

MTL4023 SOLENOID ALARM DRIVER

with line fault detection



With the MTL4023 interface, an on/off device in a hazardous area can be controlled by a volt-free contact or logic signal in the safe area. It is suitable for driving loads such as solenoids. Line fault detection (LFD), which operates irrespective of the output state, is signalled by a safe-area solid-state switch which de-energises if a field line is open or short-circuited. Earth fault detection 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

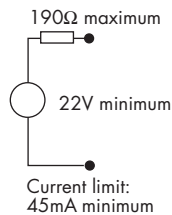
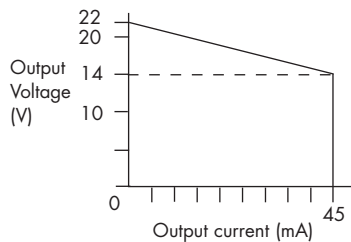
One

Location of load

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

Minimum output voltage

Equivalent output circuit



Maximum output voltage

25V from 170Ω

Output ripple

< 0.5% of maximum output, peak to peak

Control input

Suitable for switch contacts, an open collector transistor or logic drive

Output turns on if input switch closed, transistor on or <1.4V applied across terminals 10 & 11

Output turns off if input switch open, transistor off or >4.5V applied across terminals 10 & 11

Response time

Output within 10% of final value within 100ms

Line fault detection (LFD)*

Open or short circuit in field cabling de-energises solid state line fault signal (MTL4023R transistor is energised when line fault is detected)

LFD is operational irrespective of output state provided that the field circuit impedance is normally >50Ω and <7kΩ. Output off-state LFD current normally <5mA.

Line fault signal characteristics

Maximum off-state voltage: 35V

Maximum off-state leakage current: 10μA

Maximum on-state voltage drop: 2V

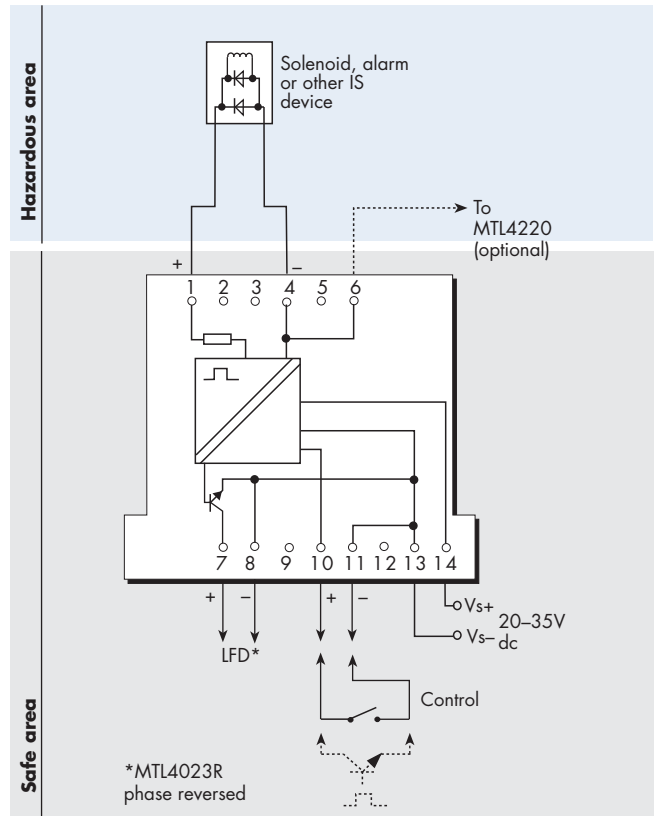
Maximum on-state current: 50mA

Note: LFD signal is Zener-diode protected against inductive loads

'No-fail' earth fault protection

Enabled by connecting terminal 6 to an MTL4220 earth leakage detector

Fault on either line proclaimed: unit continues working



Terminal	Function
1	Output +ve
4	Output -ve
6	Optional link to MTL4220
7	Line fault signal +ve
8	Line fault signal -ve
10	Control +ve
11	Control -ve
13	Supply -ve
14	Supply +ve

LED indicators

Amber: one provided for status, ON when output circuit is active

Red: one provided for line fault detection, ON when line fault is detected

Green: one provided for power indication

Power requirements, Vs

100mA at 24V dc

130mA max at 20V dc

90mA at 35V dc

Power dissipation within unit

1.2W with typical solenoid valve, output on

2.0W worst case

Isolation

250V ac between safe- and hazardous-area circuits

Safety description

25V, 170Ω, 147mA, $U_m=250V$ rms or dc

FM entity parameters

Without earth leakage detection:

$V_{OC} = 25V$ dc, $I_{SC} = 147mA$, $C_a = 0.17\mu F$, $L_a = 1.6mH$

With earth leakage detection:

$V_t = 31.9V$ dc, $I_t = 147mA$, $C_a = 0.09\mu F$, $L_a = 1.6mH$



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