PolluFlow

Ultrasonic flow sensor

Application

The PolluFlow ultrasonic flow sensor with volume pulse output has been designed for use with all usual electronic calculators for heating and cooling energy. The measurement principle is based on the measurement of the transit time. Ultrasonic technology offers many benefits: no moving parts, low pressure loss, wide flow measurement range, senstive to low flow, large metering dynamics, insensitiveness to suspended particles.

Additionally PolluFlow is suitable to measure fully condensed steam.

Special features

Approval according MID Classe 2 with dynamic range 1:100 (q_i:q_p)

No moving parts in the flow sensor

Choice between horizontal, vertical and inclined installation

Detachable calculator

Operates over a wide temperature range from 5 – 130 °C (briefly: 150 °C), hence ideally suited for so-called “6 °C / 12 °C refrigeration units” using water as a thermal medium

Service-friendly design enables cost-effective reprocessing once calibration period has expired

Very good long term stability approved by AGFW duration test

Extreme low power consumption enabling a long lifetime

Applicable for calculators with impulse input

Available in threaded or flanged version

Technical specifications: Calculator

Environmental class	EN 1434 class C / MID class E2 + M2 (ambient temperature: 5 ... 55 °C)
Protection class	Heating: IP 54 Heating/cooling: IP 65
Power supply	Only with external supply 3.0 ... 5.5 VDC
Interfaces	Open Collector pulse output - output for testing
Volume pulse value	1l/pulse or 10l/pulse (depending on the sensor size)
Material of the flow sensor body	Brass (q_p 0.6 ... 10 m³/h), grey cast iron (q_p 15 ... 60 m³/h)
Length of control lead between calculator and flow sensor	2.4 m (4.9 or 9.9 m on request)

Technical specifications: Flow sensor

Nominal flow rate	**q_p**	**m³/h**	**0.6**	**0.6**	**1.5**	**1.5**	**2.5**	**2.5**	**3.5**	**3.5**
Nominal diameter	DN	mm	15	20	15	20	20	20	25	25
Overall length	L	mm	110	190	110	190	130	190	150	260
Starting flow rate		l/h	1	1	2.5	2.5	4	4	10	10
Minimum flow rate (DR 1:250)	q_i	l/h	6	6	6	6	10	10	-	-
Minimum flow rate (DR 1:100)	q_i	l/h	6	6	15	15	25	25	35	35
Maximum flow rate	q_s	m³/h	1.2	1.2	3	3	5	5	7	7
Overload flow rate		m³/h	2.5	2.5	4.6	4.6	6.7	6.7	18.4	18.4
Pressure loss at q_p	Δp	mbar	95	85	120	75	100	100	44	60
Temp. range heating		°C	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 150[3)]	5 ... 150[3)]
Kvs value (Δp=Q²/Kvs²)			1.95	2.06	4.33	5.48	7.91	7.91	16.69	14.29

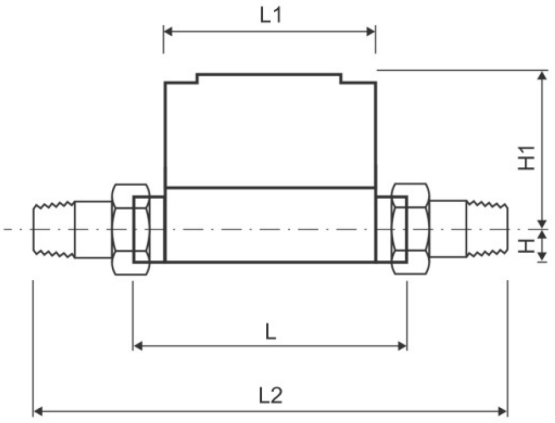
Nominal flow rate	**q_p**	**m³/h**	**6**	**6**	**10**	**10**	**15**	**25**	**40**	**60**
Nominal diameter	DN	mm	25	25	40	40	50	65	80	100
Overall length	L	mm	150	260	200	300	270	300	300	360
Starting flow rate		l/h	10	10	20	20	40	50	80	120
Minimum flow rate (DR 1:250)	q_i	l/h	24	24	40[1)]	40[1)]	60[1)]	100[1)]	160[1)]	240[1)]
Minimum flow rate (DR 1:100)	q_i	l/h	60	60	100	100	150	250	400	600/1200[2)]
Maximum flow rate	q_s	m³/h	12	12	20	20	30	50	80	120
Overload flow rate		m³/h	18.4	18.4	24	24	36	60	90	132
Pressure loss at q_p	Δp	mbar	128	128	140	140	140	75	80	75
Temp. range heating		°C	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]	5 ... 150[3)]
Kvs value (Δp=Q²/Kvs²)			16.77	16.77	26.73	26.73	40.09	91.29	141.42	219.09

1) Valid for horizontal installation only
2) Up side down installation
3) 150 °C in vertical installations or tilted installation with bigger than 45 degree tilted angle

Dimensions Thread Version

Nominal flow rate	**q_p**	**m^3/h**	**0.6**	**0.6**	**1.5**	**1.5**	**2.5**	**2.5**
Nominal diamter	DN	mm	15	20	15	20	20	20
Overall length	L	mm	110	190	110	190	130	190
Overall lenght with coupling	L2	mm	190	288	190	288	230	288
Height	H	mm	14.5	18	14.5	18	18	18
Height	H1	mm	54.5	56.5	54.5	56.5	56.5	56.5
Length of electronic	L1	mm	90	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5	65.5
Connection thread on meter		Inch	G¾B	G1B	G¾B	G1B	G1B	G1B
Connection thread of coupling		Inch	R½	R¾	R½	R¾	R¾	R¾
Operating Pressure	PN	bar	16/25	16/25	16/25	16/25	16/25	16/25
Weight		kg	0.6	0.63	0.6	0.63	0.61	0.63

Nominal flow rate	**q_p**	**m^3/h**	**3.5**	**3.5**	**6**	**6**	**10**	**10**
Nominal diamter	DN	mm	25	25	25	25	40	40
Overall length	L	mm	150	260	150	260	200	300
Overall lenght with coupling	L2	mm	270	380	270	380	340	440
Height	H	mm	23	23	23	23	33	33
Height	H1	mm	61	61	61	61	66.5	66.5
Length of electronic	L1	mm	90	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5	65.5
Connection thread on meter		Inch	G1¼B	G1¼B	G1¼B	G1¼B	G2B	G2B
Connection thread of coupling		Inch	R1	R1	R1	R1	R1½	R1½
Operating Pressure	PN	bar	16/25	16/25	16/25	16/25	16/25	16/25
Weight		kg	0.93	1.35	0.93	1.35	2.4	2.6

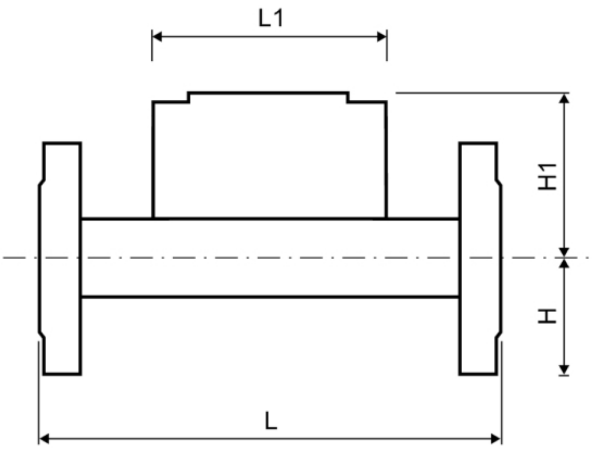


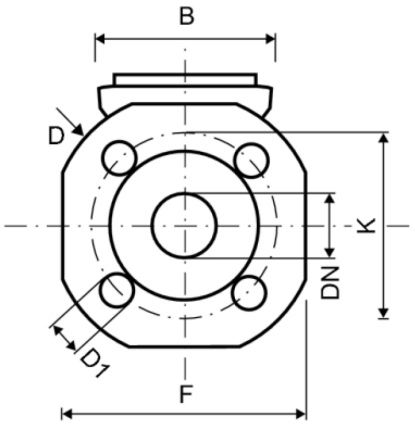
Dimensions Flange Version

Nominal flow rate	**q_p**	**m³/h**	**0.6**	**1.5**	**2.5**	**3.5**	**6**
Nominal diamter	DN	mm	20	20	20	25	25
Overall length	L	mm	190	190	190	260	260
Height	H	mm	47.5	47.5	47.5	50	50
Height	H1	mm	56.5	56.5	56.5	61	61
Length of electronic	L1	mm	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5
Flange dimension	F	mm	95	95	95	100	100
Flange diameter	D	mm	105	105	105	114	114
Hole circle diameter	K	mm	75	75	75	85	85
Screwhole diameter	D1	mm	14	14	14	14	14
Operating pressure	PN	bar	16/25	16/25	16/25	16/25	16/25
Number of screwholes		pcs	4	4	4	4	4
Weight brass body		kg	2.7	2.7	2.7	3.35	3.35
Weight grey cast iron body		kg	-	-	-	-	-

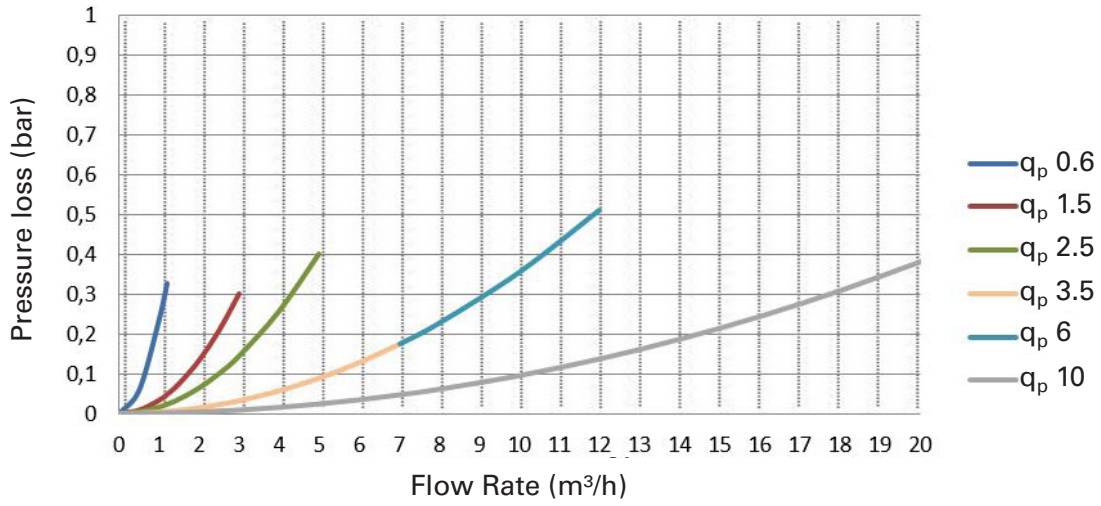
Nominal flow rate	**q_p**	**m³/h**	**10**	**15**	**25**	**40**	**60**
Nominal diamter	DN	mm	40	50	65	80	100
Overall length	L	mm	300	270	300	300	360
Height	H	mm	69	73.5	85	92.5	108
Height	H1	mm	66.5	71.5	79	86.5	96.5
Length of electronic	L1	mm	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5
Flange dimension	F	mm	138	147	170	185	216
Flange diameter	D	mm	148	163	184	200	235
Hole circle diameter	K	mm	110	125	145	160	180[1)] / 190
Screwhole diameter	D1	mm	18	18	18	19	19[1)] / 22
Operating pressure	PN	bar	16/25	16/25	16/25	16/25	16/25
Number of screwholes		pcs	4	4	8	8	8
Weight brass body		kg	6.6	7.45	9.45	11.1	16.9
Weight grey cast iron body		kg	-	6.31	8.08	10.01	15.76

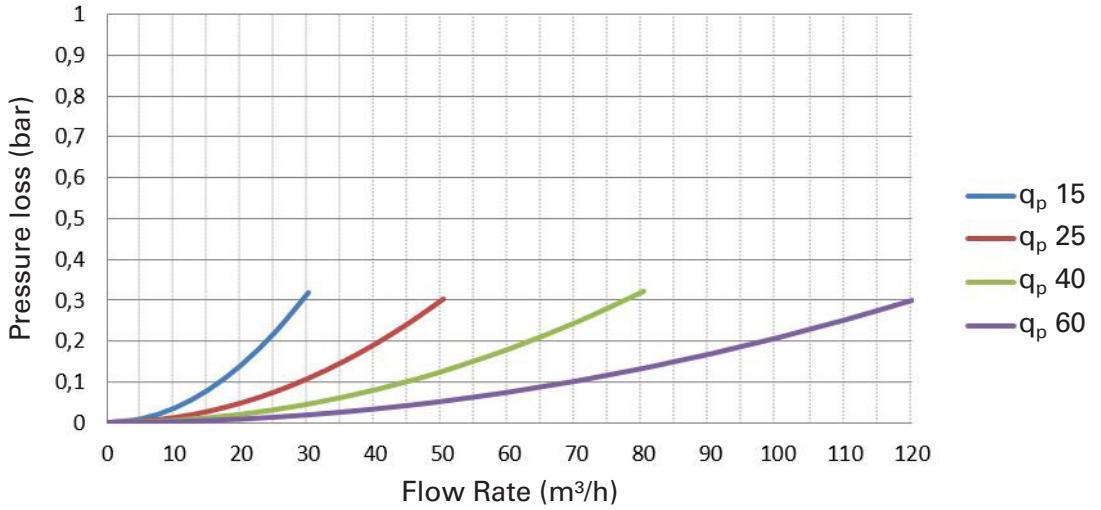
1) Values for PN 16 housing





Typical Head Loss Curve





UK & Ireland Enquiries
Sensus UK Systems Ltd, 3 Lindenwood Crockford Lane, Chineham Business Park
Basingstoke RG24 8QY UK
T: +44 (0) 1256 372800 F: +44 (0) 1256 707203 Email: info.gb@xyleminc.com **www.sensus.com**

International Enquiries
Sensus GmbH Ludwigshafen, Industriestrasse 16, 67063 Ludwigshafen, Germany
T: +49 (0) 621-6904-0 F: +49 (0) 621-6904-1409 Email: info.int@xyleminc.com **www.sensus.com**