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
Sales@cabriggs.com - www.cabriggs.com

KOBOLD Instruments, Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205

1/03-2016

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.

DF Sensor

DF-WM

DF-MA

DF-KL
-DL
-ZL

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

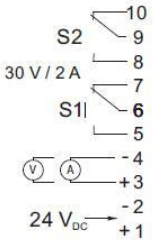
Material Combination	Standard					High Pressure Design	
	I	II	II B[1]	III	IV	VI[1]	VII[1]
Order Code	**A**	**B**	**C[1]**	**D**	**E**	**G[1]**	**H[1]**
Connecting type	Female thread	Female thread	Female thread	Female thread	Female thread	Female thread	Female thread
Housing	Trogamid®	Polysulfone	PP	Brass, 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: Continous Rate with Bargraph
- Output: 2 SPDT Relays Fully Programmable
- Output: 4-20 mA or 0-10 V_{DC}

Electrical Connection



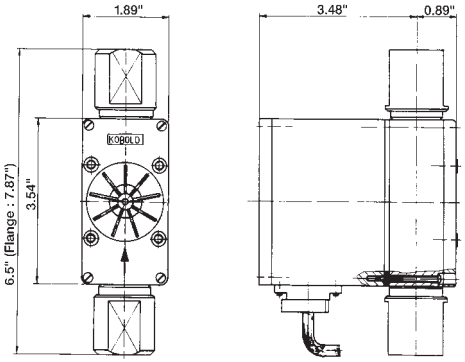
Specifications

Display:	3-digit, 7-segment LED with fixed decimal place and bar graph indicator
Temperature Range:	–10...180 °F (145 °F for DF-..A..)
Protection:	NEMA 4
Wiring:	5 foot cable, 10-wire (standard) Extended cable (optional)

Electrical Specifications

Power Supply	
Voltage:	24 V_{DC}, ±20%
Consumption:	Approx. 100 mA analog output
Current Output:	4–20 mA Load: 500 ohm max
Voltage Output:	0–10 V_{DC} Load: > 100 kohm
Relays:	2 SPDT: 1 Minimum 1 Maximum
Contact Rating:	2 amps at 30 Volts max
Hysteresis:	2.5% of full scale
Set Points:	Front panel adjustable

Dimensions



Order Details (Example: **DF-U1AN06KLK34**)

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	**..KLK3..** = Digital flowrate display, switching, and analog output, 24 V_{DC} with 1.5 m cable connection **..KLL3..** = Digital flowrate display, switching, and analog output, 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..**				
0.1...0.7	**DF-U4..**				
0.2...2.5	**DF-U5..**		**..N10..** = 3/8" NPT **..N15..** = 1/2" NPT		
0.4...5.0	**DF-U6..**		**..N15..** = 1/2" NPT **..N20..** = 3/4" NPT		
0.5...6.0	**DF-U7..**		**..N20..** = 3/4" NPT **..N25..** = 1" NPT		
0.5...12.0	**DF-U8..**				
1.0...25.0	**DF-U9..**		**..N32..** = 1-1/4 " NPT **..N40..** = 1-1/2 " NPT		
1.5...36.0	**DF-UA..**				

* For G fitting type, substitute R for N