DT-03

Calorimetric Flow Sensor in Compact Design with Optional Analogue Output

Features

/ No moving parts

/ Optionally with temperature output

/ Switch or transmitter

/ Mounting in T pieces of 3/8“ to 2“

/ Wetted stainless steel

Description:

The sensor system of the DT-03 series flow sensor is based on the calorimetric principle. A heated measuring resistance is mounted into a stainless steel sleeve in such a manner that the fluid carries the heat proportional to the inflow velocity. The heat output that must be fed to the sensor in order to maintain the resistance temperature constant is, therefore, a measure for the volume of flow. A second PT100 measuring resistance is located inside the sleeve within the flow to measure the temperature of the media. This will rule out temperature changes in the streaming fluid being interpreted erroneously as change of flow. The electronic components in the DT-03 receive information from the sensor about the flow and the temperature and convert them into a PNP or NPN switching output, a 0. . .10 V DC or 4. . .20 mA analogue output or an impulse output. At the 4-pole output plug of the DT-03 an analogue output and a switching output (on request as impulse output) are tapped that can be freely assigned ex factory to the parameters of volume and temperature.

Application:

The flow sensors of the DT-03 series are the logical consequence of Profimess‘ proven DT-01 and DT-02. Due to the new method of outputting flow and temperature also as analogue or impulse output and combining both the parameters, the application spectrum of the calorimetric technology has experienced a vast expansion in the technology of fluid measurement. The DT-03 sensors are used wherever flow and temperature of fluid media need to be tapped in narrow spaces and wherever it would be advantageous, due to the type of fluid, to use entirely stainless steel switches for the wetted parts without any moving components. In order to ensure maximum error sensitivity of the sensor, the DT-03 should be mounted for direction of flow from bottom to top as this will facilitate optimum ventilation even in extremely low flow speeds.

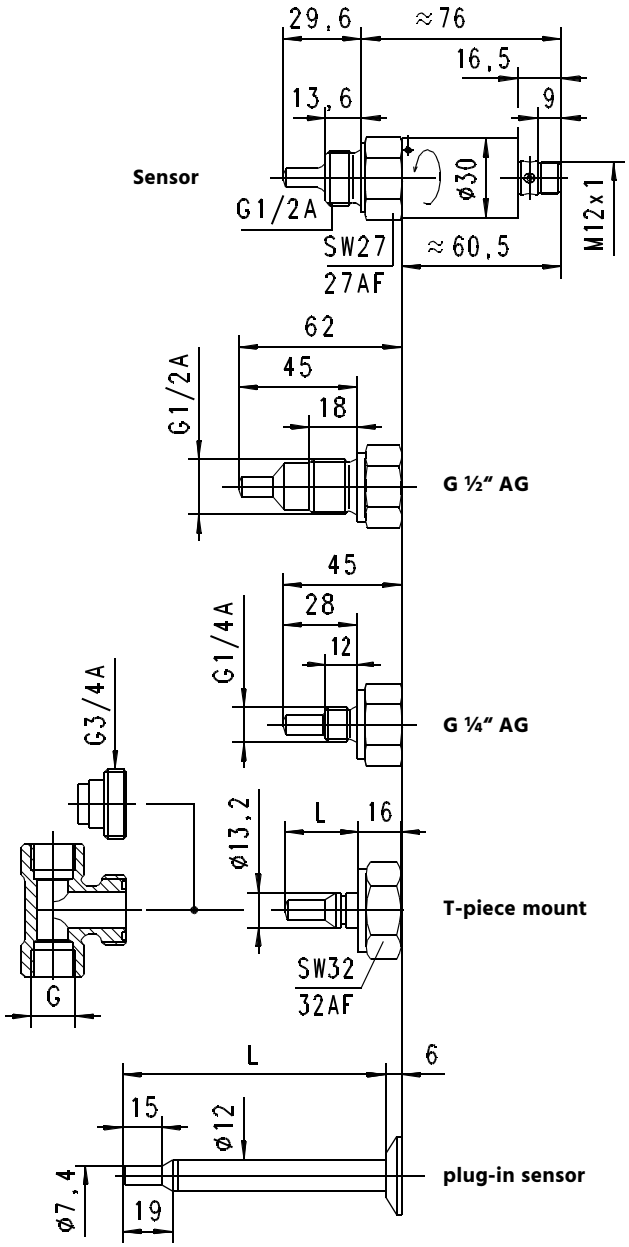
Technical Specifications:

Operating range velocity /	water 2. . .150 cm/s or 3. . .300 cm/s, oil on request
Accuracy /	± 10% set point value (tested on water with 10xD in inflow and outflow in rising tube)
Reproducibility /	± 1%
Switching hysteresis /	flow 4% set point, temp. approx. 2°C
Temperature gradient /	max. 4°C/s or rather 4 Kelvin/s
Op. range temp. /	0. . .70°C, 0. . .120°C with gooseneck
Storage temperature /	-20. . .+80°C
Materials /	wetted st. steel 1.4571, others 1.4305
Operating pressure /	max. 100 bar, 200 bar on request (if necessary, consider pressure level of T-piece)
Operating temp. /	0. . .70°C (electronics)
Weight /	approx. 200 g (standard version)
Assembly /	staved cross points to inflow
Programming the setpoints /	by means of magnet supplied along, the magnet is brought between 0.5 and 2 seconds to the marking on the label. The excrescent measuring value is stored as limit value, the LED changes to O.K. status. Longer or shorter magnetizing times than 0.5 or 2 seconds are ineffective (protection against external magnetic fields)

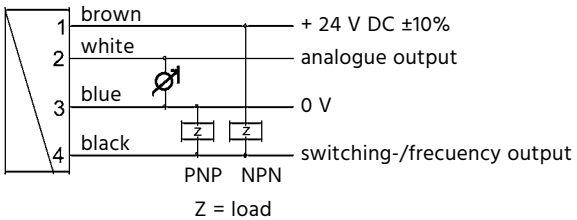
Electrical Specifications:

Power supply /	24 VDC ± 10%
Power consumption /	max. 100 mA
Connection /	round pin connector M12 x 1, 4-pole
Switching output /	Transistor output Push Pull, line short circuit and reverse polarity protected
Switching current /	max. 100 mA
As frequency output /	max. 2000 Hz
Analogue output /	4. . .20 mA max. load 500 Ohm or 0. . .10 VDC
Display /	yellow LED (ON = o.k., OFF = Alarm)
Setting /	through magnet
Protection class /	IP67

Dimensions in mm:



Electrical Connection:



Please use shielded cable, signal lines < 30m and power supply lines < 10m.

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Ordering Codes:

Order number	DT-03.	1.	1.	1.	1.	1.	3.	2.	2.	5

DT-03 Calorimetric Flowmeters and Switch

Connection size /
1 = G¼"-male
2 = G½"-male
3 = attachable sensor Ø 12 mm
4 = T-piece connector Ø 13,2 mm

Wetted material /
1 = stainless steel 1.4571

Sensor length /
0 = T-piece assembly (please specify nominal diameter of 3/8" to 2" and material in detailed text)
1 = 28 mm (G¼")
2 = 29.6 mm (G½")
3 = 45 mm (G½")
4 = plug-in sensor 50 mm
5 = plug-in sensor 70 mm
6 = plug-in sensor 100 mm
7 = plug-in sensor 150 mm
8 = plug-in sensor 200 mm

Analogue output /
0 = no analogue output
1 = current 4. . .20 mA
2 = voltage 0. . .10 VDC

Assignment for analogue output /
0 = no analogue output
1 = flow
2 = temperature

Switching output /
0 = no switching output
3 = PushPull (PNP and NPN)

Assignment for switching output /
0 = no switching output
1 = flow
2 = temperature

Switching signal /
0 = no switching output
1 = MIN switch
2 = MAX switch
3 = Frequency output

Options (multiple naming such as 3/5/6 possible) /
1 = special operating range for flow (max. 3 m/s)
2 = special operating range for temperature (max. 120°C, standard 70°C, min. -20°C, st. 0°C)
3 = Switch on delay from Alarm to O.K.
4 = Switch off delay from O.K. to Alarm
5 = Power-On-Delay (delay after switching on until the switching output becomes active)
6 = inverted switching output
7 = special hysteresis (standard 4% of full scale value)
8 = counter plug, M12x1, 4-pole

Please specify operating range full scale value, output frequency for impulse output and the setpoint in detailed text.

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