

1. Safety information

- ⚠ Changes in the data telegram or the transmission rate affect the battery life.
- ⚠ The meter sends no data telegram after delivery ex factory. The transmission starts after the installation of the meter.
- ⚠ Observe ESD protection measures.
- ⓘ Detailed information for the parameterization as well as starting and ending transmission mode with the service software is available in the UltraAssist user manual.

2. Description of functionality

- The module enables the meter to communicate wirelessly with a LoRaWAN® network.
- The module can be used in T450 meters with firmware ≥ 20.03.
- The module implements a device of class A, that is compatible with LoRaWAN® Version 1.0.2 and local parameters for EU863-870.
- The module is preset for registration according to OTAA.

3. Server configuration

- ⓘ **Note:** The server configuration should be implemented before the module's transmission start to enable a fast registration at the network.
- ⓘ **Note:** DevEUI and ApplicationKey (AppKey) can be found in the electronic delivery note (ELS) of the module.

In order for the LoRaWAN® module to be able to send data to an application device, information about the device must be set up in the network server.

The following information is required for an activation with OTAA:

- DevEUI is indicated on the module and in the ELS
- ApplicationKey (AppKey) is indicated in the ELS
- Join EUI, 64:01:FB:FF:FC:01:00:01
- Frame Port = 2

4. Installation and mounting

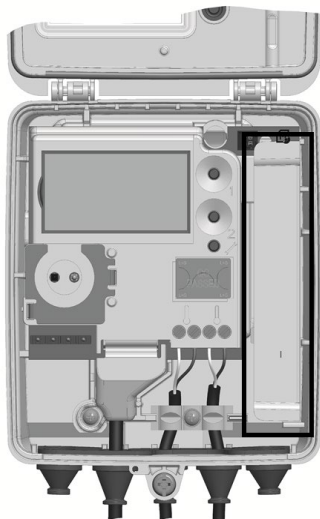


Fig. 1: Module slot

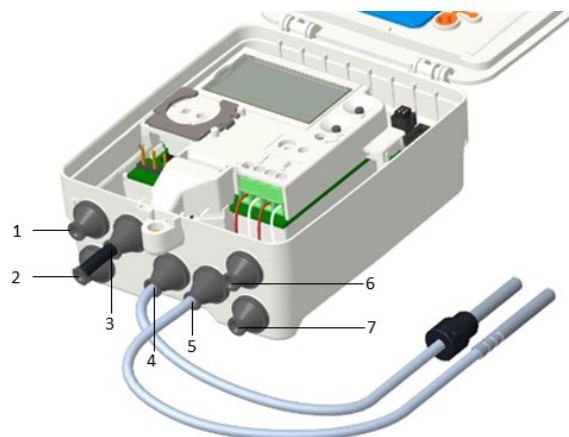


Fig. 2: Sleeves

4.1 Installing module with internal antenna (T45-LR)

- ⓘ **Note:** No later than 60 seconds after installation, the meter automatically detects the inserted module and is ready for communication.

The module is connected via a reaction-free plug, so that installation or modification is possible at any time.

To install a module with internal antenna, proceed as follows:

- If necessary, open the housing cover by loosening the screw.
- First attach the contact surfaces of the module to the module slot.
- Gently push the module in.
- Close the housing cover by tightening the screw (min. 1 Nm) and press the housing cover tightly into place.

4.2 Installing module with external antenna (T45-LR-EXT)

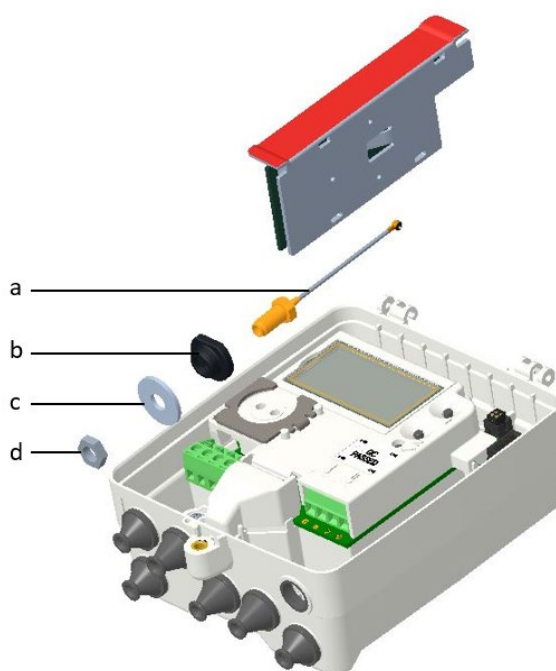


Fig. 3: Accessories external antenna

The module is connected via a reaction-free plug, so that installation or modification is possible at any time.

To install a module with internal antenna, proceed as follows:

- If necessary, open the housing cover by loosening the screw.
- Cut the rubber grommet (Fig. 2; 6) flush with the meter housing.
- Remove the washer and nut from the antenna connector (Fig. 3; a).
- Put the gasket (Fig.3; b) on the antenna connector (Fig. 3; a).
- Insert the antenna connector (Fig. 3; a) from the inside to the outside through the housing opening (Fig. 2; 6).
- Insert the washer (Fig. 3; c) from the outside onto the antenna connector (Fig. 3; a) and screw it with the nut (Fig. 3; d).
- Connect the cable of the antenna connector (Fig. 3; a) to the radio module.
- First attach the contact surfaces of the module to the module slot.
- Gently push the module in.
- Close the housing cover by tightening the screw (min. 1 Nm) and press the housing cover tightly into place.

Depending on the design of the housing, note the following additional points:

- For IP 68 versions of the housing, tighten the cable gland.
- For IP 54 versions of the housing, make sure that the grommet is seated correctly.

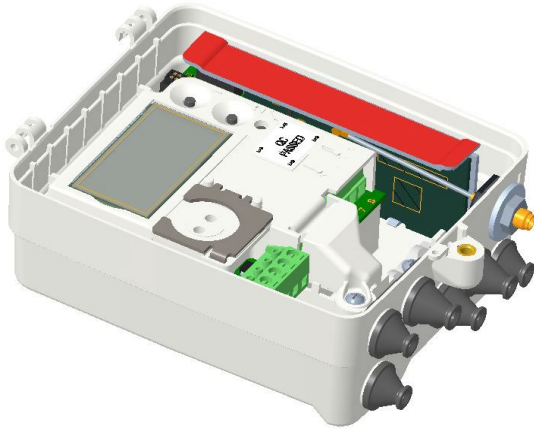


Fig. 4: Installation external antenna

5. LCD display



Note: Depending on the meter parameterization, both the display scope and the displayed data may differ from the following description.

Communication „LOOP 2“

	Head of the loop
	Display module type (alternating with the next display)
	Module information with status or if necessary, with error message

Status message

Meaning

	The module is registered on a LoRa Gateway and sends data to a LoRa network
	The module is currently performing a network login
	The module is registered on a LoRa Gateway but has not yet received confirmation of receipt for its data

The module is restarted

The module is turned off

The module has an internal error

6. Parameterization



Note: The meter parameterization may have an influence on the battery life.



Note: The meter can also be parameterized in the parameterization mode via UltraAssist using the optical interface.

6.1 Start / stop transmission



Note: After one hour of continuous flow, the transmission mode is automatically activated.

The following options are available to additionally start / stop transmission mode:

- Start transmission mode via LOOP 2.
- Start / stop transmission mode by via parameterization mode.
- Start / stop transmission mode via Service Software.

Starting transmission mode via LOOP 2

To start the transmission mode, proceed as follows:

- Press button 2 several times until appears on the LCD.
- Press button 1 several times until appears on the LCD.
- Press button 2 long (for more than 3 s).

The transmission is activated, and the LCD display will change

to:

The meter starts with the regular sending of the data telegram immediately.

6.2 Stop transmission mode

Call up parameterization function

Proceed as follows to parameterize the meter:

- Press the service button for 3 s until appears on the LCD.
- Press button 2 to select the parameterization.

Select parameters

To select a parameter, proceed as follows:

- Press button 1 to advance the display.
- Press button 2 to activate the parameter you want to change.

Stop transmission mode via parameterization mode

To stop the transmission mode, proceed as follows:

- Press button 1 several times until



appears on the LCD.

- Press button 2 until



appears on the LCD.

- Press button 1 until



appears on the LCD.

- Press button 2 until



appears on the LCD.

The transmission mode is deactivated and the meter stops transmitting immediately.

7. Switching to normal operation

To switch to normal operation, proceed as follows:

- Press button 1 several times until



appears on the LCD.

- To switch to normal mode, press button 2.

8. Transmission interval

The ECO-Mode guarantees a battery-lifetime of 11 years. To do this, the module adapts the transmission interval to the individual transmission and reception conditions in its LoRa network (data rate).

The module sends its data in ECO-Mode at the following intervals:

Data rate	0	1	2	3	4	5
Transmission interval [min]	60	60	30	30	15	15

A fixed transmission interval in the range from 15 minutes to 24 hours can also be selected at the factory or with the service software.

9. Data set

The following standard data set is transferred from the module to the server:

- Current energy level
- Current volume
- Current flow
- Current power
- Current temperature hot side
- Current temperature cold side
- Serial number
- Meter number

The module has 8 additional preset data sets and 3 data sets that can be customized with the service software.

The module can alternately transfer 2 different data records.

10. Technical data

LoRaWAN

Conformity	LoRaWAN® V1.0.2 (EU868)
LoRa device class	A
Transmission frequency	868 MHz
Transmission power	14 dBm
Transmission interval	15min. – 24 h adjustable
Activation	OTAA or ABP*)
Data	51 Byte

Power supply

Via meter	1 – 4 batteries Type AA
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Battery life

ECO-Mode	11 years lifetime **)
Daily transmission	16 years lifetime **)

- *) Further settings required with service software
**) with 4 AA-Cells

Landis+Gyr GmbH
Humboldtstr. 64
90459 Nuremberg
Germany



Note: LoRaWAN® is a brand, which is used under license from the LoRa Alliance®.