



multidata WR3

D	Montage- und Bedienungsanleitung.....	2
	Elektronisches Rechenwerk für Wärme- und/oder Kältezähler mit 2 parametrierbaren Impulsausgängen/-eingängen Optional mit M-Bus-, RS 232- oder RS 485-Schnittstelle	
GB	Installation and operating instructions.....	16
	Electronic calculator for heat and/or cooling energy meters with 2 programmable inputs/outputs Optional with M-Bus, RS 232 and RS 485 interface	
F	Notice d'installation et d'utilisation	30
	Calculateur électronique pour compteurs d'énergie thermique/de frigorie avec 2 entrées/sorties supplémentaires configurables en option avec M-Bus, interface RS-232 ou RS-485	
IT	Istruzioni per il montaggio e l'utilizzo	44
	Colcalatore di energia per contatori di calorie e/o frigorie Con 2 ingressi/uscite programmabili su richiesta con interfaccia M-Bus, RS-232, RS-485	

Contents

Scope of delivery	17
Technical data multidata WR3	17
Technical data pulse inputs / pulse outputs	18
Connector pin assignment	19
MID - Declaration of Conformity	20
Safety instructions.....	20
Electro-magnetic interference.....	20
Care instructions	20
Installation instructions.....	21
Dimensions.....	21
Safety instructions for installation	21
General information	21
Communication	22
M-Bus (optional)	22
Installation heat calculator	23
Connection sensors	23
Switchover 2- /4-conductor.....	24
Connection flow sensor (FS).....	24
External power supply	24
Function test	24
User safeguard	24
Maintenance.....	24
Status display / Error codes.....	25
Simple example of the display menu	26
Legend	28
Disposal	29

Be sure to read the installation and operating manual before installing. This allows you to protect yourself and prevent damage. Check the contents of the packing before installation to be complete.

Scope of delivery

- Calculator for heat meters multidata WR3
- Sealing material
- Wall holder with mounting accessories (in the lower housing)
- Installation and operating instructions, declaration of conformity

Technical data multidata WR3

Temperature range	°C	0 - 150
Temperature difference range	K	3 - 120
Display	LCD multifunctional display, 8-digit plus special characters	
Display unit	Standard: MWh Optional: kWh, MJ, GJ	
Volume pulse generator can be connected	Reed switch, open collector or active Input frequency: max. 1 Hz for passive transmitters, max. 100 Hz for active transmitters	
Temperature sensor connection	PT500	
Max. Sensor cable length 2-wire	m	12.5
Max. sensor cable length 4-wire	m	20
Data interfaces	As standard: Optical data interface, 2 programmable pulse outputs/inputs optional: M-Bus, RS 485, RS 232	
Ambient temperature	°C	5 - 55
Power supply ¹	Lithium battery 3.6 V Optional: Via M-Bus level converter or plug-in power supply (output: 24 V DC)	
Battery lifespan	At least 5 years + 1 year reserve, optional 10 years + 1 year reserve	
Protection class	IP 54 / IP 65	
Mechanical/ electromagnetic class	M1 / E1	
Measuring accuracy	In accordance with DIN EN 1434-1	
Measuring cycle time	Standard: 30 seconds (10 seconds when operating button is pressed) For versions with M-Bus interface: 10 seconds	

(1) Possibility for battery replacement is depending on the country, please check the relevant national regulations

Technical data pulse inputs / pulse outputs

Flow sensor input

Electrical connection	Schematic diagram	Connection data
Passive with me- chanical contact (Reed)		1 Hz Version: fmax = 1 Hz, Pulse-duty factor: 1:1 to 1:9 Input capacitance: approx 10 nF, Input resistance: approx 850 kOhm 100 Hz Version: not allowed
Passive with open drain FET		1 Hz. Version: fmax = 1 Hz, Pulse-duty factor: 1:1 to 1:9 Input capacitance: approx 10 nF, Input resistance: approx 850 kOhm 100 Hz Version: fmax = 30 Hz, Pulse-duty factor: 1:1 Input capacitance: approx 2.5 nF, Input resistance: approx 850 kOhm
Active f. ex. with C-Mos Gate		1 Hz Version: fmax = 1 Hz, Pulse-duty factor: 1:1 to 1:9 Uhigh = 2.5 ... 3.6 V, Ulow = 0 ... 0.3 V, Input capacitance: approx 10 nF, Input resistance: approx 850 kOhm 100 Hz Version: fmax = 100 Hz, Pulse-duty factor: 1:1 Uhigh = 2.5 ... 3.6 V, Ulow = 0 ... 0.3 V, Input capacitance: approx 2.5 nF, Input resistance: approx 850 kOhm

Connection additional inputs

Electrical connection	Schematic diagram	Connection data
Passive with me- chanical contact (Reed)		fmax = 1 Hz Pulse-duty factor: 1:1 to 1:9 Input capacitance: approx 15 nF Input resistance: approx 470 kOhm
Passive with open drain FET		fmax = 1 Hz Pulse-duty factor: 1:1 to 1:9 Input capacitance: approx 15 nF Input resistance: approx 470 kOhm

Connection data outputs (energy and/or volume)

Ext. voltage max. 3V...30V current DC 20mA		Typical connection (*)
Output frequency 1 Hz (8 Hz dynamically switching, if output with 1 Hz is not possible)		
Switching times: 1 Hz: 400 ms < tp < 600 ms 8 Hz: 50 ms < tp < 80 ms		(*) The connection of an external resistor may be necessary to ensure the current limitation.

Connector pin assignment

Temperature sensor

2-wire measurement:

Supply: 1 - 2

Return: 3 - 4

4-wire measurement (optionally):

Supply: 1 - 2 / 5 - 6

Return: 3 - 4 / 7 - 8

Flow sensor

Pulse: 10

GND: 11

Inputs/Outputs

I/O 1: Pulse: 52

GND: 53

I/O 2: Pulse: 54

GND: 55

M-Bus

L1: 24

L2: 25

RS-232

DTR: 71

GND: 72

Tx: 73

Rx: 74

RS-485

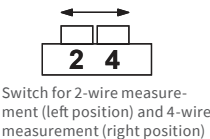
+UB: 71

GND: 72

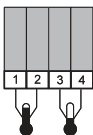
A: 73

B: 74

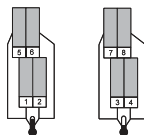
Depending on the meter's model the version of the connection board can differ. If water meters with a potential free reed contact are connected to the inputs the connection can be made in any direction. Take care of the polarity when connecting to a BMS. The connectors 24/25 are given twice for the incoming and outgoing of the M-Bus wire.



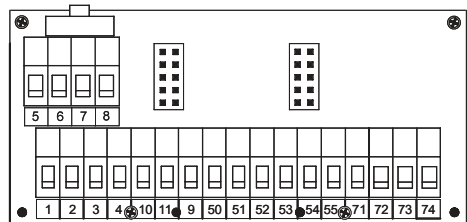
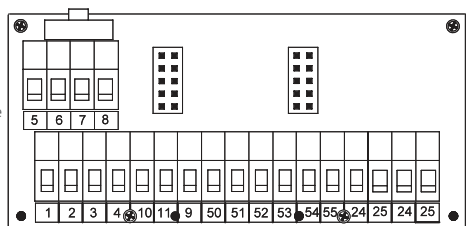
Switch for 2-wire measurement (left position) and 4-wire measurement (right position)



Connection 2-wire



Connection 4-wire



Important note for pure cooling meter calculators (only valid for Germany):

The temperature sensor on terminal 1/2 (or 1/2 and 5/6) must be installed in the cold flow, the temperature sensor on terminal 3/4 (or 3/4 and 7/8) in the cold return. The display for the temperature difference on the display (see page 26) must have a negative sign when the system is running normally.

MID - Declaration of Conformity

Multidata WR3 is produced and tested in compliance with the European Measuring Instruments Directive (MID). According to this directive, devices are no longer carrying an initial verification stamp, but rather the year of the device's declaration of conformity (recognizable on the front of the device, for example: M19=2019).

Only valid for Germany:

The metrological part for cooling energy is calibrated acc. to guideline PTB K7.2.

The MID controls the use of measuring devices 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 compulsory 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.

If you have questions, please direct them to **info@zenner.com**

The declaration of conformity is attached to each measuring instrument. The latest information about this product can be downloaded from **www.zenner.com**

Safety instructions

Electro-magnetic interference

Multidata WR3 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. 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 may only be carried out by the manufacturer or authorized service partners.

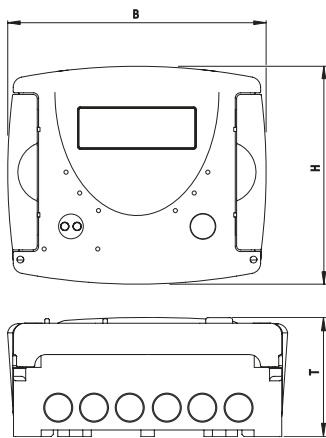
Installation instructions

Dimensions

Height: H = 106 mm

Width: B = 126 mm

Depth: T = 54 mm



Safety instructions for installation

Read these instructions carefully right up to the end before starting to mount the device! The installation has to be done by qualified professional personnel. The current laws and regulations have to be observed, especially EN 1434 part 1+6, (in Germany also AGFW directive FW202, FW 218 and FW 510). 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 make sure no heating water escapes from the pipe. **This can cause burns!** Close valves and release pressure before installation.

General information

Calculators for combined heating / cooling meters can be recognized at the imprint „change over“ or „Heating / Cooling“ on the front of the chassis.

Take care of:

- The display must be 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.

At cooling-meters for calibration rights have all subcomponents to be calibrated and marked. For use as a combined heat / cooling meter all subunits have to be marked twice, that means conformity assessment and calibrated EU (only valid for Germany).

The calculator has 7 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!

Communication

- At calculators with two pulse outputs typically the first output (I/O1) gives the energy and the second (I/O2) the volume information. The pulse value is permanently set and corresponds with the last position of the associated display value.
- At calculators with combined heating / cooling calculators the first output (I/O1) gives the heat energy and the second (I/O2) the cooling energy. The pulse value is permanently set and corresponds with the last position of the associated display value.

Example:

Output 1 = energy output

Energy display = XXXXX.XXX MWh

Last position = 0.001 MWh = 1 kWh

Output pulse = 1 kWh

Note:

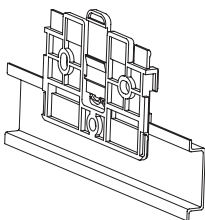
The calculator can be ordered with two inputs optionally. The pulse value can be called up in the display (see the display overview, Level 1).

M-Bus (optional)

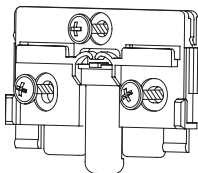
The optional M-Bus interface complies with the norm EN 13757 and operates with 2400 baud fixed. It can be set to 300/9600 baud if necessary.

Installation heat calculator

The calculator is preferably to be mounted 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 rail mounting or for wall mounting. For wall mounting detach the adapter and turn it 180°, attach 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.



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.

- Sensors are colour-coded (red = installation in the supply pipe resp. pipe with higher temperature, blue = installation in the return pipe resp. pipe with lower temperature).
- The connecting cables may not be buckled, extended or shortened!
- Do only use paired sensors with the same serial number on it.
- At 2-wire systems the cable length of the temperature sensor for supply and return should not exceed 12.5 m for PT500. At 4-wire systems the maximum cable length is 20 m. Consider EN 1434-2 regarding the diameter of the wires.
- Supply and return sensors must be inserted into the immersion sleeves completely.
- Secure the sensor after installation against unauthorised removal with appropriate sealing.
- Do not wrap or install wires along hot pipes.

Switchover 2- /4-conductor

Calculators equipped with 4-wire measuring system can be switched to 2-wire with the switch on the top left side of the connection board. Switch to the left for 2-wire, switch position on the right for 4-wire measurement.

Connection flow sensor (FS)

The total length of the wire between flow sensor and calculator should not exceed 10 m. With mechanical flow sensors the connection order is optional. Mind the polarity at electronic flow sensors.

External power supply

A small vertical line appears in the display when the optional external power supply is on service. In case of a failure of the external power supply the devices switch automatically to battery supply. The battery lifetime can be checked in the display (level 3).

Function test

Check the calculator for any error codes in the display after installation (see table 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.).

Only valid for Germany: For pure cold meters with regular running system must be displayed a **negative temperature difference**. 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.

User safeguard






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

Maintenance

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

Status display / 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! The corresponding error codes can be found in the third menu level.

Symbol	Status	Action
	External voltage	-
	Flow existent	-
	Attention!	Check system /device for errors
	<ul style="list-style-type: none">Symbol flashing: Data transmissionSymbol constantly displayer: optical interface active	<ul style="list-style-type: none">--
 	Emergency operation	Exchange device

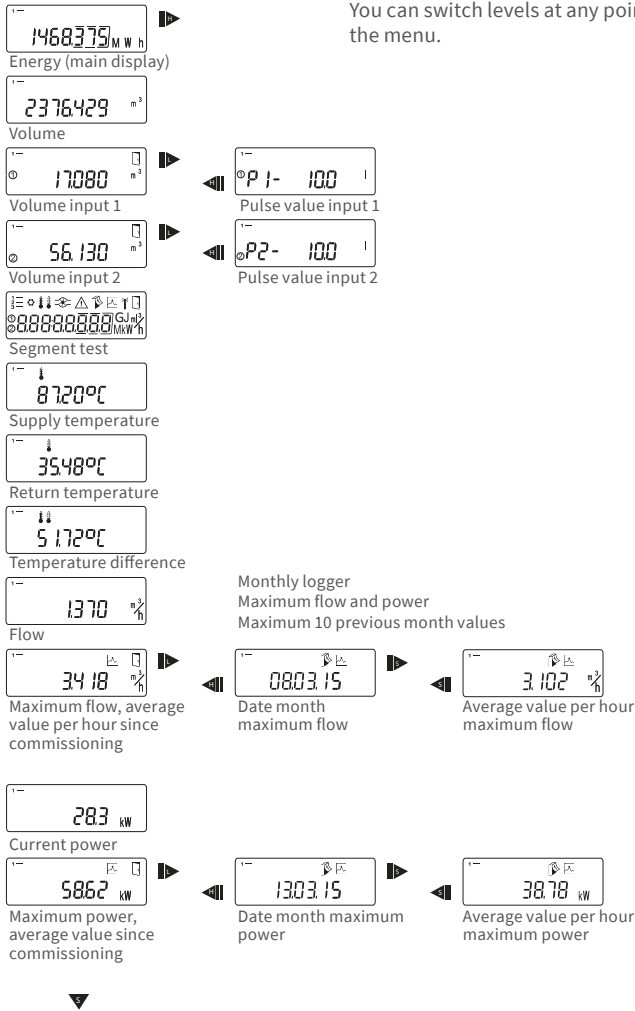
Code	Possible causes	Action
1	Short circuit return sensor	Check sensors, replace if needed
2	Interruption return sensor	Check sensors, replace if needed
3	Short circuit supply sensor	Check sensors, replace if needed
4	Interruption supply sensor	Check sensors, replace if needed
5	Hardware error	Exchange device
6	Battery empty or wrong temp. sensor	Check device / sensor
7	Temperature out of measuring range	Correction heating system, check sensor type
100	Emergency operation	Exchange device
1000	Battery life time exceed	Exchange device
2000	Initial verification expired	Exchange device
> 8000	Internal hardware error	Exchange device

Error codes show faults detected by multidata WR3. If more than one error appears, the sum of the error codes is displayed: Error 1005 = error 1000 and error 5.

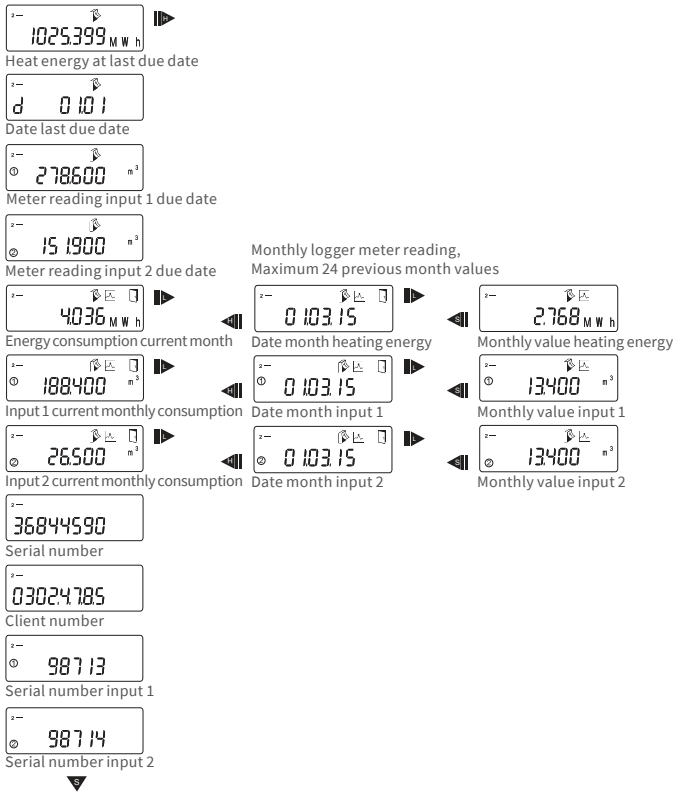
Simple example of the display menu

Level 1

You can switch levels at any point in the menu.



Level 2



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

Level 3

3- Pt 500r



Back to
Level 1

Sensor type and installation point

3- 100 ✓

Pulse value

3- bRS: cS-rL

Basic configuration

3- 0t 1300 178

Type number

3- EOb 2020

End of battery lifetime

3- 1436

Time

3- d 1703.15

Date

3- Adr 001

M-Bus address

3- bAU 2400 TQ

Baud rate

3- rE 26826 Q

Reading residual energy

3- InP 000

Input display

3- Err 5

Error status

3- C53 0 103

Firmware version

Legend



Press the button shortly (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 submenu. 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.

Recall of software version number

The software version of the firmware can be accessed from the display level 3 (display level “firmware version”).

A detailed display overview including sub-menus is available upon request.

Disposal

This device contains one or two non-rechargeable lithium battery / batteries. Batteries contain substances, which could harm the environment and might endanger human health if not disposed of properly. To reduce the disposal quantity so as unavoidable pollutants from electrical and electronic equipment in waste, old equipment should be reused prior or materials recycled or reused as another form. This is only possible if old equipment, which contains batteries or other accessories are disposed. Therefore please contact the department of your local authority which is responsible for waste disposal. Alternatively a waste disposal via ZENNER is possible. Your local or municipal authority or the local waste disposal company can give you information relating the collection points for your used equipment. ZENNER will always ensure correct disposal.

Attention:

Do not dispose the devices as domestic waste.

In this way, you will help to protect natural resources and to promote the sustainable reuse of material resources.

If you have questions, please direct them to **info@zenner.com**



The declaration of conformity and the newest information on this product can be called up from **www.zenner.com**

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