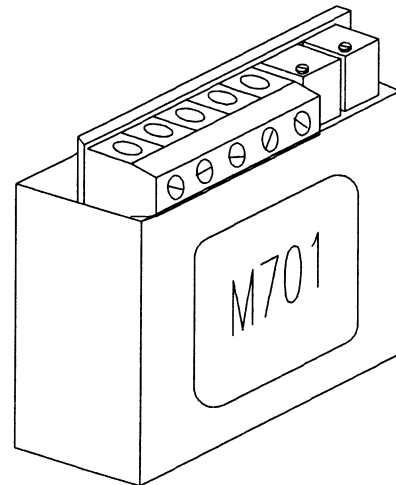




## 4-20 mA ANALOG INPUT CONVERTER MODULE

THE M701 MODULE IS A LOW COST MODULE USED TO CONVERT A 4-20 MA SIGNAL TO AN ANALOG INPUT SIGNAL THAT IS COMPATIBLE WITH SOLIDYNE CONTROLLERS.

- Inexpensive module, offers cost effective use of existing transducers
- Requires no external power
- No field calibration required
- Epoxy sealed unit for long, reliable operation



# #M701

## OPERATION

The M701 module can be used with existing industry standard transducers generating 4-20 mA signals as an interface to Solidyne controllers. The unit is small, easy to wire, and requires no external power supply or field calibration. The module can be located anywhere between the transducer and the controller.

## SPECIFICATIONS

MODEL: M701

### **ELECTRICAL**

SUPPLY: None

INPUT: 4-20 mA signal  
250 ohms impedance, +/- 5%  
max 30 mA intermittent

OUTPUT: 2.544 Vdc @ 4 mA, corresponds  
to a "0" reading  
3.109 Vdc @ 20 mA, corresponds to  
a "100" reading

OPERATING  
TEMP: -20°F to +140°F

### **MECHANICAL**

DIMENSIONS: 1.75"W x 0.60"D x 1.375"H  
(see fig. 1)

WIRING: 5-position terminal block,  
will accept #14 to #30 wire

MOUNTING: Double sided tape

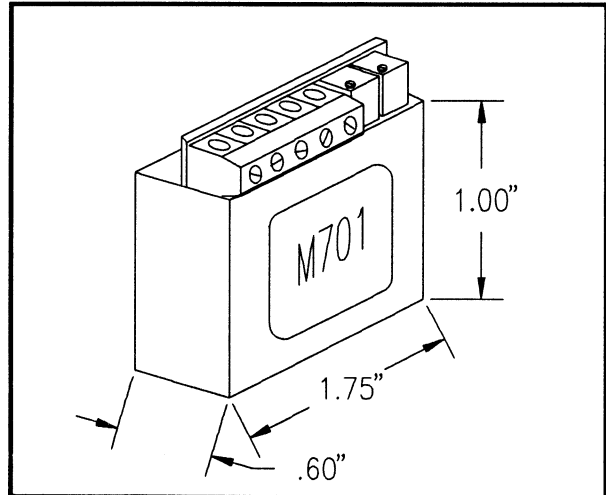


Fig. 1, Dimensions

## INSTALLATION

### **CAUTION**

BEFORE INSTALLING OR REMOVING THE M701 MODULE, DISCONNECT POWER TO PREVENT EQUIPMENT DAMAGE OR PERSONAL INJURY

1. Read the instructions very carefully. If these instructions are not followed equipment damage or personal injury may result.
2. Discharge any static you may have accumulated by touching a good earth ground before touching any components.
3. Check the ratings in the specifications and verify that this product will meet the requirements of your application.
4. This product should be installed by a trained, qualified service technician.

### **MOUNTING / LOCATION**

The M701 is designed to be mounted inside a suitable enclosure where it will not be exposed to direct outside environment such as rain, condensation, etc. For convenience, the M701 is normally mounted near the controller. Double sided tape is supplied.

## WIRING

The M701 has a 5-position terminal strip (see fig. 2). The two terminals furthest from the trim pots [labeled (+) and (-)] are wired in series with the 4-20 mA signal loop. The two terminals nearest the trim pots [labeled (out) and (com)] are wired to the Solidyne controller input. Be certain to observe polarity. The middle terminal on the terminal strip is unused.

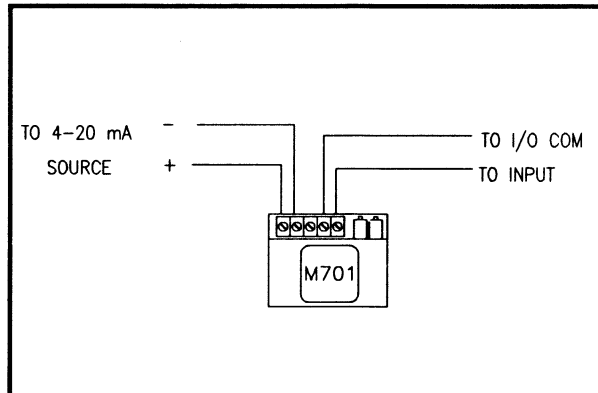


Fig. 2, Wiring

Some sensors require an external power supply for correct operation. The wiring for this configuration follows.

The positive (+) of the power supply connects to the positive (+) of the sensor. The negative (-) of the power supply connects to the negative (-) of the M701. The positive (+) of the M701 connects to the negative (-) of the sensor. Wiring from the M701 remains the same. The two terminals nearest the trim pots [labeled (out) and (com)] are wired to the Solidyne controller input. Be certain to observe polarity. The middle terminal on the terminal strip is unused (See fig. 3).

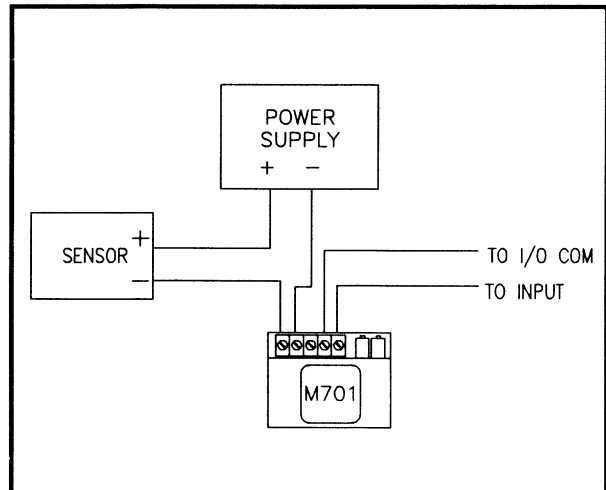


Fig 3, Sensor w/Power Supply

## OPERATION

The M701 converts the analog input of 4-20 mA to a signal format compatible with Solidyne controllers. The factory calibration converts a 4 mA signal to a voltage output of 2.554 Vdc which is the equivalent of a "0" reading on the Solidyne controller. A 20 mA signal is converted to a voltage output of 3.109 Vdc which corresponds to a reading of "100". Other readings are possible by calculating different "offset" and "multiplier" values, and entering them into the controllers.

For example, to show a range of 0-50 on the display, a multiplier of "0.5" and an offset of "-12" would be entered. To show a range of 0-500 on the display, a multiplier of "5" and an offset of "-120" would be entered. Refer to the controller manual sections on entering "multipliers" and "offsets" for further details.

## CHECK OUT PROCEDURE

1. Apply power to the Solidyne controller.
2. Check that the M701 is correctly wired between the 4-20 mA transducer and the Solidyne controller input. Check polarity.
3. Measure the current input by inserting a milliamp meter in series with the input to the M701. Note this reading.

4. Measure the voltage output of the M701 with a volt meter across the output terminals. Note this reading.
5. Compare the input current to the output voltage against the values shown on the chart in figure 4. The values should correspond. If not, recheck all wiring. Verify that the current output of the transducer corresponds to the actual input according to the manufacturer's specifications.
6. Compare the actual input value to the transducer (such as PSI, temperature, humidity, etc.) to the reading displayed on the Solidyne controller. The value should agree. If not, recheck the "offset" and "multiplier" values entered into the controller.
7. If possible, repeat steps 3-5 at various transducer inputs in order to verify operation across the entire scale.

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<u>Input mA</u>	<u>Displays</u>	<u>Voltage Out</u>
4	0	2.554
5	6	2.589
6	13	2.623
7	19	2.658
8	25	2.693
9	31	2.728
10	38	2.762
11	44	2.797
12	50	2.832
13	56	2.867
14	63	2.901
15	69	2.936
16	75	2.970
17	81	3.006
18	88	3.040
19	94	3.074
20	100	3.109

Fig. 4, Input Current vs Output Voltage

## ORDERING KEY

If you have additional questions or need further information related to this product or any other SOLIDYNE products, refer to your authorized SOLIDYNE Wholesaler for he is most familiar with your business and application. For complete ordering information refer to the Blue Sheet price list or call (800) 648-3980.

1. Order Part #M701.
2. For use with either Solidyne Micromizer or Clipper series controllers.
3. For use with XL9600 controller (Part #STB required).