T550 (UH50…)

Note: These operating instructions remain with the end user following installation.

Note: In the following text, the term meter refers to both the heat meter, the cooling meter and the flow meter, unless they are otherwise differentiated.

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1. General

1.1 Use

The T550 (UH50…) is used as a meter for heating or cooling consumption measurement in systems with water.
The meter consists of two temperature sensors and an electronic unit that calculates the energy consumption from the volume and temperature difference.

1.2 General notes

The meter left the factory in a faultless condition where safety is concerned. The manufacturer will provide additional technical support on request. Calibration relevant security seals on the meter must not be damaged or removed. Otherwise, the warranty and calibration validity of the meter will no longer apply.

- Keep the packaging so that you can transport the meter in its original packaging following expiry of the calibration validity.
- Lay all cables at a minimum distance of 500 mm to high voltage and high frequency cables.
- A relative humidity of < 93 % at 25 °C is permissible (without condensation).
- Avoid cavitation in the whole system due to overpressure i.e. at least 1 bar at qp and approx. 3 bar at qs (applies for approx. 80 °C).
- At a **heat meter** or combined heat/cold meter the mounting place of the flow sensor cold side is equivalent to return. The mounting place of the flow sensor hot side is equivalent to flow.
- At a **cooling meter** the mounting place of the flow sensor hot side is equivalent to the return. The mounting place of the flow sensor cold side is equivalent to flow.

2. Safety Information

The meter may only be used in building service engineering systems and only for the applications described.

The local regulations (installation etc.) must be adhered to.

The operating conditions according to the type plate must be complied with during use. Non-compliance can result in hazardous situations and the expiry of all claims arising from liability for defects as well as liability based on any expressly granted guarantees.

Requirements for circulating water (CEN/TR 16911: 2016).

The meter is only suitable for circulating water in heating systems.

The meter is not suitable for drinking water.

Do not lift the meter by the electronic unit.

Be aware of sharp points on the edges, flange and measuring tube.

Only personnel, trained in the installation and operation of meters in heating and cooling systems, may install and remove the meter.

Only install or remove the meter when the pipes are pressure-less.

After installing the meter, check the leak-tightness of the system.

Guarantee and calibration validity will lapse if the calibration relevant security seals are broken.

Only clean the meter from outside with a soft, lightly wetted cloth. Do not use any spirit or cleaning solvent.

The 110 V / 230 V connections may only be made by an electrician.

The meter may only be powered up once the installation has been completed. There is otherwise a danger of electronic shock on the terminals.
A defective or obviously damaged appliance must be disconnected from the power supply immediately and replaced.

As far as disposal is concerned, the meter is a waste electronic appliance in the sense of European Directive 2012/19/EU (WEEE) and it must not be disposed of as domestic waste. The relevant national, legal regulations must be observed as the appliance must be disposed of via the channels provided for this purpose. The local and currently valid legislation must be observed.

The meter contains lithium batteries. Do not dispose of the meter and the batteries with domestic waste. Observe the local stipulations and laws on disposal.

You can return the lithium batteries to the manufacturer for appropriate disposal following use. When shipping please observe legal regulations, in particular, those governing the labelling and packaging of hazardous goods.

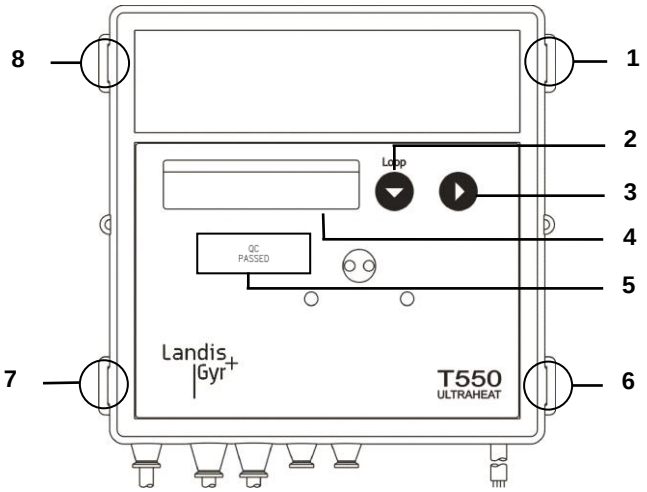
Do not open the batteries. Do not bring batteries into contact with water or expose to temperatures above 80 °C.

The meter does not have any lightning protection. Ensure lightning protection via the in-house installation.

Only fit one compartment for the power supply. Do not remove the red locking hatch.

3. Operating

3.1 Operating elements



Number	Description
1; 6; 7; 8	Cover lugs
2	Button 1
3	Button 2
4	LCD
5	Security seal

Note: Both display range and data displayed can differ from the description depending on the appliance parameterisation. Certain button functions can also be blocked.

3.2 Displaying current meter status

The meter displays the current meter status in kWh, MWh, MJ or GJ.

Note: In order to prevent reading errors, the decimal places of the values displayed are marked with a frame.

Note: Calibrated values can be recognised by an additionally displayed star symbol.

Display values

Switch to the service loops to display the values. Proceed as follows:

- To switch from the user loop into the service loops press button 1.

The displays of the meter are arranged in several levels (LOOPs).

- To switch the LCDs between the loops press button 1.

The LCD shows the following values one after the other:

LOOP 1	Service loop 1
LOOP 2	Service loop 2
...	...
LOOP 0	User loop

After the last loop is displayed, the user loop “LOOP 0” comes up again.

Switching in a loop

Proceed as follows to switch to the next display value within a loop:

- Press button 2.

The first display value will appear again after the final display value.

User loop “LOOP 0“

The meter is located in the user loop “LOOP 0“.

- To switch to the next display value press button 2.

The LCD displays the following values one after the other:

1234567 kWh	Energy accumulated with tariff status
T1 1234567 kWh	Tariff register 1 (optional)
12345,67 m³	Volume accumulated
8.8.8.8.8.8.8.8 kWh	Segment test
LOOP 0	Head of the loop
F -------	In case of error: message with error code

Service loop 1 “LOOP 1“

Service loop 1 displays the details of the current measurement. The LCD shows the following values one after the other:

LOOP 1	Head of the loop
1,234 m³/h	Current flow
90,4 kW	Current power
TV 91,6 °C	*TV* current temperature hot side, *TR* current temperature cold side; in 2-sec. cycles
TR 56,2 °C	
Bd 1234 h	Operating time
Pd 1234 h	Operating time with flow
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	Energy: previous year on set day
12345,67 m³	Volume: previous year on set day
FW1 5-00	Firmware version

Service loop 2 “LOOP 2“

Service loop 2 displays the measurement period for establishing the maximum.
The LCD shows the following values one after the other:

LOOP 2	Head of the loop
MP 60 min	Measurement period for establishing the maximum

Service loop 3 “LOOP 3“

Service loop 3 displays the monthly values.

- In order to display the monthly values, press button 2.

The set day of the current month is displayed.

- To select the desired month, press button 1.

LOOP 3	Head of the loop
...	...
01.07.11 M	Set day for July 2011

- To request the associated values, press button 2.

The LCD displays the following values one after the other:

123456,7 kWh	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. flow on the set day, in 2-sec. cycles with date stamp
St 13.06.11	
Ma 288,9 kW	Max. power on the set day, in 2-sec. cycles with date stamp
St 13.06.11	
MV 98,8 °C	Max. temperatures on the set day, in 2-sec. cycles with date stamp *MV* for hot side or *MR* for cold side
St 13.06.11	
MR 87,7 °C	
St 13.06.11	
Fd 123 h	Missing time count on the set day

After the last display the previously selected set day is displayed once again.

- To select the next set day, press button 1.

Stop “LOOP 3“

To go into the next loop early, proceed as follows:

- Select a monthly value with button 2.
- Press button 1.

Service loop 4 “LOOP 4“

Service loop 4 displays appliance parameters.
The LCD displays the following values one after the other:

LOOP 4	Head of the loop
T2 0,000 m³/h	Current tariff, in 2-sec. cycles with threshold value 1
' 0,000 m³/h	
FP 2,00 SEC	Measurement interval flow
TP 30 SEC	Measurement interval 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; channel 1 = energy, channel 2 = volume; in 2-sec. cycles
Modul 2-2 CV	
P01 125,00Wh/I	Value for energy pulses *)
P02 0,0250 L/I	Value for volume pulses *)
P03 2ms	Pulse duration in in ms *)

*) for “fast pulse“

3.3 Previous year’s values

The meter saves the following values on the yearly set day

- Energy (meter status)
- Volume (meter status)
- Tariff register (meter status)
- Missing time (meter status)
- Flow measurement time (meter status)

and the maxima with date stamp for

- Flow
- Power
- Temperature difference
- Temperature hot side
- Temperature cold side

3.4 Monthly values

The meter stores the following values for 60 months on the monthly set day

- Energy (meter status)
- Volume (meter status)
- Tariff register (meter status)
- Missing time (meter status)
- Flow measurement time (meter status)

and the maxima with date stamp for

- Flow
- Power
- Temperature difference
- Temperature hot side
- Temperature cold side

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

Note: Central European Time (CET) applies as the standard time. During summer time the storage takes place at the corresponding times.

4. Error Messages

The meter continuously runs a self-diagnosis and can thus recognise and display various installation or meter error messages.
The error message **F0** means that no flow measurement is possible, due to air in the volume measurement unit for example; the system must be vented carefully.
The error message **F4** means the battery must be replaced.
When any of the error messages **F1**, **F2** or **F5**, **F6**, **F8** are displayed, the temperature sensors are defective. The messages **F3**, **F7**, **F9** mean a defect in the electronic.
Contact the service department in all these cases.

5. Functional Details

If the respective operation thresholds are exceeded and flow and temperature difference are positive, the meter summates the energy and the volume. All segments of the display are switched on for control purposes during the segment test.
On the yearly set day, the meter status for energy and volume, the values for the maxima and flow and missing hours are logged in the previous year’s archive.
Flow, power and temperature difference are recorded with the appropriate +/- signs. If the operation threshold has dropped a *“u“* is displayed in front. The current temperatures are displayed to an accuracy of 0.1 °C.
For maximum formation the power and flow over the measurement period (of e.g. 60 mins.) are averaged. The maximum values of the average value formation are marked with *“Ma“* in front. The maximum values of the temperatures are marked with *“MV“* or *“MR“*.
The 8-digit property number (also the secondary address for M-Bus operation) can be set in the parameterisation mode.
The meter number is issued by the manufacturer.
The operating time is counted from the first connection of the power supply. Missing hours are summated if there is an error and the meter is thus unable the measure. The date is incremented on a daily basis.
The type of modules installed is displayed. If an M-Bus module is installed, the primary and secondary address is displayed in the subsequent lines.
The number for the firmware version is issued by the manufacturer.

6. Technical Data

Note: The information on the meter must be observed!

General

Measuring accuracy	Class 2 or 3 (EN 1434)
Environment class	A (EN 1434) for indoor installation
Mechanical class	M1 *)
Electromagnetic class	E1 *)
*) according to 2014/32/EU Directive on Measuring Instruments	
Ambient humidity	< 93 % rel. humidity at 25 °C, without condensation
Max. height	2000 m above sea level
Storage temperature	-20 … 60 °C

Electronic unit

Ambient temperature	5 … 55 °C
Housing protection rating	IP 54 according to EN 60529
Safety class	
Line 110 / 230 V AC	II according to EN 61558
Line 24 V ACDC	III according to EN 61558
Operation threshold f. ΔT	0.2 K
Temperature difference ΔT	3 K … 120 K
Temperature measurement range	2 ... 180 °C
LCD	7 digits
Optical interface	Standard, EN 62056-21
Communication	Optional, e.g. M-Bus
Separability	Always, optional cable length

Sensor

Type	Pt 500 or Pt 100 According to EN 60751
Temperature range	0 ... 150 °C (up to 45 mm overall length) 0 ... 180 °C (from 100 mm overall length)

Volume measurement unit

Protection class	IP 54 / IP 65 according to EN 60529 IP 68 (at qp 150) according to EN 60529
Mounting place	Hot side / cold side
Installation position	Any
Flow straightening	None
Measuring range	1:100
Temperature range	5 … 130 °C National type approvals may be different.
recommended...	
...heating application	10 … 130 °C
...cooling application	5 … 50 °C
Maximum overload	2.8 × qp
Nominal pressure	PN16 (PS16), PN25 (PS25)

EC Declaration of Conformity

No. CE UH50 018 / 10.21

Landis+Gyr

Product description: Ultrasonic heat meter
ULTRAHEAT®T550 (UH50...)

Manufacturer: Landis+Gyr GmbH, Humboldtstrasse 64, 90459 Nuremberg, Germany

Landis+Gyr GmbH takes sole responsibility for the issue of this declaration of conformity. It declares herewith that the above named product meets the requirements of the following directives and laws:

Standard	Reference	First edition		Last revised	
2011/65/EU	(RoHS)	OJ L 174	01/07/2011	OJ L 67	05/03/2020
2014/30/EU	(EMC)	OJ L 96	29/03/2014	OJ L 212	22/08/2018
2014/32/EU	(MID)	OJ L 96	29/03/2014	OJ L 3	27/01/2015
2014/35/EU	(LVD)	OJ L 96	29/03/2014		
2014/53/EU	(RED)	OJ L 153	22/05/2014	OJ L 212	22/08/2018
2014/68/EU	(PED)	OJ L 189	27/06/2014	OJ L 157	23/06/2015

These respective harmonised standards and normative documents were taken as a basis:

Standard	Last revised	Directive	Reference	Standard	Last revised	Directive	Reference
EN IEC 63000	2018	RoHS	OJ L 155 18/05/2020	EN 301 489-1 V2.1.1	2017	RED	
EN 1434-1	2007	MID	OJ C 218 24/07/2012	EN 301 489-3 V2.1.1	2019	RED	
EN 1434-2 + AC	2007/2007	MID	OJ C 218 24/07/2012	EN 301 489-52 V1.1.0	2016	RED	
EN 1434-4 + AC	2007/2007	MID	OJ C 218 24/07/2012	EN 301 511 V12.5.1	2016	RED	OJ C 049 09/02/2018
EN 1434-5	2007	MID	OJ C 218 24/07/2012	EN 10213	2016	PED (150)	OJ C 293 12/08/2016
EN 1434-1 + A1	2015/2018	MID		EN 12516-2	2014	PED (150)	OJ C 293 12/08/2016
EN 1434-2 + A1	2015/2018	MID		EN 12266-1	2012	PED (150)	OJ C 293 12/08/2016
EN 1434-3	2015	MID		EN 13480-2 + A7	2017/2020	PED (150)	OJ L 046 10/02/2021
EN 1434-4 + A1	2015/2018	MID		EN 13480-5 + A1	2017/2019	PED	OJ L 250 30/09/2019
EN 1434-5 + A1	2015/2019	MID		AD2000		PED (150)	
OIML R 75-1	2002	MID	OJ C 269 04/11/2006				
OIML R 75-2	2002	MID	OJ C 269 04/11/2006	Standards related to RED are only applicable when equipped with corresponding radio modules. Standards with reference to PED are only applicable for configuration with nominal size ≥ DN50. Standards with reference to PED (150) only for configuration with nominal size = DN150 and PN25.			
WELMEC 7.2	2015	MID					
EN 61000-6-3	2007/2011/2012	EMC	OJ C 173 13/05/2016				
EN 62368-1 + AC	2014/2015	LVD	OJ C 249 08/07/2016				
EN 300 220-1 V3.1.1	2017	RED		For DN150: PS (max. pressure): 25 bar; max. temperature 3/150 °C; DN: 150; class II; test medium: water (class 2 liquid) / test pressure: 37 bar; conformity assessment method: module A2; notified authority: 0036.			
EN 300 220-2 V3.1.1	2017	RED	OJ C 076 10/03/2017				

The notified authority (PTB, 0102) has tested the technical design and certified that it meets the requirements applicable for the device and has issued the following certificate: DE-07-MI004-PTB010, DE-06-MI004-PTB018 and DE-08-MI004-PTB017

The notified authority (PTB, 0102) has evaluated the quality assurance system and recognises it in: DE-M-AQ-PTB006

Nuremberg, 29/10/2021

Brunner, Managing Director
Name, Position

Signature

Sturek, Head R&D
Name, Position

Signature

This declaration certifies conformity with the stated directives and standards, it does not however constitute a commitment to any specific properties!
The safety instructions included in the product documentation must be followed!

Landis+Gyr GmbH
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90459 Nuremberg
Germany