DIEHL
Metering

SHARKY FS 473

#########

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 (DR) of up to 1:250 (q_i:q_p) in class 2 (depends on meter size), standard 1:100
- Extreme low power consumption --> longer battery lifetime
- Approved according EN 1434 and MID in class 2 and 3 and PTB K 7.2 (cooling)
- High long term stability, verified with independent AGFW test
- Applicable for different calculators with impulse input
- Free selectable impulse values, time continuously pulse, no puls packages
- The temperature range depending on the applicaton 5 ... 150 °C
- Battery or external power supply
- Specific housing for falling and rising pipes

GENERAL

		SHARKY FS 473
Application		Heating - cooling
Approval		MID and PTB K 7.2 for cooling
Ambient class		EN 1434 class C / MID class E2 + M2
Ambient temperature	°C	5 ... 55
Power supply		3.0 VDC battery - up to 12 years lifetime; external supply 3.0 ... 5.5 VDC
Mounting position		Any position
Protection class		Heating: IP 54; cooling: IP 65
Interfaces		Open Collector pulse output[1] - output for testing and communication[2]
Volume pulse value[3]		10 ml ... 5000 l/pulse (depending on sensor sizes and supply)
Cable length of impulse cable		10 m
Material of the flow sensor body		Brass (q_p 0.6 ... 10 m^3/h), grey cast iron (q_p 15 ... 60 m^3/h)

[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.
[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 q_p.
Standard pulse values: 1, 2.5, 10, 25, 100, 250 l/pulse

TEMPERATURE RANGE

		SHARKY FS 473
Temperature range heating - battery supplied	°C	5 ... 90 / 5 ... 105[1]
Temperature range heating - external supplied	°C	5 ... 130 / 150
Temperature range cooling - battery supplied	°C	5 ... 90 / 5 ... 105[1]

[1] Only in rising or falling pipes or tilted horizontal installation

TECHNICAL DATA

Nominal flow rate	q_p	m^3/h	**0.6**	**0.6**	**0.6**	**1.5**	**1.5**	**1.5**	**2.5**
Nominal diameter	DN	mm	15	20	20	15	20	20	20
Overall length	L	mm	110	130	190	110	130	190	130
Starting flow rate		l/h	1	1	1	2.5	2.5	2.5	4
Minimum flow rate (DR 1:250)	q_i	l/h	6	6	6	6	6	6	10
Minimum flow rate (DR 1:100)	q_i	l/h	6	6	6	15	15	15	25
Minimum flow rate (up side down installation)	q_i	l/h	6	6	6	6	6	6	10
Maximum flow rate	q_s	m^3/h	1.2	1.2	1.2	3	3	3	5
Overload flow rate		m^3/h	2.5	2.5	2.5	4.6	4.6	4.6	6.7
Pressure loss at q_p	Δp	mbar	95	85	85	120	75	75	100
Temp. range heating		°C	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130
Kvs value (q_p^2 (m^3/h) = Kvs^2 x Δp (bar))			1.95	2.06	2.06	4.33	5.48	5.48	7.91

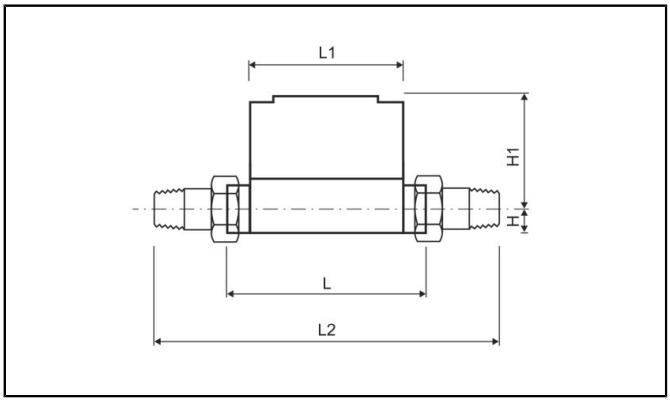
Nominal flow rate	q_p	m^3/h	**2.5**	**3.5**	**3.5**	**3.5**	**3.5**	**3.5**	**6**
Nominal diameter	DN	mm	20	25	25	25	32	32	25
Overall length	L	mm	190	135	150	260	150	260	135
Starting flow rate		l/h	4	10	10	10	10	10	10
Minimum flow rate (DR 1:250)	q_i	l/h	10	-	-	-	-	-	24
Minimum flow rate (DR 1:100)	q_i	l/h	25	35	35	35	35	35	60
Minimum flow rate (up side down installation)	q_i	l/h	10	35	35	35	35	35	24
Maximum flow rate	q_s	m^3/h	5	7	7	7	7	7	12
Overload flow rate		m^3/h	6.7	18.4	18.4	18.4	18.4	18.4	18.4
Pressure loss at q_p	Δp	mbar	100	44	44	60	65	60	190
Temp. range heating		°C	5 ... 130	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Kvs value (q_p^2 (m^3/h) = Kvs^2 x Δp (bar))			7.91	16.69	16.69	14.29	13.73	14.29	13.76

Nominal flow rate	q_p	m^3/h	**6**	**6**	**6**	**6**	**6**	**10**
Nominal diameter	DN	mm	25	25	32	32	40	40
Overall length	L	mm	150	260	150	260	150	200
Starting flow rate		l/h	10	10	10	10	10	20
Minimum flow rate (DR 1:250)	q_i	l/h	24	24	24	24	-	40[1]
Minimum flow rate (DR 1:100)	q_i	l/h	60	60	60	60	60	100
Minimum flow rate (up side down installation)	q_i	l/h	24	24	24	24		100
Maximum flow rate	q_s	m^3/h	12	12	12	12	12	20
Overload flow rate		m^3/h	18.4	18.4	18.4	18.4	18.4	24
Pressure loss at q_p	Δp	mbar	128	128	190	165	190	140
Temp. range heating		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Kvs value (q_p^2 (m^3/h) = Kvs^2 x Δp (bar))			16.77	16.77	13.76	14.77	13.76	26.73

Nominal flow rate	q_p	m^3/h	**10**	**15**	**25**	**40**	**60**	**100**
Nominal diameter	DN	mm	40	50	65	80	100	125
Overall length	L	mm	300	270	300	300	360	360
Starting flow rate		l/h	20	40	50	80	120	120
Minimum flow rate (DR 1:250)	q_i	l/h	40[1]	60[1]	100[1]	160[1]	240[1]	-
Minimum flow rate (DR 1:100)	q_i	l/h	100	150	250	400	600/1200[2]	1000
Minimum flow rate (up side down installation)	q_i	l/h	100	150	250	400	1200	1200
Maximum flow rate	q_s	m^3/h	20	30	50	80	120	120
Overload flow rate		m^3/h	24	36	60	90	132	132
Pressure loss at q_p	Δp	mbar	140	140	75	80	75	80
Temp. range heating		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Kvs value (q_p^2 (m^3/h) = Kvs^2 x Δp (bar))			26.73	40.09	91.29	141.42	219.09	218.22

[1] Valid for horizontal installation only
[2] Up side down installation

DIMENSIONS THREAD VERSION



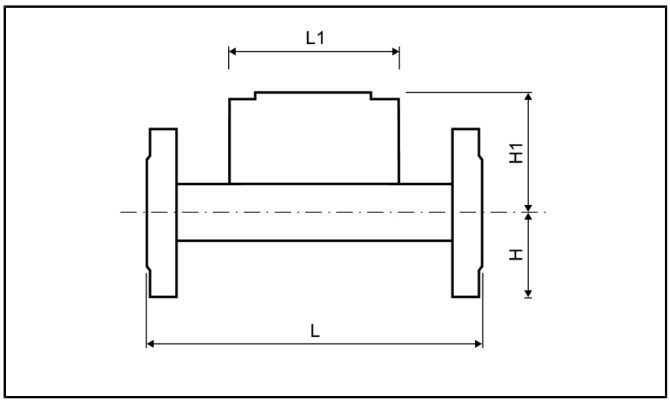
Nominal flow rate	q_p	m^3/h	0.6	0.6	0.6	1.5	1.5	1.5	2.5
Nominal diameter	DN	mm	15	20	20	15	20	20	20
Overall length	L	mm	110	130	190	110	130	190	130
Overall length with coupling	L2	mm	190	230	-	190	230	-	230
Height	H	mm	14.5	18	18	14.5	18	18	18
Height	H1	mm	54.5	56.5	56.5	54.5	56.5	56.5	56.5
Length of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

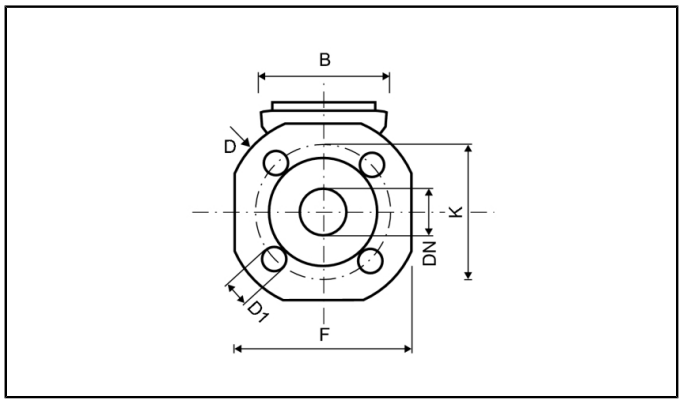
Nominal flow rate	q_p	m^3/h	2.5	3.5	3.5	3.5	3.5	3.5	6
Nominal diameter	DN	mm	20	25	25	25	32	32	25
Overall length	L	mm	190	135	150	260	150	260	135
Overall length with coupling	L2	mm	-	255	270	380	270	380	255
Height	H	mm	18	23	23	23	23	23	23
Height	H1	mm	56.5	61	61	61	61	61	61
Length of electronic	L1	mm	90	90	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5	65.5	65.5
Connection thread on meter		Inch	G1B	G1¼B	G1¼B	G1¼B	G1½B	G1½ B	G1¼B
Connection thread of coupling		Inch	R¾	R1	R1	R1	R1¼	R1¼	R1
Operating pressure	PN	bar	16/25	16/25	16/25	16/25	16/25	16/25	16/25
Weight		kg	0.63	0.88	0.93	1.35	1.08	1.35	0.88

Nominal flow rate	q_p	m^3/h	6	6	6	6	6	10	
Nominal diameter	DN	mm	25	25	32	32	40	40	
Overall length	L	mm	150	260	150	260	150	200	
Overall length with coupling	L2	mm	270	380	270	380	-	340	
Height	H	mm	23	23	23	23	33	33	
Height	H1	mm	61	61	61	61	61	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	G1½B	G1½ B	G2B	G2B	
Connection thread of coupling		Inch	R1	R1	R1¼	R1¼	R1½	R1½	
Operating pressure	PN	bar	16/25	16/25	16/25	16/25	16/25	16/25	
Weight		kg	0.93	1.35	1.08	1.35	1.52	2.4	

Nominal flow rate	q_p	m^3/h	10	15	25	40	60	100
Nominal diameter	DN	mm	40	50	65	80	100	125
Overall length	L	mm	300	270	300	300	360	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	-	-	-	-	-
Operating pressure	PN	bar	16/25	-	-	-	-	-
Weight		kg	2.6	-	-	-	-	-

DIMENSIONS FLANGE VERSION





Nominal flow rate	q_p	m^3/h	0.6	0.6	0.6	1.5	1.5	1.5	2.5
Nominal diameter	DN	mm	15	20	20	15	20	20	20
Overall length	L	mm	110	130	190	110	130	190	130
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	-
Operating pressure	PN	bar	-	-	16/25	-	-	16/25	-
Number of screwholes		pcs	-	-	4	-	-	4	-
Weight brass body[2]		kg	-	-	2.7	-	-	2.7	-
Weight grey cast iron body[2]		kg	-	-	-	-	-	-	-

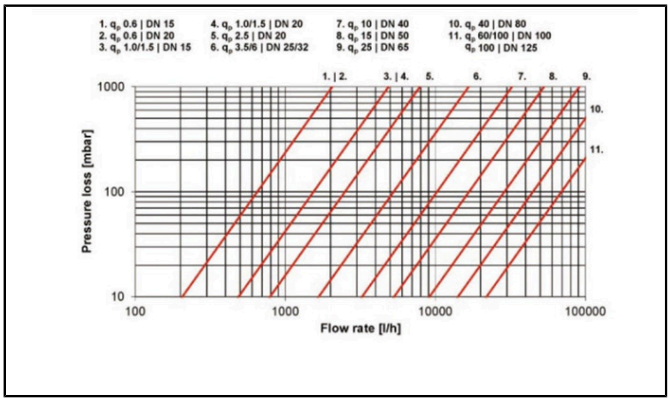
Nominal flow rate	q_p	m^3/h	**2.5**	**3.5**	**3.5**	**3.5**	**3.5**	**3.5**	**6**
Nominal diameter	DN	mm	20	25	25	25	32	32	25
Overall length	L	mm	190	135	150	260	150	260	135
Height	H	mm	47.5	-	-	50	-	62.5	-
Height	H1	mm	56.5	-	-	61	-	61	-
Length of electronic	L1	mm	90	-	-	90	-	90	-
Width of electronic	B	mm	65.5	-	-	65.5	-	65.5	-
Flange dimension	F	mm	95	-	-	100	-	125	-
Flange diameter	D	mm	105	-	-	114	-	139	-
Hole circle diameter	K	mm	75	-	-	85	-	100	-
Screwhole diameter	D1	mm	14	-	-	14	-	18	-
Operating pressure	PN	bar	16/25	-	-	16/25	-	16/25	-
Number of screwholes		pcs	4	-	-	4	-	4	-
Weight brass body[2]		kg	2.7	-	-	3.35	-	4.65	-
Weight grey cast iron body[2]		kg	-	-	-	-	-	-	-

Nominal flow rate	q_p	m^3/h	**6**	**6**	**6**	**6**	**6**	**10**
Nominal diameter	DN	mm	25	25	32	32	40	40
Overall length	L	mm	150	260	150	260	150	200
Height	H	mm	-	50	-	62.5	-	-
Height	H1	mm	-	61	-	61	-	-
Length of electronic	L1	mm	-	90	-	90	-	-
Width of electronic	B	mm	-	65.5	-	65.5	-	-
Flange dimension	F	mm	-	100	-	125	-	-
Flange diameter	D	mm	-	114	-	139	-	-
Hole circle diameter	K	mm	-	85	-	100	-	-
Screwhole diameter	D1	mm	-	14	-	18	-	-
Operating pressure	PN	bar	-	16/25	-	16/25	-	-
Number of screwholes		pcs	-	4	-	4	-	-
Weight brass body[2]		kg	-	3.35	-	4.65	-	-
Weight grey cast iron body[2]		kg	-	-	-	-	-	-

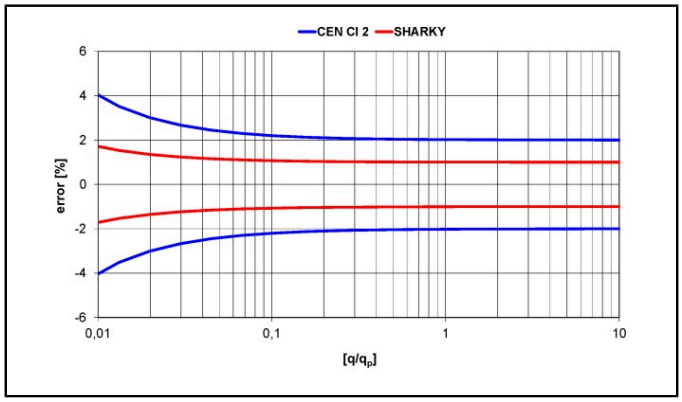
Nominal flow rate	q_p	m^3/h	**10**	**15**	**25**	**40**	**60**	**100**
Nominal diameter	DN	mm	40	50	65	80	100	125
Overall length	L	mm	300	270	300	300	360	360
Height	H	mm	69	73.5	85	92.5	108	127.5
Height	H1	mm	66.5	71.5	79	86.5	96.5	96.5
Length of electronic	L1	mm	90	90	90	90	90	90
Width of electronic	B	mm	65.5	65.5	65.5	65.5	65.5	65.5
Flange dimension	F	mm	138	147	170	185	216	255
Flange diameter	D	mm	148	163	184	200	235	270
Hole circle diameter	K	mm	110	125	145	160	180[1] / 190	220
Screwhole diameter	D1	mm	18	18	18	19	19[1] / 22	26
Operating pressure	PN	bar	16/25	16/25/40[3]	16/25/40[3]	16/25/40[3]	16/25/40[3]	25
Number of screwholes		pcs	4	4	8	8	8	8
Weight brass body[2]		kg	6.6	7.45	9.45	11.1	16.9	21.85
Weight grey cast iron body[2]		kg	-	6.31	8.08	10.01	15.76	-

[1] Values for PN 16 housing
[2] Meter with battery and 10 m cable length of the pulse cable
[3] Only for brass body

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

Economic Actor Information

Applicable regulation and legal obligations for products may change.

DIEHL METERING monitors applicable regulation to ensure their products comply at the date of placing on the market.

Each economic actor making products available on the market thereafter must independently keep informed about the current applicable regulation.

For questions, please contact: metering-germany-info@diehl.com

Diehl Metering (Jinan) Co., Ltd.
Building 11, Jinan Diya Shuangchuang Indust
2566 Shijidadao
Licheng District, Jinan
Phone: +86 531 5882 0999
Fax: +86 531 5882 0998
metering-china-sales@diehl.com
www.diehl.com/metering

EMPOWER A SUSTAINABLE FUTURE