

ULTRASONIC HEAT METER

QALCOSONIC E 2



APPLICATION

Ultrasonic heat meter QALCOSONIC E 2 is designed for metering of consumed heating or cooling energy in closed or open heating/cooling systems, installed in dwelling houses, office buildings or energy plants.

Heat meter QALCOSONIC E 2 consists of the primary flow sensor and the calculator with type approved pair of temperature sensors with Pt500 elements.

ADVANTAGES:

- High accuracy
- Heating/cooling
- AMR

APPROVALS

MID
EN 1434

SPECIAL FEATURES

- Heat meter can be used for heat and flow measurements in closed or open loop heat supply systems.
- Two flow measurement channels.
- Two pressure measurement channels.
- Two pulse inputs for additional flow sensors.
- Pre-programmed or measured pressure values may be used for energy calculation.
- Cold water temperature for open loop application can be measured, or pre-programmed temperature value can be used.
- Optional integrated regulation or alarm function.
- Flexible menu setup – list of parameter values displayed on the LCD may be configured according to the customer's needs.
- Power supply – from internal battery or 230 V AC power source.
- Battery lifetime not less than 11 years.
- Optical data interface according to EN 61107.
- Optional communication modules.

NOMINAL FLOW PARAMETERS

Permanent flow rate q_p , m^3/h	Upper flow rate q_s , m^3/h	Lower flow rate q_i , m^3/h	Threshold value of flow rate, m^3/h	Overall length L, mm	Pressure losses at q_p , kPa	Joining to the pipeline (Thread – G, flange–DN)
0,6	1,2	0,006(0,024)	0,003	110	7	G3/4"
0,6	1,2	0,006(0,024)	0,003	190	0,9	G1", DN20
1,0	2,0	0,01 (0,04)	0,005	110	11,3	G3/4"
1,0	2,0	0,01 (0,04)	0,005	190	2,5	G1", DN20
1,5	3,0	0,006 (0,06)	0,003	110; 165	17,1	G3/4"
1,5	3,0	0,006 (0,06)	0,003	190	5,8	G1", DN20
1,5	3,0	0,015 (0,06)	0,003	110; 165	17,1	G3/4"
1,5	3,0	0,015 (0,06)	0,003	190	5,8	G1", DN20
1,5	3,0	0,015 (0,06)	0,005	130	7,2	G1"
2,5	5,0	0,01 (0,1)	0,005	130	19,8	G1"
2,5	5,0	0,01 (0,1)	0,005	190	9,4	G1", DN20
2,5	5,0	0,025 (0,1)	0,005	130	19,8	G1"
2,5	5,0	0,025 (0,1)	0,005	190	9,4	G1", DN20
3,5	7,0	0,035 (0,14)	0,017	260	4	G1 1/4" DN25, DN32
6,0	12,0	0,024 (0,24)	0,012	260	10	G1 1/4" DN25, DN32
6,0	12,0	0,06 (0,24)	0,012	260	10	G1 1/4" DN25, DN32
10,0	20,0	0,04 (0,4)	0,02	300	18	G2", DN40
10,0	20,0	0,10 (0,4)	0,02	300	18	G2", DN40
15,0	30,0	0,06 (0,6)	0,03	270	12	DN50
15,0	30,0	0,15 (0,6)	0,03	270	12	DN50
25	50	0,1 (1)	0,05	300	20	DN65
25	50	0,25 (1)	0,05	300	20	DN65
40	80	0,16 (1,6)	0,08	300	18	DN80
40	80	0,4 (1,6)	0,2	300	18	DN80
60	120	0,24 (2,4)	0,12	360	18	DN100
60	120	0,6 (2,4)	0,12	360	18	DN100
60	120	0,24	0,12	350	3	DN100 Steel housing
100	200	1,0	0,5	350	7	DN125 Steel housing
100	200	0,4	0,2	350	7	DN125 Steel housing
150	300	1,5	0,75	500	2	DN150 Steel housing
150	300	0,6	0,3	500	2	DN150 Steel housing
250	500	2,5	1,25	500	1	DN200 Steel housing
250	500	1,0	0,5	500	1	DN200 Steel housing
400	1120	4,0	2,0	600	1	DN250 Steel housing
400	1120	1,6	0,8	600	1	DN250 Steel housing
560	1560	5,6	2,8	500	1,5	DN300 Steel housing
560	1560	2,24	1,12	500	1,5	DN300 Steel housing
750	2100	7,5	3,75	550	1	DN350 Steel housing
950	2660	9,5	4,75	600	1	DN400 Steel housing

Remark:

*Values of the minimum flow rates for measurement schemes U1L and U2L (accounting of heating-cooling energy) are presented in brackets.

MOUNTING ON ULTRASONIC FLOW SENSOR

Flow temperature max. 90 °C.



a) G 1 1/4



b) G 2



c) DN50-DN100
Brass housing



d) DN100-DN400
Steel housing

ENERGY AND FLOW MEASUREMENT	
Accuracy	Accuracy class 2
Dynamic range	1:100 or 1:250 optional

TECHNICAL DATA

TEMPERATURE MEASUREMENT	
Number of measurement channels	1, 2 or 3
Temperature measurement limits	0 °C ... 180 °C
Temperature difference measurement limits	2 K ... 150* K or 3...150 K (*MID is not applied)
Type of temperature sensors	Pt500
Connection scheme	four-wire or two-wire
Cable length between the calculator and each of the sensors: four-wire connection scheme	10 m; 15 m.; 20m.; 40 m.; 60 m; 80 m; 100 m.
two-wire connection scheme	3 m; 5 m.
Display resolutions for temperature and temperature difference	0,1 °C
PRESSURE MEASUREMENT	
Number of pressure measurement channels	up to 2
Input current limits (programmable)	0 ... 5 mA, 0...20 mA, 4 ... 20 mA
Lower pressure measurement limits (programmable)	0 ... 2500 kPa
Upper pressure measurement limits (programmable)	100 ... 2500 kPa
Relative normalized pressure measurement error	not more than ±0,25% from the upper pressure measurement limit
Flow measurement	
Flow liquid temperature	0 °C ...130 °C
Number of flow channels	2
Number of pulse inputs	2
Cable length between the calculator and each of the sensors	3 m.; 5 m.; 10 m.; 15m.; 20m.; 40m.; 60m.; 80m.; 100m.
Nominal pressure	PN16 or PN25

TECHNICAL DATA

COMMUNICATION INTERFACES	
Optical communication interface	integrated, according to EN 61107 (IEC 1107)
Number of plug-in (optional) interface modules	1
Available types of plug-in interface modules	M-bus M-bus/CL/RS232 and 2 pulse outputs (230V power supply) M-bus/CL/RS232 and 2 current outputs (230V power supply) RS232 RS485 Wireless 868 MHz MODBUS MiniBus RF868MHz
POWER SUPPLY OPTIONS	
Internal battery	3,6 V, battery lifetime - not less than 10 years
AC source supply	230 V, AC 50 Hz
ENVIRONMENT CONDITIONS	
Ambient temperature for the calculator	5 °C ... 55 °C
Ambient temperature for the flow sensors	-30 °C ... 55 °C
Environment class	C according to LST EN1434, M1; E2
Protection class for the calculator	IP65
Protection class for the flow sensors	IP65 (IP67/IP68 – on request)
Installation place	Indoor
Mounting of calculator	Mounting on standard DIN-rail

DATA RECORDING AND STORAGE

Following daily, weekly and monthly parameter values are recorded in heat meter memory:

- absolute integral instantaneous parameter values
- hourly, weekly and monthly alterations of integral parameters
- hourly, weekly and monthly average values for all measured temperature and pressure values
- error (fault) and information codes (see paragraph. 8.2.2) that occurred during the last hour, day and month

Data logger capacity:

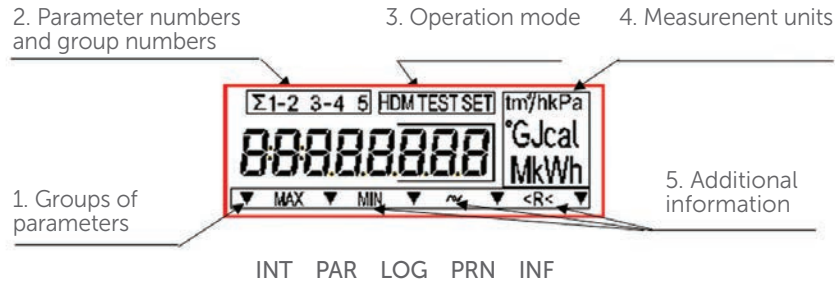
- up to 110 days (3,5 months) – for hourly records.
- up to 1461 days (36 last months) - . for daily and monthly records,

Archive data retention time:

- Retention time of measured integrated parameters not more than 36 months
- even if device is disconnected from power supply not more than 12 years

LCD INDICATOR:

The device is equipped with 8-digits LCD (Liquid Crystal Display) with special symbols to display parameters, measurement units and operation modes:



The following information can be displayed:

- Integral and instantaneous measured parameters;
- Archive data;
- Device configuration information;
- Report printing control information;

Display resolution (directly corresponding with pulse output value), depending on programmed maximum flow rate value

Maximum programmed flow rate, m ³ /h	Displayed fluid volume (mass) lowest digit value (flow pulse output value), m ³	Displayed energy lowest digit value (energy pulse output value), MWh, Gcal, GJ	Maximum value of thermal power, MW
≤ 5	0,001	0,0001	3
≤ 50	0,01	0,001	30
≤ 500	0,1	0,01	300
> 500	1	0,1	3000

SUPPLY VOLTAGE

- Internal battery 3,6 VDC, D-cell lithium.
- Replacement interval not less than 11 years (10 years for schemes U1F, U2F)
- Mains supply AC (50 ± 2) Hz, 230 V - 15 %, + 10
- Power supply < 3 VA (only for meter)
- Consumption of energy per year up to 26.3 kWh;
- Power supply < 15 VA (for meter and extra sensors)
- Consumption of energy per year up to 131,5 kWh;

Power supply for extra sensors

- Voltage for powering pressure or extra flow sensors +18 V ± 10 % (only for meter with mains supply module total current < 400 mA).
- Voltage for powering extra flow sensors +3,6 V ± 10 %, (only for meter with mains supply module) total current < 20 mA.
- Voltage for powering extra ultrasonic flow sensors +3,6 V ± 10 %, (for meter with supply from battery) total current < 70 mA.

