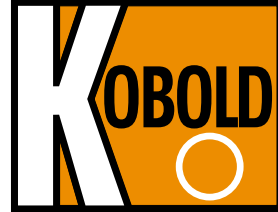


**Vane Flow Meter, Monitor, Counter,
Batching System in Modular Design**
for Liquids



Flow
Pressure
Level
Temperature
Measurement
Monitoring
Control



Model: DF-...M

Model: DF-...MA

Model: DF-...WM

Model: DF-...D

- Measuring ranges: 0,08-0,50 to 40-160 l/min. water
- Measuring accuracy: $\pm 2,5\%$ f.s.
- $p_{max.}$ 100 bar; $t_{max.}$ 80°C
- Viscosity range: low viscosity
- Connection: G 1/8 to G 1 1/2 female flange DN 15 to DN 50
- Materials: 8 different material combinations
- Output: 0(4)-20 mA, 0-10 V, switch contacts, batch, metering

Model:
DF...



The established vane technology has proven itself a million times worldwide for measuring and monitoring the flow of different media through piping. KOBOLD flow meters/monitors work with this proven principle and offer many benefits.

The heart of the new KOBOLD vane is an embedded ring magnet; it is hermetically sealed from the flow medium. It transfers, in a non-contacting manner, the rotary motion of the vane to a Hall sensor attached to the case (in order to save space).

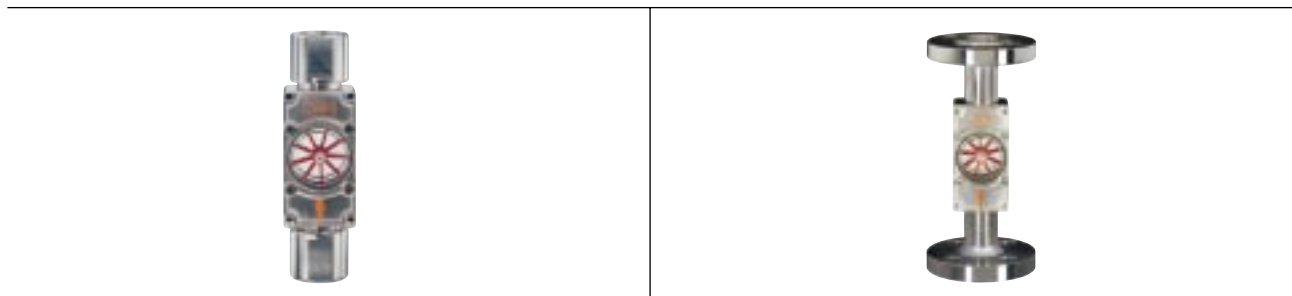
This converts the rotary motion to a frequency signal that is proportional to the flow rate. The downstream KOBOLD evaluating electronics can output this signal to a display, convert it to (0(4)-20 mA, 0-10 V) analogue signal, or count it. It may also be used to switch up to two limit contacts. The ready and control states of the limit value relay are indicated by LEDs.

The modular design of KOBOLD flow monitors and measuring instruments is a system that can be universally

applied; it is reasonably priced; and requires minimum space when in service.

Very precise measurement results can be achieved, under tough operating conditions along with the KOBOLD electronics. The system is assembled with the electronics and delivered ready for service. The electronics are adjusted and tuned for use with the sensor. When retrofitted for other measuring ranges, the system may be re-adjusted with a similar device at any time.







Measuring Sensor



Connection: Pipe thread G 1/8 to G 1 1/2
 Measuring ranges: 0,08-0,5 to 40-160 l/min.
 Measuring accuracy: $\pm 2,5\%$ full scale value
 Eight different material combinations

Connection: flange DIN 2501, DN15, 25, 40, 50
 Measuring ranges: 0,08-0,5 to 40-160 l/min.
 Measuring accuracy: $\pm 2,5\%$ full scale value
 Two different material combinations

Evaluating Electronics

					
<p>DF-...WM</p> <ul style="list-style-type: none"> ● Intermittent measuring and continuous monitoring ● 1 limit value relay ● Pushbutton and scale potentiometer for sensing the flow rate 	<p>DF-...MA</p> <ul style="list-style-type: none"> ● For teletransmitting the flow rate ● Output 0(4)-20 mA 0-10 VDC 	<p>DF-...WMA</p> <ul style="list-style-type: none"> ● Continuous measuring and monitoring ● 2 limit value relays ● Output 0(4)-20 mA ● Bar graph display 	<p>DF-...K</p> <ul style="list-style-type: none"> ● Continuous measuring and monitoring ● Digital display ● Min./max. contact ● Output 0(4)-20 mA 	<p>DF-...-Z</p> <ul style="list-style-type: none"> ● Measuring and metering ● LED display for actual-value indication ● Output 0(4)-20 mA 0-10 VDC ● Adding meter ● 1 relay for power failure or overrange 	<p>DF-...-D</p> <ul style="list-style-type: none"> ● Measuring and batching ● LED display for actual-value indication ● Output 0(4)-20 mA 0-10 VDC ● subtracting meter ● 1 relay opens after batching has finished

Measuring Ranges

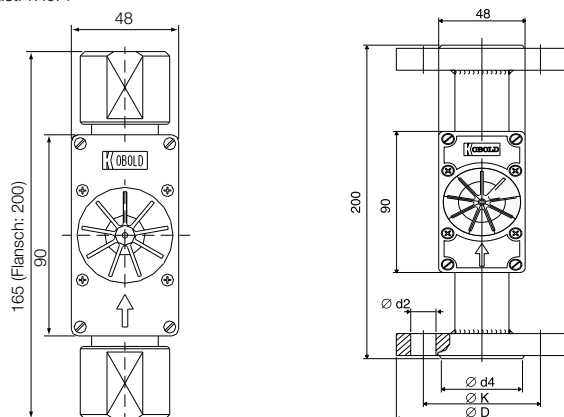
for DF-..K DF-..Z DF-..D	for DF-..MA DF-..WM DF-..WMA	Flow rate l/min	Δp (bar) at max. flow rate	Filter (mm)	Recommended connection sizes	
					Internal thread	Flange DN
DF-05..	DF-05..	0,08-0,50	0,76	1,0	1/4", (1/8")*	15
---	DF-14..	0,20-1,40	0,36	2,0	1/4", 3/8"	15
DF-25..	DF-25..	0,20-2,50	0,94	2,0	1/4", 3/8"	15
DF-50..	DF-50..	0,40-5,00	0,45	3,5	1/4", 3/8", 1/2"	15
DF-06..	DF-06..	0,30-6,00	1,00	3,2	1/4", 3/8", 1/2"	15
DF-12..	DF-12..	0,50-12,0	0,61	5,0	1/4", 3/8", 1/2"	15, 25
---	DF-13..	1,00-12,5	0,14	8,0	1/2", 3/4", 1"	15, 25
DF-24..	DF-24..	1,00-24,0	0,36	8,0	1/2", 3/4", 1"	15, 25
---	DF-48..	2,00-48,0	0,43	12,5	3/4", 1"	25
DF-60..	DF-60..	2,50-60,0	0,63	12,5	3/4", 1"	25, 40
---	DF-H2..	5,00-120	1,20	18,5	1", 1 1/4", 1 1/2"	25, 40, 50
DF-H5..	---	5,00-150 ¹⁾	1,50	18,5	1", 1 1/4", 1 1/2"	25, 40, 50
---	DF-H6..	40,0-160,0	1,50	18,5	1", 1 1/4", 1 1/2"	25, 40, 50

* Upon request

Material Combinations

Material combination	Standard version						High-pressure version	
	I	II	IIb*	III	IV*	V*	VI*	VII*
Order Code	..A..	..B..	..C..	..D..	..E..	..F..	..G..	..H..
Connection types	Pipe thread	Pipe thread	Pipe thread	Pipe thread	Pipe thread flange	Pipe thread	Pipe thread	Pipe thread flange
Case	Trogamide	Polysulfone	Polypropylene	Brass Nickel-plated	High-gr. steel	Teflon	Brass Nickel-plated	St.St.
Cover	Trogamide	Polysulfone	Polypropylene	Nickel-plated Polysulfone	Polysulfone	Teflon	Nickel-plated Brass Nickel-plated	St.St.
Connection	Brass Nickel-plated Brass	St.St.	Polypropylene	Brass Nickel-plated Brass	St.St. ⁴⁾	Teflon	Nickel-plated Brass Nickel-plated	St.St. ⁴⁾
Locking pins								
O-rings	Buna N	Viton	Viton	Buna N	Viton	-	Buna N	Viton
Vane	POM	Teflon	Teflon	POM	Teflon	Teflon	POM	Teflon
Axle ³⁾	St.St.	St.St.	Ceramics	St.St.	St.St.	Ceramics	St.St.	St.St.
Bearing ³⁾	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon	Teflon
Screen	Teflon ²⁾	Teflon ²⁾	Teflon ²⁾	Teflon ²⁾	Teflon ²⁾	Teflon ¹⁾	Teflon ²⁾	Teflon ²⁾
Max. operating pressure	10 bar	10 bar	6 bar	16 bar	16 bar	6 bar	100 bar	100 bar flange PN40
Max. operating temperature	60 °C	80 °C	80 °C	80 °C	80 °C	80 °C	80 °C	80 °C

*) Connection cannot be rotated 1) Titanium for model DF 0,5 2) St.St. for model DF 0,5 3) Special version upon request 4) St.St. 1.4571



KOBOLD measuring sensors are available with pipe thread or flange connections; standard or high-pressure versions are optional. The standard version is delivered with a standard front cover from solid, transparent plastic, which allows the flow to be optically inspected. The rotary motion of the shining red vane can be clearly seen. Faults such as power failure or rotor blockage can thus be quickly detected in situ. In addition to their use as measuring and monitoring systems, the devices can also be used as flow indicators.

The standard front cover is replaced by a metal plate on the high-pressure version (up to 100 bar with the threaded version).

The devices can be installed in any position. However, the flow must always be in the direction of the arrow, and the front panel of the device must be arranged in the vertical plane. The fluidic housing must be full with liquid. Additional inlet or outlet pipes are not required. The large radial clearance between vane and housing wall renders the measuring sensor insensitive to dirt. Depending on the version, the connection fittings can be rotated and are bearing mounted. Switching electronics or vane front may be rotated at will for ease of viewing (while in service).

Model DF...H0

DF-flow sensors are also available without a compact electronic. The linear flow proportional pulse signal provided by the sensor can be controlled by customer own electronics.

Flange DIN 2527 PN40

DN	PN	D (mm)	K (mm)	d4 (mm)	d2 (mm)
15	40	95	65	45	14
25	40	115	85	68	14
40	40	150	110	88	18
50	40	165	125	102	18

DIN 2526 sealing face form C