



T550 (UC50...)



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



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

1. General

1.1 Use

The calculator is used as a calculator for heating or cooling consumption measurement in systems with water.

The calculator forms the volume from the pulses of the flow sensor. The temperatures of the hot and cold sides are determined using platinum resistors.

The volume of water and the temperature difference between hot and cold side are then calculated and the product is summed.

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

1.2 General notes

The calculator 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 calculator must not be damaged or removed. Otherwise the guarantee and calibration validity of the meter will lapse.

- Keep the packaging so that you can transport the calculator 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).
- At a **heat meter calculator** or combined heat/cold meter calculator 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 calculator** 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 calculator may only be used in building service engineering systems and only for the applications described.



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



Adhere to the operating conditions according to the dial plate during use. Non-adherence can cause hazards and the guarantee will lapse.



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



Only clean the calculator 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 calculator 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 calculator 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 calculator may contain lithium batteries. Do not dispose of the calculator 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.



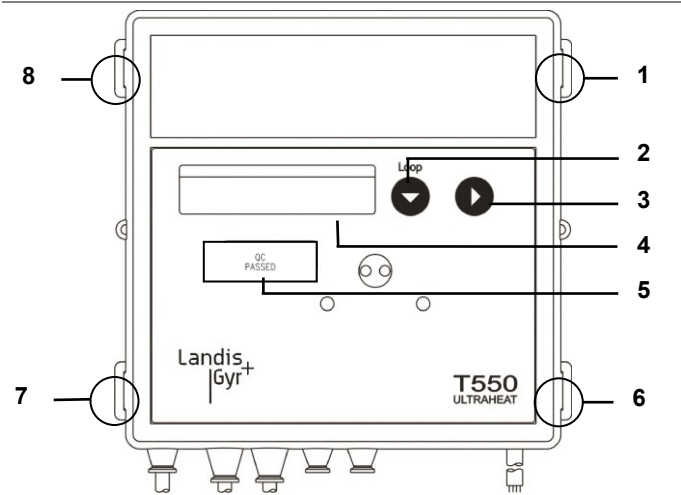
The calculator does not have any lightning protection. Ensure lightning protection via the in-house installation.



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 calculator displays the current meter value 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 further 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:

L.OOP 1	Service loop 1
L.OOP 2	Service loop 2
...	...
L.OOP 0	User loop 0

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 user loop "LOOP 0".

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

The LCD displays the following values one after the other:

L.OOP 0	Head of the loop
F - - - - -	In case of error: message with error code
.. 1234567 kWh	Energy accumulated with tariff status
T' 1234567 kWh	Tariff register 1,2,3 ¹⁾
1234567 m ³	Volume accumulated
PI 1-3	Volume pulse input 1 ²⁾
1234567 m ³	at 2-sec. cycles with current volume
PI 2-3	Volume pulse input 2 ²⁾
1234567 m ³	at 2-sec. cycles with current volume
88888888	Segment test

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:

L.OOP 1	Head of the loop
1234 m ³ /h	Current flow
904 kW	Current power
TH 916 °C	Current temperature „hot“, „cold“
TC 562 °C	at 2-sec. cycles
Δ 354 K	Temperature difference
V1 0065477	Volume pulse
VE 0000000 m ³	Volume at energy calculation
Ed 1234 h	Operating time
Fd 123 h	Missing time
K 12345678	Property number, M-Bus secondary address
D 16.10.14	Date
SD 3 105--	Yearly set day (DD.MM)
1234567 kWh	Energy: previous year on set day
0 107,14	at 2-sec. cycles with date
T' 1234567 kWh	Tariff register 1,2,3: previous year on set day ¹⁾
1234567 m ³	Volume: previous year on set day
0 107,14	at 2-sec. cycles with date
PI 1-3	Volume pulse input 1 ²⁾
1234567 m ³	at 2-sec. cycles with volume previous year
PI 2-3	Volume pulse input 2 ²⁾
1234567 m ³	at 2-sec. cycles with volume previous year
FW 8-07	Firmware version
CRC F177	CRC Code

Service loop 2 "LOOP 2"

Service loop 2 displays the installation details. The LCD shows the following values one after the other:

L.OOP 2	Head of the loop
PI 000 1000 L/A	Pulse value
POS cold	Mounting place of the flow cold side or
POS hot	hot side

Note: At a **heat meter calculator** or combined heat/cold meter calculator 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.

Note: At a **cooling meter calculator** 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.

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
...	...
0 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 set day
T 1234567 kWh	Tariff 1,2,3 on set day ¹⁾
1234567 m ³	Volume on set day
PI 1-3	Volume pulse input 1 ²⁾
1234567 m ³	at 2-sec. cycles with volume on set day
PI 2-3	Volume pulse input 2 ²⁾
1234567 m ³	at 2-sec. cycles with volume on set day
Ma 3899 m ³ /h	Max. flow at period,
St 1306,11	at 2-sec. cycles with date stamp
Ma 2889 kW	Max. power at period,
St 1306,11	at 2-sec. cycles with date stamp
MH 345 °C	Max. temperatures „warm“ at period,
St 1306,11	at 2-sec. cycles with date stamp
MC 257 °C	Max. temperatures „cold“ at period,
St 1306,11	at 2-sec. cycles with date stamp
Fcd 123 h	Missing time count on 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 0000 m ³ /h	Current tariff 1,2,3 ¹⁾
' 0000 m ³ /h	in 2-sec. cycles with threshold value 1
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 EE	Module 2: pulse module;
Modul 2-2 EV	Channel 1 = energy, Channel 2 = volume;
	in 2-sec. cycles
P01 12500 kWh/l	Value for energy pulses *)
P02 00250 l/l	Value for volume pulses *)
P03 2ms	Pulse duration in ms *)
PI 1-1	Parameter pulse input 1 ²⁾
0 1234567	in 2-sec. cycles with calculator number
PI 1-2	Parameter pulse input 2 ²⁾
250000 ml/l	in 2-sec. cycles with pulse value

¹⁾ Visible if tariff is activated

²⁾ Visible if a module with pulse input is installed

*) for "fast pulses"

3.3 Previous year's values

The meter saves the following values on the yearly set day

- Energy (meter value)
 - Volume (meter value)
 - Tariff register (meter value)
 - Missing time (meter value)
- and the maxima with date stamp for
- Flow
 - Power
 - Temperature difference
 - Temperature hot side
 - Temperature cold side

3.4 Monthly values

The calculator saves the following values for 60 months on the monthly set day

- Energy (meter value)
 - Volume (meter value)
 - Tariff register (meter value)
 - Missing time (meter value)
- 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 interface.



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

4. Error Message

The calculator continuously runs a self-diagnosis and can thus recognise and display various installation or meter error messages.

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 the temperature difference is positive, the quantity of thermal energy is summed. 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 min.) are averaged.

The maximum values are marked with "Ma" in front. The maximum values of the temperatures are marked with "MH" or "MC".

On yearly / month set day, the meter values are logged in the previous year's / month's archive.

All segments of the display are switched on for control purposes during the segment test.

The operating time is counted from the first connection of the power supply. Missing hours are summated if there is an error. 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 8-digit property number (also the secondary address for M-Bus operation) can be set in the parameterisation mode.

The number for the firmware version and calculator number is issued by the manufacturer.

6. Technical Data



Note: The information on the calculator must be observed!

General

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	0 ... 180 °C
LCD	7 digit
Optical interface	Standard, EN 62056-21
Communication	Optional, e.g. M-Bus
Separability	Always, optional cable length
Battery	3.6 V DC Lithium
Power supply	230 / 110 V AC 50 / 60 Hz
	24 V AC / DC 50 / 60 Hz
Power input	< 0.8 W

Temperature sensor

Type	Pt 500 or Pt 100 according to EN 60751
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Pulse

Pulse input	IB / IC according to EN1434
Pulse length	min. 10 ms
Pulse frequency	max. 50 Hz
Pulse wire length	max. 20 m (recommended)

EC Declaration of Conformity

No. CE UC50 008 / 06.17



Product description: Electronic unit
 ULTRAHEAT®T550 (UC50...)
 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:

- 2014/32/EU** (MID) OJ L 96 29/03/2014
- 2011/65/EU** (RoHS) OJ L 174 01/07/2011
- 2014/53/EU** (RED) OJ L 153 22/05/2014

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

Standard	Last revised	Directive	Reference	Standard	Last revised	Directive	Reference
DIN EN 61000-6-3	2011	RED	OJ C 053 25/02/2014	EN 50581	2012	RoHS	OJ C 363 23/11/2012
DIN EN 61010-1	2011	RED	OJ C 173 13/05/2016	EN 301 489-52	GSM	RED	
DIN EN 1434-4	2007	MID	OJ C 218 24/07/2012	EN 301 511	GSM	RED	
DIN EN 1434-5	2007	MID	OJ C 218 24/07/2012	EN 60950-1	GSM	RED	
DIN EN 1434-4	2015	MID					
DIN EN 1434-5	2015	MID					
EN 300 220-1	2017 ⁸⁶⁸	RED		Environmental class for MID and EMC E1 or A			
EN 300 220-2	2017 ⁸⁶⁸	RED	OJ C 76 10/03/2017	⁸⁶⁸ Applies to wireless M-Bus modul 868 MHz			
EN 301 489-1	2017 ^{868/GSM}	RED		^{GSM} Applies to GSM modul			
EN 301 489-3	2017 ⁸⁶⁸	RED					

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-11-MI004-PTB035 and DE-11-MI004-PTB036

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

Nuremberg, 13/06/2017

Brunner, VP CoC HEAT
 Name, Position Signature
 Dr. Rother, 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!