The Dwyer Series 642 Pressure Transmitter converts a single positive pressure into a standard 4-20 mA output signal. It can be used for pressures from air or compatible gases and liquids. Accuracy is an exceptional ±0.1% of full span output. Designed for tough industrial environments, this sensor resists most effects of shock and vibration. Independently adjustable zero and span controls are provided, located under the wire termination cap on top of unit. Reverse polarity protection is standard.

### Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Pressure Range (PSI/bar)</th>
<th>Maximum Pressure (PSI/bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>642-1</td>
<td>0-15 (1.03)</td>
<td>30 (2.07)</td>
</tr>
<tr>
<td>642-2</td>
<td>0-30 (2.07)</td>
<td>60 (4.14)</td>
</tr>
<tr>
<td>642-3</td>
<td>0-50 (3.45)</td>
<td>100 (6.90)</td>
</tr>
<tr>
<td>642-4</td>
<td>0-100 (6.90)</td>
<td>200 (13.8)</td>
</tr>
</tbody>
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**Installation**

1. **Location**: Select a location where the temperature of the transmitter will be between 20 and 120°F (−6.7 to 49°C). Distance from the receiver is limited only by total loop resistance. The tubing or piping supplying pressure to the unit can be practically any length required but long lengths will increase response time slightly.

2. **Position**: The transmitter is not position sensitive. However, all standard models are originally calibrated with the unit in a vertical position with the pressure connection at the bottom. Although they can be used at other angles, for best accuracy it is recommended that final zeroing and spanning be done while unit is in the alternative position.

3. **Pressure Connections**: A dual-size pressure connection provides both 3/8” NPT male and 1/8” NPT female threads. Use a small amount of Teflon® thread tape or other suitable sealant to prevent leaks. Be sure the pressure passage inside the port is not blocked.

4. **Electrical Connections**: Electrical connections to the Series 642 pressure transmitter are made to the terminal block located inside the upper half of the black housing at top of unit. Remove the top-center screw and lift off the terminal block assembly. It is marked 1, 2 and G. Wire as shown below in Fig. B.
Wire Length - The maximum length of wire connecting the transmitter and receiver is a function of wire size and receiver resistance. Wiring should not contribute more than 10% of the receiver resistance to total loop resistance. For extremely long runs (over 1000 feet), choose receivers with higher resistance to minimize the size and cost of connecting leads. Where wiring length is under 100 feet, wire as small as 22 AWG can be used.

2-Wire Operation - An external power supply delivering 10-35 VDC with minimum current capability of 40 mA DC (per transmitter) is required to power the control loop. See Fig. C for connection of the power supply, transmitter and receiver. The range of appropriate receiver load resistance (Rr) for the DC power supply voltage available is expressed by the formula and graph in Fig. D. Shielded two wire cable is recommended for control loop wiring. If grounding is required, use negative side of the control loop after the receiver. Otherwise, it is not necessary to observe polarity of control loop connections.

![Fig. C](image)

Voltage Input - Series 642 Pressure Transmitters can be easily adapted for receivers requiring 1-5 or 2-10 VDC input. Insert a 1/2 watt, 249 ohm (1-5 VDC) or 499 ohm (2-10 VDC) resistor in series with the current loop but in parallel with the receiver input. Locate resistor as close as possible to the input. Because resistor accuracy directly influences output signal accuracy, we recommend use of a precision ±0.1% tolerance resistor to minimize this effect. See Fig. E.

![Fig. E](image)

Recalibration Procedure - If the transmitter needs to be recalibrated use the following procedure.

1. Zero and span adjustments are located under the plastic cap on top of transmitter body. Loosen the two screws and gently pull and rotate the assembly until it comes loose.
2. With the transmitter connected to the companion receiver, insert an accurate milliammeter in series with the current loop. Full scale range should be approximately 30 mA.
3. Connect a controllable pressure source to one leg of a tee with the second leg connected to the pressure port of the transmitter and the third leg to an accurate test gage or manometer. Calibration should be done with the unit in the same position in which it will be mounted.
4. Apply electrical power to the unit and allow it to stabilize for 10 minutes.
5. With no pressure applied to the transmitter, adjust the Zero (Z) control so that loop current is 4.00 mA. See Fig. B.
6. Apply full range pressure and adjust loop current to 20 mA using the Span (S) control. See Fig. B.
7. Relieve pressure and allow unit to stabilize for 2 minutes.
8. Zero and span controls are slightly interactive, so repeat steps 4 through 7 until zero and full span pressure consistently produce loop currents of 4 and 20 mA respectively.
9. Remove the milliammeter from the current loop, reinstall the cap assembly and proceed with final installation.

Maintenance - After final installation of the Series 642 Pressure Transmitter and its companion receiver, no routine maintenance is required. A periodic check of system calibration is suggested following the procedure above. The Series 642 Transmitter is not field repairable and should be returned, freight prepaid, to the factory if repair is needed. Be sure to include a brief description of the problem plus any relevant application notes. Contact Customer Service for Return Goods Authorization before shipping.