

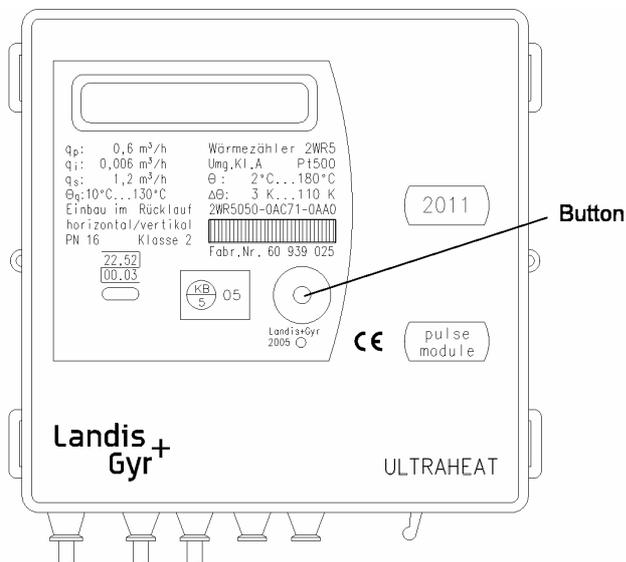
# Ultrasonic Heat Meter 2WR5

## Operating instructions UH 302-1011

Landis  
Gyr+

**These operating instructions have to be handed over to the end user**

3250 002 101 g



The heat meter 2WR5 combines state of the art microcomputer technology with innovative ultrasonic metrology avoiding any moving mechanical parts.

This technology is therefore non-wearing and largely maintenance-free. High accuracy and long-time stability ensure correct and fair heating cost accounting.

The quantity of heat output from the heating water is proportional to the difference in temperature between the supply and return temperatures and the volume of heating water having flowed.

The heating water volume is measured by an ultrasonic pulse that is first sent in the direction of flow and then against the direction of flow.

With the flow the signal transmission time between the transmitter and receiver is reduced and against the flow it is increased.

The volume of heating water and the temperature difference between the supply and return are then multiplied and the product is added to the running total.

The result is the quantity of heat consumed. This result is recorded and displayed in physical units kWh / MWh or in MJ / GJ.

### 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

1594967 MWh	Accum. qty of thermal energy
0012456 MWh	Tariff register, here, e.g. cold
1307148 m <sup>3</sup>	Accumulated volume
8,8,8,8,8,8 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

L 00P 1	Service loop 1
L 00P 2	Service loop 2
L 00P 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.

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### Service loop 1 („LOOP 1“)

8,324 m <sup>3</sup> /h	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
K0000000	Property number, 7-digit
15.10.04	Date
S 0 10 1--	Annual set day (dd.mm) *)
✓ 1594967 MWh	Heat for previous year on set day *)
∫ 00 12,456 MWh	Tariff register for previous year on set day *)
✓ 1307,48 m <sup>3</sup>	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: ↓	
1594967 MWh	Qty of thermal energy on this set day
∫ 00 12,456 MWh	Tariff register on this set day, e.g. cold
1307,48 m <sup>3</sup>	Volume on this set day
M 8,324 m <sup>3</sup> /h	Max. flowrate in Jul. 2004, changing with date stamp every 2s
S 0 10704 M	
M 306 kW	Maximum heat output in Jul., changing with date stamp every 2s
S 0 10704 M	
M 95 65 °C	Max. temperatures in Jul., changing with date stamps of flow and return every 2s
S 0 10704 M	
F 0 h	Status of missing time 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 ----- Wh/l	Parameter of fast pulses, significance of energy pulses
P2 ----- l/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 MI	Type of built in module
F 0	M-bus primary address (**)
F0000000	M-bus secondary address (**)

\*\*) only shown if module is of type MB

Note: Standard time used inside the meter is the central europe time (CET).

### 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 20 mA interface.

### Error codes

The heat meter performs self-diagnostics continuously and can thus display various errors.

Error message **F0** means there is air in the volume measurement part and it is necessary to vent the heating system thoroughly. Error message **F4** means the battery needs replacing.

Error messages **F1**, **F2** or **F5**, **F6**, **F8** mean the sensor is defective. **F3**, **F7**, **F9** indicated a fault in the electronics. In all these cases, you must contact service.

## Operational details.

If the response limits are exceeded and the flow rate 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 **property 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 **time of operation** is counted from initial connection of the power supply. **Time of downtime** is 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 modul or radio modul is also displayed as M bus module.

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

## Additional

The calculator may only be cleaned from the outside. Use only a soft and wet cloth without any aggressive detergent.

## EC Declaration of conformity

Landis+Gyr herewith declares that this product complies with the relevant requirements of the following directives:

- 2004/22/EC Measuring instruments directive
- 89/336/EEC Electromagnetic compatibility
- 73/23/EEC Low voltage directive

EC type-examination certificate

**DE-06-MI004-PTB005**