

Paddle Wheel Flow Sensors for Low Viscosity Liquids



measuring
•
monitoring
•
analyzing

DF



- Body Material Options: Brass, Stainless, or Polysulfone
- Easy to Install, No Straight Runs Required
- Robust and Reliable
- 6 Different Material Combinations Available
- Electronic Options: Frequency, Analog, Relay, Totalizer, and/or Batch Controllers with Digital Displays



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Paddle Wheel Flow Sensors DF Series

Description

The main feature of the DF flow sensors is the incorporation of a multipole magnet ring embedded into the paddlewheel. As the paddle wheel rotates, the magnets, hermetically separated from the liquid media, induce a DC signal into a Hall-Effect sensor mounted on the device housing. Since the DC signal frequency is proportional to paddlewheel rotation, an accurate flow rate reading is possible.

The DF sensors, when coupled with the appropriate KOBOLD electronics unit, can offer the user a number of features useful in the measurement and control of low viscosity liquid flow. These features include a frequency output, analog output, adjustable switches, digital displays with integrated batch controllers, or totalizers.

Specifications

Accuracy:	± 2.5% of full scale
Media:	Water and low viscosity liquids
Orientation:	Universal
Fittings:	1/8" NPT ... 1-1/2" NPT



Material Combination

Material Combination	Standard				High Pressure Design	
	I B	II	III	IV	VI ¹⁾	VII ¹⁾
Order Code	P	B	D	E	G ¹⁾	H ¹⁾
Connecting type	Female thread	Female thread	Female thread	Female thread	Female thread	Female thread
Housing	Polysulfone	Polysulfone	Brass, Nickel-plated	316L SS	Brass, Nickel-plated	316L SS
Housing lid	Polysulfone	Polysulfone	Polysulfone	Polysulfone	Brass, Nickel-plated	316L SS
Connection	Brass, Nickel-plated	316-Ti SS	Brass, Nickel-plated	316-Ti SS	Brass, Nickel-plated	316-Ti SS
Locking pins	Brass ³⁾	Brass ³⁾	Brass ³⁾	-	-	-
O-rings	NBR	FKM	NBR	FKM	NBR	FKM
Paddle wheel	POM	PTFE	POM	PTFE	POM	PTFE
Axle	316L SS	316L SS	316L SS	316L SS	316L SS	316L SS
Axle bushing	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Orifice	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾
Max. operating pressure [PSI]	145	145	230	230	1450	1450
Max. operating temperature [°F]	180	180	180	180	180	180

¹⁾ Fittings are not rotatable ²⁾ For Model DF..01 Stainless Steel Orifice ³⁾ Non-wetted



Paddle Wheel Flow Sensors DF-MA - Analog Transmitter

Special Features

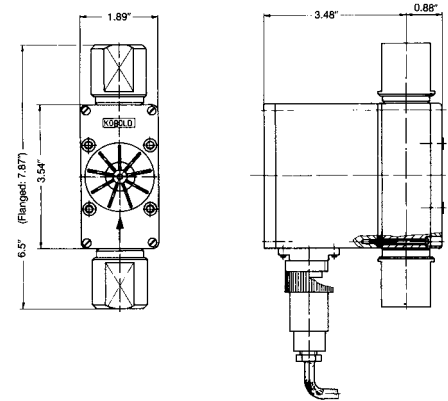
- For Transmission of Measured Flow
- Output: 0(4)–20 mA, 0–10 V_{DC}, 0–5 V_{DC}

Specifications

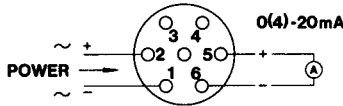
Power Consumption:	3.5 W max.
Power Supply:	24 V _{DC} , 24 V _{AC} , 110 V _{AC} , 230 V _{AC} + 15% / -10%
Analog Output:	0–20 mA, 4–20 mA, 0–5 V _{DC} or 0–10 V _{DC}
Max Load:	500 Ω
Temperature Range:	-10...180 °F (145 °F for DF-71..)
Cable Connections:	(5 ft PVC-cable standard, Plug connection optional) No. 1 Power (-) No. 2 Power (+) No. 5 Analog Output (+) No. 6 Analog Output (-)



Dimensions



Wiring Diagram



Order Details (Example: DF-7202BP04S1)

Range (Water) (GPM)	Standard Connection (NPT)	Diameter of Orifice (Inch)	Pressure Drop Max. (PSI)	DF-MA Material Combination						Options (Add Suffix to Order Number)		
				I B	II	III	IV	VI	VII	Suffix "..B.." Special Conn. (NPT)	Suffix "..L.." Special Range GPH (Water)	Suffix "..P.."
0.02...0.14	1/8"	0.04	10.2	DF-7901..	DF-7201..	DF-7301..	DF-7401..	DF-7601..	DF-7701..	1/4"	1...7	Power Conn. with Plug
0.05...0.30	1/4"	0.08	4.2	DF-7902..	DF-7202..	DF-7302..	DF-7402..	DF-7602..	DF-7702..	3/8"	3...25	
0.05...0.60	1/4"	0.08	10.4	DF-7903..	DF-7203..	DF-7303..	DF-7403..	DF-7603..	DF-7703..	3/8"	3...36	
0.1...0.7	1/4"	0.11	9.6	DF-7904..	DF-7204..	DF-7304..	DF-7404..	DF-7604..	DF-7704..	3/8"	6...42	
0.2...2.5	3/8"	0.19	12.1	DF-7905..	DF-7205..	DF-7305..	DF-7405..	DF-7605..	DF-7705..	1/2"	12...150	
0.4...5	1/2"	0.32	2.9	DF-7906..	DF-7206..	DF-7306..	DF-7406..	DF-7606..	DF-7706..	3/4"	-	
0.5...6	3/4"	0.32	4.4	DF-7907..	DF-7207..	DF-7307..	DF-7407..	DF-7607..	DF-7707..	1"	-	
0.5...12	3/4"	0.49	4.4	DF-7908..	DF-7208..	DF-7308..	DF-7408..	DF-7608..	DF-7708..	1"	-	
1...25	1-1/4"	0.59	15.9	DF-7909..	DF-7209..	DF-7309..	DF-7409..	DF-7609..	DF-7709..	1-1/2"	-	
1.5...36	1-1/4"	0.73	13.5	DF-7910..	DF-7210..	DF-7310..	DF-7410..	DF-7610..	DF-7710..	1-1/2"	-	

Power Supply Options	
Description	Add Suffix to Model Number
Power Supply 24 VDC	..P01..
Power Supply 24 VAC	..P02..
Power Supply 110 VAC	..P03..
Power Supply 230 VAC	..P04..

Output Options	
Description	Add Suffix to Model Number
0–20 mA Output	..S1
4–20 mA Output	..S2
0–10 V _{DC}	..S3
0–5 V _{DC}	..S4

Note: To place an order

1. Select the sensor order no.
2. Select the desired option suffixes
3. Specify the required power supply suffix
4. Specify the required output option suffix

No responsibility taken for errors; subject to change without prior notice.