HEATING METER CALCULATOR
QALCOMET HEAT 1

APPLICATION

QALCOMET HEAT 1 is designed for metering and monitoring of heating and cooling energy in closed or open heating/cooling systems, installed in dwelling houses, office buildings or energy plants.
The calculator QALCOMET HEAT 1 is a sub-assembly of a heat meter, together with standard flow sensors (based on ultrasonic, electromagnetic or mechanical measurement principle with standard pulse output), temperature and pressure sensors.
QALCOMET HEAT 1 measures and calculates supplied flow parameters, displays measurement data on the display, records and stores data in the internal archive.

- High accuracy
- Heating/cooling
- AMR
- Universal (applicable with any flow sensor with standard pulse output).

SPECIAL FEATURES

- Can be used to calculate energy values for two independent heating systems
- Cold water temperature for open system application can be measured or fixed (pre-programmed).
- Flexible menu setup – list of parameter values displayed on the LCD may be configured according to the customer's needs.
- User may select one of seven possible installation diagrams according to the application type
- Up to 5 flow measurement inputs.
- Up to 5 temperature sensors.
- Two channels for pressure measurement.
- Optical data interface according to EN 61107.
- Up to 12 years battery supply or 230V mains supply.
- Battery lifetime up to 12 years.
- Fulfils "C" class environment protection requirements
- Protection class IP 65.
- Programmable built-in alarm relays or regulation functions.
- Temperature measurement Pt500/Pt1000, 0 °C ...160°C
- Metering archive
- Optional communication modules
- Mounting in any installation position

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APPROVALS

MID
EN 14154

OPTICAL INTERFACE

Integrated into the front panel of calculator. It is designed for data reading via M-bus protocol and parameterization of the meter.

COMMUNICATION MODULES AND INTERFACES

The internal radio provides data reading via WMBUS telegram:

- Optical interface.
- Two configurable pulse-frequency outputs.
- Two configurable current outputs 0-20mA or 4-20mA.
- Configurable double relay output for limiting regulation or alarm function.
- Radio 868 MHz
- M-Bus/CL/RS232
- Pulse output

Wired M-BUS INTERFACE

The internal M-BUS module provides data reading possibility via M-Bus protocol.

DATA RECORDING AND STORAGE

Following daily, weekly and monthly parameter values are recorded in calculator's 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 and information codes that occurred during the last hour, day and month.

Archive data is retained even if device is disconnected from power supply for the whole lifetime period.

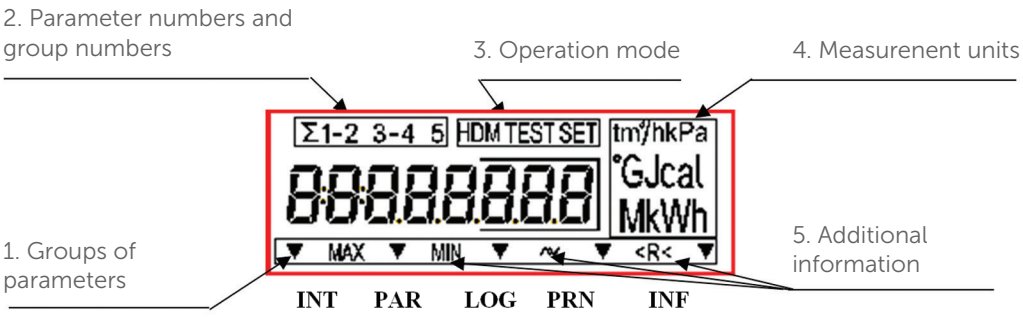
Data logger capacity:
up to 32 last months – for daily and monthly records,
up to 3,5 last months (2600 hours) - for hourly records.

ERROR codes

EERROR code indication in case of errors.

LCD INDICATOR:

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



Key to symbols	Description
1. Groups of parameters (display levels)	
▼ INT	Integral parameters
▼ PAR	Informative parameters
▼ LOG	Archive data and set day values
▼ PRN	Printing the reports
▼ INF	Information on heat meter configuration and regulator control parameters
2. Number and group of indicated parameters	
Σ	Cumulated parameter value (for example, total heating energy consumed by the 1-st and 2-nd system (E1+E2))
1...5	Number of measurement system (for example, power or energy consumed by 1-st or 2-nd system) or number of measurement channel (volume, flow, temperature, pressure measurement etc.)
1-2 (3-4)	Differences (for example, difference in amount of heating media (M1-M2), (M3-M4) or temperature difference (Θ1-Θ2, Θ3-Θ4))
3. Operation mode	
H	Hourly archive data is being printed (displayed)
D	Daily archive data is being printed (displayed)
M	Monthly archive data is being printed (displayed)
TEST	Test mode
SET	Parameterization mode
4. Measurement units	
m^3 (t)	Volume (mass)
m^3/h (t/h)	Flow rate
kPa	Pressure
o C	Temperature, temperature difference
GJ, Gcal, MWh, kWh	Energy
kW	Power
h	Hours
5. Additional information	
R	Relay output is activated, normal operation
R<	Parameter value is below minimum permissible value (for relay outputs)
<R	Parameter value exceeds maximum permissible value (for relay outputs)
^ ; v	Regulator status: ^ - opening the valve, v - closing the valve

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, m3/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

Mains supply AC (50±2) Hz, 230 V^{+10}_{-15}%,

Battery 3,6 VDC, D-cell lithium:
- Replacement interval: only for calculator not less than 12 years;
- For calculator and 2 extra ultrasonic flow sensors not less than 6 years.

Power supply for sensors:
- Voltage for powering pressure or flow sensors +18 V±10 % (only for calculator with mains supply module);
- Voltage for powering flow sensors +3,6 V ± 10 %.

TECHNICAL DATA

Temperature measurement	Number of measurement channels	up to 5
	Temperature range	0 °C ... 130 °C
	Temperature difference range	2 K ... 160 K
	Temperature sensors	Pt500, Pt1000 (EN 60751)
	Measurement principle	4-wire, 2-wire
	Cable length	2,5 ... 100 m
	Display resolution	0,1 °C
	Temperature difference	0,01 °C
Flow measurement	Number of pulse inputs	up to 5
	Pulse value	programmable
	Pulse frequency	< 200 Hz
	Cable length between the calculator and each of the sensors	2,5 ... 100 m
	Opposite flow measurement possibility (using direction indication signal)	for V1, V2 inputs
Pressure measurement	Number of pressure measurement inputs	2
	Sensor type	0...5 mA, 0...20 mA, 4...20 mA
	Pressure range	programmable
	Measurement accuracy	0,5 % of range
Outputs	Number of pulse outputs	2
	Number of current outputs (optional)	2
	2 Number of relay outputs (optional)	1
	Data output modules (optional)	M-Bus, CL, RS-232, RS-485
Power supply	Battery type	Lithium 3,6 V D-cell
	Mains version: mains supply	230 V AC (+10 / -15)%, 50 Hz, 2,5 VA
Environment conditions	Protection class [IP]	IP65
	Ambient class	Class C / EN 14 154
	Ambient temperature	+5 °C...+55 °C
	Installation place	indoor, outdoor in a pit or inst. box
	Mounting of calculator	Mounting on standard DIN-rail
Outline dimensions:	159 x 142 x 52 mm	

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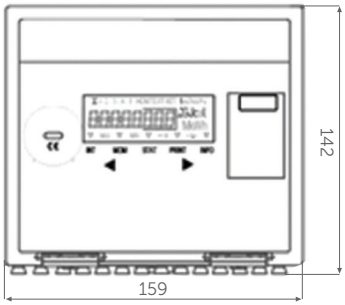
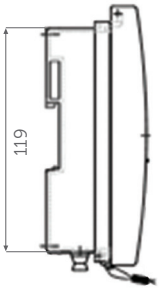
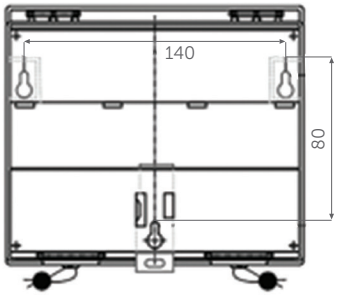
OUTLINE DIMENSIONS:

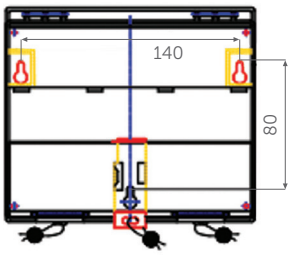


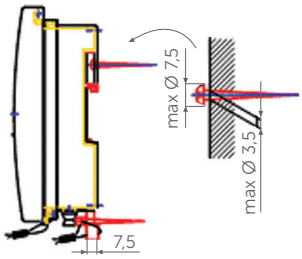




MECHANICAL MOUNTING:

Wall mounting:





Mounting on standard DIN-rail: