



## Rotating Vane Flow Meter, Counter, Doser

for liquids



measuring  
•  
monitoring  
•  
analysing

DFT



- Measuring range:  
0.2 - 2.0 ... 3 - 60 l/min
- Measuring accuracy: 2.5% f. s.
- $p_{\max}$ : 16 bar;  $t_{\max}$ : 80 °C
- Process connection:  
G 1/4, G 1/2, G 3/4 female  
1/4" NPT, 1/2" NPT, 3/4" NPT
- Materials:  
PTFE housing or brass housing

S4



KOBOLD companies worldwide:

ARGENTINA, AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHILE, CHINA, COLOMBIA, CZECHIA, EGYPT, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, NETHERLANDS, PERU, POLAND, REPUBLIC OF KOREA, ROMANIA, SINGAPORE, SPAIN, SWITZERLAND, TAIWAN, THAILAND, TUNISIA, TURKEY, USA, VIETNAM

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**Brass Housing**



**PTFE Housing**



**Working Method**

The established vane technology has proven itself a million times worldwide for measuring and monitoring the flow of different media through piping. KOBOLD flowmeters/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 readjusted with a similar device at any time.

**Fields of Application**

The KOBOLD meters/monitors are suitable for the following applications:

- cooling water monitoring
- general mechanical engineering
- waste water treatment
- all heavy goods industry
- chemical industry

**Technical Details**

**Sensor**

|                          |  |
|--------------------------|--|
| Measuring accuracy:      | 2.5% f. s.<br>5% f. s. (DFT-..0000)            |
| Medium temperature:      | -20...+80 °C                                   |
| Ambient temperature:     | -20...+80 °C                                   |
| Max. operating pressure: | 5 bar (PTFE housing)<br>16 bar (brass housing) |
| Max. pressure loss:      | see table                                      |
| Protection:              | IP 65  |

**Materials:**

|                        |   |
|------------------------|---|
| Housing/cover:         | PTFE or brass   |
| Vane:                  | PTFE  |
| Axle:                  | ceramics Al <sub>2</sub> O <sub>3</sub> or sapphire                       |
| Bearing:               | PTFE  |
| Gasket:                | NBR (DFT-11..; DFT-16..)<br>FEP-O-seal with silicone (DFT-13..; DFT-18..) |
| Front- and back panel: | aluminium, black anodised (DFT-13..; DFT-18.. only; not media-contacting) |
| Screwing:              | stainless steel   |

**Electronics**

● **Frequency output (OEM)**

|                        |                                 |
|------------------------|---------------------------------|
| Power supply:          | 5-24 V <sub>DC</sub>            |
| Power input:           | approx. 5 mA                    |
| Signal amplitude high: | approx. power supply            |
| Signal amplitude low:  | ≤ 0.2 V                         |
| Output loss:           | max. 2.5 mW                     |
| Electrical connection: | connector DIN 43650             |
| Pulse output:          | NPN, open collector, max. 15 mA |

● **Frequency output (option frequency divider)**

|                           |                                 |
|---------------------------|---------------------------------|
| Power supply:             | 24 V <sub>DC</sub> ± 20%        |
| Power input:              | 40-50 mA                        |
| Signal amplitude high:    | approx. power supply            |
| Signal amplitude low:     | ≤ 0.2 V                         |
| Output loss:              | max. 2.5 mW                     |
| Electrical connection:    | connector DIN 43650             |
| Division factor (option): | 0.25 ... 2 factory set          |
| Pulse output:             | PNP, open collector, max. 20 mA |

● **Analogue output (L electronics)**

|                        |  |
|------------------------|--|
| Power supply:          | 24 V <sub>DC</sub> ± 20%   |
| Output:                | 0-20 mA or 4-20 mA,<br>3-wire or 2-wire<br>(2-wire 4-20 mA only) |
| Max. load:             | 500 Ω  |
| Electrical connection: | connector DIN 43650  |



**Technical Details** (continued)

● **Analogue output (MA electronics)**

Power supply: 24 V<sub>DC</sub> +15% / -10%  
24/115/230 V<sub>AC</sub> ±20%

Power input: 3.5 W max.

Output: 0(4)-20 mA or 0-10 V  
(floating, 24 V<sub>DC</sub> non-isolated)

Max. load: 500 Ω

Electrical connection: 1.5 m cable connection or connector

● **Switching output (WM electronics)**

Power supply: 24 V<sub>DC</sub> +15% / -10%  
24/115/230 V<sub>AC</sub> ±20%

Power input: 3.5 W max.

Output: changeover contact,  
max. 250 V/5A

Contact resistance: <100 mΩ

Electrical connection: 1.5 m cable connection or connector

● **K electronics with digital display, MIN/MAX contact, analogue output**

Power supply: 24 V<sub>DC</sub> +15% / -10%

Power input: 5 W max.

Analogue output: 0(4)-20 mA or 0-10 V

Max. load: 500 Ω

Switching output: MIN- and MAX-changeover contact, max. 24 V/2A

Hysteresis: 2.5% of measured value

Electrical connection: 1.5 m cable connection

**Electronics**

● **DFT-...Exxx (counter electronics)**

Display: LCD module, 2 x 8-digit, illuminated, total, part and flow quantity; units of measurement selectable

Quantity meter: 8-digit

Analogue output: (0)4 ... 20 mA selectable

Load: 0 ... 500 Ω or 0-10 V<sub>DC</sub>,

Load: > 100 kΩ

Relay outputs: 2 relays, max. 250 V/5 A/1000 VA

Control elements: 4 keys

Functions: reset, MIN/MAX-memory, flow monitor, part and total quantity monitoring, language

Power supply: 24 V<sub>DC</sub> ± 20%, 3-line

Power input: approx. 100 mA

Electr. connection: 10-pin cable connection or 2 x plug M12 (5-/ 8-pin)

● **DFT-...Gxxx (Dosage electronics)**

Display: LCD module, 2 x 8-digit, illuminated, total, part and flow quantity; units of measurement selectable

Quantity meter: 8-digit

Dosage meter: 5-digit

Analogue output: (0)4...20 mA selectable

Load: 0...500 Ω or 0-10 V<sub>DC</sub>,

Load: > 100 kΩ

Relay outputs: 2 relays, max. 250 V/5 A/1000 VA

Control elements: 4 keys

Functions: dosage (relay S2), start, stop, reset, fine dosage, correction quantity, flow monitor, total quantity monitoring, language

Power supply: 24 V<sub>DC</sub> ± 20%, 3-line

Power input: approx. 100 mA

Electr. connection: 10-pole cable connection or 2 x plug M12 (5-/ 8-pin)

**Frequency/Pressure-loss Table**

| Measuring range<br>[l/min] | Brass housing   |                            |                                | PTFE housing    |                            |                                |
|----------------------------|-----------------|----------------------------|--------------------------------|-----------------|----------------------------|--------------------------------|
|                            | Oriface<br>[mm] | Frequency<br>at max. value | Pressure loss<br>at max. value | Oriface<br>[mm] | Frequency<br>at max. value | Pressure loss<br>at max. value |
| 0.2-2.0                    | 2.0             | approx. 70 Hz              | 0.8 bar                        | 2.0             | approx. 80 Hz              | 0.7 bar                        |
| 0.5-7                      | 4.3             | approx. 85 Hz              | 0.6 bar                        | 4.3             | approx. 95 Hz              | 0.5 bar                        |
| 1-16                       | 5.9             | approx. 130 Hz             | 0.8 bar                        | 5.9             | approx. 140 Hz             | 0.7 bar                        |
| 2-36                       | 9.0             | approx. 130 Hz             | 0.8 bar                        | 9.0             | approx. 120 Hz             | 0.9 bar                        |
| 3-60                       | 13.5            | approx. 85 Hz              | 0.8 bar                        | 13.5            | approx. 80 Hz              | 0.9 bar                        |



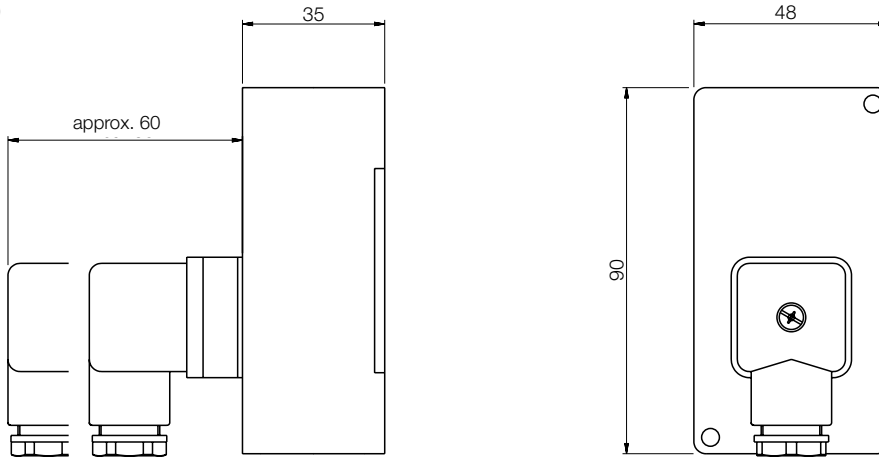
**Order Details** (Example: **DFT-1103 G2 F400**)

| Measuring range<br>[l/min] | Model                                  |  |  |  | Connection<br>female thread  |
|----------------------------|--|--|--|--|--|
|                            | Brass housing<br>ceramic axle          | PTFE housing<br>ceramic axle           | Brass housing<br>sapphire axle         | PTFE housing<br>sapphire axle          |  |
| 0.2-2.0<br>0.5-7<br>1-16   | DFT-1103..<br>DFT-1107..<br>DFT-1116.. | DFT-1303..<br>DFT-1307..<br>DFT-1316.. | DFT-1603..<br>DFT-1607..<br>DFT-1616.. | DFT-1803..<br>DFT-1807..<br>DFT-1816.. | ..G2.. = G ¼<br>..G4.. = G ½<br>..N2.. = ¼" NPT<br>..N4.. = ½" NPT |
| 2-36                       | DFT-1136..                             | DFT-1336..                             | DFT-1636..                             | DFT-1836..                             | ..G4.. = G ½<br>..G5.. = G ¾<br>..N4.. = ½" NPT<br>..N5.. = ¾" NPT |
| 3-60                       | DFT-1160..                             | DFT-1360..                             | DFT-1660..                             | DFT-1860..                             | ..G5.. = G ¾<br>..N5.. = ¾" NPT                                    |

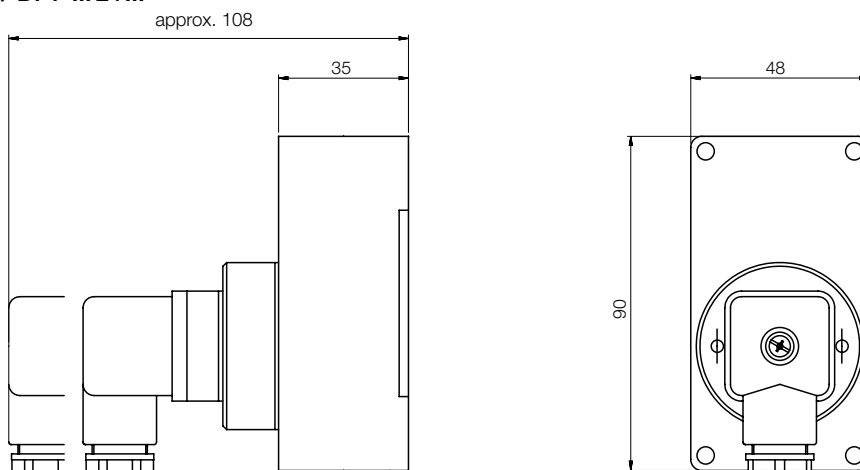
| Evaluating electronics  |  |  |
|---|--|--|
| <p><b>OEM frequency output (OEM)</b><br/>...0000 = NPN, connector DIN 43 650</p> <p><b>Frequency output</b><br/>...F400 = PNP, connector DIN 43 650<br/>...F490 = PNP, connector DIN 43 650, frequency divider 0.25...2</p> <p><b>Analogue output</b><br/>...L403 = connector DIN 43 650, 0-20 mA, 3-wire<br/>...L443 = connector DIN 43 650, 4-20 mA, 3-wire<br/>...L442 = connector DIN 43 650, 4-20 mA, 2-wire</p> |  |  |
| MA electronics with analogue output   |  |  |
| Electronic type   | Auxiliary power  | Analogue output                                |
| ..MK.. = 1.5 m cable connection<br>..MS.. = connector<br>..MG.. = connector and mating connector  | ..0.. = 230 V <sub>AC</sub><br>..1.. = 110 V <sub>AC</sub><br>..2.. = 24 V <sub>AC</sub><br>..3.. = 24 V <sub>DC</sub> | ..0 = 0-20 mA<br>..4 = 4-20 mA<br>..1 = 0-10 V |
| WM electronics with 1 contact   |  |  |
| Electronic type   | Auxiliary power  | Analogue output                                |
| ..WK.. = 1.5 m cable connection<br>..WS.. = connector<br>..WG.. = connector and mating connector  | ..0.. = 230 V <sub>AC</sub><br>..1.. = 110 V <sub>AC</sub><br>..2.. = 24 V <sub>AC</sub><br>..3.. = 24 V <sub>DC</sub> | ..X = without analogue output                  |
| K electronics (display, MIN/MAX-contact, analogue output)   |  |  |
| Electronic type   | Auxiliary power  | Analogue output                                |
| ..KK.. = 1.5 m cable connection   | ..3.. = 24 V <sub>DC</sub>   | ..0 = 0-20 mA<br>..4 = 4-20 mA<br>..1 = 0-10 V |
| Counter electronics / dosage electronics  |  |  |
| Electronic type   | Electrical connection /<br>power supply  | Analogue output                                |
| E = counter electronics (2 x changer)<br>G = dosage electronics (2 x changer)   | 3 = plug 2x M12 / 24 V <sub>DC</sub><br>1 = 1.5 m cable / 24 V <sub>DC</sub><br>9 = x m cable / 24 V <sub>DC</sub>     | 4R = 0(4)-20 mA<br>1R = 0-10 V                 |

**Dimensions Brass Housing [mm]**

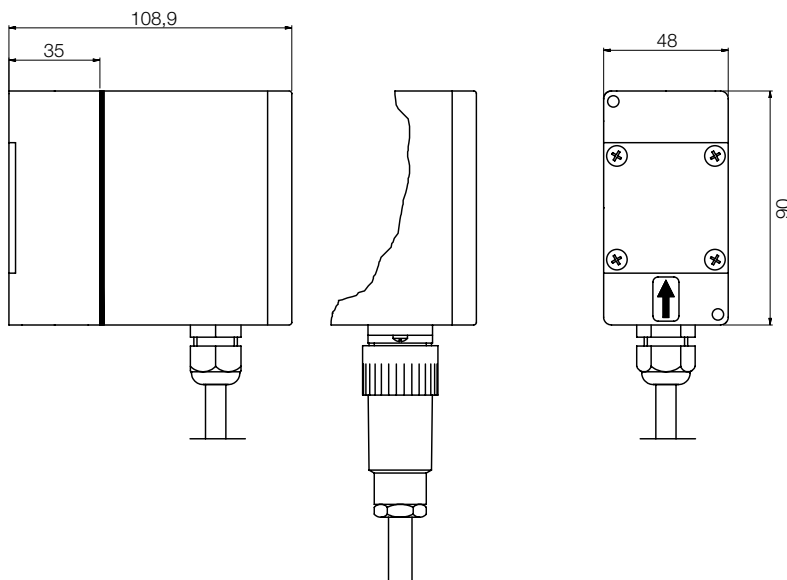
DFT-...0000



DFT-...F4... / DFT-...L4...

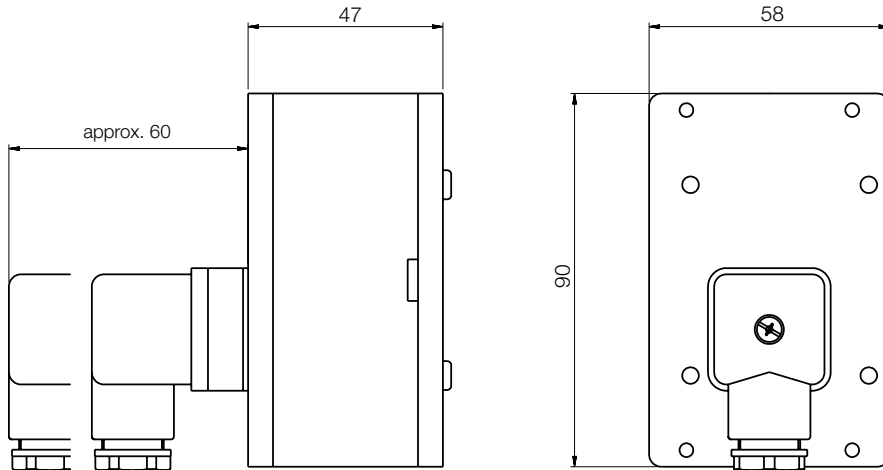


DFT with MA- / WM- / K- / E- / G- electronics

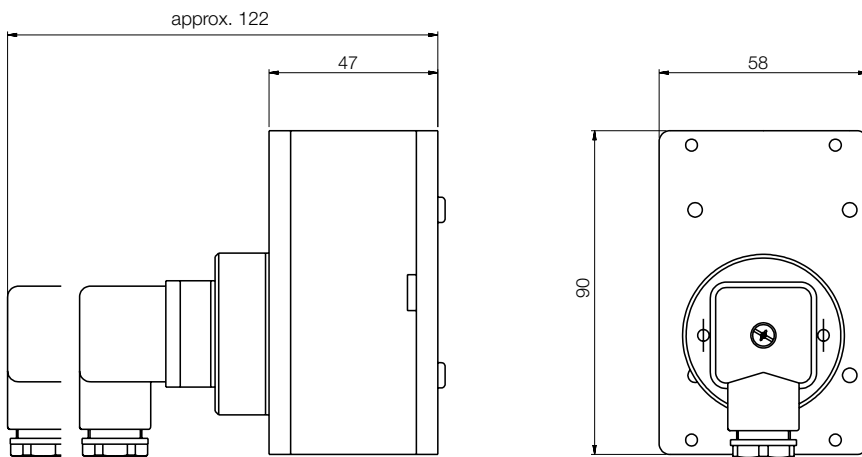


**Dimensions PTFE Housing [mm]**

DFT-...0000



DFT-...F4... / DFT-...L4...



**DFT with MA- / WM- / K- / E- / G- electronics**

