Only for trained experts

IMPORTANT!

READ THROUGH CAREFULLY BEFORE USE.

KEEP ACCESSIBLE THROUGHOUT THE PRODUCT LIFETIME.

Heat meter

Screw-type meter (QDS)

Scope of delivery

Heat meter
2 protective caps
Installation manual
Operating manual
User information for stock immersion sleeves (only for D)
Flow sensor kit
Temperature sensor kit
Control cable kit The control cable with screws and seals is only part of the scope of supply for the heat meter with integrated communication interface.

Contents

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.

Intended use

Heat meters are 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.
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 pressurized 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.

Measuring devices connected to the impulse input

No liability is accepted for the plausibility of transmitted data.
In cases of doubt the measured value of the measuring device shall be valid.

Safety notes

Improper handling and excessively forceful tightening of screwed connections can cause leaks. Observe the maximum torque stated in the manual. The dimensions and thermal loads of seals must be appropriate for their application. 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 is equipped 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 into fire
- Do not short-circuit
- Do not open or damage
- Do not charge
- Do not store within the reach of children

Norms and standards

Conformity	see EU Declaration of Conformity

Protection rating

IP protection rating	IP65 according to EN 60529

Heat meter

European Measuring Instruments Directive (MID)	2004/22/EC
EC-type examination certificate	DE-12-MI004-PTB009
Heat meter	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	M1
Environment class	A
Precision class	3

Calculator unit

Temperature range

Heat meter	10 ... 105 °C
Heat meter with optional cold range	5 ... 105 °C
Approved temperature difference	3 - 70 K
Switch-on value temperature difference	Heat: 1.0 K / cold(*): 0.2 K (can be selected using 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 the version and options included)
Display	8-digit LCD + pictograms
Energy display	kWh <--> MWh (optionally MJ <--> GJ)
Cable length Calculator unit - flow sensor	 approx. 40 cm

(*) Outside the Measuring Instruments Directive

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
Weight	compact	668 g	575 g	650 g	743 g
	detachable	820 g	709 g	802 g	895 g
Installation position		horizontal/vertical			

Nominal flow qp		0.6 m³/h	1.5 m³/h		2.5 m³/h
Minimum flow qi	horizontal	24 l/h	30 l/h		50 l/h
	vertical	24 l/h	30 l/h		50 l/h
Ratio qp/qi	horizontal	25:1(*)	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			

(*) Versions with a higher dynamic range are also available as options

Temperature sensor

Measuring element		Pt 1000 according to EN 60751
Execution		Type DS
Diameter		5.0 mm - 5.2 mm - 6.0 mm - AGFW
Type of installation		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

Technical data for integrated communication

Connection cable	"OUT"	"IN"
Function	M-Bus	Impulse inputs
Length	3 m	1 m
Supply	Included in scope of supply	Included in scope of supply of order option
Protection class	IP65	
Wire ends	Wire-end ferrules	
Cable sheathing	PVC	

Colour assignment connection cable

Impulse input	Imp1	orange (ground)	brown
	Imp2	red (ground)	black
M-Bus	M-Bus	orange *(not occupied)*	brown *(not occupied)*
	M-Bus	red	black

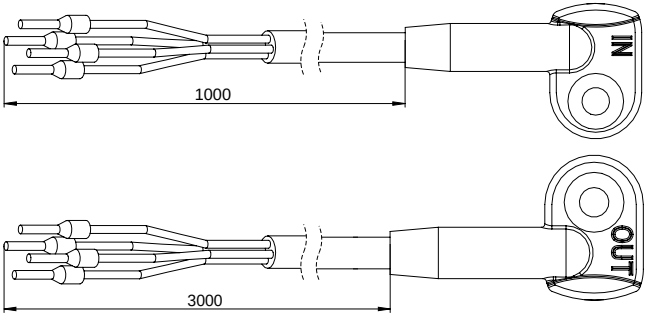
Impulse input device

Classification	in accordance with EN 1434-2, Class IB Restriction: Switching threshold at low level max. 0.25 V
Impulse length	≥ 100 ms
Impulse frequency	≤ 5 Hz (2.5 Hz with filter setting "on")
Source current	≤ 0.1 mA
Number of impulse inputs	2

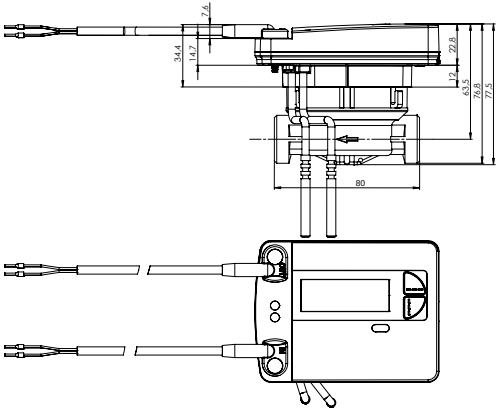
Impulse outputs (sources)

Solenoid switch	Reed contact
Integrated circuit	Open collector
Namur sensor	Not possible

Connection cable

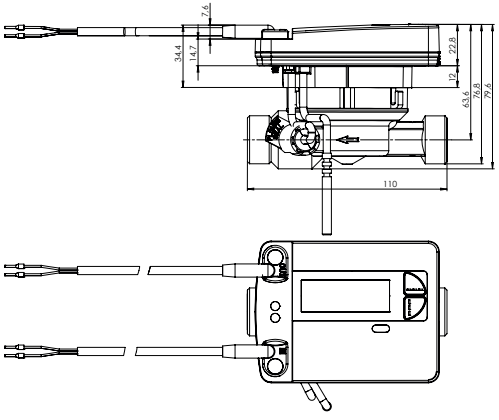


Design length 80 mm

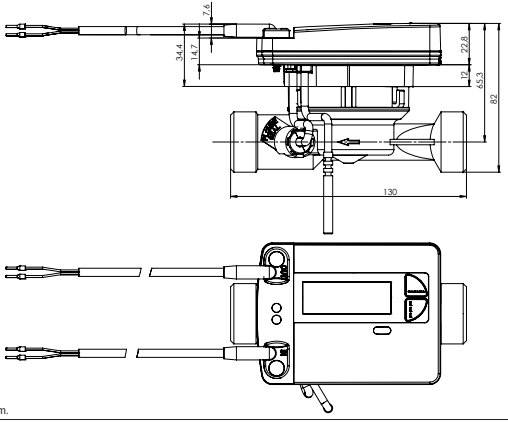


Dimensions in mm.

Design length 110 mm

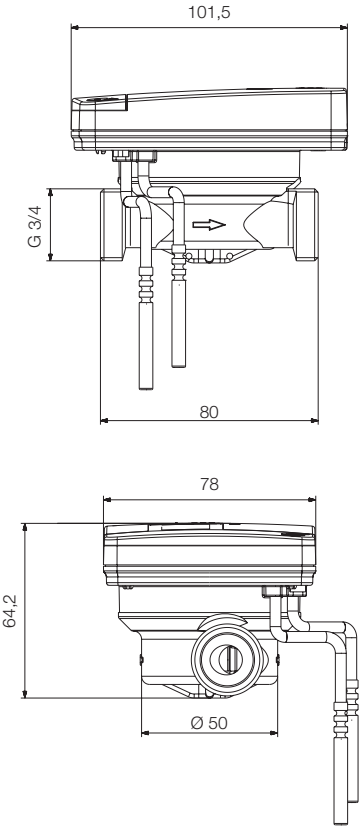


Design length 130 mm



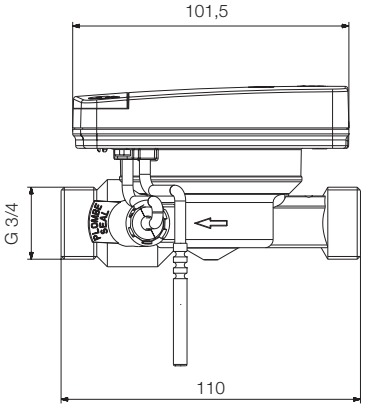
Dimensions in mm.

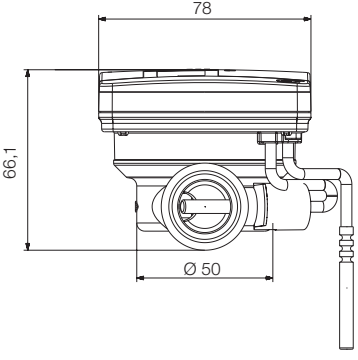
Design length 80 mm



Dimensions in mm.

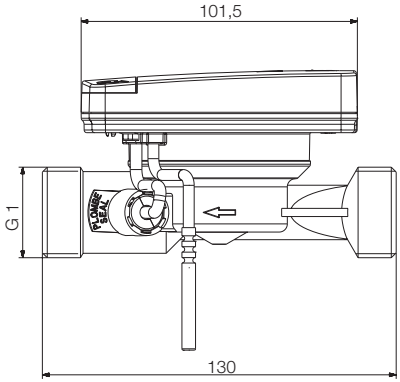
Design length 110 mm

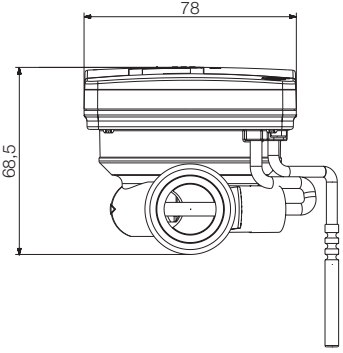




Dimensions in mm.

Design length 130 mm





Dimensions in mm.

EN 1434-6

The sensor cables (e.g. temperature sensor cable) must be routed at a distance of at least 50 mm to sources of electro-magnetic interference (switches, electric motors, fluorescent lamps).

An installed meter is a pressurized component.
Risk of scolds from hot water.
Fitting only by trained experts.

Refer to operating manual, operating conditions and installation requirements in accordance with EN 1434-6.

Directly immersed installation variant
This variant is always recommended.

Indirectly immersed installation variant
Please note national and country-specific regulations concerning the use of immersion sleeves.

Heed correct supply flow or return flow installation and the installation position of the flow sensor.

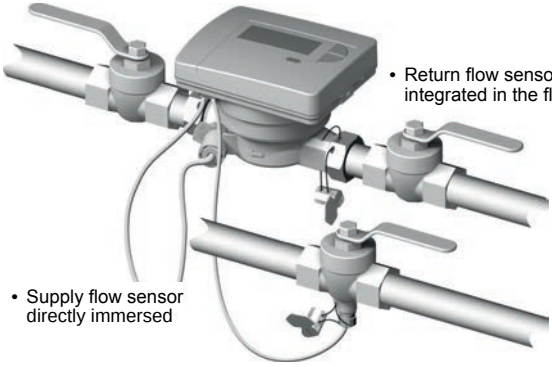
Horizontal installation

Vertical installation

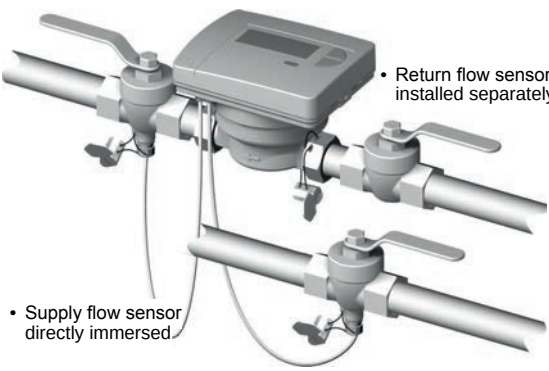
Tilted horizontal installation

No overhead installation!

Heat meter design lengths 110 mm / 130 mm

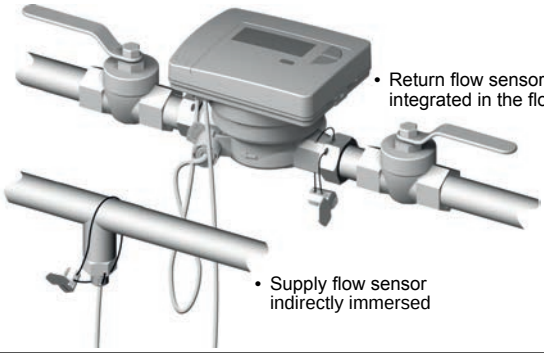


Heat meter design length 80 mm



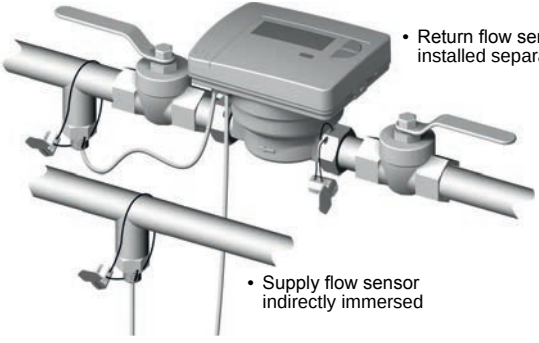
Heat meter design lengths 110 mm / 130 mm

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

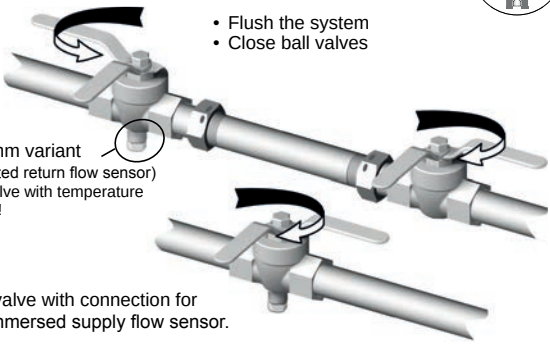


Heat meter design length 80 mm

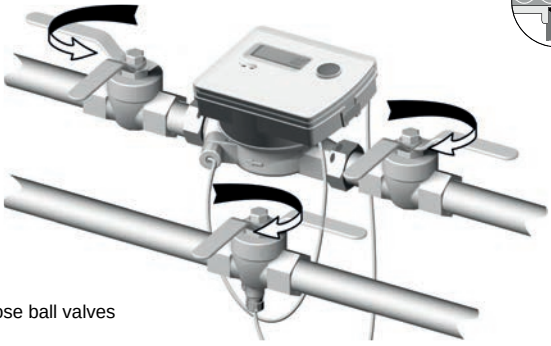
Note national and country-specific regulations concerning the use of immersion sleeves.



- for new installation

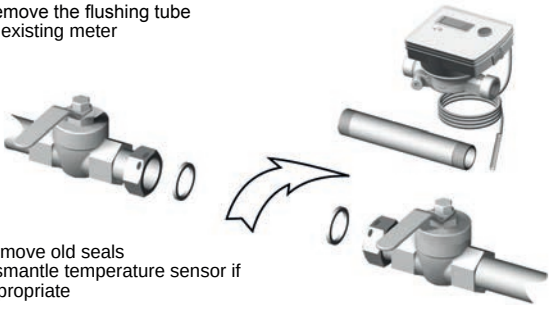


- for device replacement



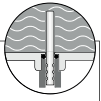
Prepare installation

- Remove the flushing tube or existing meter

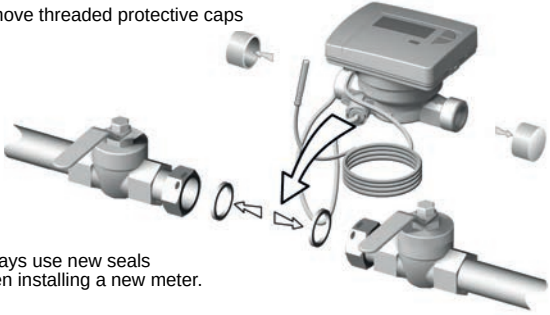


- Remove old seals
- Dismantle temperature sensor if appropriate

Fit the heat meter



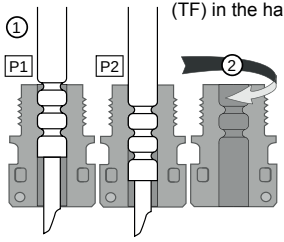
- Remove threaded protective caps



- Always use new seals when installing a new meter.

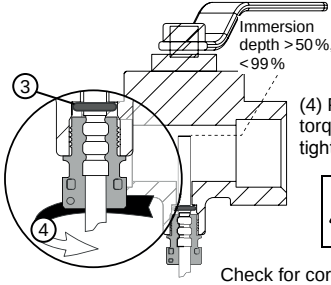
Temperature sensors – diameter 5.0 mm / 5.2 mm

Carry out steps 1-4 with the position P1 shown for the temperature sensor (TF) in the half-shell screw fitting.



(1) Insert the temperature sensor in the half-shell screw fitting enclosed.

(2) Fit the second half of the screw fitting in such a way that the locking pin of the one half fits into the recesses of the other half.



(3) Position the O-ring at the installation point in the ball valve.

Use the genuine O-ring from the kit enclosed.

(4) Push in the TF and use a tightening torque of approx. 3 Nm (hand-tight) to tighten the screw fitting.

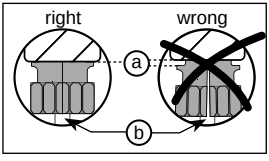
The temperature sensor must not touch the base of the ball valve.

Check for correct TF installation:

(a) Collars of the half-shell screw fitting are flush to the ball valve

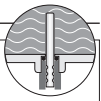
(b) Shells of the screw fitting are flush to one another

If TF installation has not been successful, the TF must be removed from the ball valve again.

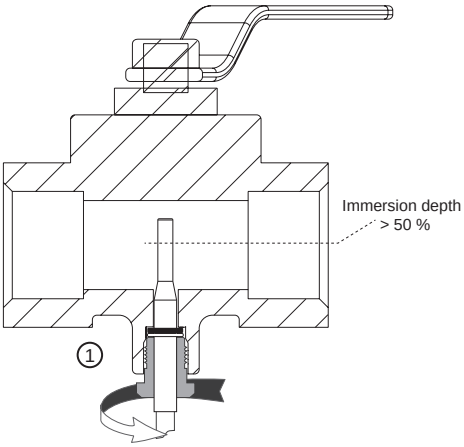


Then carry out steps 1-4 with the position P2 shown for the temperature sensor (TF) in the half-shell screw fitting.

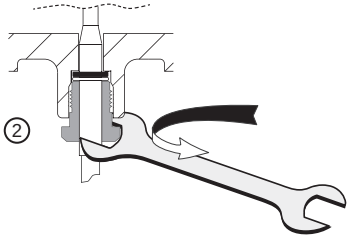
Temperature sensor – AGFW



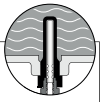
(1) Screw the temperature sensor hand-tight into the installation point.



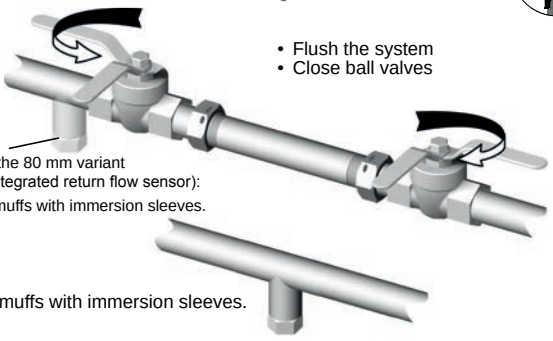
(2) Tighten the sensor screw fitting with a tightening torque of approx. 5 Nm using a wrench.



- for new installation

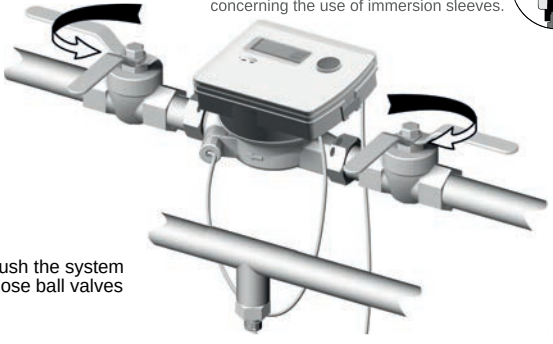


Note national and country-specific regulations concerning the use of immersion sleeves.



- for device replacement

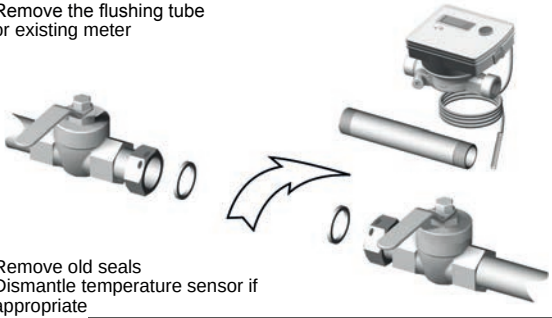
Note national and country-specific regulations concerning the use of immersion sleeves.



Prepare installation

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

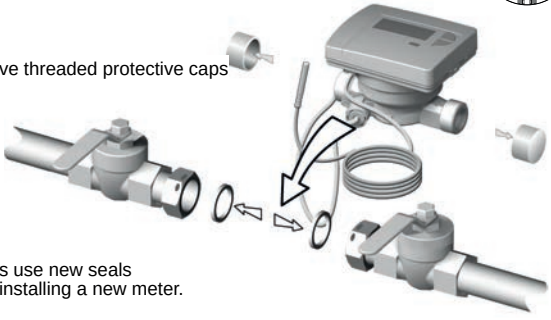
- Remove the flushing tube or existing meter



- Remove old seals
- Dismantle temperature sensor if appropriate

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

- Remove threaded protective caps



- Always use new seals when installing a new meter.

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

In EU states (except Germany) immersion sleeves are also approved for new installations if they are MID-conform.

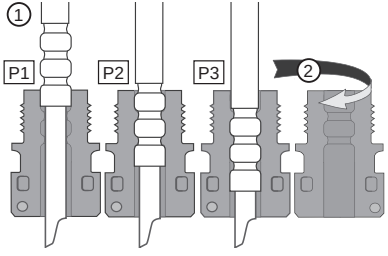
Immersion sleeves are not approved for new installations in Germany. For replacement installations, note and follow the enclosed user information for stock immersion sleeves.

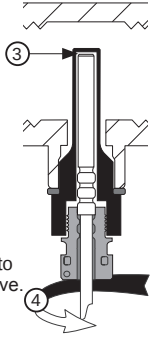
Try out steps 1-3 in succession with the positions of the temperature sensor (TF) in the half-shell screw fitting shown below as P1 , P2 and P3 until you are sure that the TF is in the immersion sleeve as far as it will go and the TF thread engages with the thread of the immersion sleeve.

(1) Insert the temperature sensor in the half-shell screw fitting* enclosed.

(2) Fit the second half of the screw fitting in such a way that the locking pins of the one half latch into the recesses of the other half.

(3) Push the temperature sensor into the immersion sleeve as far as it will go.





(4) Use a tightening torque of approx. 3 Nm (hand-tight) to tighten the TF with screw fitting in the immersion sleeve.

When the temperature sensor is installed in immersion sleeves from other manufacturers the type of attachment can deviate from the above description. If necessary, use the attachment material of the device you have removed.

*Devices with temperature sensor diameter 6 mm for installation in immersion sleeves from external manufacturers do not include screw fittings.

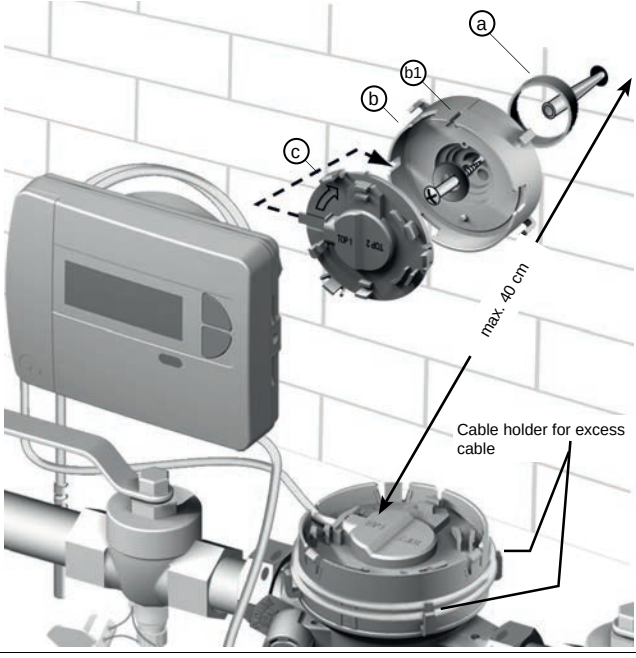
Variants with removable calculator unit can be installed up to max. 40 cm away from the flow sensor using the optional wall bracket.

(1) Attach the spacer (a) and wall bracket (b) in the required position using the enclosed material. Align the wall bracket in such a way that the groove (b1) is pointing upwards.

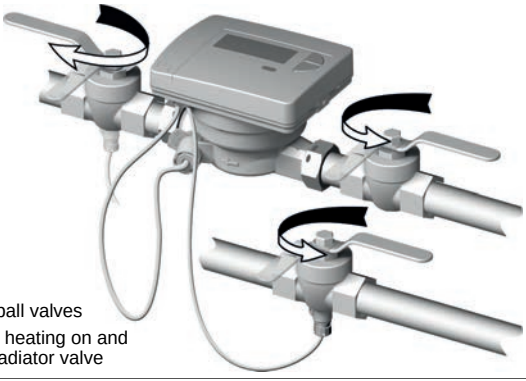
(2) Fit the cover (c) in such a way that the marking "TOP1" can be read horizontally, and click it into the wall bracket.

(3) Take the calculator unit off the flow sensor, unwind the calculator unit cable.

(4) Firmly latch the calculator unit into the wall bracket.

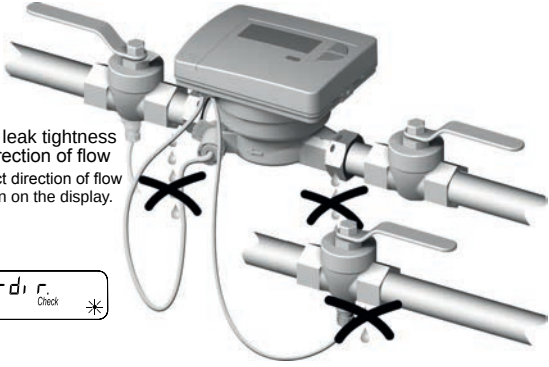


Opening the valves



- Open the ball valves
- Switch the heating on and open the radiator valve

Checking installation



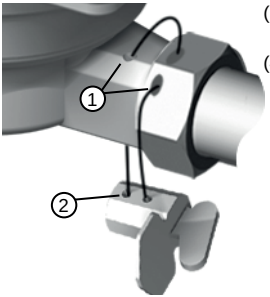
- Check leak tightness and direction of flow

  Incorrect direction of flow is shown on the display.

Sealing flow sensors

(1) Thread the seal wire through the seal holes in the union nut on the inlet and on the flow sensor.

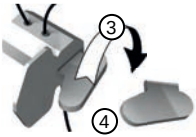
(2) Insert the wire through the available opening in the seal body.



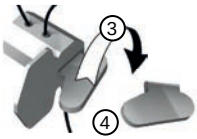
(3) Wind the wire tightly by turning the wing in the seal.

(4) Break the wing off the seal.

Sealing is guaranteed by breaking the seal off.



Sealing the temperature sensor in a ball valve



(1) Thread the wire of the seal through the seal holes on the ball valve and the sensor screw fitting.

(2) Insert the wire through the available opening in the seal body.

(3) Wind the wire tightly by turning the wing in the seal.

(4) Break the wing off the seal.

Sealing is guaranteed by breaking the seal off.

Sealing the temperature sensor in an immersion sleeve

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

(1) Thread the wire of the seal through the seal holes on the threaded sensor fitting and immersion sleeve.

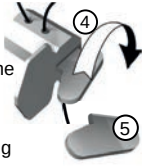
(2) Route the seal wire around the tee-piece.

(3) Insert the wire through the available opening in the seal body.

(4) Wind the wire tightly by turning the wing in the seal.

(5) Break the wing off the seal.

Sealing is guaranteed by breaking the seal off.



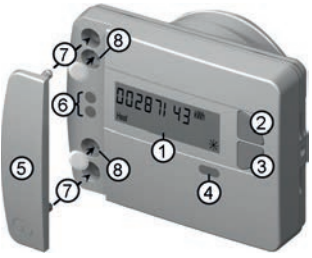
Noting the meter readings

- Remove the installation protection

- Note the installation date, meter numbers, any seal numbers
- Note the old and new meter readings

Dispose of a used device according to national waste disposal regulations.

Device elements



(1) LC display
The display is off as standard (sleep mode). The display can be activated by pressing a key.
(2) Key <H >(horizontal)
(3) Key < V > (vertical)
(4) IrDA interface
(5) Interface cover
(6) Module interface
(7) Attachment holes for external optical modules
(8) User protection and slots for external cable connections

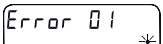
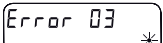
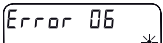
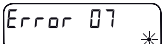
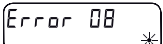
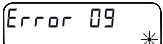
Status displays

Display	Description
Imp1 Imp2 Heat Cool	The data displayed apply for: •Heat •Imp1 = Impulse input 1 •Cool = Cold •Imp2 = Impulse input 2
M-	•(empty) = Displayed value is the current value •M (Memory) = Value on a monthly or due date
M-Day	Displayed value is a date value: •Day = Current date •M-Day = Date applies for a saved annual or monthly value
M-Check	Displayed value is a checksum: •Check = Checksum refers to the current consumption value •M-Check = Checksum is valid for a saved annual or monthly value
	•Current flow available •No energy counting -> no temperature difference
	•Current flow available •Energy counting
Comm	•IrDA communication is currently active

Special operating states

Display	Description	Measures/Notes
	• Communication credit of the module interface or IrDA exceeded	• Is eliminated after the credit period (module = current day; IrDA = current month) has passed.
	• Operating time expired	• Device must be replaced
	• Wrong direction of flow	• Check installation (note arrow on flow sensor) • Check piping • Check recirculating pumps and thermostats for correct function
	• Temperature sensors have been mixed up or fitted incorrectly	• Check whether flow sensor has been fitted in the right strand or • check type of installation of temperature sensor

Error messages

Error display	Error description	Measures/Notes
	• Hardware error or damaged firmware	• Check flow sensor, connection cable and calculator unit for external damage • Device must be replaced
	• Add-on module has been paired with another meter before	• The module has the measuring data of another heat meter • Save data, since these are overwritten after a short time • Press any key to delete the display
	• Supply flow sensor broken	• Check temperature sensor and pipes for mechanical damage • Device must be replaced
	• Short circuit supply flow sensor	• Check temperature sensor and pipes for mechanical damage • Device must be replaced
	• Return flow sensor broken	• Check temperature sensor and pipes for mechanical damage • Device must be replaced
	• Short circuit return flow sensor	• Check temperature sensor and pipes for mechanical damage • Device must be replaced

Navigating within the levels

1. To open the display loop or level operating scheme

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

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

2. To change from any position on one level to the next level

Press the < H > key

3. To change to the next display within one level

Press the < V > key

(level L3 or L4 only)

Key assignment in programming mode

To be able to activate programming mode, you have to be authorised for programming by entering a PIN.

The default standard PIN is printed on the device packaging.

Once the PIN has been accepted, further values can be programmed without PIN input. Validity is lost if a level other than L3 or L4 is set.

1. To activate programming mode

Use the < H > key to navigate to the level.

Use the < V > key to navigate within the level and display the value for which the parameter is to be set.

First press and hold the < H > key,

then press and hold the < V > key as well.

2. To change parameters

Press the < V > key briefly several times until the parameter section flashing has reached the desired value.

Press the < H > key briefly to jump to the next parameter section.

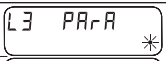
3. To confirm entry

First press and hold the < H > key,

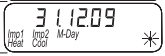
then press and hold the < V > key as well.

To activate programming mode

1. Use the < H > key to navigate to the respective display level (L3 or L4).



2. Use the < V > key to display the respective value (here: due date).



3. Activate programming mode using the key combination < H > + < V > (see pagePage 31). Keep this key combination pressed until the display for password entry appears.

4. Press the < V > key several times briefly until the value for the flashing segment block has been reached.

5. Press the < H > key to jump to the next segment block.

6. Repeat steps 4 and 5 until the password has been entered completely.

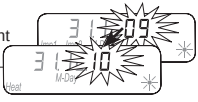
7. Confirm acceptance of the password using the key combination < H > + < V > (see pagePage 31). When the password has been entered, the display changes to the value to be programmed.

Example: Programming the due date

Display level L3 - display "due date"

1. Activate programming mode using the key combination < H > + < V > (see pagePage 31).

   When programming mode has been activated, the segment block for setting the value "year" flashes first.



2. Press the < V > key several times briefly until the value "year" for the new due date has been reached.

3. Only press the < V > key if you want to skip the first due date.

   Press the < H > key in order to jump to the segment block for setting the value "month".

4. Press the < V > key several times briefly until the value "month" for the new due date has been reached.

5. Confirm the setting by means of the key combination < H > + < V > (see pagePage 31).

   Only the last day of a month can be chosen as the due date.

Example: Activate / deactivate levels

Display level L3 - display "possible + active levels"

1. Activate programming mode using the key combination < H >+< V > (see page Page 31). When programming mode is activated, the "M-" symbol will flash.

2. Press the < H > key several times briefly until the segment block for setting the respective level flashes.

3. Press the < V > key briefly in order to deactivate or activate the respective level.

4. Press the < H > briefly to jump to the number of the next available level.

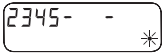
5. Repeat steps 3 and 4 until the required levels have been activated / deactivated.

If display level 3 is deactivated, the device can then only be parameterised using the parameterisation software.

6. Confirm the setting by means of the key combination < H >+< V > (see page Page 31).

Result of this example:

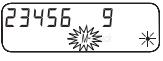
Levels 2, 3, 4 and 5 are shown,
– = Level 6 is hidden,
2x space = Levels 7+8 are not available **–** =Level 9 is hidden



Example: Switch the checksum display on / off (postcard readout)

Display level L3 - display "possible + active levels"

1. Activate programming mode using the key combination < H >+< V > (see Page 31). When programming mode is activated, the "M-" symbol will flash.



If the marking is not set on the "M-" symbol, press the < H > key briefly until the "M-" symbol flashes.

2. Press the < V > key briefly if the "display checksum" option is to be switched on or off.

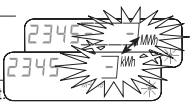
6. Confirm the setting by means of the key combination < H >+< V > (see page Page 31).

Example: Changing the dimensioning unit (kWh <--> MWh or MJ <--> GJ)

Display level L3 - display "possible + active levels"

1. Activate programming mode using the key combination < H >+< V > (see pagePage 31). When programming mode is activated, the "M-" symbol will flash.

2. Press the < H > key briefly several times until the symbol for the dimensioning unit with the decimal frame flashes.



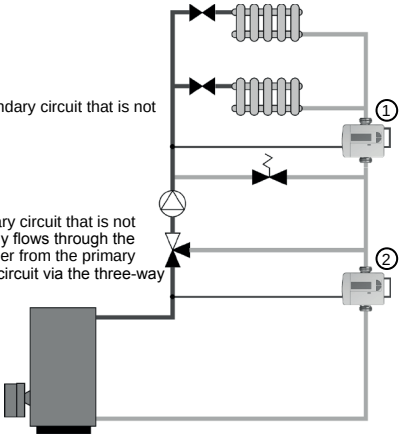
3. Press the < V > key briefly to change the dimensioning unit.

6. Confirm the setting by means of the key combination < H >+< V > (see pagePage 31).

All other device parameters can be set according to the pattern in the examples shown.

(1) Installation in a part of the secondary circuit that is not constantly under flow.

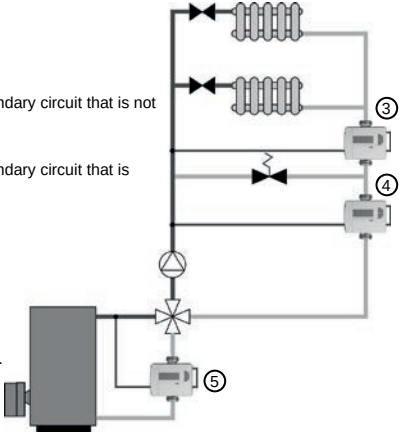
(2) Installation in a part of the primary circuit that is not constantly under flow. Water only flows through the heat meter when hot supply water from the primary circuit flows into the secondary circuit via the three-way mixing valve.



(3) Installation in a part of the secondary circuit that is not constantly under flow.

(4) Installation in a part of the secondary circuit that is constantly under flow.

(5) Installation in the primary circuit.



Heed national and country-specific regulations!

Before installation

1. Are the security points on the meter undamaged? (seal on the return flow meter, seal) ☐
2. Is there a suitable installation kit available? (ball valves, installation parts, seals) ☐
3. Is the installation kit in the right place? ☐
4. Is the heat meter dimensioned correctly? (flow qi / qp / qs, pressure, temperature) ☐
5. Are the geometrical connection conditions of the flow sensor, the temperature sensor and the immersion sleeves if appropriate suitable for the installation location? ☐
6. If immersion sleeves are used: Are the immersion sleeves suitable for the heat meter with regard to country-specific and national regulations? ☐
7. Are all the installation parts required available? (seals, screw fittings) ☐
8. Are all the parts required for sealing available? ☐
9. Is the installation manual for the heat meter available? ☐
10. Has the system been flushed properly? (clean filters and screens) ☐

After installation

1. Have the temperature sensors (supply flow / return flow sensors) been installed in the respective pipes? ☐
2. In addition where immersion sleeves are used: Has the sensor been pushed to the base of the immersion sleeve and screwed in place tightly? ☐
3. Has the flow sensor been installed in the right strand? ☐
4. Has the flow sensor been installed tension-free? (no tensile, compression or torsion loads) ☐
5. Have the valves in the right strand been opened? ☐
6. Are all installation points leakproof? ☐
7. Are all displays plausible? (temperatures and current flow) ☐

After commissioning

1. Is the supply flow sensor sealed? (manipulation risk) ☐
2. Are the return flow sensor and the flow sensor sealed? ☐
3. Has the device number been noted (on the type plate)? ☐
4. Has the initial meter status been noted? (Level 0 - important for billing) ☐

Use of combined heat/cold meters with add-on module

Add-on modules cannot be used with heat meters with an integrated communication interface.

With the introduction of the new heat meter generation, the housing colour of the heat meter add-on modules has been changed from blue to white.

In addition, the serial number concept has been optimised for the new heat meters.

Please note the following instructions:

The add-on modules listed below use the < *Serial no.* > to interpret the < *System ID channel 2* > using an algorithm that is invalid for the serial number concept of the new heat meters.

This means that these add-on modules delivery a value for the address allocation of the 2nd channel (< *System ID channel 2* >) that no longer correlates with the serial no. cold printed on the meter.

This results in the following anomalies for **previous modules** in conjunction with a **combined heat/cold meter**:

WFZ16x.Ox – add-on radio module

Calibration replacement (blue add-on module)
The add-on module delivers the value < *Serial no. for heat* - 3.000.000 > as system ID channel 2

Example:

Printed on heat meter:	Serial no. heat:	65 000 100
	Serial no. for cold:	65 000 101

The following system ID is generated from the serial no. for heat:

System ID channel 1: 65 000 100	for heat
System ID channel 2: 62 000 100	for cold

The combined heat/cold meter is identified and managed in the radio systems Q AMR and Q walk-by on the basis of these numbers.

⚠ With the < *System ID channel 2* > generated by the module, there can be an address collision with other devices in the radio network. To preclude the danger of data loss, check the device directory for multiple system IDs for channel 2!

So that address collisions can be excluded from the outset, we offer the following solution:

With the programming stick WFZ.PS3 the module can be parameterised to the serial number algorithm of Q heat 5.
The programming stick WFZ.PS3 is available on request.

R99/0005-02 – M-Bus add-on module

New installation and calibration replacement (white and blue add-on module)
For < System ID channel 2 > the module sets a “9” as the first digit. Digit positions 2 - 8 correspond to those of the serial number for heat.

Example:

Printed on heat meter:	Serial no. heat:	65 000 100
	Serial no. for cold:	65 000 101

The following system ID is generated from the serial no. for heat:

System ID channel 1: 65 000 100	for heat
System ID channel 2: 95 000 100	for cold

M99/4001-01 / -11 – rcu4 radio add-on module rmh4

New installation and calibration replacement (white and blue add-on module)
The effect described is irrelevant for this add-on module. You can continue to use this module as usual with a new heat meter. The serial no. cold printed on the heat meter must be ignored.