MTL MTL Series Service Manual

MTL4016

1. Description

With the MTL4016, two switches or proximity detectors located in

3. Product Information

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With the MTL4016, two switches or proximity detectors located in a hazardous area can each control two safe-area loads. The four safe-area outputs are made through reed relays. It is designed for applications where the status of a sensor needs to be fed to two separate systems (eg, control and shutdown). Independent phasereversal switches for each channel, located on top of the module, allow alarm signals to be signalled for either state of the sensors. Line fault detection (LFD) for broken or shorted lines is provided as also are facilities for earth fault detection. Power and switch status is indicated by LEDs located on top of the module.

SPECIFICATION

See also common specification, cable parameters and approvals

Number of channels

Two

Location of switches

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 1kΩ

Input/output characteristics

Outputs closed if >2.1mA* (<2kΩ) in sensor circuit

Outputs open if <1.2mA* (>10kΩ) in sensor circuit

Hysteresis: 200µA (650Ω) nominal

*NAMUR and DIN 19234 standards for proximity detectors

Phase reversal

The operation of each channel can be reversed by independent switches on top of the unit

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Line fault detection (LFD)

By built-in line-fault detection (LFD)

Outputs open if input current <100µA (broken line) or >6.5mA (shorted lines)

Note: to prevent false triggering of LFD, switch-type sensors must be fitted with resistors as shown in the diagram or LFD disabled by switches on top of the unit

'No-fail' earth fault protection

Enabled by connecting terminals 3 and 6 to an MTL4220 earth leakage detector

Fault on either line of each channel proclaimed: unit continues working

Note: to maintain isolation between the two channels, separate earth leakage detectors are needed

Relay output characteristics

Double-pole on/off, open when relay de-energised

Response time: 2ms maximum

Contact rating: 10W, 0.5A, 35V (dc)

Contact life expectancy: 106 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

Green: one provided for power indication

Power requirement, Vs

50mA at 24V dc

60mA at 20V dc

45mA at 35V dc

Power dissipation within unit

1.2W at 24V

1.6W at 35V

Terminal Function

1 Input 1 –ve

2 Input 1 +ve

3 Optional link from input 1 to MTL4220

4 Input 2 –ve

5 Input 2 +ve

6 Optional link from input 2 to MTL4220

7,8 Output 1A

8, 9 Output 2A

10, 11 Output 1B

11, 12 Output 2B

13 Supply –ve

14 Supply +ve

Isolation

250V ac between safe and hazardous area circuits

Safety description for each channel

10.5V, 800Ω, 14mA

FM entity parameters

Voc = 10.5V dc, Isc = 14mA, Ca = 2.4µF, La = 165mH

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