

Paddle Wheel Flow Sensors for Low Viscosity Liquids



measuring
•
monitoring
•
analyzing

DF



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



Order from: **C A Briggs Company**
622 Mary Street; Suite 101; Warminster, PA 18974
Phone: 267-673-8117 - 800-352-6265; Fax: 267-673-8118
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KOBOLD Instruments, Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205

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	II	II B ¹⁾	III	IV	VI ¹⁾	VII ¹⁾
Order Code	A	B	C ¹⁾	D	E	G ¹⁾	H ¹⁾
Connecting type	Female thread	Female thread	Female thread	Female thread	Female thread	Female thread	Female thread
Housing	Trogamid®	Polysulfone	PP	Brass, Nickel-plated	316L SS	Brass, Nickel-plated	316L SS
Housing lid	Trogamid®	Polysulfone	PP	Polysulfone	Polysulfone	Brass, Nickel-plated	316L SS
Connection	Brass, Nickel-plated	316-Ti SS	PP	Brass, Nickel-plated	316-Ti SS	Brass, Nickel-plated	316-Ti SS
Locking pins	Brass ³⁾	Brass ³⁾	Brass ³⁾	Brass ³⁾	-	-	-
O-rings	NBR	FKM	FKM	NBR	FKM	NBR	FKM
Paddle wheel	POM	PTFE	PTFE	POM	PTFE	POM	PTFE
Axle	316L SS	316L SS	Ceramic	316L SS	316L SS	316L SS	316L SS
Axle bushing	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Orifice	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾	PTFE ²⁾
Max. operating pressure [PSI]	145	145	85	230	230	1450	1450
Max. operating temperature [°F]	145	180	180	180	180	180	180

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



Special Features

- Digital Display: Rate, Total, and Grand Total
- Output: 2 SPDT Relays Fully Programmable
- Output: 4-20 mA or 0-10 V_{DC}

Specifications

Display: 2x 8-digit, 7-segment LED with fixed decimal place

Temperature Range: -10...180 °F (145 °F for DF-..A..)

Protection: NEMA 4

Wiring: 5 foot cable, 10-wire (standard)
Extended cable (optional)



Electrical Connection

Wire Number	Function
1	+ 24 VDC
2	GND
3	Analog output
4	GND
5	do not connect
6	Reset part quantities
7	Relay S1
8	Relay S1
9	Relay S2
10	Relay S2

Specifications

Power Consumption: 2.4 W max.

Power Supply: 24 V_{DC}, ±20%

Contact Rating: 250 V, 5A max

Contact Resistance: <100 mΩ

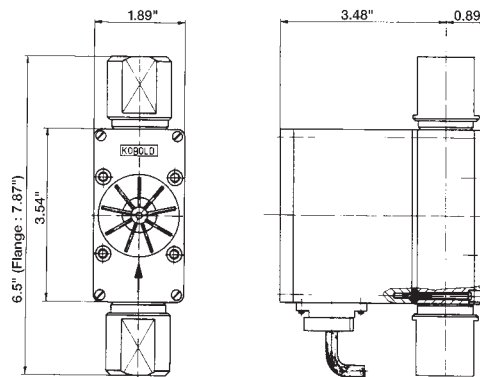
Analog Output: 4-20 mA

Max Load: 500 Ω, 4-20 mA, or >100 kΩ 0-10 V_{DC}

Temperature Range: 0...180 °F (145 °F for DF-..A..)

Protection: NEMA 4

Dimensions



Order Details (Example: **DF-U1AN06ZLK34**)

Flow Rate (GPM)	Model	Material Combination	Fitting Type*/Size	Electronic	Analog Output
0.02...0.14	DF-U1..	..A.. = Trogamid®/Brass ..B.. = PSU/SS ..C.. = PP ..D.. = Brass ..E.. = Stainless Steel ..G.. = Brass (1450 PSI) ..H.. = SS (1450 PSI)	..N06.. = 1/8" NPT ..N08.. = 1/4" NPT	..ZLK3.. = Electronic ratemeter/totalizer, 24 V _{DC} , 1.5 m cable connection ..ZLL3.. = Electronic ratemeter/totalizer, 24 V _{DC} , cable connection (please clearly specify cable length)	..4 = 4-20 mA ..1 = 0-10 V
0.05...0.30	DF-U2..		..N08.. = 1/4" NPT ..N10.. = 3/8" NPT		
0.05...0.60	DF-U3..		..N10.. = 3/8" NPT ..N15.. = 1/2" NPT		
0.1...0.7	DF-U4..		..N15.. = 1/2" NPT ..N20.. = 3/4" NPT		
0.2...2.5	DF-U5..		..N20.. = 3/4" NPT ..N25.. = 1" NPT		
0.4...5.0	DF-U6..		..N32.. = 1-1/4" NPT ..N40.. = 1-1/2" NPT		
0.5...6.0	DF-U7..				
0.5...12.0	DF-U8..				
1.0...25.0	DF-U9..				
1.5...36.0	DF-UA..				

* For G fitting type, substitute R for N

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

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