



Zertifiziertes  
QM-System  
DIN EN ISO 9001  
Zertifikat-Nr. 01017

## Vane Flow Meter, Monitor, Counter, Batching System

in modular design · for liquids



measuring  
·  
monitoring  
·  
analysing



- Measuring ranges: 0,08-0,50...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...G 1 1/2  
flange DN 15...DN 50
- Materials: 8 different material combinations
- Output: 0(4)-20 mA, 0-10 V,  
switch contacts, batch, metering

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BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, MOROCCO, NETHERLANDS,  
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Model:  
DF

The established vane technology has proven itself a million times worldwide for measuring and monitoring the flow of dif 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...G 1 1/2

Measuring ranges:  
0,08 - 0,5...40 - 160 L/min

Measuring accuracy:  
±2,5% v. ME

Eight different material combinations



Connection:  
Flange DIN 2501,  
DN 15, DN 25, DN 40, DN 50

Measuring ranges:  
0,08 - 0,5...40 - 160 L/min

Measuring accuracy:  
±2,5% v. ME

Two different material combinations

### Evaluating Electronics



**DF-...WM**

- intermittent measuring and continuous monitoring
- 1 limit value relay
- pushbutton and scale potentiometer for sensing the flow rate



**DF-...MA**

- for teletransmitting the flow rate
- output  
0(4) -20  
0(4)-20 mA  
0-10 V<sub>DC</sub>



**DF-...KL**

- continuous measuring and monitoring
- digital display  
2 limit value relays
- output  
0(4)-20 mA  
0-10 V<sub>DC</sub>



**DF-...-Z**

- measuring and metering
- LED display
- output  
0(4)-20 mA  
0-10 V<sub>DC</sub>
- 2 adding meters
- 2 relays freely programmable



**DF-...-D**

- measuring, counting and batching
- LED display
- output  
0(4)-20 mA  
0-10 V<sub>DC</sub>
- subtracting and adding meter
- 1 dosing relay
- 1 relay freely programmable



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).

**Typ 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..

**Measuring Ranges**

Model	Flow rate L/min	Δp [bar] at max. flow rate	Filter [mm]	Recommended connection sizes	
				Internal thread ["]	Flange DN
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..	0.2 - 2.50	0.94	2.0	1/4, 3/8	15
DF-26..	0.3 - 2.60	0.98	2.0	1/4, 3/8	15
DF-50..	0.4 - 5.00	0.45	3.5	1/4, 3/8, 1/2	15
DF-06..	0.3 - 6.00	1.00	3.2	1/4, 3/8, 1/2	15
DF-12..	0.5 - 12.0	0.61	5.0	1/4, 3/8, 1/2	15, 25
DF-13..	1.0 - 12.5	0.14	8.0	1/2, 3/4, 1	15, 25
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..	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-H6..	40.0 - 160	1.50	18.5	1, 1 1/4, 1 1/2	25, 40, 50

\* Upon request

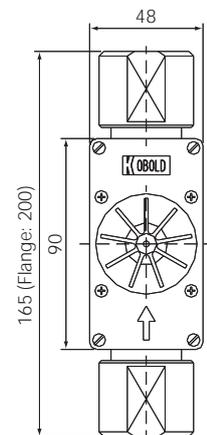
**Material Combinations**

Material combination	Standard version					High-pressure version	
	I	II	II B <sup>1)</sup>	III	IV <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 Nick.-plat.	St.St <sup>4)</sup>	Brass Nick.-plat.	St.St <sup>4)</sup>
Cover	Trogamide	Polysulfone	Polypropylene	Polysulfon	Polysulfon	Brass Nickel-plated	St.St <sup>4)</sup>
Connection	Brass Nick.-plat.	St.St <sup>4)</sup>	Polypropylene	Brass Nick.-plat.	St.St <sup>4)</sup>	Brass Nick.-plat.	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 <sup>4)</sup>	St.St <sup>4)</sup>	ceramic	St.St <sup>4)</sup>	St.St <sup>4)</sup>	St.St <sup>4)</sup>	St.St <sup>4)</sup>
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

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

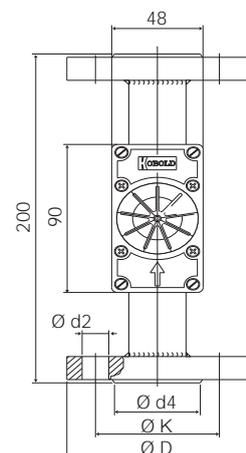
**Dimensions**



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





### 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.)

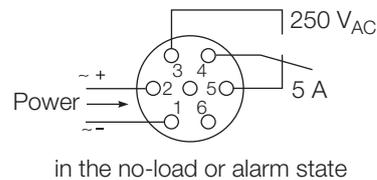
### Technical Details

Accuracy:	±2.5% f. s.
Power supply:	24 V <sub>DC</sub> +15% / -10% 24, 110, 230 V <sub>AC</sub> ±20%
Power input:	3.5 W max.
Output:	changeover contact 250 V max. / 5 A contact resistance ≤ 100 mΩ
Ambient temperature:	-25 °C to +80 °C
Protection type:	IP 65, all-insulated

### Cable Connections

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

### Wiring Diagram



### Order Details (Example: DF-05 A R 06 WMK 0)

Flow rate L/min	Model	Material combination (see transducer)	Connection	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power
0.08 - 0.50	DF-05...	A = Trogamide/Brass B = PSO/VA C = PP D = Brass E = St. St. G = Brass, 100 bar H = St. St., 100 bar	<b>R</b> = G female  <b>N</b> = NPT female  <b>F</b> = flange DIN 2527, PN 40	<b>06</b> = G 1/8 <b>08</b> = G 1/4 <b>10</b> = G 3/8 <b>15</b> = G 1/2, DN 15 <b>20</b> = G 3/4 <b>25</b> = G 1, DN 25 <b>32</b> = G 1 1/4 <b>40</b> = G 1 1/2, DN 40 <b>50</b> = DN 50	<b>WMK</b> = monitor with 1.5 m cable connection  <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...					
0.20 - 2.50	DF-25...					
0.30 - 2.60	DF-26...					
0.40 - 5.00	DF-50...					
0.25 - 6.00	DF-06...					
0.50 - 12.0	DF-12...					
1.00 - 12.5	DF-13...					
1.00 - 24.0	DF-24...					
2.00 - 48.0	DF-48...					
2.50 - 60.0	DF-60...					
5.00 - 120	DF-H2...					
40.0 - 160	DF-H6...					



### 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.)

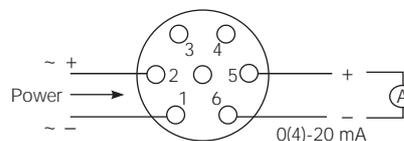
### Technical Details

- Accuracy: ±2.5% f. s.
- Power supply: 24 V<sub>DC</sub> +15% / -10%  
24, 110, 230 V<sub>AC</sub> ±20%
- Power input: 3.5 W max.
- Output (DIN IEC 381): current source 0(4)-20 mA floating, 0-10 V (bei 24 V<sub>DC</sub> non-isolated)
- Output load: 0-500 Ω (load)
- Ambient temperature: -25 °C to +80 °C
- Protection type: IP 65, all-insulated

### Cable Connections

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

### Wiring Diagram



### Order Details (Example: DF-05 A R 06 MAK 0 0)

Flow rate L/min	Model	Material combination (see transducer)	Connection	Connection sizes (see measuring sensor for recommended size)	Electronics	Auxiliary power	Analogue output
0.08 - 0.50	DF-05...	<b>A</b> = Trogamide/Brass <b>B</b> = PSO/VA <b>C</b> = PP <b>D</b> = Brass <b>E</b> = St. St. <b>G</b> = Brass, 100 bar <b>H</b> = St. St., 100 bar	<b>R</b> = G female <b>N</b> = NPT female <b>F</b> = flange DIN 2527, PN 40	<b>06</b> = G 1/8	<b>MAK</b> = remote sensor with 1.5 m cable connection <b>MAS</b> = remote sensor with connector <b>MAG</b> = remote sensor 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>	<b>0</b> = 0-20 mA <b>4</b> = 4-20 mA <b>1</b> = 0-10 V
0.20 - 1.40	DF-14...			<b>08</b> = G 1/4			
0.20 - 2.50	DF-25...			<b>10</b> = G 3/8			
0.30 - 2.60	DF-26...			<b>15</b> = G 1/2, DN 15			
0.40 - 5.00	DF-50...			<b>20</b> = G 3/4			
0.25 - 6.00	DF-06...			<b>25</b> = G 1, DN 25			
0.50 - 12.0	DF-12...			<b>32</b> = G 1 1/4			
1.00 - 12.5	DF-13...			<b>40</b> = G 1 1/2, DN 40			
1.00 - 24.0	DF-24...			<b>50</b> = DN 50			
2.00 - 48.0	DF-48...						
2.50 - 60.0	DF-60...						
5.00 - 120	DF-H2...						
40.0 - 160	DF-H6...						



**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 top display line of the double-spaced display shows the flow value with measuring unit and the bottom line a bargraph indicator proportional to the measuring value. The two relays with floating output changeover contacts continuously monitor the flow values. Switching point, hysteresis, a window point, and switch on or off delay can be set separately for each relay. The switching points can also be set directly by using the control keys without having to change over into the menu. A red LED indicates with the switching status.

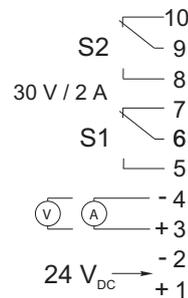
The analogue output is optionally available as current output with 0(4)...20 mA or as voltage output with 0...10 V. A MIN/MAX reading memory determines the extreme readings of the flow. If the maximum set flow (exceeded range) is exceeded, it will be shown on the display. The set parameters can be protected against unauthorised alteration by using a password function.

The device is connected with a 10-pin cable.

**Technical Details**

- Accuracy: ±2.5% f.s.
- Display: double-spaced display, illuminated flow value with selectable units and bargraph display
- Power supply: 24 V<sub>DC</sub> ±20 %
- Current consumption: approx. 100 mA
- Electrical connection: 10 wire cable connection
- Analogue output: (0)4...20 mA selectable  
Load: 0...500 Ω  
or 0-10 V<sub>DC</sub>, Load: >100 kΩ
- Switching output: 2 relays, max. 30 V / 2 A
- Control elements: via 3 keys
- Functions: MIN/MAX memory, flow monitor, language settings, password protection
- Protection type: IP 65

**Electrical Connection**



**Order Details** (Example: DF-05 A R 06 KLK3 4)

Flow rate L/min	Model	Material combination (see transducer)	Connection	Connection sizes (see measuring sensor for recommended size)	Electronics	Analogue output
0.08 - 0.50	DF-05...	<b>A</b> = Trogamide/Brass <b>B</b> = PSO/VA <b>C</b> = PP <b>D</b> = Brass <b>E</b> = St. St. <b>G</b> = Brass, 100 bar <b>H</b> = St. St., 100 bar	<b>R</b> = G female <b>N</b> = NPT female <b>F</b> = flange DIN 2527, PN 40	<b>06</b> = G 1/8 <b>08</b> = G 1/4 <b>10</b> = G 3/8 <b>15</b> = G 1/2, DN 15 <b>20</b> = G 3/4 <b>25</b> = G 1, DN 25 <b>32</b> = G 1 1/4 <b>40</b> = G 1 1/2, DN 40 <b>50</b> = DN 50	<b>KLK3</b> = Digital display, switching and analogue output, 24 V <sub>DC</sub> with 1.5 m cable connection  <b>KLL3</b> = Digital display, switching and analogue output, 24 V <sub>DC</sub> cable connection (Please specify length in clear text)	<b>4</b> = (0)4-20 mA  <b>1</b> = 0-10 V
0.20 - 1.40	DF-14...					
0.20 - 2.50	DF-25...					
0.30 - 2.60	DF-26...					
0.40 - 5.00	DF-50...					
0.25 - 6.00	DF-06...					
0.50 - 12.0	DF-12...					
1.00 - 12.5	DF-13...					
1.00 - 24.0	DF-24...					
2.00 - 48.0	DF-48...					
2.50 - 60.0	DF-60...					
5.00 - 120	DF-H2...					
40.0 - 160	DF-H6...					

## Flow Indicator with Digital Display and Counter Electronic



The evaluation unit changes the frequency signal of the pickup into a 3(4)-digit flow reading with selectable measurement unit (top display line), and into a scalable analogue signal. The flow quantity is added up in a part quantity meter and a total quantity meter and then displayed in the bottom line of the screen. The quantity meter's units of measurement are selectable.

The two relays with floating output changeover contacts continuously monitor if the freely adjustable limits are exceeded or fallen short of. Here, it is possible to choose between threshold value and window monitoring.

Switching point, hysteresis, a window point, and switch on or off delay can be set separately for each relay. The switching points can also be set directly by using the control keys without having to change over into the menu. Alternatively, it is also possible to monitor the quantity meter to see if it is exceeded. A red LED indicates with the switching status.

The analogue output is optionally available as current output with 0(4)...20 mA or as voltage output with 0...10 V. The parameter names can be shown in the menu in German or English. If used where the flow readings change rapidly, the display can be pacified and the analogue reading averaged by switching on some software.

A MIN/MAX reading memory determines the extreme readings of the flow. The display of the readings and the resetting are achieved by using the keys without having to change into the menu. Resetting by using the keys can also be blocked. If the maximum set flow (exceeded range) is exceeded, it will be shown on the display. The set parameters can be protected against unauthorised alteration by using a password function.

## Range of Functions

Quantity meter and flow meter with digital display, switch and analogue output:

- Measurement and display total, part and flow quantities
- Control input for part quantity reset
- 2 switching outputs, freely programmable as flow monitor or for monitoring the part and total quantity
- Analogue output 0(4)-20 mA or 0-10 V
- MIN/MAX memory

## Technical Details

Accuracy:	±2.5% f.s.
Display:	2 x 8-digit LCD module, illuminated total, part and flow quantity, units of measurement are selectable
Quantity meter:	8 digits
Power supply:	24 V <sub>DC</sub> ±20%
Current consumption:	approx. 100 mA
Electrical connection:	10-pole cable connection
Analogue output:	0(4)...20 mA selectable Load: 0...500 Ω or 0...10 V <sub>DC</sub> , Load: >100 kΩ
Switching output:	2 relays, max. 30 V / 2 A
Control elements:	via 4 keys
Functions:	reset function, MIN/MAX-memory, flow monitor, monitoring of part and total quantities, language
Protection type:	IP 65



Flow Indicator with Digital Display and Counter Electronic Model DF-...ZLxxx

Order Details (Example: DF-05 A R 06 ZLK3 4)

Flow rate L/min	Model	Material combination (see transducer)	Connection	Connection sizes (see measuring sensor for recommended size)	Electronics	Analogue output
0.08 - 0.50 0.20 - 1.40 0.20 - 2.50 0.30 - 2.60 0.40 - 5.00 0.25 - 6.00 0.50 - 12.0 1.00 - 12.5 1.00 - 24.0 2.00 - 48.0 2.50 - 60.0 5.00 - 120 40.0 - 160	DF-05... DF-14... DF-25... DF-26... DF-50... DF-06... DF-12... DF-13... DF-24... DF-48... DF-60... DF-H2... DF-H6...	A = Trogamide/Brass B = PSO/VA C = PP D = Brass E = St. St. G = Brass, 100 bar H = St. St., 100 bar	R = G female  N = NPT female  F = flange DIN 2527, PN 40	06 = G 1/8 08 = G 1/4 10 = G 3/8 15 = G 1/2, DN 15 20 = G 3/4 25 = G 1, DN 25 32 = G 1 1/4 40 = G 1 1/2, DN 40 50 = DN 50	ZLK3 = Counter electronic, 24 V <sub>DC</sub> 1.5 m cable connection  ZLL3 = Counter electronic, 24 V <sub>DC</sub> cable connection (Please specify length in clear text)	4 = (0)4-20 mA  1 = 0-10 V

Electrical Connection

DF-...ZLxxx cable connection

Wire number	Function
1	+24 V <sub>DC</sub>
2	GND
3	Analogue output
4	GND
5	don't connect
6	Reset part quantities
7	Relay S1
8	Relay S1
9	Relay S2
10	Relay S2

## Flow Indicator with Digital Display and Dosing Electronic



The evaluation unit changes the frequency signal of the pickup into a 3(4)-digit flow reading with adjustable scale (top line of display), and a scalable analogue signal. The dosage is displayed in the bottom line of the display. The unit of measurement can be selected. Included are two relays with floated output changeover contacts for various functions. The relay (S1) can be used to execute the flow monitoring, total volume monitoring, fine dosage or the pump control.

When the flow is being continuously monitored, it checks if the freely adjustable limits are exceeded or fallen short of. A choice can be made between threshold value and window monitoring. Switching point, hysteresis, window point, and switch-on or switch-off delay can be set as desired.

If monitoring of the total volume is selected, a check is made to see if the adjustable quantity limit is exceeded. The dosage relay (S2) switches on when the dosage process starts, and then switches off again, once the dosage has flowed through. The dosage process can be interrupted by using the Start/Stop switch. By taking a correction quantity into account, it is possible to take any special features or conditions of the system into account. By entering a fine dosage, the bypass valve can be controlled with the relay (S1). A red LED indicates the relay's switching status.

The Analogue output is available as a current output with 0(4)...20 mA or a voltage output with 0...10 V. The parameter names in the menu can be displayed in either German or English. If used where the flow readings change rapidly, the display can be pacified and the analogue reading averaged by switching on some software. If the maximum set flow (exceeded range) is exceeded, it will be shown on the display. The set parameters can be protected against unauthorised alteration using a password function.

## Range of Functions

Dosage and flow meter with digital display, switching and analogue output:

- Measurement and display of dosage, total and flow quantities
- Interval counter (number of dosage process)
- 2 control inputs
- 1 dosage output
- 1 switching output, freely programmable as flow monitor or for monitoring the total quantity
- Analogue output 0(4) - 20 mA or 0-10 V

## Technical Details

Accuracy:	±2.5% f.s.
Display:	2 x 8-digit LCD module, illuminated dosage, total and flow quantity, units of measurement are selectable
Quantity meter:	8-digit
Dosage:	5-digit
Power supply:	24 V <sub>DC</sub> ±20 %
Current consumption:	approx. 100 mA
Electrical connection:	10-pole cable connection
Analogue output:	0(4)...20 mA selectable Load: 0...500 Ω or 0...10 V <sub>DC</sub> Load: >100 kΩ
Switching output:	2 relays, max. 30 V / 2 A
Control elements:	via 4 keys
Functions:	dosage (relay S2), start, stop, reset, fine dosage, correction quantity, flow monitor, total volume monitoring, language
Protection type:	IP 65



Flow Indicator with Digital Display and Dosing Electronic Model DF-...DLxxx

Order Details (Example: DF-05 A R 06 DLK3 4)

Flow rate L/min	Model	Material combination (see transducer)	Connection	Connection sizes (see measuring sensor for recommended size)	Electronics	Analogue output
0.08 - 0.50	DF-05...	<b>A</b> = Trogamide/Brass <b>B</b> = PSO/VA <b>C</b> = PP <b>D</b> = Brass <b>E</b> = St. St. <b>G</b> = Brass, 100 bar <b>H</b> = St. St., 100 bar	<b>R</b> = G female  <b>N</b> = NPT female  <b>F</b> = flange DIN 2527, PN 40	<b>06</b> = G 1/8 <b>08</b> = G 1/4 <b>10</b> = G 3/8 <b>15</b> = G 1/2, DN 15 <b>20</b> = G 3/4 <b>25</b> = G 1, DN 25 <b>32</b> = G 1 1/4 <b>40</b> = G 1 1/2, DN 40 <b>50</b> = DN 50	<b>DLK3</b> = Dosing Electronic, 24 V <sub>DC</sub> 1.5 m cable connection  <b>DLL3</b> = Dosing Electronic, 24 V <sub>DC</sub> cable connection (Please specify length in clear text)	<b>4</b> = (0)4-20 mA  <b>1</b> = 0-10 V
0.20 - 1.40	DF-14...					
0.20 - 2.50	DF-25...					
0.30 - 2.60	DF-26...					
0.40 - 5.00	DF-50...					
0.25 - 6.00	DF-06...					
0.50 - 12.0	DF-12...					
1.00 - 12.5	DF-13...					
1.00 - 24.0	DF-24...					
2.00 - 48.0	DF-48...					
2.50 - 60.0	DF-60...					
5.00 - 120	DF-H2...					
40.0 - 160	DF-H6...					

Electrical Connection

DF-...DLxxx cable connection

Wire number	Function
1	+24 V <sub>DC</sub>
2	GND
3	Analogue output
4	GND
5	Control 1*
6	Control 2*
7	Relay S1
8	Relay S1
9	Relay S2
10	Relay S2

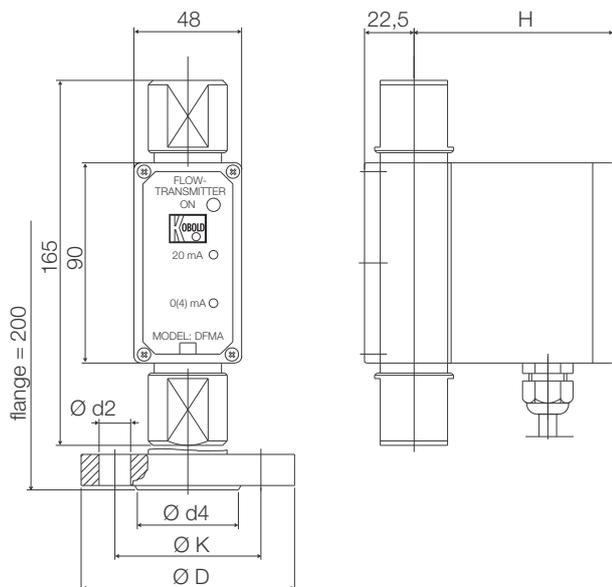
\* Control 1 <-> GND: Start-dosing  
 Control 2 <-> GND: Stop-dosing  
 Control 1 <-> Control 2 <-> GND: Reset-dosing



**Dimensions**

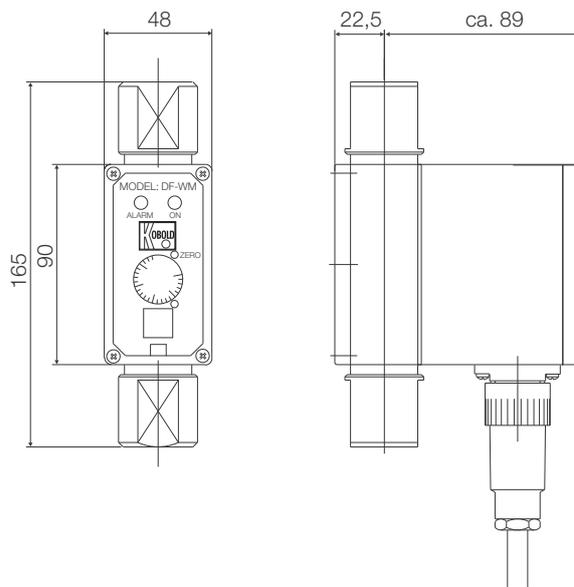
**Cable connection**

DF-...KL, DF-...WM, DF-...MA, DF-...ZL, DF-...DL



**Plug connection**

DF-...WM, DF-...MA



**Flange DIN 2501 PN 40**

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

Model	H
DF-...MA, DF-...WM	approx. 89 mm
DF-...DLxxx, DF-...ZLxxx, DF-...KL	approx. 93 mm



**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**

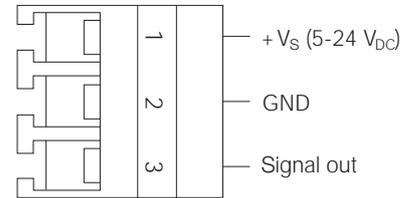
- Measuring accuracy: ±2.5% f.s.
- Medium temperature: -20...+80°C
- Protection type: IP 65
- Frequency Output (OEM) no CE (...IHO, ...IHP)**
- Power supply: 5-24 V<sub>DC</sub>
- Supply current: approx. 5 mA
- Signal amplitude high: approx. power supply
- Signal amplitude low: ≤0.2 V
- Output loss: 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-connection 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



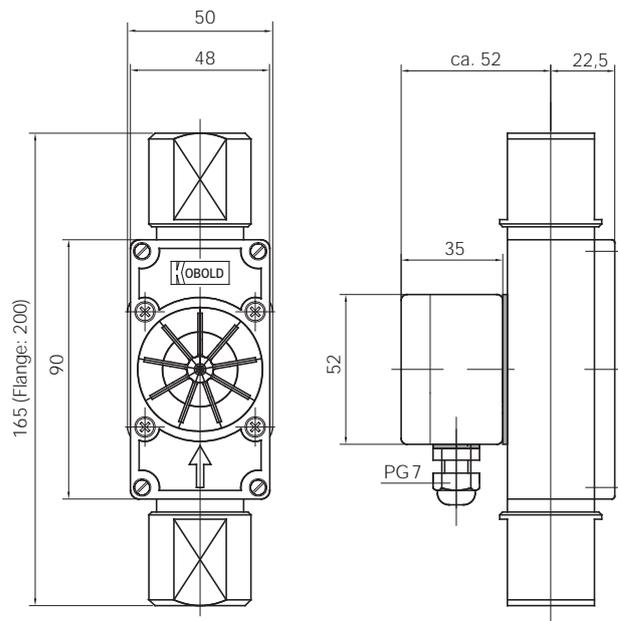
**Electrical Connection**



**Cable Connection**

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

**Dimensions**



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

Flow rate L/min	Frequency at Q <sub>max</sub> [Hz]	Model	Material combination (see transducer)	Connection <sup>1)</sup> female or flange DIN 2527, PN40	Pulse Output	Auxiliary power
0.08 - 0.50	ca. 28	DF-05...	A = Trogamide/ Brass	R06 = G 1/8	IHO = approx. 80 mm cable, NPN, OEM, without calibration certificate	3K = 5...24 V <sub>DC</sub>
0.20 - 1.40	ca. 25	DF-14...		B = PSO/VA		
0.20 - 2.50	ca. 50	DF-25...	C = PP		R10 = G 3/8	
0.30 - 2.60	ca. 38	DF-26...		D = Brass	R15 = G 1/2	
0.40 - 5.00	ca. 53	DF-50...	E = St. St.		R20 = G 3/4	
0.25 - 6.00	ca. 85	DF-06...		G = Brass, 100 bar	R25 = G 1,	
0.50 - 12.0	ca. 90	DF-12...	H = St. St., 100 bar		R32 = G 1 1/4	
1.00 - 12.5	ca. 48	DF-13...		F15 = DN 15 <sup>2)</sup>	HPO = PC-connection box, PNP without calibration certificate	
1.00 - 24.0	ca. 93	DF-24...	F25 = DN 25 <sup>2)</sup>	HPP = PC-connection box, PNP with calibration certificate		
2.00 - 48.0	ca. 85	DF-48...	F40 = DN 40 <sup>2)</sup>			
2.50 - 60.0	ca. 100	DF-60...	F50 = DN 50 <sup>2)</sup>			
5.00 - 120	ca. 116	DF-H2...				
40.0 - 160	ca. 165	DF-H6...				

<sup>1)</sup> recommended size please see transducer

<sup>2)</sup> flange connection with material combination stainless steel E or H only