

**MM7501  
DC INPUT INTEGRATING  
PULSE OUTPUT  
TRANSMITTER  
TOTALIZER**



**FUNCTION**

The MM7501 is a DC to Frequency Converter that generates an output pulse rate proportional to its DC input. The integral is obtained by counting the pulses over a period of time on a counter or totalizer. The integrator is useful for totalizing flow, BTU, weight, or any other quantity that can be represented in quantity per unit time.

**DESCRIPTION**

The MM7501 uses an integrating DC to frequency converter to generate the basic pulse rate. The pulse rate is fed to a frequency scaler (binary pulse rate divider) which, together with wide-ranging zero and span controls, provides a 4096:1 range of output pulse rate adjustment.

The final output may be an spdt relay or a transistor output suitable for driving a counter, or for use as a voltage pulse or open-collector output.

**OPTIONS**

The following options are available on the MM7501:

- U** All circuit boards conformal coated for protection against moisture.
- V** Pulse output (16 V, 240 ohm source). Options V or OC should always be used for pulse rates above 60 pulses per minute.
- DC POWER**  
Inverter-isolated 12 V or 24 V power.
- OC** Open collector (*npn*) output. (*sinks up to 1A, 30V*) to drive annunciator, computer, programmable controller or external relay.

**CONTROLS**

Zero and span adjustments are available on top of the module. These are factory set to the specified output. They can be used to change the calibration in the field. The zero control has a 25% range and the span control has a 2.2 to 1 range to allow overlap of the adjustment ranges.

An internal twelve-position DIP switch allows the selection of any one of twelve pulse rate ranges. The switch divides the basic output frequency by a factor of 2 for each position, beginning at switch Position 0. Refer to the following chart.

NOMINAL CALIBRATION AND SWITCH SETTINGS FOR MM7501			
SWITCH POSITION*	PULSES/SEC.	PULSES/MIN.	PULSES/HR.
0	4 to 8	240 to 480	14400 to 28800
1	2 to 4	120 to 240	7200 to 14400
2	1 to 2	60 to 120	3600 to 7200
3	0.5 to 1	30 to 60	1800 to 3600
4	0.25 to 0.50	15 to 30	900 to 1800
5	0.125 to 0.25	7.5 to 15	450 to 900
6	0.0625 to 0.125	3.75 to 7.5	225 to 450
7	0.0312 to 0.0625	1.875 to 3.75	112.5 to 225
8	0.0156 to 0.0312	0.938 to 1.875	56.25 to 112.5
9	0.0078 to 0.0156	0.469 to 0.938	28.12 to 56.25
10	0.0039 to 0.0078	0.234 to 0.469	14.06 to 28.12
11	0.0019 to 0.0039	0.117 to 0.234	7.03 to 14.06

\* Switch position numbers are etched in copper on the small frequency scaler PC board.

## CALIBRATION

Before calibrating, it is necessary to determine the proper DIP switch setting. Determine the output pulse rate required at maximum input (refer to chart). Turn the appropriate switch position ON. (All others should be OFF.)

**Example:** For 0 to 10 pulses (counts) per minute, turn switch position 5 on.

To save time when calibrating at very low frequencies, it is desirable to calibrate at a higher pulse rate. This can be done simply by multiplying the desired output by two until a reasonable pulse rate is obtained.

**Example:** To calibrate for 1 pulse per minute, switch position 8 would be activated. However, calibration will be much faster if you use switch position 2 and set the output to 64 pulses per minute. (Multiply 1 times 2 times 2 times 2 times 2 times 2 equals 64.) Upon completion of calibration, turn OFF position 2 and turn ON position 8.

Once the switch position is set, connect a precision voltage or current source to the input and a timer or frequency meter to the output. Set the input at full scale and adjust the SPAN control for the proper full-scale output rate (frequency).

Reduce the input to 10% of full scale and set the ZERO control for 10% of the full-scale output pulse rate.

Repeat once or twice, as the controls interact.

## SPECIFICATIONS

### Input Impedance

4/20 mA input 100 ohms

### Linearity

better than 0.1% of span

### Frequency Output

20 mA input 7 pph min, 8 pps max user-adjustable

### Output

Relay (Std) spdt, 1 A contact

### Pulse (Option V)

16 V pulse, 240 ohm source

### Temperature Stability

±0.04% of span per °C

### Transistor (Option OC)

open-collector npn transistor, sink 1A, 30V max

### Common Mode Rejection

100 dB, DC to 60 Hz

### Operating Temperature

-10°C to 60°C (14°F to 140°F)

### Power

Standard

115 VAC ±10%, 50/60 Hz, 2.5 W

Optional

230 VAC ±10%, 50/60 Hz, 2.5 W  
12 V or 24 VDC

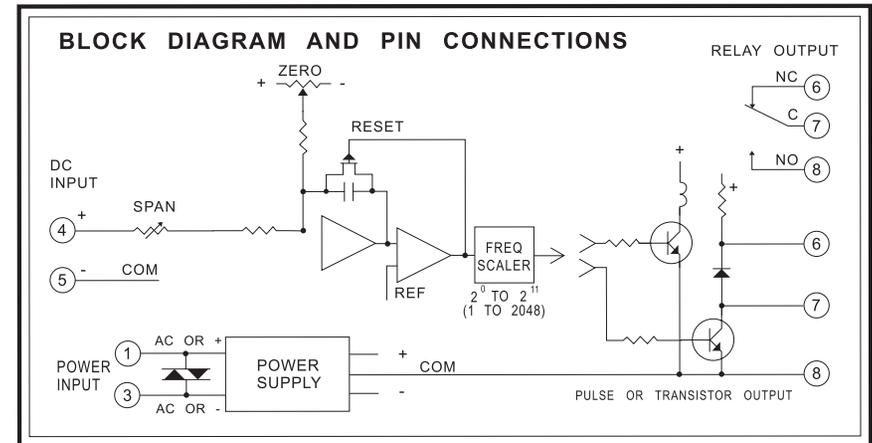
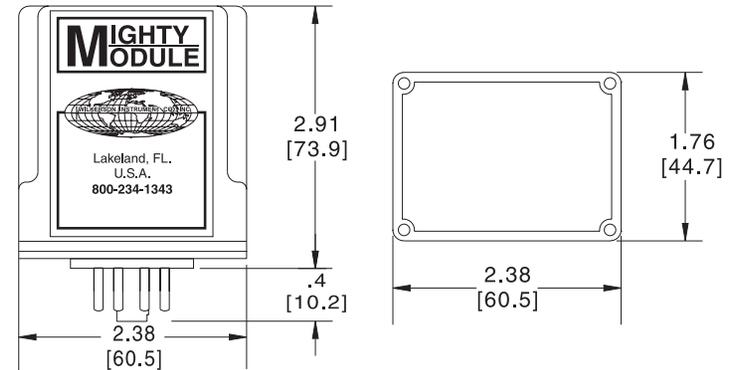
## MOUNTING

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 piece of PVC track.

## WARRANTY

For any warranty repair or return, please contact the factory at 1-800-234-1343.

## CASE DIMENSIONS INCHES [mm]



## OPTION V

Connect pins 6 and 7 together for voltage output.  
Use pins 7 (+) and 8 (-) for open-collector output.

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2915 Parkway Street  
Lakeland, FL 33811-1391 · USA

800-234-1343

Tel: 863-647-2000 · Fax: 863-644-5318  
www.wici.com · E-mail: sales@wici.com