

Flow sensor, Vortex type VORTEX



- Flow-rate sensor for domestic hot water, drinkable water, demineralised water
- Measuring range from 0.9 to 150 l/min
- Pipes from ND 8 to ND 25 mm
- Output signal: or 4-20 mA or pulses
- Drinkable water approvals: WRAS,ACS

APPLICATIONS

Flow measurement on domestic hot water, drinkable water or non-conductive liquids such as demineralised water or reverse osmosis water.

DESCRIPTION

This flowmeter, which has no moving mechanical parts, is not affected by a pollution. It is distinguished by a low pressure drop and a good accuracy.

The flow sensor is based on the principle of Karman vortex trail. The frequency of vortices generated by the obstacle located in the flow path, is proportional to the flow speed. Turbulences are detected by a piezoelectric paddle, operated by an integrated electronics.

TECHNICAL FEATURES

Flow-rates:

Measuring principle	Vortex, piezo-ceramic sensor
Measuring range	From 0.9 up to 150 l/min
Accuracy	Flow-rate < 50% F.S.: $\pm 1\%$ F.S. Flow-rate > 50% F.S.: $\pm 2\%$ F.S.
Response time	Analogue output: < 500 ms Frequency output: < 5 ms

Operating conditions:

Liquids	Domestic hot water, potable water, demineralized water
Liquid temperature limit	< 125 °C
Ambient temperature limits	-15 ... +85 °C
Storage temperature	-30 ... +85 °C
Pressure limits vs. Temperature	Max. 12 bar at 40 °C / Max. 6 bar at 100 °C (Max. test pressure is 18 bar at 40 °C)
Cavitation	Respect the following relation to prevent cavitations [Outlet Pabs. / Differential pressure] > 5.5

Wet parts FDA compliant:

Sensor paddle	ETFE
Body with damming insert	PA6T/6I (40 % FV)
Sealing	EPDM peroxide (FPM on request)

Tests and approvals:

Approvals for drinking water: WRAS / ACS

EC Conformity: The instrument meets the legal requirements of the current European Directives.

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Electrical features

Model with analogue output:

Power supply	8 ... 33 V DC
Output signal	4-20 mA
Connector	3 pins, M12x1 (IP 65)
Load to GND or IN	< $[(U_{IN} - 8 V) / 20 \text{ mA}]$

Model with pulse output (without filter):

Power supply	4.75 ... 33 V DC
Output signal:	Square pulse < 0,5... > $U_{IN} - 0,5 V$
Connector	3 pins, M12x1 (IP 65)
Load to GND or IN	< 1 mA / < 100 nF
Consumption I _{IN}	< 2 mA

Specific parameters vs. bore:

Bore	Range	Flow speed	Pressure drop*	Mass
ND 8	0.9 ... 15 l/min	0.133 ... 2.210 m/s	$P_v = 85.00 \times Q^2$	~ 47 g
ND 10	1.8 ... 32 l/min	0.265 ... 4.716 m/s	$P_v = 22.50 \times Q^2$	~ 57 g
ND 15	3.5 ... 50 l/min	0.290 ... 4.145 m/s	$P_v = 6.70 \times Q^2$	~ 68 g
ND 20	5.0 ... 85 l/min	0.265 ... 4.509 m/s	$P_v = 2.50 \times Q^2$	~ 92 g
ND 25	9.0 ... 150 l/min	0.283 ... 4.709 m/s	$P_v = 0.92 \times Q^2$	~ 100 g

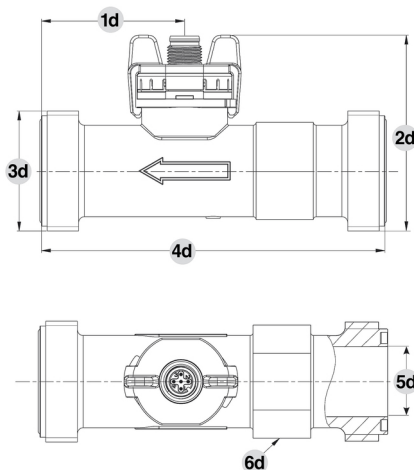
*: Includes distances upstream and downstream of 3 ND (P_v in Pa, Q in l/min)

CODE NUMBERS AND REFERENCES

Analogue output		Frequency output						
Code	Reference	Code	Reference	Frequency	Volume per pulse**	Bore	Range	Fittings
777 001	VORTEX A 8	777 021	VORTEX F 8	30 ... 384 Hz	0.628 ml	ND 8	0.9 ... 15 l/min	½" G
777 002	VORTEX A 10	777 022	VORTEX F 10	24 ... 387 Hz	1.370 ml	ND 10	1.8 ... 32 l/min	¾" G
777 003	VORTEX A 15	777 023	VORTEX F 15	20 ... 275 Hz	3.016 ml	ND 15	3.5 ... 50 l/min	1" G
777 004	VORTEX A 20	777 024	VORTEX F 20	14 ... 230 Hz	6.125 ml	ND 20	5.0 ... 85 l/min	1 ¼" G
777 005	VORTEX A 25	777 025	VORTEX F 25	12 ... 204 Hz	12.251 ml	ND 25	9.0 ... 150 l/min	1 ½" G

** : at 50% of F.S.

DIMENSIONS



	1d	2d	3d	4d	5d	6d
ND 8	43.7	53	½" G	77	11.5	Hexagonal; 12 mm
ND 10	39.5	54.1	¾" G	90	11.5	Hexagonal; 19 mm
ND 15	41.6	59.5	1" G	97	16	Hexagonal; 22 mm
ND 20	42.6	65.8	1 ¼" G	117	20	Hexagonal; 27 mm
ND 25	56	71.3	1 ½" G	132	26	Hexagonal; 34 mm

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