

Technical Information

Heat meters

- **heatplus**
Compact energy meters



- **heatplus extra**
Compact energy meters
with removable arithmetic unit



- **heatsonic**
Ultrasonic compact energy meters



- Ultrasonic split heat meters

- OEM kits

- Accessories/spare parts

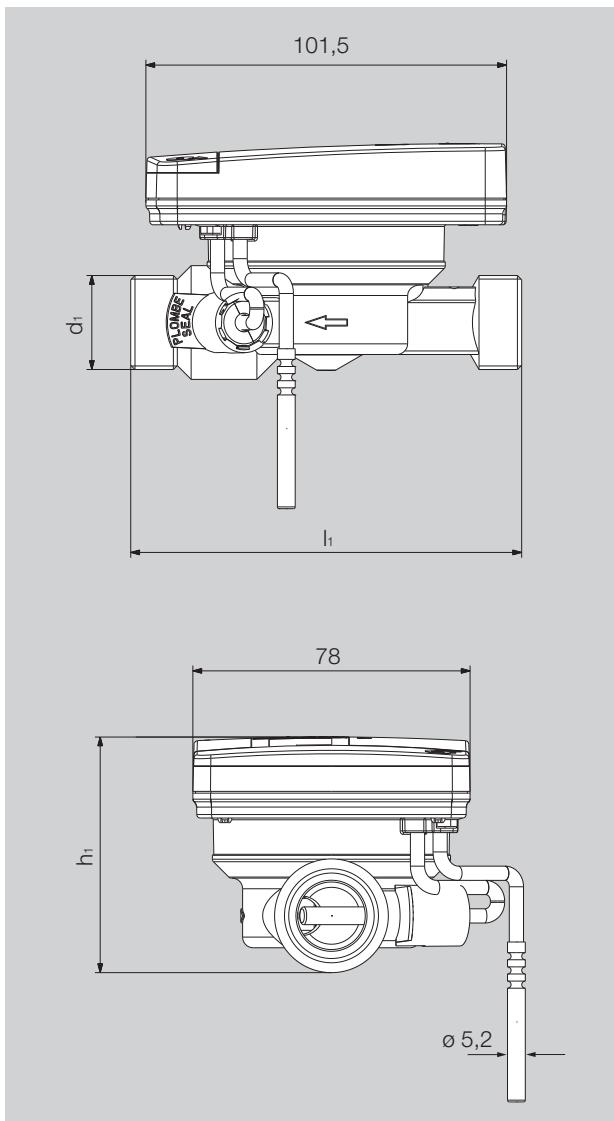
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Heat meters **heatplus**



Dimensions



- **heatplus** Compact heat meter with magnet-free sensing for low-wear and stable long-term measurement operation
- IrDA interface for readout and parameter assignment of the heat meter
- Grid-independent implementation with 10-year lithium battery
- Temperature measurement via two platinum resistance thermometers PT1000
- 8-digit LCD display with pictograms for display of actual value, old value, check number, as well as many service and operating parameters
- Display and storage of current status values and accounting date values (15 monthly values are possible), as well as many service and operating parameters
- Storage of the maximum flow and return temperature, and of the maximum momentary flow rate with date
- Programming of the device-specific parameters (e.g. accounting date) is possible on site via the operating buttons or via the IrDA interface
- Appropriate communication technology (e.g. M-Bus) can be retrofitted through top-mount modules or is optionally integrated in the factory.
- Optionally with additional pulse input interface for connection of up to 2 external water meters
- MID approval has been issued
- The **heatplus** is available in two variants for installation in the return pipe (standard meter) or in the supply pipe

Optionally available as cooling meter or solar meter for the following media:
 – Glythermin P44 – Tyfocor L – Tyfocor N
 – Antifrogen L – Antifrogen N – Dowcal 20 – Gelbin DC 924 L

Scope of delivery

- 1 x compact heat meter
- 2 x protective cap
- 2 x flat seal
- 1 x installation instructions
- 1 x operating instructions
- 1 x disposal directive
- 1 x flow sensor (extra item)
- 1 x temperature sensor (extra item)
- 1 x commissioning protocol (D/A)
- 1 x user info for existing immersion sleeves (D)

Meter size	d ₁	l ₁ (mm)	h ₁ (mm)
Ø 0.6	G ¾	110	66.1
Ø 1.5			
Ø 2.5	G1	130	68.5

Heat meters heatplus

Technical data

Standards

CE conformity	See Declaration of Conformity
Electromagnetic compatibility	
Immunity to interference	EN 61000-6-2
Emitted interference	EN 61000-6-3
Degree of protection	
IP degree of protection	IP65 in accordance with EN 60529
Heat meters	
European Measurement Instrument Directive (MID)	2004/22/EC
EC type examination certificate	DE-12-MI004-PTB012
Heat meters	EN1434
Heating medium quality	VDI Directive 2035
Influencing variables	
Electromagnetic class	E1
Mechanical class	M1
Environment class	A
Metering accuracy class	3

Arithmetic unit

Temperature range	
Heat meters	10 – 90 °C
Approved temperature differential	3 – 70 K
Counting start – temperature differential	1.0 K
Ambient temperature	5 – 55 °C
Measuring cycle	36 s (optional 6 s)
Power supply	
Lithium battery	Nominal voltage 3.0 V
Power life	10 years + 6 month reserve
Display levels	
Standard	Min. 2 up to 10 (depending on the version and the options included)
Display	8-digit LCD + pictograms
Energy display	kWh (optional MWh, MJ, GJ)

Temperature sensor

Measuring element	PT1000 in accordance with EN 60751
Version	Type DS
Diameter	5.2 mm (optionally 5.0 mm, 6.0 mm, AGFW)
Installation type	5.2 mm / 5.0 mm – direct (ball valve) / indirect (immersion sleeve)* 6.0 mm – indirect (immersion sleeve)* AGFW – direct (ball valve)
Cable length	1.5 m (optionally 3.0 m)

* Comply with national and country-specific regulations for the use of immersion sleeves!

Heat meters heatplus

Technical data

Volumetric flow meter

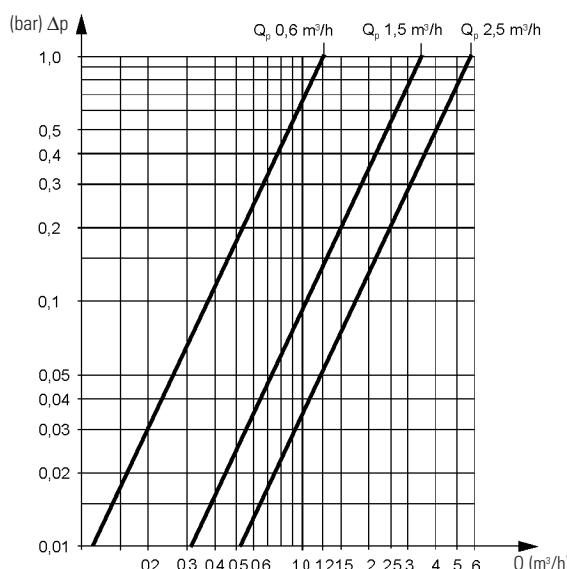
Connection sizes and mass	0.6 m³/h	1.5 m³/h	2.5 m³/h
Length	110 mm	110 mm	130 mm
Connection	G ¾ B	G ¾ B	G 1 B
Mass	668 g	650 g	743 g
Install position	horizontal/vertical		
Nominal flow rate q_p	0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow rate q_i	horizontal vertical	12 l/h 24 l/h	30 l/h 30 l/h
Ratio q_p/q_i	horizontal vertical	25:1 25:1	50:1* 50:1
Ratio q_s/q_p			2:1
Starting flow rate		3–4 l/h	4–5 l/h 6–7 l/h
Max. permissible operating pressure			16 bar
Min. system pressure for avoidance of cavitation			1 bar
Temperature range			10 – 90 °C

* Optionally variants with a higher dynamic range are also available

Product line

Version	PU	Order no.
Return pipe (standard)		
q_p 0.6 m³/h	DN 15	G ¾
q_p 1.5 m³/h	DN 15	G ¾
q_p 2.5 m³/h	DN 20	G 1
Supply pipe		
q_p 0.6 m³/h	DN 15	G ¾
q_p 1.5 m³/h	DN 15	G ¾
q_p 2.5 m³/h	DN 20	G 1

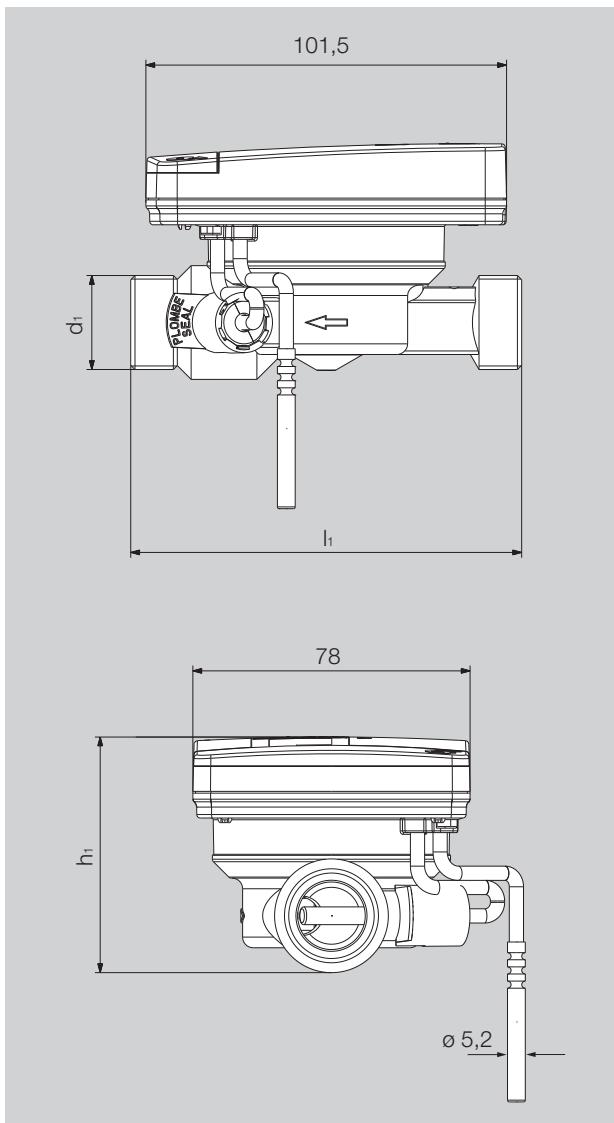
Pressure loss diagram



Heat meters **heatplus extra**



Dimensions



heatplus extra with removable arithmetic unit

- Compact heat meter with magnet-free sensing for low-wear and stable long-term measurement operation
- IrDA interface for readout and parameter assignment of the heat meter
- Grid-independent implementation with 10-year lithium battery
- Temperature measurement via two platinum resistance thermometers PT1000
- 8-digit LCD display with pictograms for display of actual value, old value, check number, as well as many service and operating parameters
- Display and storage of current status values and accounting date values (15 monthly values are possible), as well as many service and operating parameters
- Storage of the maximum flow and return temperature, and of the maximum momentary flow rate with date
- Programming of the device-specific parameters (e.g. accounting date) is possible on site via the operating buttons or via the IrDA interface
- Appropriate communication technology (e.g. M-Bus) can be retrofitted through top-mount modules or is optionally integrated in the factory.
- Optionally with additional pulse input interface for connection of up to 2 external water meters
- MID approval has been issued
- The **heatplus extra** is available for installation in the return pipe (optionally for the supply pipe)
- Optionally available as cooling meter or solar meter for the following media: – Glythermin P44 – Tyfocor L – Tyfocor N – Antifrogen L – Antifrogen N – Dowcal 20 – Gelbin DC 924 L

Scope of delivery

- 1 x compact heat meter
- 2 x protective cap
- 2 x flat seal
- 1 x installation instructions
- 1 x operating instructions
- 1 x disposal directive
- 1 x flow sensor (extra item)
- 1 x temperature sensor (extra item)
- 1 x commissioning protocol (D/A)
- 1 x user info for existing immersion sleeves (D)

Meter size	d ₁	l ₁ (mm)	h ₁ (mm)
q _p 0.6	G $\frac{3}{4}$	110	79.9
q _p 1.5			
q _p 2.5	G1	130	82.3

Heat meters heatplus extra

Technical data

Standards

CE conformity	See Declaration of Conformity
Electromagnetic compatibility	
Immunity to interference	EN 61000-6-2
Emitted interference	EN 61000-6-3
Degree of protection	
IP degree of protection	IP65 in accordance with EN 60529
Heat meters	
European Measurement Instrument Directive (MID)	2004/22/EC
EC type examination certificate	DE-12-MI004-PTB012
Heat meters	EN1434
Heating medium quality	VDI Directive 2035
Influencing variables	
Electromagnetic class	E1
Mechanical class	M1
Environment class	A
Metering accuracy class	3

Arithmetic unit

Temperature range	
Heat meters	10 – 90 °C
Approved temperature differential	3 – 70 K
Counting start – temperature differential	1.0 K
Ambient temperature	5 – 55 °C
Measuring cycle	36 s (optional 6 s)
Power supply	
Lithium battery	Nominal voltage 3.0 V
Power life	10 years + 6 month reserve
Display levels	
Standard	Min. 2 up to 10 (depending on the version and the options included)
Display	8-digit LCD + pictograms
Energy display	kWh (optional MWh, MJ, GJ)

Temperature sensor

Measuring element	PT1000 in accordance with EN 60751
Version	Type DS
Diameter	5.2 mm (optionally 5.0 mm, 6.0 mm, AGFW) 5.2 mm/5.0 mm – direct (ball valve)/indirect (immersion sleeve)*
Installation type	6.0 mm – indirect (immersion sleeve)* AGFW – direct (ball valve)
Cable length	1.5 m (optionally 3.0 m)

* Comply with national and country-specific regulations for the use of immersion sleeves!

Heat meters heatplus extra

Technical data

Volumetric flow meter

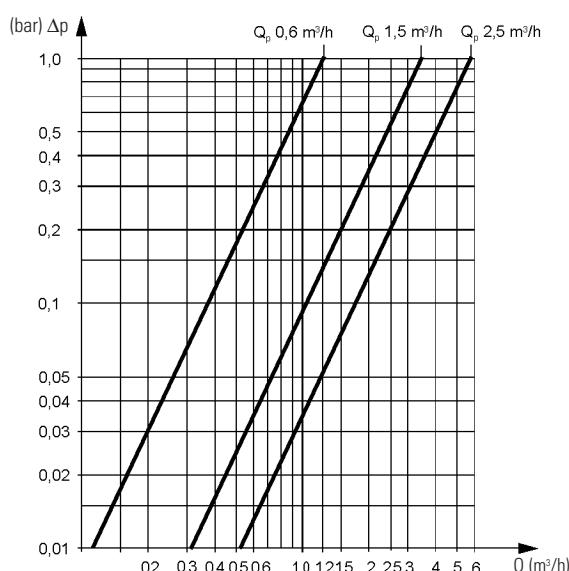
Connection sizes and mass	0.6 m³/h	1.5 m³/h	2.5 m³/h
Length	110 mm	110 mm	130 mm
Connection	G ¾ B	G ¾ B	G 1 B
Mass	668 g	650 g	743 g
Install position	horizontal / vertical		
Nominal flow rate q_p	0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow rate q_i	12 l/h 24 l/h	30 l/h 30 l/h	50 l/h 50 l/h
Ratio q_p/q_i	25:1 25:1	50:1* 50:1	50:1 50:1
Ratio q_s/q_p	2:1		
Starting flow rate	3–4 l/h	4–5 l/h	6–7 l/h
Max. permissible operating pressure		16 bar	
Min. system pressure for avoidance of cavitation		1 bar	
Temperature range	10 – 90 °C		

* Optionally variants with a higher dynamic range are also available

Product line

Version	PU	Order no.
Return		
q_p 0.6 m³/h	DN 15	G ¾
q_p 1.5 m³/h	DN 15	G ¾
q_p 2.5 m³/h	DN 20	G 1
		110 mm
		130 mm
	1	128 512 1.101
	1	128 512 2.101
	1	128 512 3.101

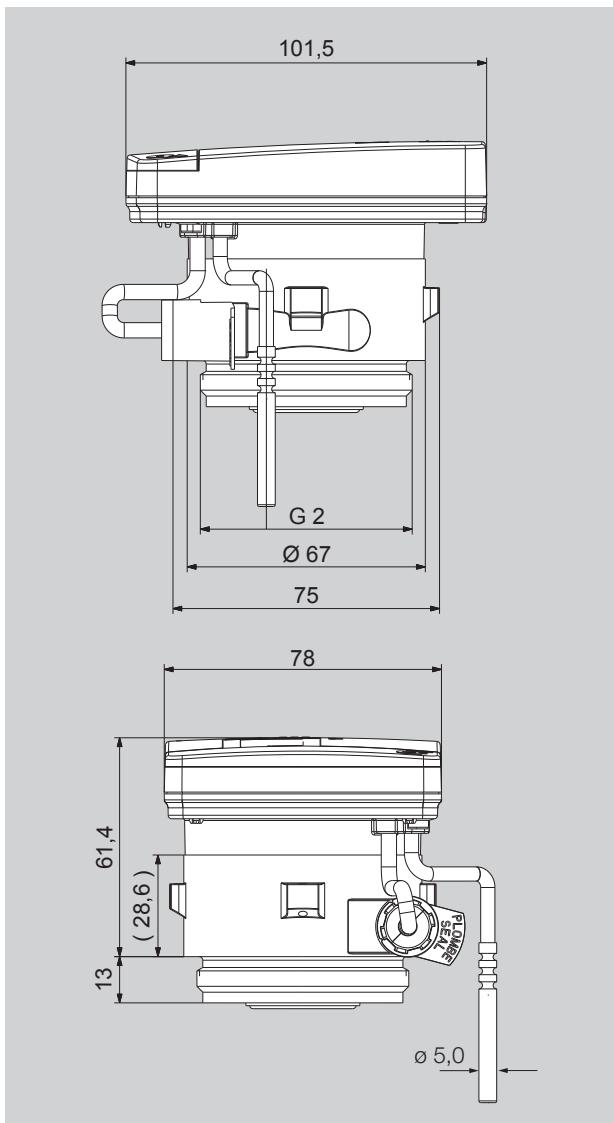
Pressure loss diagram



Heat meters **heatplus**



Dimensions



- **heatplus** as 2" capsule heat meter (optionally as heat / cooling meter) for direct or indirect installation of the temperature sensors
- Compact meter with magnet-free sensing for low-wear and stable long-term measurement operation
- IrDA interface for readout and parameter assignment of the heat meter
- Grid-independent implementation with 10-year lithium battery
- Temperature measurement via two platinum resistance thermometers PT1000
- 8-digit LCD display with pictograms for display of actual value, old value, check number, as well as many service and operating parameters
- Display and storage of current status values and accounting date values (15 monthly values are possible), as well as many service and operating parameters
- Storage of the maximum flow and return temperature, and of the maximum momentary flow rate with date
- Programming of the device-specific parameters (e.g. accounting date) is possible on site via the operating buttons or via the IrDA interface
- Appropriate communication technology (e.g. M-Bus) can be retrofitted through top-mount modules or is optionally integrated in the factory.
- Optionally with additional pulse input interface for connection of up to 2 external water meters
- Optionally with removable arithmetic unit
- MID approval has been issued
- The **heatplus** is available for installation in the return pipe (optionally for the supply pipe)
- Fits in all 2" coax EATs with due consideration of the geometric specifications (see page 38)

Scope of delivery

- 1 x heat meter in measuring capsule design
- 1 x protective cap
- 1 x profile seal
- 1 x installation instructions
- 1 x operating instructions
- 1 x disposal directive
- 1 x EAT (extra item)
- 1 x temperature sensor (extra item)
- 1 x commissioning protocol (D/A)
- 1 x user info for existing immersion sleeves (D)

Heat meters heatplus

Technical data

Standards

CE conformity	See Declaration of Conformity
Electromagnetic compatibility	
Immunity to interference	EN 61000-6-2
Emitted interference	EN 61000-6-3
Degree of protection	
IP degree of protection	IP65 in accordance with EN 60529
Heat meters	
European Measurement Instrument Directive (MID)	2004/22/EC
EC type examination certificate	DE-12-MI004-PTB009
Heat meters	EN1434
Heating medium quality	VDI Directive 2035
Influencing variables	
Electromagnetic class	E1
Mechanical class	M1
Environment class	A
Metering accuracy class	3

Arithmetic unit

Temperature range	
Heat meters	10 – 90 °C
Approved temperature differential	3 – 70 K
Counting start – temperature differential	Heat: 1.0 K
Ambient temperature	5 – 55 °C
Measuring cycle	36 s (optional 6 s)
Power supply	
Lithium battery	Nominal voltage 3.0 V
Power life	10 years + 6 month reserve
Display levels	
Standard	Min. 2 up to 10 (depending on the version and the options included)
Display	8-digit LCD + pictograms
Energy display	kWh (optional MWh, MJ, GJ)

Temperature sensor

Measuring element	PT1000 in accordance with EN 60751
Version	Type DS
Diameter	5.0 mm (optionally 5.2 mm, 6.0 mm, AGFW)
Installation type	5.0 mm/5.2 mm – direct (ball valve) / indirect (immersion sleeve)* 6.0 mm – indirect (immersion sleeve)* AGFW – direct (ball valve)
Cable length	1.5 m (optionally 3.0 m)

* Comply with national and country-specific regulations for the use of immersion sleeves!

Heat meters heatplus

Technical data

Volumetric flow meter 2" capsule meter

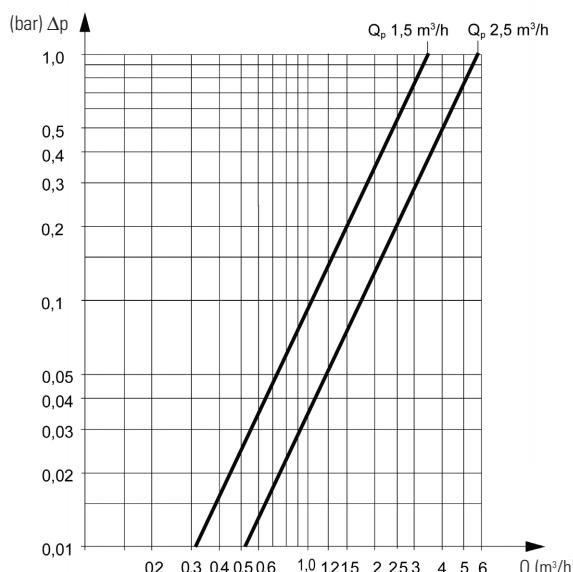
Connection sizes and mass	0.6 m³/h	1.5 m³/h	2.5 m³/h
Install length of the EAT	110 mm	110 mm	130 mm
Pipe connection	G ¾" Soldered 15 mm or soldered 18 mm	G 1" Soldered 22 mm	
Mass	605 g	605 g	607 g
Install position		horizontal / vertical	
Meter thread on the EAT	G 2 B	G 2 B	G 2 B
Nominal flow rate q_p	0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow rate q_i	horizontal vertical	12 l/h 24 l/h	30 l/h 30 l/h
Ratio q_p/q_i	horizontal vertical	50:1 25:1	50:1* 50:1
Ratio q_s/q_p			2:1
Starting flow rate	3 – 4 l/h	4 – 5 l/h	6 – 7 l/h
Max. permissible operating pressure		16 bar	
Min. system pressure for avoidance of cavitation		1 bar	
Temperature range		10 – 90 °C	

* Optionally variants with a higher dynamic range are also available

Product line

Version		PU	Order no.
q_p 0.6 m³/h	Connection thread G2	1	128 514 1.101
q_p 1.5 m³/h	Connection thread G2	1	128 514 2.101
q_p 2.5 m³/h	Connection thread G2	1	128 514 3.101
Wall holder		1	128 523 0
Installation key		1	127 904 0

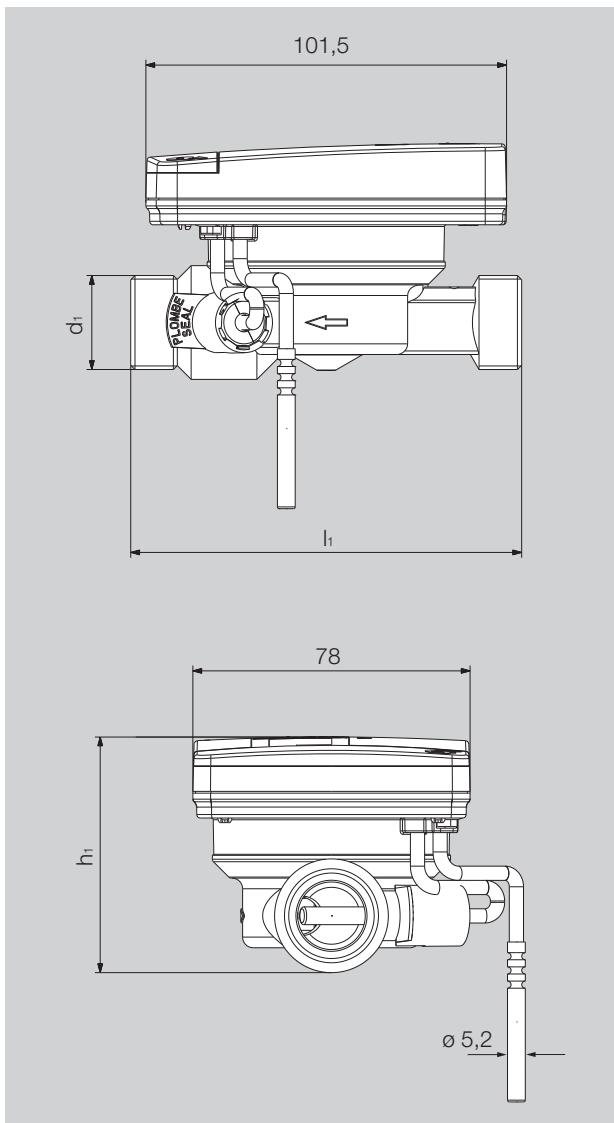
Pressure loss diagram



Heating/cooling meters **heatplus**



Dimensions



- **heatplus** Compact meter with magnet-free sensing for low-wear and stable long-term measurement operation
- IrDA interface for readout and parameter assignment of the heat meter
- Grid-independent implementation with 10-year lithium battery
- Temperature measurement via two platinum resistance thermometers PT1000
- 8-digit LCD display with pictograms for display of actual value, old value, check number, as well as many service and operating parameters
- Display and storage of current status values and accounting date values (15 monthly values are possible), as well as many service and operating parameters
- Storage of the maximum flow and return temperature, and of the maximum momentary flow rate with date
- Programming of the device-specific parameters (e.g. accounting date) is possible on site via the operating buttons or via the IrDA interface
- Appropriate communication technology (e.g. M-Bus) can be retrofitted through top-mount modules or is optionally integrated in the factory.
- Optionally with additional pulse input interface for connection of up to 2 external water meters
- MID approval (heat) and PTB K 7.2 (cooling) issued
- The **heatplus** is available in two variants for installation in the return pipe (standard meter) or in the supply pipe
- Optionally available with removable arithmetic unit

Scope of delivery

- 1 x compact heat meter
- 2 x protective cap
- 2 x flat seal
- 1 x installation instructions
- 1 x operating instructions
- 1 x disposal directive
- 1 x flow sensor (extra item)
- 1 x temperature sensor (extra item)
- 1 x commissioning protocol (D/A)
- 1 x user info for existing immersion sleeves (D)
- 1 x commissioning protocol (D/A)
- 1 x user info for existing immersion sleeves (D)

Meter size	d_1	l_1 (mm)	h_1 (mm)
q_p 0.6	$G \frac{3}{4}$	110	79.9
q_p 1.5	$G 1$	130	82.3
q_p 2.5			

Heating/cooling meters heatplus

Technical data

Standards

CE conformity	See Declaration of Conformity
Electromagnetic compatibility	
Immunity to interference	EN 61000-6-2
Emitted interference	EN 61000-6-3
Degree of protection	
IP degree of protection	IP65 in accordance with EN 60529
Heat meters	
European Measurement Instrument Directive (MID)	2004/22/EC
EC type examination certificate	DE-12-MI004-PTB009
Heat meters	EN1434
Heating medium quality	VDI Directive 2035
Influencing variables	
Electromagnetic class	E1
Mechanical class	M1
Environment class	A
Metering accuracy class	3

Arithmetic unit

Temperature range	
Heat meters	5 – 90 °C
Approved temperature differential	3 – 70 K
Counting start – temperature differential	Heat: 1.0 K / cooling: 0.2 K
Ambient temperature	5 – 55 °C
Measuring cycle	36 s (optional 6 s)
Power supply	
Lithium battery	Nominal voltage 3.0 V
Power life	10 years + 6 month reserve
Display levels	
Standard	Min. 2 up to 10 (depending on the version and the options included)
Display	8-digit LCD + pictograms
Energy display	kWh (optional MWh, MJ, GJ)

Temperature sensor

Measuring element	PT1000 in accordance with EN 60751
Version	Type DS
Diameter	5.2 mm (optionally 5.0 mm, 6.0 mm, AGFW)
Installation type	5.0 mm/5.2 mm – direct (ball valve) / indirect (immersion sleeve)* 6.0 mm – indirect (immersion sleeve)* AGFW – direct (ball valve)
Cable length	1.5 m (optionally 3.0 m)

* Comply with national and country-specific regulations for the use of immersion sleeves!

Heating/cooling meters heatplus

Technical data

Volumetric flow meter

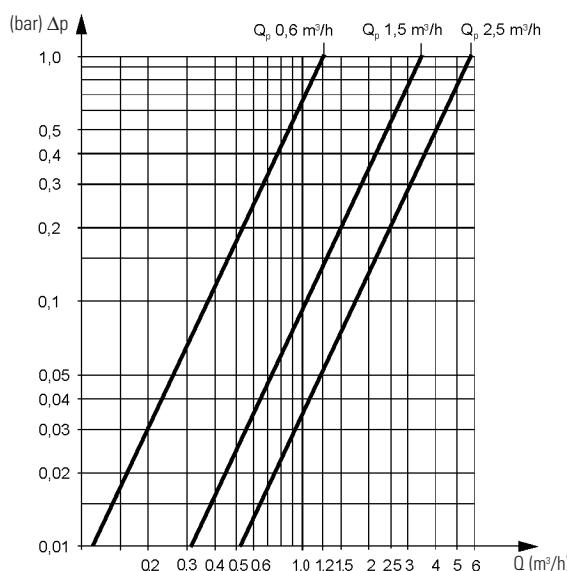
Connection sizes and mass	0.6 m³/h	1.5 m³/h	2.5 m³/h
Length	110 mm	110 mm	130 mm
Connection	G ¾ B	G ¾ B	G 1 B
Mass	668 g	650 g	743 g
Install position	horizontal / vertical		
Nominal flow rate q_p	0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow rate q_i	horizontal vertical	12 l/h 24 l/h	30 l/h 30 l/h
Ratio q_p/q_i	horizontal vertical	50:1 25:1	50:1* 50:1
Ratio q_s/q_p			2:1
Starting flow rate		3–4 l/h	4–5 l/h
Max. permissible operating pressure			16 bar
Min. system pressure for avoidance of cavitation			1 bar
Temperature range			10 – 90 °C

* Optionally variants with a higher dynamic range are also available

Product line

Version	PU	Order no.
Return pipe (standard)		
q_p 0.6 m³/h	DN 15	G ¾
q_p 1.5 m³/h	DN 15	G ¾
q_p 2.5 m³/h	DN 20	G 1
Supply pipe		
q_p 0.6 m³/h	DN 15	G ¾
q_p 1.5 m³/h	DN 15	G ¾
q_p 2.5 m³/h	DN 20	G 1

Pressure loss diagram



Heat meters heating/cooling meters heatplus

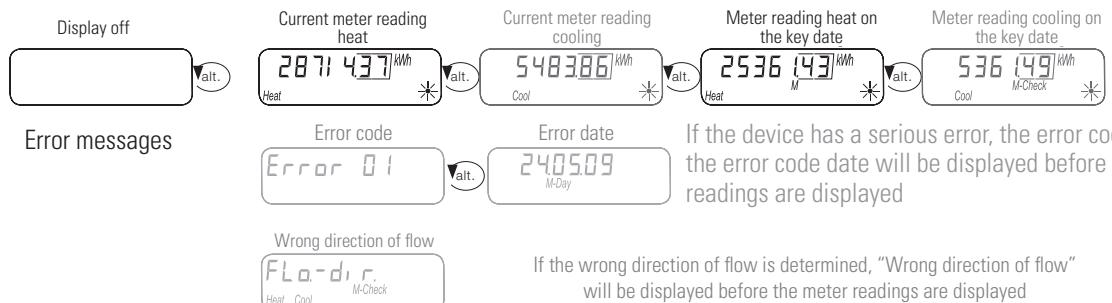
Device states, display units and consumption values are shown via the LCD display in multiple levels (up to 10 levels). The heat meter is equipped with two buttons, with which you can change over between the individual display steps and display levels.

The display of the meter is normally switched off and is only activated after a button is pressed. To check the function, every 36 seconds the display is briefly switched on (fast readout mode) and shows the current meter reading, the meter reading on the key date and if present, an error message.

Fast readout mode

Standard loop

(Meter reading displays depend on the device configuration)



If the device has a serious error, the error code and the error code date will be displayed before the meter readings are displayed

If the wrong direction of flow is determined, "Wrong direction of flow" will be displayed before the meter readings are displayed

Overview – display levels

L0 current consumption values

Standard levels

L1 yearly consumption values

L2 momentary values

L3 parameters

L4 connections
(Integrated communication modules)

L5 monthly values heat

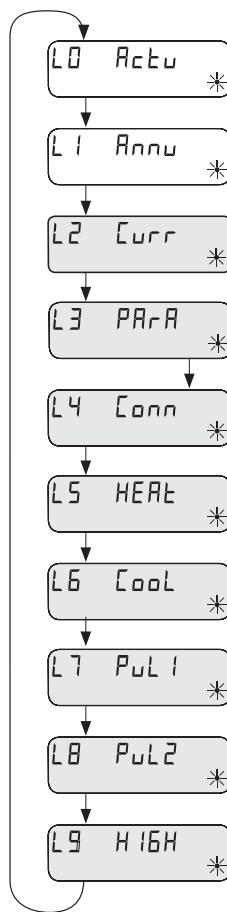
The levels with a grey background can be switched off individually.

L6 monthly values cooling

L7 monthly values pulse input 1

L8 monthly values pulse input 2

L9 maximum values



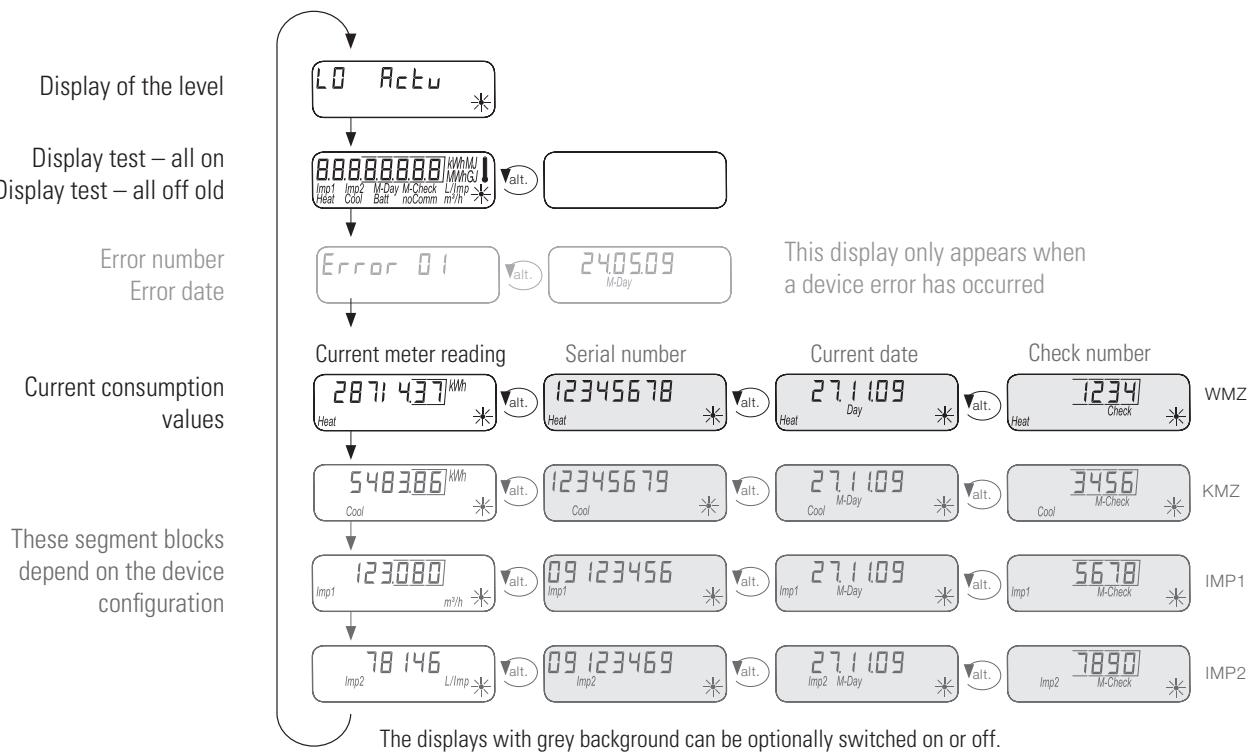
Button for changing the level

Button for moving within a level

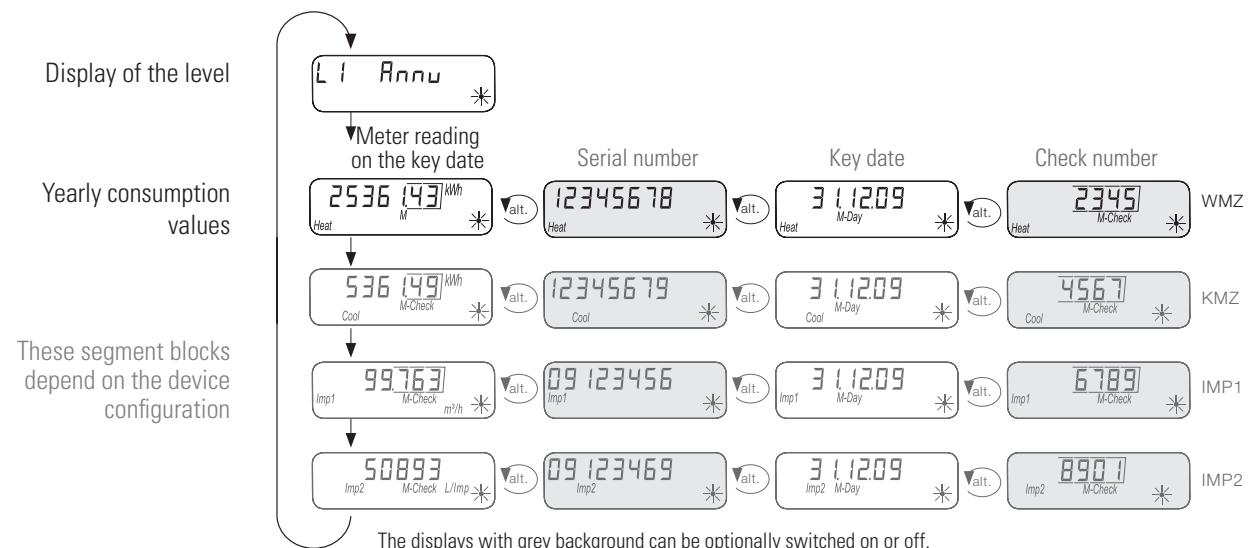
Alt. Alternating display

Heat meters heating/cooling meters heatplus

Display level L0 – current consumption values



Display level L1 – yearly consumption values



Heat meters heating/cooling meters heatplus

Display level L2 – momentary values

Display of the level

Momentary flow rate

Momentary supply temperature

Momentary return temperature

Momentary temperature differential

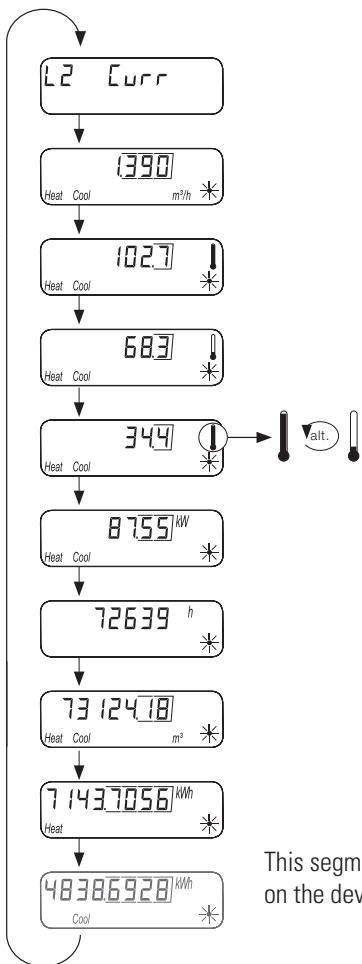
Momentary energy flow

Operating hours

Cumulated volume

High resolution meter reading heat quantity meter

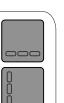
High resolution meter reading cooling quantity meter



This segment appears depending on the device configuration.



Button for changing the level

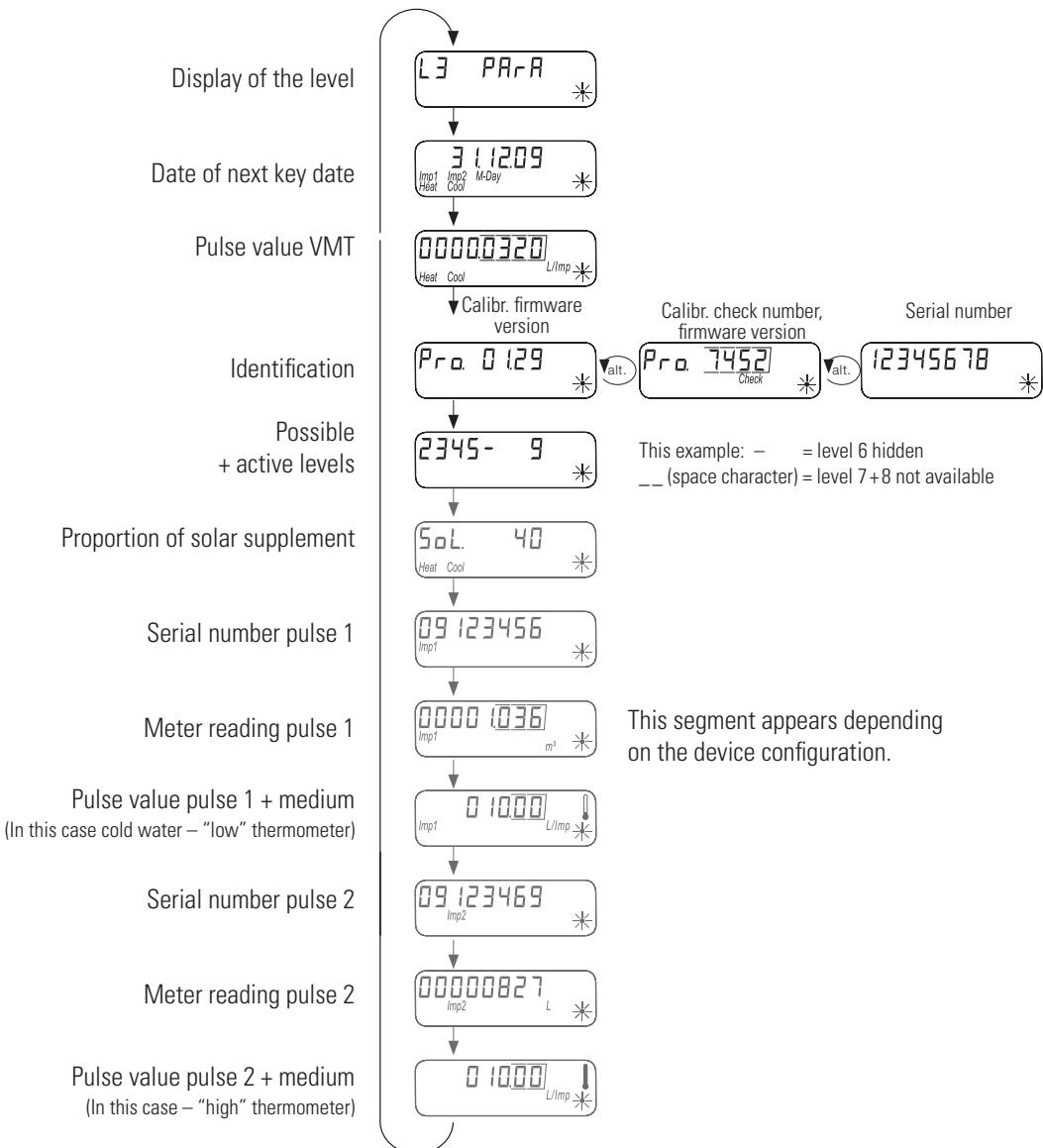


Button for moving within a level

▼alt. Alternating display

Heat meters heating/cooling meters heatplus

Display level L3 – parameters



Button for changing the level

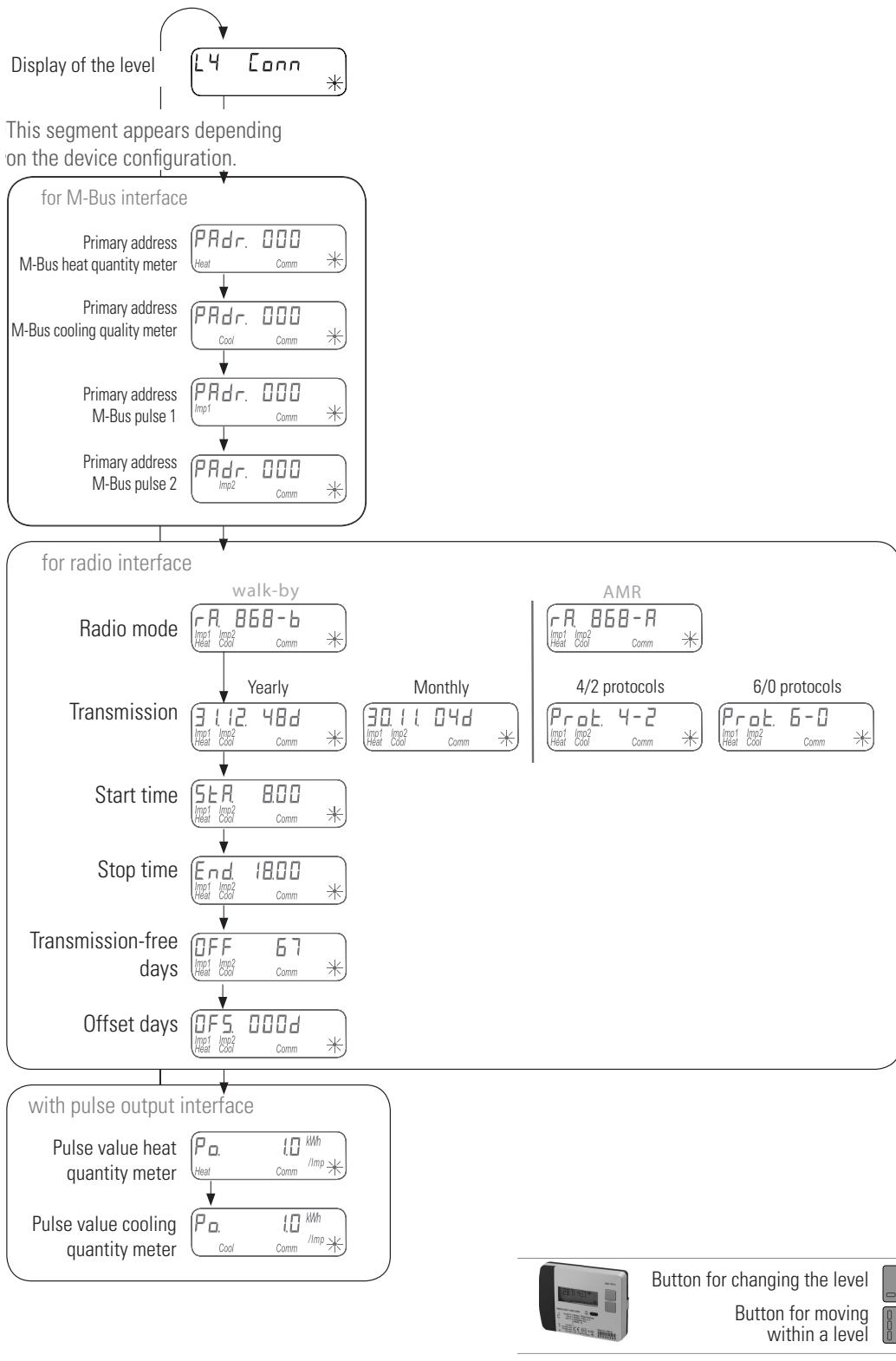


Button for moving within a level

alt. Alternating display

Heat meters heating/cooling meters heatplus

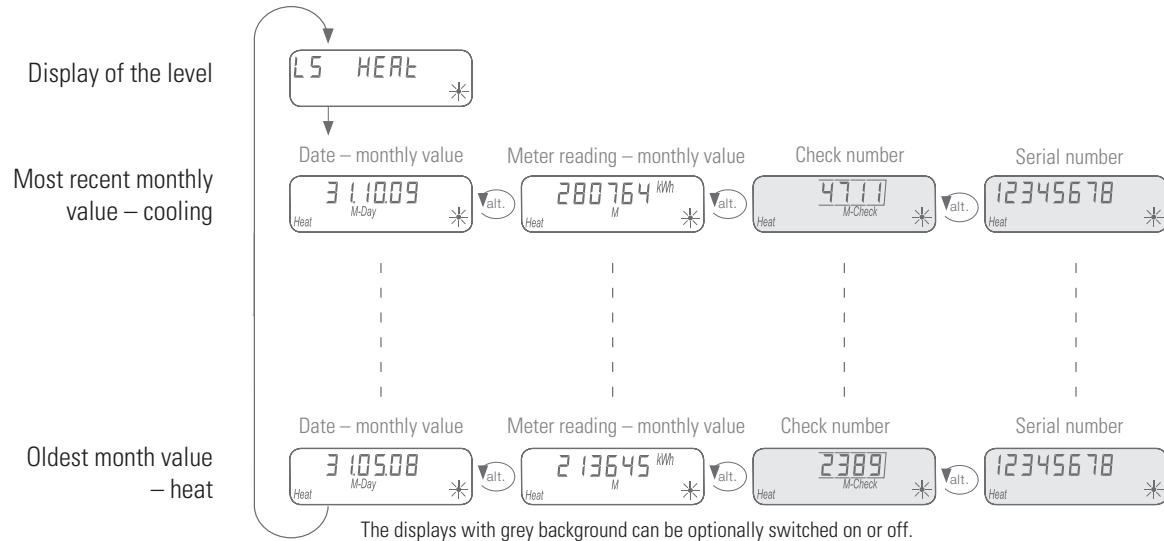
Display level L4 – connections



Heat meters heating/cooling meters heatplus

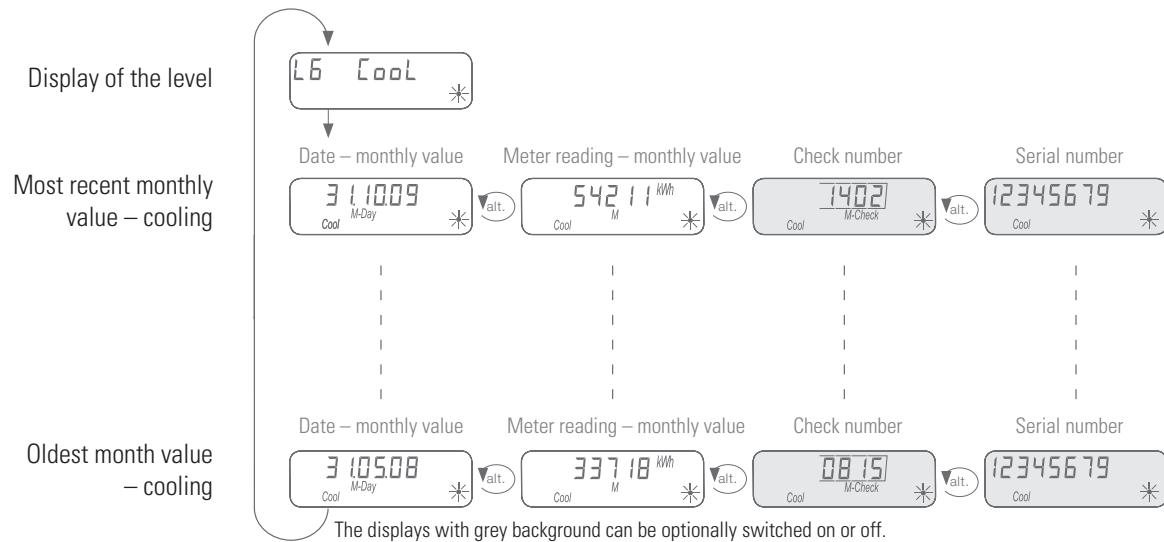
Display level L5 – monthly values

This level is only displayed when the device is configured to heat metering.

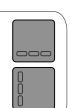


Display level L6 – monthly values cooling

This level is only displayed when the device is configured to cooling metering.



Button for changing the level



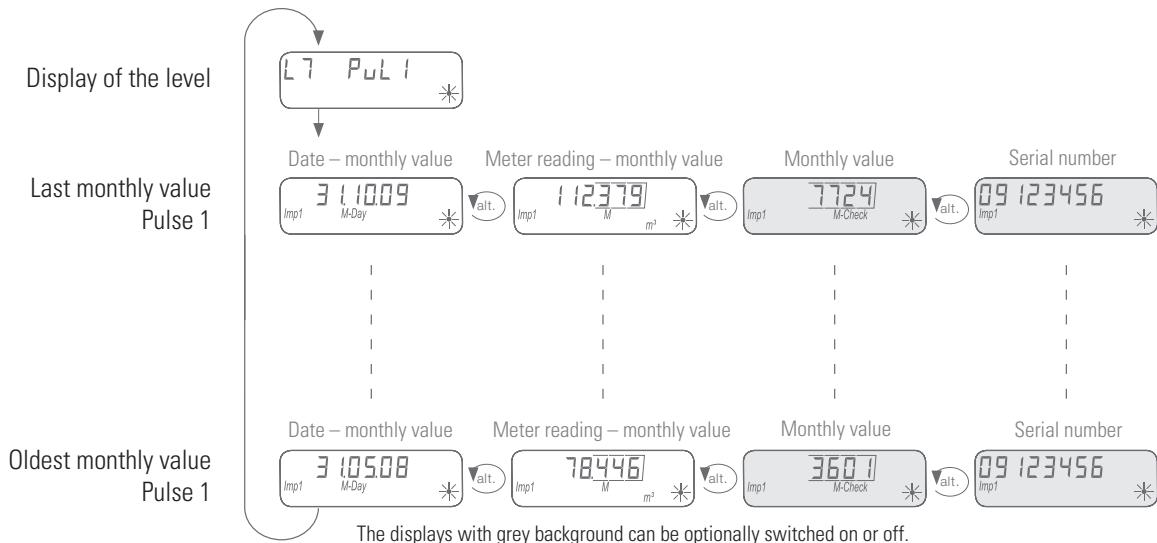
Button for moving within a level

▼ alt. Alternating display

Heat meters heating/cooling meters heatplus

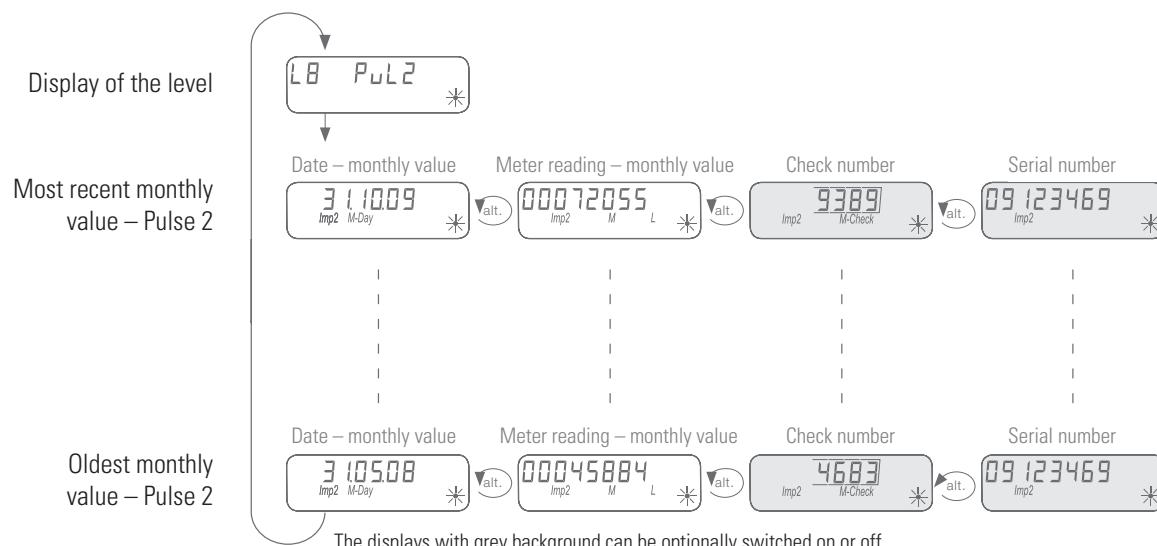
Display level L7 – monthly values pulse 1

This level is only displayed when an additional meter is installed on pulse input 1.

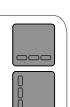


Display level L8 – monthly values pulse 2

This level is only displayed when an additional meter is installed on pulse input 2.



Button for changing the level

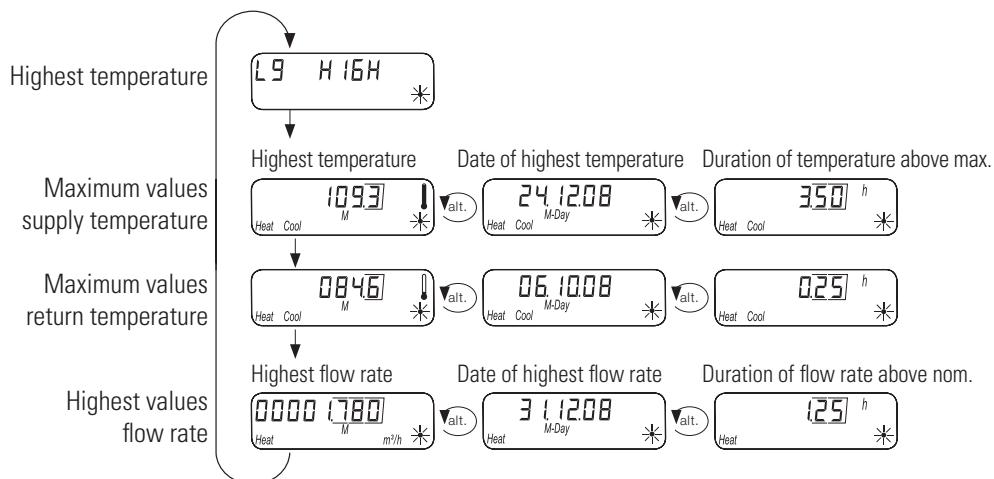


Button for moving within a level

alt. Alternating display

Heat meters heating/cooling meters heatplus

Display level – L9 maximum values



Error and status messages

Error 01		Date error 01	
Wrong direction of flow			Temporary message
IrDA communication active			Temporary message
IrDA communication blocked (IrDA credits used up)			Temporary message
Operating time end reached			Static message, Batt symbol flashes
Momentary temp. differential negative (Supply / return swapped)			
Momentary flow rate available (No energy metering)			
Momentary flow rate available (Energy metering)			



▼ alt. Alternating display

Heat meters heating/cooling meters **heatplus**

Parameter assignment possibilities

With PC (Q Suite heat)

- ~ Next key date
- ~ Password for near field interface
- ~ Display in kWh or MWh or MJ or GJ
- ~ Selection of the levels to display
- ~ Display of meter readings with or without check number

In addition for devices with 2 additional pulse inputs:

- ~ Serial numbers of the external meters
- ~ Pulse values of the external meters
- ~ Starting meter readings of the external meters
- ~ Medium selectable – water or hot water

In addition for devices with M-Bus:

- ~ Primary addresses for heat, cooling, pulse 1, pulse 2

In addition for devices with walk-by radio:

- ~ Time offset in days until the reading date
- ~ Weekdays without telegram transmission
- ~ Transmission period within a day (e.g. 8:00 – 18:00 MET)
- ~ Reassignment of parameters for use in the Q AMR system (non-reversible)
Regardless of the set readout time, the measuring devices transmit status information several times a day throughout the year.

In addition for devices with solar adaptation:

- ~ Proportion of glycol or brine

Via buttons

- ~ Next key date
- ~ Display in kWh or MWh or MJ or GJ
- ~ Selection of the levels to display
- ~ Display of meter readings with or without check number

In addition for devices with 2 additional pulse inputs:

- ~ Serial numbers of the external meters
- ~ Pulse values of the external meters
- ~ Starting meter readings of the external meters
- ~ Medium selectable – water or hot water

In addition for devices with M-Bus:

- ~ Primary addresses for heat, cooling, pulse 1, pulse 2

In addition for devices with solar adaptation:

- ~ Proportion of glycol or brine

heatplus Modules for communication

Interface modules

Version	Order no.
M-Bus module	127 501 6
Pulse output module	127 501 7
"Walk By" wireless attachment module	on request
Wireless attachment module, "AMR"	on request

Ultrasonic compact heat meter **heatsonic**



Ultrasonic compact energy meter for measuring energy consumption in heating and/or cooling systems.

- Approval for the ultrasonic meter in the dynamic range 250:1 (qp:qi) in class 2
- Low power consumption → longer battery service life
- Approved in accordance with MID in class 2 and 3 and in accordance with PTB K 7.2 (cooling meter)
- Insensitive to fouling
- Versatile power supply possibilities
- Optional integrated radio, Real Data or Open Metering (868 or 434 MHz)
- Individual remote readout (AMR) with optional plug & play modules
- Extensive readable data memory
- 2 communication slots (e.g. M-Bus and pulse input)
- Significantly improved radio capacity
- Variable install position

Technical data

Application	Heat – cooling – heat/cooling
Approval	MID (DE-10-MI004-PTB013) and PTB K 7.2 (cooling meter)
Install position – flow sensor	Any, inflow and outflow sections not necessary
Degree of protection – flow sensor	Heat: IP 54; cooling, heat/cooling: IP 68
Operating supply	3.6 VDC – A-cell, max. 11 years service life; (optional 3.6 VDC – D-cell, max. 16 years service life)
Power unit supply	24 VAC (optional); 230 VAC (optional)
Temperature sensor type	PT 500 (PT 100 optional) with 2-conductor; diameter 5.2 mm (diameter 6.0 optional)
Cable length of the temperature sensor	PT 500: 2 m (optional 3/5/10 m)
Measuring cycle volume	with power supply unit: 1/8s; with A-cell: 1s; with D-cell: 1s

Arithmetic unit – basic data

Environment class	Class E1 + M1
Ambient temperature	5 – 55 °C
Storage temperature	–25 to +60 °C
Degree of protection	IP54
Communication	2 communication slots (e.g. M-Bus + M-Bus; 2 primary addresses, 1 secondary address)
Integrated radio	868 MHz Real Data (optionally 434 MHz or Open Metering)
Standard interface	Optical ZVEI interface
Optional interfaces	2 slots for modules with M-Bus, pulse output, pulse input, combined pulse input and output, analog output, L-Bus, RS232 or RS485
Temperature range, heat meter	5 – 130 / 150 °C
Temperature range – cooling meter	5 – 90 °C
Temperature range, heat/cooling meter	5 – 105 °C
Extensive readable data memory	Month memory ¹ ; historical LOG memory; energy memory

¹ programmable memory interval (daily, weekly, monthly, etc.)

Ultrasonic compact heat meter **heatsonic**

Arithmetic unit – integrated radio

Frequency band	868 MHz (optionally 434 MHz)
Type of radio telegram	Real Data (optionally OMS – Open Metering Standard)
Data actuality	Online – no time delay between measured value acquisition and data transmission
Data transmission	Unidirectional
Transmission interval	12 – 20 s, depending on the length of the telegram (duty cycle)

Arithmetic unit – display

Display	LCD, 8-place
Units	MWh – kWh (optionally GJ – Gcal – MBtu – gal – GPM) °C (optionally °F) m ³ – m ³ /h
Displayed values	Energy – Power – Volume – Flow – Temperature and other

Interfaces (optional)

Optical	ZVEI interface, for communication and test, M-Bus protocol
M-Bus	Configurable telegram, conformance with EN 13757-3, data readout and parameter assignment via reverse-polarity protected 2-wire line, automatic baud rate detection (300 and 2400 baud), 2 x M-Bus with 2 primary addresses
L-Bus	Adapter for external radio module, configurable telegram, conformance with EN 13757-3, data readout and parameter assignment via reverse-polarity protected 2-wire line
RS 232	Serial interface for communication with external devices, special data cable necessary, M-Bus protocol, 300 and 2400 baud
RS 485	Serial interface for communication with external devices, power supply 12 V ± 5 V, M-Bus protocol, 2400 baud
Pulse output	Module with 2 pulse outputs (open collector, floating potential), output 1-4 Hz (pulse width 125 ms), 100 Hz (pulse width 150 ms), pulse output or static state (e.g. error), output 2: 100 Hz (pulse width ≥ 5 ms), ratio pulse duration/pulse pause ~ 1:1, configurable with IZAR@SET software
Pulse input	Module with 2 pulse inputs, max. 20 Hz, configurable with software, data transmission also possible
Combined pulse input and output	Module with 2 pulse inputs and 1 pulse output, configurable with software, is required for leak detection
Analog output	Module for 4 ... 20 mA with 2 programmable passive outputs, adjustable value if there is an error

Temperature input

Measuring cycle	T	s	With power supply unit: 2 s; with battery: A-cell: 16 s; D-cell: 4 s
Starting temperature differential	ΔΘ	K	0.125
Min. temperature differential	ΔΘ _{min}	K	3
Max. temperature differential	ΔΘ _{max}	K	177
Absolute temperature measurement range	Θ	°C	1 ... 180

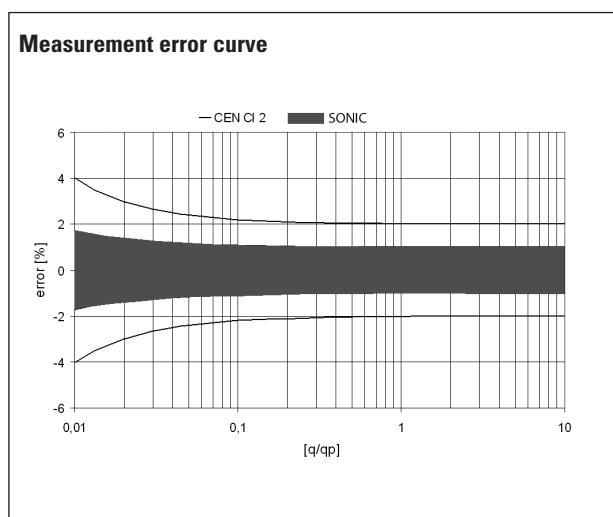
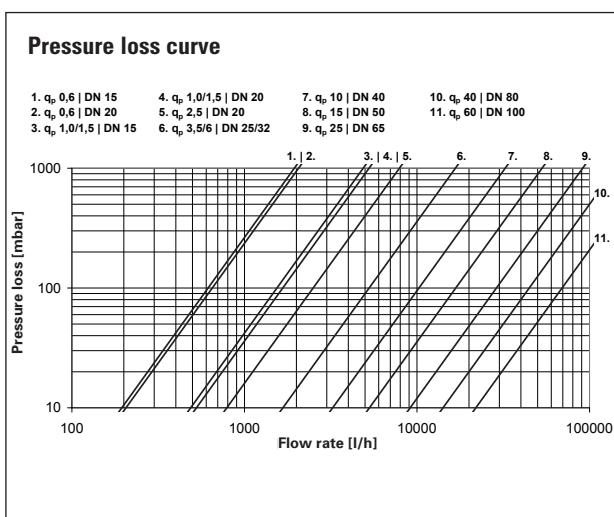
Ultrasonic compact heat meter **heatsonic**

Volumetric flow meter – basic data

Nominal flow rate	q_p	m^3/h	0.6	1.5	2.5	3.5	6
Nominal diameter	DN	mm	15	15	20	25	25
Overall length	L	mm	110	110	130	260	260
Starting flow rate		l/h	1	2.5	4	7	7
Minimum flow rate	q_i	l/h	6	6	10	35	24
Maximum flow rate	q_s	m^3/h	1.2	3	5	7	12
Overload value		m^3/h	2.5	4.6	6.7	18.4	18.4
Operating pressure	PN	bar	16	16	16	16	16
Pressure loss q_p		mbar	85	75	100	44	128
Temperature range, heat meter		°C	5 ... 130	5 ... 130	5 ... 130	5 ... 150	5 ... 150
Temperature range, cooling meter		°C	5 ... 90	5 ... 90	5 ... 90	5 ... 90	5 ... 90
Temperature range heat/cooling meter		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Kvs value ($\Delta p = Q^2/\text{Kvs}^2$)			2.06	5.48	7.91	16.69	16.77

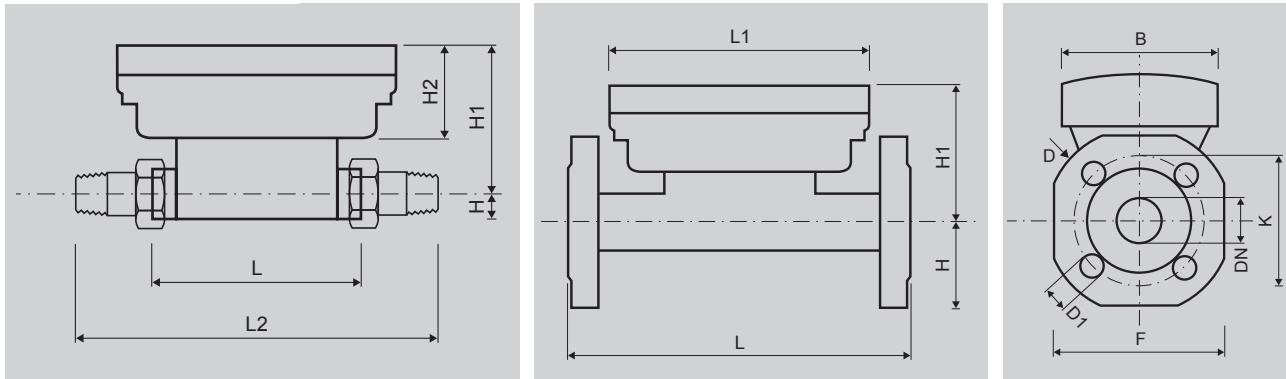
Nominal flow rate	q_p	m^3/h	10	15	25	40	60
Nominal diameter	DN	mm	40	50	65	80	100
Overall length	L	mm	300	270	300	300	360
Starting flow rate		l/h	20	40	50	80	120
Minimum flow rate	q_i	l/h	40'/100	60'/150	100'/250	160	240'/600'/1200'
Maximum flow rate	q_s	m^3/h	20	30	50	80	120
Overload value		m^3/h	24	36	60	90	132
Operating pressure	PN	bar	16	25	25	25	16/25
Pressure loss q_p		mbar	95	80	75	80	75
Temperature range, heat meter		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150	5 ... 105
Temperature range, cooling meter		°C	5 ... 90	5 ... 90	5 ... 90	5 ... 90	5 ... 90
Temperature range heat/cooling meter		°C	5 ... 105	5 ... 105	5 ... 105	5 ... 105	5 ... 105
Kvs value ($\Delta p = Q^2/\text{Kvs}^2$)			32.44	53.03	91.29	141.42	219.09

¹only in horizontal install position, ²only in ascending pipe or down pipe, or tilted install position, ³only in overhead install position



Ultrasonic compact heat meter **heatsonic**

Dimensions



Thread version

Nominal flow rate	qp	m³/h	0.6	1.5	2.5	3.5	6	10
Nominal diameter	DN	mm	15	15	20	25	25	40
Overall length	L	mm	110	110	130	260	260	300
Length – arithmetic unit	L1	mm	150	150	150	150	150	150
Height	H	mm	14.5	14.5	18	23	23	33
Height	H1	mm	82	82	84	88.5	88.5	94
Height – arithmetic unit	H2	mm	54	54	54	54	54	54
Width – arithmetic unit	W	mm	100	100	100	100	100	100
Connection thread – meter		Inches	G3/8B	G3/8B	G1B	G1 1/4B	G1 1/4B	G2B
Mass		kg	0.76	0.76	0.85	1.5	1.5	3

Flange version

Nominal flow rate	qp	m³/h	3.5	6	10	15	25	40	60
Nominal diameter	DN	mm	25	25	40	50	65	80	100
Overall length	L	mm	260	260	300	270	300	300	360
Length – arithmetic unit	L1	mm	150	150	150	150	150	150	150
Height	H	mm	50	50	69	73.5	85	92.5	108
Height	H1	mm	88.5	88.5	94	99	106.5	114	119
Height – arithmetic unit	H2	mm	54	54	54	54	54	54	54
Width – arithmetic unit	B	mm	100	100	100	100	100	100	100
Flange dimensions	F	mm	100	100	138	147	170	185	216
Flange diameter	D	mm	114	114	148	163	184	200	235
Hole-circle diameter	K	mm	85	85	110	125	145	160	180'/190
Diameter	D	mm	14	14	18	18	18	19	19/22
Number of flange bores	Pc.		4	4	4	4	8	8	8
Mass		kg	3.5	3.5	6.8	7.6	9.6	11.2	17

¹ Values for PN 16 housing

Ultrasonic compact heat meter **heatsonic**

Basic specification:

Install location:	Return
Cable:	1.5 m between AU & flow sensor
Power supply:	Battery 3.0 VDC (A-cell) 12-year battery life
Energy unit:	kWh (without decimal places) for q_p 0.6 – 6.0 m^3/h MWh (with 2 decimal places) for q_p 10.0 – 60.0 m^3/h
Temperature sensor type (pair):	Pt 500/2 m cable/Ø 5.2 m
Temperature sensor installation:	1 sensor mounted directly in the flow sensor q_p 0.6 – 2.5 m^3/h 2 free sensors for $q_p \geq 3.5 \text{ m}^3/\text{h}$

Product range heatsonic M-Bus

Version	Nominal diameter	Overall length	Connection	Pressure stage	Order no.
0.6 m^3/h	DN 15	110 mm thread	G¾B	PN16	128 200 2
1.5 m^3/h	DN 15	110 mm thread	G¾B	PN16	128 201 2
2.5 m^3/h	DN 20	130 mm thread	G1B	PN16	128 202 2
3.5 m^3/h	DN 25	260 mm thread	G1¼B	PN16	128 203 2
3.5 m^3/h	DN 25	260 mm flange		PN25	128 204 2
6 m^3/h	DN 25	260 mm thread	G1¼B	PN16	128 205 2
6 m^3/h	DN 25	260 mm flange		PN25	128 206 2
10 m^3/h	DN 40	300 mm thread	G2B	PN16	128 207 2
10 m^3/h	DN 40	300 mm flange		PN25	128 208 2
15 m^3/h	DN 50	270 mm flange		PN25	128 209 2
25 m^3/h	DN 65	300 mm flange		PN25	128 210 2
40 m^3/h	DN 80	300 mm flange		PN25	128 211 2
60 m^3/h	DN 100	360 mm flange		PN25	128 212 2

Product range heatsonic Radio 868 MHz

Version	Nominal diameter	Overall length	Connection	Pressure stage	Order no.
0.6 m^3/h	DN 15	110 mm thread	G¾B	PN16	128 200 1
1.5 m^3/h	DN 15	110 mm thread	G¾B	PN16	128 201 1
2.5 m^3/h	DN 20	130 mm thread	G1B	PN16	128 202 1
3.5 m^3/h	DN 25	260 mm thread	G1¼B	PN16	128 203 1
3.5 m^3/h	DN 25	260 mm flange		PN25	128 204 1
6 m^3/h	DN 25	260 mm thread	G1¼B	PN16	128 205 1
6 m^3/h	DN 25	260 mm flange		PN25	128 206 1
10 m^3/h	DN 40	300 mm thread	G2B	PN16	128 007 1
10 m^3/h	DN 40	300 mm flange		PN25	128 208 1
15 m^3/h	DN 50	270 mm flange		PN25	128 209 1
25 m^3/h	DN 65	300 mm flange		PN25	128 210 1
40 m^3/h	DN 80	300 mm flange		PN25	128 211 1
60 m^3/h	DN 100	360 mm flange		PN25	128 212 1

Product range – accessories

Article	Order no.
Battery 3.6 VDC (D-cell) 20-year service life	128 240 0
Power supply 230 VAC	128 240 1
Power supply 24 VAC	128 240 2
M-Bus module	128 240 3
Pulse output module (1 pulse output)	128 240 4
Pulse input module (2 inputs)	128 240 5
Combination pulse module (2 pulse inputs, 1 pulse output)	128 240 6
Analog module	128 240 8
L-Bus module	128 241 1
R 232 module	128 240 9
RS 485 module	128 241 0

Ultrasonic compact heat meter **heatsonic**

LCD – multifunction display (heat meter)

The meter has 6 different display loops: Main loop, key date loop., info loop, pulse input loop, rate loop and month loop.

The window content of each loop is programmed in the factory with the standard information. Various display windows consist of up to seven value displays that alternate in 2–4s rhythm. For fast visual acquisition the loops in the display are marked with numbers 1 to 6.

The main loop (1) is programmed with the current data, e.g. for energy, volume, flow rate (default).

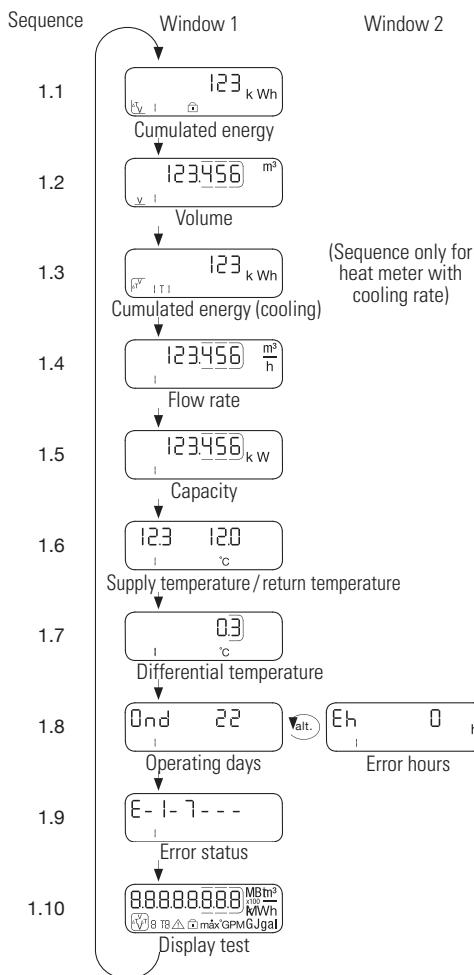
With the IZAR@SET software the settings of the loops can be programmed on customer-specific basis.

With the pushbutton the individual displays can be paged through. In this regard there is a distinction between short and long button activations.

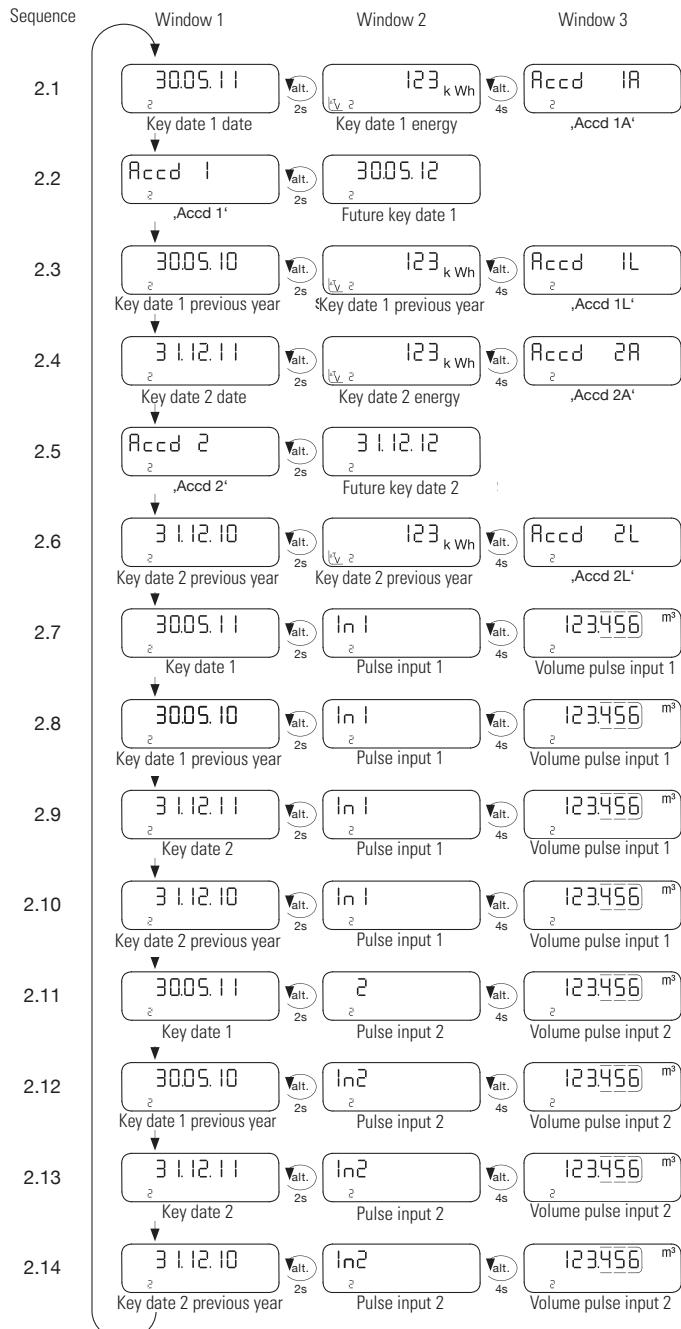
The table below shows the operating possibilities:

Action	Event
Short button activation (< 3 seconds)	Page forward within a loop
Long button activation (> 3 seconds)	Page forward to the next display loop
Button not pressed for 4 minutes	Meter switches off the display automatically (to save power, only if an error is not present)
Button pressed again	Meter is in the basic display

Display main loop (1)

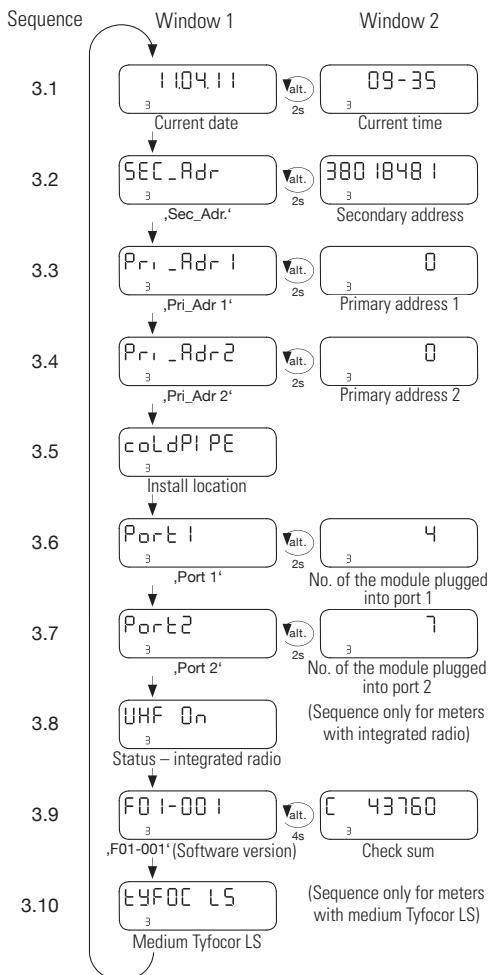


Display key date loop (2)

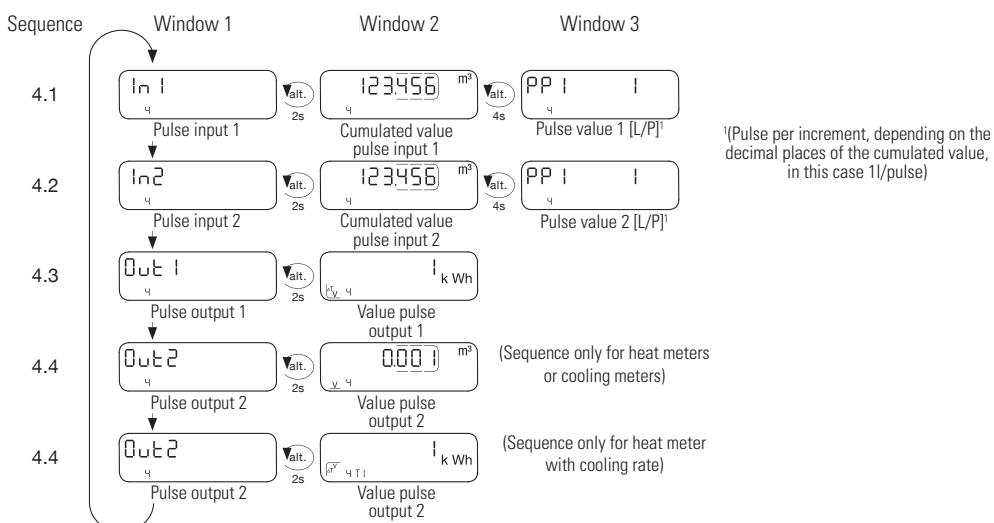


Ultrasonic compact heat meter **heatsonic**

Display – info loop (3)

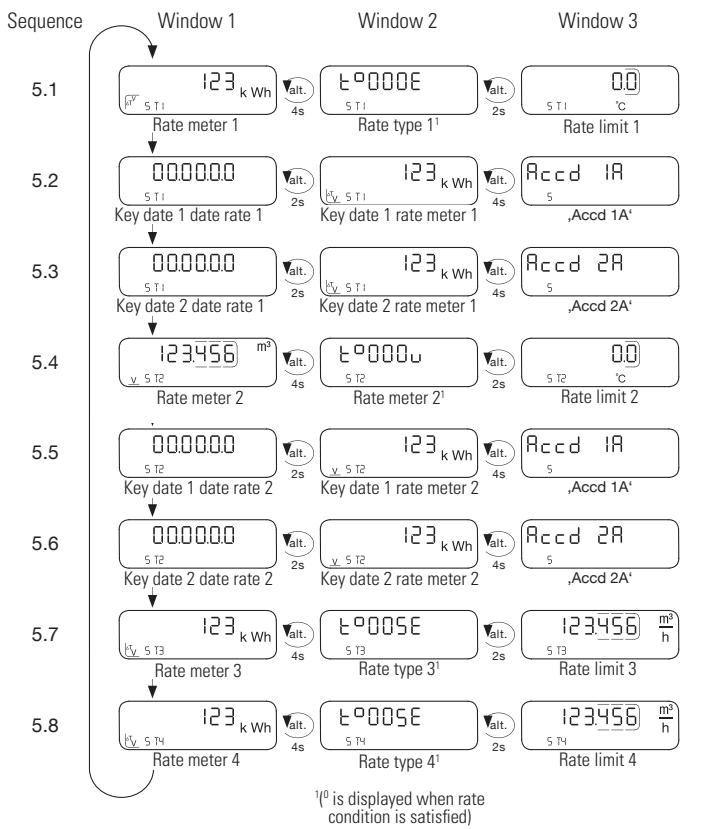


Display – pulse loop (4)

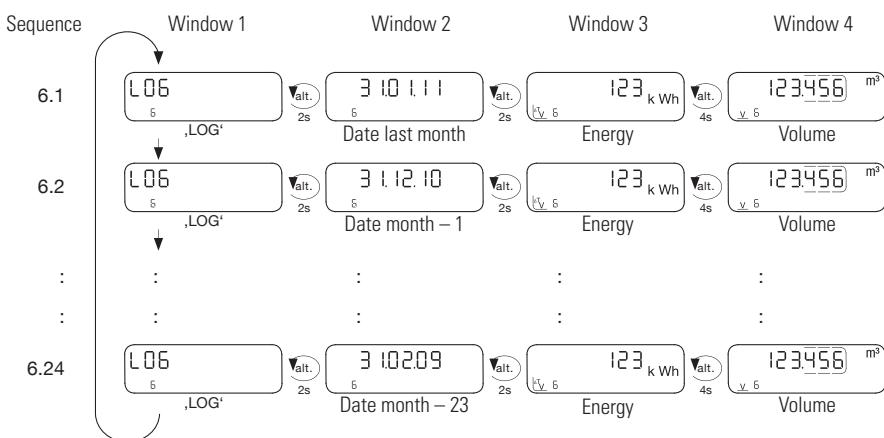


Ultrasonic compact heat meter **heatsonic**

Display rate loop (5) (only for heat meter with cooling rate)



Display month loop (6) (heat meter or cooling meter)



Ultrasonic split heat meters



- Ultrasonic split heat meter consisting of arithmetic unit, volumetric flow meter and temperature sensors
- Volumetric flow meter without additional pressure loss because the sensors are outside of the volume flow
- All components MID tested
- Arithmetic unit can be extended with communication modules (e.g. M-Bus)
- Insensitive to fouling
- Dynamic range ($q_p:q_i$) 125:1

Technical data

Arithmetic unit

Temperature range

Heat meters 5 – 180 °C

Approved temperature differential 3 – 150 °C

Counting start – temperature differential 1.0 K

Ambient temperature 5 – 55 °C

Standards

Max. measurement error $\pm 1.5\%$ at 3.0 K $\langle \Delta t \rangle$ 20 K

Environment class C (industrial)

Degree of protection IP65

Power supply

Lithium battery Nominal voltage 3.0 V

Power life 6 (optionally 10) years

Display levels

Standard 4/5

Display 7-digit LCD display

Energy display MWh (optionally GJ)

Temperature sensor

Measuring element

PT1000 in accordance with EN 60751

Version Type DS

Diameter 5.2 mm

Installation type Indirect immersion sleeve

Cable length

1.5 m (optionally 3.0 m)

Temperature

0 – 180 °C

Differential temperature

3 – 180 K

Max. pressure PN 25

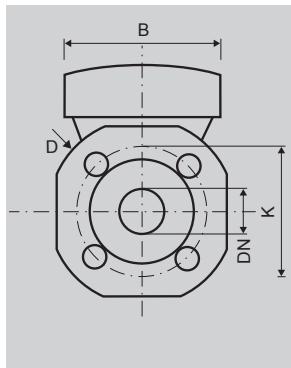
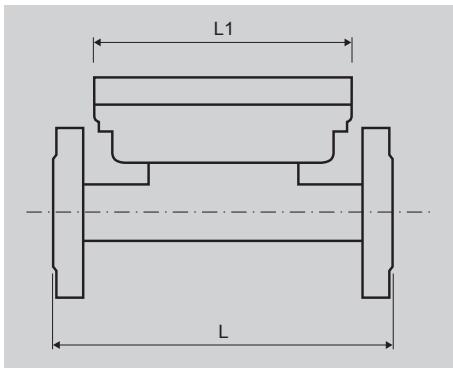
Volumetric flow meter

Nominal flow rate	q_p	m^3/h	100	150	240	370	540
Nominal diameter	DN	mm	125	150	200	250	300
Overall length	L	mm	320	320	450	450	450
Starting flow rate		m^3/h	0.35	0.54	0.96	1.50	2.16
Minimum flow rate	q_i	m^3/h	1.77	2.50	4.53	7.08	10.15
Transition flow	q_t	m^3/h	8.8	12.7	22.6	35.4	50.9
Maximum flow rate	q_s	m^3/h	221.10	318.50	566.00	885.00	1290.00
Operating pressure	PN	bar			16		
Temperaturbereich		°C			0 ... 110 (opt. 130)		
Umgebungstemperatur		°C			5 ... 50		
Accuracy ($q_i < q < q_t$)					± 4 %		
Accuracy ($q_t < q < q_s$)					± 2 %		

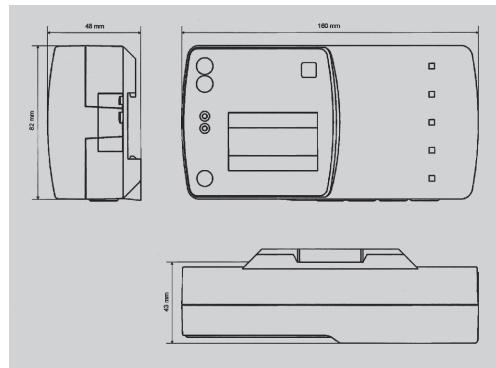
Ultrasonic split heat meters

Dimensions

Volumetric flow meter



Arithmetic unit



Nominal flow rate	qp	m³/h	100	150	240	370	540
Nominal diameter	DN	mm	125	150	200	250	300
Overall length	L	mm	320	320	450	450	450
Length – arithmetic unit	L1	mm	125	125	125	125	125
Height – arithmetic unit	H2	mm	50	50	50	50	50
Width – arithmetic unit	W	mm	105	105	105	105	105
Flange diameter	D	mm	250	285	340	405	460
Hole-circle diameter	K	mm	210	240	295	355	410
Number of flange bores	Pc.		8	8	12	12	12
Mass		kg	18.5	24.0	40.0	54.0	65.0

Product line

Volumetric flow meter

Version	Nominal diameter	Overall length	Order no.
qp 100 m³/h	DN 125	320 mm	128 505 2
qp 150 m³/h	DN 150	320 mm	128 506 2
qp 240 m³/h	DN 200	450 mm	128 507 2
qp 370 m³/h	DN 250	450 mm	128 508 2
qp 540 m³/h	DN 300	450 mm	128 509 2

Arithmetic unit

Version	Order no.
Prepared for M-Bus	128 243 0

Temperature sensor

Version	Order no.
	128 242 0

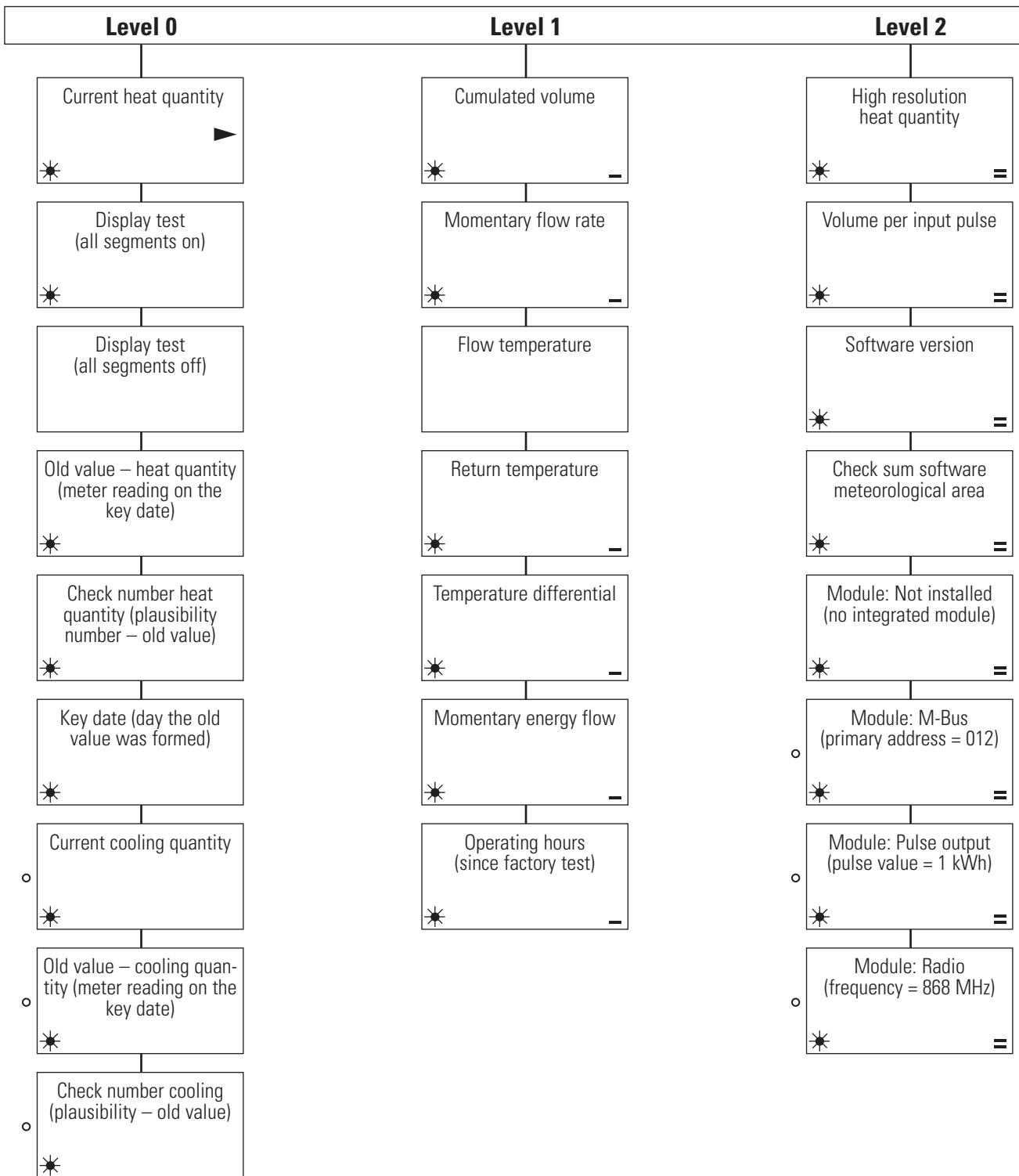
Ultrasonic split heat meters

Arithmetic unit

LCD – multifunction display

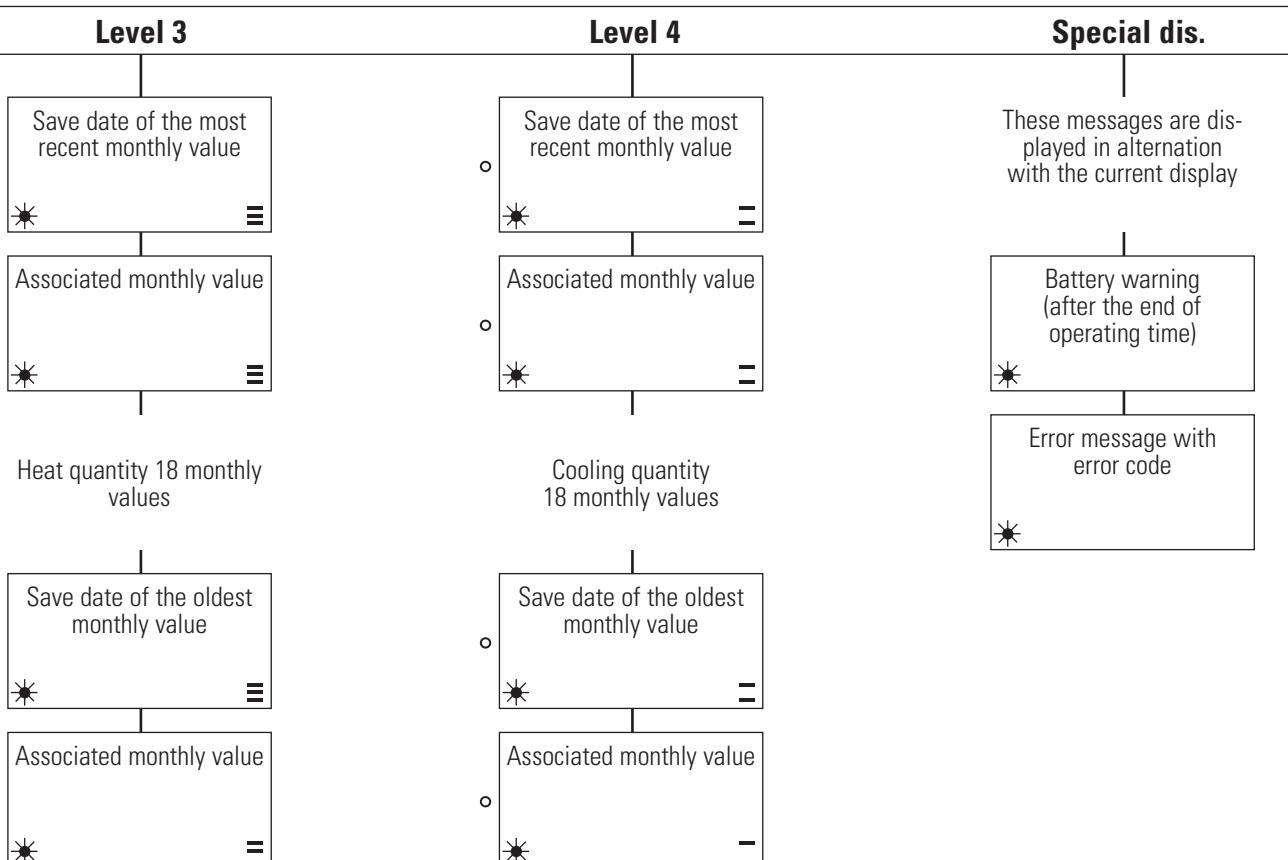
◀ Change the display:

◀ Change the display: Short button activation



Ultrasonic split heat meters

Long button activation ►



- Optional display. Depending on the installed module or heat meter type, this display appears in addition.



This symbol indicates that volume pulse from the hydraulic encoder arrive in the electronics, this means that as long as volume pulses come from the encoder the symbol will rotate in 45° increments.



These bars indicate the display level in which you are currently located. Level 0 (no symbol) shows the consumption data, levels 1 to 4 show service, configuration and other consumption data.

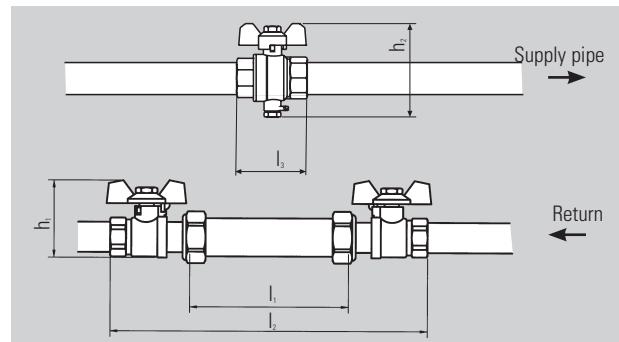
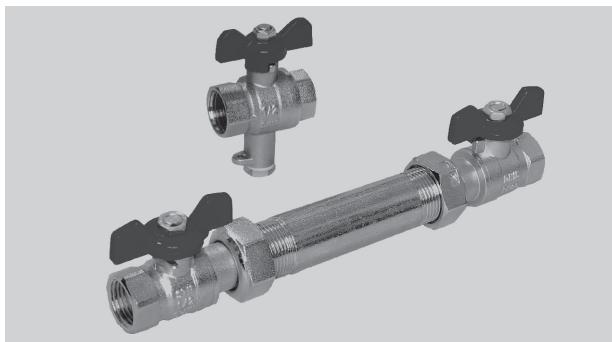


This arrow indicates that currently no energy is detected through the heat meter, i.e. it is visual indication of the idle phase of the device (no temperature differential and/or no flow).

OEM kit

Heat meters heatplus – OEM kit ball valve

Temperature sensor directly in the medium

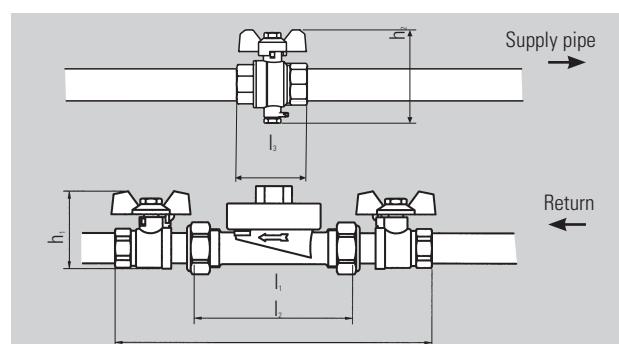
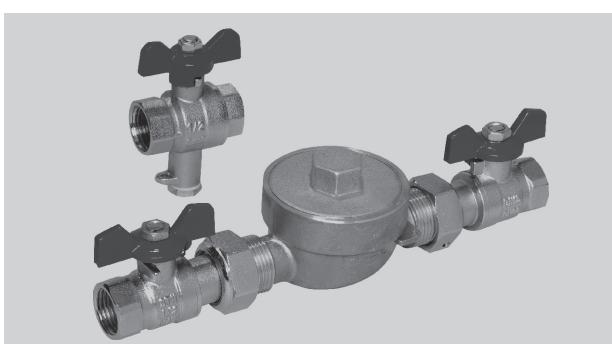


Scope of delivery: 1 special ball valve (supply) 1 meter replacement (return)
2 shut-off ball valves with integrated cup nut including seals (Return)

For heat quantity meter	Nominal diameter	l ₁ (mm)	l ₂ (mm)	l ₃ (mm)	h ₁ (mm)	h ₂ (mm)	PU	Order no.
q _p 0.6 / q _p 1.5	DN 15	110	224	48	54	77	1	127 860 1
q _p 2.5	DN 20	130	256	53	61	79	1	127 861 1
q _p 2.5	DN 25	130	275	66	75	96	1	127 862 1

Heat meters heatplus measurement cartridge – OEM kit ball valve

Temperature sensor directly in the medium



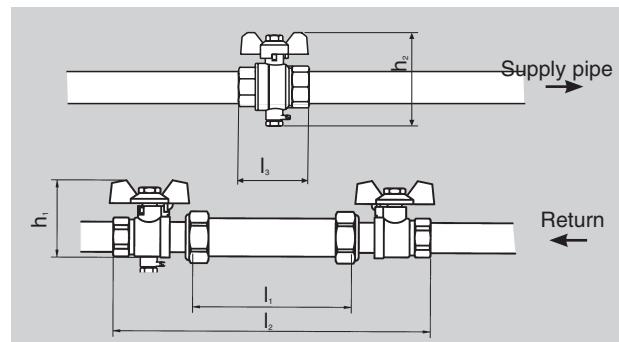
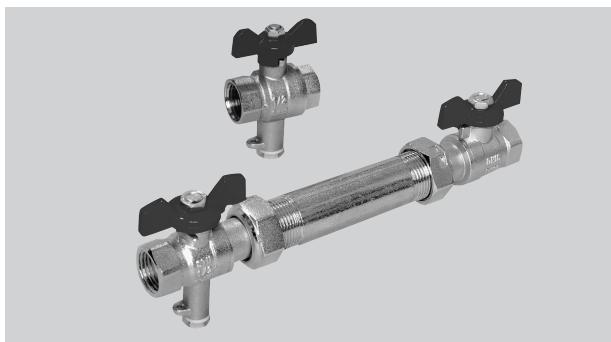
Scope of delivery: 1 special ball valve (supply) 1 single pipe connector piece (return)
2 shut-off ball valves with integrated cup nut including seals (Return)

For heat quantity meter	Nominal diameter	l ₁ (mm)	l ₂ (mm)	l ₃ (mm)	h ₁ (mm)	h ₂ (mm)	PU	Order no.
q _p 0.6 / q _p 1.5	DN 15	110	224	48	54	77	1	127 878 1
q _p 2.5	DN 20	130	256	53	61	79	1	127 879 1
q _p 2.5	DN 25	130	275	66	75	96	1	127 880 1

OEM kit

Heat meters heatsonic – OEM kit ball valve

Temperature sensor directly in the medium



Scope of delivery: 1 special ball valve (supply) 1 meter replacement (return)

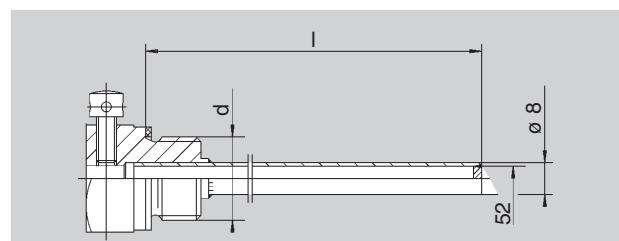
1 special ball valve with integrated cap nut including seal (return)

1 special shut-off valve with integrated cap nut including seal (return)

For heat quantity meter	Nominal diameter	L ₁ (mm)	L ₂ (mm)	L ₃ (mm)	h ₁ (mm)	h ₂ (mm)	PU	Order no.
q _p 3.5 / q _p 6.0	DN 25	260	420	66	74	96	1	127 863 2

Heat meters heatsonic – immersion sleeve kit

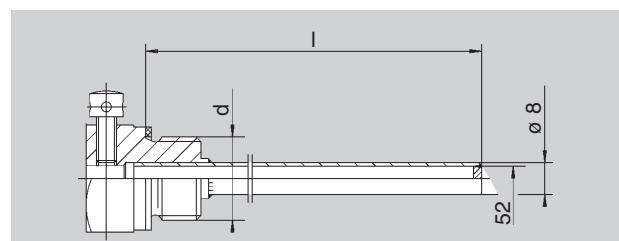
Temperature sensor indirectly in the medium



for heat meters heatsonic q_p 3.5 – 60.0 m³/h

Consisting of: 2 stainless steel immersion sleeves | sensor diameter: 5.2 mm

Dimensions	d	l (mm)	PU	Order no.
	G ½	85 mm	1	127 950 1
	G ½	120 mm	1	127 950 2
	G ½	155 mm	1	127 950 3
	G ½	210 mm	1	127 950 4



for heat meters heatsonic q_p 3.5 – 60.0 m³/h

Consisting of: 2 brass immersion sleeves

G ½	52 mm	1	127 951 1
G ½	85 mm	1	127 951 2
G ½	120 mm	1	127 951 3

Spare parts and accessories



Single-pipe connection piece

(incl. dummy cover, seal)

Nominal diameter	Connection	Version	PU	Order no.
DN 15	G 3/4	110 mm (Ms) bare	1	127 652 9
DN 20	G 1	130 mm (RG) bare	1	127 904 1



Special ball valve with sensor connection M 10 x 1 – directly immersing

Socket – socket

DN 15	G 1/2	nickel-plated	5	128 091 2
DN 20	G 3/4	nickel-plated	5	128 091 3
DN 25	G 1	nickel-plated	5	128 091 4



Special ball valve with sensor connection M 10 x 1 – directly immersing

Socket – threaded union

DN 25	G 1	nickel-plated	5	128 090 6
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Shut-off ball valve

DN 15	G 1/2 x G 3/4	nickel-plated	10	161 012 0
DN 20	G 3/4 x G 1	nickel-plated	10	161 012 1
DN 25	G 1 x G 1 1/4	nickel-plated	127 863 0	



T-piece with sensor threaded union – directly immersing

DN 15	Rp 1/2 M 10 x 1	bare	10	127 918 0
DN 20	Rp 3/4 M 10 x 1	bare	10	127 919 0
DN 25	Rp 1 M 10 x 1	bare	15	127 929 0



T-piece with sensor threaded union- directly immersing

M 10 x 1 / M 10 x 1	bare	1	139 403 0
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Sensor adapter M 10 x 1 – directly immersing

G 1/2 M 10 x 1	bare	1	139 404 0
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Spare parts and accessories



T-piece with immersion sleeve for M 10 x 1 – indirectly immersing

DN 15	Rp ½	nickel-plated	1	127 873 1
DN 20	Rp ¾	nickel-plated	1	127 874 1
DN 25	Rp 1	nickel-plated	1	127 875 1



Immersion sleeve – indirectly immersing

Sensor diameter 5.2 mm

M 10 x 1 / M 10 x 1	nickel-plated	1	127 876 1
G ½ / M 10 x 1	bare	1	127 869 0



Sensor adapter for immersion sleeve M 10 x 1 (indirectly immersing)

G ¾ M 10 x 1	nickel-plated	1	139 400 1
G ¼ M 10 x 1	nickel-plated	1	139 402 1
G ½ M 10 x 1	nickel-plated	1	139 401 1



Threaded union set

(2 each) including seal

Nominal diameter	Version	PU	Order no.
DN 15	bare	30	127 009 0
DN 20	bare	20	127 010 0
DN 25	bare	1	127 011 0
DN 40	bare	1	127 012 0



Threaded connection component

IT 3/4 x OT 1 incl. seal

DN 20	bare	20	127 037 0
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Meter replacement part

Galvanised steel version

DN 15	Overall length 110 G ¾	5	127 051 0
DN 20	Overall length 130 G 1	5	127 053 0
DN 32	Overall length 260 G 1 ¼	5	127 052 0
DN 40	Overall length 300 G 2	5	127 052 5



Accessories bag

heattwo	1	127 922 0
heatsonic	1	128 240 7
heatplus	1	128 522 0



Sealing set

heat	1	127 631 0
heatplus	1	128 521 0



Installation key for capsule system meter

heatone k, heattwo k, heatwp k

1	127 904 0
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