T450

1 General

Note
These operating instructions remain with the end user after commissioning.

Note
In the following text, the term "meter" is used to refer to both the heating meter as well as the cooling meter unless otherwise stated.

1.1 Use

The meter is used to measure the heat or cold consumed in heating/cooling systems.

The meter consists of two temperature sensors and a calculator, which calculates the energy consumption based on the volume and temperature difference.

1.2 General information

The meter has left the factory in a technically safe condition. Further technical support is provided by the manufacturer on request. The meter's calibration-relevant security symbols must not be damaged or removed. Otherwise, the warranty and calibration validity of the meter will be invalidated.

- Keep the packaging in a safe place so that you can transport the meter in its original packaging after the calibration validity has expired.
- Lay all cables at a minimum distance of 500 mm from power and high-frequency cables.
- A relative humidity of < 93 % at 25°C is permissible (non-condensing).
- Avoid overpressure cavitation throughout the system, i.e. at least 1 bar for qp and approx. 3 bar for qs (applies for approx. 80 °C).
- The control line must not be cut, shortened or extended.
- In the case of a **heat meter** or combined heat/cooling meter, the cold side installation location corresponds to the return and the warm side installation location corresponds to the supply.
- In the case of a **cooling meter**, the warm side installation location corresponds to the return and the cold side installation location to the supply.

2 Safety instructions

Caution
The meters may only be used in building installations and only for the applications described.

Caution
The local regulations (installation, etc.) must be observed.

Caution
The operating conditions on the nameplate must be observed during use. Failure to comply with these regulations can cause dangerous situations and voids all claims arising from liability for defects as well as liability on the basis of any expressly granted guarantees.

Caution
Comply with the requirements for circulation water (CEN / TR 16911:2016).

Caution
The meter is only suitable for circulation water in heating systems.

Caution
The meter is not suitable for drinking water.

Caution
Do not lift the meter on the calculator.

Caution
Pay attention to sharp edges on threads, flanges and the measuring tube.

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

Caution
Only install or remove the meter on an unpressurised system.

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

Caution
Breaking the safety marks relevant for calibration voids the warranty and the validity of the calibration.

Caution
Avoid contact of the meter housing with silicone oils or substances containing silicone oil.

Caution
Only clean the meter from the outside with a soft, slightly moistened cloth. Do not use spirits or cleaning agents.

Warning
If the medium temperature is higher than 60 °C, shield the volume measuring part from unintentional contact.

Warning
The meter must not be energised until it has been fully assembled. Otherwise there is a risk of electric shock on the terminals. A defective or obviously damaged device must be disconnected from the power supply immediately and replaced.

Warning
The meter is valid for disposal as waste electronic equipment within the meaning of the European Directive 2012/19/EU (WEEE) and must not be disposed of as household waste. The corresponding national and legal regulations must be observed and the device must be disposed of via the channels provided for this purpose. The local and currently valid legislation must be observed.

Warning
The meter contains lithium batteries. Do not dispose of the meter and batteries as household waste. Observe local regulations and laws regarding disposal.

Warning
After lithium batteries have been used, you can return them to the manufacturer for proper disposal. When shipping batteries please observe legal regulations which among other things govern the labelling and packaging of hazardous goods.

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

Warning
The meter has no lightning protection. Ensure lightning protection via the house installation.

3 Operation

3.1 Operating elements

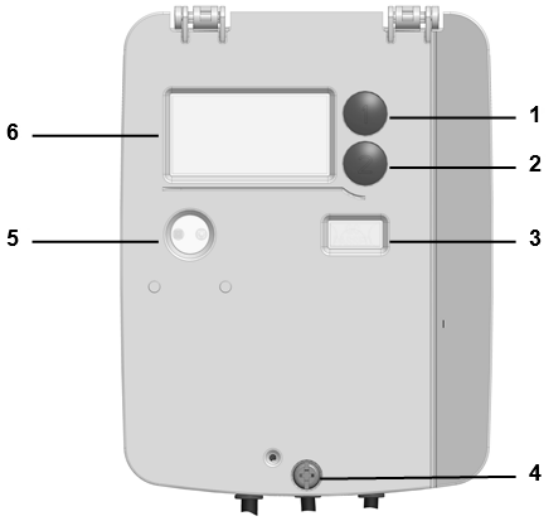
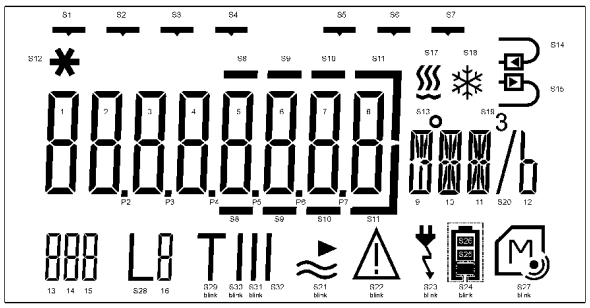


Figure 1: Meter, closed

3.2 LCD



ID number	Symbol	Description
S1	H	Hourly value
S2	D	Daily value
S3	M	Monthly value
S4	Y	Yearly value
S5	m	Maximum value
S6	M	Minimum value
S7	Ø	Mean
S8-S11		Decimal places
S12	*	Calibrated value
S14		Place of installation, return

S15		Place of installation, supply
S17		Meter type: Heat meters or combined heat/cooling meters
S18		Meter type: Cooling meter
S21		Current flow rate
S22		Error message
S23		Power supply: Mains
S24-S26		Power supply: Battery with capacity indicator
S27		Module identifier
S28	LO	Current loop display (LOOP)
S29-S32	T III	Tariff display
13-15	000	Current display code (LCD-ID)

3.3 Display current meter reading

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

Note
To avoid reading errors, the decimal places of displayed values are marked by a frame.

Note
The calibrated value is indicated by an additionally displayed star symbol (S12).

Note
Depending on the device parameterisation, both the display scope and the displayed data may deviate from this description.

3.3.1 Display values

The meter displays are arranged in multiple loops (LOOPs). The default state is LOOP 0.

Proceed as follows to switch between the LOOPs:

- Press button 2 until the desired LOOP appears.

After the last loop LOOP LE, LOOP 0 is displayed again.

3.3.2 Advancing in a loop

To advance to the next display value within a loop, proceed as follows:

- Press button 1.

After the last display value, the first display value appears again.

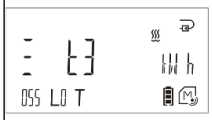
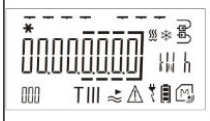
3.3.3 Loop "LOOP 0"

The meter is in loop "LOOP 0".

- Press button 1 to advance to the next display value.

  The LCD displays the following values one after the other:

Table 1: Loop "LOOP 0"

		Loop head
		Error message (here: currently no error)
		Current energy quantity (here: kWh; heat meter; installation location: Return flow; tariff on)
		Current volume
		Current value tariff register 1 (only if tariff was selected)
		Current value tariff register 2 (only if tariff was selected)
		Current value tariff register 3 (only if tariff was selected)
		Segment test
		Firmware version
		CRC/CMAC

4 Error messages

The meter constantly performs a self-diagnosis and can recognise and display various metre and installation errors.

If the error message **F0** is displayed, flow measurement is not possible, e.g. due to air in the volume measuring section.

The error messages **F1**, **F2** and **F5**, **F6**, **F8** indicate that the temperature sensors are defective.

If the error message **F4** is displayed, the battery is empty.

The error messages **F3**, **F7**, **F7F** and **F9** indicate that the electronics are defective.

In all cases, notify the Service Department.

5 Technical data

General

Note
Please note the information on the meter!

Measuring accuracy	Class 2 or 3 (EN 1434)
Mechanical class	M2 (2014/32/EU)
Electromagnetic class	E1 (2014/32/EU)
Ambient humidity	< 93% rel. humidity at 25 °C, non-condensing
Max. altitude	2000 m above sea level
Storage temperature	-20 … 60 °C

Calculator

Ambient temperature	5 … 55 °C
Housing protection class	IP 54/IP 68 optional (EN 60529)
Response limit for ΔT	< 0.2 K
Temperature difference ΔT	3 K … 120 K
Temperature measurement range	0 … 180 °C
LCD	8-digit
Optical interface	Standard (EN 62056-21)
Communication	Optional, e.g. M-bus
Splitability	Always removable, cable length optional

Temperature sensor

Type	Pt500 or Pt100 (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/IP 68 optional (EN 60529)
Installation location	Warm side/cold side; parameterisable
Installation position	any
Measuring range	1:100
Temperature range	5 … 130 °C National approvals may differ.
recommended for...	
... heating applications	10 … 130 °C
... cooling applications	5 … 50°C
Maximum overload	2.8 x qp
Nominal pressure	PN16 (PS16), PN25 (PS25)

Power supply

Type of power supply	Battery for 6 - 20 years
Battery type	AA cell lithium
Lithium content	0.65 g per battery
Number of batteries	1 - 4, depending on configuration

EC Declaration of Conformity

No. CE T450 002 / 11.21

Landis+Gyr

Product description:	Ultrasonic heat meter ULTRAHEAT®T450 (UH40…)
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 133	20/04/2021
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
2014/53/EU	(RED)	OJ L 153	22/05/2014	OJ L 212	22/08/2018

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

Standard	Last revised	Directive	Reference
EN IEC 63000	2018	RoHS	OJ L 155 18/05/2020
EN 1434-1	2007	MID	OJ C 218 24/07/2012
EN 1434-2 + AC	2007/2007	MID	OJ C 218 24/07/2012
EN 1434-4 + AC	2007/2007	MID	OJ C 218 24/07/2012
EN 1434-5	2007	MID	OJ C 218 24/07/2012
EN 1434-1 + A1	2015/2018	MID	
EN 1434-2 + A1	2015/2018	MID	
EN 1434-3	2015	MID	
EN 1434-4 + A1	2015/2018	MID	
EN 1434-5 + A1	2015/2019	MID	
OIML R 75-1	2002	MID	OJ C 269 04/11/2006
OIML R 75-2	2002	MID	OJ C 269 04/11/2006
WELMEC 7.2	2015	MID	

Standard	Last revised	Directive	Reference
EN 301 489-1 V2.1.1	2017	RED	
EN 301 489-3 V2.1.1	2019	RED	
EN 300 220-1 V3.1.1	2017	RED	
EN 300 220-2 V3.1.1	2017	RED	OJ C 076 10/03/2017
EN 61000-6-3	2007/2011/2012	EMC	OJ C 173 13/05/2016
EN 62368-1 + AC	2014/2015	RED	OJ C 249 08/07/2016

Standards related to RED are only applicable when equipped with corresponding radio modules.

The notified authority (PTB, 0102) has tested the technical design and certified that it meets the MID requirements applicable for the device and has issued the following certificate: DE-19-MI004-PTB034 and DE-19-MI004-PTB035

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

Nuremberg, 12.11.2021

Brunner,
Managing Director
Name, Function

Signature

Sturek,
Head R&D
Name, Function

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!

Translation of the original document **EC DIRECTIVES - CE MARKING - DECLARATION OF CONFORMITY** Page 1 / 1

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