



Heat meter

Safety and guarantee	2
Technical data	4
Norms and standards	4
Calculator unit	5
Flow sensor screw-type meter	5
Flow sensor 2" encapsulated meter	6
Temperature sensor	6
Device elements	7
Device elements	7
Key assignment in standard mode	7
Status displays	7
Error messages	8
Standard loop	8
Quick reading mode	8
Operating scheme	8
Display	8
Overview levels	9
Display level L0 - Current consumption values	10
Display level L1 – Consumption values annual	11
Display level L2 – instantaneous values	12
Display level L3 – Parameter	13
Display level L4 – Connections	14
Configuration radio interface	14
Configuration M-Bus interface	15
Display level L5 – monthly values heat	16
Display level L6 – monthly values cold	16
Display level L7 – monthly values Imp1	17
Display level L8 – monthly values Imp2	17
Display level L9 – instantaneous values	18
Special operating modes	18
Error messages	19

Important information

This product must be installed professionally and in accordance with the prescribed assembly guidelines and may therefore only be installed by qualified and trained experts!

Application according to specification

Heat meters are used for the centralized recording of the consumption of heat energy or cooling energy. Depending on their design, they are for measuring hot water or hot water with glycol additives. Heat meters must be used exclusively for this purpose.

Use not according to specification

Any use other than the use described previously and any changes made to the device constitute improper use. Uses and changes must be queried in writing beforehand and are subject to special approval.



The installed meter is a pressurised component.

There is a risk of persons suffering scolds from hot water.

Warranty and guarantee

Warranty and guarantee claims are only valid if the parts in question have been used in accordance with their intended use and if the technical requirements and any applicable technical regulations have been observed.

Safety notes

Improper handling and excessively forceful tightening of screwed connections can cause leaks. Please observe the max. torque specified in the instructions. Seals must be suitable with regard to measurement and thermal loads. You should therefore only use the seals delivered with the device. Meters for heating water with glycol additives may only be used with the glycol additive specified on the device.

Safety notes for lithium batteries

The heat meter comes with a lithium battery. This type of battery is classified as hazardous.

VALID TRANSPORT REGULATIONS ARE TO BE ADHERED TO IN EACH CASE!

Inspection documents for the batteries used are available on request.

Handling of lithium batteries:

- store protected from dampness and moisture
- do not heat to above 100°C or throw in fire
- do not short-circuit
- do not open or damage
- do not charge
- do not store within reach of children

Norms and standards

CE conformity	see Declaration of Conformity
---------------	-------------------------------

Electromagnetic compatibility

Interference resistance	EN 61000-6-2
Emitted interference	EN 61000-6-3

Protection rating

IP protection rating	IP65 according to EN 60529
----------------------	----------------------------

Heat meter

European Measuring Instruments Directive (MID)	2004/22/EC
EC type examination	DE-12-MI004-PTB009
Heat meter	EN1434
Quality of heat medium	acc. to VDI guideline 2035

Cause variables

Electromagnetic class	E1
Mechanical class	M1
Environmental class	A
Measuring accuracy class	3

Calculator unit

Temperature range

as heat meter	10 ... 90 °C
as heat/cold meter	5 ... 90 °C
Permissible temperature difference	3 - 70 K
Start of metering temperature difference	Heat: 1.0 K / cold: 0.2 K (can be selected via art. no.)
Ambient temperature	5 ... 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 10 (depending on design and available options)
Display	8-digit LCD + pictograms
Energy display	kWh (opt. MWh, MJ, GJ)

Flow sensor screw-type meter

Connection sizes and dimensions	0.6 m³/h	1.5 m³/h	1.5 m³/h	2.5 m³/h
Length	110 mm	80 mm	110 mm	130 mm
Connection	G ¾ B	G ¾ B	G ¾ B	G 1 B
Ground	668 g	575 g	650 g	743 g
Installation position	horizontal/vertical			

Nominal flow qp		0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow qi	horizontal	12 l/h	30 l/h	50 l/h
	vertical	24 l/h	30 l/h	50 l/h
Ratio qp/qi	horizontal	50:1	50:1	50:1*
	vertical	25:1	50:1	50:1
Ratio qs / qp		2:1		
Start-up		3-4 l/h	4-5 l/h	6-7 l/h
Max. permissible operating pressure		1.6 MPa (16 bar)		
Min. system pressure to avoid cavitation		0.1 MPa (1bar)		
Temperature range		10 ... 90 °C		

* Variants with higher dynamic ranges are also available

Flow sensor 2" encapsulated meter

Connection sizes and dimensions 0.6 m³/h		1.5 m³/h	2.5 m³/h
Installation length of the EAT	110 mm	110 mm	130 mm
Pipe connection	G 3/4" solder 15 mm / 18 mm		G 1" Solder 22 mm
Ground	605 g	605 g	607 g
Installation position	horizontal/vertical		
Meter thread at the EAT	G 2 B	G 2 B	G 2 B

Nominal flow qp		0.6 m³/h	1.5 m³/h	2.5 m³/h
Minimum flow qi	horizontal	12 l/h	30 l/h	50 l/h
	vertical	24 l/h	30 l/h	50 l/h
Ratio qp/qi	horizontal	50:1	50:1*	50:1*
	vertical	25:1	50:1	50:1
Ratio qs / qp		2:1		
Start-up		3-4 l/h	4-5 l/h	6-7 l/h
Max. permissible operating pressure		1.6 MPa (16 bar)		
Min. system pressure to avoid cavitation		0.1 MPa (1bar)		
Temperature range		10 ... 90 °C		

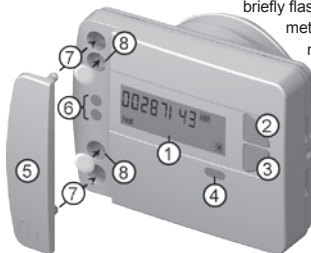
* Variants with higher dynamic ranges are also available

Temperature sensor

Measuring element		PT 1000 according to EN 60751
Execution		Type DS
Diameter		5.0 mm - 5.2 mm - 6.0 mm - AGFW
Installation type		5.0 mm - direct (ball valve) / indirect (immersion sleeve) 5.2 mm - direct (ball valve) / indirect (immersion sleeve) 6.0 mm - indirect (immersion sleeve) AGFW - direct (ball valve)
Cable length	Standard	1.5 m
	Optional	3.0 m

Device elements

- (1) LC-Display - The display is off by default (sleep mode). Every 36 seconds the display briefly flashes and shows the current meter status, the meter status at due date and, if applicable, an error message (quick read mode).



- (2) Key <H> (horizontal)
 (3) Key <V> (vertical)
 (4) IrDA interface
 (5) Interface cover
 (6) Module interface
 (7) Fastening holes for external optical modules
 (8) User backup and slots for external cable connections

Key assignment in standard mode

1. Activate LC display



Press key <H> or



Press key <V>

2. Change from any position in a level to the next level



Press key <H>

3. Change to the next display within a level

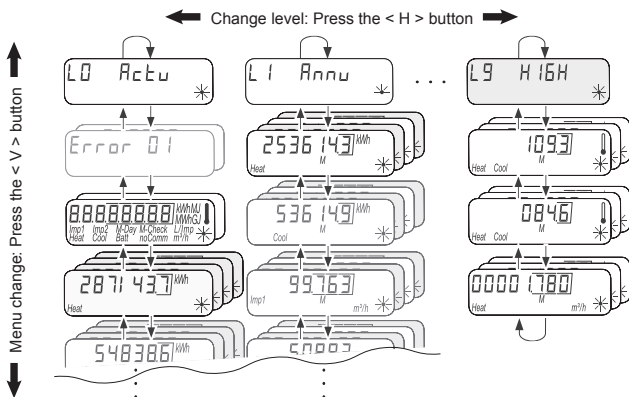


Press key <V>

Status displays

Display	Description
	The displayed data applies to: •Heat = Heat •Imp1 = Impulse entry1 •Cool = Cool •Imp2 = Impulse entry2
	•(empty) = Displayed value is a current value •M (Memory) = Value for a month date or due date
	Displayed value is a date value: •Day = current date •M-Day = Date applies to a saved annual or monthly value
	Displayed value is a checksum: •Check = Checksum refers to a current consumption value •M-Check = Checksum applies to a saved annual or monthly value

Operating scheme



Quick reading mode

The display is off by default (sleep mode - ☾). Every 36 seconds the display briefly flashes and shows the current meter status, the meter status at due date and, if applicable, an error message.

Standard loop

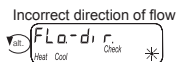
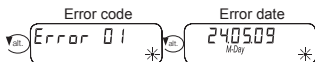
(Meter status displays depend on the device configuration.)



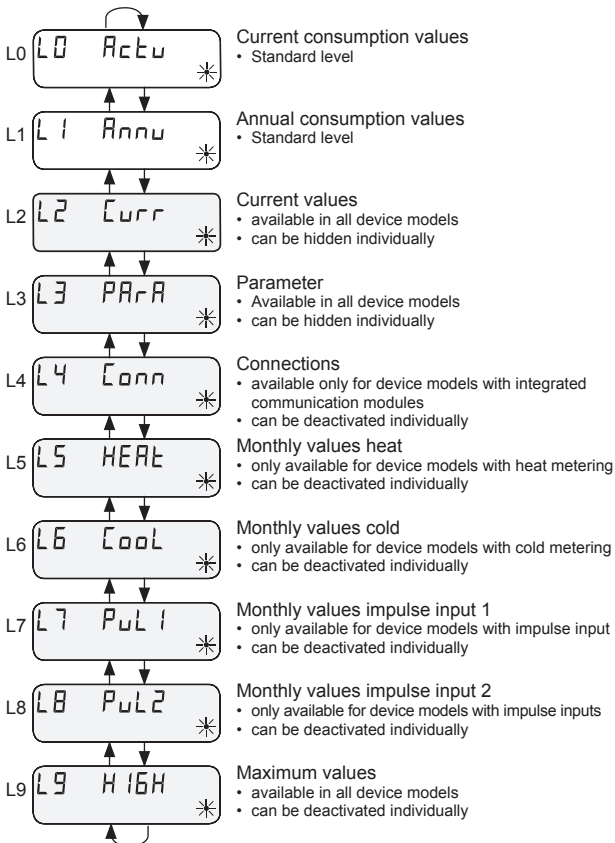
Error messages

If the device indicates a fatal error, the error code and the error date are shown before the meter status displays.

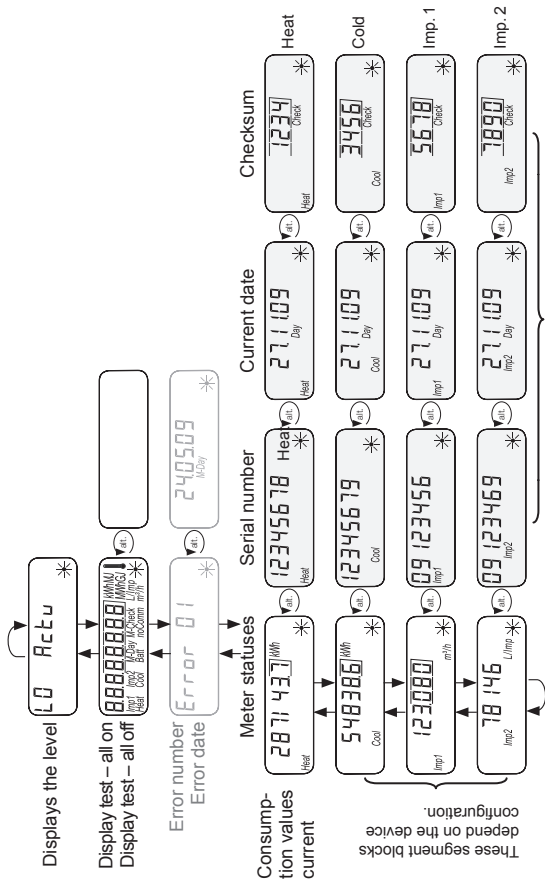
If it is determined that the direction of the flow is incorrect, the meter status display returns the message "Incorrect direction of flow".



Overview levels

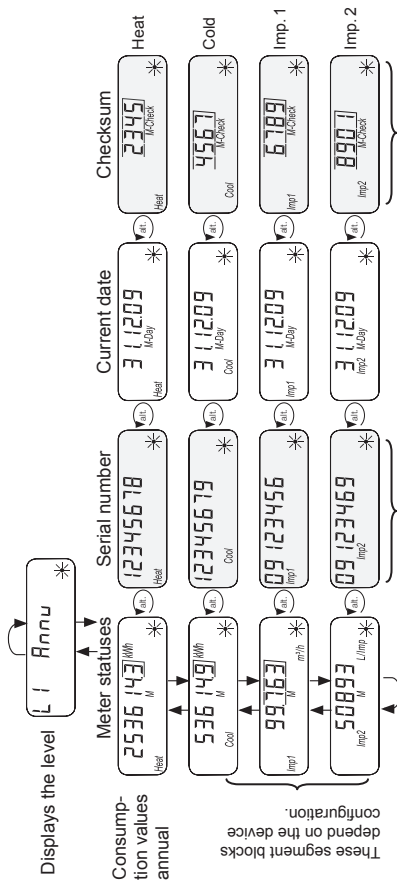


Display level L0 - Current consumption values



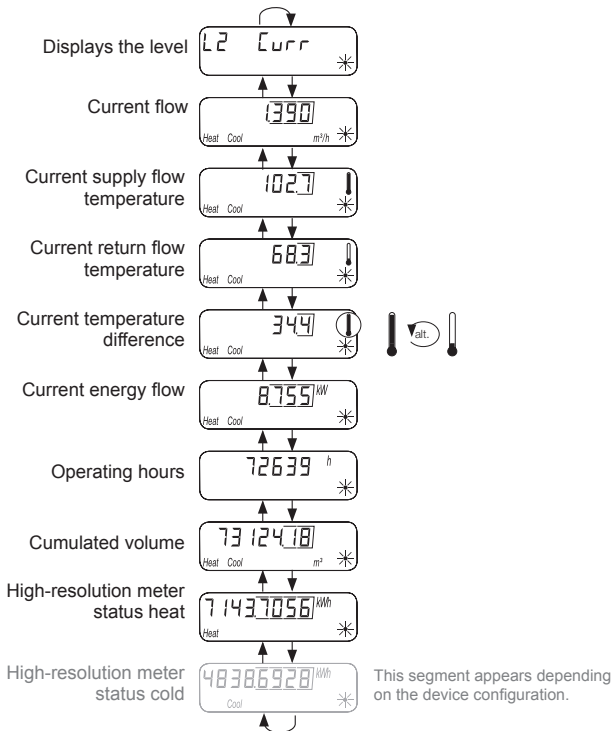
The displays coloured grey are optional or can be added and switched off as required.

Display level L1 – Consumption values annual



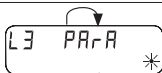
The displays coloured grey are optional or can be added and switched off as required.

Display level L2 – instantaneous values



Display level L3 – Parameter

Displays the level



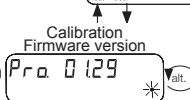
Date of next due date



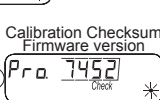
Impulse value flow sensor



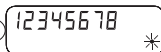
Identification
Calibration
Firmware version



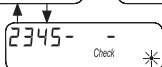
Calibration Checksum
Firmware version



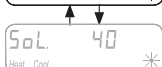
Serial number



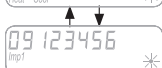
Possible + activated levels



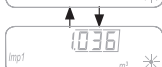
Share of solar added



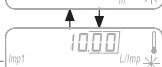
Serial number Imp1



Meter status Imp1



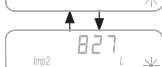
Impulse value Imp1
+ medium (here cold water -
"low" thermometer)



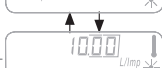
Serial number Imp2



Meter status Imp2



Impulse value Imp2
+ medium (here hot water -
"high" thermometer)



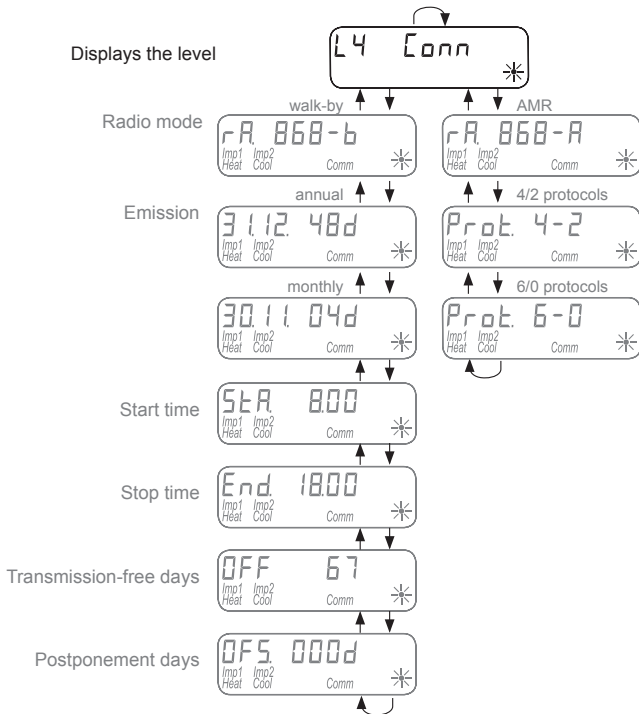
This example:
Levels 2, 3, 4 and 5 are shown,
- = Level 6 is hidden,
2x white space = Level 7+8 not available,
- = Level 9 hidden

These segments appear depending
on the device configuration.

Display level L4 – Connections

These segment blocks appear depending on the device configuration.

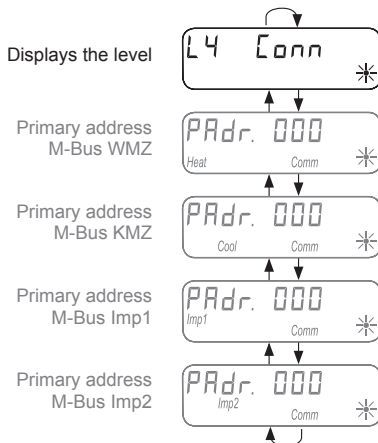
Configuration radio interface



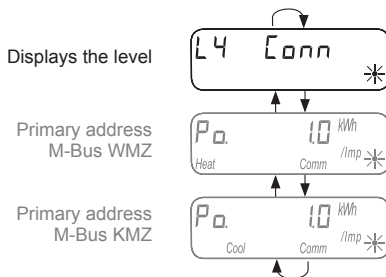
Display level L4 – Connections

These segment blocks appear depending on the device configuration.

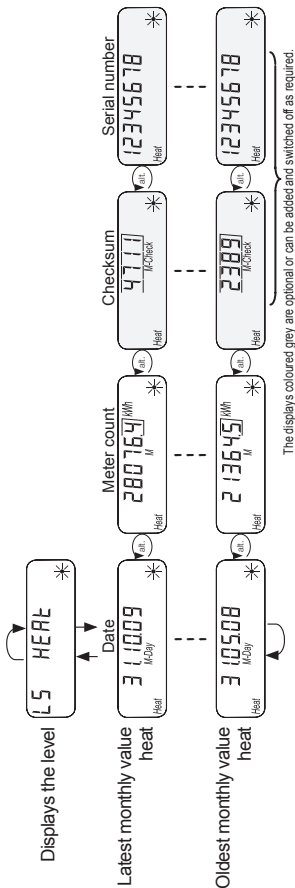
Configuration M-Bus interface



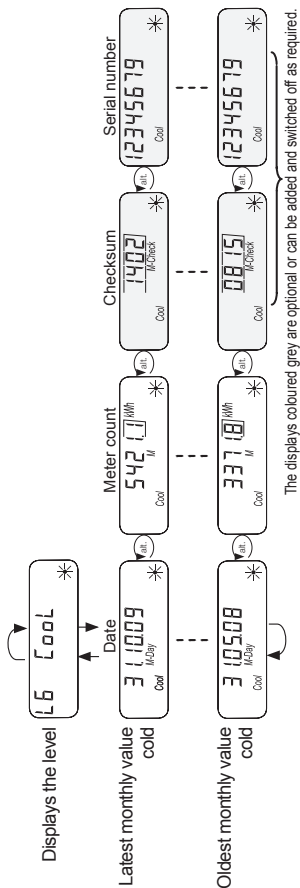
Configuration M-Bus interface

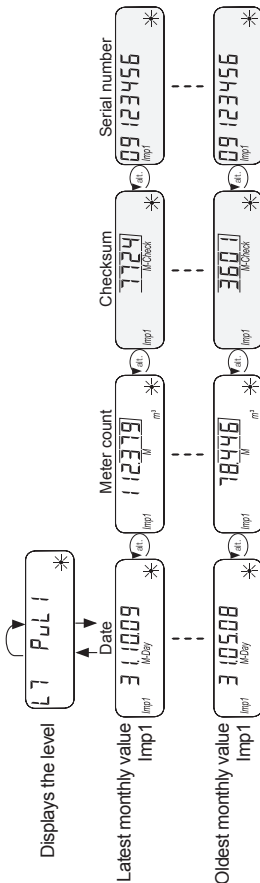


Display level L5 – monthly values heat

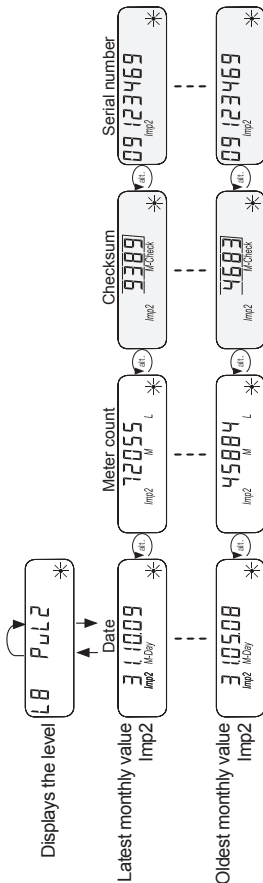


Display level L6 – monthly values cold



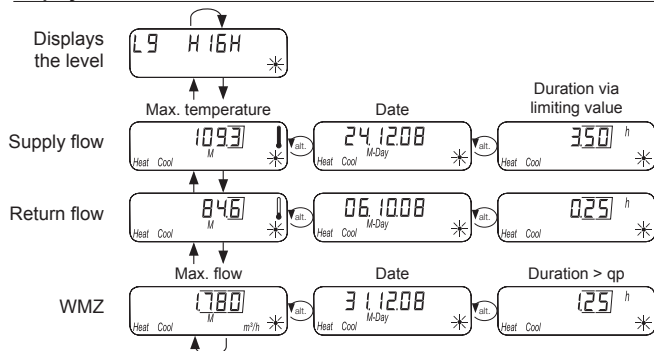
Display level L7 – monthly values Imp1

The displays coloured grey are optional or can be added and switched off as required.

Display level L8 – monthly values Imp2

The displays coloured grey are optional or can be added and switched off as required.

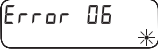
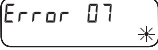
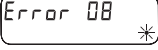
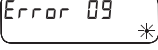
Display level L9 – instantaneous values



Special operating modes

Display	Description	Measure/information
	• Communication credit of module interface or IrDA exceeded	• Is cancelled after expiration of credit period (Module = current day; IrDA = current month).
	• Operating time expired	• Device must be replaced or battery exchanged. Please observe national and country-specific legislation!
	• Direction of flow incorrect	• Check installation (Observe arrow on flow sensor) • Check piping • Check functionality of circulation pumps and thermostats
	• Temperature sensors have been mixed up or mounted incorrectly	• Check whether the flow sensor has been mounted in the correct track and • Check installation type of temperature sensor

Error messages

Error display	Error description	Measure/information
	• Hardware error or damaged firmware	• Check flow sensor, connection cable and calculator for exterior damages • The device must be replaced
	• Supply flow sensor broken	• Check temperature sensor and line for mechanical damages • The device must be replaced
	• Short circuit • Feed cooler	• Check temperature sensor and line for mechanical damages • The device must be replaced
	• Return flow sensor broken	• Check temperature sensor and line for mechanical damages • The device must be replaced
	• Short circuit return flow sensor	• Check temperature sensor and line for mechanical damages • The device must be replaced

