DT-03N

Calorimetric Flowmeter and Flowswitch for very small Flow Volumes

Features

/ No moving parts

/ Optionally with temperature output

/ Switch or transmitter

/ Low pressure drops

/ Wetted stainless steel 1.4571

/ Linearised and temp.-compensated

Description:

The sensor system of the DT-03N series flow sensor is based on the calorimetric principle. A heated sensing resistor is built 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 at a constant level 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-03N receive information from the sensor about the flow and the temperature and convert them into a Push-Pull transistor switching output that can be linked to NPN (but not open collector) as well as PNP inputs, including additionally an analogue output. At the 4-pole output plug of the DT-03N, a 4. . .20 mA or 0. . .10 V DC signal and a switching output (on request as impulse output) are tapped which can be freely assigned ex factory to the parameters of volume and temperature.

Application:

The DT-03N calorimetric flow sensors are capable of monitoring and measuring fluid media even in extremely small range of volume. The compact design of the device combines easy-to-operate analyzing electronics with a measuring tube that includes wetted inlet and outlet paths, exclusively made of stainless steel 1.4571. The insulating hoses fitted externally on the measuring tube offer protection against ambient factors and these may not be removed by the user. In order to ensure maximum error sensitivity of the sensor, the DT-03N should be mounted for direction of flow from bottom to top as this will facilitate optimum ventilation even in extremely low flow speeds. The DT-03N is connected to the process side by means of commercially available crimp connectors or clamp screw joints.

Technical Specifications:

Operating range for water /	6 mm tube: (0.001) 0.01. . .2 l/min 8 mm tube: 0.025. . .5 l/min 10 mm tube: 0.05. . .10 l/min other ranges on request
Accuracy /	± 5% FSO (Special calibration possible)
Op. range temp. /	0. . .70°C (-20. . .+100°C on request)
Hysteresis /	Flow 1% FS, Temperature approx. 1°C
Storage temp. /	-20. . .+80°C
Materials /	wetted 1.4571, others PPS, PA6.6, brass Ni plated
Operating pressure /	max. 10 bar (others on request)
Pressure drop /	max. 0.3 bar at max. flow
Operating temp. /	-20. . .70°C (electronics)
Temperature gradient /	max. 4 K/s
Weight /	ca. 200g (standard version)

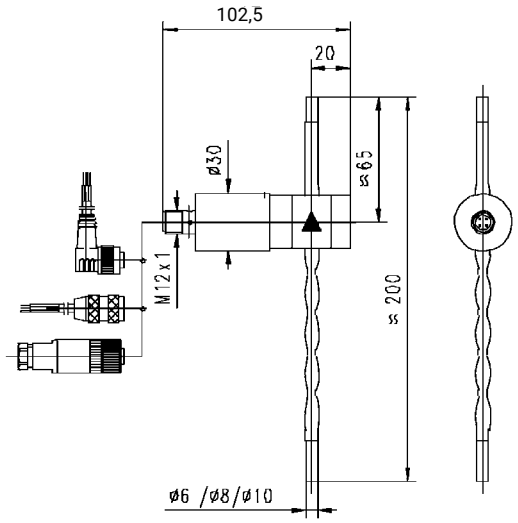
Programming the setpoints /

Using the supplied magnet, the magnet is kept over the marking on the name plate for 0.5 to 2 seconds. The given measured value is saved as the limit value and the LED changes to O.K. status. Longer or shorter magnetizing times than 0.5 or 2 seconds remain ineffective (as protection against external magnetic fields). Immediately after programming the switching output goes into O.K. status (LED on, output connected through, i.e. PNP = High and NPN = Low)

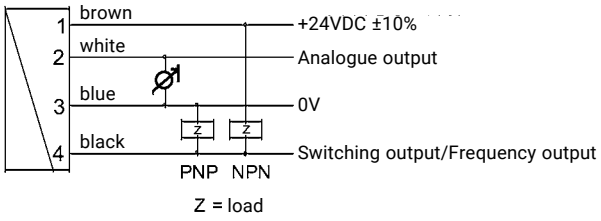
Electrical Specifications:

Supply voltage /	24 VDC ± 10%
Power consumption /	max. 100 mA
Electrical connection /	rounded plug M12 x 1, 4-pole
Switching output /	Transistor output Push Pull, line short circuit and reverse polarity protected
Switching load /	max. 100 mA
As frequency output /	max. 2000 Hz
Analogue output /	4. . .20 mA max. load 500 Ohm or 0. . .10 VDC load min. 1 kOhm
Display /	yellow LED (ON = o.k., OFF = Alarm)
Setting /	through magnet
Protection class /	IP65

Dimensions in mm:



Electrical Connection:



We recommend using a shielded cable,
signal lines < 30m and power supply lines < 10m.

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Ordering Codes:

Order number	DT-03N.	08.	1.	1.	1.	2.	2.	05

DT-03N Calorimetric Flow-Measurement and -monitoring

Connection size /
06 = 6 mm tube diameter,
Operating range (0.001) 0.01. . .2 l/min
08 = 8 mm tube diameter,
Operating range 0.025. . .5 l/min
10 = 10 mm tube diameter,
Operating range 0.05. . .10 l/min

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
1 = Push-Pull (PNP and NPN)

Assignment of 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 (specify end-frequency, max. 2000 Hz in detailed text)
4 = Pulse output

Options (multiple naming such as 3/5/6 possible) /
01 = special operating range for flow
02 = special op. range for temperature (max. 100°C, standard 70°C, min. -20°C, standard 0°C)
03 = Switch on delay from Alarm to O.K.
04 = Switch off delay from O.K. to Alarm
05 = Power-On-Delay [delay after switching on until switching output becomes active)
06 = switching output inverted
07 = switching output fixed setting
08 = other filtering time (standard = 0.5 s, possible are 0/0.2/0.5/1/2/4/8/16/32 s)
09 = special hysteresis (standard 1% of full scale value)
10 = 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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