reactive loads must be adequately suppressed

Relay characteristics

Response time: 10ms maximum

Contact rating: 250V ac, 2A, $\cos\phi > 0.7$

40V dc, 2A, resistive load

Contact life expectancy: 3×10^5 operations at maximum load

Line fault detection (LFD)

User selectable: Off or On

A detected line fault de-energises Output 1 relay

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

Short circuit alarm on if $I_{in} > 6.5mA$

Note: For contact input, resistors must be fitted

500 Ω to 1k Ω in series with switch

20k Ω to 25k Ω in parallel with switch

Output 2 mode

User selectable: Slave or LFD mode

In LFD mode, a line fault de-energises Output 2 relay

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

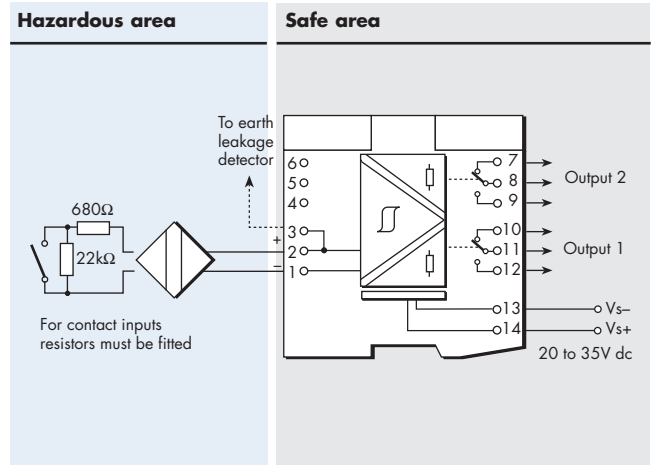
Short circuit alarm on if $I_{in} > 6.5mA$

See note above on use of resistors

In Slave mode output 2 repeats output 1

Power supply failure protection

Relays de-energised if supply fails



Terminal	Function
1	Input -ve
2	Input +ve
3	Earth leakage detection
7	Normally closed (output 2)
8	Common (output 2)
9	Normally open (output 2)
10	Normally closed (output 1)
11	Common (output 1)
12	Normally open (output 1)
13	Supply -ve
14	Supply +ve

LED indicators

Green: power indication

Yellow: illuminated when output 1 is energised

Red: illuminated when LFD is selected and there is an open or short circuit in the field wiring

Supply voltage

20 to 35V dc

Maximum current consumption

45mA at 24V

50mA at 20V

35mA at 35V

Maximum power dissipation within unit

1.1W at 24V

1.3W at 35V

Safety description

10.5V, 800 Ω , 14mA, $U_m = 250V$ rms or dc



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