

# DM4380A DC INPUT FIELD RANGEABLE ISOLATED TRANSMITTER



## DESCRIPTION

The DM4380A provides a DC output signal proportional to a DC input signal. The output is fully isolated from input, line power, and ground. The unit is useful in eliminating ground loops and common mode signals.

Input and output ranges are fully user-settable. Each may be voltage or current, with or without offset. The output response may be normal or reverse-acting. Ranging is accomplished with gold plated jumpers.

The DM4380A includes filtering and conditioning to reduce susceptibility to transients and noisy environments. It utilizes a feedback VCO to develop a pulse train with a duty cycle proportional to the input signal amplitude. This pulse train is coupled through a pulse transformer to the output circuitry, where the duty cycle data is converted to a proportional DC output level. A write-on label is supplied on the front panel for the user's convenience.

## OPTIONS (User specified)

**AC Power** 24, 115 or 230 VAC

**DC Power** 12 or 24 VDC

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

## INSTALLATION

DM4380A mounts on standard DIN Rail. Install it by hooking the top of the module's latch onto the top of the rail, then use a downward rotating motion to snap the module onto the rail. To remove the module, insert a screwdriver into the slot on the spring loaded snap which is located on the lower backside

of the unit. Apply a downward pressure on the release and rotate the module up and off of the rail.

1. Remove the front panel by spanning the top and bottom edges between the thumb and index finger. Use a rocking motion to pull the front panel away from the module.

2. Input, Output and Power connections are shown on the terminal block labels.

**CAUTION: BEFORE PROCEEDING, REMOVE ALL POWER TO THE WIRES AND MODULE TO AVOID THE DANGER OF SHOCK AND/OR DAMAGE TO THE UNIT.**

To access input and output terminals, the connecting wires are inserted into the top of the top terminal block, and into the bottom of the bottom terminal block. The terminal blocks unplug. Wiring can be completed before the product is installed. Recommended wire sizes are 22-14 AWG Cu, with a strip length of 0.25 inches.

3. Replace the front panel by inserting the pins into the slotted holes located on the bezel and pushing it into position.

4. The front panel label provides space for the user to make application notes.

## CONTROLS

The ranging jumpers and the ZERO and SPAN adjustment controls are accessed by unplugging the product's front panel from the bezel.

## CALIBRATION

**CAUTION: BE SURE ALL RANGE SELECT JUMPERS ARE SET TO THEIR PROPER POSITIONS BEFORE APPLYING INPUT OR POWER.**

The DM4380A is supplied configured and calibrated as per the label on the side of the case. (See Figure 1) Be sure the proper supply voltage is being used.

Check that all range select jumpers are properly set for your input and output range. Labels on the input and output terminal strips indicate connections.

Connect a precision DC voltage or current source to the input. Connect a precision DC voltage or current meter to the output. Set the input source to the low-end value and adjust the ZERO control for the proper low-end output. (*Adjust for full-scale output if the REVERSE-ACTING mode is selected.*)

Increase the input to its full-scale value and adjust the SPAN control for full-scale output (*low-end output if REVERSE ACTING*).

Repeat until both readings are correct.

## RECONFIGURING THE INPUT AND OUTPUT RANGES

Unplug the front panel from the bezel. Figure 1 and the label on the side of the product shows jumper positions.

## DEFINITIONS

Span is the difference between full scale and low scale. A 4/20 mA signal has a span of 16 mA. Offset is the difference between the low scale input and zero and is expressed as a percent of full scale. A 4/20 mA signal has an offset of 4/16 = 25%. Offsets that are positive are elevated. Offsets that are negative are suppressed. The ELV and SUP jumpers cancel elevated or suppressed offsets respectively.

### To re-range the input:

- Place the mode jumper on the input jumpers in the V or MA position to select voltage or current input.
- Place the INPUT SPAN jumper at the next higher position above the desired span.

The labeled values represent the **maximum** achievable span for each position. The SPAN control will allow adjustment of the output from the marked

value of span to ½ the marked value. For example, the position marked 2 VOLTS/100 mA allows span to be adjusted from 1 to 2 volts and from 50 to 100 milliamperes.

3. Place the OFFSET POLARITY jumper in the ELV to cancel elevated input offsets (*example 1 to 5 VDC*). Place the jumper in the SUP position to cancel suppressed input offsets (*example -5 to +5 VDC*).

4. Calculate the amount of offset.

(*Example 1 to 5 V. Span is 4 volts. Offset is 1/4 = 25%. Example -5 to +5 VDC. Span is 10 volts. Offset is 5/10 = 50%.*)

(*Example .25 to 2 VDC. Span is 2 volts. Offset is .25/2 = 12.5%.*)

Place the jumper in the position nearest the desired offset. In the third example the 0% or the 25% positions could be used.

### To re-range the output:

- Select voltage or current output by putting the MODE jumper (*a double set used in the vertical position*) in the V or MA position.
- Select NORMAL or REVERSE ACTING output. (*NORMAL The output goes in the same direction as the input. REVACTING The output goes in the reverse direction of the input.*)

**Figure 1  
Range Select Jumper Positions**

DM4380A DC TO DC ISOLATED TRANSMITTER			
INPUT CONFIGURATION		OUTPUT CONFIGURATION	
MODE	mA	V	
1,5	.031	0	256
3,1	.062	0	128
6,2	.13	0	64
13	.25	0	32
25	.50	0	16
50	1	0	8
100	2	0	4
OFFSET	%	0	75
CANCEL	SPAN	0	25
	SUP	0	ELV
FACTORY SETUP		FIELD SETUP	
MODEL	_____	INPUT	_____
INPUT	_____	OUTPUT	_____
POWER	_____	POWER	_____ V
	_____ VA		_____ Hz
CODE	_____		_____

- Select the output RANGE desired.  
(If reverse-acting output is used, the range will be reversed.)  
**Example:** The 4 to 20 mA output would become 20 to 4 mA.)  
(The output can be used to provide negative outputs by simply reversing connections to the unit.)  
**Example:** The 0 to 1 volt output becomes 0 to -1 V if the output connections are reversed.)
- Apply power and calibrate per CALIBRATION section.

## SPECIFICATIONS

### INPUT RANGE

(User-Settable)

Limits any voltage between  
-256 and +256 VDC  
any current between  
-100 and +100 mAAdc

Span

any voltage span from  
16 mV to 256 VDC  
any current span from  
0.8 to 100 mAAdc

Offset

can cancel any input offset  
between -110% and +110% of span

### INPUT IMPEDANCE

Voltage  
1 megohm  
Current  
20 ohms

### OUTPUT RANGE

(User-settable)

Voltage	Current
0/.25 V	0/1 mA
0/1 V	0/4 mA
0/5 V	0/20 mA
1/5 V	4/20 mA
0/10 V	
-5/+5 V	
-10/+10 V	

### OUTPUT LOAD

Voltage  
5 mA max. (2 kilohm at 10 V)  
Current  
24 V compliance  
(1200 ohms max. at 20 mA)

### COMMON MODE REJECTION

120 dB, DC to 60 Hz

### ISOLATION, OUTPUT/INPUT

>500 megohms

### BREAKDOWN, OUTPUT/INPUT

>1000 VAC rms

### BREAKDOWN, POWER/CIRCUITRY

>1000 VAC rms

### OPERATING TEMPERATURE

14°F to 140°F (-10°C to 60°C)

### TEMPERATURE STABILITY

(0.02% of span + 2μV)/°C max

### POWER (2.5 W max)

115 VAC 10%, 50 or 60 Hz  
230 VAC 10%, 50 or 60 Hz  
24 VAC 10%, 50 or 60 Hz

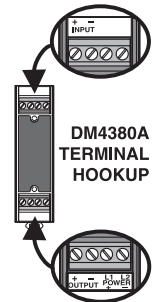
### DC Power Option

12 VDC (Limits 10 VDC to 15 VDC)  
24 VDC (Limits 21 VDC to 28 VDC)

**CAUTION: THE DIN/RAIL SHOULD BE EARTH GROUNDED (GREEN WIRE) TO ENSURE SAFEST OPERATION AND TO PROVIDE OPTIMUM PERFORMANCE.**

## MOUNTING

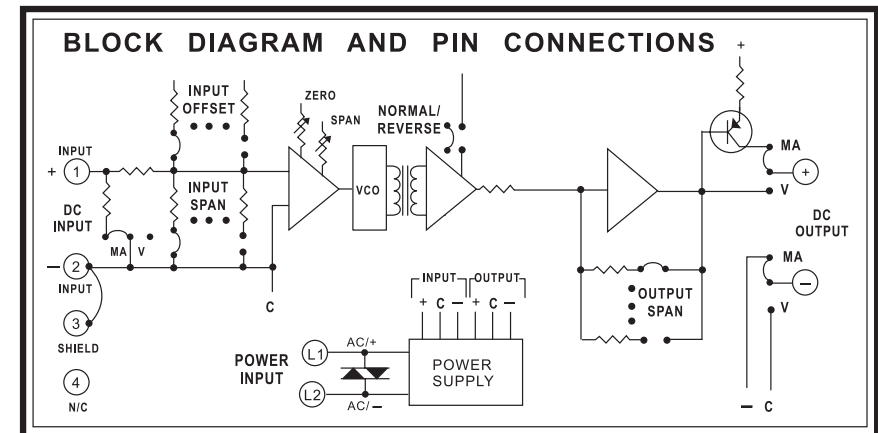
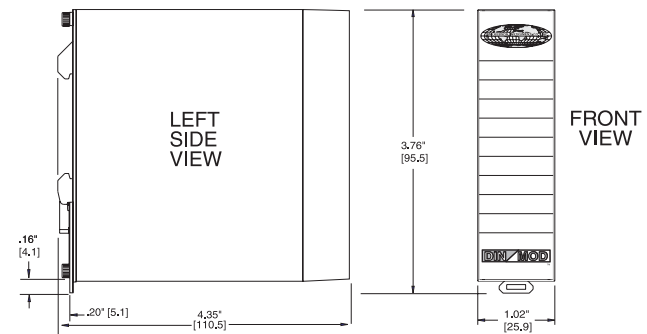
The DIN Rail package is installed by snapping it onto the rail and it is removed from the front side by using a screwdriver to release the spring loaded snap (located on the lower backside of the unit).



## WARRANTY

The DIN-MOD Series of products carry a limited permanent warranty. In the event of a failure due to defective material or workmanship, the unit will be repaired or replaced at no charge. Relays are not covered by the warranty.

## CASE DIMENSIONS INCHES [mm]



Specifications are subject to change without notice. ©2007 Wilkerson Instrument Co., Inc. DWG #W102567F 3/07



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