

Datasheet Ultrasonic Compact Heat Meter Model 775

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 PTB K 7.2 (cooling)
- High long term stability, tested and verified at independent AGFW test
- Insensitive against dirt
- Versatile possibility of power supply
- Integrated Radio, Real Data or Open Metering Standard (868 or 434 MHz)
- Individual remote reading (AMR) with add on modules Plug and Play
- Extensive readable data memory
- 2 communication ports (e.g. M-Bus + Radio)
- Significantly improved radio performance



GENERAL:

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 -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 1/ 5 m
Volume measuring cycle	With mains unit: 1/ 8 s; with A-cell battery: 2 s; with D-cell: 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:

Ambient class	Class E1 + M1
Ambient temperature °C	5 ...55
Ambient storage temperature °C	-20... +70
Protection class	IP 54
Communication	2 communication slots (e.g. M-Bus + M-Bus; 2 primary addressees, 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 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,...)

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CALCULATOR - INTEGRATED RADIO:

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)

DISPLAY:

Display indication	LCD, 8 digit
Units	MWh - kWh - GJ - Gcal - MBtu - gal - GPM - °C - °F - m ³ - m ³ /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 and more

INTERFACES:

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 ≥ 5ms), ratio: pulse duration/ pulse break ~ 1:1, configurable via IZAR@SET software, needed for leak detection.
Pulse input	Module with 2 pulse inputs, max. 20Hz, configurable via IZAR@SET software, data can be transferred remotely
Combined pulse in-/ output	Module for 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 the case of error.

TEMPERATURE INPUT:

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: 4s
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	250	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	2.50	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
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	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
Flow resistance coefficient	Zeta		4	4	2.8	7.4	2.8	7.4

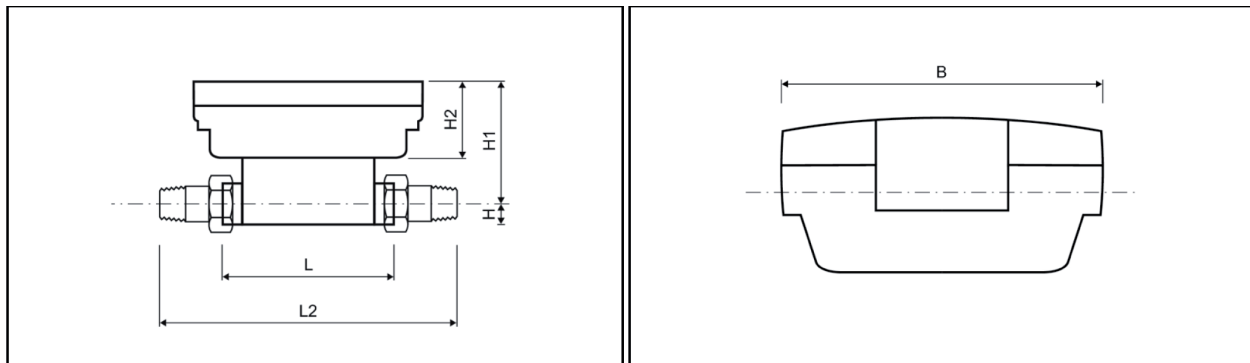
Nominal Flow Rate	q ^p	m ³ /h	10	10	15	25	40	60
Nominal diameter	DN	mm	40	40	50	65	80	100
Overall length	L	mm	200	300	270	300	300	360
Starting flow rate		l/h	20	20	40	50	80	120
Minimum flow rate	q _i	l/h	40 ³ /100	40 ³ /100	60 ³ /150	100 ³ /250	160	240 ³ /600 ³ / 1200 ⁵
Maximum flow rate	q _s	m ³ /h	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
Flow resistance coefficient	Zeta		3.8	3.8	3.5	3.4	3.4	3.8

¹: Also available in PN 25bar ²: Also available in PN 40 bar ³: Only for horizontal installation ⁴: Only in rising and falling pipes or tilted installation ⁵: Only upside 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 3/8B	G1B	G1B	G 3/8B	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		Kg	0.76	0.85	0.96	0.76	0.85	0.96

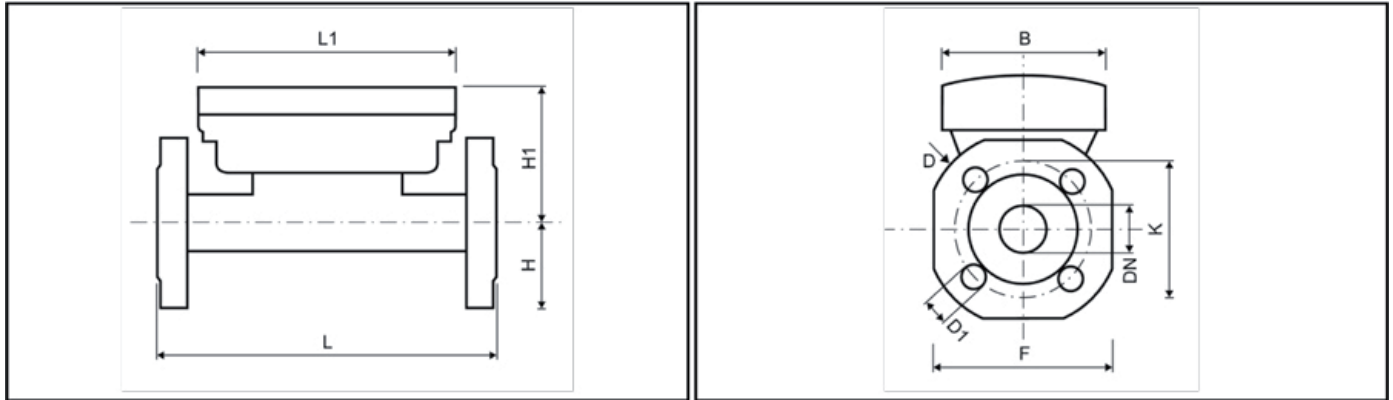
Nominal Flow Rate	q ^p	m ³ /h	2.5	2.5	3.5	3.5	6	6
Nominal diameter	DN	mm	20	20	25	32	25	32
Overall length	L	mm	130	190	260	260	260	260
Overall length with coupling	L2	mm	230	290	380	-	380	-
Length of calculator	L1	mm	150	150	150	-	150	-
Height	H	mm	18	18	23	-	23	-
Height	H1	mm	84	84	88.5	-	88.5	-
Height 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 1/4B	-	G1 1/4B	-
Connection thread of coupling		Inch	R 3/4	R 3/4	R1	-	R1	-
Weight		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 1/4	R1 1/4	-	-	-	-
Weight		Kg	2.4	3	-	-	-	-

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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 with coupling	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 screw holes		pcs	-	-	4	-	-	4
Weight		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 with coupling	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 screw holes		pcs	-	4	4	4	4	4
Weight		kg	-	2.75	3.5	4.8	3.5	4.8

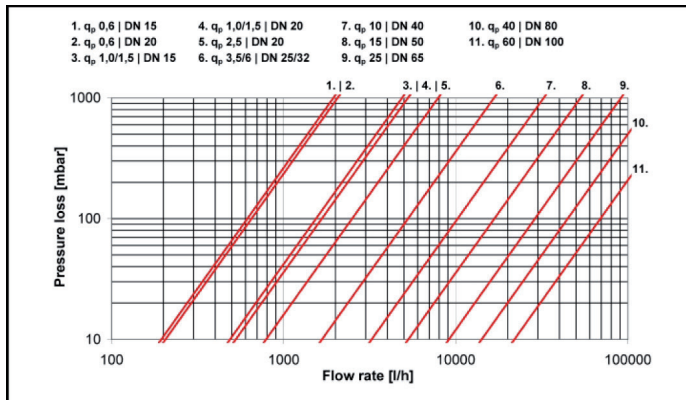
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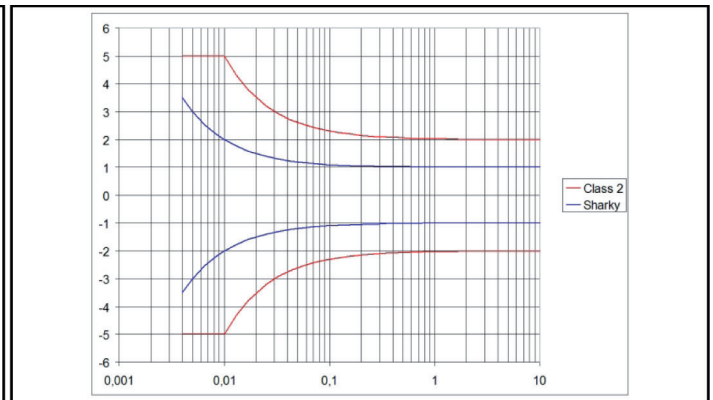
DIMENSIONS FLANGE VERSION (continued):

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 with coupling	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 screw holes		pcs	-	4	4	8	8	8
Weight		kg	-	6.8	7.6	9.6	11.2	17

PRESSURE LOSS GRAPH/ TYPICAL ERROR GRAPH:



Pressure loss graph



Typical error graph