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# PolluTherm
# PolluFlow compatible

## Installation and Operating Instruction

The calculator unit PolluTherm is used for energy consumption measurement in heating or cooling systems, with water as the energy-carrying medium. For applications with frost protection additive in water, it is only possible to use PolluTherm as uncalibrated non-MID conformed device, and the correction factor for the K-factor in this case can be programmed. This manual describes the installation and operation of the calculator unit PolluTherm. It contains important information that shall be read by the end user of this product

## Contents

**What is Included in the packaging:**

- Calculator unit PolluTherm (possibly with temperature sensors and sleeves or ball valve)
- Sealing material (self-lock seals, locking wire), cable-ties for strain relief
- Attachment material (2 screws, 2 dowels, C-rails)
- Installation and Operating Instruction

28505234

## 1. Technical Data

| Calculator unit | |
|---|---|
| Temperature measurement range | $\Theta$ = 1 … 180 °C |
| Temperature differential range | $\Delta\Theta$ = 3 … 150 K |
| Switch-off limit | 0.15 K |
| Measurement accuracy | Better than (%): ± (0.5 + $\Delta\Theta_{min}$ / $\Delta\Theta$) |
| Updating time or calculating cycles: - Temperature - Flow, output - Energy, volume | 2 sec 4 sec 4 sec (16 sec *) * for battery operation |
| Optical data interface | Physical according to EN 61107 Data telegram according to EN 13757-3 |
| Suitable temperature sensor | Pt 500 Connection in two or four-wire system |
| Power supply (there is the respective calibration period) | Battery for 6 years (optional: 11 years) or power supply 230 V AC or 24 V AC |
| Electromagnetic environmental condition | Class E 1 |
| Mechanical environmental condition | Class M 2 |
| Protection class | IP 54 |
| Ambient temperature | 5 … 55 °C |
| Storage temperature | -20 … +65 °C |
| Relative air humidity | < 93 % |
| Size (H x W x D) regarding wall installation | approx. 159 x 125 x 52 mm |

| Input pulse value in l | 1 | 10 |
|---|---|---|
| Display of the calculator unit with decimal points for m³, MWh or GJ | 00000.000 | 000000.00 |
| Pulse value for telecounting of the heat quantity in MWh or GJ | 0.001 | 0.01 |
| Pulse value for telecounting of the volume in l | 1 | 10 |

## 2. Safety Notes ⚠️

- Installation of the PolluTherm requires specialist knowledge and should only be carried out by a person trained for this.
- The PolluTherm must be used within the conditions outlined in Section1.
- During installation of the PolluTherm, make sure that the sleeve or ball valve is correctly installed, otherwise there is a danger of scalding due to escaping heating medium. Therefore, during removal, first close the shut-off valves.
- The brass threads can have sharp edges due to the production method. Therefore, we recommend to use protective gloves.
- Heat and cooling meters are measurement devices and must be handled with care. In order to protect from damage and contamination, they should only be removed from the packaging before installation.
- If the housing and/or connecting cable shows any signs of damage, the device must be taken out of operation and secured to prevent further operation.
- For cleaning, only use a Water moistened cloth.
- Depending on the variants, there is a battery installed in the device. This must not be opened with force, come into contact with water, short-circuited or exposed to temperatures above 80 °C.
- Discharged batteries, electronic devices or components that are no longer required must be disposed of as hazardous waste at suitable collection points.
- If multiple meters are used in a billing unit, similar types of device shall be used in order to obtain an accurate calculation of the consumption.

**For devices with main power supply:**

The main power supplies (230 V AC or 24 V AC) must have a 6 A-fuse on the installation side for safety. **The connection must only be carried out by an authorized person trained for this.** Furthermore, observe the recognized rules for the technology and in particular, VDE 0100.

Voltage:                        220 ... 240 V AC
                                or 24 V AC
Frequency:                      50/60 Hz
Max. power consumption:         0.5 VA
Cable length:                   approx. 1.1 m

## 3. Tools Required
- Suitable open-end spanner or adjustable spanner for the connecting bolts or flanged bolts.
- Philips screwdriver 0.5 x 3 for terminal connection block
- Allen key, size 3 for wall adapter
- Side cutters for lockwire
- Open-end spanner AF 24 (sleeves)

## 4. Combination of the Sub-assemblies

A complete measurement unit comprises of three sub-assemblies:
These are available as a standard set which includes:
- Flow sensor
- Calculator unit PolluTherm
- A pair of temperature sensors

Flow sensor:

| Size | Output pulse |
|---|---|
| qp 0.6 to 6 | 1 litre/pulse |
| qp 10 to 60 | 10 litres/pulse |

Calculator:

| Input pulses | 1 litre/pulse |
|---|---|
| | 10 litres/pulse |

Temperature sensors:

| Length | 45 mm |
|---|---|
| | 100 mm |
| | 150 mm |

During the installation it must be ensured that the flow sensor and the calculator have the same pulse value!

## 5. Installation of the system parts

PolluTherm can also be utilized as a heat meter, a cooling meter or combined heat / cooling meter. (See Section 10.10). Therefore, the following terminology is used in the following text:

Return for heating systems:     **Cooling line**
Flow for heating systems:       **Warm line**

Return for cooling systems:     **Warm line**
Flow for cooling systems:       **Cooling line**
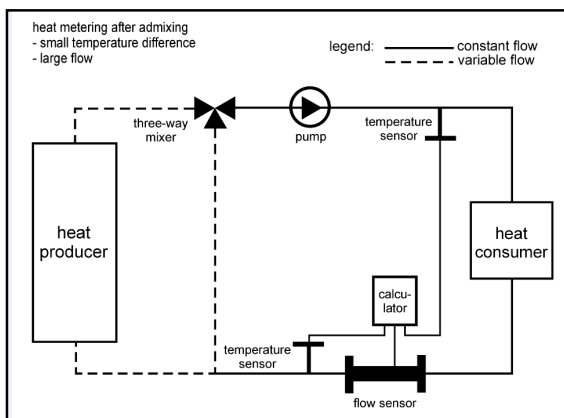
**Examples of installation for heating systems**



*Figure 1: Measurement after admixture*
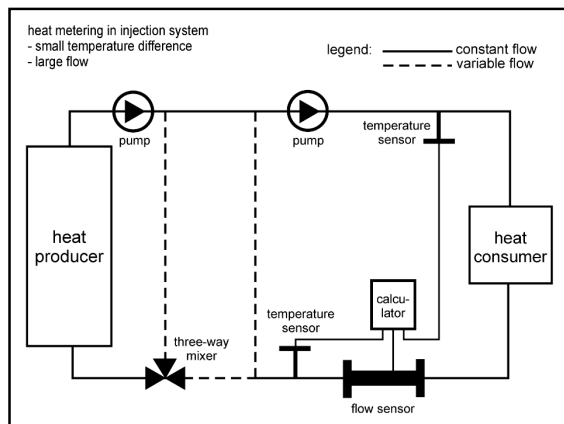


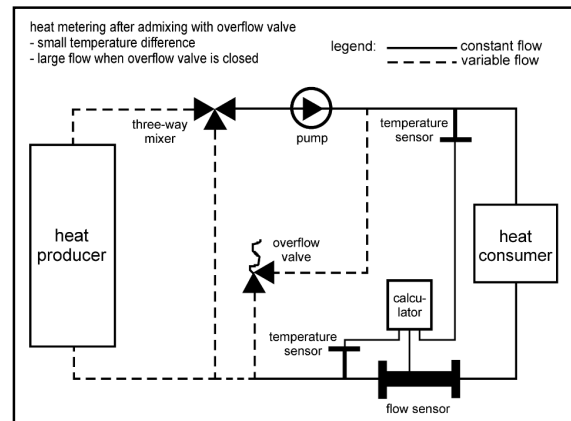*Figure 2: Measurement at injection circuit*



*Figure 3: Measurement with overflow valve*

### 5.1 Flow Sensor PolluFlow

Applicable standards: EN 1434-6

For heating systems, the flow sensor PolluFlow is installed as standard in the heating return or the cooling pipe. For cooling systems, the calculator unit PolluTherm X must be used (hereby, the X indicates that the calculator unit has been adjusted for flow sensors in the warm pipe) and the flow sensor should be installed in the heating flow or the warm pipe.

The **direction of flow is indicated by an arrow on the housing**. The permitted operating pressure and operating temperature must not be exceeded.
The flow sensor can either be installed in the warm or cooling pipe of the system. Make sure that the flow sensor is installed in the appropriate position for the medium temperature (refer to PolluFlow Operating Instructions).
Calming sections for upstream and downstream of the flow sensor are not required, however, it is recommended to allow upstream of the meter with 3 - 10 DN to stabilize the flow.

There should be no sudden cross-sectional reductions of the pipe in the downstream of the flow sensor.

Installation of a strainer is also strongly recommended at upstream of the flow sensor, or at another suitable position in the heating or cooling circuit. It is also recommended to install shut-off valves in upstream and downstream of the flow sensor (so that the pipeline does not have to be drained during meter exchange). First, install an adapter (instead of the flow sensor) and thoroughly flush the pipeline system. Next, close the shut-off valves, remove the adapter, clean the sealing areas and install the flow sensor using

new seals. With flanges, make sure that the cross-section of the pipe is not reduced by the positioning of the seals.

**Installation in cooling systems:**

It is recommended to install the flow sensor into the warm pipe (return) of the cooling system. PolluTherm X (installation into the warm pipe) must be used in cooling systems. If Sensus flow sensors are used, note to the approved temperature range.

**5.2 Installation of the Temperature Sensor**

PolluTherm is operated using a pair of temperature sensors, Type Pt 500. The type of temperature sensors that can be used is given on the front of the calculator unit.

**In accordance with the guideline of the PTB TR K 9, heat and cooling meters with nominal flows of ≤ Qp 6m³/h, only direct immersion is permitted (refer to MID starter kit) (refer to Figure 6) when installing the temperature sensor into new installations of the pipeline section in the area of the measurement position with nominal pressures of ≤ 16 bar,.** Here, our MID starter kit should be used. This consists of special ball valves with temperature sensor seat M10 x 1, with integrated union nuts and an adapter (refer to Datasheet MH 1131 DE). These starter kits are compatible with the temperature sensor types L = 45 mm / Ø = 5.2 mm and DS 27.5. They are supplied up to R1"(DN 25).

The EN 1434-2 can be used as a general installation guideline.

When using Sensus temperature sensors with the installation lengths of 100 mm and 150 mm, the active measuring part is measured approx. 10 to 15 mm from the tip of the temperature sensor and must be located as close as possible to the centre in the pipeline. For these types, it is recommended to install as follows:

Nominal diameters ≥ DN 80*: Installation of the temperature sensor at an angle of 45° against the direction of flow (refer to Figure 4).

Nominal diameters ≥ DN 65*: Installation of the temperature sensor vertical to the direction of flow (refer to Figure 5).

* For DN 65 and DN 80, both installation positions are permitted, up to DN 50, installation is also possible in the pipe elbow

For larger nominal diameters (from approx. DN 150) the sleeve must be immersed a minimum of 50 mm into the pipeline.
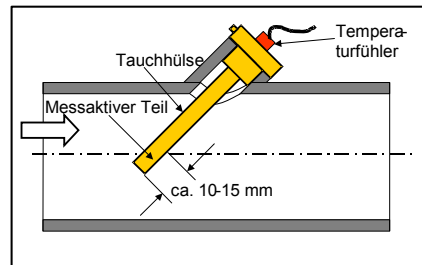


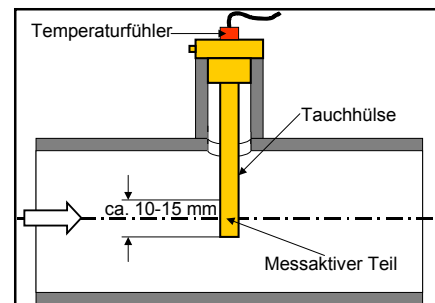*Figure 4: Exemplary illustration for Nominal diameter DN 50*



*Figure 5: Exemplary illustration for Nominal diameter DN 100*



*Figure 6: temperature sensor, direct immersion*

**5.3 Installation of the Calculator Unit**

Use the C-rail with two bolts to attach the calculator in the horizontal position at the required position. Place the housing on the C-rail and use a flat-head screwdriver to raise the red snap-in hook.
Next, press the housing onto the C-rail and release the snap-in hook. Alternatively, the calculator unit can also be directly installed onto the flow sensor.

To remove the red snap-in hook, use a flat-head screwdriver to raise and remove the housing (refer to Figure 7).

electronics of the flow sensor could get damaged!



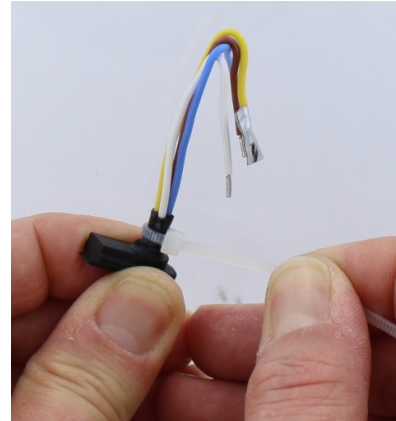*Figure 7: back side of the housing with C-rails installed*



Figure 9: Strain relief with cable-tie

## 6. Connection of the Sub-Assemblies

To open the housing, press on the two locking lugs at both lower corners of the housing cover and lift up the cover.
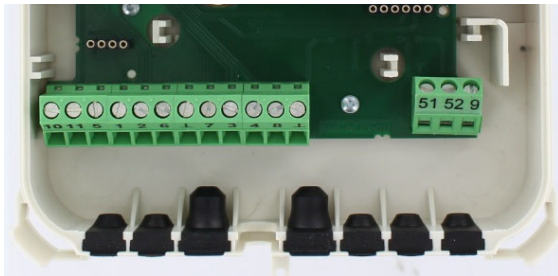


*Figure 8: Terminal compartment open, with one moulded rubber part removed*

### 6.1 Connecting the Flow Sensor

Remove the appropriate moulded rubber part from the housing (Figure 8) and cut a hole in the moulded rubber part. Next, lead the cable through the hole and establish strain relief using a cable-tie (Figure 9).
The pulse line (white) is connected to the terminal 10 (+) and the line GND (blue) connected to the terminal 11 (-). The terminal 9 is provided for the voltage supply (brown). The yellow connection cable should not be connected. This is only used for test purposes. (Figure and Table 10).

**The above mentioned cables must not be connected other than stated, as the**



Figure 10: connected Flow sensor

| Function | Terminal | Colour |
|---|---|---|
| do not connect | x | yellow |
| 3 V | 9 | brown |
| Imp (+) | 10 | white |
| Imp (-) | 11 | blue |

Table 10: Connection diagram

### 6.2 Connecting the Temperature Sensor

PolluTherm can be operated using temperature sensor Type Pt 500. The type to use is given on the front of the calculator unit housing. For electro-magnetic sources of interference (generators, frequency converters etc.) as well as for cables that carry ≥ 230 V, we recommend a minimum distance of 0.3 m. The connection can be carried out either in two-wire or four-wire system (for extension of the cable for the temperature sensor up to max. of 23 m, cable type: e.g. I-Y(St)Y 2x2x0.8, Minimum cross-section: 0.5 mm², also refer to Section 12). The following allocation applies:

**Supply temperature sensor (warm pipe):**

| Type of connection | Terminals |
|---|---|
| Two-wire system | 5, 6 |
| Four-wire system | 5, 6 and 1, 2 |
| Pos. available shielding | ⊥ |

**Return temperature sensor (cooling pipe):**

| Type of connection | Terminals |
|---|---|
| Two-wire system | 7, 8 |
| Four-wire system | 7, 8 and 3, 4 |
| Pos. available shielding | ⊥ |

To connect the cable for the temperature sensor, initially remove the respective moulded rubber part from the calculator housing (refer to Figure 7), then lead the cable through the hole in the moulded rubber part and establish strain relief using a cable-tie (refer to Figure 11). Now connect the wires to the appropriate terminals and replace the moulded rubber part (refer to Figure 12 and 13).
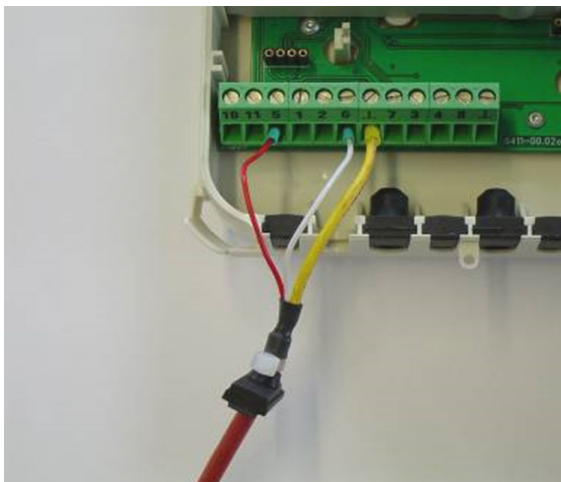


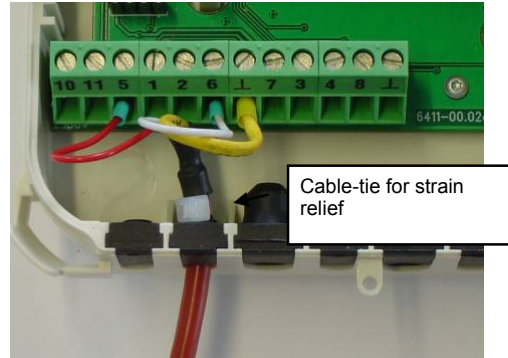*Figure 12: Example of the connection of a shielded cable in two-wire system*



*Figure 13: Wires connected, moulded rubber part again used*

For types of temperature sensors that are supplied with the moulded rubber part attached to the cable (refer to Figure 14), these can be directly inserted into the calculator unit housing. In this case, the attachment of a cable-tie is not required.
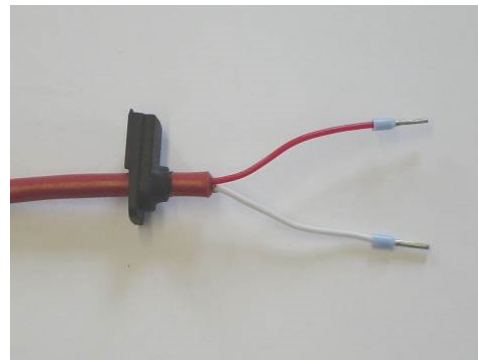


*Figure 14: Cable with moulded rubber part already attached*

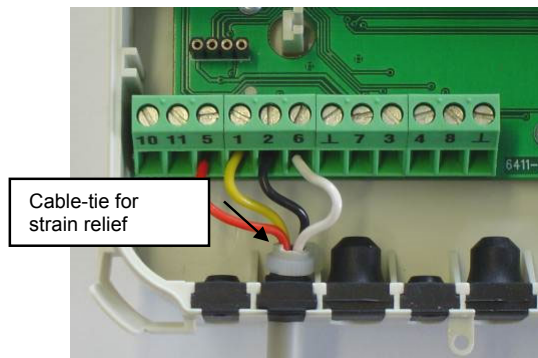When connecting in the four-wire system, the procedure is similar (refer to Figure 15 and Section 11).



*Figure 15: Example of connecting an unshielded cable in the four-wire system*

## 7. Display Options

The different types of display options of the PolluTherm are in six levels. The displays indicated by (*) are hidden in the standard version and can be displayed depending on the setting of the meter. As required, the mask can be changed through the optical data interface by using the service software MiniCom Version 3.6.0.65. In default setting, the display switches on for one second at an interval of 4 seconds and indicates the cumulated heating energy. By pressing the red button, the first position displayed is activated in the User Level (cumulated heating energy). The other five levels can be accessed by pressing the red button for 8 seconds. The selection menu appears L1 to L6:

| | |
|---|---|
| L1 | **User level** |
| L2 | **Due Date level** |
| L3 | **Archive level** |
| L4 | **Service level** |
| L5 Ctrl | **Control level for tariff purposes** |
| L6 | **Parameterization level** |

By pressing the red button, the levels can be selected in the above sequence. When the required level is indicated, in order to attain this level, press the red button for 2 seconds. The individual display positions at the levels are called up consecutively by a momentarily pressing the button. If the button is not activated for approx. 4 minutes, the display automatically returns to default. In all levels, volume pulses received are indicated by a flashing impeller symbol (left, lower corner of the display).

**7.1 User Level (Example)**

| | |
|---|---|
| Err 4010 ⚠ | Error message (only for a pending error) |
| 20537 MWh | Cumulated heating and cooling energy |
| 14823 MWh  311209 | Consumption at the due date with associated date |
| 895473 m³ | Cumulated volume |
| 88888888 Gcal t GJ m³ kWh | Segment test |
| 1000 L / IMP | Pulse value of the flow sensor |
| 9857 MWh | Tariff consumption 1 * (if activated) |
| 5969 MWh ☼ | Tariff consumption cooling * (if activated) |
| 5230763 m³ | Consumption of the external meter * |
| 67362 m³ | Consumption of the second external meter * |
| 1468 m³/h | Actual flow |
| 53857 kW | Actual output |
| °C 698 | Temperature in the warm pipe |
| °C 380 | Temperature in the cooling pipe |
| Δ 31027 | Temperature difference |

| Display | Description |
|---|---|
| 03840275 CL IEnt | Customer-specific number |
| 2 PrAdr | Primary M-Bus address (factory setting: 0) * |
| 03840275 SECAdr | Secondary M-Bus address (Factory setting: Serial number) * |

## 7.2 Due date Level (Example)

All display positions are indicated by an arrow. Display of all values are saved to an adjustable due date in the year.

| Display | Description |
|---|---|
| 14823 MWh  31.12.09 | Due date value for heating and cooling energy |
| 787032 m³  31.12.09 | Due date value for volumes |
| 2.613 MWh  31.12.09 | Due date value for Tariff 1 (if activated) * |
| 1453 MWh  31.12.09 | Due date value for Tariff cooling (if activated) * |
| 9830.123 m³  31.12.09 | Due date value for the first external meter * |
| 6890.123 m³  31.12.09 | Due date value for the second external meter * |
| rEturn | Return to the selection menu (press for 2 seconds) |

## 7.3 Archive Level (Example)

All display positions are indicated by a calendar symbol. Originating from the actual date, the values are displayed for the past 16 months (Date in six digits in the form dd.mm.yy below the main display).
In addition, the values for the present month can be accessed, in this case, the month must be selected as "today".
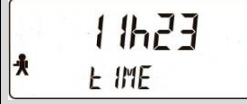
| Display | Description |
|---|---|
| 30-09-10 | Selection of the required month by shortly pressing the button, then press the button for 2 seconds |
| 28.053 MWh  30.09.10 | Heating and cooling energy |
| 895.923 m³  30.09.10 | volume |
| 2.996 MWh  30.09.10 | Tariff consumption 1 (if activated) * |
| 1453 MWh  30.09.10 | Tariff consumption cooling (if activated) * |
| 9830.123 m³  30.09.10 | Consumption of the first external meter * |
| 6890.123 m³  30.09.10 | Consumption of the second external meter * |
| M 34863 m³/h  30.09.10 | Maximum flow in the selected month with date (averaged) |
| M 34863 m³/h  08h59 | Maximum flow in the selected month with time (averaged) |
| M 787032 kW  30.09.10 | Maximum energy in the selected month with date (averaged) |
| M 787032 kW  08h59 | Maximum energy in the selected month with time (averaged) |

| | |
|---|---|
| h 0 kW ⚠30.09.10 | Failure hours |
| hAC 0 kW ⚠30.09.10 | Hours with power supply failure (only relevant for power supply) * |
| rEturn | Return to the month selection (press for 2 seconds) |

To exit the archive level, press the button twice when a month change is displayed, or wait for 5 minutes.
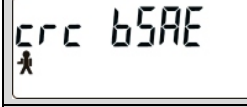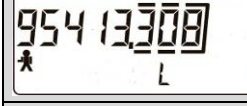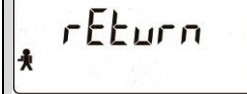
### 7.4. Service Level (Example)

Each display position is indicated by a symbol of a little man. The service level indicates the maximum values and settings of the meter.
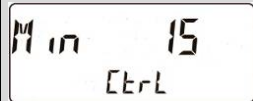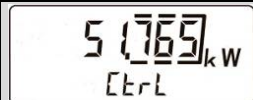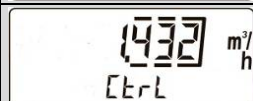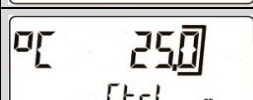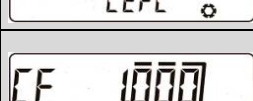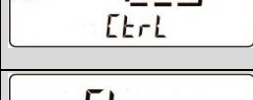
| | |
|---|---|
| M 34863 m³/h 17.09.10 | Absolute maximum flow with date (averaged) |
| M 34863 m³/h 08h59 | Absolute maximum flow with time (averaged) |
| M 787032 kW 17.09.10 | Absolute maximum energy with date (averaged) |
| M 787032 kW 08h59 | Absolute maximum energy with time (averaged) |
| M 89.3 17.09.10 | Absolute maximum temperature in the warm pipe with date |
| M 52.8 17.09.10 | Absolute maximum temperature in the cooling pipe with date |
| 03-10-10 dATE | Actual date |
| 11h23 tIME | Actual time * |

| | |
|---|---|
| 31-12-10 | Next due date |
| d 293 | Operating days |
| 3600 bATT | Battery voltage (calculated) * |
| h 0 ⚠ | Accumulated error hours |
| hAC 0 ⚠ | Hours with power supply failure (only relevant for power supply) * |
| 123 PrAdr | Primary M-Bus address (factory setting: 0) |
| 03840275 SECAdr | Secondary M-Bus address (factory setting: Serial number) |
| OnE COMPA | Data transmit mode (length and structure of the M-Bus protocol) |
| V 3.0 | Version of the Firmware |
| crc b5AE | Check sum |
| 37056833 Wh | High resolution energy display |
| 95413308 L | High resolution volume |
| rEturn | Return to the selection menu (press for 2 seconds) |

**Heat / Cooling Meters Calculator Unit
PolluTherm can be combined with PolluFlow
Installation and Operating Instructions**

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### 7.5 Control Level for Tariff Purposes (Example)

Each display position is indicated by the word CTRL". Settings for the tariff functions can be checked here.

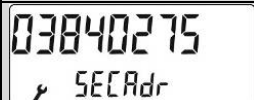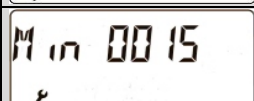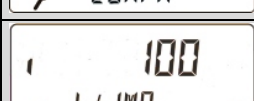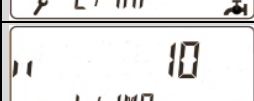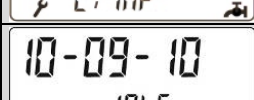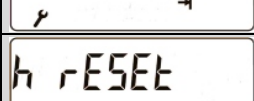| Display | Description |
|---|---|
| M in 15 CtrL | Averaging interval set for the flow and energy |
| 5 1765 kW CtrL | energy in the actual averaging interval |
| 1432 m³/h CtrL | Flow in the actual averaging interval |
| 60.000 kW CtrL | Setting tariff 1 (if activated) * |
| °C 25.0 CtrL | Switching point for inlet flow temperature cooling metering (if activated) * |
| 0.750 CtrL | Switching point for outlet temperature difference cooling metering (if activated) * |
| CF 1.000 CtrL | Correction factor for water/frost protection mixture (if activated) (only in combination with a mechanical flow sensor) |
| rEturn CtrL | Return to the selection menu (press for 2 seconds) |

### 7.6 Parameterization Level (Example)

Each display position is indicated by the tool symbol.
This level is protected by a password. The password is the last three digits of the eight digit serial number on the meter housing. Initially, "000" appears. Next, press the button for approx. 2 seconds and the left zero starts to flash. By constantly pressing the button, the value at the flashing position changes. As soon as the required values are reached, release the button. By shortly pressing the button, the value set is confirmed and switches to the next position. Proceed here as you did in the previous position. After the last position is set, the level is activated. Now, by shortly pressing the button, the required positions can be selected; setting the values is carried out by manually entering the password.

By setting the "OnE COMPA", the standard values are read out. The setting "OnE, OnE Plus or ALL" activates the read out of additional information.

| Display | Description |
|---|---|
| PASS 123 | Password request |
| 002 PrAdr | Setting Primary M-Bus address |
| 03840275 SECAdr | Setting Secondary M-Bus address |
| 03840275 CL IEnt | Setting Customer-specific number |
| M in 0015 | Setting Averaging interval for the flow and energy |
| OnE COMPA | Setting data transmit mode (One, All, One Plus, One Compa) |
| 100 L/IMP | Pulse value of the first external meter (0.25 to 10.000 L/Imp.) * |
| 10 L/IMP | Pulse value of the second external meter (0.25 to 10.000 L/Imp.) * |
| 10-09-10 dAtE | Set date |
| 09h48 t IME | Set time * |
| 31-12-10 | Set due date |
| M rESEt | Reset absolute maximum * |
| h rESEt | Reset Failure hours * |
| hACrESEt | Reset Hours with mains failure * |
| rEturn | Return to the selection menu (press for 2 seconds) |

## 8. Function Check, Sealing

After opening the shut-off valves, check the installation for signs of leakage. For checking purposes, the actual values for the flow, energy, as well as the flow and return temperature can be called up on the display (see Section 7.1). In order to protect the meter from manipulation, the self-lock seal must be sealed at the following points:

- Flow sensor screw connection
- Installation point of the temperature sensors
- Cover of the calculator unit (pull lockwire through the eyelet at the bottom edge)

## 9. Possible Error Situations

PolluTherm is equipped with an automatic self-monitoring function. In the event of a fault, a four digit error code appears on the display in the form **"Err XYZ0"**. For decoding the error codes, the following applies:

**X:** Monitoring the temperature sensors

**Y:** Monitoring the calculator unit

**Z:** Error statistics

Extract

| Code | Meaning |
|---|---|
| Err 1010 | Temperature sensor interchanged or return temperature is higher than the flow temperature |
| Err 2010 or 3010 | One or both temperature/s is/are short-circuited |
| Err 4010 or 5010 | Cable break, return temperature sensor |
| Err 6010 or 7010 | Supply temperature sensor short-circuited and return temperature sensor cable break |
| Err 8010 or 9010 | Cable break, supply temperature sensor |
| Err A010 or B010 | Return temperature sensor short-circuited and supply temperature sensor cable break |
| Err C010 or D010 | Cable break, flow and return temperature sensor |

The error situation "Err 1010" is caused temporarily in the majority of cases when the temperature in the warm line reduces by a minimum of 3 K below the temperature in the cooling line.

For all other error codes, contact our Technical Service Centre.

Due to the back-up battery installed, the PolluTherm with **power supply** can maintain the measurement and metering operation even if there is an interruption in the voltage supply (power failure) for a period of up to 90 days.

In such situations, communication (M-Bus, MiniBus) with the meter will not be possible and the following message will appear on the LC display:



After 90 days, the measurement and metering function is interrupted in the event of a power failure, the back-up battery then ensures the contents of the memory and the date and time continues.

## 10. Data Interfaces and Options

PolluTherm has the following interfaces as standard and can be equipped with the following options, or be retrofitted:

### 10.1 Optical Interface

All meters are equipped with an optical data interface as standard. Through an optical data coupler (e.g. order number 184023 with USB connection), settings can be changed using the parameterization software MiniCom, or the meter can be read out through the read-out system SensusREAD. The data interface is activated for one hour by momentarily pressing the button. By interim communication of data, this period restarts, so that e.g. over a longer time, read out of the log can be carried out every 15 minutes or hourly.

### 10.2 M-Bus Plug-In Module acc. to EN 13757-3

(Order number: 68504020)
Using this plug-in module, the meter can be read out via its primary or secondary address, using an M-Bus level converter (300 and 2400 baud, automatic recognition). The setting of both addresses can be carried out in the parameterization level (refer to Section 7.6) or using the service software MiniCom (Note: The factory setting of the secondary address and customer number is the same as the device number on the meter housing). The primary address can be set at between 0 and 250 and, when delivered factory default, is set at 0.
Battery devices have an M-Bus credit, as such the daily read out is limited, depending on the number of meters in the M-Bus network. If the battery powered device is retrofitted to a main power

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a xylem brand

supply device, the M-Bus credit is switched off and communication is unlimited (refer to Point. 10.12 Converting Battery Device to Power Supply)

### 10.3 Telecounting Plug-In Module

Telecounting plug-in module FZS/N (Order number: 68503920) for transmitting heat consumption and volume pulses (only for power supply operation)

Telecounting plug-in module FZS/B (Order number: 68503922) for transmitting heat quantity pulses (for battery operation)

| | |
|---|---|
| Closing time: | approx. 125 ms |
| Max. voltage: | 28 V DC or AC |
| Max. current: | 0.1 A |
| Free of bounce and potential | |

### 10.4 M-Bus Plug-In Module with Two Pulsed Inputs

Order number: 68504686
In addition to the plug-in module described in Section 10.3, two external consumer meters (cooling water, warm water, electricity, gas, other) with passive telecounting contact (reed switch or open collector) can be connected.

Specification of the contact inputs:

| | |
|---|---|
| Necessary losing time: | > 62.5 ms |
| Input frequency: | ≤ 3 Hz |
| Terminal voltage: | 3 V |

Factory default setting for both contact inputs:

- *Input 1:* Cooling water meter, pulse value 10 litres, meter start status 0.00 m³
- *Input 2:* Warm water meter, pulse value 10 litres, meter start status: 0.00 m³

**Activation of the inputs must be carried out using the service software MiniCom 3, in the menu item:**
**"Set parameter for the pulse input".**
The meter serial numbers (meter ID) of the pulse meter and, if necessary, the primary M-Bus addresses must be entered. Set the tick for "Meter 1 (2) visible on the M-Bus". Meter start status and pulse value can also be adapted. Pulse meters are available as independent M-Bus meters on the M-Bus. The consumption of the pulse meter is then no longer transmitted in the M-Bus protocol of the heat meter.

### 10.5 USB Plug-In Module (for M-Bus slot)

Order number: 68504688
Using this plug-in module, the calculator unit can be connected to a PC / Notebook or hand-held computer with USB input. If an M-Bus plug-in module is installed, this must be removed beforehand. A driver is required for connection, which is also supplied with a data carrier. The description of the driver installation is given there.

### 10.6 LONWORKS®-FTT10A

Using this plug-in module, the meter can be connected via a LONTALK® protocol to appropriate instrumentation. A driver software is supplied on a mini-CD. For more detailed information, refer to Datasheet LH 6132 DE.

### 10.7 Inserting the Plug-In Modules into the Calculator Unit

In each calculator unit has a slot for the M-Bus modules (at the back, right) and the telecounting modules (at the front, left). **The approved modules for the calculator unit must only be installed into the slots provided for them.**

*Figure 16: Installation of the plug-in modules*
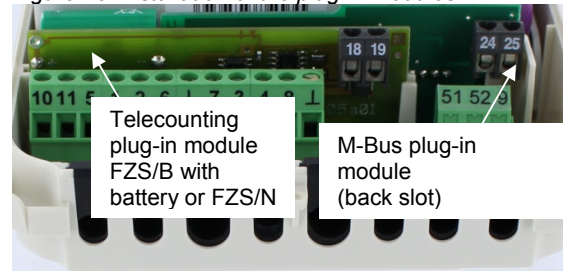


During assembly, insert the plug-in modules into the left and right guide made from white plastic (Figure 16).
The contact pins must not be bent and easily glide in the contact bushes provided for them.
Guide the connecting cable through the hole in the moulded rubber part and establish strain relief using a cable-tie. Now connect the wires to the appropriate terminals and replace the moulded rubber part.

### 10.8 Combined Heat / Cooling Meter (Order Option)

Designation:
PolluTherm H or PolluTherm X H

With this option, the PolluTherm switches between metering of the heating and cooling

energy with the aid of an automatic switching point. The factory setting for switching to cooling metering is:

Flow temperature ≤ 25 °C **and**
Negative temperature differential ≥ - 0.15 K

To switch back to warm metering, the following applies:

Flow temperature > 25 °C **and**
Positive temperature differential ≥ 0.15 K

As required, this switching point can be adapted on site, using the service software MiniCom, from Version 3.6.0.65.

### 10.9 Optional Integrated Data Logger (Order Option)

If the option is installed, the housing cover has the additional inscription "Data Logger".
The integrated data logger saves consumption values at a time interval and actual values (energy, flow, temperatures) that can be selected (3 to 1440 minutes). The logger data can be read out through the optical interface, M-Bus using the service software MiniCom, from Version 3.6.0.65. The time setting (factory setting: 60 minutes) can also be changed using the MiniCom, from Version 3.6.0.65.

For connection to a PC, either an optical data coupler (refer to Section 10.1.) or a USB plug-in module can be used.

### 10.10 Conversion of Battery Device to Power Supply Device

Before converting, observe the following and also carry out in this sequence:
- Before the supply battery is removed, the calculator module must be removed from the calculator unit. For this, open the cover of the calculator unit and remove the right retaining screw (screwdriver: Torx 6) under the plastic cover (user seal, refer to Figure 17).
- Subsequently, carefully pull the calculator unit module upwards, out of the plug-in connection. The left and middle seal must not be removed (loss of calibration)!
- Insert the backup battery AA 3,6V (68504998) into the rear of the calculator unit module. The battery is required to secure the date and for temporary operation when the mains power is interrupted.
- Remove the main battery (D-cell) and insert the mains module.

This is described in detail in the Installation and Operating Instructions for the MH 6122, supplied with the mains module.
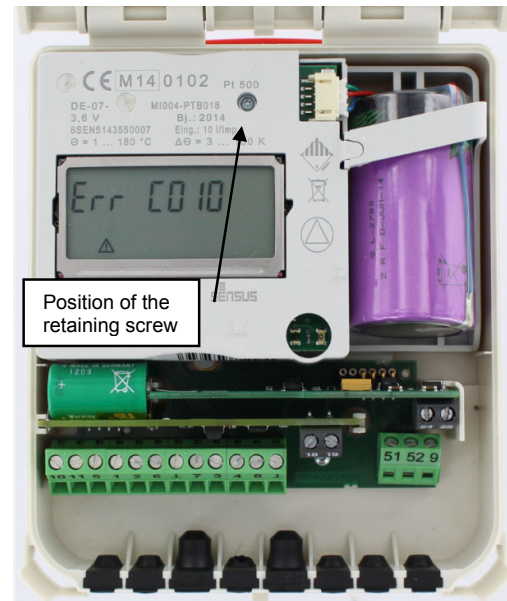

*Figure 17: Removing the retaining screw for the module*

## 11. Note for Extending the Temperature Sensor Cables

The temperature sensors for PolluTherm are with platinum resistor elements in the version Pt 500 (500 Ohm at 0 °C) as standard.

Two temperature sensors are required for each calculator unit. Therefore, with regard to this, they are delivered in pairs and calibrated. It is ensured that a measured temperature differential in the heating or cooling system is not falsified by different characteristics of the temperature sensor and cable resistance.

Due to the systems, it is frequently required to extend one or both temperature sensors. The cable for the temperature sensors can be extended to a maximum of approx. 23 m.
In order to compensate for the additional cable resistance, the so-called four-wire system is used. Cable with four wires is used (e.g. I-Y(St)Y 2x2x0.8, **minimum cable cross-section: 0.5 mm²**).

Option:

- Extending only one cable
- Extending both cables where both extensions must not be the same length

Extension cable of the temperature sensor must be carried out using the distribution socket offered by Sensus. (refer to Figure 18, Order number: 88599001, Installation Instructions MH 6105).
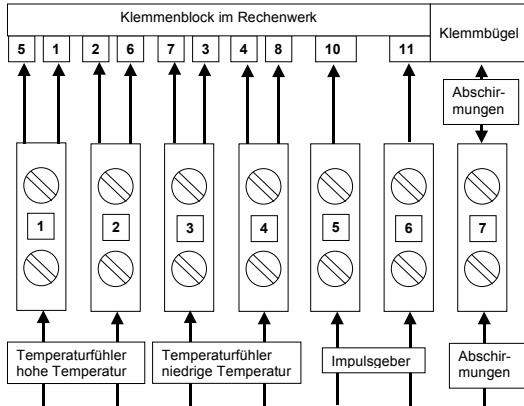


*Figure 18: Distribution socket connection diagram*

Due to the use of two additional wires per temperature sensor at the terminal block in the calculator unit, the electrical resistance and the extension cable has no influence on the measurement and indication of the temperatures for higher temperature 1 and 2 and the lower temperature 3 and 4,

Date: 20. June 2017

## EU Declaration of Conformity
### No CE/PolluTherm/0617

Herewith we,

Sensus GmbH Ludwigshafen
Industriestr.16
67063 Ludwigshafen

declare under our sole responsibility, that the calculator type **PolluTherm,** to which this declaration relates, is in conformity with the following legal regulations:

Directive 2014/32/EU of the European Parliament and the Council of the 26th of February 2014, including

Annex I, Essential requirements
Annex VI, Thermal Energy Meters (MI-004)

Directive 2014 / 30 / EU of the European Parliament and the Council of the 26th of February 2014

applied harmonized or normative documents

- OIML-R 75, Edition 2002
- DIN EN 1434, Edition 2016
- DIN EN 55022, Edition 2010

other standards

- WELMEC guideline 7.2, Edition 2015
- EN 60751, Edition 2009
- EN 13757-2, Edition 2005
- EN 13757-3, Edition 2013
- DIN EN ISO 4064-4, Edition 2014
- DIN EN 60529, Edition 2014
- DIN EN 60870, Edition 2006

The conformity assessment procedure was carried out under the supervision of the notified body PTB identification number 0102. The type-examination certificate DE-07-MI004-PTB018 was issued.

This declaration is made on behalf of the manufacturer by the Technical Director.

Sensus GmbH Ludwigshafen

Roland Rott
Managing Director

i.V.
Jürgen Westphal
Director Metrology

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Christopher Dühnen

Qualitätsmanagementsystem Quality Austria-zertifiziert
Nach ISO 9001, Reg.-Nr. 3496/0