

MM1800, MM1801, MM1802 and MM1804 POTENTIOMETER INPUT SINGLE ALARM TRIPS



FUNCTION

The 1800-1804 modules are potentiometer input limit alarms that provide a DPDT relay closure when the input signal exceeds a preset level. The unit can be supplied to alarm on increasing or decreasing signals.

DESCRIPTION

The limit alarm modules monitor an input and trip a relay when the input exceeds the preset value.

Normal operation has the relay energized and it de-energizes for an alarm condition. This provides an alarm condition for loss of power to the alarm. A two-color LED indicates alarm status, green for normal, and red for alarm. A dead-band adjustment allows a dead-band of 0.5% to 100% of Span to be set into the unit. The dead-band is symmetrical about the setpoint.

MODEL NUMBERS

Five styles of setpoint controls are available for the alarms. These are listed below by model number:

MM1800 Potentiometer Input Single Alarm
(25 turn screwdriver Adj)

MM1801 Potentiometer Input Single Alarm
(Dial-Single turn)

MM1802 Potentiometer Input Single Alarm
(Remote Pot Setpoint)

MM1804 Potentiometer Input Single Alarm
(Dial-Ten turn precision)

OPTIONS

The following options are available for the alarms.

H/L

H = High Alarm - Alarm occurs on an increasing signal

L = Low Alarm - Alarm occurs on a decreasing signal

Specify H or L (H supplied if not specified)

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

All 1800 - 1804 alarm modules contain zero, span and deadband adjustments. MM1800, MM1801 and MM1804 alarms have built-in setpoint controls. MM1802 requires an external setpoint potentiometer, while MM1803 requires a DC set point programming input.

CALIBRATION

Modules are shipped with ZERO and SPAN precalibrated. The user needs only adjust the SETPOINT and DEADBAND for the desired levels.

On MM1800, MM1801, MM1802 and MM1804, connect a potentiometer to the module input and set it for the desired trip point. Turn the DEADBAND fully CCW. Adjust the SETPOINT until the relay just trips.

MM1803 has no setpoint control, and so needs no setpoint calibration.

On all modules, adjust the DEADBAND for the desired amount of deadband. Vary the input potentiometer position up and down to check the level at which the relay trips. The setpoint will remain centered in the middle of the deadband.

If there is a need to recalibrate ZERO and SPAN proceed as follows on all modules.

Connect a potentiometer to the module input and set it fully CCW. Turn the DEADBAND and SETPOINT controls fully CCW. Adjust the ZERO control until the relay just trips. Set the input potentiometer fully CW and turn the SETPOINT control fully CW (or increase the setpoint input to 100%). Adjust the SPAN control until the relay just trips. Repeat the ZERO adjustment, the controls interact slightly.

After adjusting ZERO and SPAN, readjust the SETPOINT and DEADBAND and controls.

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 section 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.

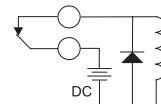


Figure 1
Surge Suppression
Inductive DC Load

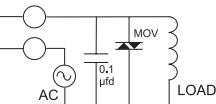


Figure 2
Surge Suppression
Inductive AC Load

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.

MOUNTING

MM1800, MM1801 and MM1804 are designed to plug into a standard 11-pin relay socket. MM1802 and MM1803, and all modules with T option, require a 20-pin socket. Part number MP011 is an 11-pin socket suitable for mounting on a flat surface or in a piece of PVC track. A DIN rail mounted socket P/N DMP011 is available for 35mm symmetrical rail. Part number MP020 is a 20-pin socket suitable for mounting on a flat surface.

SPECIFICATIONS

Input Potentiometer Resistance

100 ohm to 100 kilohm

Excitation

1V, 10 mA max

Input Impedance

greater than 10 megohm

Deadband

0.5% to 100% of span

Setpoint

0 to 100% of span

Response Time

100 ms

Temperature Stability

$\pm 0.04\%$ of span per $^{\circ}\text{C}$

Common Mode Rejection

120dB, DC to 60 Hz

Temperature, Operating

0°C to 60 °C

32°F to 140°F

Relay

DPDT, 5A contacts

Power

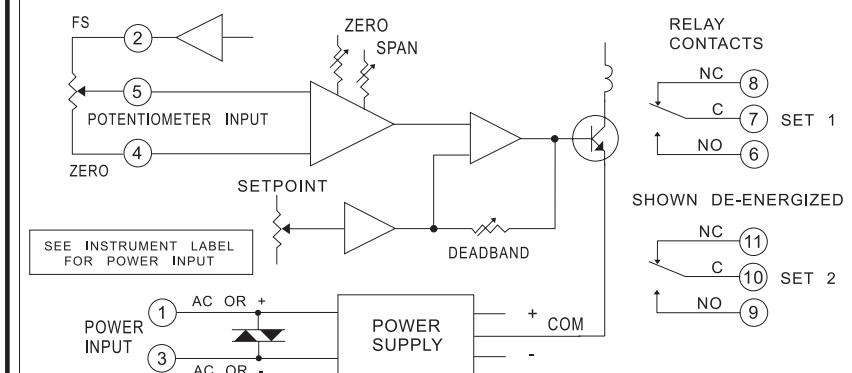
115V +10%, 50 or 60 Hz

230V, 50 or 60 Hz available

12V and 24V DC available

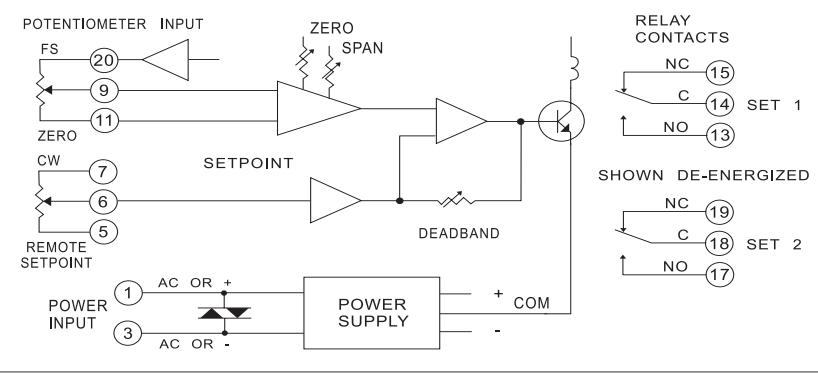
MM1800, MM1801, MM1804

BLOCK DIAGRAM AND PIN CONNECTIONS

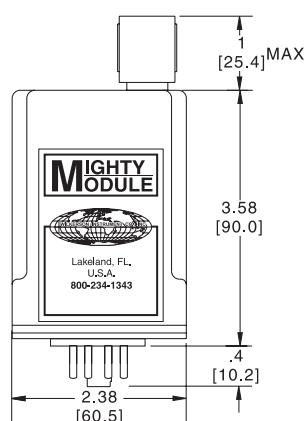
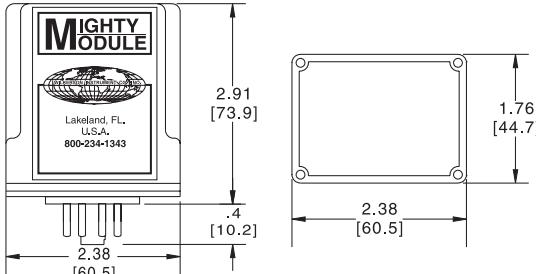


MM1802 (REMOTE SETPOINT)

BLOCK DIAGRAM AND PIN CONNECTIONS



CASE DIMENSIONS INCHES [mm]



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