Piston Flow Meters

for Viscous Media

- Measuring range: 6 - 420 L/h liquid
- Measuring accuracy: ± 1.0 % of measured value
- pmax: 40 bar, tmax: 80 °C
- Viscosity range: 5-100 mm²/s
- Connection: G 1/8, G 1/4, 1/8 NPT, 1/4 NPT (female thread)
- Material: brass housing

Model: DRZ-...C3

Model: DRZ-...0000
with AUF

Model: DRZ-...F
DRZ-...L

KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
☎ +49(0)6192 299-0
Fax +49(0)6192 23398
E-Mail: info.de@kobold.com
Internet: www.kobold.com

Description

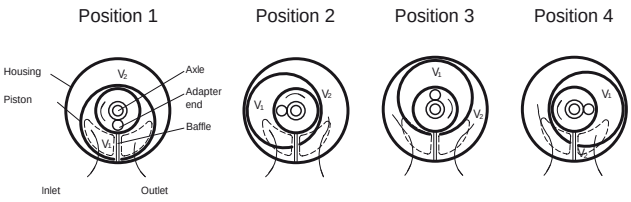
KOBOLD piston flow meters are direct volume counters, also called displacement counter (positive displacement meter). Its function is based on continuous limitation of a definite part-volume of the flow in a measuring cell through continuous filling and emptying of this measuring cell. The measuring cell consists of the measuring chamber and the moving part, the piston.

The piston is driven by the pressure difference between inlet and outlet of the measured media. The revolution is carried forward via a magnet and a magnet field sensor.

In cross section the u-formed piston is guided with its piston- and guiding-adaptor in a ring chamber at the bottom and top of the measuring-body and also with its slot at the baffle.

The inlet and outlet openings are located on both sides of the chamber's wall. They are constantly sealed by the piston and the baffle.

The incoming measured media fills up the sickle shaped space, it wants to increase this space and therefore turns the piston, until one after the other the volumes V1 and V2 are reached. While moving ahead, these filled spaces get connected with the outlet and are emptied. Since both sickle shaped spaces - the inner and the outer - are displaced to one another, the piston movement will not have a dead center. The piston moves continuously depending to the measured flow.



One complete turn of the piston adaptor end is equal to the flow of the measuring chamber content (V1+V2). With the help of a located magnet and a Hall-type sensor it is possible to create a digital signal, which can be evaluated.

Application examples

- Heating oil consumption measurement
- Fuel consumption measurement
- Consumption control
- Flow measurement of mineral-oil
- Dosing and bottling of oil
- Engine-testing application

Technical Details

Measuring range:	6 - 420 L/h
Max. flow rate:	600 L/h
Measuring accuracy:	± 1.0 % of reading ± 2.5 % of reading (OEM version)
Repeatability:	± 0.2%
Standard viscosity range:	5 - 100 mm²/s
Process temperature:	max. 80 °C
Ambient temperature:	-10 to +60 °C
Max. pressure:	40 bar
Max. pressure loss:	1.5 bar
Connection:	Female thread G ⅛; G ¼; ⅛ NPT; ¼ NPT
Mounting position:	independent
Recom. Filter fineness:	100 µm
Protection type:	IP 65
Weight:	approx. 0.7 kg (DRZ-..F.., DRZ-..L..) approx. 1.0 kg (DRZ-..C..)
Materials:	
Housing:	Brass
Piston:	Aluminium
Magnet holder:	POM
Magnet:	Permanent magnet
O-ring/Seal:	FPM

Electronics

- OEM frequency output (...0000), without CE

Power supply:	5 - 24 V_{DC}
Supply current:	10 mA
Pulse output:	NPN, open collector, max. 15 mA
Impulse rate:	405 pulses/liter
Electr. connection:	Plug connector DIN 43650
Option:	Plug-on display AUF-4000 with 4 - 20 mA output / 24 V_{DC}

- Frequency output (...F300)

Power supply:	12 - 28 V_{DC}
Supply current:	10 mA
Pulse output:	PNP, open collector, max. 25 mA
Impulse rate:	432 pulses/liter
Electr. connection:	Plug connector M12x1

- Frequency output with frequency divider (...F3X0)

Power supply:	24 V_{DC} ± 20%
Supply current:	15 mA
Pulse output:	PNP, open collector, max. 25 mA
Electr. connection:	Plug connector M12x1
Division factor:	1...1/128, set by customer's request

Technical Details (continued)

- Analogue output (...L303; ...L343)

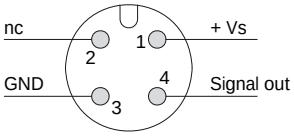
Power supply:	24 V_{DC} ± 20 %
Output:	4 - 20 mA, 0 - 20 mA, 3-wire
Max. load:	500 Ω
Electr. connection:	Plug connector M12x1

- Compact electronics (..C3..)

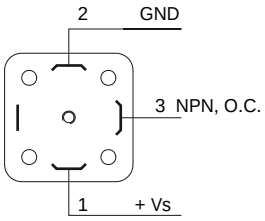
Display:	3-segment LED
Analogue output:	(0)4...20 mA adjustable max. 500 Ω
Switching output:	1 (2) semiconductor PNP or NPN, factory setting
Contact function:	N/C / N/O programmable
Setting:	via 2 buttons
Power supply:	24 V_{DC} ± 20 %, 3-wire technology, approx. 100 mA
Electr. connection:	Plug connector M12x1

Electrical connection

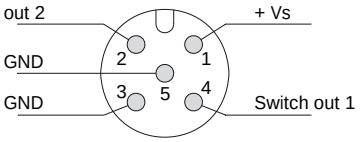
DRZ-..F3..; DRZ-..L3..



DRZ-..0000



DRZ-..C3..



Order Details: (Example: **DRZ-1110 G1 F300**)

Version	Model	Connection	Evaluating electronics
Brass housing 6 - 420 L / h oil	**DRZ-1110**	**G1** = G ⅛ IG **G2** = G ¼ IG **N1** = ⅛ NPT **N2** = ¼ NPT	**OEM frequency output, no CE** **0000** = DIN plug connector, NPN **Frequency output** **F300** = plug connector M12x1, PNP **F320** = plug connector M12x1, PNP, divider 1:2 **F340** = plug connector M12x1, PNP, divider 1:4 **F390** = plug connector M12x1, PNP, divider 1...1/128 **Analogue output** **L303** = plug connector M12x1, 0-20 mA, 3-wire **L343** = plug connector M12x1, 4-20 mA, 3-wire **Compact electronics**[1)] **C30M** = LED display, 2 x NPN switch. output, plug con. M12x1 **C30R** = LED display, 2 x PNP switch. output, plug con. M12x1 **C34N** = LED display, 4-20 mA, 1 x NPN switching output, plug connector M12x1 **C34P** = LED display, 4-20 mA, 1 x PNP switching output, plug connector M12x1

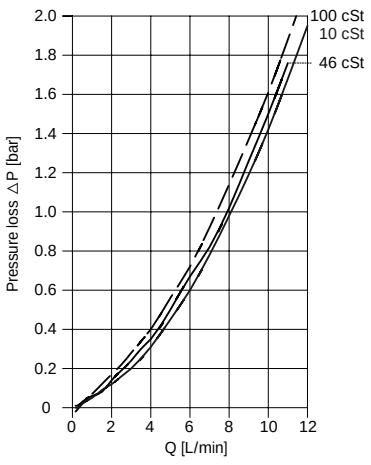
1) Please specify flow direction in writing

Plug-on display

for model DRZ...0000 (OEM version, NPN- and DIN connector)

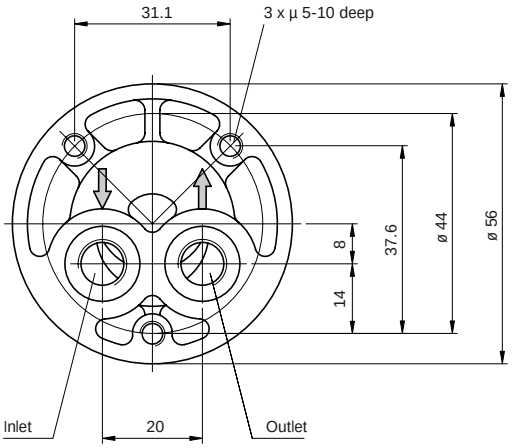
Description	Order No.
4-digit red LED, Plug connector DIN 43650 Input: pulses of DRZ (NPN-Hall effect sensor) Output: 4-20 mA, 3-wire; Load: max. 250 Ω Power supply: 24 V_{DC}	**AUF-4000**

Pressure loss diagram



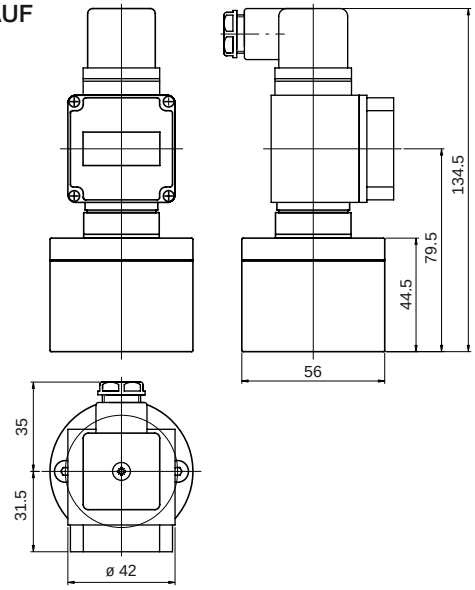
Dimensions

Mechanical connection

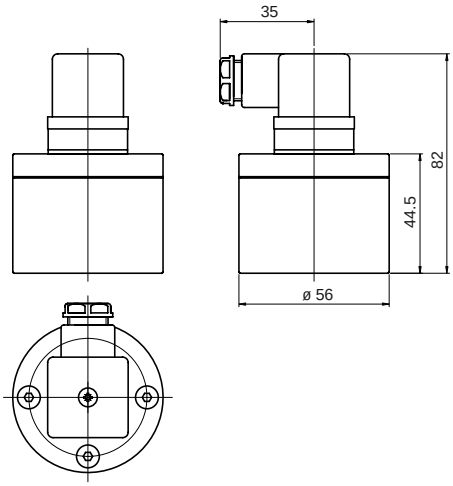


Process connection
G ⅛
G ¼
⅛ NPT
¼ NPT

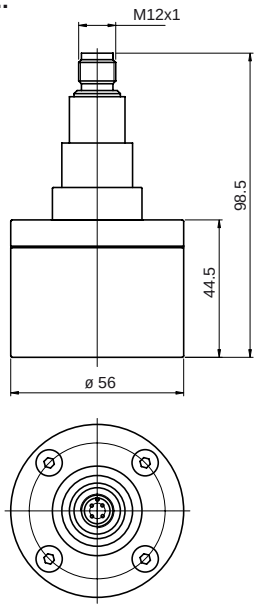
DRZ-...0000 with AUF



DRZ-...0000



DRZ-..F3..; DRZ-..L3..



DRZ-...C3