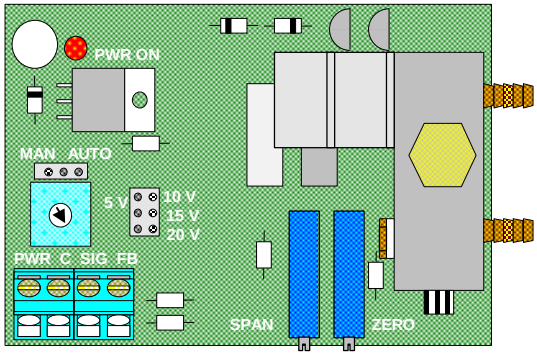
0 TO 15 PSI
E/P OR I/P
PNEUMATIC
TRANSDUCER



- Generates 0-15 PSI Pressure Output from 0-10 VDC modulating Voltage input .
- One Transducer is suitable for variety of Pneumatic Controls Applications.
- Uses the locally available 24 VDC or AC Power Source.
- Built in Manual Override Capability for Service and troubleshooting.
- Service Override for manual PSI pressure output is adjustment.
- Universal Modulating Input signal selection for 0 - 15 PSI output.
- Excellent precision and repeatable PSI Pressure Output.
- Back pressure Output Voltage Signal Built-in for Closed Loop applications
- Low exhaust scim values (Typically 14 scim)
- High Air Flow scim

MODEL
M301

Analog Current or Voltage Input to Modulated Pressure Output with Bleed

GENERAL :

M301 is a pneumatic transducer . It has IN and OUT ports which are connected to the Supply Pressure Source and Controlled Actuator Pressure Output. The Transducer is powered from 22 to 28 VDC or VAC power source. It has a Modulating Input Voltage connection. It also has an Back Pressure Output terminal which can be used to indicate the present PSI output value.

0-to-15 PSI of Pressure Output is changes with its modulating DC input voltage. Typically, a 0-10 VDC modulating input is used to produce the corresponding 0-to-15 PSI Pressure Output. See Table 1 for typical PWM and 0-10 VDC Controller output(M301 input) values vs. M301 PSI Output.

M301 is primarily used for applications where there is a Pneumatic Actuator that will be controlled. It is required to change the position of the Actuator proportionally to applied DC input voltage . The Input Port of the Transducer is typically attached to 20 PSI pressure source. The Output Port Pressure will vary from 0 to 15 PSI , based on the Input voltage Jumper setting and actual modulating voltage applied.

M301 has several other features that make it suitable for variety of applications. The modulating input voltage range can be jumper selected for 0-5 , 0-10 , 0-15 or 0-20 VDC. It also has a Manual - Auto Jumper, where for service or other reasons, the Transducer can be left in manual mode . When in Manual Mode, the Pressure Output can be set to a desired value by adjusting the unit's MAN|AUTO potentiometer. By adjusting this Potentiometer, a fixed 0 to 15 PSI pressure output can be set.

M301 has a 1/8 " FNPT connector port where a gauge can be attached to read the branch line pressure. The M301 can also be ordered with the 0 - 20 PSI Gauge already attached by the factory.

It is very important to add a **5 Micron air filter** in series with the supply air . If it is not included, non-filtered air particles will eventually clog the M301valve. Damage as a result of clogged valves will void the warranty on the unit.

M301 has a 0-5 VDC feedback voltage corresponding to the 0-15 PSI branch pressure. This feedback output can be connected to one of the Controller's Sensor Inputs for Closed Loop control and output pressure verification.

The Transducer is shown in **Fig.1.**

SPECIFICATIONS :

1. INPUT VOLTAGE : Nominal 24-VDC or -VAC
   (Red LED Power ON indicator)

2. Input Range : Min : 22.8 VDC to Max: 27.6 VDC
   Min : 21.6 VAC to Max: 26.4 VAC

3. Current Consumption : 160 mA Typical

4. Max. Air Supply Input : 28 PSI Absolute Max.

5. Modulating M301 Input Voltages selections:

   a. 0-5 VDC
   b. 0-10 VDC (SEE TABLE 1)
   c. 0-15 VDC
   d. 0-20 VDC

6. Maximum Input Voltage : +25 % of the maximum Input voltage selected:

   a. 6.2 VDC
   b. 12.5 VDC
   c. 18.8 VDC
   d. 25.0 VDC

7. Feed Back Voltage: 0-5 VDC corresponding to PSI output.

8. Air Flow : 1400 scim typical

9. Exhaust Air Flow : 14 to 73 scim
(combined air flow , orifice and branch loss)

10. Gage Port (reads branch pressure) : 1/8" FNPT

11. Bleed Orifice :

	Size	*Color of the Hex Nut*
a.	0.005"	Copper
b.	0.007 "	Brass
c.	0.010"	Silver

10. Factory Calibration :
    Input PSI : 20
    Output PSI : 0 to 15 for
    Output Feedback Voltage : 0 to 5 VDC
11. Operating Temperature : 40 to 120 ° F
12. Storage Temperature : 40 to 160 ° F
13. Operating Humidity Range : 0 to 95 %RH
    non-condensing
14. Mechanical Dimensions :
    Width : 2.125"
    Length : 3.000 "
    Height 1.500 " (without pressure gauge)

TABLE - 1

CONTROLLER OUTPUT PWM (0-10 VDC) vs M301 PSI OUTPUT

PWM OUTPUT FROM THE CONTROLLER %	0-10 VDC OUTPUT VOLTAGE FROM THE CONTROLLER	M301 PRESSURE OUTPUT 0 TO 15 PSI
0.0 %	0.0 VDC	0.0 PSI
5	0.5	0.75
10	1.0	1.5
15	1.5	2.25
20	2.0	3.00
25	2.5	3.75
30	3.0	4.5
35	3.5	5.25
40	4.0	6.00
45	4.5	6.75
50	5.0	7.50
55	5.5	8.25
60	6.0	9.00
65	6.5	9.75
70	7.0	10.50
75	7.5	11.25
80	8.0	12.00
85	8.5	12.75
90	9.0	13.50
95	9.5	14.25
100%	10.0 VDC	15.00 PSI

INSTALLATION and WIRING:

NOTE : *ALWAYS GROUND YOURSELF BEFORE TOUCHING THE MODULE PCB*

1. Make sure that the mounting area and the surface does not exceed the limits of the ambient temperatures and is away from condensation .

2. Mount the snap track in any desirable location.

3. Slide or snap the PCB into the track.

4. Connect 24-VAC or -VDC wires as shown in Fig. 2 to PWR (+) and C(--) terminals of the 4 position wiring terminal block. Make sure power is off to the Unit until wiring is done and all the attachments are complete.

WIRING WHILE POWER IS APPLIED TO THE UNIT WILL DAMAGE THE CIRCUITRY ON THE BOARD

5. If 24 VDC is used to power the unit , make sure the polarity is correct.

6. *IT IS CRUCIAL THAT YOU CHECK THE WIRING CONFIGURATION OF ANY OTHER LOAD(s) THAT MAY BE CONNECTED TO THIS TRANSFORMER. USE A SEPARATE TRANSFORMER IF THE 24 VAC SOURCE IS UNKNOWN OR IT IS TOO HIGH. 4 VA TRANSFORMER IS SUFFICIENT TO POWER THE M301.*

If the 24 VAC source is shared with other devices, such as coils of contractors, relays, solenoids or other inductive loads, each coil must then be terminated with a MOV, AC Transorb or other electrical transient suppression components.

Without these suppressers, high electrical spikes and transient voltages generated by these coils when they turn on and off, can cause malfunction and/or damage to the internal circuitry of the M301.

The same is true for 24 VDC applications, but DC Transorbs or fly back diodes should be used across the DC coils.

7. The common of the Module must be grounded. The ground connection should be checked with a DVM to make sure it is a proper ground. Since the Common terminal of M301 is connected to one side of 24 VAC or DC source, when this common connected to a Controller such as IZAC-4/8 Sensor common terminal, it may effect the operation of the Controller. It is never desirable to attach a floating 24 VAC to a common of a Controller. It may cause inconsistent readings and other undesirable operation. Therefore , this common wire should be connected to a known and tested ground at the Controller location.

NOTE : *It is also possible that M301 and the Controller may be powered by the same 24 VAC source. In this case , make sure that :*

a. One of the 24 VAC wires of the transformer is not already grounded. Test both legs of the 24 VAC for the ground. If one is grounded, connect that leg of the 24VAC to the common of the M301 . Also make sure that this grounded leg is connected to the **1st Terminal closest to the transformer** of the IZAC-4/8 24 VAC input terminal block.

b. If neither legs of the 24 VAC is connected to 24 VAC, choose the leg that is

connected to the **1st Terminal closest to th transformer** of the IZAC-4/8 24 VAC input terminal block to be grounded.

8. Always keep in mind that an unloaded transformer voltage supplying power to the M301can be significantly higher than normal loaded state. Make sure that this voltage never exceeds 28 VAC.

9. Connect Common and 0-10 VDC Output signal from the Controller being used.

   NOTE: This control signal may be the built in 0-10 VDC output signal or one of the AO-4 outputs.

10. *OPTIONAL :*Connect 0-5 VDC Feedback Output from the M301 "Branch Pressure " signal if it is needed for a closed loop control applications.(i.e. 0-10 VDC command signal is verified by a return signal of 0-10 VDC)

11. Connect 20 PSI supply Pressure Supply to IN-PORT after the air filter .

12. Connect the Pressure Output to the Actuator being controlled.

NOTE : The surface between the input/output pressure manifold and internal Pressure Sensor is pressure sealed to the circuit board. IT IS IMPORTANT TO make sure that limit and minimize the stress between the circuit board and the manifold by holding the manifold(not the circuit board) in one hand while installing pneumatic tubing onto the fittings. Also use care when removing tubing to avoid damaging fittings or moving the manifold.

13. The bleed orifice can be unscrewed with a ¼ " hex nut driver for cleaning or inspection. Do not lose or misplace the sealing gasket. You can clean it with a degreaser or by blowing pressured air through it from the opposite side.

14. The Unit requires at least "2" cubic inches of the branch air line capacity to operate properly. Otherwise, you may observe oscillating Pressure Output signals.

15. Make sure that the Input Voltage Select Jumper is set to 10 VDC position (See Fig. 2) .

16. Make sure that the Man-Auto Jumper is set to Auto (center pin to Auto pin connected).

NOTE : **SETTING MANUAL PRESSURE OUT**

The required pneumatic pressure output when the Unit is in Manual control can be set at any time after all wiring is complete , by removing the Jumper between the center pin and "MAN" pin. After this, the potentiometer right below the Jumper can be adjusted until the desired pressure output is reached and set.
If the Jumper is left unplugged , erratic operation will result.

17. The feedback 0-5 VDC signal and the output pressure will keep increasing proportional to the input signal if the input signal is increased beyond its upper limit.

18. IMPORTANT APPLICATION INFORMATION:

    3 way solenoid assembly can be used to prevent loss of branch line pressure if power is lost.

19. After every input and output is properly terminated , apply power to the Unit. You will see the power input RED LED light up and the unit will start working.

20. Contact Solidyne for your specific requirements if they are not covered with the M301 Module. Any special modifications to the Module will be considered to meet your specific application, provided that it is doable.

CONTACT SOLIDYNE'S TECHNICAL SUPPORT DEPARTMENT FOR ALL YOUR INQUIRES .

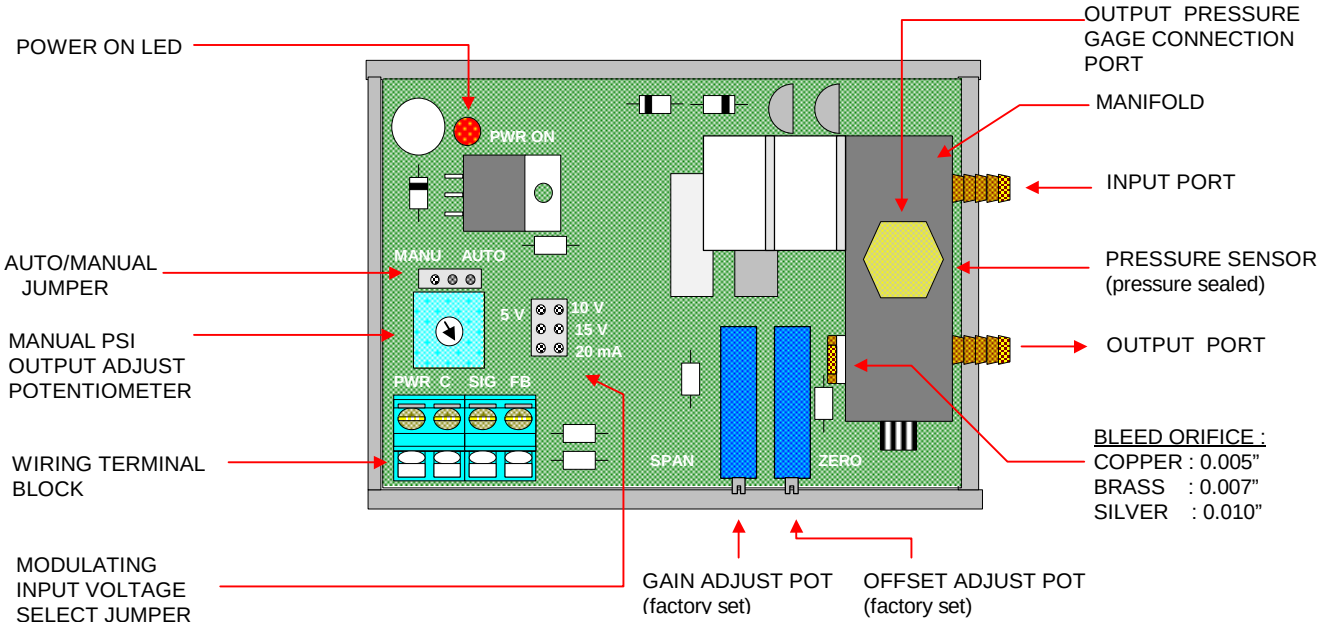


Fig. 1 M301 Module View and location of important points

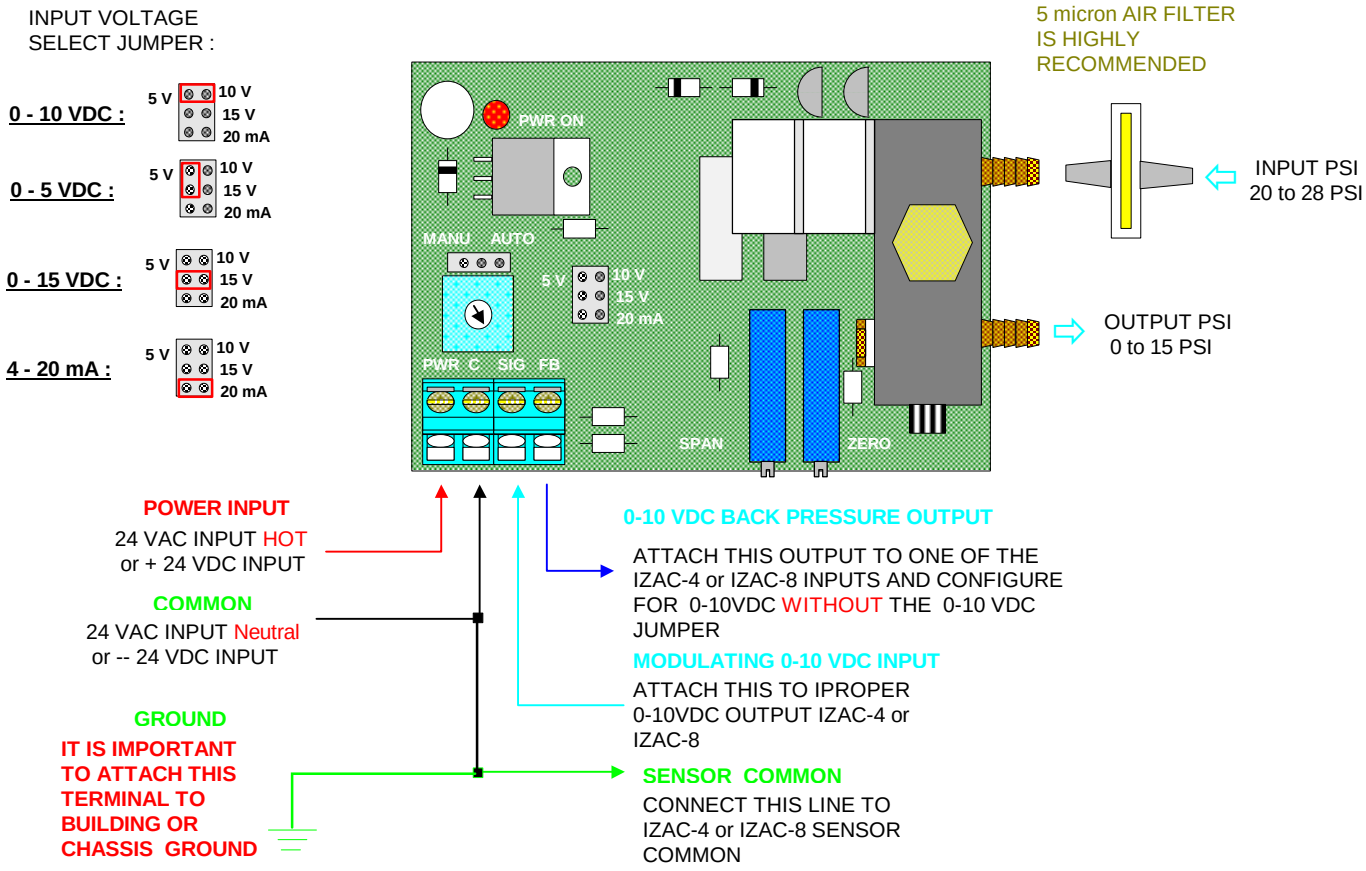


Fig. 2 M301 Wiring