

# DF PADDLE WHEEL FLOW SENSOR



Flow  
Pressure  
Level  
Temperature  
measurement  
monitoring  
control



S4

- $\pm 2.5\%$  of Full Scale Accuracy
- Analog Output
- Easy to Install and Maintain
- Robust and Reliable
- No. Min. Requirements for Straight Inlet and Outlet Pipe
- Low Pressure Drop
- 7 Different Material Combinations Available



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Model:  
DF



### Flow Sensor DF

The main feature of the KOBOLD DF flow sensor is the incorporation of a multipole magnet ring into the paddlewheel. As the paddlewheel rotates, these magnets, hermetically separated from the fluid medium, induce an DC signal in a Hall sensor mounted on the device housing. Since the DC signal frequency is proportional to paddlewheel rotation, an accurate flowrate reading is possible.

The DF sensor, when coupled with the appropriate KOBOLD electronics unit, can offer the user a number of features useful in the measurement and control of fluid flow. These features include an analog output, adjustable switches, batch controller, or totalizer.

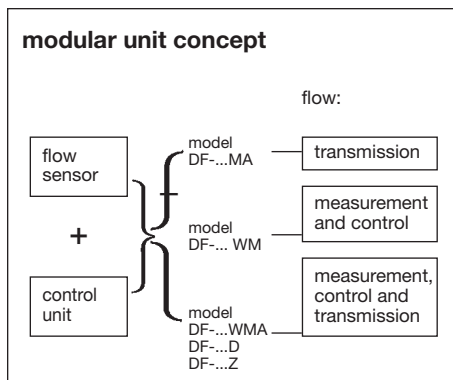
### Specifications

- Accuracy:** ± 2.5% of full scale
- Media:** water and low viscosity liquids
- Orientation:** universal
- Fittings:** 1/8" NPT ... 1 1/2" NPT, flange ANSI 1/2", 1", 1 1/2"
- 7 different material combination:** trogamid, polysulfone, brass, SS, teflon



DF-... with flange

### DF-... with female thread



Materials combination	Standard				High Pressure Design	
	I	II/IIB*	III	IV*	VI*	VII*
Connecting type	Female thread	Female thread	Female thread	Female thread flange	Female thread	Female thread flange
Housing	Trogamid	Polysulfone/PP	Brass Nickel-plated	SS	Brass Nickel-plated	SS
Housing lid	Trogamid	Polysulfone/PP	Polysulfone	Polysulfone	Brass Nickel-plated	SS
Connection	Brass Nickel-plated	SS/PP	Brass Nickel-plated	SS	Brass Nickel-plated	SS
Locking pins	Brass	Brass	Brass	-	-	-
O-rings	Buna-N	Viton	Buna-N	Viton	Buna-N	Viton
Paddle wheel	Delrin	Teflon	Delrin	Teflon	Delrin	Teflon
Axle	SS	SS/Ceramic	SS	SS	SS	SS
Axle Bearing	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon
Orifice	Teflon <sup>2</sup>	Teflon <sup>2</sup>	Teflon <sup>2</sup>	Teflon <sup>2</sup>	Teflon <sup>2</sup>	Teflon <sup>2</sup>
Max. operating pressure PSI	145	145/85	230	230	1450	1450 (with flange 580)
Max. operating temperature (°F)	145	180	180	180	180	180

\* Fittings not rotatable    <sup>1</sup>for Model DF..01 Titanium    <sup>2</sup> for Model DF..01 SS

**DF-K Special Features**

- Compact Design
- Digital Flow Rate Indication
- Analog Transmission of Flow Rate
- Two limit switches for Flow Control

**Physical Description**

**Display:** 3-Digit, 7-Segment LED with fixed decimal place  
**Temperature Range:** -10 °F to 180 °F  
**DF4100:** -10 °F to 145 °F  
**Protection:** NEMA 4  
**Wiring:** 5 foot pigtail

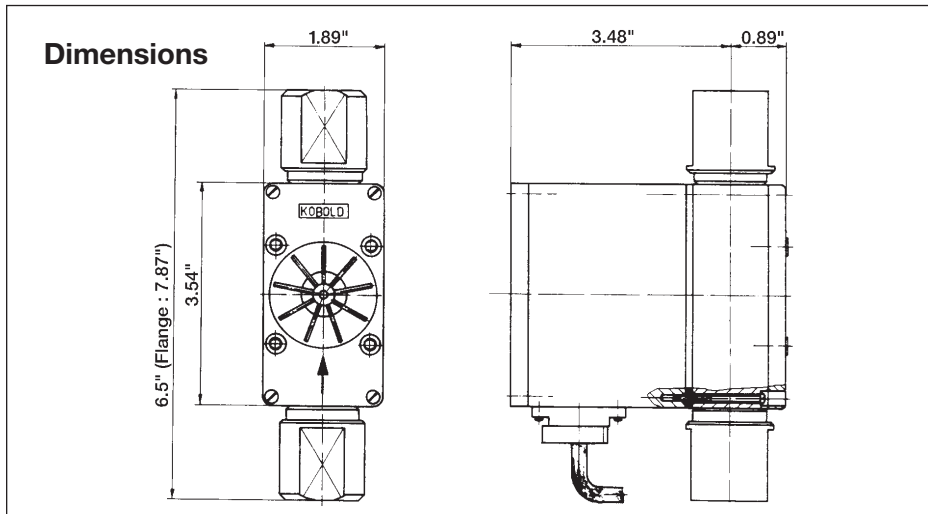
**Electrical Specifications**

**Power Supply**  
**Voltage:** 24 VDC, + 15%/- 10 %  
**Consumption:** 5 Watts

**Analog Output**  
**Current:** 0-20 mA, 4-20 mA  
 Load: 0-500 ohm  
**Voltage:** 0-10 VDC, 0-5 VDC  
 Load: > 500 kohm

**Relays:** 2 SPDT: 1 Minimum  
 1 Maximum

**Rating:** 2 Amps @ 24 Volts  
**Hysteresis:** 2.5 % of full scale  
**Set Points:** Front Panel Adjustable



S4

Order Numbers											
Range Water	Standard Fitting	Dia. of Orifice	Max. Pressure Drop PSI	DF Flow Sensor with Model K Electronics Material Combinations							
				I	II	IIB	III	IV	VI	VII	
0.02- 0.14	1/8"	0.04	10.2	DF-4101	DF-4201	DF-4001	DF-4301	DF-4401	DF-4601	DF-4701	
0.05- 0.30	1/4"	0.08	4.2	DF-4102	DF-4202	DF-4002	DF-4302	DF-4402	DF-4602	DF-4702	
0.05- 0.60	1/4"	0.08	10.4	DF-4103	DF-4203	DF-4003	DF-4303	DF-4403	DF-4603	DF-4703	
0.1 - 0.7	1/4"	0.11	9.6	DF-4104	DF-4204	DF-4004	DF-4304	DF-4404	DF-4604	DF-4704	
0.2 - 2.5	3/8"	0.19	12.1	DF-4105	DF-4205	DF-4005	DF-4305	DF-4405	DF-4605	DF-4705	
0.4 - 5	1/2"	0.32	2.9	DF-4106	DF-4206	DF-4006	DF-4306	DF-4406	DF-4606	DF-4706	
0.5 - 6	3/4"	0.32	4.4	DF-4107	DF-4207	DF-4007	DF-4307	DF-4407	DF-4607	DF-4707	
0.5 -12	3/4"	0.49	4.4	DF-4108	DF-4208	DF-4008	DF-4308	DF-4408	DF-4608	DF-4708	
1 -25	1 1/4"	0.59	15.9	DF-4109	DF-4209	DF-4009	DF-4309	DF-4409	DF-4609	DF-4709	
1.5 -36	1 1/4"	0.73	13.5	DF-4110	DF-4210	DF-4010	DF-4310	DF-4410	DF-4610	DF-4710	

Options	
Add Suffix to Model#	
Larger Fittings Suffix »-B«	GPH Scale Suffix »-L«
1/4"	1 - 7
3/8"	3 -25
3/8"	3 - 36
3/8"	6 - 42
1/2"	12 - 150
3/4"	Flanges for Material IV and VII on request
1"	
1 1/2"	
1 1/2"	Suffix »-FL«

Output Options	
Description	Add Suffix to Model#
0-20 mA Current Output	-S1
4-20 mA Current Output	-S2
0-10 VDC Voltage Output	-S3
0-5 VDC	-S4

**To Place an Order:**

1. Select the desired sensor wetted parts material combination.
2. Select the required sensor range.
3. The order number for your selection is found at the intersection of the »Range« row and »Material Combination« column.
4. Add the required fitting or scale option suffix found in the »Options« table on the right.
5. Add the required analog output suffix found in the lower left »Output Options« table.

**For Example:**

DF-4205-B-S3 for 2.5 GPM polysulfone sensor with 1/2" NPT fittings & 0-10 VDC output.