SHARKY FS 473

FLOW SENSOR | ULTRASONIC

DIEHL
Metering

APPLICATION

The ultrasonic flow sensor can be used for flow measuring in local and district heating / cooling systems.

FEATURES

- 1st approval in Europe for ultrasonic flow sensor with a dynamic range of 1:250 (q_i:q_p) in class 2
- extreme low power consumption --> long battery lifetime
- approved according EN 1434 and MID in class 2 and 3
- high long term stability, verified with independent AGFW test
- applicable for different calculators with impulse input
- free selectable impulse values
- temperature range 5°C to 90 °C / 130°C / 150°C
- battery or external powered
- specific housing for falling and rising pipes

smart in solutions

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GENERAL

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Application		heating - cooling
Approval		EN1434 class 2: q_p 0.6 ... 6m³/h; MID: q_p 0.6 ... 60m³/h
Ambient class		EN 1434 class C / MID class E1 + M1
Ambient Temperature	°C	5 ... 55
Power supply		3.0 VDC battery - max. 12 years lifetime; external supply 3.0 ... 5.5 VDC
Mounting position		any position
Protection class		heating: IP 54; cooling: IP 68
Interfaces		Open Collector pulse output[1] - output for testing and communication[2]
Volume pulse value[3]		1 ml ... 5000 l/pulse

1: The pulse output can be choosen without galvanic isolation (standard) or with galvanic isolation (only with battery supply). The flow sensor has by default a 4 wire impulse cable with a length of 2.5m (5 or 10m optional)
2: The output for testing is a combined pulse output. The flow sensor can either emit a high resolution test pulse (standard) or communicate via the same output. By using an adapter the flow sensor can be read via the HYDRO-SET software.
3: The pulse duration is between 1 and 250 ms. It depends on the pulse value and on the nominal flow rate qp.
Standard pulse values: 1, 2.5, 10, 25, 100, 250 l/pulse

TEMPERATURE RANGE

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Temperature range heating - battery supplied	°C	5 ... 90 / 5 ... 105[1]
Temperature range heating - external supplied	°C	q_p 0.6 ... 2.5m³/h: 5 ... 130; q_p 3.5 ... 60m³/h: 5 ... 150[1]
Temperature range cooling	°C	5 ... 90 / 5 ... 105[1]

1: Only in rising or falling pipes or tilted installation

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TECHNICAL DATA

Nominal flow rate	q_p	m^3/h	0.6	0.6	0.6	1.5	1.5	1.5
Nominal diameter	DN	mm	15	20	20	15	20	20
Overall length	L	mm	110	130	190	110	130	190
Starting flow rate		l/h	1	1	1	2.5	2.5	2.5
Minimum flow rate	q_i	l/h	6	6	6	6	6	6
Maximum flow rate	q_s	m^3/h	1.2	1.2	1.2	3	3	3
Overload flow rate		m^3/h	2.5	2.5	2.5	4.6	4.6	4.6
Operating pressure	PN	bar	16[1]	16[1]	16[1]	16[1]	16[1]	16[1]
Pressure loss at q_p	Δp	mbar	85	85	85	75	75	75
Test pulse value		ml/pulse	5	5	5	10	10	10
Flow resistance coefficient	Zeta		21.3	67.5	67.5	4.3	13.6	13.6

Nominal flow rate	q_p	m^3/h	2.5	2.5	3.5	3.5	6	6
Nominal diameter	DN	mm	20	20	25	32	25	32
Overall length	L	mm	130	190	260	260	260	260
Starting flow rate		l/h	4	4	7	7	7	7
Minimum flow rate	q_i	l/h	10	19	35	35	24	24
Maximum flow rate	q_s	m^3/h	5	5	7	7	12	12
Overload flow rate		m^3/h	6.7	6.7	18.4	18.4	18.4	18.4
Operating pressure	PN	bar	16[1]	16[1]	16[1]	16[1]	16[1]	16[1]
Pressure loss at q_p	Δp	mbar	100	100	44	44	128	128
Test pulse value		ml/pulse	20	20	20	20	50	50
Flow resistance coefficient	Zeta		4	4	2.8	7.4	2.8	7.4

Nominal flow rate	q_p	m^3/h	10	15	25	40	60	
Nominal diameter	DN	mm	40	50	65	80	100	
Overall length	L	mm	300	270	300	300	360	
Starting flow rate		l/h	20	40	50	80	120	
Minimum flow rate	q_i	l/h	40[3]/100	60[3]/150	100[3]/250	160[3]/400	240[3]/600[4]/1200[	
Maximum flow rate	q_s	m^3/h	20	30	50	80	120	
Overload flow rate		m^3/h	24	36	60	90	132	
Operating pressure	PN	bar	16[1]	25[2]	25[2]	25[2]	16/25[2]	
Pressure loss at q_p	Δp	mbar	95	80	75	80	75	
Test pulse value		ml/pulse	100	100	200	250	500	
Flow resistance coefficient	Zeta		3.8	3.5	3.4	3.4	3.8	

1: Also available in PN 25 bar
2: Also available in PN 40 bar
3: Only for horizontal installation
4: Only in risiing or falling pipes or tilted installation
5: Only up side down installation

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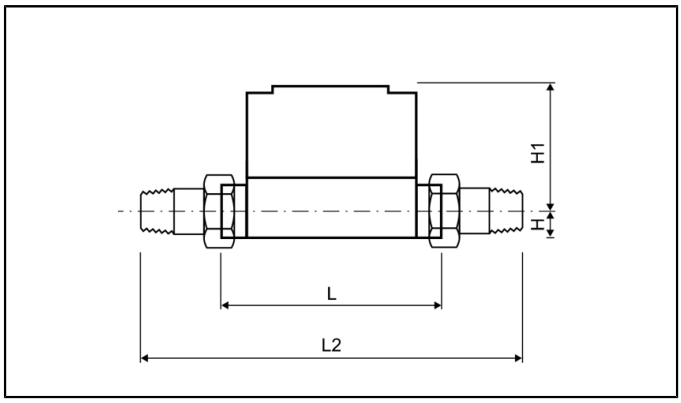
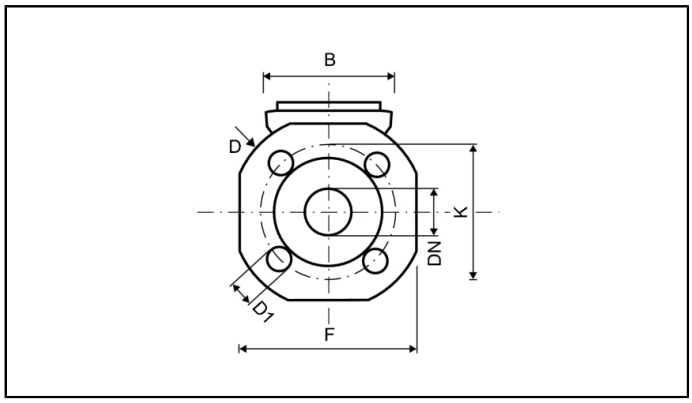
DIMENSIONS THREAD VERSION





Nominal flow rate	q_p	m^3/h	0.6	0.6	0.6	1.5	1.5	1.5
Nominal diameter	DN	mm	15	20	20	15	20	20
Overall length	L	mm	110	130	190	110	130	190
Overall length with coupling	L2	mm	190	230	-	190	230	-
Height	H	mm	14.5	18	18	14.5	18	18
Height	H1	mm	54.5	56.5	56.5	54.5	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	G1B	G¾B	G1B	G1B
Connection thread of coupling		Inch	R½	R¾	R¾	R½	R¾	R¾
Weight		kg	0.6	0.61	0.63	0.6	0.61	0.63

Nominal flow rate	q_p	m^3/h	2.5	2.5	3.5	3.5	6	6
Nominal diameter	DN	mm	20	20	25	32	25	32
Overall length	L	mm	130	190	260	260	260	260
Overall length with coupling	L2	mm	230	-	380	-	380	-
Height	H	mm	18	18	23	-	23	-
Height	H1	mm	56.5	56.5	61	-	61	-
Length of electronic	L1	mm	90	90	90	-	90	-
Width of electronic	B	mm	65.5	65.5	65.5	-	65.5	-
Connection thread on meter		Inch	G1B	G1B	G1¼B	-	G1¼B	-
Connection thread of coupling		Inch	R¾	R¾	R1	-	R1	-
Weight		kg	0.61	0.63	1.35	-	1.35	-

Nominal flow rate	q_p	m^3/h	10	15	25	40	60
Nominal diameter	DN	mm	40	50	65	80	100
Overall length	L	mm	300	270	300	300	360
Overall length with coupling	L2	mm	440	-	-	-	-
Height	H	mm	33	-	-	-	-
Height	H1	mm	66.5	-	-	-	-
Length of electronic	L1	mm	90	-	-	-	-
Width of electronic	B	mm	65.5	-	-	-	-
Connection thread on meter		Inch	G2B	-	-	-	-
Connection thread of coupling		Inch	R1½	-	-	-	-
Weight		kg	2.6	-	-	-	-

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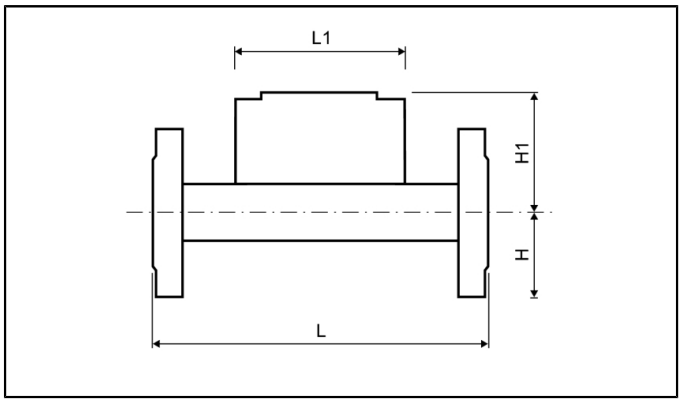
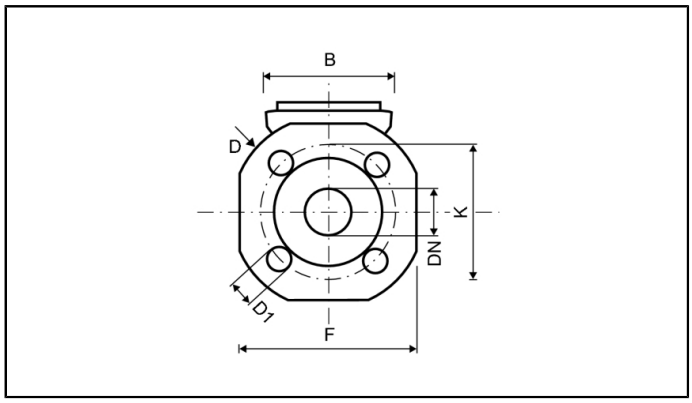
DIMENSIONS FLANGE VERSION





Nominal flow rate	q_p	m^3/h	0.6	0.6	0.6	1.5	1.5	1.5
Nominal diameter	DN	mm	15	20	20	15	20	20
Overall length	L	mm	110	130	190	110	130	190
Height	H	mm	-	-	47.5	-	-	47.5
Height	H1	mm	-	-	56.5	-	-	56.5
Length of electronic	L1	mm	-	-	90	-	-	90
Width of electronic	B	mm	-	-	65.5	-	-	65.5
Flange dimension	F	mm	-	-	95	-	-	95
Flange diameter	D	mm	-	-	105	-	-	105
Hole circle diameter	K	mm	-	-	75	-	-	75
Screwhole diameter	D1	mm	-	-	14	-	-	14
Number of screwholes		pcs	-	-	4	-	-	4
Weight		kg	-	-	2.7	-	-	2.7

Nominal flow rate	q_p	m^3/h	2.5	2.5	3.5	3.5	6	6
Nominal diameter	DN	mm	20	20	25	32	25	32
Overall length	L	mm	130	190	260	260	260	260
Height	H	mm	-	47.5	50	62.5	50	62.5
Height	H1	mm	-	56.5	61	61	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	100	125	100	125
Flange diameter	D	mm	-	105	114	139	114	139
Hole circle diameter	K	mm	-	75	85	100	85	100
Screwhole diameter	D1	mm	-	14	14	18	14	18
Number of screwholes		pcs	-	4	4	4	4	4
Weight		kg	-	2.7	3.35	4.65	3.35	4.65

Nominal flow rate	q_p	m^3/h	10	15	25	40	60
Nominal diameter	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
Number of screwholes		pcs	4	4	8	8	8
Weight		kg	6.6	7.45	9.45	11.1	16.9

1: values for PN 16 housing

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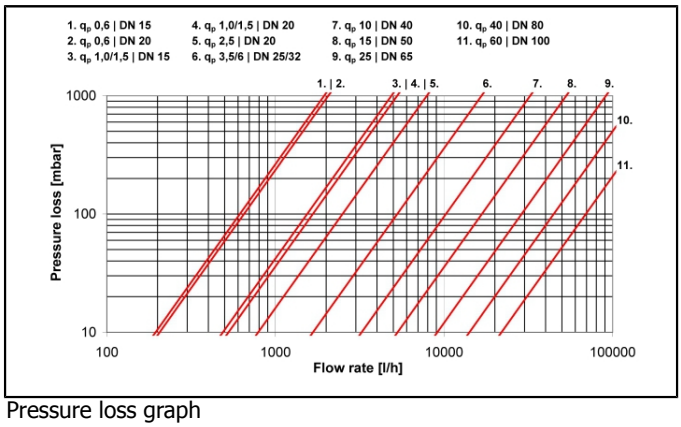
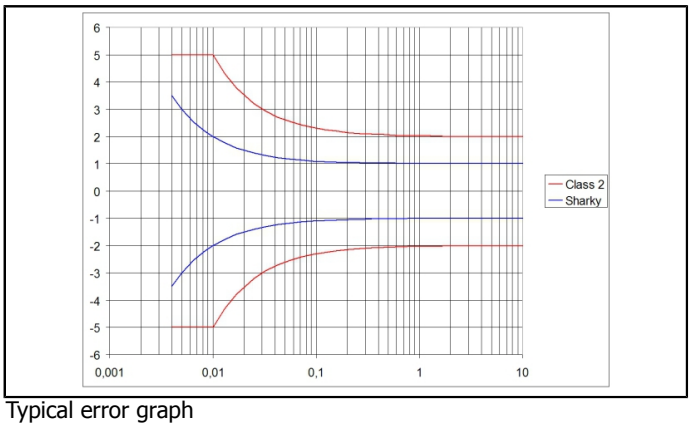
PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

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