

## MM1005 4-20mA SINGLE ALARM WITH 24VDC POWER SUPPLY FOR TWO-WIRE TRANSMITTER



The MM1005 DC input alarm monitors a 4/20mA DC input signal and trips a dpdt relay when the input exceeds the setpoint. Specifically designed for use with two-wire and other 24 VDC powered transmitters, the MM1005 contains an integral 24 VDC transmitter power supply.

The MM1005 can be supplied as a HI or LO alarm. The output relay is normally energized, and de-energizes for an alarm condition. This provides alarm indication upon loss of power to the alarm. A set of red/green LEDs indicates alarm status.

A 25 turn deadband adjustment, allows deadband settings between 0.5% and 100% of span. The deadband is symmetrical about the setpoint.

### OPTIONS

The following options are available on the MM1005. Options installed are listed on the label attached to the side of the module.

#### H/L

##### H = High alarm.

Alarm occurs on an increasing signal.

##### L = Low alarm.

Alarm occurs on a decreasing signal.

**R** The Normal condition for the relay is energized. It de-energizes for an alarm condition (Failsafe). Option R (Reverse Sense) reverses this logic.

**U** All circuit boards conformal coated for protection against moisture.

### CONTROLS

The MM1005 alarm module contains two adjustments: setpoint and deadband. No other calibrations are needed.

### CALIBRATION

Connect a 4/20 mA calibration signal to the module input and set it for the desired trip point. Turn the DEADBAND control fully ccw. Adjust the SETPOINT until the alarm trips (LED turns from green to red).

Adjust the DEADBAND control for the desired amount of deadband. Vary the input signal up and down to check the levels at which the relay trips and rests. The setpoint will remain centered in the middle of the deadband.

### RELAY CONTACT PROTECTION

When inductive loads such as motors, relays or transformers are switched, voltage transients may be generated which exceed the ratings of the relay contacts. The resulting arcing can quickly destroy the contacts. (Refer to the SPECIFICATIONS below for the relay contact ratings.)

Surge suppression is required across inductive loads to guard against premature relay failure. Figure 1 illustrates diode surge suppression for a DC load. The diode's operating (peak inverse) voltage should exceed the load's supply voltage by at least 50% and should have a current rating of at least one ampere.

Figure 2 shows surge suppression for an AC load, using an MOV (Metal Oxide Varistor) and a capacitor. The breakdown voltage ratings of both the MOV and the capacitor must exceed the peak AC voltage.

With normal sine-wave power, PEAK = 1.414 x RMS voltage. For 115 VAC power a 200 volt peak rating is recommended.

### SPECIFICATIONS

#### INPUT RANGE

4/20 mA

#### INPUT RESISTANCE

61.9 ohms

#### TRANSMITTER POWER SUPPLY

24 VDC regulated, 30 mA max

#### DEADBAND

0.5% to 100% of span

#### SETPOINT

0 to 100% of span

#### RESPONSE TIME

20 ms typical

#### OPERATING TEMPERATURE

14°F to 140°F/-10°C to 60°C

#### RELAY CONTACTS

(dpdt)

Resistive Load:

5 A max, 150 W max,  
220 VAC max, 30 VDC max

Inductive Load

(Power Factor  $\geq$  0.4):

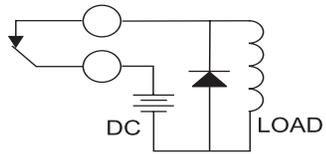
2.5 A max, 75 W max,  
220 VAC max, 30 VDC max

#### POWER OPTIONS

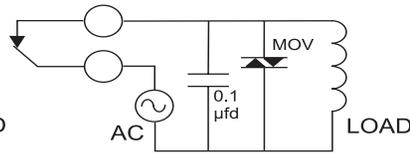
115 VAC  $\pm$ 10%, 50/60 Hz

230 VAC  $\pm$ 10%, 50/60 Hz

(2.5 W max)



**Figure 1**  
Surge Suppression  
Inductive DC Load



**Figure 2**  
Surge Suppression  
Inductive AC Load

**MOUNTING**

The module is designed to plug into a standard 11-pin relay socket. Part number MP011 is a molded plastic socket suitable for mounting on a flat surface or in a 2¾" wide PVC snap track (TRK48). Use CLP-1 hold-down clip if needed. A Killark HK Series explosion-proof housing with dome and 11-pin socket is available (HKB-HK2D-11).

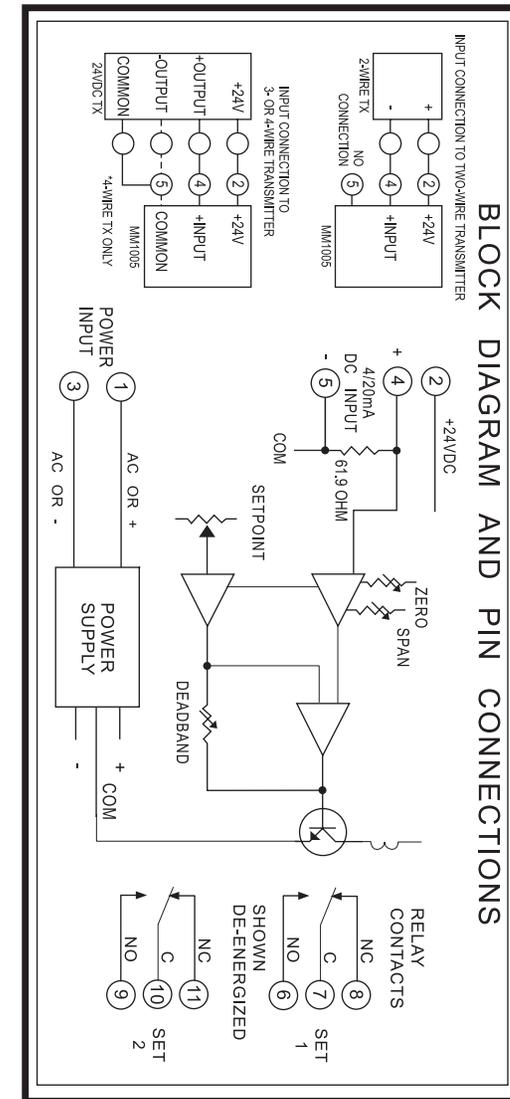
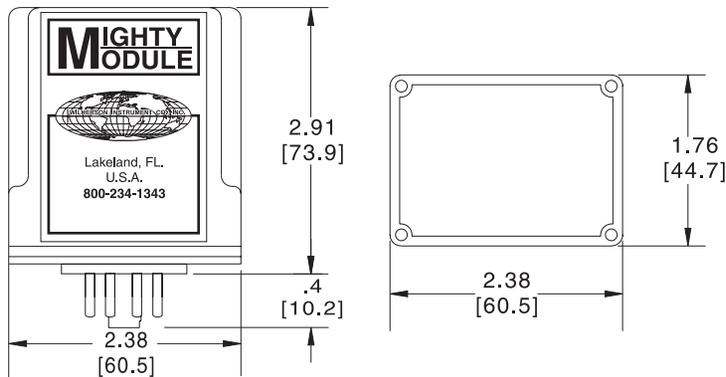
A DIN rail mounted socket (P/N DMP011) is available for 35mm symmetrical rail.

**WARRANTY**

The Mighty Module Series of products carry a limited warranty of 10 + 5 years. In the event of a failure due to defective material or workmanship, during the 10 year period, the unit will be repaired or replaced at no charge. For a period of 5 years after the initial 10 year warranty, the unit will be repaired, if possible, for a cost of 10% of the original purchase price.

Relays are not covered by the warranty.

**CASE DIMENSIONS INCHES [mm]**



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