

# MM4410 & MM4410ISO DC INPUT MULTIPLIER TRANSMITTER



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## DESCRIPTION

The MM4410 modules provide a DC output voltage or current proportional to the product of two DC inputs. Typical input ranges are 4/20 mA, 10/50 mA, 0-1 V, 0-5 V, and 0-10 VDC. Other ranges are available down to minimum spans of 1 V or 1 mA DC.

The two inputs are amplified and applied to a complex integrated circuit which performs the multiplication function. The resulting product is applied to an output stage which provides the final DC voltage or current output. Zero and span adjustments in the output circuit allow precise calibration.

For current inputs, internal shunt resistors create DC voltage levels at the amplifier inputs. Input offset capability permits multiplication of offset inputs such as 4/20 mA.

Standard calibration provides the output at full scale (100%) when both inputs are at full scale (100%). Other calibrations are available.

## OPTIONS

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

**DC Power** 12 V or 24 VDC power

## CONTROLS

The MM4410 modules contain two calibration controls, ZERO and SPAN. Both are available at the top of the module.

## CALIBRATION

The modules are shipped precalibrated and does not normally need adjustment. If you need to recalibrate, proceed as follows:

Monitor the output with an accurate meter and insert input signals into both inputs. Set Input A to its minimum level, Input B to full scale. Adjust the ZERO control for the proper output. Increase Input A to full scale and adjust the SPAN control for the proper output. Repeat the procedure, the controls may interact slightly.

## 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 in a 2 3/4 inch wide PVC snap track (TRK48). Use (CLP1) hold down clip, if needed. A Killark HK Series explosion-proof housing with dome and 8-pin socket is available (HKB-HK2D-8). A DIN rail socket (DMP008) is available for 35mm symmetrical DIN 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.

## SPECIFICATIONS

### INPUT RANGE

Voltage  
select any range between  
 $\pm 250$  V max (min span 1 V)  
Typical inputs: 0-1 V, 0-5 V, 0-10V

Current  
select any range between  
 $\pm 100$  mA max (min span 1 mA)  
Typical inputs: 4/20 mA or 10/50mA

### INPUT IMPEDANCE

Voltage  
100 kilohms min  
Current  
1.25 V drop typical, others available

### OUTPUT RANGE

Voltage  
select any range from  
-10 V to +15 V, 10 mA max load  
(min span 0.2 V)

Current  
select any range from 0 to 50 mA  
max,  
>24 V compliance  
(1200 ohms at 20mA max)  
18 V compliance for ISO option  
if full scale output >20 mA

### RESPONSE TIME

$\leq 150$  ms (range dependent)

### ACCURACY

$\pm 0.25\%$  of span

### ISOLATION (MM4410ISO)

Output/Input  
>500 megohms  
Breakdown Voltage  
>1000 VAC rms  
Output Ripple (peak-to-peak)  
<0.1% of span  
Breakdown, Pwr/Circuitry  
>1500 VAC rms

### OPERATING TEMPERATURE

14°F to 140°F / -10°C to 60°C

### TEMPERATURE STABILITY

$\pm 0.02\%$  of span/°C max

### POWER

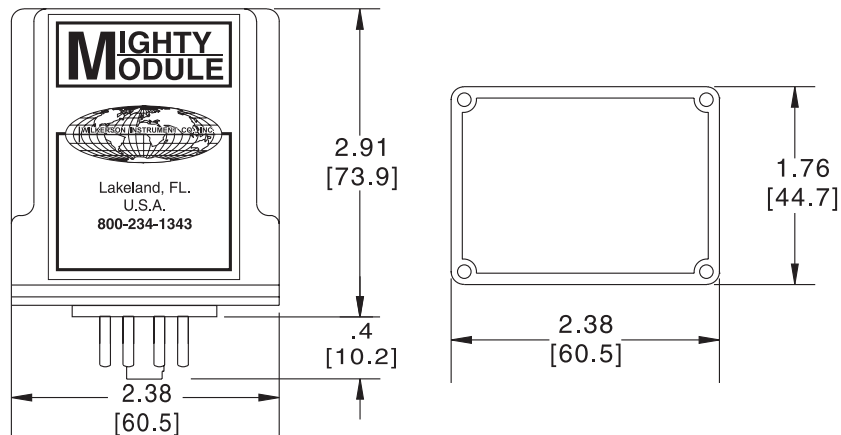
115 VAC  $\pm 10\%$ , 50 or 60 Hz  
(2.5 W max)  
230 VAC  $\pm 10\%$ , 50 or 60 Hz  
(2.5 W max)

### (DC Power Option)

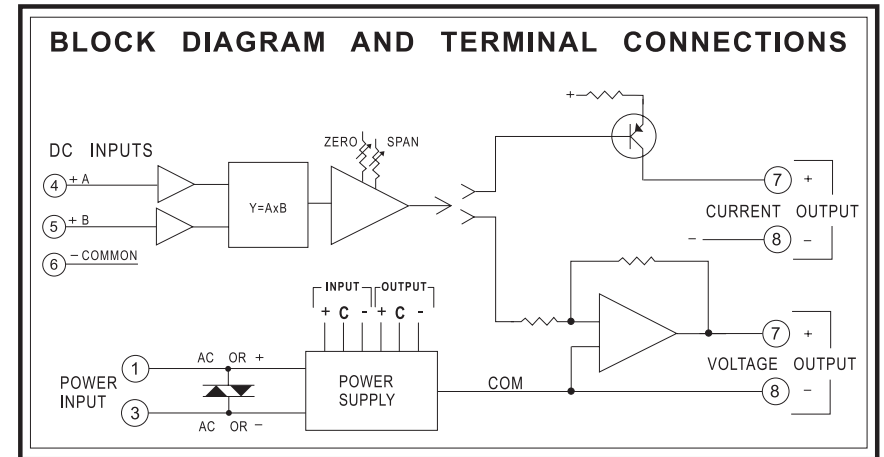
24 VDC (limits 21 VDC to  
32 VDC) (2.5 W max)

Isolation, DC power supply to  
input common: 10 megohms

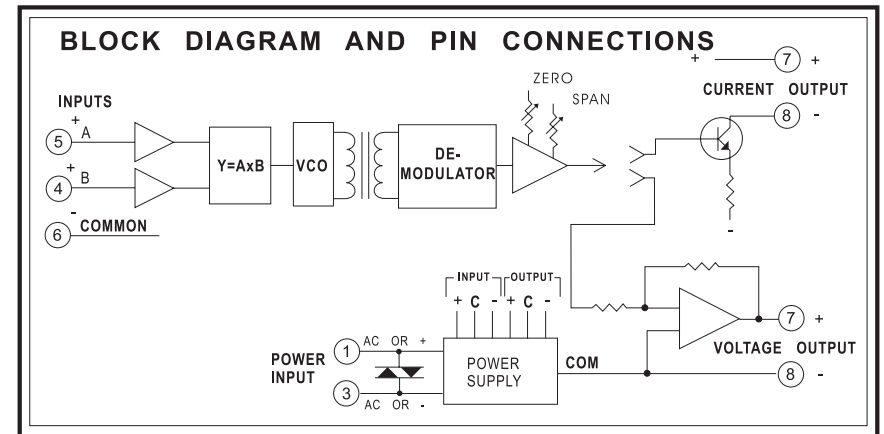
### DIMENSIONS INCHES [mm]



## MM4410



## MM4410ISO



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DWG#103496 06/08



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