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Series DPE
Turbine Flow Sensor

Precautions

- **User's Responsibility for Safety:** KOBOLD manufactures a wide range of process sensors and technologies. While each of these technologies are designed to operate in a wide variety of applications, it is the user's responsibility to select a technology that is appropriate for the application, to install it properly, to perform tests of the installed system, and to maintain all components. The failure to do so could result in property damage or serious injury.
- **Proper Installation and Handling:** Use a proper sealant with all installations. Never overtighten the sensor within its fittings. Always check for leaks prior to system start-up.
- **Wiring and Electrical:** Because this is an electrically operated device, only properly trained personnel should install and maintain this product. Be sure that the power supplied to the flow sensor is appropriate for the electronics version supplied. Electrical wiring of the sensor should be performed in accordance with all applicable national, state and local codes.
- **Temperature and Pressure:** The DPE is designed for use in application temperatures from -10°F to 176°F. Operation outside these limitations will cause damage to the unit.
- **Material Compatibility:** The DPE process wetted parts for the various body materials are stated below. Make sure that the DPE is chemically compatible with the application liquids. While the sensor's outer housing is liquid resistant when installed properly, it is not designed to be immersed. It should be mounted in such a way that it does not normally come into contact with fluid.
- **Flammable, Explosive and Hazardous Applications:** The DPE is not an explosion-proof design. It should not be used in applications where an explosion-proof design is required.
- **Make a Fail-Safe System:** Design a fail-safe system that accommodates the possibility of sensor or power failure. In critical applications, KOBOLD recommends the use of redundant backup systems and alarms in addition to the primary system.

Specifications

Accuracy: ±2.5% of full scale

Wetted Parts

Bronze Body: Bronze, PVDF, 316 SS, Sapphire, and Buna-N

Stainless Steel Body: 316 SS, PVDF, Sapphire, and Viton

Max. Pressure: 580 PSIG

Temperature Range: -10°F to +176°F

Electrical (see model number table for model codes and descriptions for each output type)

Electrical Protection (all versions): NEMA 4X/IP 65

Output K442

Output Type: 4-20 mA, 4-wire and 2 adjustable set-point relays (SPDT 5A @ 230 VAC)

Input Power: 115 VAC

Display Type: 3-1/2 digit LED and 270° bargraph

Enclosure: Epoxy coated aluminum and polycarbonate

Output F300

PNP Pulse Output: PNP open collector, 25mA max.
Power: 14-28 VDC

Electrical Connection: 4 pin micro-DC plug, male

Electrical (continued)

Output L342: 4-20 mA, 2-wire, Rmax < 500 ohms, power= 24 VDC

Electrical Connector = 4 pin micro-DC plug, male

Output L343: 4-20 mA, 3-wire, Rmax < 500 ohms, power= 24 VDC

Electrical Connector = 4 pin micro-DC plug, male

Output L442: 4-20 mA, 2-wire, Rmax < 500 ohms, power= 24 VDC

Electrical Connector = DIN 43650 (hirschmann) plug

Output Type C34P & C30R

Compact Electronics: 4-20 mA + 1 PNP switch or 2 PNP switches depending on model code

Power Supply: 24 VDC ±20%, 80 mA max.

Analog Output: 4-20 mA, 3-wire, Rmax < 500 ohm

Switch Type: PNP open collector, 24 VDC, 300 mA max.

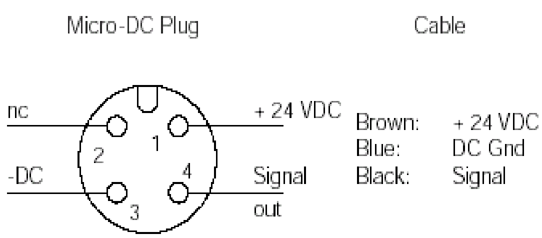
Electrical Conncetion: 5 pin micro-DC plug, male

Part Number Decoding

Range GPM	Freq. at f.s. (Hz)	Bronze	Stainless Steel	Fitting	Output/Electronics
1.5 - 8	80	**DPE-1150**	**DPE-1250**	**N4**=1/2” NPT	**F300**=Frequency output, Micro-DC plug
3 - 13	80	**DPE-1155**	**DPE-1255**	**N5**=3/4” NPT	**L342**=4-20 mA, 2 wire, Micro-DC plug
5.5 - 20	65	**DPE-1160**	**DPE-1260**	**N6**=1” NPT	**L343**=4-20 mA, 3 wire, Micro-DC plug
6.6 - 65	140	**DPE-1165**	**DPE-1265**	**N8**=1 1/2” NPT	**L442**=4-20 mA, DIN 43650 plug
8 - 90	135	**DPE-1170**	**DPE-1270**	**N9**=2” NPT	**C34P**=Compact electronic, 4-20 mA w/ 1 PNP switch
15 - 200	110	**DPE-1175**	**DPE-1275**	**NB**=3” NPT	**C30R**=Compact electronic, 2 PNP switches
					K442=Display and Controller

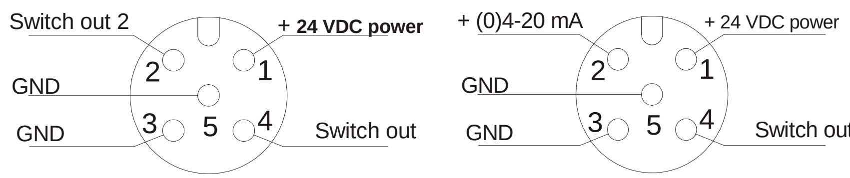
Accessories
Part Number **807.037** = Mating 4-pin Micro-DC plug with 6 ft. cable for output **F300, L342, & L343**
Part Number **807.007** = Mating 5-pin Micro-DC plug with 6 ft. cable for output **C34P & C30R**

Electrical Connection for Output F300 and L343 (3-wire transmitters)

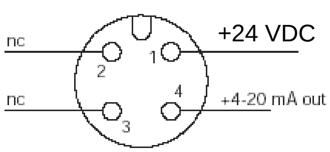


Electrical Connection for Output C30R & C34P (5-wire Micro-DC plug)

Cable: Brown= Pin 1; White= Pin 2; Blue= Pin 3; Black= Pin 4; Gray= Pin 5

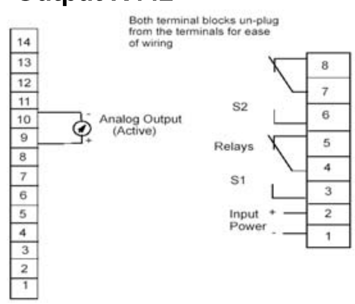


Electrical Connection for Output L342 (2-wire 4-20 mA)

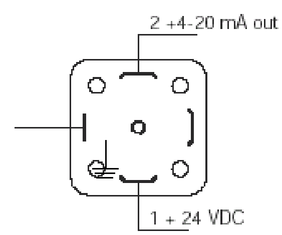


Cable:
Brown = +24 VDC
Black = 4-20 mA

Electrical Connection for Output K442



Electrical Connection for Output L442 (2-wire 4-20 mA)



Mechanical Installation

Piping Preparation: Piping should be rigidly supported at both the inlet and outlet of the sensor to prevent potential damage due to excessive stress on the sensor fittings. In order to ensure that the fluid flow profile is fully developed and symmetrical, a minimum straight piping run of 20 pipe diameters upstream and 10 diameters downstream of the sensor are required. The straight runs should be free of tees, elbows, valves, reducers and other disturbances.

Pumps: All pumps cause pulsations in the fluid. Centrifugal pumps cause the least amount of pulsations in the fluid and positive displacement or reciprocating pumps cause the most. In order to minimize the effect of these pulsations on sensor accuracy, the sensor should be located as far away from the pump as possible. A pulsation dampener or accumulator may be used to dampen pulsations if required. If the fluid pulsations cannot be reduced to an acceptable level, a field calibration to determine the new K-factor for the sensor installed in a pulsating system may be required.

Viscosity: All flow range and calibration data provided with this sensor are for water. All turbine type transducers are affected by viscosity. higher viscosities tend to make the turbine wheel turn slower for a given flow rate. This results in a lower K-factor for the sensor when it is used with a viscous media (i.e. viscosity > 10 cSt.) and the calibration data provided for water flow is no longer valid. If the sensor is to be used with viscous media, a field calibration is required to determine the new K-factor for the sensor.

Field calibration: For frequency output versions, a simple field calibration can be performed to determine the new K-factor for the sensor when it is to be used in a manner in which the above specified calibration information does not apply (i.e. use with viscous or pulsating media, insufficient straight run etc.). With the sensor installed in the system, dispense a known quantity of the fluid to be measured while using a pulse counter to count the number of pulses generated by the sensor during the dispense. This information can be used to determine the new K-factor specific to your system and fluid.