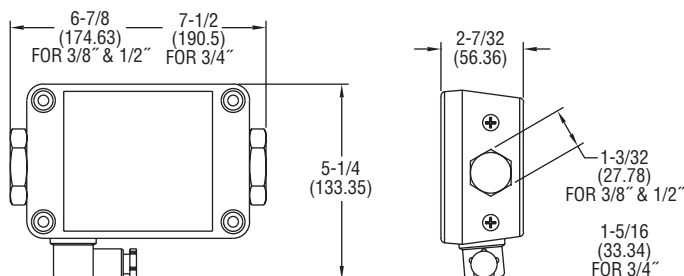




Series DFT Inline Differential Flow Transmitter

Specifications - Installation and Operating Instructions



The Series DFT use a segmented wedge differential producer to measure flow rates as related to pressure to monitor process fluids. The segmented wedge provides a simple and reliable restriction for sensing flow as related to pressure differential. The sensor can be mounted in any position and allows the designer to install it in any orientation: horizontal, vertical or inverted. The sensor is offered with three flow measuring ranges: 0.5-5, 1-10 and 1-15 GPM and three electrical output signals: 4-20 mA, 1-5 VDC and 1-10 VDC. The sensor offers low-cost precision with a measuring accuracy of $\pm 2\%$ of full-scale range and repeatability of $\pm 0.5\%$.

INSTALLATION

The flowmeter can be installed directly into the fluid line without flow straighteners or special piping. The meter is used to measure the flow rate of most liquids that do not contain particles greater than 200 micron.

1. The flow-metering element and plumbing connectors are made of PVC which permits use of a variety of media. Use of mild detergent to clean the meter body is encouraged to prevent damaging the label or associated components. Check your cleaning agents compatibility with PVC.
2. The meter may be mounted in any orientation to allow convenient access for installation and maintenance as long as the fluid is flowing in the direction of the arrow on the enclosure. 90° elbows can be installed on both ends without any noticeable flow variation.
3. The meter should NOT be mounted near hot pipes or equipment that can cause damage to the device. The maximum temperature rating of 170°F (76°C) must be observed for ambient conditions as well as the fluid system.
4. The meter should not be mounted in a manner such that piping misalignment or other system components can't exert force or produce a bending moment on the pressure vessel.

SPECIFICATIONS

- Service:** Compatible liquids.
- Wetted Materials:** End ports: PVC; Wedge element: PVC; Pressure sensor: polyetherimide.
- Flow Measuring Ranges:** 0.5-5, 1-10, 1-15 GPM.
- Accuracy:** $\pm 2\%$ of full-scale.
- Repeatability:** $\pm 0.5\%$ of full-scale.
- Response Time:** Indication of no less than 90% of any step change within <500ms.
- Power Requirements:** 12-35 VDC.
- Output Signal:** 4-20 mA, 0-5 VDC or 0-10 VDC.
- Maximum Current Consumption:** 25 mA.
- Minimum Load Resistance:** 1000 Ω .
- Maximum Transmission Distance:** 200 ft.
- Resolution:** Infinite.
- Temperature Limits:** 170°F (76°C).
- Pressure Limits:** 125 psig (8.6 bar).
- Enclosure Rating:** NEMA 4.
- Weight:** 1 lb (0.45 kg).

INSTALLATION (continued)

5. To retain accuracy and repeatability internal passages are closely toleranced and require filtration of at least 200 micron. Position the filter in front of the meter and in a location that allows easy access for routine maintenance.
6. Care should be taken when choosing a pipe sealing method. The use of pipe sealing pastes is often discouraged when sealing plastic fittings and pipe tape is recommended. If tape is used, be sure to leave 1/8" (3 mm) of pipe thread exposed on the end of the pipe.
7. Do not overflow the meter by more than 150% of the maximum flow reading.

WIRING INSTRUCTIONS

0-5/0-10 VDC Output Option

Note: The input impedance (resistance) of the receiving device must not be lower than 1000 Ω or non-linearity may result. Lower impedances will not damage the transmitter.

1. Connect the positive voltage source (+12 to +35 VDC) to terminal #1 of the DIN connector.
2. Connect terminal #2 of the DIN connector to the negative side of the DC voltage source.
3. Connect terminal #3 of the DIN connector to the 0-5 VDC input of the receiving device.
4. If the power source does not originate at the receiving device, a wire will need to be connected between the negative side of the voltage source and the signal ground of the receiving device.
5. If the circuit is operating correctly, the green LED on the circuit board will illuminate brightly when power is applied to the unit.

4-20 mA Output Option

INPUT Voltage: The supply voltage must be between 12-35 VDC. The maximum resistance that may be placed within the current loop is given by the following formula:

$$R_{\max} = 50(V_s - 12)$$

R_{\max} = the maximum resistance that may be placed in the current loop (Ω)

V_s = the value of the supply voltage (VDC)

Note: Although the signal conditioning circuit does have an integral over-current protection, it is suggested that the circuit be protected with a 0.25 amp fuse.

1. Connect the positive DC power source (+12 to +35 VDC) to terminal #1 on the DIN connector.
2. Connect terminal #2 of the DIN connector to the positive current input on the receiving device.
3. If the power source does not originate from the receiving device, the negative side of the power supply must be connected to the signal ground of the receiving device.
4. If the transmitter is operating properly, the green LED on the signal conditioning board will illuminate dimly at zero flow and will increase in intensity as flow increases.

OPERATION

The flowmeter comes from the factory 100% calibrated and ready for use. The receiving device will generally need to be scaled to reflect the correct FSRV (full scale range value) of the flowmeter calibration. Performing this task requires that the peak output of the device is correlated to the range of FSRV of calibration ordered.

Standard meters are calibrated for water with a specific gravity of 1.0. The segmented wedge meter is affected by changes in density and viscosity, as are most other similar type meters. The indicated flow reading will read high for heavier fluids and low for lighter fluids.

MAINTENANCE

It is recommended that filtration of at least a 200 micron filter or screen be used in the system. Some systems may require a magnetic filter. Contamination can come from many sources such as fresh fluid, new machinery, environmental and self-generated sources.

When fresh fluid is stored in holding tanks, it may be contaminated with scale or metal flakes from inside the tank. To prevent this type of contamination, be sure to filter the fresh fluid before adding it to the system.

Contamination from new machinery typically consists of dust, dirt, chips, fiber, sand, flushing solutions, moisture, weld splatters and pipe sealants. Flushing the system before operation can reduce contamination, but cannot eliminate it totally unless the system is flushed at a high velocity.

When performing routine maintenance, the systems fluid is commonly exposed to environmental contamination. Exercise caution during routine maintenance to prevent this type of contamination. Be sure to change breather filter and the systems air filter regularly.

Self-generated contamination is a product of wear, cavitations, fluid breakdown and corrosion. Systems that are carefully flushed, maintained and have fresh fluid added, mainly have self-generated contamination. In this case, proper filtration can prevent fluid component malfunction.

The Series DFT is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.