The Series 655 Wet/Wet Differential Pressure Transmitter converts a positive or a positive differential pressure measurement into a standard 4-20 mA output signal. Designed for use as a wet/wet differential pressure transmitter, units can be used to measure gas or liquid pressures compatible with 316/316L stainless steel wetted parts. With an accuracy of ±0.5% FS, the Series 655 Pressure Transmitter can measure low differential pressures, but can withstand working pressures to a maximum of 300 psi (20.7 bar).

Installation
1) Location - Select a location where the temperature of the transmitter will be between 40 and 120°F (5 to 50°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 and with the pressure connections at horizontal. 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 - Pressure connections are 1/4˝ female NPT. Use a small amount of pipe thread sealant tape or other suitable sealant to prevent leaks. Be sure the pressure passage inside the port is not blocked.

CAUTION: Do not exceed specified supply voltage ratings. Permanent damage not covered by warranty will result. This device is not designed for 120 or 240 volt AC operation. Use only 16 to 35 Vdc.

SPECIFICATIONS
Service: Compatible gases & liquids.
Wetted Materials: Types 316, 316L SS.
Accuracy: +/-0.5% F.S. (Includes linearity, hysteresis & repeatability).
Stability: ±1% F.S./yr.
Temperature Limits: 0 to 140°F (-17.8 to 60°C).
Compensated Temperature Limits: 40 to 120°F (4.44 to 48.9°C).
Pressure Limits: 300 psi (20.7 bar) continuous; 2000 psi (137.8 bar) burst. A zero shift of up to +/- 2% F.S. may occur when 300 psi pressure is applied.
Thermal Effect: 0.025% F.S./ºF (0.045% F.S./°C).
Power Requirements: 16-35 VDC (2-wire).
Output Signal: 4 to 20 mA.
Zero & Span Adjustments: Accessible potentiometers. ±10% of span.
Loop Resistance: DC; 0-1250 ohms maximum.
Current Consumption: DC; 38 mA max.
Electrical Connections: 3 position plastic terminal block.
Process Connections: 1/4˝ female NPT.
Enclosure Rating: Designed to meet NEMA 4X (IP66).
Mounting Orientation: Not position sensitive.
Weight: 1 lb, 11.7 oz (785 g).

4) Electrical Connections - Electrical connections to the Series 655 Pressure Transmitter are made to the terminal block located inside the upper half of the black housing at the top of the unit. Remove the top-center screw and lift off the terminal block assembly. It is marked 1, 2 and G. Wire as shown in Figure B (see next page).
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 1,000 feet (305 m)), choose receivers with higher resistance to minimize the size and cost of connecting leads. Where wiring length is under 100 feet (30.5 m), wire as small as 22 AWG can be used.

Two (2)-Wire Operation - An external power supply delivering 16 to 35 Vdc with minimum current capability of 40 mA DC (per transmitter) is required to power the control loop. (See Figure C for connection of the power supply, transmitter and receiver.) The range of appropriate receiver load resistance (R_L) for the DC power supply voltage available is expressed by the formula and graph in Figure 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.

Voltage Input - The Series 655 Pressure Transmitter 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 Figure E.

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

1) Zero and span adjustments are located under the screws on the side of the transmitter body. Remove the two screws to locate the adjustment potentiometers.

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 control so that loop current is 4.00 mA.

6) Apply full range pressure and adjust loop current to 20 mA using the Span control.

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 screws and proceed with final installation.

Maintenance - After final installation of the Series 655 Pressure Transmitter, no routine maintenance is required. A periodic check of system calibration is suggested following the procedure above. The Series 655 Pressure Transmitter is not field repairable and should be returned. Be sure to include a brief description of the problem and any relevant application notes. Contact Customer Service for a Return Goods Authorization before shipping.