

MM4003 & MM4003ISO POTENTIOMETER TRANSMITTERS



DESCRIPTION

The MM4003 modules are used to provide an output voltage or current proportional to the slide position of a potentiometer.

The MM4003ISO utilizes pulse width modulation to develop a pulse train with a duty cycle proportional to the input signal amplitude. This pulse train is coupled through a pulse transformer where the duty cycle data is converted to a proportional DC level in the output circuit.

The potentiometer used for the input signal is excited with a stable 1V power supply. As the potentiometer is rotated the slide voltage goes from 0 to 1V. This voltage change is processed by the module to provide the desired output.

A manually driven potentiometer may also be used to create signals for calibrating other instrumentation. Potentiometers with resistance ranges from 100 ohms to 100,000 ohms should be used.

OPTIONS

The following options are available on the MM4003 & MM4003ISO:

U All circuit boards conformal coated for protection against moisture.

DC Power

Inverter-isolated 12 V or 24 V DC power.

CONTROLS

Two controls, ZERO and SPAN, are accessible from the top of the module. An additional internal control adjusts the 1V excitation supply.

CALIBRATION

The MM4003 modules' output range may be calibrated to represent full 0-100% potentiometer travel, or to represent any 75% or wider portion of its travel. Other, nonstandard, ranges may also be ordered and will be reflected in the data on the instrument's label. Refer to the instrument's label to determine your instrument's supply voltage and input and output ranges. Refer to the "Block Diagram and Pin Connections" for pin connections.

Connect the input potentiometer as shown in the "Block Diagram and Pin Connections". Connect a precision DC voltage or current meter to the output.

Set the input potentiometer to the low end of its travel and adjust the ZERO control for the low-end output voltage or current. Raise the potentiometer to the high end of its travel and adjust the SPAN control for full-scale output. Repeat until both readings are correct.

An internal control adjusts the one-volt excitation level. It is factory-set and does not normally need to be readjusted. The excitation need not be precise as long as ZERO and SPAN are calibrated as described above. If you should need to adjust this voltage, loosen the four screws at the bottom of the module and remove its cover. The excitation control is located on the small plug-in preamplifier board.

Connect power and monitor the voltage between pins 6 (+) and 4 (-) with a digital voltmeter. Adjust the excitation control for a reading of 1.000 volts.

Re-assemble the cover and recalibrate ZERO and SPAN as described above.

MOUNTING

The module is designed to plug into a standard 8 pin relay socket. (MP008) is a molded plastic socket suitable for mounting on a flat surface or snap into 2 3/4 inch wide PVC track (TRK48).

A spring hold-down clip (CLP1) is available for installations where vibration may be a problem.

A DIN rail mounted socket (DMP008) is available for 35mm symmetrical DIN rail.

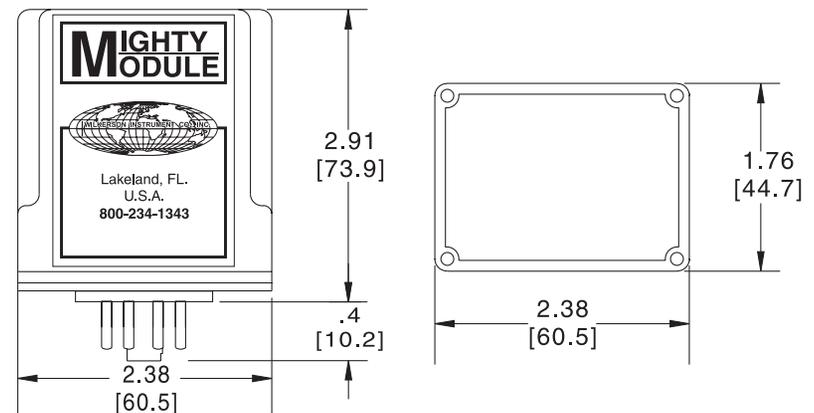
A Killark HK Series explosion-proof housing with dome and 8-pin socket is available (HKB-HK2D-8).

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]



SPECIFICATIONS

Input Potentiometer Resistance
any value from 100 ohms to 100 kilohms

Input Span Adjustment
70% to 100% pot rotation

Input Offset Adjustment
0 to 25% of pot rotation

Input Impedance
>10 megohms

Excitation
1 V, 10 mA max load

Output Range
Voltage
select any range from -10V to +15V,
10 mA max load (min span 0.2 V)
Current
select any range from 0 to 50 mA
max, >24V compliance (1200 ohms
max at 20 mA)

Response Time
≤100 ms (range dependent)

Accuracy
±0.1% of span

Linearity
±0.01% of span

Common Mode Rejection
120 dB, DC to 60 Hz

Isolation (MM4003ISO)
Output/Input
>500 megohms 1000 VAC rms

Breakdown Voltage
>1000 VAC rms

Output Ripple (peak-to-peak)
<0.1% of span

Linearity
±0.05% of span

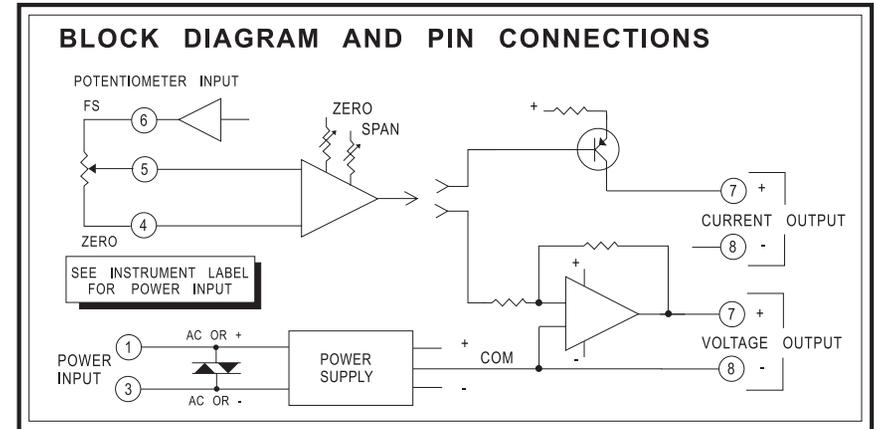
Breakdown, Pwr/Circuitry
>1500 VAC rms

Operating Temperature
0°C to 60°C (32°F to 140°F)

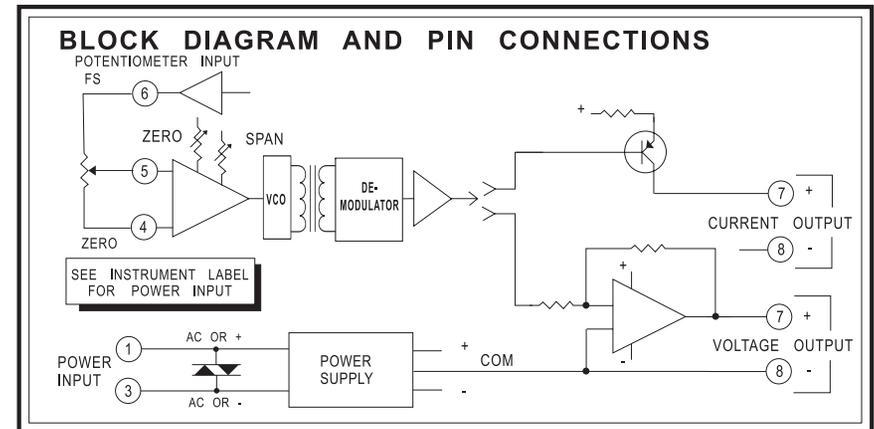
Temperature Stability
±0.04% of span per °C

Power Options
115 VAC ±10%, 50 or 60 Hz
(2.5 W max)
230 VAC ±10%, 50 or 60 Hz
(2.5 W max)
DC Power Option
24 VDC (limits 21-32 VDC) (2.5 W
max)

MM4003



MM4003ISO



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