

# 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

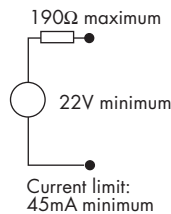
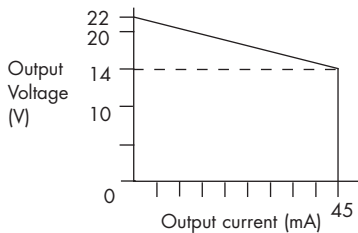
One

### 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

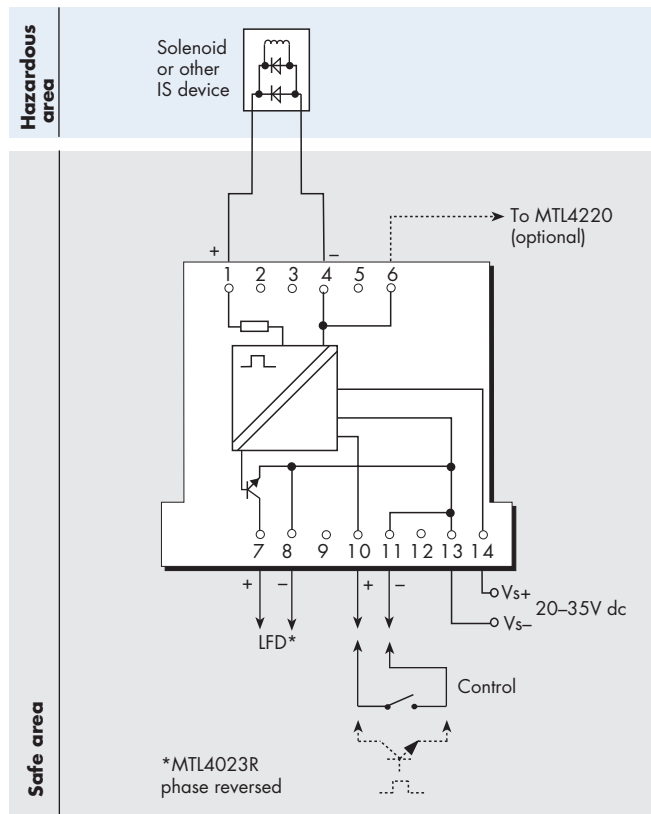
- Maximum off-state voltage: 35V
- Maximum off-state leakage current: 10μA
- Maximum on-state voltage drop: 2V
- Maximum on-state current: 50mA

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, V<sub>s</sub>

- 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<sub>m</sub>=250V rms or dc

### FM entity parameters

- Without earth leakage detection:  
V<sub>OC</sub> = 25V dc, I<sub>SC</sub> = 147mA, C<sub>a</sub> = 0.17μF, L<sub>a</sub> = 1.6mH
- With earth leakage detection:  
V<sub>t</sub> = 31.9V dc, I<sub>t</sub> = 147mA, C<sub>a</sub> = 0.09μF, L<sub>a</sub> = 1.6mH

