VELOMAT

MESSELEKTRONIK GmbH

Flow rate sensor DFS 1 i

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Features

- Low cost
- 7 measuring ranges
- Simple construction
- High accuracy
- Low pressure lost
- Temperature range –20 to 100 °C
- Operating pressure 25 bar
- FDA-approved materials
- Position-independent
- Pulse output, standard
- Analogue output, option
- Fixed limit value, option

DFS1 series turbine flow sensors are designed to accurately measure small quantities of liquid, whereby both the instantaneous flow rate can be recorded and the quantity that has flowed through can be counted.

The liquid flowing through the DFS 1 causes the impeller to rotate. The speed of the impeller is proportional to the volume flow rate over a wide range. Via a contactless magnetic pick-up, the speed of the impeller is available as a pulse frequency proportional to the flow rate for digital evaluation, optionally as voltage (0-10 V) or current (4-20 mA).

The large number of pulses results in a good resolution. The response time is very short due to the low mass of the impeller. A stabilising section in the pipework upstream/downstream of the sensor is not necessary.

The simple mechanical design of the DFS 1 turbine flow meter means that a long service life can be expected without any loss of accuracy. Pressure surges cannot damage the measuring system.

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Technical data:

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Measuring range

Modell-No.	Measuring range L/min	Pulses / L	DN	Connecting thread	Frequency / Hz	Installation-length	Weight	Limit value L/min
DFS 1 /35i	2,0-35 L/min	750	8 mm	3/8“ A	25-438 Hz	55 mm	30 g	2,0
DFS 1 /25i	1,0-25 L/min	1000	8 mm	3/8“ A	16-417 Hz	55 mm	30 g	1,0
DFS 1 /15i	1,0-15 L/min	2200	8 mm	3/8“ A	37-550 Hz	55 mm	30 g	1,0
DFS 1 /10i	1,0-10 L/min	3300	6 mm	3/8“ A	55-550 Hz	55 mm	30 g	1,0
DFS 1 /7,5i	0,5-7,5 L/min	4700	8 mm	3/8“ A	39-588 Hz	55 mm	30 g	0,5
DFS 1 /5,0i	0,5-5,0 L/min	6900	6 mm	3/8“ A	58-575 Hz	55 mm	30 g	0,5
DFS 1 /2,5i	0,1-2,5 L/min	22000	8 mm	1/4“ A	37-917 Hz	55 mm	30 g	0,1
DFS 1 /8im	2,0-8,0 L/min	4200	8 mm	3/8“ A	140-560 Hz	45 mm	85 g	2,0
DFS 1 /25im	3,0-25 L/min	1000	8 mm	3/8“ A	50-417 Hz	45 mm	85 g	3,0
DFS-1 /2,5i-V	0,1-2,5 L/min	24500	5 mm	1/4” A	41-1021 Hz	45 mm	60 g	0,1

Flow medium	Liquids without particles, Filtration approx. 20 to 40 micros
Approval	Trough Amid CX7323: KTW; NSF/ANSI61, WRAS, ROHS, CE Brass, Grilamid: KTW, ROHS, CE
Pressure rating	25 bar Grilamid-, Trough Amid-, Brass housing, 200 bar burst pressure
Installation lenght	55mm
End connection	G 3/8“, G 1/4" refer to table
Temperature range	-20 to 100 °C
Accuracy	+/- 3 % of reading
Repeatability	better than 0,5 %
Viscosity	up to approx. 15 cSt
Pressure drop	refer to table
El. connection	Valve plug
Power supply	5 – 24 VDC (DFS i), 24 V with option DFS 1i a, DFS 1 ig
Power consumption	approx. 8 mA, DFS 1i, ca., 20 mA DFS 1 ia, DFS 1 ig
Output signal	Frequency open collector (NPN sinking)
Output current	max. 20mA
Materials	Housing Grilamid (PA12) Brass Trough Amid Turbine Grilamid (PA12 Ferrite) Bearings PTFE 15 % Graphit

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Options:

g = Limit value adjustes, OC or Relais BSA 4

aU = analog output 0-10 V, with BSA 3

aI = analog output 4-20 mA, with BSA 1

d = Metering function with BSA 2

l = Cable 1 m, 3x AWG 24, assignment: red +, black: -, brown: signal

t = Connection for 10 mm hose with POM grommets

s = Connection for 10 mm hose with brass grommets

e = Suitable for ethanol and methanol, all measuring ranges

m = Brass housing

z = with counter BZ 1

b = with universal flow meter easyflow NT 5

V = INOX

Example of order:

DFS 1/25i aU

=> Flow sensor for max. flow rate 25 L/min with pulse and voltage output

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Pin assignment

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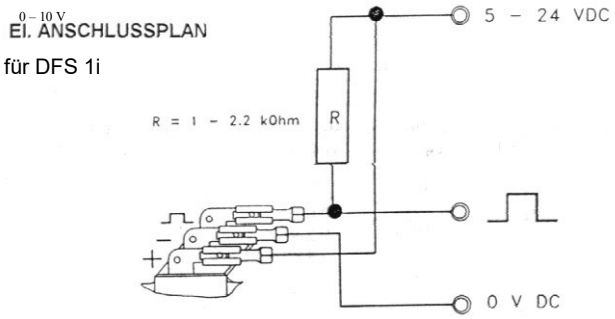

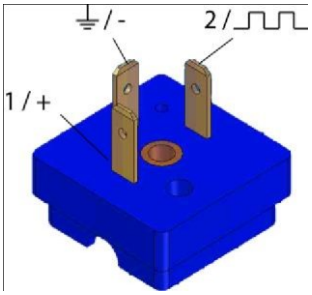

Cable assignment Standard

Black	-
Brown	+
Red	Pulse output

Cable assignment analog output

Brown	+
White	-
Green	analog output 0-10 V, 4-20 mA
Green	Switching output with batch function
Yellow	Programming input
Grey	Start with batch-function

Operating and installation instructions

1. Check medium compatibility: Sensor material: Trogamid, Grilamid (PA12), brass
2. If the medium contains solids, a filter must be installed upstream. Fibrous contamination must be avoided at all costs.
3. Insert only into cleaned medium line.
4. Check the electrical connection according to the wiring diagram.
5. Do not exceed limit values
6. The DFS 1 is a volume measuring device (e.g. air in water is also measured as a medium).
7. When connected correctly, the sensor is completely maintenance-free.
8. The DFS 1 may only be used by trained personnel.
9. The sensor must not be blown out with compressed air - Caution! - Destruction of the rotor
10. When using Teflon tape for sealing, the 1st thread must not be covered so that abrasion cannot enter the DFS 1i.

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