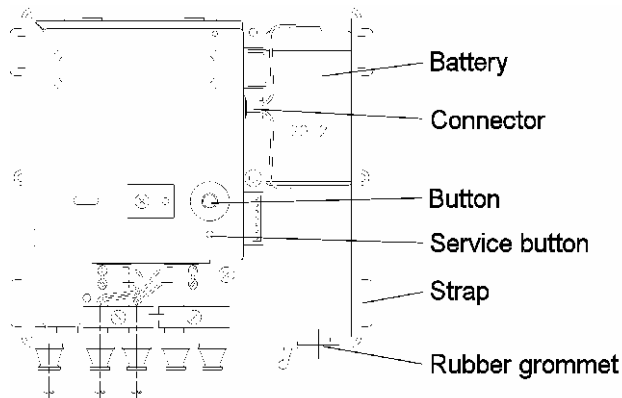


Ultrasonic Heat Meter 2WR5

Service instructions

UH 402-101g

The heat meter can be powered with a battery or by power supply modules. All power supply modules are encapsulated and fulfill protection class II. The modules can be upgraded or retrofitted at any time.



Inserting the battery

Press the four straps at the side of the housing cover inward and remove the cover forwards. Insert the battery with the plus pole up in the top right-hand corner of the calculator. Turn the battery until the printed year is visible through the round window of the housing cover. Connect the two-way connector to the printed circuit board.

Installing the power supply module

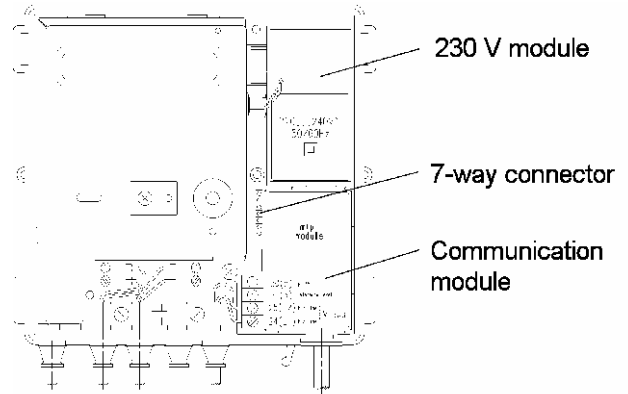
It is possible to connect a power supply module (24 V ACDC, 115 V AC or 230 V AC) instead of the battery. Remove the rubber grommet upward and thread the labelled connecting cable of the module through the grommet. Insert the module into the top, right-hand corner of the calculator and insert the grommet again from above. Connect wires as indicated by the labelling.

☞ The regulations for electrical installations must be complied with!

The 110 V / 230 V module must also be fuse-protected with 6A. When replacing the unit after the period of calibration validity has elapsed, simply swing out the supply module, mount the new heat meter, and replace the module. Because of the protection class II, it is not necessary to disconnect from mains.

Installing the communication module

The communication modules are connected using a 7-way, reaction-free connector so that installation or replacement are possible at any time.



Unscrew the cross-head screw for module fixing and open up. Insert the communication module carefully into the bottom corner of the calculation unit so that the 7-way connector engages without tension.

Fix the communication module to the printed circuit board with the cross-head screw. Cut off the fifth grommet from the left to match the cross-section of the connecting cable. Route the connecting cable from outside through the grommet. Strip back the cables and connect the cores as shown on the connection diagram printed on the module.

Calling up service functions

The heat meter is completely parameterised. Only in special cases, is it necessary to alter the parameterisation on the unit.

To do that, remove the seal on the calculator cover and take off the cover. Press the service button for about 3 sec. The mode "PrUEF", "PArA" or "Nb" are now shown on the display. Press the advance button when "PArA" is displayed.

Caution:

Mode "PrUEF" is only for use on a heat meter in a test assembly. The individual test steps are described in detail in TKB 3412.

Parameterisation

| | |
|------------|--|
| F8 | Reset F8 error |
| M | Reset maxima |
| S 0101-- | Yearly set day (dd.mm) (01.01. -- *) |
| D 15.10.04 | Date (dd.mm.yy) (15.10.04) |
| T 15:49:06 | Time (15:49:06) |
| K8888888 | Customer No., or M BUS secondary address |
| R 0 | Primary address of the M BUS |
| Modul RI | Set CV/CT/RI function in pulse module |
| P 75 min | Set measuring period (7.5/15/30/60min) |
| Ft | Reset missing hours |
| Nb----- | Return to normal mode |

*) see comment about the yearly set day on page 3

As soon as the required function is displayed, press the next display button to accept the function. If you **keep** the button pressed, the blinking position is changed continuously or error F8 or the maxima are reset. A **brief** press of the button accepts the value set blinking. After that, the next less significant value blinks that can be set by holding the button pressed and accepted with a brief press of the button. As final acknowledgement of a display line, the character „*“ is displayed briefly.

Exiting service functions

After you have finished your work, select function Nb to return to normal operation. The unit also switches back to normal operation automatically 15 h after the last time you pressed a button.

Troubleshooting

The heat meter continuously conducts self-diagnostics and can therefore display various error messages.

| | |
|-----------|---|
| F0 | There is air in the volume measuring part. The heating system must be vented thoroughly. |
| F1 | The supply sensor has a wire break. |
| F2 | The return sensor has a wire break. |
| F3 | Check whether the shield of the sensor cable has a short-circuit with the sensor conductor. If not then the electronics for temperature evaluation is defective. The unit must be repaired. |
| F4 | For battery supply: Insert new battery and dispose of the used battery properly. For power supply module: The power supply module is defective and must be repaired. |
| F5 | The supply sensor has a short circuit. |
| F6 | The return sensor has a short circuit. |

| | |
|-----------|--|
| F7 | The internal memory is defective. The unit must be repaired. |
| F8 | If one of the errors F1, F2 or F3 or F5, F6 is pending for more than 8 hours, the F8 message also appears so that fraudulent tampering can be detected subsequently. |
| F9 | The internal communication is defective. The unit must be repaired. |

Error rectification

Message F8 must be reset manually in parameterisation mode. All other error messages are automatically reset after the fault has been rectified.

Display

The heat meter display is subdivided into several levels and may differ from the standard shown below. The user loop display (level 1) is advanced cyclically each time the button is pressed briefly.

User loop

| | |
|------------------------|----------------------------------|
| 159496 MWh | Accum. qty of thermal energy |
| 0012456 MWh | Tariff register, here, e.g. cold |
| 1307142 m ³ | Accumulated volume |
| 888888 MWh | Segment test |
| F----- | Error with/without error digit |

The tariff displays can vary depending on the tariff type. The displays shown here are for a combined heat/cold meter. The valid tariff status is displayed together with the thermal energy as $_$, $=$ or \equiv . With a **pure flow meter** the heat and tariff registers are not displayed.

If button is held pressed for three seconds, the display switches from the user loop to the service loops (level 2).

Service loops

| | |
|--------|----------------|
| LOPP 1 | Service loop 1 |
| LOPP 2 | Service loop 2 |
| LOPP 3 | Service loop 3 |

One of the service loops is preselected by pressing the button briefly. By pressing the button for another 3 s the contents of the selected service loop will be displayed.

Each time the button is pressed briefly the next information is displayed.

The service loops are exited by holding the button pressed for 3 s or automatically after 30 minutes.

Service loop 1 („LOOP 1“)

| | |
|----------------|---|
| 8324 mA | Current flowrate |
| 306 kW | Current heat output |
| 92 55 °C | Current flow and return temperature |
| T9 00020 °C | Threshold value for the tariff, e.g. Tv |
| K8000000 | Customer number, 7-digit |
| 0 15.10.04 | Date |
| S 0 10 1-- | Annual set day (dd.mm) *) |
| V 159495 MWh | Heat for previous year on set day *) |
| L 00 12456 MWh | Tariff register for previous year on set day *) |
| V 1307148 m³ | Volume for previous year on set day *) |
| 2-03 FW | Version of firmware |

*) see comment about the yearly set day on page 3

Service loop 2 („LOOP 2“)

In service loop 2 the **monthly values** are displayed. One of the previous 36 monthly values can be selected by pressing the button briefly. The corresponding data are then opened by pressing the button for 3s. Each time the button is pressed briefly the next value for the selected month is displayed.

| | |
|---|--|
| 0 10904 M | Set day previous month Sep. 2004 |
| 0 10804 M | Set day previous month Aug. 2004 |
| ... | Set day previous month xxxx 200y |
| pressing the button for more than 3s: ↓ | |
| V 159495 MWh | Qty of thermal energy on this set day |
| L 00 12456 MWh | Tariff register on this set day, e.g. cold |
| V 1307148 m³ | Volume on this set day |
| M 8324 mA | Max. flowrate in Jul., changing with date stamp every 2s |
| S 0 10 104 M | Maximum heat output in Jul., changing with date stamp every 2s |
| M 95 55 °C | Max. temperatures in Jul., changing with date stamps of flow and return every 2s |
| S 0 10 104 M | |
| S 0 10 104 M | |
| V 0 | Status of missing hour counter on this set day |

After the last item is shown, the current set day is again displayed. The next set day can be selected by pressing the button briefly.

Service loop 3 („LOOP 3“)

| | |
|--------------|---|
| P1 ----- W/V | Parameter of fast pulses, significance of energy pulses |
| P2 L | Significance of volume pulses |
| P3 --- mS | Pulse length in ms |
| TP 30 SEC | Interval of temperature measurement |
| ----- F0 | Date stamp for F0 warning |
| Modul MB | Type of built in module |
| A 0 | M-bus primary address *) |
| R 0000000 | M-bus secondary address *) |

*) only shown if module is of type MB

Monthly values

The calculator stores for 36 months at the set day at 00:00h the values of

- Heat (meter reading)
- Tariff (register reading)
- Volume (reading)
- Max. flowrate (monthly maximum averaged across the measurement period, standard 60 min), with date stamp
- Max. demand (monthly maximum averaged across the measuring period), with date stamp
- Max. temperatures (monthly maximum) with date stamp each for flow and return
- Missing hour counter (reading)

The monthly values can also be read out via the optical and 20mA interface.

The heat meter can be delivered in various versions. As a consequence the display loops may be shorter or longer or arranged in a different way as shown above.

Operational details

If the response limits are exceeded and the flowrate and temperature difference are positive, the **quantity of heat** and the **volume** are summated. With the **segment test**, all segments of the display are activated to test the display itself.

On the **yearly set day** the meter readings for the quantity of heat and volume are placed in a **previous year's memory** identified with a **V** (with firmware versions 2.12 and 2.13 this function is not possible together with fast pulses! The display of S 00,01,- means that the yearly set day is deactivated).

The **flow rate**, the **heat output**, and the **differential** (temperature difference) are acquired with the correct sign. If the lower response limit is violated, a **u** is displayed in front of the value. The current **temperatures** are displayed as integer values in °C together on one display line.

The heat output and flow rate are averaged over the **measuring period** of, say, 60 min. The **maximum values** of mean value calculation are marked with an **M** in the leading position.

The 8-digit **customer number** (secondary address for M bus operation) can be set in parameterisation mode. The most significant position is suppressed in the display. The **unit number** is assigned by the manufacturer.

The **hours of operation** are counted from initial connection of the power supply. **Hours of downtime** are summated if a fault prevents the heat meter from measuring. The **date** is incremented every day.

The **module type** is displayed. If an M bus module is installed, the primary address is displayed on the next line. A modem, analog module or radio module is also displayed as M bus module.

The number of the **firmware version** is assigned by the manufacturer.

Literature

The following further literature can be ordered from the manufacturer:

| | |
|------------------------|------------|
| Configuration | UH 102-101 |
| Assembly instructions | UH 202-101 |
| Operating instructions | UH 302-101 |
| Service instructions | UH 402-101 |
| Catalog sheet | UH 502-101 |
| Basic documentation | UH 602-101 |
| Test description | TKB 3412 |
| Serial interfaces | TKB 3415 |
| Description of M bus | TKB 3417 |
| Description of Modem | TKB 3416 |

Latest versions and additional information you may find in the internet: **www.landisgyr.com**

Landis+Gyr GmbH
Humboldtstr. 64
D-90459 Nürnberg
Germany

Notes

The data below can be recorded for a service assignment:

Heat meter location

Name

Street

Postcode / City

Phone

Unit type

Year of manufacture

Factory number

Customer number

Quantity of heat

Volume

Heat previous year

Volume previous year

Days downtime

Days of operation

Error messages

Comments

.....

.....

Service technician

Name

Date

Signature