Zertifiziertes QM-System DIN EN ISO 9001 Reg.Nr. 95046

# Low Volume Rotating Vane Flow Meter

KOBOLD

measuring • monitoring • analysing




- Measuring ranges:
  0.015 - 0.7 to 0.05 - 5 l/min water
- Measuring accuracy:
  1 % (2.5 %) f. s.
- $p_{max}$: 16 bar; $t_{max}$: 80 °C
- Connection:
  G 1/8, G 1/4 female thread
  1/8 NPT, 1/4 NPT female thread
- Material:
  brass nickel-plated or
  stainless steel

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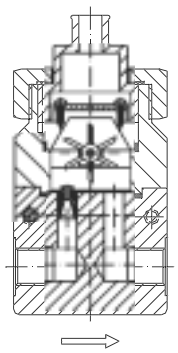
**Model:**
DPM



01/1201/Ko/10

## Application

KOBOLD model DPM flow meters are used for measuring and monitoring liquids. Due to its compact construction the measuring instrument is suitable for use with machines with minimum available space. The system can be used in a wide variety of applications because the output pulses can be analysed in many different ways.



### Areas of Application:

- low viscosity liquids
- non-conductive liquids
- volume dosing with external electronics
- filter aid

### Technical details:

| | |
|---|---|
| Measuring accuracy: | |
| DPM..000: | 2.5 % f.s. |
| DPM...F, DPM...L, DPM..C, DPM..Z: | 1 % f.s. |
| Linearity: | 1 % f.s. |
| Repeatability: | 0.5 % |
| Medium temperature: | -40 to +80 °C |
| Ambient temperature: | -30 to +60 °C |
| Max. operating pressure: | 16 bar |
| Protection: | IP 65 |

### Materials:

| | |
|---|---|
| Housing: | brass nickel-plated<br>stainless steel 1.4404 |
| Upper part: | brass nickel-plated<br>stainless steel 1.4404 |
| Union nut: | brass nickel-plated<br>or stainless steel 1.4405 |
| Orifice: | 1.4405 |
| Axle: | saphire |
| Rotating vane: | polypropylene |
| Vane mount: | polysulfone |

## Working principle

The medium flows through a specially shaped fluidic casing and causes a vane to rotate. This rotary motion is sensed by optoelectronics in a non-contacting manner, and converted to an asymmetric frequency signal or an analog signal. A frequency divider with symmetrical output is available as an option. The frequency is proportional to the flow velocity.
The vane is saphire-supported: this ensures a high degree of linearity and long service life.

## Electronics

- **Frequency output (OEM)**

| | |
|---|---|
| Power supply: | 4.5 - 16 $V_{DC}$ |
| Supply current: | typ. 7 mA |
| Signal amplitude high: | approximately power supply |
| Signal amplitude low: | ≤ 0.2 V |
| Cut-off voltage transmitter: | 3 V max. |
| Supply current transmitter: | 15 mA - 25 mA |
| Output loss: | max. 2.5 mWatt |
| Electrical connection: | solder pins |

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

| | |
|---|---|
| Power supply: | 24 $V_{DC}$ ±20 % |
| Supply current: | 40 - 50 mA |
| Signal amplitude high: | approximately power supply |
| Signal amplitude low: | ≤ 0.2 V |
| Output loss: | max. 2.5 mWatt |
| Electrical connection: | plug connector M12x1<br>(option: 2 m PVC cable) |
| Division ratio (option): | 1 : 2, 1 : 4 or 1 : 8 |

- **Analogue output (plug-on display option)**

| | |
|---|---|
| Power supply: | 24 $V_{DC}$ ±20 % |
| Output: | 0 - 20 mA or 4 - 20 mA,<br>3-wire |
| Max. load: | 500 ohm |
| Electrical connection: | plug connector M12x1<br>or DIN 43 650 |
| Option: | plug-on display (with plug<br>connector DIN 43 650 only) |

- **Compact electronics**

| | |
|---|---|
| Display: | 3-digit LED |
| Analogue output: | (0)4...20 mA adjustable |
| Switching outputs: | 1 (2) semiconductor PNP<br>or NPN, factory set |
| Contact operation: | N/C/N/O cont. programmable |
| Setting: | via 2 buttons |
| Supply: | 24 $V_{DC}$ ±20 %, 3-wire |
| Electrical connection: | plug connector M12x1 |

- **Pointer indicator with analogue output**

| | |
|---|---|
| Housing: | aluminium (PA6 GF30) |
| Display: | moving-coil instrument,<br>240° display |
| Power supply: | 24 $V_{DC}$ ±20 % |
| Output: | (0)4 - 20 mA, factory set,<br>3-wire |
| Max. load: | 250 ohm |
| Electrical connection: | plug connector M12x1 |



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## Order details (example: **DPM-1107 G1 0000**)

| Measuring range (l/min) water | approx. frequency (Hz) at max. value | approx. pressure loss (bar) at max. value | Model material brass | Model material st. steel | Connection | Evaluating electronics |
|---|---|---|---|---|---|---|
| 0.015 - 0.7 | 228 | 1.16 | **DPM-1107..** | **DPM-1507..** | **G1..**=G 1/8 fem.<br>**G2..**=G 1/4 fem.<br>**N1..**=1/8 NPT fem.<br>**N2..**=1/4 NPT fem. | **Frequency output**<br>**..0000**=frequency output, without cable (OEM)<br>**..F300**=frequency output, plug connector M12x1<br>**..F320**=frequency divider 1:2, plug connector M12x1<br>**..F340**=frequency divider 1:4, plug connector M12x1<br>**..F380**=frequency divider 1:8, plug connector M12x1<br>**Analogue output**<br>**..L303**=0-20 mA output, M12x1 plug connector<br>**..L343**=4-20 mA output, M12x1 plug connector<br>**..L403**=0-20 mA output, plug connector DIN 43 650<br>**..L443**=4-20 mA output, plug connector DIN 43 650<br>**Compact electronics**<br>**C30R**=LED display, 2x open collector, PNP, plug connector M12x1<br>**C30M**=LED display, 2x open collector, NPN, plug connector M12x1<br>**C34P**=LED display, 4-20 mA, 1x open coll., PNP, plug connector M12x1<br>**C34N**=LED display, 4-20 mA, 1x open coll., NPN, plug connector M12x1<br>**Pointer indicator**<br>**Z300**=240° pointer indicator, 0-20 mA, plug connector M12x1<br>**Z340**=240° pointer indicator, 4-20 mA, plug connector M12x1 |
| 0.05 - 1.0 | 217 | 0.53 | **DPM-1110..** | **DPM-1510..** | | |
| 0.05 - 2.0 | 344 | 0.91 | **DPM-1120..** | **DPM-1520..** | | |
| 0.05 - 3.0 | 372 | 0.61 | **DPM-1130..** | **DPM-1530..** | | |
| 0.05 - 4.0 | 415 | 0.57 | **DPM-1140..** | **DPM-1540..** | | |
| 0.05 - 5.0 | 439 | 0.57 | **DPM-1150..** | **DPM-1550..** | | |

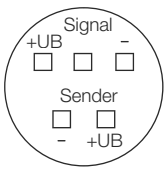
## Plug-on display

for model DPM...L443 (with 4-20 mA output and DIN plug connector)

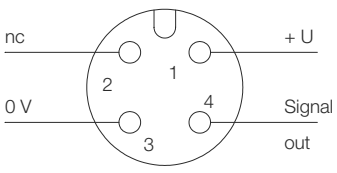
| Description | Order number |
|---|---|
| 4-digit LED, connector DIN 43 650,3-wire, supply through analogue output | **AUF-3000** |

## Electrical connection

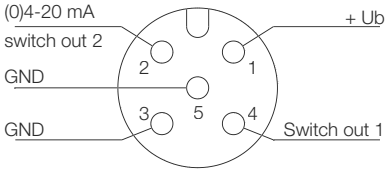
### DPM..0000



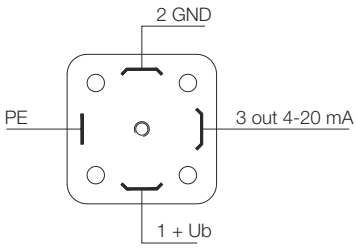

### DPM..L3 / DPM..Z / DPM..F




### DPM..C

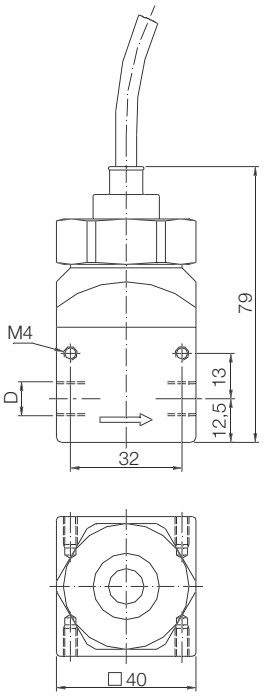



### DPM..L4

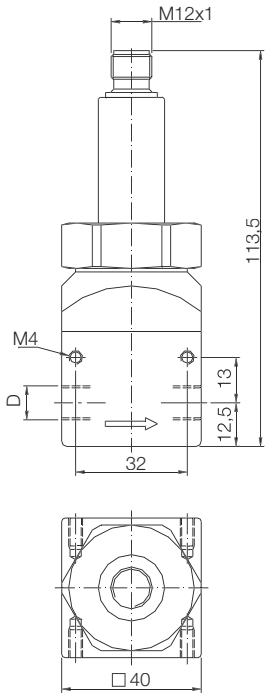


## Dimensions

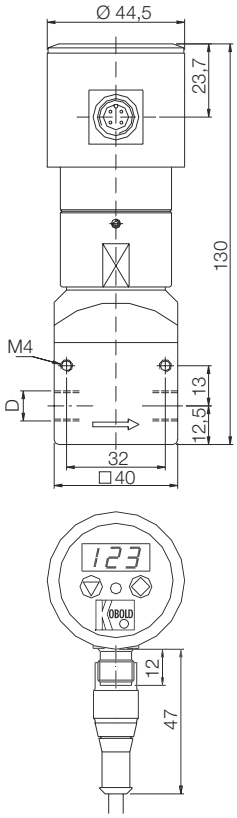
### DPM-..F with frequency output



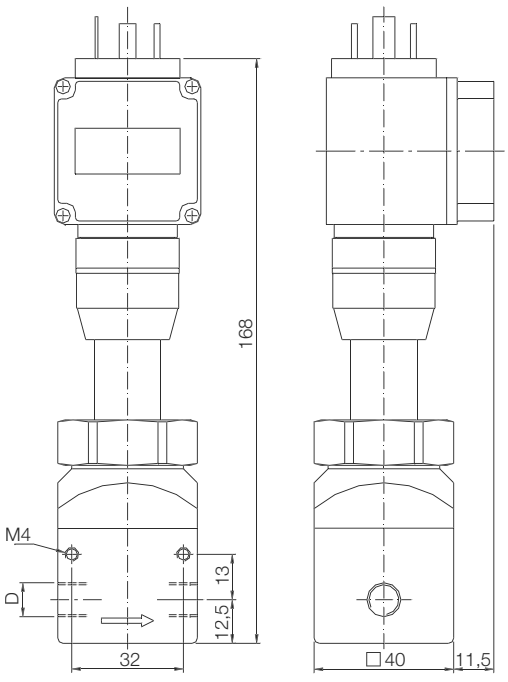

### DPM-..L with analogue output



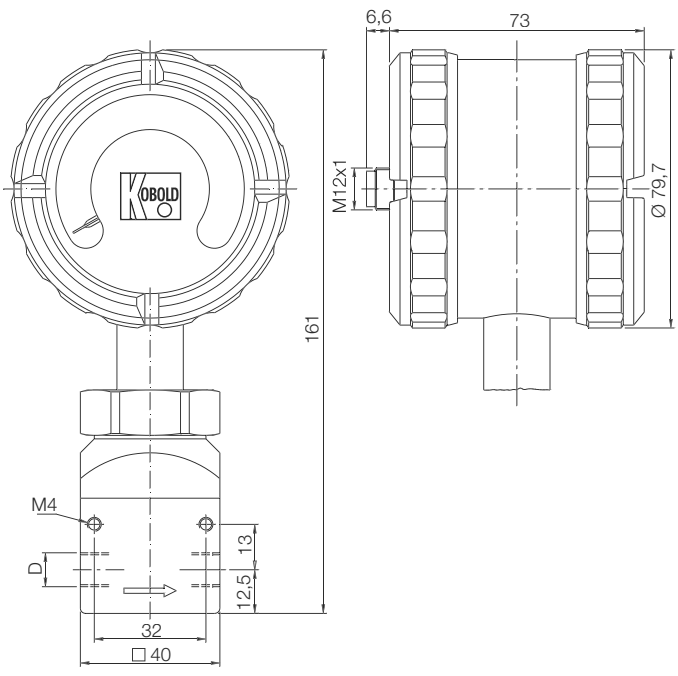

### DPM-..C with compact electronics




### DPM-..L with analogue output and plug-on display




### DPM-..Z with analogue output and pointer indicator







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