Compact Heat Meters

Features

- Compact design
- Simple operation
- Pulsed output
- Measures heating or cooling

Specification

Water Meter

Temp. range	10 to 90°C
Nominal pressure	16bar
Installation	Return
Cable length	50cm
Nominal flow (q_p):	
15mm	0.6 or 1.5m³/h
20mm	2.5m³/h
Pressure loss at q_p	<0.25bar
External thread:	
15mm	G¾"
20mm	G1"
Dimensions:	
15mm	110mm face to face
20mm	130mm face to face

Temperature Sensors

Sensor element	PT500 (to DIN IEC 60751)
Sensor lead length	1.5
Diameter	5mm
Installation:	
Return	Integrated flow sensor
Flow	¾" or 1" Ball valve with pocket

Heat Meter

Temp. range	1 to 130°C
Display type	8 digit LCD
Energy display	MWh
Output pulse	10kWh
Data storage	Non-volatile memory, once daily
Power supply	3V Lithium battery
Battery life	>6 years
Output pulse	Max. operating voltage 30Vdc, 20mA max Pulse width 400-600ms
Measurement accuracy	Class 3
Conformity	MID
Ambient temp.	5 to 55°C
Protection	IP54

Product Codes

MW-CHM-1
Compact heat meter with 0.6m³/h nominal flow, 15mm nominal diameter (DN)

MW-CHM-2
Compact heat meter with 1.5m³/h nominal flow, 15mm nominal diameter (DN)

MW-CHM-3
Compact heat meter with 2.5m³/h nominal flow, 20mm nominal diameter (DN)

Output options (add to above code)

-A
Pulsed output

-B
M-Bus output

Accessories

MW-BV-1
Replacement ¾" ball valve

MW-BV-2
Replacement 1" ball valve

Technical Overview

Heat energy is calculated by using a matched pair of high accuracy sensors to measure the difference between the forward and flow temperatures. The amount of water flowing through the circuit is measured by the water meter, and the microprocessor-controlled calculator then calculates the consumed heat energy from the temperature and flow data. The large, easy-to-read display shows the energy used. Additional measurement and instrument data can be easily displayed by scanning the display loops. The integrated non-volatile E^2PROM automatically stores the meter data once a day. It is possible to view the last 18 monthly values from the display.

General Information

Expressive symbols in the display and easy menu navigation make readout simple. It can be operated with one single button. The meter is equipped with a long-life battery made for operation during the initial verification validity period (5 years) including a reserve of at least another year.

Initial verification

The MW-CHM is produced and tested in compliance with the new European measuring instruments directive (MID). According to this directive, devices do no longer carry an initial verification stamp, but rather the year of the device's declaration of conformity (recognizable on the front of the device, for example: M07). The MID controls the use of heat meters up to the moment they are placed on the market resp. their first putting into use. After this, the national regulations for devices subject to legal verification apply within the EC.

Electro-magnetic interference

The MW-CHM fulfils the national and international requirements for interference resistance. To avoid malfunctions due to other interferences, do not install fluorescent lamps, switch cabinets or electric devices such as motors or pumps in the immediate vicinity of the meter (minimum distance 1 m). Cables leaving the meter should not be laid parallel to live cables (230V, minimum distance 0.2 m).

Care instructions

Clean plastic surfaces with a damp cloth only. Do not use any scouring or aggressive cleaning agents!

The device is maintenance-free during the service life. Repairs can only be made by the manufacturer.

General Information (continued)

Declaration of Conformity

Sontay Ltd declares that this product with the number of the EC type examination certificate DE-07-MI004-PTB008 complies with the requirements of the EC directives 2004/22/EC (Measuring instruments directive) and 89/336/EEC (electro-magnetic compatibility).

Installation

Sontay Ltd recommends to use direct temperature measurement and not to use immersion sleeves. The maximum heating water temperature at the flow sensor may not exceed 90ºC. Make sure no heating water escapes during installation – this can cause burns!

The current laws and regulations have to be observed, especially EN 1434 part 1+6.

Devices with M-Bus, the general rules of technology and the respective regulations for electrical installations have to be followed. The installation has to be done by qualified professional personnel. Read this instructions carefully right up to the end before starting to mount the device.

Mounting the meter body

- Mount ball valves up and downstream of the meter body.
- Consider the correct installation point (supply/flow).
- Consider the correct flow direction. This is indicated by an arrow on the side of the valve body. The use of flow direction inverters is forbidden!
- Install horizontally or vertically only, not tilted, inclined or overhead. Installation into horizontal or up streaming or down streaming pipelines.
- Do not install at highest point of piping to avoid air inside the flow sensor.
- Consider the dimensions of the heat meter.
- Axis-centre distance between two meter body 135mm minimum. Keep about 1 meter distance between the MW-CHM and electromagnetic sources of interference like switch cabinets, motors or pumps. Keep about 0.2 m distance to power cables. Keep min. 3 cm free mounting space around the device.

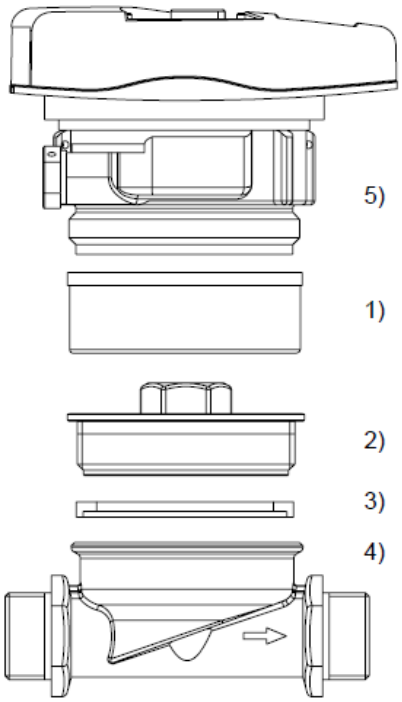
Installation (continued)

Ball valves

- Mount ball valves up and downstream of the meter body
- Mount a supplied ball valve with bore M10x1 for direct sensors in the supply. This one is used for mounting the return sensor.

Installation of the energy meter

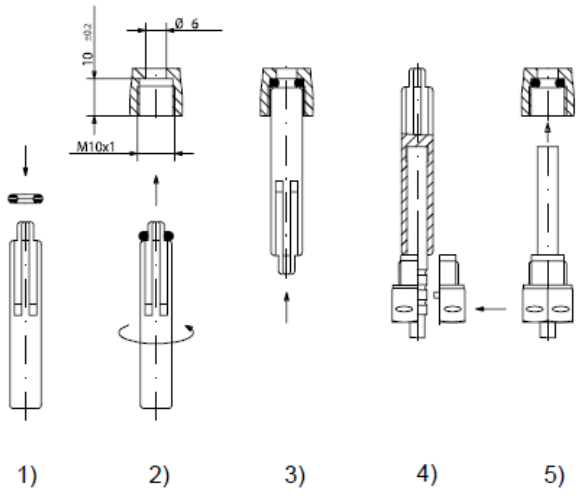
- Flush the system thoroughly before installing the meter.
- Close valves and release pressure. Screw out the overflow cap (2) or the existing measuring capsule.
- Check the seal face and thread on the measuring capsule and the meter body for damage.
- Remove the old profile seal, clean the seal face and insert the new one (3) into the meter body (4) with the flat side up.
- Attention: insert only one profile seal! The O-ring on the meter's filter must be fitted into the groove. Use only new and flawless sealing material.
- Remove the protective cap (1) from the new measuring capsule (5) and then screw into the meter body (4).
- Tighten measuring capsule up to the metallic stop with a hook wrench (for example: according to DIN 1810 A, 68-75 mm).
- Turn heat calculator to desired reading position.



Installation (continued)

Installing the temperature sensors

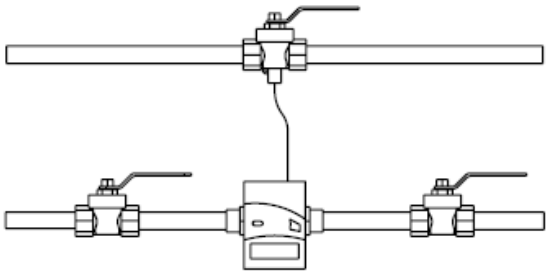
- The installation of the temperature sensors should be preferably symmetrical and direct installation. Do not remove the flow sensor if already mounted in the flow sensor.
- Sensors are colour-coded.
- The connecting cables may not be buckled, extended or shortened. The seal at the sensor installation point on the measuring capsule may not be damaged.
- Remove locking screw and seal at the ball valve completely, if existing.
- Attach the O-ring to the installation aid (the 2nd O-ring is only a spare O-ring). Using the installation aid, insert the O-ring into the installation point according to DIN EN 1434 with a slight circular motion.
- Using the other end of the installation aid bring the O-ring into the correct position.
- Insert the 2 halves of the plastic connector into the sensor's three notches (crimps) and press them together. Use the installation aid as positioning aid. Insert the temperature sensor into the installation point and screw it in tightly until the dead stop of the seal on the 12-point is reached (mounting torque 3-5 Nm).
- Secure the sensor after installation against unauthorised removal with appropriate sealing (available as a sealing set)!



Installation (continued)

Putting into use

- Open vales carefully and check installation for leakage.
- While the system is operating, check whether the volume display proceeds and the temperatures displayed correspond with the actual temperatures (see the display overview).
- Wait for the temperature display to be updated (1-2 sec).
- Secure the measuring capsule and the meter body with the enclosed sealing material against unauthorised removal.



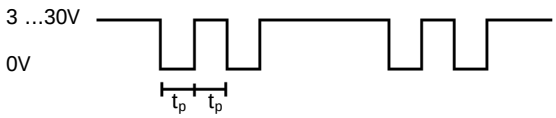
Sensor installation for MW-CHM with the flow sensor integrated in the meter body.

Outputs

Pulsed:
The pulse value can be called up in the display (see the display overview, Level 1) for devices with two pulse inputs.

The pulse value of the outputs is permanently set and corresponds with the last position of the associated display value.

Example:
Output 1 = energy output
Energy display = XXXXX.XX MWh
Last position = 0.01 MWh = 10 kWh
Output pulse = 10 KWh



400m/s < t_p < 300m/s

Outputs (continued)

M-Bus:
The M-Bus interface complies with the norm EN 1434-3 and operates with 2400 baud fixed.
Both of the cable cores can be connected to the M-Bus network in any order.

Colour	Connection	Meaning
Yellow	NC	Not connected
Pink	M-Bus 1	M-Bus line 1
Grey	M-Bus 2	M-Bus line 2
Green	I/O 1	I/O 1
White	GND	Common ground for I/O 1 & I/O 2
Brown	I/O 2	I/O 2

Error Codes

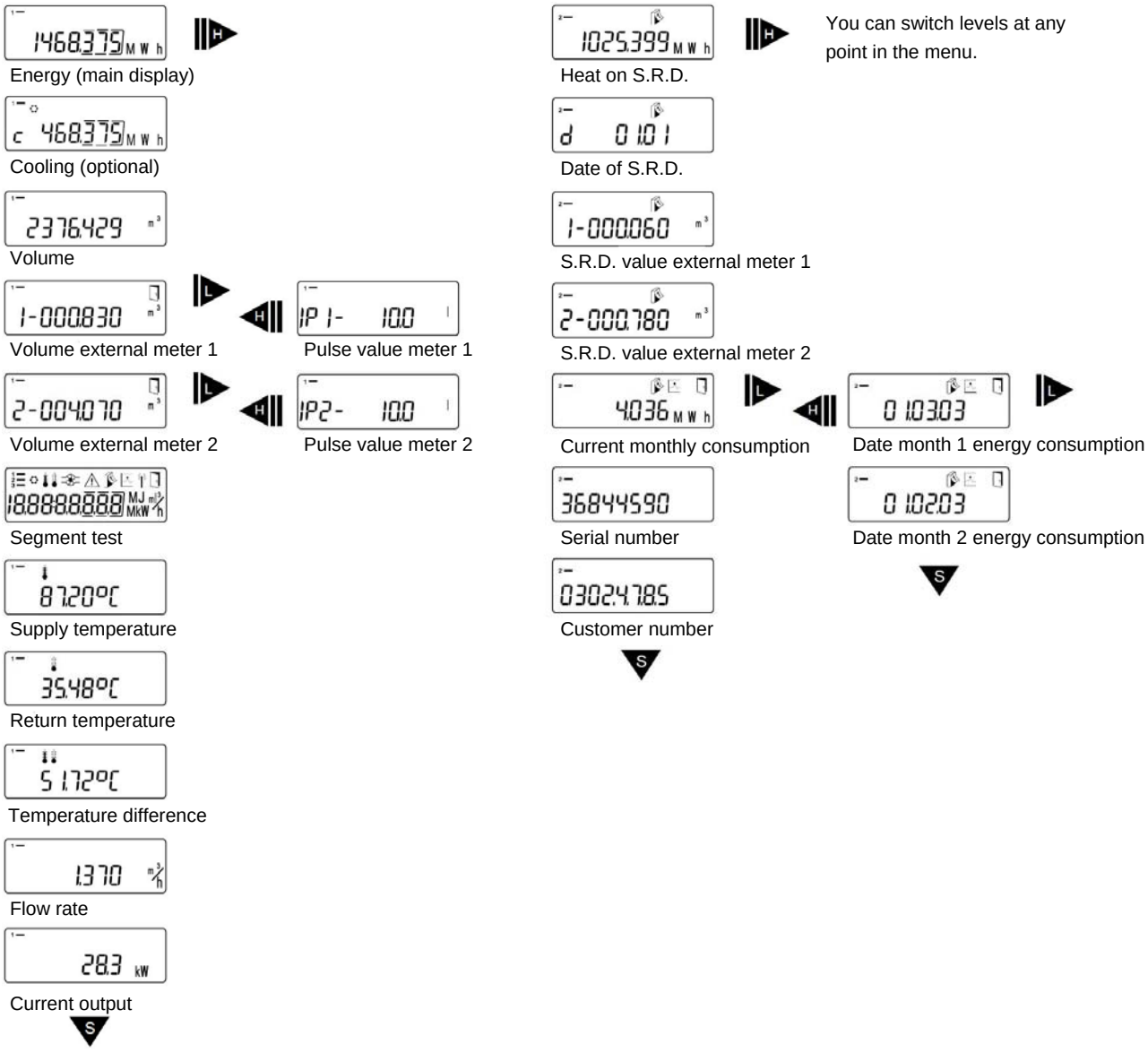
The symbols in the table below show the meter's operational status. The status messages only appear in the main display (energy).
The temporary display of the warning triangle can be caused by special operating states and does not always mean that the device is malfunctioning. However, should the symbol be displayed over a longer period of time you should contact the service company.

Symbol	*Status*	*Event*
	Flow existent	-
	Attention	Check for errors
	Data transmission	-
	Emergency operation	Exchange device

Error codes show faults detected by MW-CHM. If more than one error appears, the sum of the error codes is displayed: Error 1005 = error 1000 and error 5.

Code	*Error*	*Event*
1	Hardware error	Exchange device
2	Interruption supply sensor	"
3	Interuption return sensor	"
4	Hardware error	"
5	Short circuit supply sensor	"
6	Short circuit return sensor	"
100	Emergency operation	"
1000	Battery life time exceeded	"
2000	Initial verification expired	"
8001-5	Memory error	"

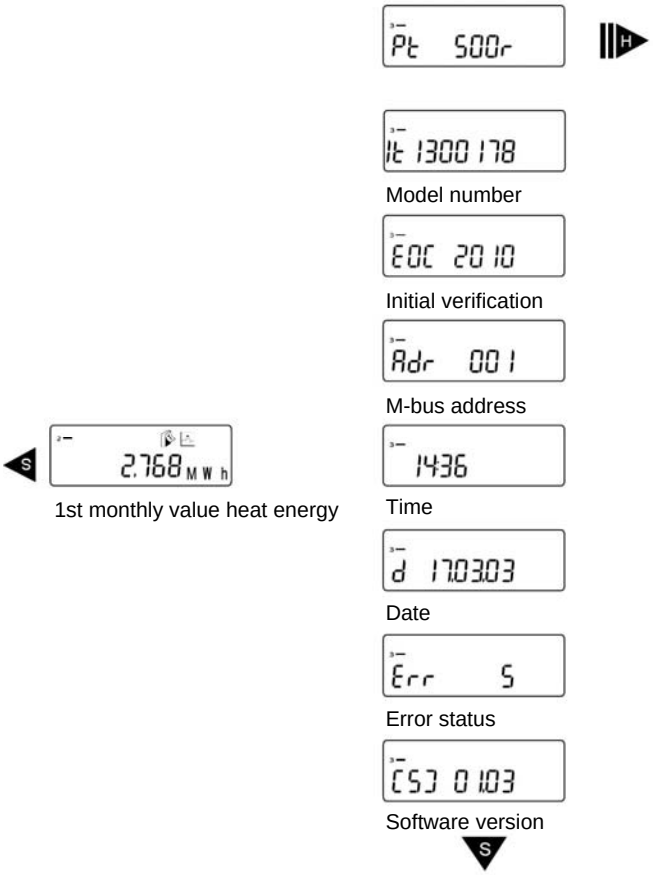
Display Loops



Note

Depending on your meter's model its displays can differ in number and order from those shown here.

Display Loops



Legend

S

Press the button briefly (S) to switch through the display from top to bottom. When you have reached the last menu item the device automatically jumps back to the menu item at the top (loop).

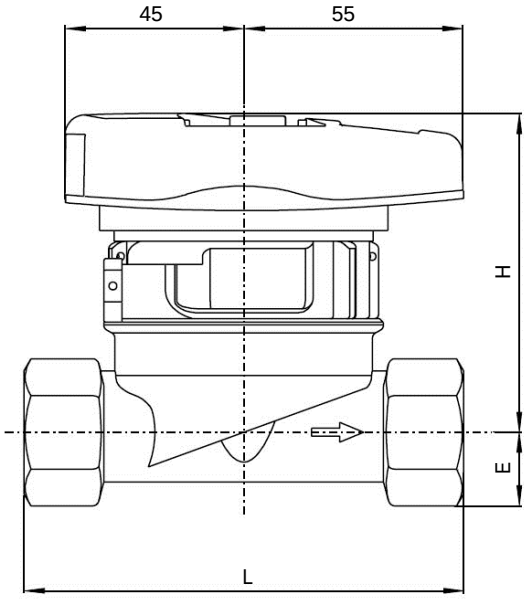
L

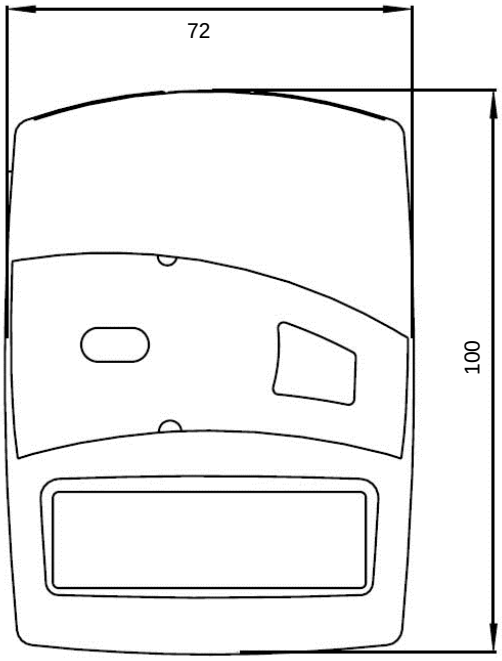
Press the button for about 2 seconds (L), wait for the door symbol to appear (upper right corner of the display) and then release the button. The menu is then updated resp. switches to the sub-menu.

H

Hold down the button (H) until the device switches to another level or switches back from the sub-menu.

Dimensions





	H (mm)	E (mm)	L (mm)	Nominal dia. (mm)	Thread (")
MW-CHM-1	80	18.5	110	15	¾
MW-CHM-2	80	18.5	110	15	¾
MW-CHM-3	80	18.5	130	20	1