Solenvis
experts in energy metering

SHARKY 775

ULTRASONIC COMPACT METER

APPLICATION

SHARKY ultrasonic compact energy meter can be used for measuring the energy consumption in heating / cooling application for billing purposes. The measurement principle is static and based on the measurement of the transit time. Ultrasonic technology offers many benefits : no moving parts (avoids wear and tear of the metering components), low pressure loss, large metering dynamics and low start flowrate, insensitiveness to suspended particles...

FEATURES

- Approved according EN 1434 and MID in class 2 with dynamic range of 1:250 (qi:qp) in class 2
- Complete range from ND 15 mm qp 1.5 m³/h up to ND 100 mm qp 60 m³/h
- Extermely low power consumption enabling a long battery lifetime (16 years in standard use)
- Radio option integrated
- Modular version, M-Bus, RS232, RS485, Analog outputs 4-20mA, pulse outputs and pulse inputs

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ULTRASONIC COMPACT METER

GENERAL

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Application	Heating - cooling - heating/cooling
Approval	MID (DE-10-MI004-PTB013) and PTB K7.2 (cooling)
Mounting position flow sensor	Any position
Protection class flow sensor	Heating: IP 54; cooling, heating/cooling: IP 68
Battery supply	3.6 VDC- D-cell max. 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[1] / 5 m
Volume measuring cycle	With power supply: ⅛ s; with D-cell battery: 1 s
Test possibilities	via display, optical test pulses, test output or via NOWA software

[1]: Only for meters with PTB K 7.2 approval

CALCULATOR - BASIC FEATURES

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Ambient class		Class E1 + M1
Ambient 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 adresses, 1 secondary adress)
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 heatmeter	°C	5 ... 130 / 150
Temperature range cooling meter and heating/cooling meter	°C	5 ... 105
Extensive readable data memory		Monthly memory[1]; historical LOG memory; event memory

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

CALCULATOR - INTEGRATED RADIO

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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

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Optical	ZVEI interface, for communication and testing, M-Bus protocol.
M-Bus	Configurable telegram, according to EN1434-3, 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 adresses.
L-Bus	Adapter for external radio module, configurable telegram, according to EN1434-3, 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), 4 Hz (pulse width 125 ms), 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	1.5	2.5	6	6	10
Nominal diameter	DN	mm	15	20	25	32	40
Overall length	L	mm	110	130	260	260	300
Starting flow rate		l/h	2.5	4	7	7	20
Minimum flow rate	q_i	l/h	6	10	24	24	40^3/100
Maximum flow rate	q_s	m^3/h	3	5	12	12	20
Overload flow rate		m^3/h	4.6	6.7	18.4	18.4	24
Operating pressure	PN	bar	16[1]	16[1]	16[1]	16[1]	16[1]
Pressure loss at q_p	Δp	mbar	75	100	128	128	95
Temp. range heating		°C	5 ... 130	5 ... 130	5 ... 150	5 ... 150	5 ... 150
Temp. range cooling		°C	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
Flow resistance coefficient	Zeta		4.3	4	2.8	7.4	3.8

Nominal flow rate	q_p	m^3/h	15	25	40	60
Nominal diameter	DN	mm	50	65	80	100
Overall length	L	mm	270	300	300	360
Starting flow rate		l/h	40	50	80	120
Minimum flow rate	q_i	l/h	60^3/150	100^3/250	160	240^3/600^4/1200^5
Maximum flow rate	q_s	m^3/h	30	50	80	120
Overload flow rate		m^3/h	36	60	90	132
Operating pressure	PN	bar	25[2]	25[2]	25[2]	16/25[2]
Pressure loss at q_p	Δp	mbar	80	75	80	75
Temp. range heating		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Temp. range cooling		°C	5 ... 50	5 ... 50	5 ... 50	5 ... 50
Temp. range heating/cooling		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Flow resistance coefficient	Zeta		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 rising or falling pipes or tilted installation
[5]: Only up side down installation

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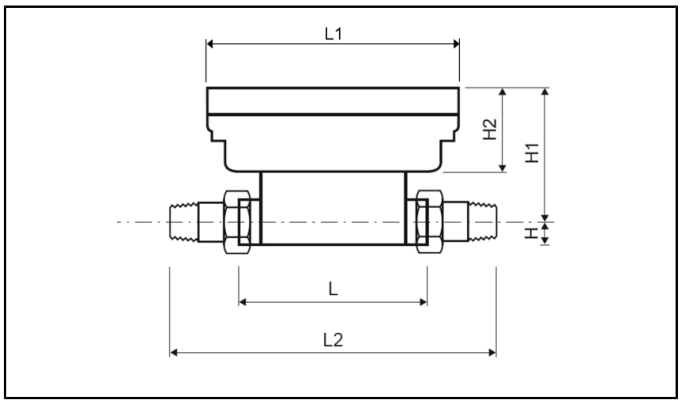
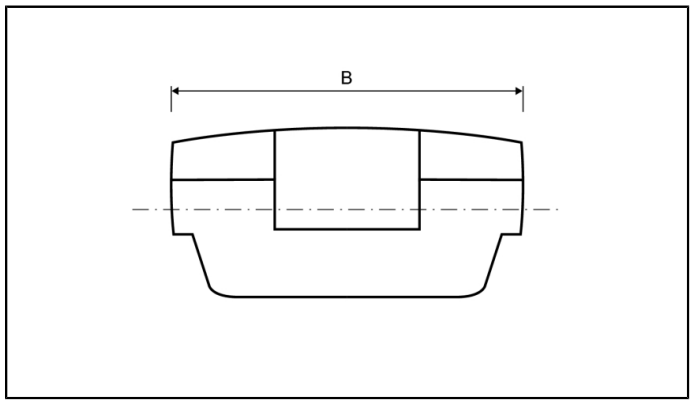
DIMENSIONS THREAD VERSION





Nominal flow rate	q_p	m^3/h	1.5	2.5	6	6	10
Nominal diameter	DN	mm	15	20	25	32	40
Overall length	L	mm	110	130	260	260	300
Overall length with coupling	L2	mm	190	230	380	-	440
Length of calculator	L1	mm	150	150	150	-	150
Height	H	mm	14.5	18	23	-	33
Height	H1	mm	82	84	88.5	-	94
Height of calculator	H2	mm	54	54	54	-	54
Width of calculator	B	mm	100	100	100	-	100
Connection thread on meter		Inch	G¾B	G1B	G1¼B	-	G2B
Connection thread of coupling		Inch	R½	R¾	R1	-	R1½
Weight		kg	0.76	0.85	1.5	-	3

Nominal flow rate	q_p	m^3/h	15	25	40	60
Nominal diameter	DN	mm	50	65	80	100
Overall length	L	mm	270	300	300	360
Overall length with coupling	L2	mm	-	-	-	-
Length of calculator	L1	mm	-	-	-	-
Height	H	mm	-	-	-	-
Height	H1	mm	-	-	-	-
Height of calculator	H2	mm	-	-	-	-
Width of calculator	B	mm	-	-	-	-
Connection thread on meter		Inch	-	-	-	-
Connection thread of coupling		Inch	-	-	-	-
Weight		kg	-	-	-	-

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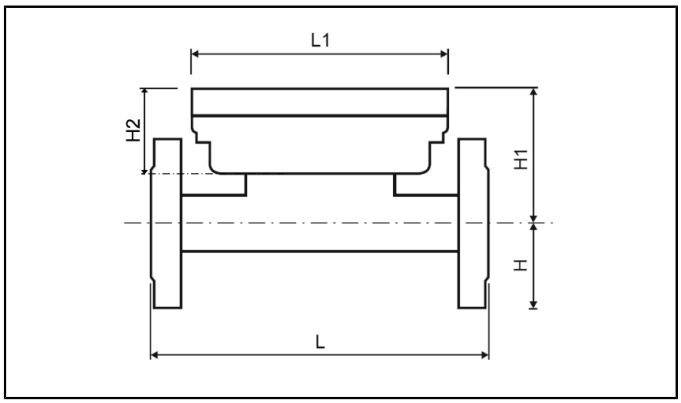
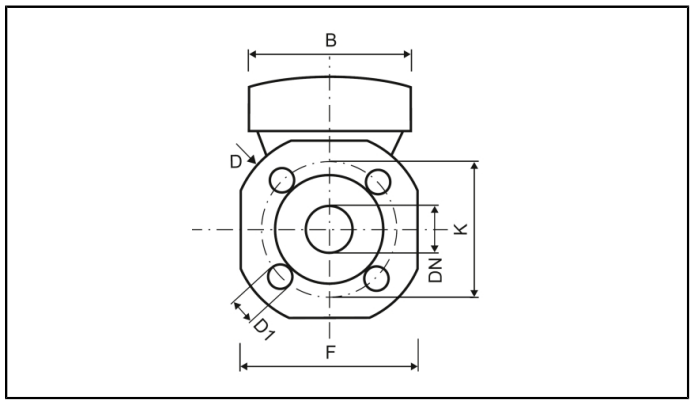
DIMENSIONS FLANGE VERSION





Nominal flow rate	q_P	m^3/h	1.5	2.5	6	6	10
Nominal diameter	DN	mm	15	20	25	32	40
Overall length	L	mm	110	130	260	260	300
Length of calculator	L1	mm	-	-	150	150	150
Height	H	mm	-	-	50	62.5	69
Height	H1	mm	-	-	88.5	88.5	94
Height of calculator	H2	mm	-	-	54	54	54
Width of calculator	B	mm	-	-	100	100	100
Flange dimension	F	mm	-	-	100	125	138
Flange diameter	D	mm	-	-	114	139	148
Hole circle diameter	K	mm	-	-	85	100	110
Screwhole diameter	D1	mm	-	-	14	18	18
Number of screwholes		pcs	-	-	4	4	4
Weight		kg	-	-	3.5	4.8	6.8

Nominal flow rate	q_P	m^3/h	15	25	40	60
Nominal diameter	DN	mm	50	65	80	100
Overall length	L	mm	270	300	300	360
Length of calculator	L1	mm	150	150	150	150
Height	H	mm	73.5	85	92.5	108
Height	H1	mm	99	106.5	114	119
Height of calculator	H2	mm	54	54	54	54
Width of calculator	B	mm	100	100	100	100
Flange dimension	F	mm	147	170	185	216
Flange diameter	D	mm	163	184	200	235
Hole circle diameter	K	mm	125	145	160	180[1]/190
Screwhole diameter	D1	mm	18	18	19	19[1]/22
Number of screwholes		pcs	4	8	8	8
Weight		kg	7.6	9.6	11.2	17

[1]: Values for PN16 housing

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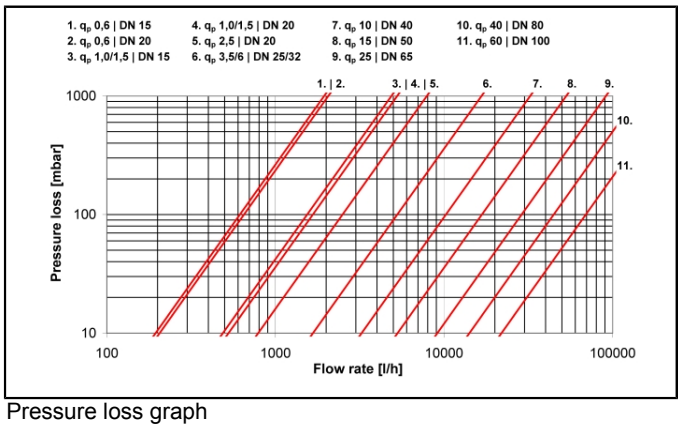
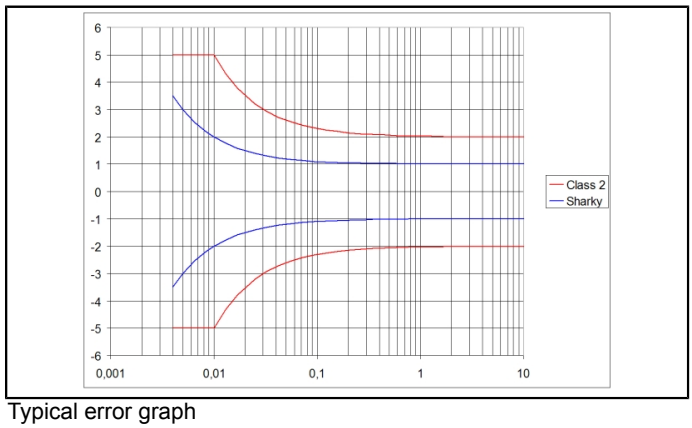
PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph