

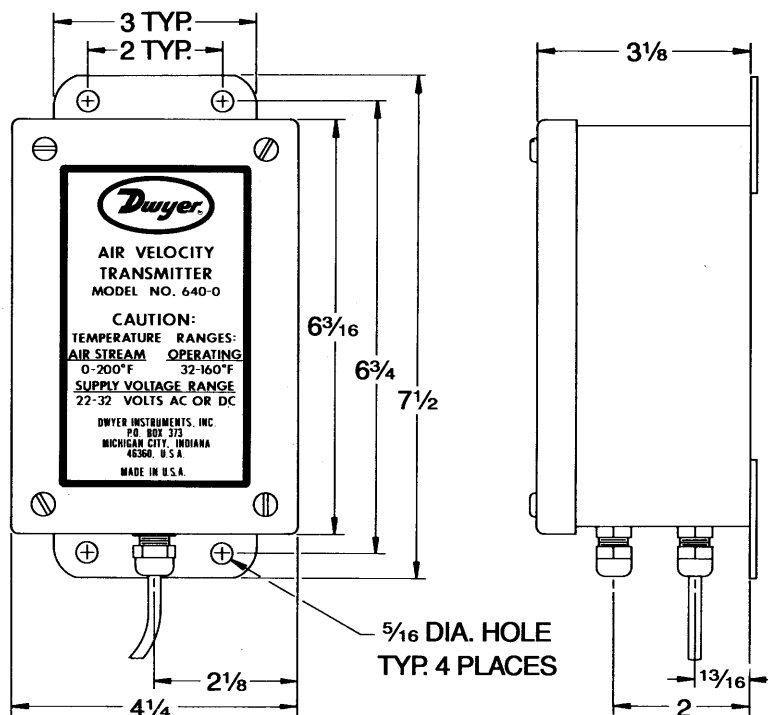


## Series 640 Air Velocity Transmitter

### Specifications - Installation and Operating Instructions



Patent No. 4,860,583



The Dwyer Series 640 air velocity transmitter is ideal for a wide range of HVAC measurement and control applications, particularly in complete building control and energy management systems. Designed for use in reasonably clean and dry air streams, applications include multi-point air velocity measurements, supply and exhaust fan tracking, industrial hygiene and clean-room systems, air pollution studies and manufacturing or process control systems. The Series 640 brings  $\pm 2\%$  accuracy (including linearity, hysteresis and repeatability) to these types of demanding applications at a surprisingly low cost. With four field selectable ranges of 0-200, 0-1000, 0-3000 and 0-12,000 FPM, this single transmitter can be supplied off-the-shelf for a variety of different air velocity measurement applications.

The Series 640 transmitter is easily installed with the mounting hardware supplied, including a split flange for securing the sensing probe in the duct. Requiring only 18-24volts AC or 22-28volts DC for power and having a 4-20 mA output, electrical connections are made quickly and easily by means for a four-wire cable to a plug-in terminal block through a liquid tight cable gland. The NEMA 13 housing is suitable for all indoor industrial, institutional or commercial installations. An optional probe extension is available for larger duct sizes.

#### SPECIFICATIONS:

##### GENERAL

Media: Air  
Ranges: 0-200, 0-1000, 0-3000,  
0-12,000 FPM (field selectable;  
referenced to standard conditions)

##### ELECTRICAL

Power Supply: 18-24 VAC or 22-28 VDC  
Signal: 4-20 mA DC  
Loop Resistance: 0-3m Ohms  
Current Consumption: 250 mA Maximum  
Warm-up Time: 3 to 5 minutes

##### PERFORMANCE

Zero Output: 4 mA  
Full Span Output: 20 mA

##### ACCURACY: (percentage of full span output)

0-200 fpm range  
 $\pm 5\%$  @ 32-180°F  
 $\pm 9\%$  @ 0-32°F or 180-200°F  
0-1000, 0-3000 or 0-12,000 fpm ranges  
 $\pm 2\%$  @ 32-180°F  
 $\pm 6\%$  @ 0-32 or 180-200°F

##### ENVIRONMENTAL

Temperature Ranges:  
- Dry Air Stream (Probe)  
0-200°F  
- Operating (Transmitter)  
32 to 160°F  
- Storage 0-200°F

##### MECHANICAL

Weight: 3 lbs.  
(includes probe and cable)  
Probe length: 12" insertion  
depth  
Cable length: 6feet  
Range adjustment: protected  
switches

##### ACCESSORIES

(4) 1" - No 14 Pan head sheet metal screws,  
(1) Split flange mounting bracket with gasket  
and screws.

#### INSTALLATION

##### LOCATION

Select a location where temperature limits will not be exceeded. Avoid mounting surfaces subject to high shock or vibration. Although the housing is rated NEMA 13, a reasonably clean, dry location is recommended.

##### MOUNTING

The Model 640 air velocity transmitter will operate properly in any position but if possible, a vertical surface is best so that cable entrances will be on the bottom. Attach to mounting surface with the four 1" No. 14 pan head sheet metal screws provided.

## PROBE INSTALLATION

Air velocity is not generally uniform across the cross sectional area of a duct. To reach the greatest possible accuracy it is generally necessary to conduct a procedure in which a number of readings are taken in a formal pattern and an average velocity thereby established. The final, permanent probe location is then chosen by selecting a spot closest to the average. See bulletin H-100, page 3 for further details on how to perform a duct traverse.

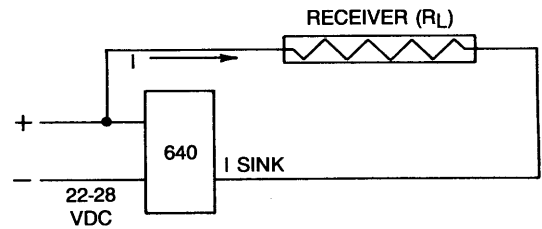
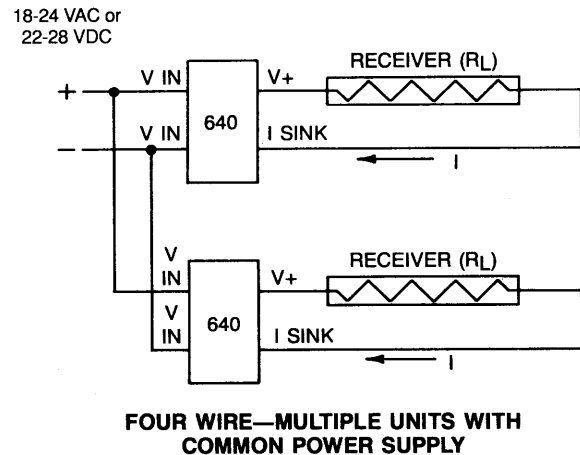
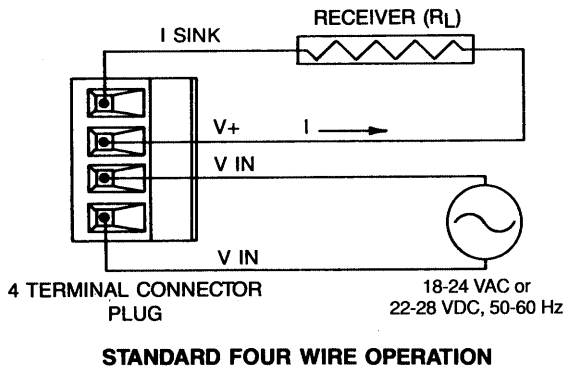
Drill an 11/32" - 3/8" hole in duct for the probe. Place the gasket over that hole and drill four 1/8" pilot holes for the 3/4" No. 8 mounting screws. Loosely assemble the two flange halves to the probe, insert probe through gasket into duct and attach split flange. Position probe tip so holes are parallel to and dot marks face air stream. Refer to etched inch markings on side for proper depth. Tighten machine bolts to complete installation.

## ELECTRICAL CONNECTIONS

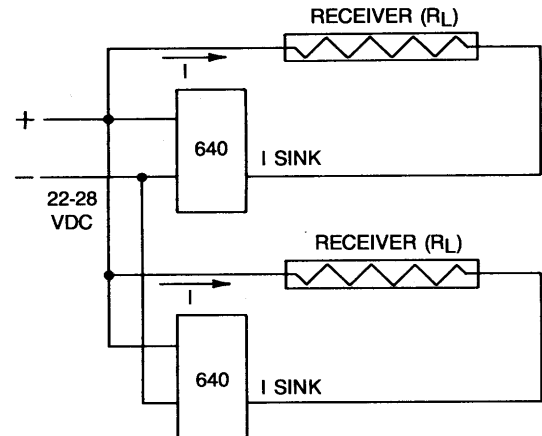
**CAUTION:** DO NOT EXCEED SPECIFIED SUPPLY VOLTAGE RATINGS. PERMANENT DAMAGE NOT COVERED BY WARRANTY WILL RESULT. For proper seal within the oil tight cable gland use cable with O.D. between .10"- .25". Cable should be unshielded with four 22 AWG conductors.

A power supply delivering 18-24 VAC or 22-28 VDC with a current consumption capacity to 250 mA is required. Carefully lift out the green 4 terminal connector plug located next to the probe cable. Attach wiring to the connector according to the circuit labels and the type of circuit to be used. See various wiring options depicted in drawings below.

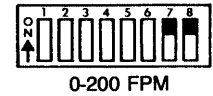
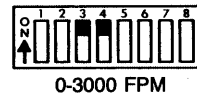
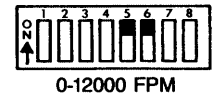
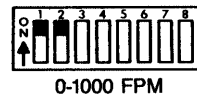
Select the operating range by moving the appropriate pair of selector switches to the "on" position. Set 1 and 2 "on" for 0-1000 FPM, 3 and 4 "on" for 0-3000 FPM, 5 and 6 "on" for 0-12000 FPM or 7 and 8 "on" for 0-200 FPM. Replace cover when wiring and range selection are complete.



**THREE WIRE OPERATION**



**THREE WIRE—MULTIPLE UNITS WITH COMMON POWER SUPPLY**



**RANGE SELECTION SWITCHES**

## MULTIPLE RECEIVER INSTALLATION

An advantage of the standard 4-20mA output signal provided by the Series 640 Transmitter is that any number of receivers can be connected in Series in the current loop. Thus, an analog panel meter, a chart recorder, process controlling equipment, (or any combination of these devices) can be operated simultaneously. It is only necessary that these devices all be equipped with a standard 4-20mA input and that proper polarity of the input connections be observed when inserting the device in the current loop. If any of the receiving devices displays a negative or downscale reading, this indicates that the signal input leads are reversed.

## MAINTENANCE

Upon final installation of the Series 640 Transmitter and the companion receiver no routine maintenance is required. A periodic check of system calibration is recommended. The Series 640 Air Velocity Transmitter is not field serviceable and should be returned to the factory if service is required.

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