



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



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**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).

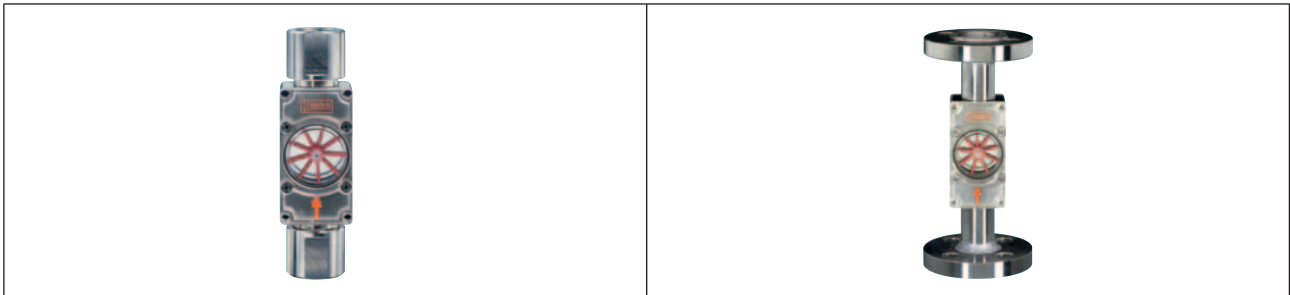
This converts the rotary motion to a frequency signal that is proportional to the flow rate. The downstream KOBOLD evaluating electronics can output this signal to a display, convert it to (0(4)-20 mA, 0-10 V) analogue signal, or count it. It may also be used to switch with up to two limit contacts. 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 1/2  
 Measuring ranges: 0.08-0.5 to 40-160 L/min  
 Measuring accuracy: ± 2.5% full scale value  
 Eight different material combinations

Connection: Flange DIN 2501, DN 15, 25, 40, 50  
 Measuring ranges: 0.08-0.5 to 40-160 L/min  
 Measuring accuracy: ± 2.5% full scale value  
 Two different material combinations

**Evaluating Electronics**

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



**Measuring Ranges**

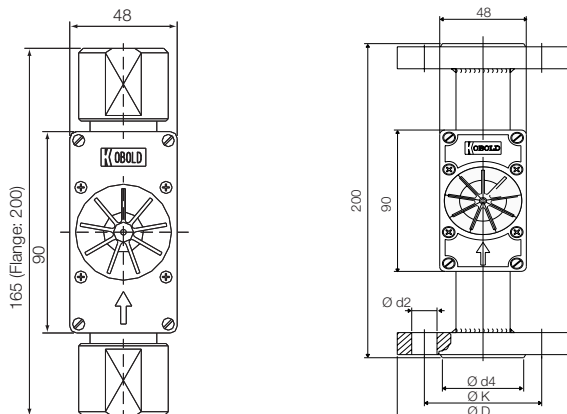
for DF-..K DF-..Z DF-..D	for DF-..MA DF-..WM DF-..WMA	Flow rate L/min	Δp (bar) at max. flow rate	Filter (mm)	Recommended connection sizes	
					Internal thread	Flange DN
DF-05..	DF-05..	0.08-0.50	0.76	1.0	1/4", (1/8")*	15
-	DF-14..	0.20-1.40	0.36	2.0	1/4", 3/8"	15
DF-25..	DF-25..	0.20-2.50	0.94	2.0	1/4", 3/8"	15
-	DF-26..	0.30-2.60	0.98	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 <sup>1)</sup>	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	III <sup>1)</sup>	IV <sup>1)</sup>	V <sup>1)</sup>	VI <sup>1)</sup>	VII <sup>1)</sup>
Order code	..A..	..B..	..C..	..D..	..E..	..G..	..H..
Connection types	Pipe thread	Pipe thread	Pipe thread	Pipe thread	Pipe thread flange	Pipe thread	Pipe thread flange
Case	Trogamide	Polysulfone	Polypropylene	Brass Nickel-plated	High-gr. steel	Brass Nickel-plated	St.St.
Cover	Trogamide	Polysulfone	Polypropylene	Polysulfone	Polysulfone	Brass Nickel-plated	St.St.
Connection	Brass Nickel-plated	St.St.	Polypropylene	Brass Nickel-plated	St.St. <sup>4)</sup>	Brass Nickel-plated	St.St. <sup>4)</sup>
Locking pins	Brass	Brass	Brass	Brass	-	-	-
O-rings	NBR	FPM	FPM	NBR	FPM	NBR	FPM
Vane	POM	PTFE	PTFE	POM	PTFE	POM	PTFE
Axle <sup>3)</sup>	St.St.	St.St.	Ceramics	St.St.	St.St.	St.St.	St.St.
Bearing <sup>3)</sup>	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Screen	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>	PTFE <sup>2)</sup>
Max. operating pressure	10 bar	10 bar	6 bar	16 bar	16 bar	100 bar	100 bar flange PN 40
Max. operating temperature	60 °C	80 °C	80 °C	80 °C	80 °C	80 °C	80 °C

1) Connection cannot be rotated 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...H**

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 PN 40**

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**



### Flow Indicator with Intermittent Sensing

The DF-...WM evaluating electronics is used in applications where sporadic flow rate measurement is required, or where simultaneous continuous monitoring is needed. It converts the digital frequency signal from the sensor to a limit contact.

The limit value over the entire measuring range can be set with a potentiometer with calibrated scale. The ready state is indicated by a green LED. When the flow rate drops below the setpoint, a red LED flashes. The relay can be shorted and disabled by pressing a button. The flow rate can be determined and the potentiometer scale can be read by rotating the potentiometer from the largest to the smallest value (until the red diode flashes).

The front panel on the electronics and vane are displaced by 180°. This means that the operator can see from two directions whether flow is available. The power supply of the device and the relay output are connected with a 7-pin connector or a 1.5 m cable. (A cable can only be used for flange connection.)



### Technical Specifications

#### Power input

3.5 W max.

#### Power supply

24 V<sub>DC</sub> +15% / -10%  
24, 110, 230 V<sub>AC</sub> ± 20%

#### Output

Changeover contact 250 V max. / 5 A  
Contact resistance ≤ 100 mΩ

#### Protection type

IP 65, all-insulated

#### Ambient temperature

-25°C to +80°C

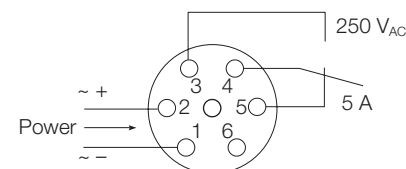
#### Accuracy

± 2.5% f. s

### Cable Connections

- Nr. 1 supply voltage (-)
- Nr. 2 supply voltage (+)
- Nr. 3
- Nr. 4
- Nr. 5

### Wiring Diagram



in the no-load or alarm state

### Order Details

Flow rate L/min	Model	Material combination (see transducer)	Con-nection*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power
0.08-0.50	DF-05...	A	R=	06 = G 1/8	<b>WMK</b> =monitor with 1.5 m cable connector <b>WMS</b> =monitor with connector <b>WMG</b> =monitor with connector and mating connector	<b>0</b> =230 V <sub>AC</sub> <b>1</b> =110 V <sub>AC</sub> <b>2</b> =24 V <sub>AC</sub> <b>3</b> =24 V <sub>DC</sub>
0.20-1.40	DF-14...	B	G female	08 = G 1/4		
0.20-2.50	DF-25...	C		10 = G 3/8		
0.30-2.60	DF-26...	D		15 = G 1/2, DN 15		
0.40-5.00	DF-50...	E	F=	20 = G 3/4		
0.25-6.00	DF-06...	G	Flange	25 = G 1, DN 25		
0.50-12.0	DF-12...	H	DIN 2527,	32 = G 1 1/4		
1.00-12.5	DF-13...		PN 40	40 = G 1 1/2, DN 40		
1.00-24.0	DF-24...			50 = DN 50		
2.00-48.0	DF-48...					
2.50-60.0	DF-60...					
5.00-120	DF-H2...					
40.0-160	DF-H6...					

\* NPT-thread Code N



### Remote Flow Transmitter

The DF-...MA evaluating electronics converts the frequency signal from the measuring sensor to a 0(4)-20 mA, 0-10 V<sub>DC</sub> analogue signal. It is ideally suited for precise teletransmission of flow-rate measurements for indicating devices, recorders or controllers, for example.

A green LED on the transmitter indicates the ready state. If the sensor is replaced, the transmitter should be readjusted with the potentiometers marked 0 mA and/or 20 mA. They are protected against unintentional rotation by a foil situated behind the front dial. Measuring accuracy and perfect operation is only guaranteed when the foil is undamaged.

The supply voltage and output are connected with a 7-pin circular connector or a 1.5 m cable. (A cable can only be used for flange connection.)



### Technical Specifications

**Power input**

3.5 W max.

**Power supply**

24 V<sub>DC</sub> +15% / -10%  
24, 110, 230 V<sub>AC</sub> ±20%

**Output**

(DIN IEC 381)  
current source 0(4)-20 mA floating,  
0-10 V  
(24 V<sub>DC</sub> non-isolated)

**Output load**

0-500 Ω (load)

**Protection type**

IP 65, all-insulated

**Ambient temperature**

-25°C to +80°C

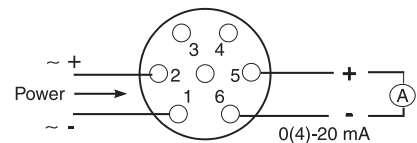
**Accuracy**

±2.5% f. s

### Cable Connections

- Nr. 1 supply voltage (-)
- Nr. 2 supply voltage (+)
- Nr. 5 analog output (+)
- Nr. 6 analog output (-)

### Wiring Diagram



### Order Details

Flow rate L/min	Model	Material combination (see transducer)	Connec-tion*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08-0.50	DF-05...	A	R= G female	06 = G 1/8	MAK = remote sensor with 1.5 m cable connection MAS = remote sensor with connector MAG = remote sensor with connector and mating connector	0=230 V <sub>AC</sub> 1=110 V <sub>AC</sub> 2=24 V <sub>AC</sub> 3=24 V <sub>DC</sub>	0=0-20 mA 4=4-20 mA 1=0-10 V
0.20-1.40	DF-14...	B		08 = G 1/4			
0.20-2.50	DF-25...	C		10 = G 3/8			
0.30-2.60	DF-26...	D		15 = G 1/2, DN 15			
0.40-5.00	DF-50...	E	F= Flange DIN 2527, PN 40	20 = G 3/4			
0.25-6.00	DF-06...	G		25 = G 1, DN 25			
0.50-12.00	DF-12...	H		32 = G 1 1/4			
1.00-12.5	DF-13...			40 = G 1 1/2, DN 40			
1.00-24.0	DF-24...			50 = DN 50			
2.00-48.0	DF-48...						
2.50-60.0	DF-60...						
5.00-120	DF-H2...						
40.0-160	DF-H6...						

\* NPT-thread Code N



**Technical Specifications**

**Power supply:**

24 V<sub>DC</sub> +15% / -10% 5 W

**Output:**

alternative 0(4)...20 mA, 0-10 V<sub>DC</sub>  
load 0 to 500 Ω  
oder 0 to 10 V, load >500 kΩ  
both versions grounded

**Limit contacts:**

1 floating min. and max. change-over contact 24 V/2 A each, hysteresis 2.5 % of full scale value, limit values adjustable by keys, remain stored after power failure

**Display:**

3-segment, 7-segment with fixed point (7 mm high)

**Ambient temperature:**

-25 °C to +80 °C

**Key Assignment**

- MIN**      Selecting the MIN alarm value
- MAX**      Selecting the MAX alarm value
- Δ**          Increasing the selected alarm value
- ∇**          Lowering the selected alarm value
- Δ and ∇**   Saving the altered alarm value



**Flow Indicator with Digital Display, Min./Max. Contact and Analogue Output**

The DF-K evaluating electronics outputs the sensor frequency signal to a display, and converts it to an analogue signal and two limit contacts. The flow rate is output to the 3-position 7-segment display. Two limit value relays with floating changeover contacts serve to continuously monitor the minimum and, or maximum flow rate. The control state is indicated by a red LED. The setpoint value is adjusted by pressing the MIN. or MAX. key together with the up or down key. The analogue output can be either a current (0 (4) to 20 mA) or voltage output (0 to 10 V). The device must be re-calibrated by KOBOLD if the sensor is replaced. The device is connected with a 10-pin 1.5 m long cable.

(Connector version is not available)

**Fault Signals**

All display segments shine to indicate excess voltage. Overrange causes the display to flash.

**Order Details**

Flow rate L/min	Model	Material combination (see transducer)	Con-nection*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08-0.50	DF-05...	A	R=	06 = G 1/8	KOK=Digital display 2 contacts, analogue output with 1.5 m cable connection	3=24 V <sub>DC</sub>	0=0-20 mA 4=4-20 mA 1=0-10 V <sub>DC</sub>
0.20-2.50	DF-25...	B	G female	08 = G 1/4			
0.40-5.00	DF-50...	C		10 = G 3/8			
0.30-6.00	DF-06...	D		15 = G 1/2, DN 15			
0.50-12.0	DF-12...	E	F=	20 = G 3/4			
1.00-24.0	DF-24...	G	Flange	25 = G 1, DN 25			
2.00-60.0	DF-60...	H	DIN 2527,	32 = G 1 1/4			
5.00-150	DF-H5...		PN 40	40 = G 1 1/2, DN 40			
				50 = DN 50			

\* NPT-thread Code N



**Technical Specifications**

**Power input**

4 W max.

**Power supply**

24, 110, 230 V<sub>AC</sub> +10% / -10%

**Output**

Switching contact 250 V max./5 A

contact resistance < 200 mΩ

Current source (DIN IEC 381)

0(4)-20 mA

Output load 0-300 Ω (load)

**Protection type**

IP 65

**Ambient temperature**

-25°C to +80°C

**Accuracy**

± 2.5% f. s



**Flow Indicator and Monitor with Analogue Output**

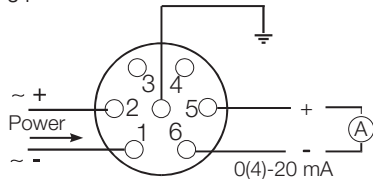
The DF-..WMA evaluating electronics outputs the frequency signals from the sensor to a display, and converts the signal to an analogue signal and limit value contacts. A light-strip indicator comprising 24 LEDs indicates the flow rate. Forty-eight-fold resolution is achieved by changing the luminosity of the diodes. Two built-in limit value relays serve to continuously monitor the minimum and, or maximum flow rate. The setpoint value can be defined with a button. The light-strip indicator is switched over from the current measured value to the set limit value by pressing a button. The device has an analogue output 0 (4)-20 mA, which allows teletransmission. The ready state is indicated by a green LED. The control state of the relay is indicated by two red LEDs.

If the sensor is replaced, the device must be re-calibrated by KOBOLD.

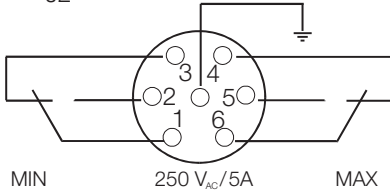
Vane and light-strip indicator are arranged beside one another in this evaluating electronics. They can both be observed at the same time. Connections can be made through two 7-pin connectors at the back of the case.

**Wiring diagram**

J1



J2



**Order Details**

Flow rate L/min	Model	Material combination (see transducer)	Con-nection*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08-0.50	DF-05...	A	R= G female	06=G 1/8	WMA= Electronics with bar diagram, 2 limit contacts, analogue output	0=230 V <sub>AC</sub> 1=110 V <sub>AC</sub> 2=24 V <sub>AC</sub>	0=0-20 mA 4=4-20 mA
0.20-1.40	DF-14...	B		08=G 1/4			
0.20-2.50	DF-25...	C		10=G 3/8			
0.30-2.60	DF-26...	D		15=G 1/2, DN 15			
0.40-5.00	DF-50...	E		20=G 3/4			
0.25-6.00	DF-06...	G	F= Flange DIN 2527, PN 40	25=G 1, DN 25			
0.50-12.0	DF-12...	H		32=G 1 1/4			
1.00-12.5	DF-13...			40=G 1 1/2, DN 40			
1.00-24.0	DF-24...			50=DN 50			
2.00-48.0	DF-48...						
2.50-60.0	DF-60...						
5.00-120	DF-H2...						
40.0-160	DF-H6...						

\* NPT-thread Code N



**Technical Specification**

**Actual-value indication**

3-segment LED display

**Power input**

5 watt max.

**Power supply**

24 V<sub>AC</sub>, 110 V<sub>AC</sub> + 15% / -10%  
230 V<sub>AC</sub> + 10% / -10%

**Relay output**

Opens upon power failure or overrange, break contact max. 250 V, 5A contact resistance < 100 mΩ

**Analogue output (DIN IEC 381)**

0(4)-20 mA floating. 0-10 V<sub>DC</sub> output load 0-500 Ω (load)

**Protection type**

IP 65

**Ambient temperature**

-20°C to +80°C

**Accuracy:**

±2.5% f. s.



**Actual-value indication**

3-segment LED display for measuring the current flow rate in L/min

**Analogue output**

0-10 V, 0-20 or 4-20 mA, for teletransmitting the measured value; also during a fault signal in the actual-value indication.

**Totalizing counter**

6-segment LED display display in liters or m<sup>3</sup>

**1 relay output**

Opens upon power failure or overrange

**Fault signals**

Faults are indicated by a flashing actual-value display.

**Option**

Remote control of START/STOP-key

**Key Assignment**



**Starts counting**

If the >START< key is pressed after a fault, the current counter reading is displayed and counting continues from the displayed value. The red LED shines during counting.



**Resets the counter to »000000«**

Option: The >RESET< key can be disabled at the factory; the counter cannot be reset to ZERO after that.

**Power failure**

The output relay drops out upon power failure. Counting is interrupted and the last value displayed in the counter is saved. When power has been restored counting can be continued by pressing the >START< key; it can be reset by pressing the >RESET< key and then restarted. The actual-value indication then shows the current flow rate.



**Overrange**

Should the measuring range be exceeded by more than 20%, serious measuring errors can occur. The output relay drops out. The last value displayed in the counter is stored.



When the flow rate has been reduced, counting can be continued by pressing the >START< key; it can be reset by pressing the >RESET< key and restarted. The actual-value indication then shows the current flow rate.

**Order Details**

Flow rate L/min	Model	Material combination (see transducer)	Con-nection*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08-0.50	DF-05...	A		06 = G 1/8	ZGL= counter with mating connector, unit liter	0=230 V <sub>AC</sub>	0=0-20 mA
0.20-2.50	DF-25...	B	R=	08 = G 1/4	ZFL= counter with mating connector, remote control, unit liter	1=110 V <sub>AC</sub>	4=4-20 mA
0.40-5.00	DF-50...	C	G female	10 = G 3/8	ZGM= counter with mating connector, unit m <sup>3</sup>	2=24 V <sub>AC</sub>	1=0-10 V <sub>DC</sub>
0.30-6.00	DF-06...	D		15 = G 1/2, DN 15	ZFM= counter with mating connector, remote control, unit m <sup>3</sup>		
0.50-12.0	DF-12...	E		20 = G 3/4			
1.00-24.0	DF-24...	G	F=	25 = G 1, DN 25			
2.00-60.0	DF-60...	H	Flange DN 2527, PN 40	32 = G 1 1/4			
5.00-150	DF-H5...			40 = G 1 1/2, DN 40			
				50 = DN 50			

\* NPT-thread Code N



**Technical Specification**

**Actual-value indication**

3-segment LED display

**Power input**

5 watt max.

**Power supply**

24 V<sub>AC</sub>, 110 V<sub>AC</sub> + 15%/-10%  
230 V<sub>AC</sub> + 10%/-10%

**Relay output**

Opens upon power failure or overrange, break contact max. 250 V, 5A contact resistance < 100 mΩ

**Analogue output (DIN IEC 381)**

0(4) -20 mA floating output load 0-500 Ω (load)

**Protection type**

IP 65

**Ambient temperature**

-20°C to +80°C



**Actual-value indication**

3-segment LED display for measuring the current flow rate in L/min

**Analogue output**

0-10 V, 0-20 or 4-20 mA, for teletransmitting the measured value; also during a fault signal in the actual-value indication.

**Subtracting Counter**

6-segment LED display display in liters or m<sup>3</sup> dosing quantity adjustable with »SET« keys.

**1 relay output**

Opens when dosing sequence has stopped, upon power failure or overrange.

**Option**

Remote control of START/STOP-key

**Key Assignment**



**Starts the dosing sequence**

The output relay closes, until the pre-selected quantity has been batched. The red LED shines during dosing.

If the >START< key is pressed after a fault, the quantity already batched is displayed and batch continues from the displayed value.



**Stops the dosing sequence**

The output relay opens. The display shows the quantity already batched.

Continue batch with >START< or abort and reset to the initial output value with the >SET<-keys.



**Adjusting the batch quantity**

Any value can be written in the counter with the >SET< keys.

**Fault signals**

Faults are indicated by a **flashing actual-value display**.

**Power failure**

The output relay drops out upon power failure. Batch is interrupted and the quantity already batched is stored. When power has been restored, batching can be continued by pressing the >START< key. The actual-value indication then shows the current flow rate.

**Overrange**

Should the measuring range be exceeded by more than 20%, serious measuring errors can occur. The output relay drops out. The quantity already batched is stored.

When the flow rate has been reduced, batching can be continued by pressing the >START< key. The actual-value indication shows the current flow rate again.

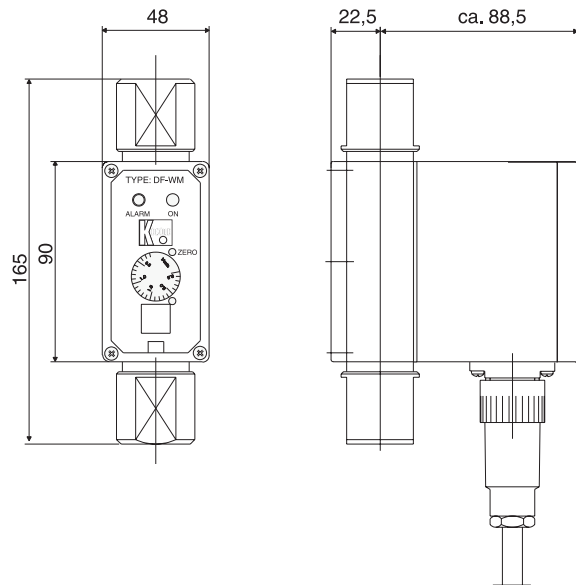
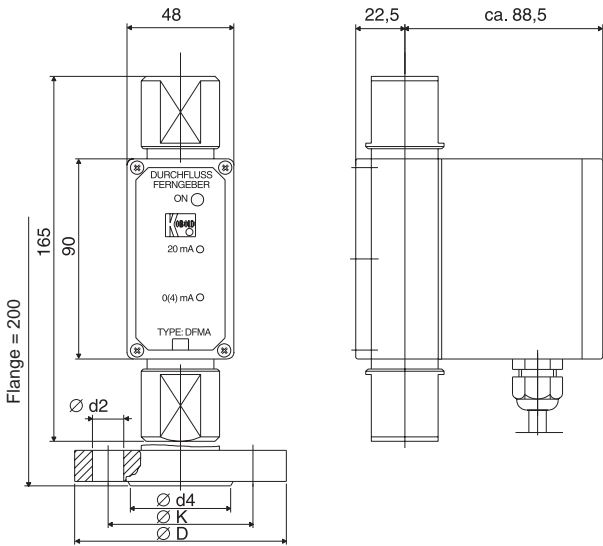
**Order Details**

Flow rate L/min	Model	Material combination (see transducer)	Con-nection*	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08-0.50	DF-05...	A		06 = G 1/8	DGL= batch systems with mating connector, unit liter	0=230 V <sub>AC</sub>	0=0-20 mA
0.20-2.50	DF-25...	B	R=	08 = G 1/4		1=110 V <sub>AC</sub>	4=4-20 mA
0.40-5.00	DF-50...	C	G female	10 = G 3/8	DFL= batch systems with mating connector, remote control, unit liter	2=24 V <sub>AC</sub>	1=0-10 V <sub>DC</sub>
0.30-6.00	DF-06...	D		15 = G 1/2, DN 15			
0.50-12.0	DF-12...	E		20 = G 3/4	DGM=batch systems with mating connector, unit m <sup>3</sup>		
1.00-24.0	DF-24...	G	F=	25 = G 1, DN 25	DFM=batch systems with mating connector, re-remote control, unit m <sup>3</sup>		
2.00-60.0	DF-60...	H	Flange DIN 2527, PN 40	32 = G 1 1/4			
5.00-150	DF-H5...			40 = G 1 1/2, DN 40			
				50 = DN 50			

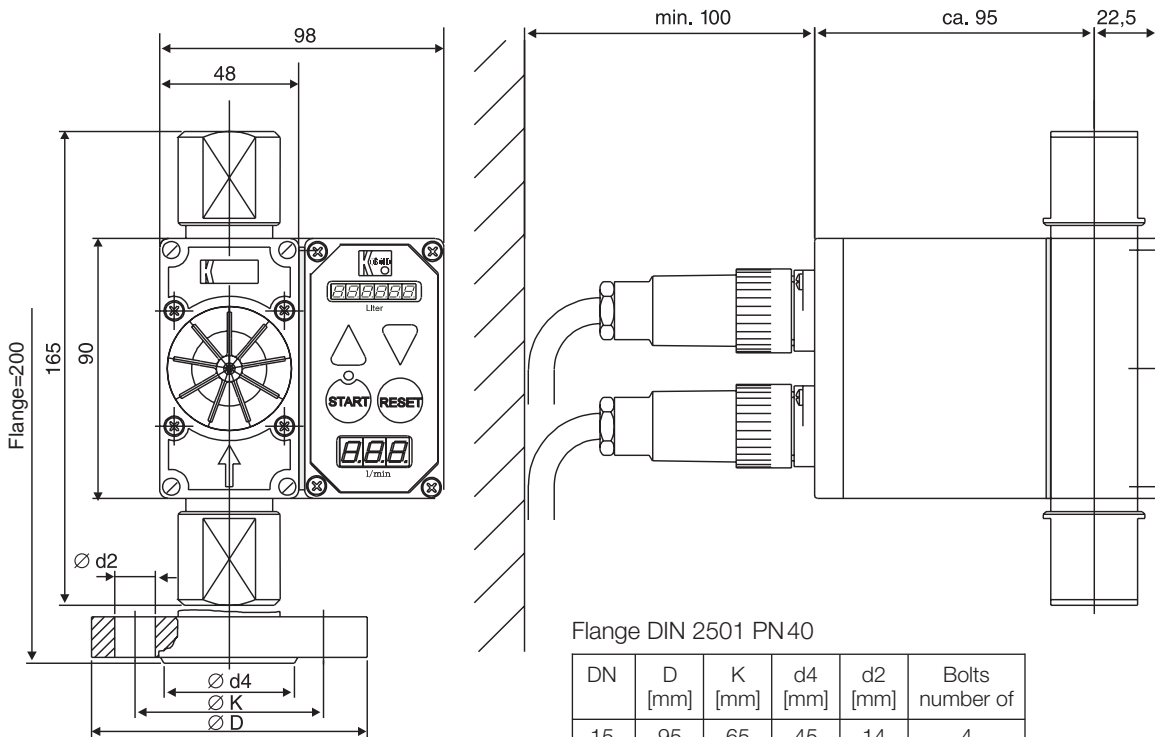
\* NPT-thread Code N

DF-K..., DF-...WM, DF-...MA with Cable Connection

DF-...WM, DF-...MA with Pin connector



DF-...WMA, DF-...Z, DF...D



Flange DIN 2501 PN40

DN	D [mm]	K [mm]	d4 [mm]	d2 [mm]	Bolts number of
15	95	65	45	14	4
25	115	85	68	14	4
40	150	110	88	18	4
50	165	125	102	18	4



**Description**

The KOBOLD measuring sensors are also available without evaluating electronics. The linear flow proportional pulse signal provided by the sensor can be controlled by customer own electronics. For connection there exists a connection box with integrated connection pins. With the OEM-version the customer is capable of integrating the sensor directly in his electronic to save additional costs and material (EMV-stability must be realised).

**Technical Details**

Measuring accuracy: 2.5% f. s.  
 Medium temperature: -20 to +80°C  
 Protection type: IP 65

● **Frequency output (OEM) no CE (...IHO, ...IHP)**

Power supply: 5-24 V<sub>DC</sub>  
 Supply current: approx. 5 mA  
 Signal amplitude high: approx. power supply  
 Signal amplitude low: ≤ 0.2 V  
 Output loss: max. 2.5 mW  
 Electrical connection: approx. 80 mm cable  
 Pulse output: NPN, open collector, max. 15 mA, not symmetric.

● **Frequency output (...HNO, ...HNP, ...HPO, ...HPP)**

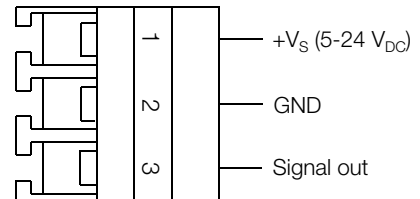
Power supply: 5-24 V<sub>DC</sub>  
 Supply current: approx. 5 mA  
 Signal amplitude high: approx. power supply  
 Signal amplitude low: ≤ 0.2 V  
 Output loss: max. 2.5 mW  
 Electrical connection: PC-box with cable connection plug  
 Pulse output: NPN or PNP, open collector, max. 15 mA, not symmetric.

Special versions: High temperature version, DIN-Plug connection

**DF...-H**



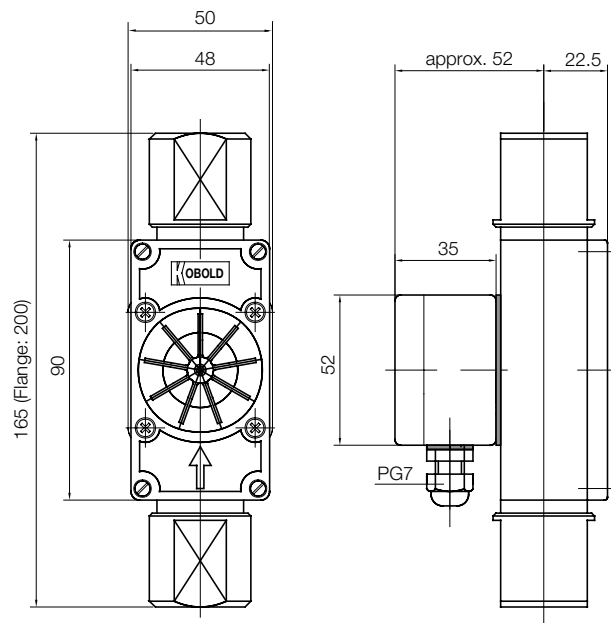
**Electrical Connection**



**Cable Connection**

red = +V<sub>s</sub>  
 blue = GND  
 yellow = Signal out

**Dimensions**



**Order Details** (Example: DF-05 A R06 IHO 3K)

Measuring range [L/min]	Frequency at Q <sub>max</sub> [Hz]	Model	Material combination (see transducer)	Connection Female or flange DIN 2527, PN 40	Pulse output	Auxiliary power
0.08...0.5	approx. 28	DF-05	A=trogamide/Ms B=PSO/VA C=PP D=brass E=stainless steel G=brass, 100 bar H=stainless steel, 100 bar	R06=G 1/8	IHO = approx. 80 mm cable, NPN, OEM, without calibration certificate IHP = approx. 80 mm cable, NPN, OEM, with calibration certificate HNO = Connection-box, NPN without calibration certificate HNP = Connection-box, NPN with calibration certificate HPO = Connection-box, PNP without calibration certificate HPP = Connection-box, PNP with calibration certificate	3K=5...24 V <sub>DC</sub>
0.2...1.4	approx. 25	DF-14		R08=G 1/4		
0.2...2.5	approx. 50	DF-25		R10=G 3/8		
0.3...2.6	approx. 38	DF-26		R15=G 1/2		
0.4...5.0	approx. 53	DF-50		R20=G 3/4		
0.3...6.0	approx. 85	DF-06		R25=G 1		
0.5...12	approx. 90	DF-12		R32=G 1 1/4		
1...12.5	approx. 48	DF-13		R40=G 1 1/2		
1...24	approx. 93	DF-24		F15=DN15*		
2...48	approx. 85	DF-48		F25=DN25*		
2.5...60	approx. 100	DF-60		F40=DN40*		
5...120	approx. 116	DF-H2		F50=DN50*		
40...160	approx. 125	DF-H6				

\* Flange connection with material combination stainless steel E or H only

## For Control Devices and Relays...



... please refer to our brochure »Z2«