Heat Meter Ultraheat® UH50
Cold Meter Ultracold® UH50
Flow Sensor UH50

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Operating Instructions UH 306-101I

3250 006 101 I

These Operating Instructions must be handed to the final user on start-up!

Note: In the following text the term Meter covers the Heat Meter as well as the Cold Meter and the Flow Sensor if not mentioned otherwise.

General information

The UH50 Meter combines modern microcomputer technology with innovative ultrasonic measuring technology in which no moving parts are necessary.

This technology is therefore non-wearing, robust, and largely maintenance-free. Great accuracy and stability over a long time ensure true and fair billing of costs.

The quantity of thermal energy given off from the heating or cooling water is proportional to the temperature difference between the flow and return temperature and the volume of water that flowed through.

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

Downstream the time the pulse travels between the transmitter and the receiver becomes shorter; upstream it becomes correspondingly longer.

The volume of water is then calculated from the values measured for the pulse travel times. The flow and return temperatures are sensed using platinum resistors.

The volume of water and the temperature difference between the flow and return are then multiplied and the product is summated.

The result is that the quantity of thermal energy consumed is recorded and displayed in the units kWh or MWh or MJ or GJ.

Operating elements

Displays

The places after the decimal point of displayed values are indicated by a surrounding border.
Calibrated values can be recognized by the star symbol shown in addition to the value.

The displays of the meter are arranged on several levels (LOOPs). LCD button 2 advances the display of the user loop (LOOP 0) cyclically.

Note: Depending on how the unit is parameterized, the number of items displayed and the data shown may differ from this description. Certain button functions may also be disabled.

User loop ("LOOP 0")

LOOP 0	Head of loop
F --------	Error message with error code number (only displayed in case of error)
1234567 kWh	Accumulated quantity of energy with tariff status
T1 1234567 kWh	Tariff register 1 (optional)
12345.67 m³	Accumulated volume
8.8.8.8.8.8.8.8 kWh	Segment test

LCD button 1 is used to switch the display from the user loop to the selection of service loops (LOOP 1..n).

Service loops (selection)

LOOP 1	Service loop 1
LOOP 2	Service loop 2
...	...
LOOP n	Service loop n

LCD button 1 advances the display to the next loop. After the last loop, the user loop (LOOP 0) appears again.

LCD button 2 displays the content of the selected service loop.

Within a loop, the LCD button 2 is used to advance to the next line of the display. After the last line of the display, the first display line appears again.

Service loop 1 ("LOOP 1")

LOOP 1	Head of the loop
1.234 m³/h	Current flowrate
90.4 kW	Current power
TV 91.6 °C	Current flow/return temperature; at 2s intervals
TR 56.2 °C	
Bd 1234 h	Operating time
Pd 1234 h	Operating time with flowrate
Fd 123 h	Missing time
K 12345678	Property number, 8-digit
D 10.05.06	Date

SD 31.05.--	Yearly set day (DD.MM)
1234567 kWh	Quantity of energy previous year on set day
12345,67 m³	Volume for previous year on set day
FW1 5.00	Firmware version

Service loop 2 ("LOOP 2")

In service loop 2, the **maxima** are displayed. LCD button 2 calls the displays one after the other.

LOOP 2	Head of the loop
Ma 3.899 m³/h	Max. flowrate, at 2s intervals with date stamp
St 13.12.05	
Ma 288.9 kW	Max. power, at 2s intervals with date stamp
St 11.12.05	
MV 98.8 °C	Max. temperatures, at 2s intervals with date stamp for flow and return maximum
St 08.12.05	
MR 87.7 °C	
St 04.12.05	
MP 60 min	Measuring period for maximum calculation

Service loop 3 ("LOOP 3")

Service loop 3 shows the **monthly values**. LCD button 1 is used to select a month out of the previous months. The data for that month are then opened with LCD button 2. Each further press of LCD button 2 shows the next value for the selected month.

LOOP 3	Head of the loop
...	...
01.01.06 M	Set day for December 2005
01.12.05 M	Set day for November 2005
...	...

using LCD button 2: ⇩

1234567 kWh	Quantity of energy on the set day
T1 1234567 kWh	Tariff register 1 on the set day
12345,67 m³	Volume on the set day
Ma 3.899 m³/h	Max. flowrate on the set day, at 2s intervals with date stamp
St 13.12.05	
Ma 288.9 kW	Max. power on the set day, at 2s intervals with date stamp
St 11.12.05	
MV 98.8 °C	Max. temperatures on the set day, at 2s intervals with date stamp for flow and return maximum
St 08.12.05	
MR 87.7 °C	
St 04.12.05	
Fd 123 h	Missing time count on the set day

After the last display, the previously selected set day is displayed again. Pressing LCD button 1 selects the next set day.

Note: If you want to drop out and go directly to the next loop, choose a monthly value by pressing LCD button 2 and then press LCD button 1.

Service loop 4 ("LOOP 4")

Service loop 4 shows the **unit parameters**. LCD button 2 calls the displays one after the other.

LOOP 4	Head of the loop
T2 0.000 m³/h	Current tariff, at 2s intervals with threshold value 1
' 0.000 m³/h	
FP 2.00 SEC	Measuring interval for flowrate
TP 30 SEC	Measuring interval for temperature
Modul 1 MB	Module 1: M-bus module
AP1 127	M-bus primary address 1
A 12345678	M-bus secondary address 8-digit
Modul 2-1 CE	Module 2: pulse module; chan. 1 = energy quantity, Channel 2 = volume, at 2s intervals
Modul 2-2 CV	
P01 125.00Wh/I	Significance for energy quantity pulses *)
P02 0.0250 L/I	Significance for volume pulses *)
P03 2ms	Pulse duration in ms *)

*) for "fast pulses"

Previous year's values

The electronic unit stores the meter readings for quantity of energy, volume, the tariff register, missing time, and flowrate measuring time as well as the current maxima for flowrate, power, temperature difference, flow temperature, and return temperature with their date stamps on a yearly set day.

Monthly values

The electronic unit stores the meter readings for quantity of energy, volume, the tariff register, missing time, and flowrate measuring time as well as the monthly maxima for flowrate, power, temperature difference, flow temperature and return temperature with their date stamp for up to 60 months on the set day of each month.

Note: The standard time used is Central European Time (CET). If daylight-saving time is activated, storage will be performed accordingly.

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

Error messages

The meter constantly performs self-diagnostics and can display various error messages.

Error message ***F0*** means flowrate measurement is not possible, e.g. due to air in the volume measuring unit; the system must be carefully vented.

Error message ***F4*** means the battery must be replaced.

Error message ***F1, F2*** or ***F5, F6, F8*** means that the temperature sensor is defective. Messages ***F3, F7, F9*** indicate a fault in the electronics. In all these cases, please call service.

Functional details

If the response thresholds are exceeded and the flowrate and temperature difference are positive, the **quantity of thermal energy** and the **volume** are

summated. In the **segment test,** all segments of the display are switched on for test purposes.

On the **yearly set day,** the meter readings for quantity of energy and volume, the values for the maxima and the flowrate and missing times are placed in the **previous year memory**.

The **flowrate, power,** and **temperature difference** are acquired with the correct sign. If the response threshold is not reached, the value is preceded by a ***u***. The current **temperatures** are shown in separate lines with a resolution of 0.1°C.

To calculate the maximum, the power and flowrate are averaged over a **measuring period** of, for example, 60 min. The **maximum values** from the average calculation are preceded by ***Ma***. The **maximum temperatures** are preceded by ***MV*** resp. ***MR***.

The 8-digit **property number** (also the secondary address in M-bus operation), can be set in parameter setting mode. The **unit number** is assigned by the manufacturer.

The **operating time** is counted from the first time the power supply is connected. **Missing times** are summated, if an error is pending that prevents the meter from measuring. The **date** is incremented daily.

The type of installed **modules** is displayed. If an M-but module is installed, the primary and secondary address awill be displayed on the following lines.

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

Technische Daten

Measuring accuracy	class 2 or 3 (EN 1434)
Environment class	A (EN 1434) for indoor installation
Mechanical class	M1 *)
Elektromagnetical class	E1 *)

*) according 2004/22/EG EC directive

Ambient humidity	< 93 % r.h. without condensation

Electronic unit

Storage temperature	- 20 to 60°C
Max. height	2000 m above MSL
Ambient temperature	5 to 55°C
Housing degree of prot.	IP 54 per EN 60529
Safety class	
line 110 / 230 V AC	II per EN 61558
line 24 V ACDC	III per EN 61558
Response threshold f. ΔT	0,2 K
Temperat. diff. ΔT	3 K to 120 K
Temperat. meas. range	2...180°C

Sensors

Type	Pt500 or Pt100 per EN 60751
Temperature range	0...150°C (<= 45 mm length) 0...180°C (>= 100 mm length)

All volume measuring units

(Consider the details on the meter)

Mounting location	return or flow
Mounting orientation	any
Settling section	none
Metrological class	1:100
Temperature range	5 to 130°C *)
recommended for…	
…heat application	10 to 130°
…cooling application	5 to 50°C

*) national approvals may differ

Max. temperature	150°C for 2000 h
Max. overload	2,8 x q_p
Nominal pressure	**PN16**, PN25

EC Declaration of conformity

Landis+Gyr herewith declares that the products of type UH50 comply with the requirements of the following directives:

- **2004/22/EC** measuring instruments directive *)
- **2004/108/EG** electromagnetic compatibility
- **73/23/EEC** low-voltage directive

*) for Cold Meters in Germany applies PTB TR K 7.2

Nürnberg, the 25.05.2009

Brunner, COO .... Reichmann, head of R&D ....
name, function signature name, function signature

This declaration and the corresponding documents are lodged at Mr. Reichmann c/o Landis+Gyr under the number CE UH50 003/05.09.

EC type-examination certificate
DE-06-MI004-PTB018

EC design-examination certificate
DE-07-MI004-PTB010

EC type-examination certificate (flow sensor)
DE-08-MI004-PTB017

Certificate of the approval of a quality management system
DE-09-AQ-PTB006MID

Notified body: PTB Braunschweig and Berlin, Germany; Nr. 0102

In Germany the Cold Meter is approved under the number 22.72/07.01.

Further information

- The electronic unit must only be cleaned on the outside. Please use a soft, damp cloth to do this, which can be dipped in a non-corrosive cleaning agent.
- User seals must only be removed by authorized persons for service purposes and must then be replaced.