MW-MD

Heat Meters Integrator (Calculator)

Features:

- Simply operation
- Integral wall and DIN-rail mounting bracket
- Pulsed or M-Bus output options
- Measures heating or cooling and heat/cooling

Technical Overview

The MW-MD range of Heat Meter Integrators uses the latest innovative technology to calculate heat usage from heating and cooling systems. They are for use with mechanical flow parts. With its dynamic measuring cycle even the smallest energy consumptions are reliably collected.

The large multifunction display permanently shows the heat consumption total, and by using the button is it possible to scroll through the display to show all data.

Specification:

Temperature range	1 to 150°C
Temperature diff	3 to 120K
Supply	3.6V Lithium battery
Battery life	6 years (optional 11 year available upon request)
Display	Multifunction 8-digit + characters LCD
Output pulse	30Vdc max. @ 20mA
Frequency:	1Hz
Pulse duration	400m/s <T_P <600m/s
M-Bus Baud rate	2400
Sensor type	PT500 Matched pair
Pocket thread	½" BSP
Ambient range:	
Temperature	5 to 55°C
RH	95% non-condensing
Dimension	106 x 54 x 120mm (H x L x W)
Output pulse	30Vdc, 20mA max
Pulse width	400-600ms
Flow sensor location	Return*
Conformity:	
EN1434	
MID	Annex I M1/E1, Annex MI-004
Protection	IP54

* The MW-MD range of heat meter integrators, the default location of installation of the flow sensor is in the return. It can be programmed for the meter to be installed in the flow, but this **must** clearly be stated at the time of order.

Part Codes:

MW-MD

Integrator
(build unit with following options)

Output type (add to above code)

-P Pulsed output
-M M-Bus output

Pockets & PT500 sensors (add to above code)**

-A 45mm Pockets, sensors 1.5m cable
-B 105mm Pockets, sensors 3m cable
-C 105mm Pockets, sensors 10m cable
-D 140mm Pockets, sensors 3m cable
-E 140mm Pockets, sensors 10m cable

System type (add to above code)

-4 Heating system
-5 Cooling system
-6 Heat/cooling system

Accessory

MW-BATTERY

Optional 11 year battery
(only available when purchasing MW-MD, not available as a separate item)

Replacement items

MW-PKT-1

45mm Stainless steel pockets (pair)

MW-PKT-2

105mm Stainless steel pockets (pair)

MW-PKT-3

140mm Stainless steel pockets (pair)

****** See page 4 for pocket selection data

General Information:

Initial verification

The MW-MD 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: M09). 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 EU.
The duration of initial verification validity in Germany remains 5 years for heat meters. After this period has expired, the measuring device may no longer be used for billing in commercial use. The regulations resp. validity period may vary in other countries of the EU.

Electro-magnetic interference

The MW-MD 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 1m). 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.

Declaration of Conformity

Sontay Ltd declares that this product with the number of the EC type examination certificate DE-08-MI004-PTB012 complies with the requirements of the EC directives 2004/22/EC (Measuring instruments directive) and 89/336/ EEC (electro-magnetic compatibility).

Installation:

Safety instructions

The installation has to be done by qualified personnel. Read the instructions carefully right up to the end before starting to mount the device.

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

At devices with communication interfaces or mains supply the general technical rules and the correspondent regulations have to be followed.

While demounting flow sensors and temperature sensors care should be taken to ensure that no heating water escapes from the pipe – this can cause burns!

Close valves and release pressure before installation.

Take care of:

- The display must readable at all times, 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).
- All welding must be finished.
- The ambient temperature must not exceed 55°C.
- The type of temperature sensor must correspond with the calculator.
- The pulse value of the flow sensor must correspond with the one from the calculator.
- The calculator has 7 screwed cable glands for wires with a diameter between 4.2 and 10 mm. Keep unused glands closed.
- Mind the connection order: temperature sensors first, flow sensor afterwards!
- The MW-MD is delivered ready for operation. It does not need any settings or adjustment.

Installation (continued):

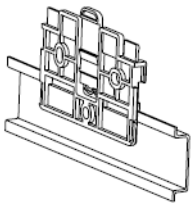
Installation heat calculator

Sontay recommends mounting the calculator on the wall. Do not mount the device at the pipe or attach it directly on the flow sensor.

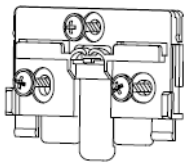
The mounting adapter at the backside of the calculator can be used for DIN-rail mounting or "reverse" for wall mounting.

For wall mounting attach the adapter with at least two screws to the wall and clip the calculator on it.

For rail mounting lift the adapter a little bit, place the calculator on the rail and push the adapter back until it locks.



DIN-rail mounting



Wall mounting

Connection sensors

The mounting of the temperature sensors should be done symmetrical with direct immersion. If immersion sleeves are used they have to be checked for conformity to MID and have to be marked accordingly. The installation of immersion sleeves has to be done according to DIN EN 1434-2.

- The sensor cables are marked with colours (red = supply, blue = return). Do not buckle, extend or shorten the wire.
- Do only use paired sensors with the same serial number on it.
- Supply and return sensors must be inserted into the immersion sleeves completely.
- Installation points in the flow sensor can be used for symmetrical installation of the temperature sensors.
- Seal temperature sensor after installation to prevent unauthorized demounting (seals included).
- Do not wrap or install wires along hot pipes.

Connection flow sensor

The total length of the wire between flow sensor and calculator should not exceed 10m. Mind the polarity at electronic flow sensors.

Operation test

Check the calculator for any error codes in the display after installation (see Page 5 for error codes). Most of the errors can be deleted by pressing the button.
If the error appears permanently, it will be detected at the next measuring cycle and displayed again. Check whether the volume information is updated and the displayed temperatures correspond to the present ones while the system is running (measuring cycle 2 minutes max.).
When attaching the top cover on the housing pulses on the inputs can possibly be generated. Check readings of the inputs and correct if necessary.

Sealing

Seal the device with the included seals to prevent unauthorized opening.

Maintenance

Repairs or overhaul are only allowed by the manufacturer or companies authorized by the manufacturer.

Pocket Selection

When selecting pockets you should always try and install the pocket so that the tip is in the centre of the flow.

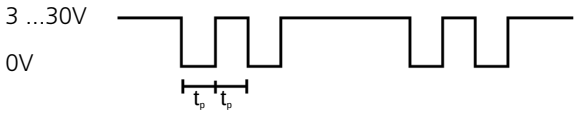
A good guide on what pocket length to select is;

	45mm Pockets	105mm Pockets	140mm Pockets
Flow sensors	DN15 to DN40mm	DN50 to DN80mm	DN100mm to DN200mm

Outputs:

Pulsed:
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



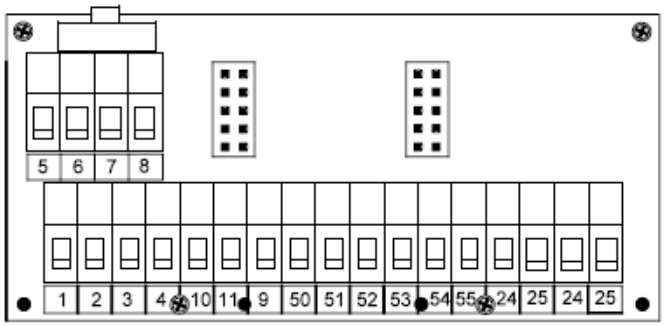
400m/s < t_p < 300m/s

M-Bus:
The M-Bus interface complies with the norm EN 1434-3 and operates with 2400 baud fixed. It can be set to 300/6900 baud if necessary.

Connections
Inputs:
Temperature sensors
Supply (hottest pipe) 1 & 2
Return (coolest pipe) 3 & 4

Flow sensor pulse 10 & 11 (GND)

If water meters with a potential free reed contact are connected to the inputs the connection can be made in any direction.



Outputs:
Energy output pulse 52 & 53 (GND)
Volume output pulse 54 & 55 (GND)
Care must be taken when connection is made to a BMS.

M-Bus (M-Bus connections are given twice for incoming and outgoing of the M-Bus wires).
L1 24
L2 25

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 Sontay.

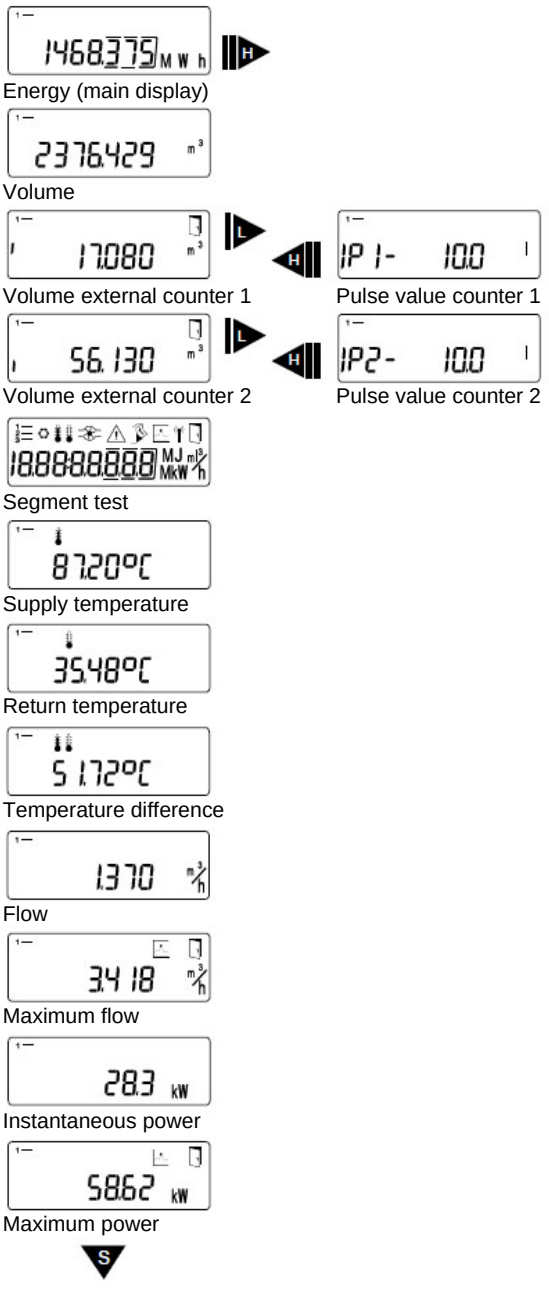
Symbol	*Status*	*Event*
	Flow existent	-
	Attention	Check for errors
	Data transmission	-
	Emergency operation	Exchange device
	External power supply	-

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

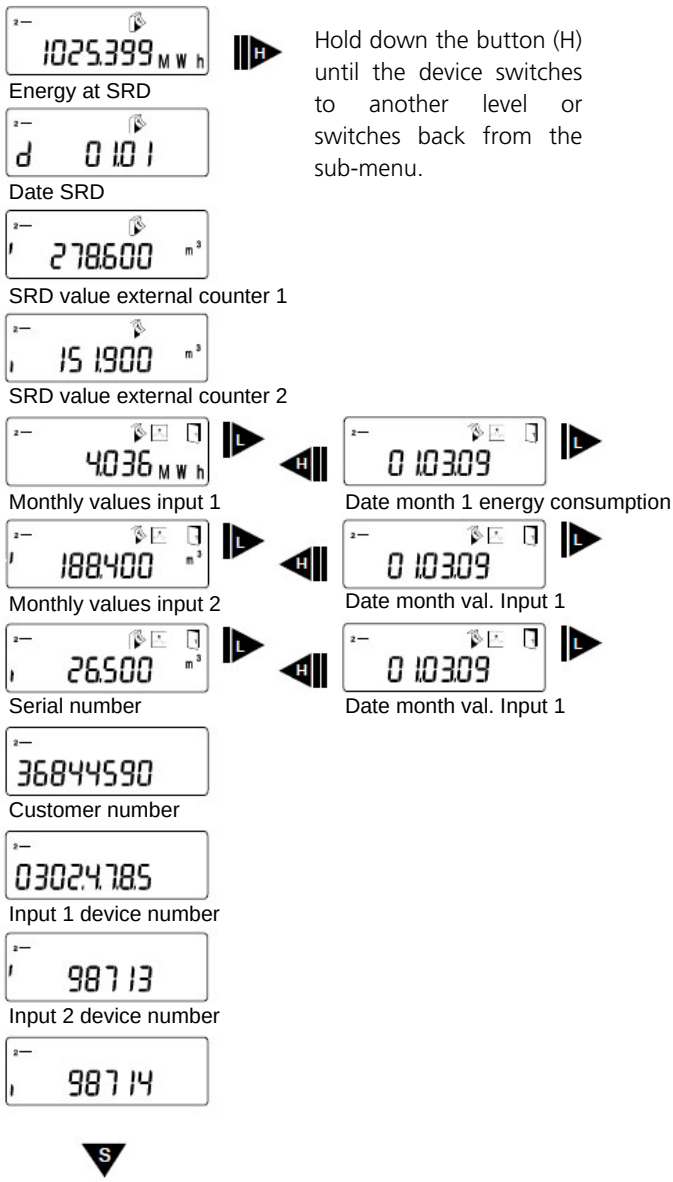
Code	*Error*	*Event*
1	Short-circuit return sensor	Check sensors
2	Interruption return sensor	"
3	Short circuit supply sensor	"
4	Interruption supply sensor	"
5	Hardware error	Exchange device
6	Battery empty/wrong temp sensor	Check
7	Temp. out of measuring range	Correction of heating system
100	Emergency operation	Exchange device
1000	Battery life time exceeded	"
2000	Initial verification expired	"
>8000	Internal hardware error	"

Display Loops:

Level 1



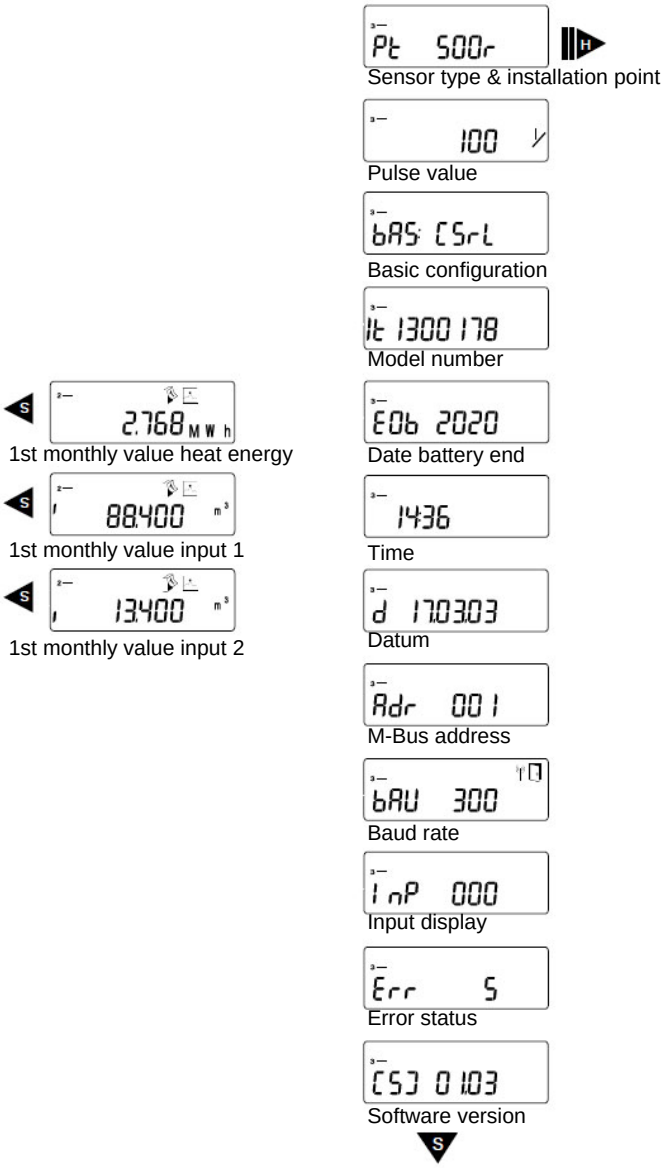
Level 2



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

Display Loops (continued)

Level 1



Legend

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).

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.

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

Dimensions: