



## Series 677 Differential Pressure Transmitter



### Specifications– Installation and Operating Instructions



**Series 677 Differential Pressure Transmitters** are designed to measure pressures as low as 0.1≤ w.c. with ±0.4% accuracy. Use Series 677 for Building Energy Management Systems, environmental pollution control, oven pressurization, lab and fume hood control, HVAC and VAV applications. The transmitter features 10 psid overpressure, reverse polarity protection and EMI/RFI protection. Internal regulation permits use with unregulated DC.

### INSTALLATION

#### Mounting

The 677 series is designed for mounting in either 2.75 snap track or by using the four (4) slots (suitable for #6 screws) that are provided on the plate. For optimum performance, isolate the instrument from vibration and provide relatively clean, dry air to the pressure ports.

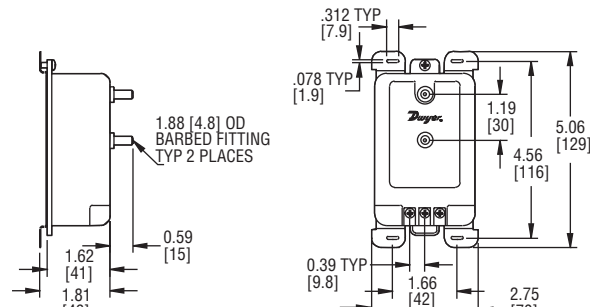
**NOTE:** Even though there is no flow through the 677 series, a filter is located in both the high and low pressure ports for use in extreme dust or moisture conditions.

In most applications, preferred installation is with the baseplate mounted vertically and located on a flat surface in a junction box or attached to a nearby beam. Quick and easy field replacement is possible by removing the single case screw that holds the black sensor/circuit housing to the baseplate and lifting the black housing free. The baseplate will remain mounted and can be used with the replacement units black sensor/circuit housing.

**Caution:** The axis most sensitive to vibration is the one perpendicular to the baseplate. Avoid mounting with maximum vibration along axis.

#### Piping

Two (2) 3/16" O.D. barbed pressure fittings are provided for pressure connection with 3/16" or 1/4" I.D. push on tubing. Both high (positive) pressure port and reference (low) pressure port are located on the front of the unit labeled "HIGH" and "LOW" respectively. For best results, 3/16" I.D. tubing is suggested for tubing lengths up to 100 feet long, 1/4" I.D. for tubing lengths up to 300 feet, and 3/8" I.D. for tubing lengths up to 900 feet.



#### PHYSICAL DATA

**Service:** Air and nonconductive, noncorrosive gases.

**Accuracy:** ±0.4% full scale (RSS).

**Output:** 4 to 20 mA DC, 2-wire.

Supply Voltage: 9 to 30 VDC.

**Electrical Load:** 0 to 800Ω (calibrated using 250Ω load @ 24 VDC).

**Process Connection:** 3/16≤ O.D. barbed brass pressure fitting for 4≤ push-on tubing.

**Span and Zero:** Externally accessible potentiometers, noninteractive, ±10% F.S. adjustment.

**Response Time:** 250 msec maximum.

**Maximum Pressure:** 5 times full scale or 10 psi. (whichever is greater).

**Operating Temperature Range:** 0 to 175°F (-18 to 79°C).

**Compensated Temperature:** 0 to 150° F (-18 to 65°C)

**Storage Temperature Range:** -65 to 250°F (-54 to 121°C).

**Thermal Effects:** <±0.033% F.S. over 40°F to 100°F range. Housing: Fire retardant glass-filled polyester.

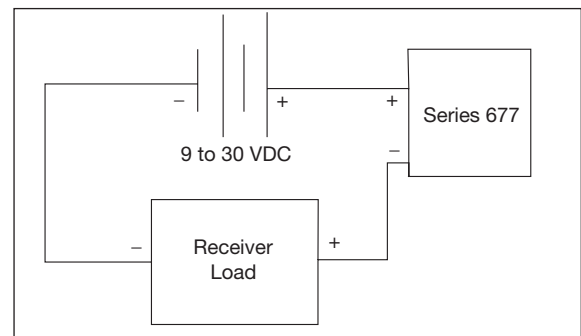
**Wetted Parts:** Brass.

**Electrical Connections:** Three screw terminals.

**Weight:** 10 oz (283 g).

The overpressure limit with the new tension diaphragm construction is up to 10 PSI regardless of range.

#### WIRING DIAGRAM FOR 677 SERIES



#### Electrical

The series 677 is a two (2) wire circuit (+SUPPLY, -RECEIVER) with a 4-20 mA output. The unit is calibrated at the factory using a 250 ohm load at 24 VDC.

**NOTE:** Minimum Supply Voltage  
 $VDC = 15 + 0.02 \times (\text{resistance of receiver plus line})$   
Maximum Supply Voltage  
 $(VDC) = 32 + 0.004 \times (\text{resistance of receiver plus line})$

If the current loop has a current limiter, threshold should be adjusted to 35mA minimum.

### **Calibration**

The 677 series is factory calibrated and should require no field adjustment. However, both zero and span adjustments are provided near the screw terminal strip. Whenever possible, any zero and/or span offsets should be corrected by software adjustment in the user's control system. Use the zero and span adjustments on the 677 series only if absolutely necessary. The 677 series is calibrated in the vertical position at the factory (baseplate vertical). For use in any other orientation, position the unit and follow the adjustment procedure listed below. If a change in range is needed, contact the Customer Service Department for a replacement in the appropriate range.

### **Zero Adjustment**

While monitoring the current output with both pressure ports open to atmosphere, the zero may be adjusted. For unidirectional pressure changes, turn the zero adjustment screw until a reading of 4mA (+/- .16mA) is achieved. For bidirectional ranges, set the zero to 12mA (+/- .16 mA).

### **Span Adjustment**

Span or output adjustments should only be done using an accurate pressure standard (electric manometer, digital pressure gage, etc.) with at least comparable accuracy to the 677 series (+/- 1% full scale). With full scale pressure applied to the high pressure port (reference open to atmosphere), adjust span to achieve 20mA output.

Example 1: Unidirectional pressure range of 1" W.C.  
Apply 1.00" W.C., adjust span to 20mA (+/- .16mA)

Example 2: Bidirectional pressure range of +/- 5" W.C.  
Apply 5.00" W.C., adjust span to 20mA (+/- .16mA)

### **MAINTENANCE/REPAIR**

After final installation of the Series 677 Differential Pressure Transmitter, no routine maintenance is required. A periodic check of system calibration is recommended. These devices are not field repairable and should be returned to the factory if recalibration or other service is required. After first obtaining a Returned Goods Authorization (RGA) number, send the material, freight prepaid, to the following address. Please include a clear description of the problem plus any application information available.

Dwyer Instruments  
Attn: Repair Department  
102 Highway 212  
Michigan City, IN 46360