CMi4111
Integrated MCM for Landis+Gyr ULTRAHEAT® T230/T330, LoRaWAN

INTRODUCTION

CMi4111 is an integrated communication interface that is mounted inside a Landis+Gyr T230/T330 meter to deliver meter data via a LoRaWAN network. For a complete description of the product or for information in other languages, please visit the Elvaco AB website, https://www.elvaco.com.

ACTIVATION

Upon delivery, CMi4111 is set to passive mode, which means no messages will be transmitted from the module. The module is activated via the Elvaco OTC App which is avaliable in Google Play Store (compatible with Android phones with Android 5.0 or later).

Start the Elvaco OTC app and place the phone on the front side of the meter where the CMi4110 is mounted to scan via NFC. In the Elvaco OTC App, set the Power mode to "Active" and click Apply settings. Place the phone on the front side of the meter to apply settings.

If the module fails to join the LoRaWAN network at first attempt, it will retry join attempts according to a schedule designed to conserve battery. Delay between join attempts increase gradually from 15 seconds to 24 hours.

INITIAL DATA RATE CALIBRATION

When activated, CMi4111 will initially transmit messages every minute in order to let the LoRaWAN network adjust to an optimal data rate. After three minutes, the module will start using its normal settings where the message transmit interval is determined by the device configuration.

DEVICE CONFIGURATION

Before activating the module, you should make sure to apply the correct configuration profile by using the Elvaco mobile application Elvaco OTC. Settings are transferred to the device using NFC. Please make sure NFC is activated on your phone.

Join EUI – The Join EUI sets the identification number of the application server where data from the module will be delivered. The JoinEUI is by default set to 94193A0307000001 (16 digits) in all CMi4111 devices.

Activation type – There are two different activation types for LoRaWAN – Over-the-air activation (OTAA) and Activation by personalization (ABP). Elvaco strongly recommends using OTAA, where all network keys are generated each time the module joins the LoRaWAN network. In contrast, for ABP, all keys are set manually and stay constant over time.

Application key – The application key of each CMi4111 device is generated by Elvaco and used in OTAA mode to generate network keys when the module joins the LoRaWAN network. Keys are managed in a secure way using Elvaco's OTC (One Touch Commissioning) Solution which includes the mobile application for configuration.

Message format – CMi4111 supports nine different message formats: Standard, Compact, JSON, Scheduled-daily redundant, Scheduled Extended, Combined heat/cooling, Simple Billing Plausibility check and Monitoring. Please refer to the CMi4111 user's manual for more information about the structure and payload of each message format.

Transmit interval – The transmit interval parameter is used to set how many messages per day the module transmits. It is possible to set any transmit interval between 15 minutes and 1440 minutes (24 hours).

EcoMode – EcoMode can be enabled to guarantee a battery-life of 11 years. The device-specific EcoMode table of the communication interface is then used to determine how often the module is allowed to transmit data for each data rate. If the transmit interval exceeds the limit in the EcoMode table, it will be lowered accordingly. See EcoMode table for CMi4111 below.

Data rate	Transmit interval
DR0	120 minutes
DR1	60 minutes
DR2-DR3	30minutes
DR4-DR5	15 minutes

Configuration lock – CMi4111 has a configuration lock feature which can be used to prevent unauthorized users to access the module. When configuration lock has been enabled, a user needs the device-specific Product Access Key in order to access the device. Keys are managed in a secure way using Elvaco's OTC (One Touch Commissioning) solution which includes the mobile application for configuration.

After you have set all configuration parameters, place the phone next to the meter and click Apply settings. Hold the phone still until it vibrates three times. This confirms that new settings have successfully been transferred to the device via NFC.

SERVER CONFIGURATION

Before CMi4111 is able to transmit messages on the LoRaWAN network, device information needs to be added to the network server. More specifically, the following parameters need to be registered (in OTAA mode) in order to enable the network server to receive messages from the module:

- Device EUI (16-digit number)
- Application key
- Join EUI

NOTE

If activation mode is set to "ABP". the application key does not need to be added to the network server. Instead, the following information will be needed: network session key, application session key and device address.

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TECHNICAL SPECIFICATIONS

Electrical connections

Supply voltage	Battery, lifetime up to 11 years

Electrical characteristics

Nominal voltage	3.0 VDC
Power consumption (max)	50 mA
Power consumption (sleep mode)	2.5 µA

Radio characteristics

Frequency	868 MHz
Output power	14 dBm
Receiver sensitivity	-135 dBm

LoRaWAN characteristics

Device class	Class A, bi-directional
LoRa version	1.0.2
Activation	OTAA or ABP
Data rate	DR0-DR5 (250 bit/s-5470 bit/s)

User interface

Configuration	NFC via Elvaco OTC mobile application or downlink data

Approvals

EMC	EN 301 489-1, EN 301 489-3
LoRa Alliance	LoRaWAN® Certified

SIMPLIFIED DECLARATION OF CONFORMITY

Hereby, Elvaco declares that the product is in compliance with the following directives:

EU:

- 2014/53/EU (RED)
- 2014/30/EU (EMC)
- 2014/35/EU (LVD)
- 2011/65/EU + 2015/863 (RoHS)

UK:

- 2017 No. 1206
- 2016 No. 1091
- 2016 No. 1101
- 2012 No. 3032

The complete Declaration of Conformity can be found at www.elvaco.se/en > Search on product.

SAFETY

The warranty does not cover damage to the product caused by usage in any other way than described in this manual. Elvaco AB can not be liable for personal injury or property damage caused by usage in any other way than described in this manual.

CONTACT INFORMATION

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