

SHARKY 775

HYDROMETER

COMPACT ENERGY METER | ULTRASONIC



APPLICATION

The ultrasonic compact energy meter can be used for measuring the energy consumption in heating / cooling application for billing purposes.

FEATURES

- ▶ Approval for ultrasonic meter with dynamic range of 1:250 ($q_i:q_p$) in class 2
- ▶ Improved power consumption --> longer battery lifetime
- ▶ Approved according MID in class 2 and 3 and PTB K 7.2 (cooling)
- ▶ High long term stability, tested and verified at independent AGFW test
- ▶ Insensitive against dirt
- ▶ Versatile possibility of power supply
- ▶ Optional with integrated radio, Real Data or Open Metering Standard (868 or 434 MHz)
- ▶ Individual remote reading (AMR) with add on modules Plug & Play
- ▶ Extensive readable data memory
- ▶ 2 communication ports (e. g. M-Bus + Radio)
- ▶ Significantly improved radio performance

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GENERAL

SHARKY	
Application	Heating - cooling - heating/cooling
Approval	MID (DE-10-MI004-PTB013) and PTB K7.2 for cooling (22.72/10.03)
Mounting position flow sensor	Any position, calming sections not necessary
Protection class flow sensor	Heating: IP 54; cooling, heating/cooling: IP 68
Battery supply	3.6 VDC - A-cell max. 11 years lifetime; 3.6 VDC- D-cell 16 years lifetime
Mains supply	24 VAC; 230 VAC
Temperature sensor type	Pt 100 or Pt 500 with 2-wire leads; Ø 5.2 / 6 mm or direct sensor
Cable length of temperature sensor	Pt 100: 2 m; Pt 500: 2 / 3 / 5 / 10m
Volume measuring cycle	With mains unit: 1/8 s; with A-cell battery: 1 s; with D-cell battery: 1 s
Test possibilities	via display, optical test pulses, test output or via NOWA software

CALCULATOR - BASIC FEATURES

SHARKY	
Ambient class	Class E1 + M1
Ambient operating temperature	°C 5 ... 55
Ambient storage temperature	°C -25 ... +70
Protection class	IP 54
Communication	2 communication slots (e. g. M-Bus + M-Bus; 2 primary addresses, 1 secondary address)
Integrated Radio	Optional
Interfaces standard	Optical ZVEI interface
Interfaces optional	2 Slots for modules with M-Bus, L-Bus, RS232, RS485, pulse output, pulse input, combined pulse in-/output or analogue output
Temperature range heating	°C 5 ... 130 / 150
Temperature range cooling	°C 5 ... 90
Temperature range heating/cooling	°C 5 ... 105
Extensive readable data memory	periodical log ¹ ; history log; event memory

¹: Programmable storage interval (daily, weekly, monthly, ...)

CALCULATOR - INTEGRATED RADIO

SHARKY	
Frequency band	868 or 434 MHz
Type of radio telegram	Real Data or Open Metering Standard (OMS)
Transmission data updating	Online - no time delay between value measurement and data transmission
Data transmission	Unidirectional
Sending interval	12 ... 20 s; depending on length of telegram (duty cycle)

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DISPLAY

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Display indication	LCD, 8-digit
Units	MWh - kWh - GJ - Gcal - MBtu - gal - GPM - °C - °F - m³ - m³/h
Total values	99,999,999 - 9,999,999.9 - 999,999.99 - 99,999.999
Values displayed	Energy - Power - Volume - Flow rate - Temperature and more

INTERFACES

SHARKY	
Optical	ZVEI interface, for communication and testing, M-Bus protocol.
M-Bus	Configurable telegram, according to EN13757-3, data reading and parametrization are via two wires with polarity reversal protection, auto baud detect (300 and 2400 baud), 2 M-Bus with 2 primary addresses.
L-Bus	Adapter for external radio module, configurable telegram, according to EN13757-3, data reading and parametrization are via two wires with polarity reversal protection.
RS232	Serial interface for communication with external devices, a special data cable is required, M-Bus protocol, 300 and 2400 baud.
RS485	Serial interface for communication with external devices, power supply with 12V ± 5V, M-Bus protocol, 2400 baud.
Pulse output	Module with 2 Open Collector pulse outputs (potential-free), output 1: 4 Hz (pulse width 125 ms), pulse or static conditions (e.g. errors), output 2: 100 Hz (pulse width ≥ 5 ms), ratio: pulse duration / pulse break ~ 1:1, configurable via IZAR@SET software.
Pulse input	Module with 2 pulse inputs, max. 20Hz, configurable via IZAR@SET software, data can be transferred remotely.
Combined pulse in-/output	Module with 2 pulse inputs and 1 pulse output, configurable via IZAR@SET software, needed for leak detection.
Analogue output	Module for 4 ... 20 mA with 2 programmable passive outputs, programmable value in case of error.

TEMPERATURE INPUT

SHARKY			
Sensor current		mA	Pt 100 peak < 8; rms < 0.015, Pt 500 peak < 2; rms < 0.012
Measuring cycle	T	s	With mains unit: 2 s; with A-cell battery: 16 s; with D-cell battery: 4 s
Starting temperature difference	$\Delta\Theta$	K	0.125
Min. temperature difference	$\Delta\Theta_{\min}$	K	3
Max. temperature difference	$\Delta\Theta_{\max}$	K	177
Absolute temperature measuring range	Θ	°C	1 ... 180

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TECHNICAL DATA FLOW SENSOR

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
Temp. range heating		°C	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130	5 ... 130
Temp. range cooling		°C	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50
Temp. range heating/cooling		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Kvs value (Δp=Q ² /Kvs ²)			2.06	2.06	2.06	5.48	5.48	5.48

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	10	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
Temp. range heating		°C	5 ... 130	5 ... 130	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Temp. range cooling		°C	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50
Temp. range heating/cooling		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Kvs value (Δp=Q ² /Kvs ²)			7.91	7.91	16.69	16.69	16.77	16.77

Nominal flow rate	q _p	m ³ /h	10	10	15	25	40	60
Nominal diameter	DN	mm	40	40	50	65	80	100
Overall length	L	mm	200	300	270	300	300	360
Starting flow rate		l/h	20	20	40	50	80	120
Minimum flow rate	q _i	l/h	40 ³ /100	40 ³ /100	60 ³ /150	100 ³ /250	160	240 ³ /600 ⁴ /1200 ⁵
Maximum flow rate	q _s	m ³ /h	20	20	30	50	80	120
Overload flow rate		m ³ /h	24	24	36	60	90	132
Operating pressure	PN	bar	16 ¹	16 ¹	25 ²	25 ²	25 ²	16/25 ²
Pressure loss at q _p	Δp	mbar	95	95	80	75	80	75
Temp. range heating		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Temp. range cooling		°C	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50	5 ... 50
Temp. range heating/cooling		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Kvs value (Δp=Q ² /Kvs ²)			32.44	32.44	53.03	91.29	141.42	219.09

¹: Also available in PN 25 bar

²: Also available in PN 40 bar

³: Only for horizontal installation

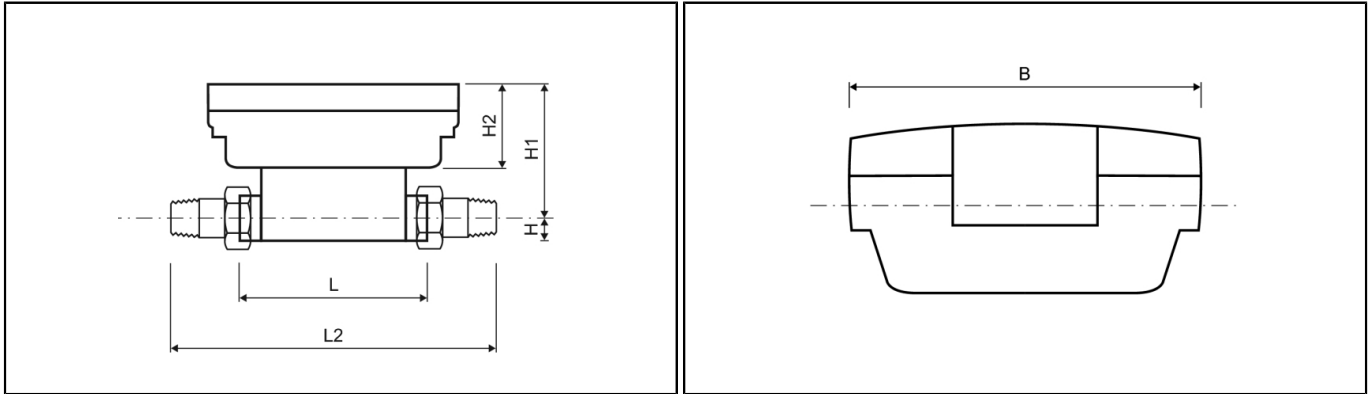
⁴: Only in rising or falling pipes or tilted installation

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	290	190	230	290
Length of calculator	L1	mm	150	150	150	150	150	150
Height	H	mm	14.5	18	18	14.5	18	18
Height	H1	mm	82	84	84	82	84	84
Height of calculator	H2	mm	54	54	54	54	54	54
Width of calculator	B	mm	100	100	100	100	100	100
Connection thread on meter	Inch		G ³ / ₄ B	G1B	G1B	G ³ / ₄ B	G1B	G1B
Connection thread of coupling	Inch		R ¹ / ₂	R ³ / ₄	R ³ / ₄	R ¹ / ₂	R ³ / ₄	R ³ / ₄
Weight ¹		kg	0.76	0.85	0.96	0.76	0.85	0.96

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	290	380	-	380	-
Length of calculator	L1	mm	150	150	150	-	150	-
Height	H	mm	18	18	23	-	23	-
Height	H1	mm	84	84	88.5	-	88.5	-
Height of calculator	H2	mm	54	54	54	-	54	-
Width of calculator	B	mm	100	100	100	-	100	-
Connection thread on meter	Inch		G1B	G1B	G1 ¹ / ₄ B	-	G1 ¹ / ₄ B	-
Connection thread of coupling	Inch		R ³ / ₄	R ³ / ₄	R1	-	R1	-
Weight ¹		kg	0.85	0.96	1.5	-	1.5	-

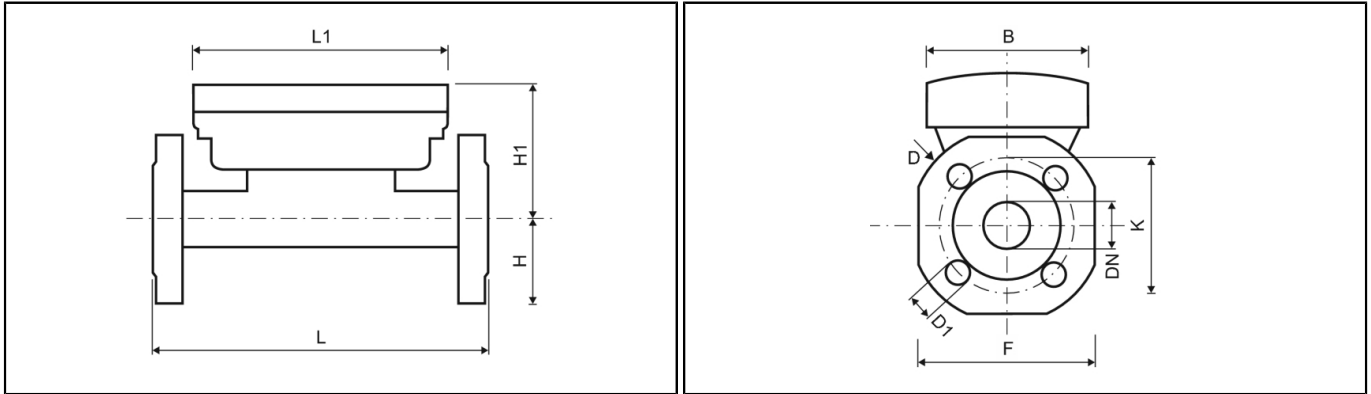
Nominal flow rate	q _p	m ³ /h	10	10	15	25	40	60
Nominal diameter	DN	mm	40	40	50	65	80	100
Overall length	L	mm	200	300	270	300	300	360
Overall length with coupling	L2	mm	340	440	-	-	-	-
Length of calculator	L1	mm	150	150	-	-	-	-
Height	H	mm	33	33	-	-	-	-
Height	H1	mm	94	94	-	-	-	-
Height of calculator	H2	mm	54	54	-	-	-	-
Width of calculator	B	mm	100	100	-	-	-	-
Connection thread on meter	Inch		G2B	G2B	-	-	-	-
Connection thread of coupling	Inch		R1 ¹ / ₂	R1 ¹ / ₂	-	-	-	-
Weight ¹		kg	2.9	3.1	-	-	-	-

¹: Meter with A-cell, without modules, 1.5m cable length, 2m cable length of temperature sensor Ø 5.2mm

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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
Length of calculator	L1	mm	-	-	150	-	-	150
Height	H	mm	-	-	47.5	-	-	47.5
Height	H1	mm	-	-	84	-	-	84
Height of calculator	H2	mm	-	-	54	-	-	54
Width of calculator	B	mm	-	-	100	-	-	100
Flange dimension	F	mm	-	-	95	-	-	95
Flange diameter	D	mm	-	-	105	-	-	105
Hole circle diameter	K	mm	-	-	75	-	-	75
Screw hole diameter	D1	mm	-	-	14	-	-	14
Number of screwholes		pcs	-	-	4	-	-	4
Weight ²		kg	-	-	2.75	-	-	2.75

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
Length of calculator	L1	mm	-	150	150	150	150	150
Height	H	mm	-	47.5	50	62.5	50	62.5
Height	H1	mm	-	84	88.5	88.5	88.5	88.5
Height of calculator	H2	mm	-	54	54	54	54	54
Width of calculator	B	mm	-	100	100	100	100	100
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
Screw hole diameter	D1	mm	-	14	14	18	14	18
Number of screwholes		pcs	-	4	4	4	4	4
Weight ²		kg	-	2.75	3.5	4.8	3.5	4.8

Nominal flow rate	q _p	m ³ /h	10	10	15	25	40	60
Nominal diameter	DN	mm	40	40	50	65	80	100
Overall length	L	mm	200	300	270	300	300	360
Length of calculator	L1	mm	-	150	150	150	150	150
Height	H	mm	-	69	73.5	85	92.5	108
Height	H1	mm	-	94	99	106.5	114	119
Height of calculator	H2	mm	-	54	54	54	54	54
Width of calculator	B	mm	-	100	100	100	100	100
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
Screw hole diameter	D1	mm	-	18	18	18	19	19 ¹ /22
Number of screwholes		pcs	-	4	4	8	8	8
Weight ²		kg	-	6.4	7.0	8.9	10.9	16.4

Subject to technical adjustments

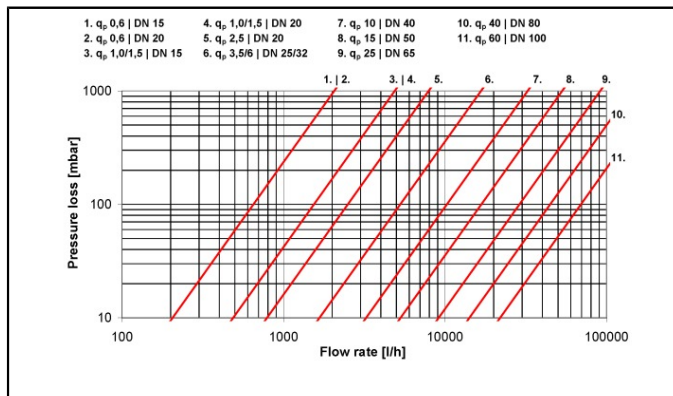
¹: Values for PN16 housing

²: Meter with A-cell, without modules, 1.5m cable length, 2m cable length of temperature sensor Ø 5.2mm

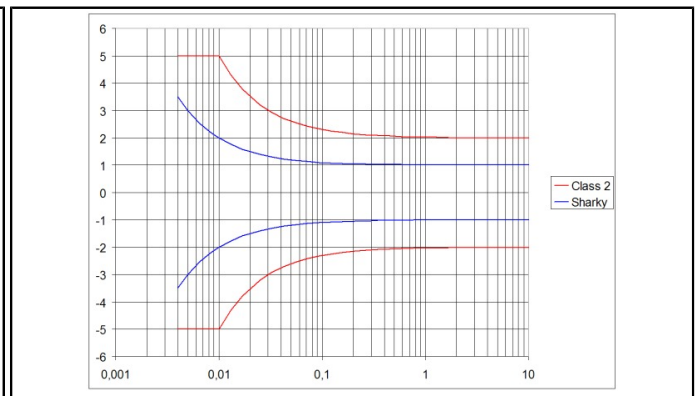
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PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph