



Heat meter Q heat 5 US

Ultrasonic heat meter with ultrasonic measurement technology (runtime difference method) with IrDA interface and an interface for retrofitting external modules.

Exact measurement of even very small flow quantities. Can be installed in any position, no moving parts in the volume flow. Extremely compact design height and detachable calculator unit as standard with long connection cable for universal use.

Can be used in the **Q opto**, **Q basic**, **Q M-Bus**, **Q walk-by** and **Q AMR** systems. Can be retrofitted with external modules for use in the above-mentioned systems.

Application

The heat meter is used for measuring heat energy. The main areas of application are in central heating systems where the heating energy is outputted individually to different consumers.

This is meaningful in:

- › Apartment buildings
- › Offices and administration buildings

Functions

- › IrDA interface for reading out and setting parameters for the heat meter.
- › Mains-independent, for local use, 6 or 10-year lithium battery.
- › Measured values are recorded using two PT 1000 platinum resistance thermometers.
- › Can be installed in any position, no moving parts in the volume flow.
- › Detachable calculator unit with connection cable 80 cm long and clip ring for wall attachment.
- › High resolution thanks to 8-digit LC display that indicates current value, old value, check sum as well as many service and operating parameters.
- › Display loop “fast readout” with the most important consumption values can be opened using control keys.
- › Additional display of 15 monthly values with date.
- › Storage of the maximum supply flow and return flow temperatures as well as the maximum current flow with date.
- › Programming of the device-specific parameters (e.g. due date) is possible on site using the control keys or the IrDA interface.
- › The communication technology required can be retrofitted in the field by means of add-on modules.

Screw-type variant

- › Heat meter Q heat 5 US for direct or indirect installation of the temperature sensors
- › MID approval

Technology

The heat meter comprises a pair of precise temperature sensors and an ultrasonic flow meter which is installed in a hot water circuit. An electronic calculator unit continually calculates the difference in temperature between the supply and return flow and the flow rate. The heating capacity calculated from the two values is cumulated, displayed or forwarded to a data-processing system by radio or cable.

The **Q heat 5 US** is a heat meter that can be extended by various external modules.

The **Q heat 5 US** has two communication interfaces.

- ▶ The IrDA interface accessible from outside. This allows parameters to be set for the **Q heat 5 US** on site at any time.
- ▶ The module interface, which can be used to retrofit the heat meter for radio or other communication methods. The respective modules are simply mounted on the calculator unit.

Measuring principle

The flow sensor of the screw-type meter works according to the ultrasonic measuring principle. The water flow through the meter is measured using acoustic sensors. The low-maintenance design and lack of mechanically moving parts for the determination of exact volume flow are the key features of this measuring principle.

Incorrect direction of flow is detected and indicated by an error message in the display.

NOTE: Only use water without chemical additives as the medium for this device.

Glycol additives are expressly not permitted. Heating systems must be bled completely before start-up.

Determining water consumption

Using the measured difference in temperature between supply and return flow, the flow rate and the calculated thermal coefficient, the heat quantity is shown on the LC display in physical units (kWh, MWh, MJ, GJ) following an internal calculation process.

Storing the consumption values

The heat consumption values are continually cumulated. The current status is stored at 24.00 h on the due date.

The due date is set with the aid of the two keys or a programming tool, December 31 is the default setting.

Every time the current consumption and the annual consumption is saved, the heat meter calculates a checksum. This can be read out together with the due date value and checked in the billing program. This allows incorrect display readouts (e.g. "switched digits") to be detected. The stored due date value remains in place for one year.

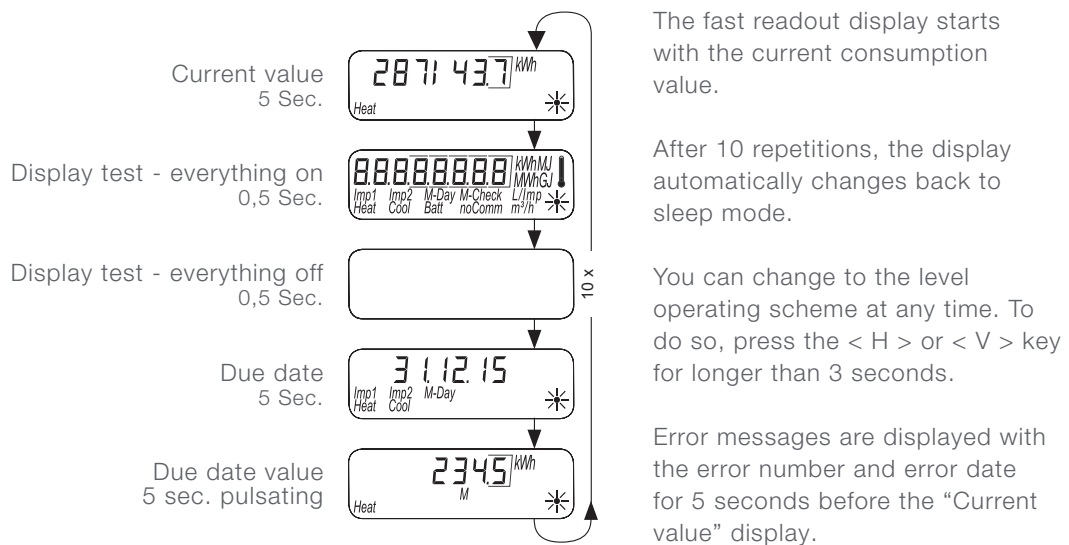
Display

Device states, display units and consumption values are shown via the LC display on several levels (up to 6). The heat meter is equipped with two keys that can be used to switch between the individual display steps and levels.

The display is off as standard (sleep mode). The display can be activated by pressing a key.

Opening the fast readout display loop:

Press the < H > or < V > key briefly to open the fast readout display loop.

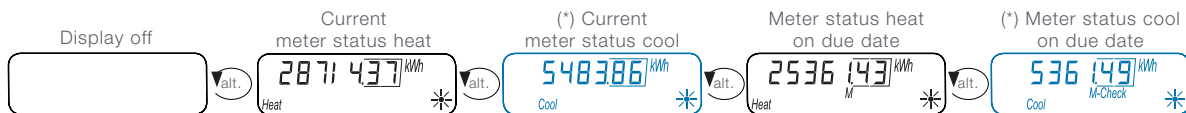


Opening the level operating scheme of the standard levels:

Press the < H > or < V > key longer than 3 seconds to open the level operating scheme.

Standard loop

(*) Meter status displays depend on the device configuration!



Error messages

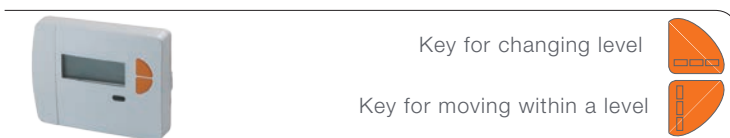


If a serious error occurs with the device, the error code and error date are displayed before the meter status.

Incorrect direction of flow



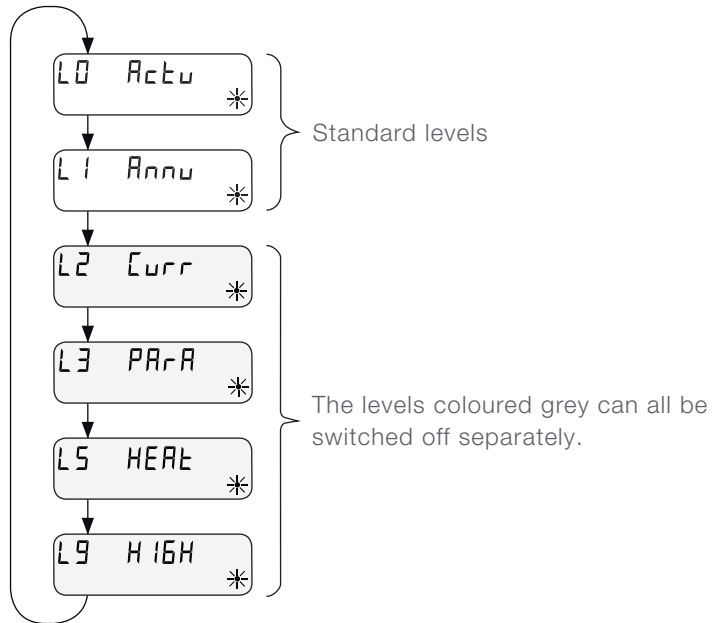
If the incorrect direction of flow is established, an error message appears on the display as shown.



Display

Overview of display levels

- L0 Current consumption values
- L1 Annual consumption values
- L2 Current values
- L3 Parameters
- L5 Monthly values heat
- L9 Maximum values



Key for changing level

Key for moving within a level



Parameter-setting possibilities

Via keys:

- 】 Next due date
- 】 Display in kWh or MWh or MJ or GJ
- 】 Selection of the levels to be displayed
- 】 Display of the meter statuses with or without check number

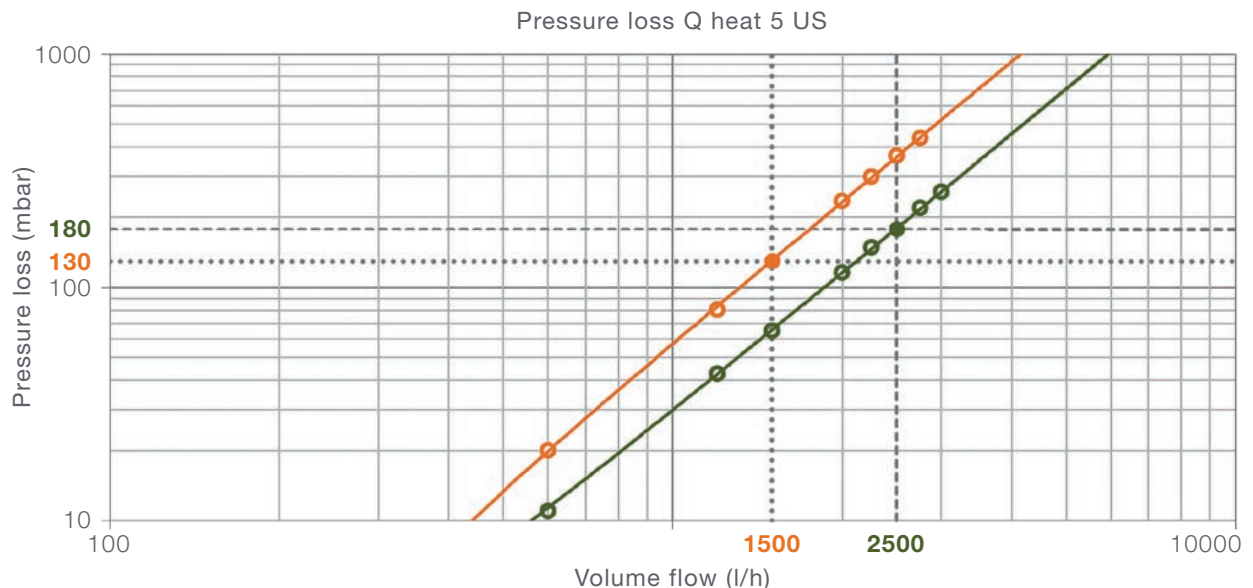
With PC:

- 】 Next due date
- 】 Password for close-range interface
- 】 Display in kWh or MWh or MJ or GJ
- 】 Selection of the levels to be displayed
- 】 Display of the meter statuses with or without check number

Only the wireless measuring devices additionally transmit status information several times a day the whole year round independently of the readout time set.

Pressure loss curves

Complete heat meters



Nominal flow qp 1.5 m³/h = orange
Nominal flow qp 2.5 m³/h = green

Technical data

Norms and standards	
Conformity	see EU Declaration of Conformity
Electromagnetic compatibility	
Interference resistance	EN 61000-6-2
Emitted interference	EN 61000-6-3
Protection rating	
IP protective rating Calculator unit/Flow sensor	IP65 according to EN 60529
Heat meters	
European Measuring Instruments Directive (MID)	2004/22/EG
EC type examination certificate	DE-14-MI004-PTB006
Heat meters	CEN EN1434
Quality of heat medium	in accordance with VDI guideline 2035 in accordance with AGFW standard 510
Influencing quantities	
Electromagnetic class	E1
Mechanical class	M2
Environment class	A
Precision class	3

Calculator unit

Temperature range	
as heat meter	20 °C ... 90 °C
permissible temperature difference	3 K - 160 K
start of metering temperature difference	1,0 K
Ambient temperature	5 °C ... 55 °C
Power supply	
Lithium battery	Nominal voltage 3.0 V
Service life	> 6 (opt. 10) years + 6 months reserve
Display levels	
Standard	min. 2, up to 6 (depending on the version and options included)
Display	8-digit LCD + pictograms
Energy display	kWh <--> MWh (optionally MJ <--> GJ)
Cable length	
Calculator unit - flow sensor	approx. 80 cm

Temperature sensor

Measuring element	PT 1000 according to EN 60751
Version	Typ DS
Diameter	5,0 mm - 5,2 mm
Type of installation	5.0 mm - direct (ball valve) / indirect (immersion sleeve)* 5.2 mm - direct (ball valve) / indirect (immersion sleeve)*
Cable length	
Standard	1,5 m
Optional	3,0 m

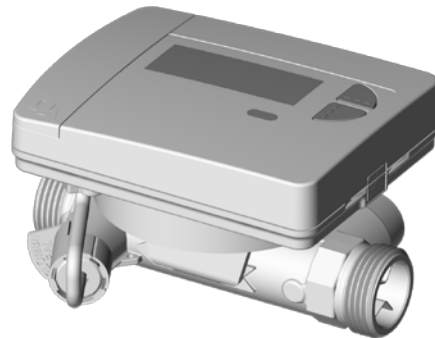
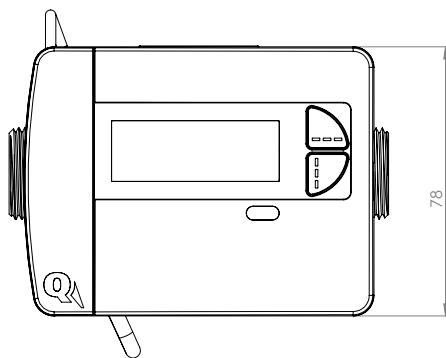
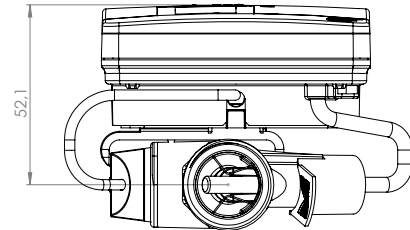
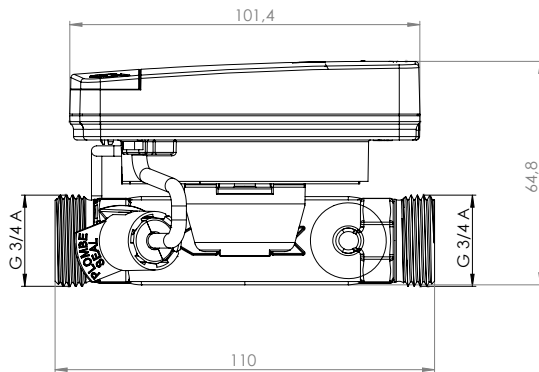
* Note national and country-specific regulations concerning the use of immersion sleeves.

Flow sensor Screw-type meter

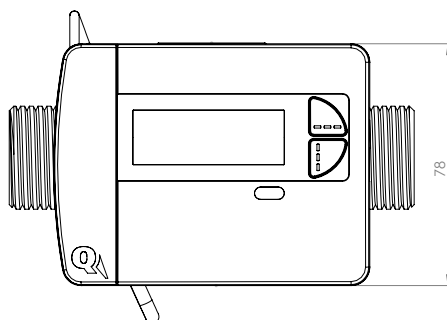
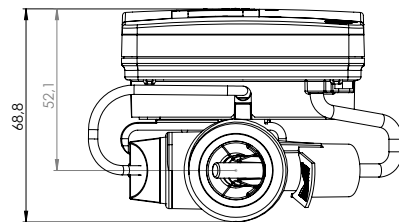
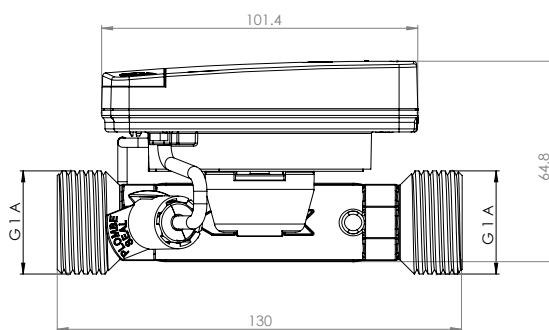
Connection sizes and dimensions	1,5 m ³ /h	2,5 m ³ /h
Length	110 mm	130 mm
Connection	G ¾ B	G 1 B
Weight Calculator unit detachable	530 g	660 g
Installation position	any	
Nominal flow q_p	1,5 m ³ /h	2,5 m ³ /h
Minimum flow q_i	15 l/h	25 l/h
Maximum flow q_s	3000 l/h	5000 l/h
Start-up limit q_0	1,5 l/h to 4,0 l/h	2,5 l/h to 6,5 l/h
Max. permissible operating pressure	16 bar	
Min. system pressure to avoid cavitation (cavity formation)	1 bar	
Temperature range	20 °C ... 90 °C	
Dynamic range q_p/q_i	1:100	

Dimensional drawings

Installation length 110 mm - 3/4 inch thread



Installation length 130 mm - 1 inch thread



✉ **QUNDIS GmbH**

Sonnentor 2
99098 Erfurt / Germany

☎ +49 (0) 361 26 280-0

☎ +49 (0) 361 26 280-175

✉ info@qundis.com

www.qundis.com

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