

LoRaMod-R4 / LoRa Plug-in

Manual

| | |
|-------------------|---|
| November 26, 2020 | Initial Version |
| February 10, 2021 | Updates |
| April 13, 2021 | Update to image description and additions |
| April 20, 2021 | Additions regarding time-synchronous transmission |
| April 22, 2021 | Addition of different device types |
| April 23, 2021 | Revision of the general structure and wording |
| July 9, 2021 | Adjusting meter types and device names |
| September 9, 2021 | Addition of LoRa downlink configuration commands |





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DZG Metering GmbH
Heidelberger Str. 32
D-16515 Oranienburg

www.dzg.de



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1 Important Information

1.1 Safety Instructions

When assembling, installing, and uninstalling the device, the local safety regulations for electrical installations must be observed.



Danger

Improper handling of live parts can lead to life-threatening injuries and accidents, which can be fatal even at 230 V.

During assembly and installation work, the conductors to which the device is connected or will be connected must be de-energized.

The relevant circuits must be de-energized before work begins and secured against re-energization.

The device must not be operated outside the specified technical data!

1.2 Maintenance and Warranty Information

Do not attempt to repair the device yourself if it is damaged. Opening the device voids all warranty and liability claims. This also applies if damage is due to external influences.

The device is maintenance-free.

1.3 Disposal



This device was designed and manufactured by DZG with the aim of ensuring reliable operation for many years. This is supported by our commitment to providing high-quality support. When the device reaches the end of its useful life, it must be disposed of in accordance with applicable national and local regulations.

2 General Description

The DIN rail or plug-in module is a universally applicable communication module for wireless transmission in the 868 MHz band. Depending on the device type and configuration, the device supports the modulation types LoRaTM, FSK (in a compatible version for Wireless mBusTM), or both of the aforementioned types.

The DIN-rail module is designed for use on a DIN-rail and, thanks to its modularity, offers a wide range of application possibilities.

The plug-in module is specifically designed for direct installation in meters of the DxS7X / WS7x series. Depending on the selected type, the device supports different operating modes. The following device types are available for order:

| Type Label | Explanation |
|---------------------|--|
| LoRaMod-R4-G2 | Module for exclusive data transmission via LoRa |
| wMBusMod-R4-G2 | Module for exclusive data transmission via wireless mBus |
| LORAMOD-R4.G2.wMB | Module for mixed operation with LoRa and wireless mBus |
| LoRaModDirect-R4-G2 | Module for use with a direct connection based on LoRa |
| LoRaPlugin | Module for exclusive data transmission via LoRa |
| wMBusPlugin | Module for exclusive data transmission via wireless mBus |
| Lora-PlugIn.wMB | Module for mixed operation of LoRa and wireless mBus |
| LoRaPluginDirect | Module for using a direct connection based on LoRa |

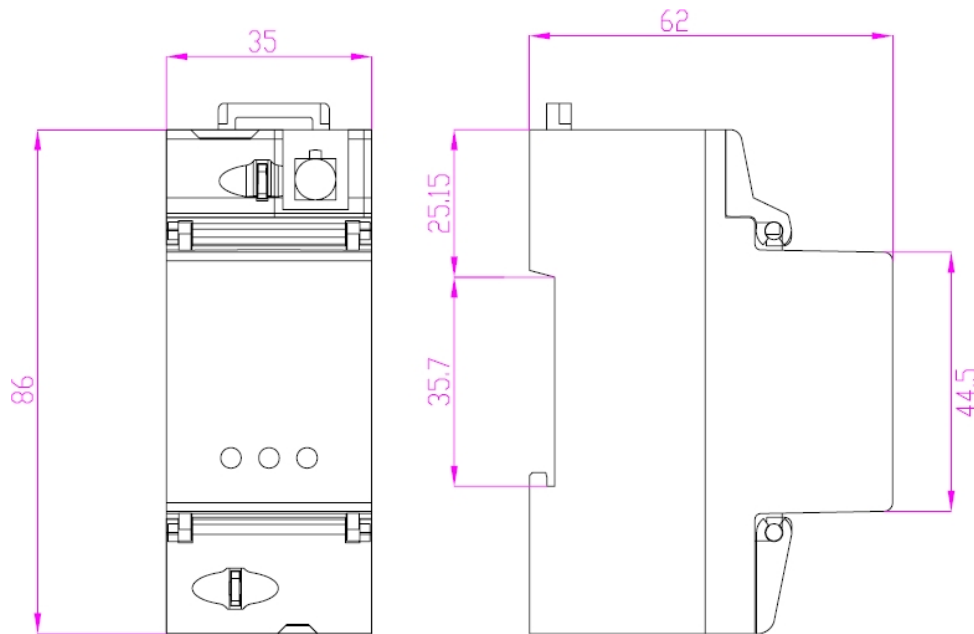
3 Technical Data for the

| Type | Top-hat rail module | Plug-in module |
|-------------------------|--|--|
| Voltage | | |
| Rated voltage U_n | 230 85 ... 265 VAC | VAC 3.3 VDC |
| Frequency | | |
| Nominal frequency f_n | 50 Hz | Not suitable for direct mains operation |
| Interface 1 | | |
| Type | RS232 | Internal interface |
| Usage | Debug interface, serial forwarding, configuration interface | Default Debug Interface, Serial Forwarding, Default Config Interface |
| Interface 2 | | |
| Type | RS485 | Not Available |
| Usage | LMN-compliant meter communication | |
| Interface 3 | | |
| Connection | USB | Not available |
| Parameters | Debug interface, parameterization interface | |
| Housing | | |
| Dimensions | 86 x 35 x 62 mm (L x W x H) | |
| Protection class | II | II |
| Protection rating | IP 51 | IP 51 |
| Operating temperature | -25°C to +55°C | -25°F to +133°F |
| Humidity | 0 ... 95% (non-condensing) | 0 ... 95% (non-condensing) |
| Power consumption | < 0.5W | < 0.5 W |
| Antenna | | |
| Connector type | FAKRA | SMA |
| LoRaWAN | | |
| Supported classes | Class A and C | Class A and C |
| Frequency band [MHz] | 868 | 868 |
| Stack version used | | |
| Spreading factors | 7, 8, 9, 10, 11, 12 | 7, 8, 9, 10, 11, 12 |
| Transmit power [dBm] | 2, 5, 8, 11, 14 | 2, 5, 8, 11, 14 |
| Additional features | <ul style="list-style-type: none"> ▪ Dynamic transmission time windows ▪ Dynamic adjustment of transmit power and spreading factor ▪ Link monitoring (Link Check) | <ul style="list-style-type: none"> ▪ Dynamic transmission time slots ▪ Dynamic adjustment of transmit power and spreading factor ▪ Connection Monitoring (Link Check) |



| Wireless MBus | | |
|---------------------------------|---|---|
| Supported operating modes | <ul style="list-style-type: none"> Receive: T1, C1A, C1B Transmission: C1B, T1A | <ul style="list-style-type: none"> Receive: T1, C1A, C1B Transmission: C1B, T1A |
| Frequency band [MHz] | 868 | 868 |
| Transmit power [dBm] | 14 | 14 |
| Encryption | Encryption Mode 5 in accordance with OMS4.1 and EN13757-4 | Encryption Mode 5 in accordance with OMS4.1 and EN13757-4 |
| Supported items | | |
| Protocols | <ul style="list-style-type: none"> SML / COSEM LMN Communication according to FNN Specifications IEC 1107 Modbus Wireless MBus™ in accordance with EN 13757-4 and OMS 4.1 Optional additional protocols | <ul style="list-style-type: none"> IEC 1107 Wireless MBus™ in accordance with EN 13757-4 and OMS 4.1 Optional additional protocols |
| DZG meter | <ul style="list-style-type: none"> DxSB / DxZE (FNN Basic Counter) DxS7x / WS7x (using the RS485 plugin) DVH4013 / WH4013 / MDVH4006 | DxS7x / WS7x |
| Meters from other manufacturers | <ul style="list-style-type: none"> EMH LZQJ, Honeywell / Elster AS1440 (IEC 1107) Meter compliant with FNN specifications for basic meters Socomec (Modbus) Countis Wireless MBus meter compliant with OMS4.1 and EN13757-4 with the media: Gas, water, heat, electricity | Wireless MBus meters compliant with OMS4.1 and EN13757-4 for the following utilities: gas, water, heat, electricity |

4 Enclosure, DIN rail-, module



5 Installation and connection of the DIN-rail- module

5.1 Top-hat rail module

The housing is suitable for mounting on a top-hat rail in accordance with IEC 60715.



Warning

A suitable selective overcurrent protection device must be provided upstream of the device. The requirements of the applicable technical operating rules (TAB) of the utility must be observed.

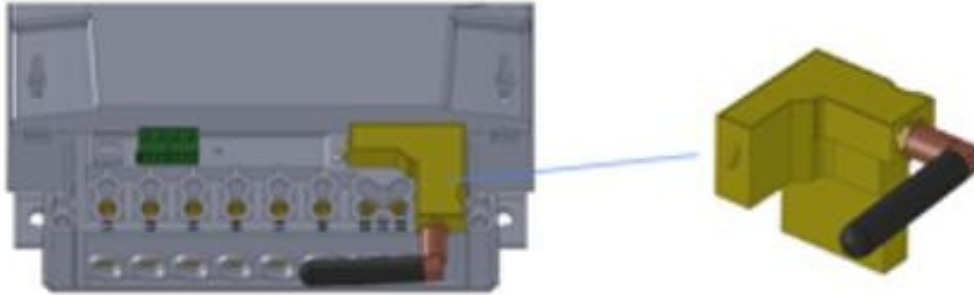
Caution!

Damage to the terminal blocks due to excessive torque

Ensure that the connection cables are tightened to the appropriate torque according to EN 60999 to ensure a secure connection. The torque to be applied depends, among other things, on the type of connection cable and the maximum current.

5.2 PlugIn- e Module

The PlugIn module is installed as shown in the illustration.

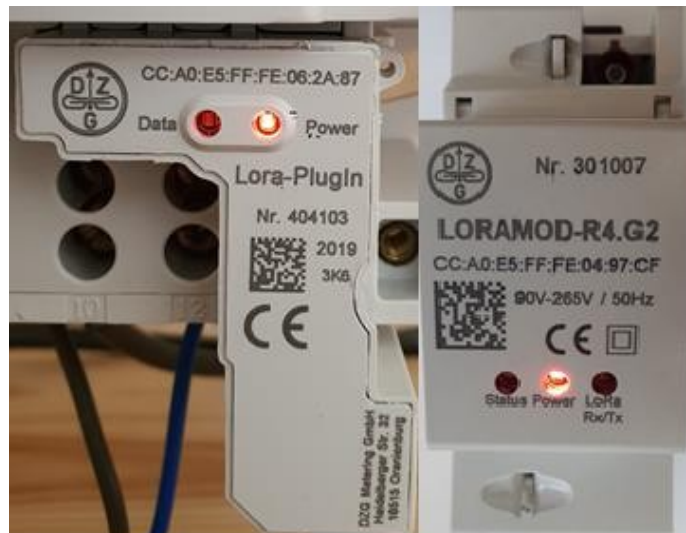


6 Status LEDs

The DIN rail and plug-in modules both have LEDs on their front panels. The number of LEDs varies by device type, but their meanings are the same for both types.

6.1 "Power" LED

The red "Power" status LED indicates that the device is operational, regardless of the device type. For the plug-in module, this LED is a dual-color LED. The green LED serves as the status LED. Due to technical reasons, the color may appear yellowish during normal operation.



6.2 LED "Status"

The bright green "Status" LED indicates that the device is ready for shipment.

| Lighting Pattern | LoRa operating mode | Operating mode | |
|-------------------------------|--|--|----------|
| | | s MBus | Wireless |
| Lights up Solid green | The Module is Fully operational | The module is fully operational | |
| Flashes green briefly 3 times | Communication with the meter is faulty. | Communication with the meter is faulty. | |
| No light | The module is active but not yet actively connected to the LoRa server | The module is active but not yet fully ready to transmit | |

6.2.1 Error description when flashing

A possible cause of an error state could be a faulty connection between the module and the meter (RS+, RS- swapped, connection cable loose or severed) or the baud rate set in the module does not match that of the meter being used.

6.2.2 Error description: Status LED () not lit

If the status LED does not respond even after a certain amount of time, there is an error in the wireless connection between the radio module and the backend. In LoRa mode, the status LED not lighting up indicates that the module is not properly connected (joined) to the server. This can be due to either physical causes (faulty or poor connection to a gateway, infrastructure failure due to a power outage, or reception problems at the gateway) or logical causes (the module was incorrectly configured on the server; DevEUI, AppEUI, or AppKey do not match). The latter is explained in more detail in Chapter 12.

In wireless mBus mode, the absence of the light may be due to an incorrect configuration. Ensure that wireless mBus is selected as the transmission type under the "Transmission Type" tab in the configuration interface and that LoRaWAN connectivity is completely disabled.



6.3 "Rx/Tx" LED / "Data"

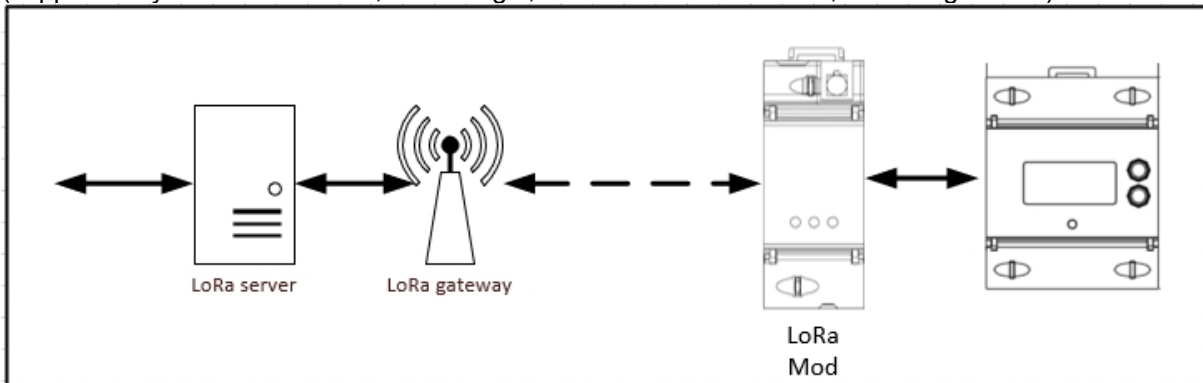
The "Rx/Tx" or "Data" status LED indicates, depending on the operating mode, whether a data packet is being sent or received via one of the wireless interfaces. This status LED flashes red briefly upon receiving or sending a data packet and lights up dark green when a packet is being sent. The behavior is identical for the Wireless MBus and LoRa operating modes.

7 Operating Modes

Depending on the device type and configuration, the operating modes LoRaWAN, LoRa Direct, LoRa to Serial Forwarding, Wireless MBus Data Collector, Wireless MBus Sniffer, and Wireless MBus Transmission can be set. The exact specifications of the respective modes as well as the supported device types are explained in more detail below.

7.1 LoRaWAN

(supported by LoRaMod-R4-G2, LoRaPlugIn, LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB)



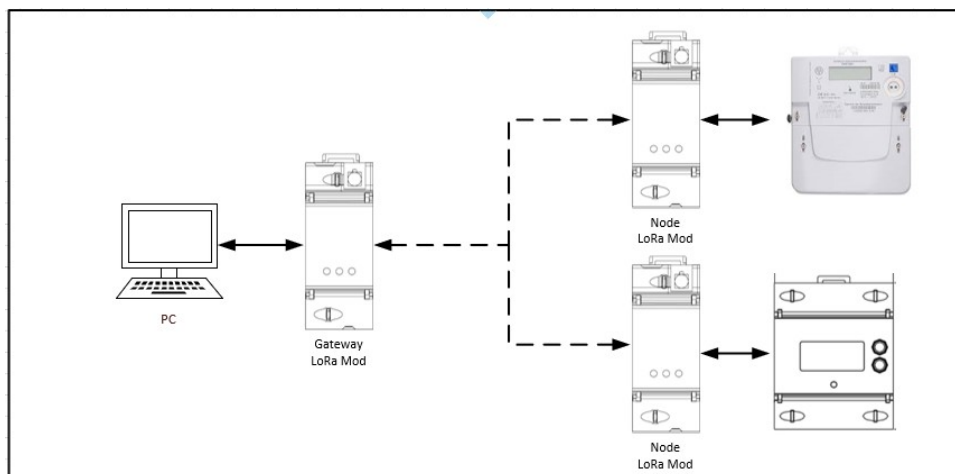
In this operating mode, the device functions as an intelligent data collector. The device is configured for the respective meter types with regard to interface specifications. After successful configuration, physically connected meters are automatically polled at regular intervals, and the received measurement values are stored in the internal data memory. The stored values are sent to the corresponding remote station via LoRa at the previously configured transmission interval. In the case of a meter connected via Wireless M-Bus, the device is initially in Wireless M-Bus receive mode. All received data packets are stored in the internal data memory and sent to the remote station via LoRa at the configured time interval. During this process, the device briefly switches its operating mode. The plugin module can be used as a standalone data collector without being connected to a meter; a LoRa plugin programming adapter is required for this.

Note:

In LoRa mode, only unconfirmed packets are currently used for data transmission. This must be taken into account for some applications.

7.2 LoRa direct

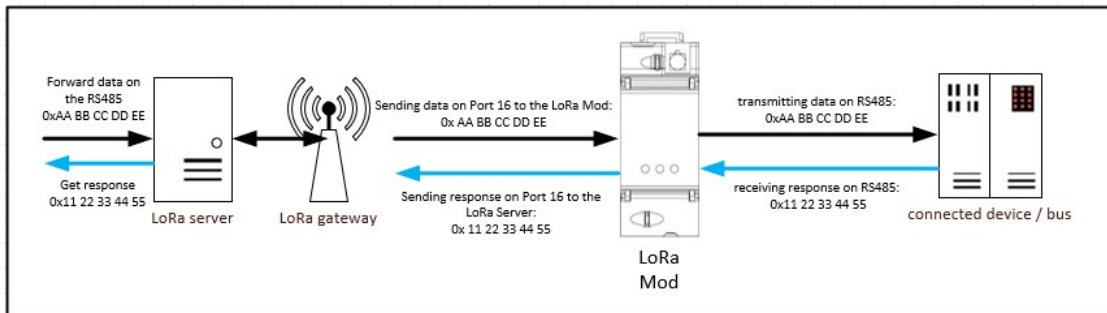
(supported by LoRaMod-R4-G2, LoRaPlugIn, LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB, LoRaModDirect-R4-G2, LoRaPlugInDirect)



LoRa Direct mode enables a direct LoRaWAN connection (AWP operating mode) between a LoRa DIN-rail or plug-in module and multiple LoRa DIN-rail or plug-in modules. The resulting LoRa connection is a 1:n connection and can therefore be used without an external LoRa gateway or the associated LoRa server. In this setup, one device acts as the master (gateway) (if a plugin is used as the gateway, a LoRa plugin programming adapter is required), and the remaining devices act as transmitters (nodes). The master module is connected directly to a PC and can be controlled using appropriate terminal software. The transmitter modules are connected to a meter either physically or wirelessly (Wireless MBus). Using a defined packet, the master module can query a transmitter module regarding the stored meter data. The required LoRa command can be triggered via the aforementioned terminal software.

7.3 LoRa to Serial Forwarding

(supported by LoRaMod-R4-G2, LoRaPlugIn, LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB)



The LoRa to Serial Forwarder makes it possible to access the physical interfaces of the DIN rail or plug-in module via LoRa. When active, all packets received via LoRa are forwarded to the device's corresponding serial interface, depending on the receiving port. All interfaces behave identically with regard to forwarding. If a response arrives via the selected interface in response to a packet received via LoRa, it is sent via LoRa using the same port as the originally received packet. The relevant ports for the respective interfaces are as follows:

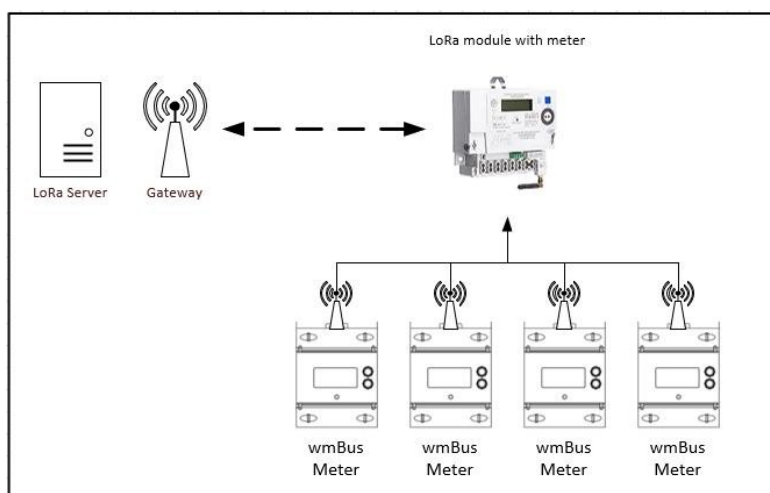
- RS232: Port
- RS485: Port 16

Note:

Please note that the RS485 interface is only available on a DIN rail module.

7.4 Wireless MBus Data Collector

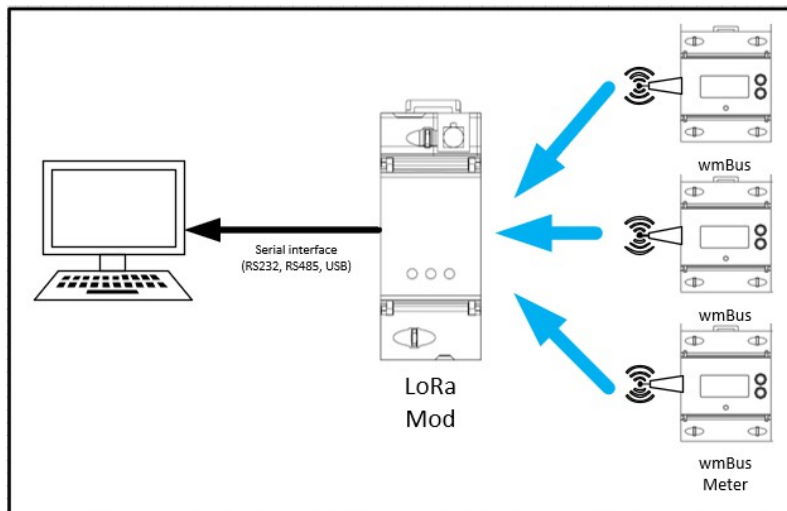
(supported by LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB)



In this operating mode, the device functions as a smart Wireless MBus data collector. If the LoRa option is also enabled, this data collector can be upgraded to a full-featured Wireless MBus-to-LoRa data bridge. In the latter operating scenario, the device initially enters a reception mode for Wireless MBus. In this mode, all Wireless MBus packets of types T1, C1A, and C1B are received and stored in the internal data memory. To transmit a Wireless MBus data set from a received wireless meter via the LoRaWAN interface, the corresponding meter must be added to the module's meter list using the AES key provided by the meter manufacturer. In this operating mode, operation with a compatible wired meter is also possible. Under certain circumstances, this must also be added to the meter list.

7.5 Wireless MBus Serial Forwarding / Wireless MBus Sniffer

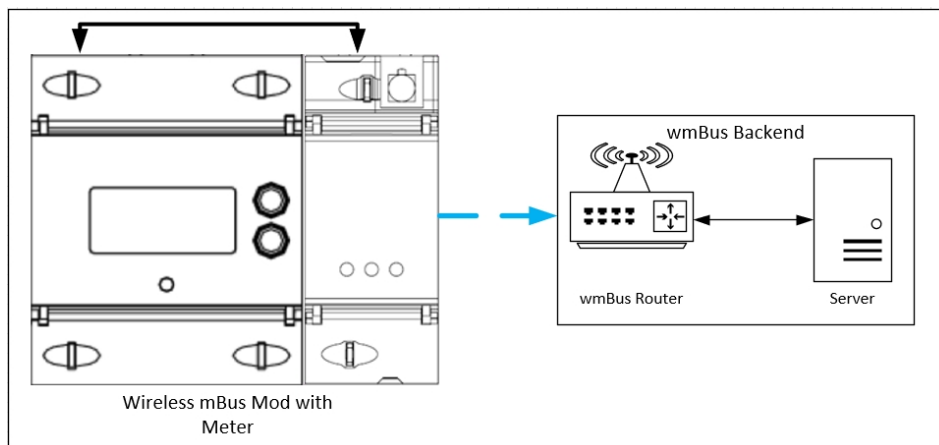
(supported by wMBusMod-R4-G2, wMBus-Plugin, LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB)



If the LoRa option is not desired or active, the option for direct forwarding to one of the module's serial interfaces can be selected. In this mode, all received wireless mBus packets of types T1, C1A, and C1B are forwarded directly to the communication interface unchanged and without post-processing. Further evaluation of the data packets can then be performed by a backend solution. To use a plug-in module as a forwarder or sniffer, a corresponding programming adapter is required.

7.6 Wireless- -MBus

(supported by wMBusMod-R4-G2, wMBus-Plugin, LORAMOD-R4.G2.wMB, Lora-PlugIn.wMB)



The wireless MBus operating mode of the DIN rail or plug-in module allows for easy expansion of compatible meters with an OMS4.1 (EN 135757-4) compatible transmission option. To do this, the module is configured via the configuration software to match the meter being upgraded and physically connected to it. The transmission intervals can be set within the configuration software in the same way as for the LoRa operating mode. Both OMS4.1-encrypted and unencrypted data transmission are available.

8 Communication Interfaces

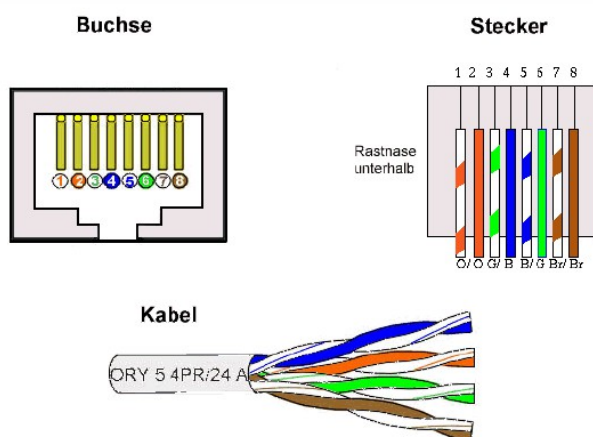
A defined communication interface is used for communication between the meter to be read and the DIN rail or plug-in module. In the case of the plug-in module, this communication interface is integrated into the module's structural design.

To achieve a high degree of flexibility with the DIN rail module, the RS485 interface is used as the communication interface. Since the design of the RS485 interfaces varies among the respective meter types, the corresponding connection cable between the DIN rail module and the meter must be adapted accordingly. The exact pin assignment of the RS485 interface is described in the section RJ45 Pin Assignment.

9 RJ45 Pin Assignment

Adapterkabel RJ-45 auf RS485, RS232

| Pin | Beschreibung | Anmerkung |
|-----|--------------|--|
| 1 | RS-485 B | |
| 2 | DC12 out | R29A muss bestückt sein, um externe Geräte mit 12V zu versorgen |
| 3 | GND | Pin 5 an SUB-D 9 Buchse |
| 4 | DC12 in | R28A muss bestückt sein, damit externe 12V Spannungsversorgung funktioniert. |
| 5 | NC | |
| 6 | RS-485 A | |
| 7 | RS-232 TX | Pin 2 an SUB-D 9 Buchse |
| 8 | RS.232 RX | Pin 3 an SUB-D 9 Buchse |



10 Meter Register

10.1 DxS7x / WS7x

| Name of Obis Number | Obis ID | Available with LoRa | Available with wireless MBus | Scaling factor of measured values |
|------------------------------|---------------------|---------------------|------------------------------|-----------------------------------|
| Firmware version | 1-0:0.2.0*255 | No | no | None (0) |
| Serial number | 1-0:0.0.5*255 | yes | Yes | None (0) |
| Server ID | 94:94.94.100.1*1 | no | yes | None (0) |
| Second index | 1-128:160.130.8*255 | No | No | None (0) |
| Status Word | 1-0:96.5.0*255 | yes | no | none (0) |
| Total Import Energy | 1-0:1.8.0*255 | yes | yes | -1 |
| Total Import Energy Tariff 1 | 1-0:1.8.1*255 | yes | yes | -1 |
| Total Import Energy Tariff 2 | 1-0:1.8.2*255 | yes | yes | -1 |
| Total Export Energy | 1-0:2.8.0*255 | yes | yes | -1 |
| Total Export Energy Tariff 1 | 1-0:2.8.1*255 | yes | yes | -1 |
| Total Export Energy Tariff 2 | 1-0:2.8.2*255 | yes | yes | -1 |

10.2 MDVH4006 / DVH4013 / WH4013

| Name of Obis Number | Obis ID | Available with LoRa | Available with wireless MBus | Scaling factor of measured values |
|-----------------------|------------------|---------------------|------------------------------|-----------------------------------|
| Server ID | 94:94.94.100.1*1 | no | yes | None (0) |
| Status Word | 1-0:96.5.0*255 | yes | no | none (0) |
| Serial Number | 1-0:0.0.5*255 | yes | yes | None (0) |
| Total Imported Energy | 1-0:1.8.0*255 | yes | Yes | 0 |
| Total Export Energy | 1-0:2.8.0*255 | yes | yes | 0 |

10.3 DxSB (Base Meter) / DxZE / Meter according to FNN Specifications

| Name of Obis Number | Obis ID | Available with LoRa | Available with wireless MBus | Scaling factor of measured values |
|-----------------------|------------------|---------------------|------------------------------|-----------------------------------|
| Server ID | 94:94.94.100.1*1 | no | yes | None (0) |
| Status Word | 1-0:96.5.0*255 | yes | no | none (0) |
| Serial Number | 1-0:0.0.5*255 | yes | yes | None (0) |
| Total Imported Energy | 1-0:1.8.0*255 | yes | yes | -1 |
| Total Export Energy | 1-0:2.8.0*255 | yes | yes | -1 |

10.4 IEC 1107 Protocol -meter

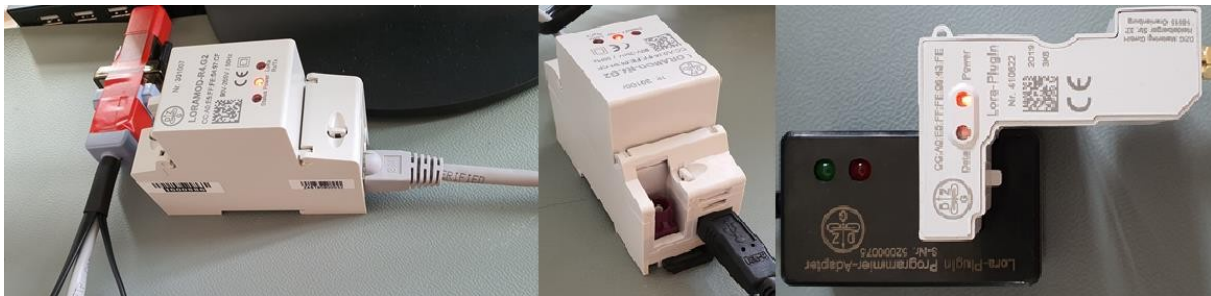
| Name of Obis Number | Obis ID | Available with LoRa | Available with wireless MBus | Scaling factor of measured values |
|-----------------------|------------------|---------------------|------------------------------|-----------------------------------|
| Server ID | 94:94.94.100.1*1 | no | yes | None (0) |
| Status Word | 1-0:96.5.0*255 | yes | no | none (0) |
| Serial number | 1-0:0.0.5*255 | yes | yes | None (0) |
| Total Imported Energy | 1-0:1.8.0*255 | yes | yes | -1 |
| Total Export Energy | 1-0:2.8.0*255 | yes | yes | -1 |

11 Configuration Software

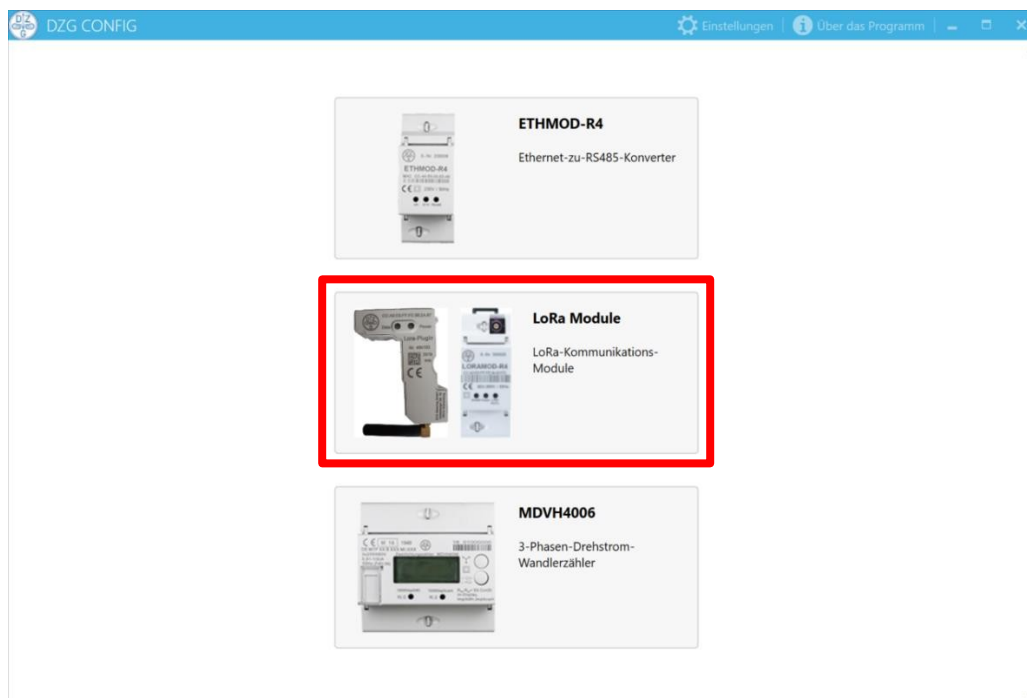
To properly configure the DIN rail or plug-in module, the “DZG Config” software is required. This software allows you to set and read all available device parameters. To use the configuration software, a programming cable is required for the DIN rail or a programming adapter for the plug-in module.

11.1 Establishing a Connection

To establish a connection with a DIN rail or a plug-in module, the module to be configured must be physically connected to the PC on which the configuration software is installed. For the DIN rail module, this connection can be established using a programming cable or a USB 2 Type B cable, and for the plug-in module, using a programming adapter.



Once the device to be configured has been successfully connected to the PC, the configuration software can be launched. Clicking the “LoRa Modules” button takes you to the configuration interface for LoRa or wireless MBus modules.



In the next interface, you can now use the Settings menu item to configure the serial COM port to which the device is connected, as well as the communication baud rate. This menu item is located in the upper-right corner of the interface.

The values shown are examples and may differ depending on the module being used. The "Baud Rate," "Data Bits," and "Parity" fields must be adjusted to match the device's interface parameters. The values shown are default values.

Once all interface parameters within the interface have been adjusted to the device being configured, the settings tab can be closed by clicking the arrow (to the left of Settings), and the connection can be established by clicking the "Connect" button.

If the connection is successful, all data for the connected device will be listed in the LoRa Module Info Block.

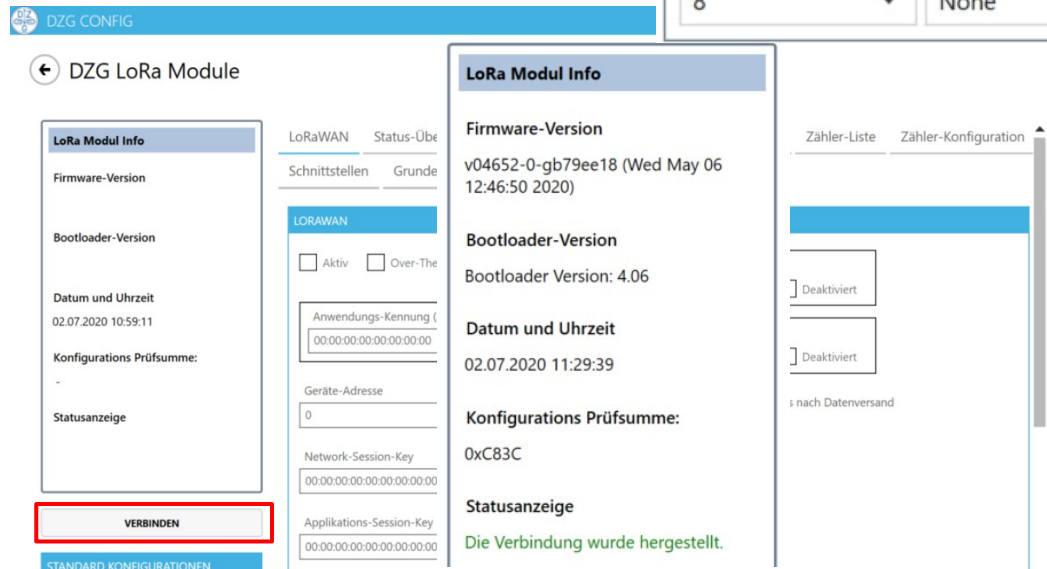
 Einstellungen

Sprache
Deutsch (Deutschland)

Expertenmodus

LORAMOD-R4 VERBINDUNGSPARAMETER

| | |
|----------------|----------|
| Serieller Port | Baudrate |
| COM14 | 9600 |
| Daten-Bits | Parität |
| 8 | None |



The screenshot shows the 'DZG CONFIG' interface. On the left, there is a 'DZG LoRa Module' section with a 'LoRa Modul Info' block. This block contains fields for Firmware-Version, Bootloader-Version, Datum und Uhrzeit, Konfigurations Prüfsumme, and Statusanzeige. A red box highlights the 'VERBINDEN' button at the bottom of this block. To the right of the 'LoRa Modul Info' block is a 'LORAWAN' configuration section with checkboxes for 'Aktiv' and 'Over-The-Air', and input fields for 'Anwendungs-Kennung', 'Geräte-Adresse', 'Network-Session-Key', and 'Applikations-Session-Key'. Further right is a 'LoRa Modul Info' block displaying connection details: Firmware-Version (v04652-0-gb79ee18), Bootloader-Version (4.06), Datum und Uhrzeit (02.07.2020 11:29:39), and Konfigurations Prüfsumme (0xC83C). A green status message at the bottom reads 'Die Verbindung wurde hergestellt.' On the far right, there are tabs for 'Zähler-Liste' and 'Zähler-Konfiguration', with the latter showing 'Deaktiviert' buttons.

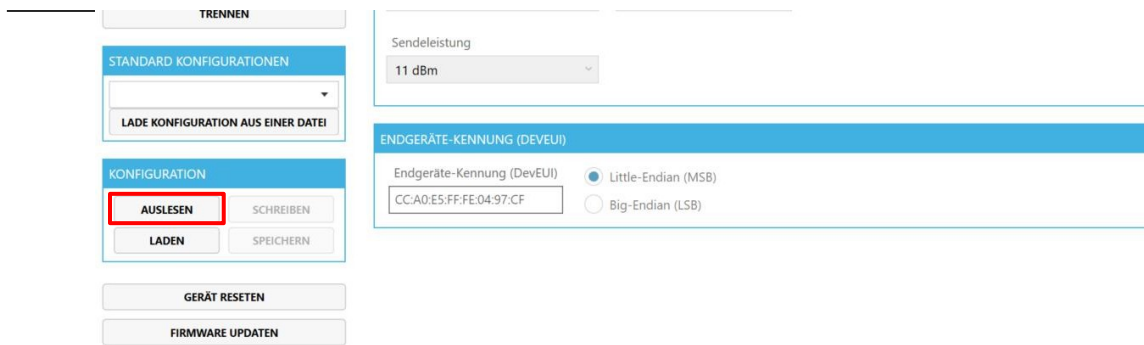
The image above shows an example of how a successful connection between the module and the PC is displayed within the LoRa Module Info Block.

11.2 Loading a " " Configuration

After successfully establishing a connection between the module and the PC, the existing device configuration must first be read. Alternatively, a pre-configured configuration file in .cfgpkg format can be loaded.

11.2.1 Reading a Configuration

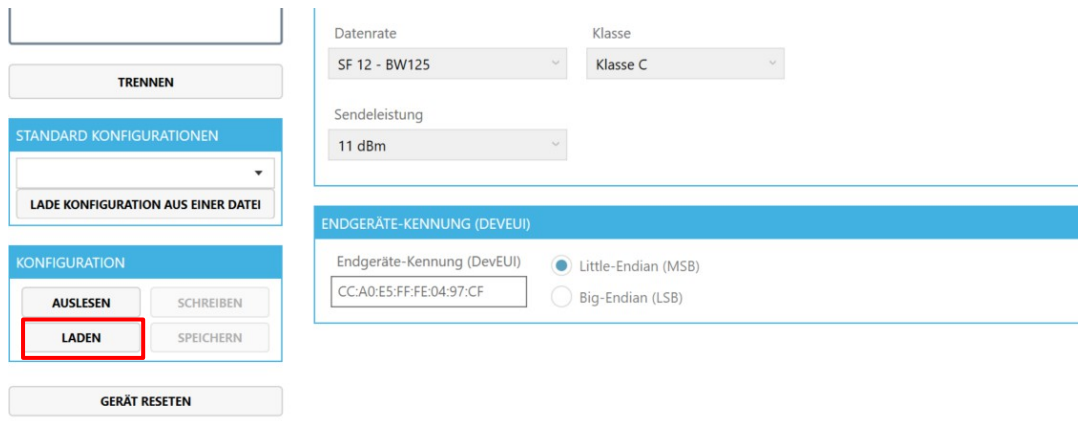
To read a configuration file from a successfully connected module, click the "Read" button under the "Configuration" tab in the interface.



After the device configuration has been successfully read, all buttons on the interface become accessible. Additionally, the successful read operation is displayed in the Info Box.

11.2.2 Loading an Existing Device Configuration File

Another way to obtain a configuration file is to load an existing file into the configuration program. The desired file must be in the .cfgpkg file format. To load the file into the configuration program, use the "Load" button. In the file dialog that opens, navigate to the desired file and open it. The file dialog automatically displays only files in the .cfgpkg format.



Once the device configuration has loaded successfully, all buttons on the interface will be available. A message confirming the successful load will also appear in the info box.

11.3 Editing and Writing a Device Configuration

The successfully loaded configuration can either be uploaded directly to the device or further customized. Depending on the device specifications, different sub-sections are available in the interface. In the example shown, all available configuration options are active; therefore, the interface may differ for the product you are using. After editing the configuration, it can be uploaded to the device using the "Write" button.

11.3.1 LoRaWAN Configuration Tab

1. Option set: LoRaWAN operating mode active
2. Join Behavior:
 - Set: OTAA (Over-the-Air Activation) is used -> Server automatically sets device address and device key.
 - Not set: ABP (Activation by Personalization) is used -> Device address and device key must be set manually beforehand



3. Option set: The device uses the previously saved LoRa session data after a reboot.

Note:

If the Session Resumption option is used, ensure that the LoRa server in use also supports this option. In cases of incompatibility, the device may no longer be able to join the desired LoRa server. This may manifest as repeated incoming Join Request packets, unanswered Join Accept packets from the server, or a generally non-functioning LoRa connection. In this case, the saved session data (11) must be deleted and the device restarted. The Session Resumption option must be disabled.

4. Option set: No rejoin is performed after a restart
 5. Application identifier (AppEUI) of the corresponding application on the LoRa server
 6. Application key (AppKey) of the corresponding application on the LoRa server
 7. LoRa transmission parameters:
 - Data rate (spreading factor)
 - Transmission class
 - Transmit power
 8. Periodic behavior:
 - Periodic rejoin: within the selected time window.
 - Periodic link check: Periodically checks the connection status within the selected time window.
 9. Setting of the time window during which the device operates in LoRaWAN mode when the OMS reception option is active. This time window is **only taken into account** if the device is operating in **combined mode**, which combines wireless M-Bus reception and LoRa transmission. In pure LoRaWAN mode, this window is ignored, as all DZG LoRa modules use Class C (continuous).
 10. Device ID: Serial number of the device in use (cannot be changed).

LoRa Modul Info

Firmware-Version
v04652-0-gb79ee18 (Wed May 06 12:46:50 2020)

Bootloader-Version
Bootloader Version: 4.06

Datum und Uhrzeit
02.07.2020 11:44:23

Konfigurations Prüfsumme:
0xC83C

Statusanzeige
Konfiguration wurde erfolgreich gelesen

TRENNEN

STANDARD KONFIGURATIONEN

LADE KONFIGURATION AUS EINER DATEI

KONFIGURATION

AUSLESEN SCHREIBEN
LADEN SPEICHERN

GERÄT RESETEN
FIRMWARE UPDATEN

ZEIT ABFRAGEN ZEIT SETZEN
MIT LORA SERVER NEU VERBINDEN

SESSIONDATEN LÖSCHEN

LoRaWAN Status-Übertragung Wireless MBus Zählerdaten-Übertragung Zähler-Liste Zähler-Konfiguration

Schnittstellen Grundeinstellungen

LORAWAN

1 Aktiv Over-The-Air-Aktivierung verwenden 2

3 Session Resumption verwenden

4 Kein Re-Join beim Booten (gespeicherte Session-Daten verwenden)

5 Anwendungs-Kennung (AppEUI) Little-Endian (MSB) Big-Endian (LSB)
AA:BB:CC:DD:EE:FF:11:22

6 Anwendungs-Schlüssel (AppKey)
2B:7E:15:16:28:AE:D2:A6:AB:F7:15:88:09:CF:4F:3C GENERIEREN

Datenrate SF 12 - BW125 Klasse Klasse C
Sendeleistung 11 dBm

Periodischer Rejoin 00:00:00 Deaktiviert

Periodischer Link-Check 00:00:00 Deaktiviert

Zeit im LoRaWAN-Modus nach Datenversand 00:00:00

ENDGERÄTE-KENNUNG (DEVEUI)

Endgeräte-Kennung (DevEUI) Little-Endian (MSB) Big-Endian (LSB) 10
CC:A0:E5:FF:FE:04:97:CF

ZEIT MELDUNG

11.3.2 Status – Transmission Configuration Tab

1. Frame Type: This setting specifies which wireless transmission method and the associated frame type should be used for sending status or data packets. Depending on the device type, the options "Simple" and "Advanced" are available for LoRa or wireless mBus
2. Status Transmission: Selecting this option enables or disables the transmission of status packets / deactivated. Furthermore, the transmission periods after a boot process (**initial transmission window**) and during ongoing operation (**transmission window**) can be defined.

LoRaWAN Status-Übertragung Wireless MBus Zählerdaten-Übertragung Zähler-Liste

Schnittstellen Grundeinstellungen

LORA FRAME

Frame-Typ
Einfach 1

STATUS-ÜBERTRAGUNG

Aktiv

Initiales Versandzeitfenster

| | | |
|--------------------|---|--------------------|
| Minimale Wartezeit | - | Maximale Wartezeit |
| 00:00:05 | | 00:00:10 |

Versandzeitfenster

| | | |
|--------------------|---|--------------------|
| Minimale Wartezeit | - | Maximale Wartezeit |
| 24:00:00 | | 25:00:00 |

2

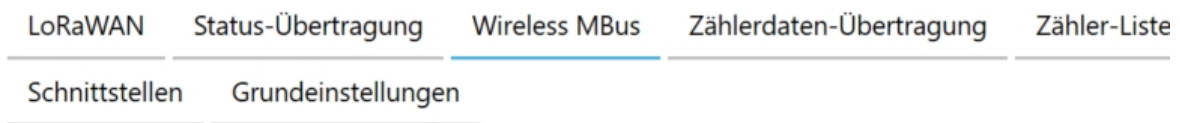
11.3.3 Wireless mBus Configuration Tab

1. Option set: Wireless mBus reception mode active
2. Option set: Wireless mBus transmission active
3. Selection of encryption mode
 - No encryption
 - OMS3-compliant AES 16 encryption

Note:

When using a combo module, please note that only one data transmission mode can be activated. If both the LoRa and wireless mBus transmission options are active, the LoRa Wan transmission mode is activated by default.

Similarly, in wireless mBus mode, only one operating mode can be actively used. If both modes are selected, the transmission mode is used as the default.



WIRELESS MBUS EMPFANGEN

Aktiv 1

WIRELESS MBUS VERSAND

Aktiv 2

WIRELESS MBUS FRAME

Wireless MBus Verschlüsselungsverfahren

Keine Verschlüsselung 3

11.3.4 Meter Data Transmission Configuration Tab

1. Meter Configuration enables data transmission via LoRa or Wireless MBus. The transmission interval can also be freely configured by entering a value.
2. Real-time synchronous transmission: When this option is enabled, the DIN-rail or plug-in module captures meter readings within the set transmission interval in real time. Since neither module type has a built-in real-time component, synchronization with real time must be established via the LoRa server being used. Most server providers synchronize the time based on the first status frame.
3. Transmission time window: This option allows for finer adjustment of the transmission time of the value. This is useful when more than one LoRa device is used within an installation area. **A delay can be added** to the set **real-time value**. This **delay** is randomly determined from the **transmission time window** and is always **at least the minimum** or **at most the maximum wait time**.
4. Number of retransmission attempts for a measured value before it is discarded
5. Number of previous measurements before a measured value is sent

Note:

To use the real-time synchronous transmission functionality, general meter data transmission must be enabled. However, the set value is overwritten by that of the real-time synchronous transmission. Additionally, the "extended" transmission type should be selected in the LoRa frame settings to obtain a timestamp for the meter data collection.

| | | | | |
|----------------|--------------------|---------------|-------------------------|--------------|
| LoRaWAN | Status-Übertragung | Wireless MBus | Zählerdaten-Übertragung | Zähler-Liste |
| Schnittstellen | Grundeinstellungen | | | |

ZÄHLER-KONFIGURATION

Aktiv Übertragungsintervall 1

ECHTZEITSYNCHRONE ÜBERTRAGUNG

Aktiv Zeitfenster 2

Übertragungszeitfenster

| | | |
|---------------------------------------|---|---------------------------------------|
| Minimale Wartezeit | - | Maximale Wartezeit |
| <input type="text" value="00:01:00"/> | | <input type="text" value="00:02:00"/> |

3

| | |
|---|--|
| Anzahl der Sendewiederholungen <input type="text" value="0"/> 4 | Anzahl der vorherigen Messungen <input type="text" value="0"/> 5 |
|---|--|

11.3.5 Counter List Configuration Tab

1. Clicking "**Refresh List**" loads the list saved on the module
2. Clicking "**Add Meter**" allows you to add a new meter to the list. All relevant meter data is entered in the dialog box that opens.
3. Clicking **Save Meter List** saves the currently loaded meter list.
4. Clicking "**Load Meter List**" loads an existing meter list.
5. Clicking "**Update Meter Configuration**" updates the meters within the PC interface with the meter list stored on the module
6. The saved meter list can be deleted using "**Delete Meter List**".

Schnittstellen Grundeinstellungen

| GERÄTE-NR. | HERSTELLER | ART DES ZÄHLERS | MEDIUM |
|------------|------------|--------------------|-------------|
| 31003512 | DZG | DVH4013 / MDV 4006 | Electricity |
| 31002299 | DZG | DVH4013 / MDV 4006 | Electricity |

ZÄHLER ANLEGEN

Art des Zählers: DVH4013 / MDV 4006 Medium: Electricity Hersteller: DZG Geräte-Nr.: 1234678

AES-Schlüssel (nur für wMBus): 00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00

OK ABBRECHEN

← ————— →

1
LISTE AKTUALISIEREN
2
ZÄHLER HINZUFÜGEN
3
ZÄHLERLISTE SPEICHERN
4
ZÄHLERLISTE LADEN

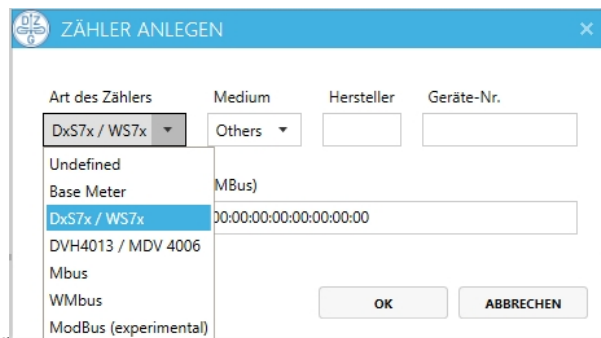
5
ZÄHLERKONFIGURATION AKTUALISIEREN
6
ZÄHLERLISTE LÖSCHEN

Note:

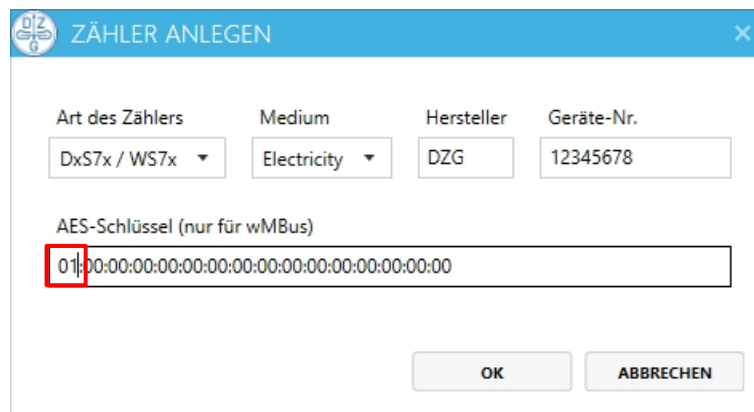
To write newly created counters to the DIN rail or plug-in module via the user interface, you must use the "Write" button within the configuration block.

11.3.6 Creating a new counter in the counter list

1. Select the **Add Counter** button.
2. In the window that opens, you can now specify the meter type, the meter medium, the manufacturer, and the meter's serial number. The last field in this window allows you to set the AES key for this meter. This key is used exclusively in wireless mBus mode.



3. In receive mode (combined operating mode), you may need to enter the key for the wireless meter to be connected. For most manufacturers, this is included in the digital delivery note. In transmission mode, however, two options are available. First, a custom 16-byte AES key can be entered directly for each meter. Second, predefined AES keys can be selected. In this case, a value between 1 and 25 (hexadecimal) must be entered into the first byte of the AES key field. A list of these predefined keys can be found in the digital delivery note for the DIN rail or plug-in module.



4. Clicking the "OK" button creates the counter. However, it is only written to the device when the configuration is saved.

Important Note:

For physically connected meters, for technical reasons, only meters of the same model can be read at a time. If meters of different models are configured, only the meters can be read using the Meter App shown in 11.3.7. In this case, the device indicates via the status LED that communication with one of the configured meters is faulty.

11.3.7 Meter Configuration Tab

In addition to entering a meter, you must specify which meter application should be launched within the device. This can be selected within the interface (1). Furthermore, the polling interval (2) and the meter data to be retrieved (3) can be specified as Obis digits. All compatible meter data, including Obis digits, are summarized under 10.

| DZG DXS74 / WS7X | | | | |
|--------------------------------|------------------------------|---|----------|----------------------------|
| <input type="checkbox"/> Aktiv | Abfrageintervall 00:00:01 | OBIS Kennziffern Bezug | | |
| | 1 | 2 | 3 | |
| DZG DVH 4013 | | | | |
| <input type="checkbox"/> Aktiv | Abfrageintervall 00:00:10 | OBIS Kennziffern Bezug | | |
| BASISZÄHLER | | | | |
| <input type="checkbox"/> Aktiv | Abfrageintervall 00:00:10 | OBIS Kennziffern Bezug & Lieferung | | |
| IEC 1107 | | | | |
| <input type="checkbox"/> Aktiv | Abfrageintervall 00:00:10 | OBIS Kennziffern unbekannte Tarifauswahl | Passwort | Art des Zählers General |
| | | | | 4 |

When used with an IEC 1107-compatible meter, a password is required. This can also be set within these tabs (4).

Note:

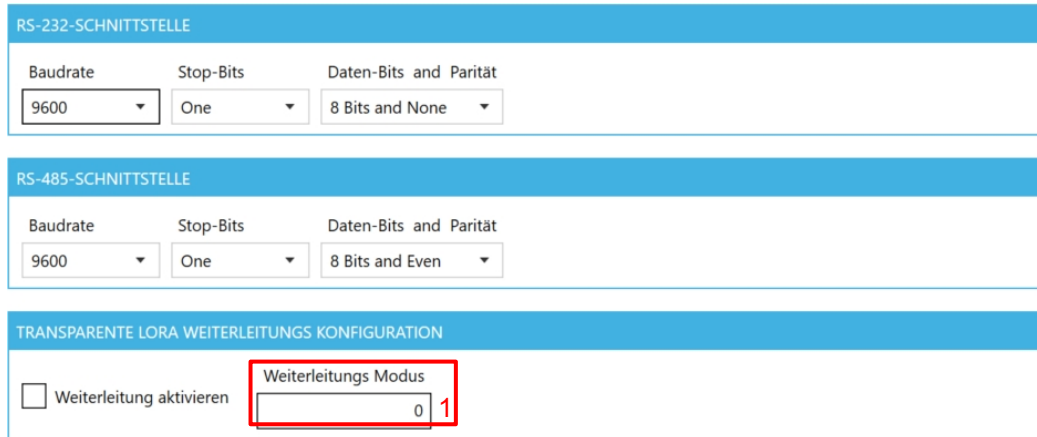
When using an IEC 1107 meter, ensure that a baud rate other than the default 300 baud is used. If the meter to be used is set to this baud rate, it must be set to 9600 using the corresponding configuration program.

11.3.8 Interface Configuration Tab

The interfaces of the DIN rail or plug-in module can be configured within this tab.

Note:

The RS485 and USB interfaces are not available on a plug-in module. On a plug-in module, the communication and parameterization interfaces are combined into a single interface; therefore, when adjusting the interface parameters, these must also be adjusted in the user interface as shown in Section 11.1.



The screenshot shows three configuration sections:

- RS-232-SCHNITTSTELLE:** Baudrate: 9600, Stop-Bits: One, Daten-Bits and Parität: 8 Bits and None.
- RS-485-SCHNITTSTELLE:** Baudrate: 9600, Stop-Bits: One, Daten-Bits and Parität: 8 Bits and Even.
- TRANSPARENTE LORA WEITERLEITUNGS KONFIGURATION:**
 - Weiterleitung aktivieren
 - Weiterleitungs Modus: 0 1 (highlighted with a red box)

By selecting the **Enable Forwarding** option (1), forwarding from LoRa to a physically available interface can be enabled. You can choose between permanent and time-limited forwarding. To enable permanent forwarding, enter the value **9**.

11.3.9 Standard interface parameters for the respective meter types

| Meter Type | LoRa Mod | LoRa Plugin |
|--|--|--|
| DxS7x / WS7x | RS485 (RS485 plugin for meters is required) | RS232 |
| | Baud rate: 9600 Data bits: 8 Stop bit: 1 Parity: None | Baud rate: 9600 Data bits: 8 Stop bit: 1 Parity: None |
| DVH4013 MDVH4006 | / RS485 | Not available |
| | Baud rate: 9600 Data bits: 8 Stop bit: 1 Parity: Even | |
| DVSB (Base Meter) / EHZ / FNN Specifications | RS485 (An OKK is required for EHZ) | Not available |
| | Baud rate: 921600 Data bits: 8 Stop bit: 1 Parity: None | |
| Counter accord ing to IEC1107 | RS485 | Not available |



11.3.10 Basic Settings Configuration " " Tab

The following settings can be configured on the Basic Settings Configuration tab

1. Automatic reset: If this option is selected, the device performs a device reset within the specified time window.
2. Enable Debug Output: When this option is selected, the relevant device-specific debug outputs corresponding to the debug level are enabled. These are not required when operating with a meter and can normally be left disabled.

12 Creating a LoRa Module on a LoRa Server

A LoRa module can be registered on a LoRa server in two different ways. The connection can be established via OTAA (Over-the-Air Activation) or via ABP (Activation by Personalization). The following describes both connection methods and the settings to be configured within the interface. The following examples of configuring a LoRa module on a LoRa server were created using [TheThingsNetwork](#).

Note:

A complete guide on creating a new device is not possible within the scope of this manual, as it would vary depending on the selected server platform and thus exceed the scope of this document. A corresponding guide is usually available on the respective server platform. The focus of this manual is primarily on explaining all necessary settings within the LoRa module's configuration interface.

12.1.1 Basic settings for connecting via OTAA (Over-the-Air Activation)

The connection is established via OTAA automatically as soon as the LoRa module is started with the option enabled. During this process, the LoRa module and the LoRa server exchange all necessary keys and addresses. Apart from the correct entry of the device identifier (Dev-EUI), the application identifier (App-EUI), and the application key (App-Key) by the LoRa module and the LoRa server, no further steps or entries are required.

Depending on the endianness of the selected server, the byte order of the application identifier and the device identifier must be adjusted. However, this is not always immediately apparent. If you encounter issues establishing a connection, it is advisable to swap them if necessary. When doing so, ensure that you only swap the byte order for one parameter at a time. For easier operation, you can select the display view using the selection buttons on the right side of the buttons.

Note:

Changing the display of the DevEUI or AppEUI does not alter the endianness of the DevEUI or AppEUI in the LoRa module's memory. This option is provided to simplify the process of changing values within the configuration and server interfaces.

Application ID **0051581685673c9c**

Device ID lora_plugin_otaa_test

Activation Method **OTAA**

Device EUI <> ⇄ CC A0 E5 FF FE 01 AD B7

Application EUI <> ⇄ 00 51 58 16 85 67 3C 9C

App Key <> ⇄ 27 F1 A5 68 65 FC 9B D5 E2 78 1E 6D 47 DB 27 77

LORAWAN

Aktiv Over-The-Air-Aktivierung verwenden

Session Resumption verwenden

Kein Re-Join beim Booten (gespeicherte Session-Daten verwenden)

Anwendungs-Kennung (AppEUI) Little-Endian (MSB)
00:51:58:16:85:67:3C:9C Big-Endian (LSB)

Anwendungs-Schlüssel (AppKey)
27:F1:A5:68:65:FC:9B:D5:E2:78:1E:6D:47:DB:27:77 **GENERIEREN**

Datenrate SF 7 - BW125 Klasse Klasse C

Sendeleistung 8 dBm

ENDGERÄTE-KENNUNG (DEVEUI)

Endgeräte-Kennung (DevEUI) Little-Endian (MSB)
CC:A0:E5:FF:FE:01:AD:B7 Big-Endian (LSB)

12.1.2 Default settings for connecting via ABP (Activation by Personalization)

Unlike OTAA, the connection setup via ABP is not automated. This means that the configurator must manually exchange all necessary keys and addresses. The following data must be exchanged:

- Device identifier of the LoRa module (DevEUI) -> is determined by the LoRa module
- Application identifier (AppEUI) -> is determined by the LoRa server
- Device address -> determined by the LoRa server
- Network ID -> is set by the LoRa server
- Network Session Key -> is set by the LoRa server
- Application Session Key -> is set by the LoRa server

As described above, the device identifiers must be read from the LoRa module's configuration interface and entered into the LoRa server's interface. The remaining parameters are then transferred from the server to the LoRa module's configuration interface.

Depending on the endianness of the selected server, the byte order of the application ID and the device ID must be adjusted. However, this is not always immediately apparent. If you encounter problems establishing a connection, it is advisable to swap them if necessary. When doing so, be sure to swap the byte order for only one parameter at a time.

Typically, LoRa servers specify the device address and network ID in **hexadecimal** notation. The LoRa module's configuration interface, however, **expects** these values **in decimal format**. The value can be converted using the Calculator app on Windows or a comparable tool on other platforms. The following section provides an example of how to configure a LoRa module using [TheThingsNetwork](#) via ABP.

Application ID 0051581685673c9c

Device ID abp_test_geraet

Activation Method ABP

Device EUI CC A0 E5 FF FE 01 AD B7

Application EUI 00 51 58 16 85 67 3C 9C

Device Address 26 01 33 87

Network Session Key 8D F3 8D 7C 6F 3D DE 58 7B D2 1E C0 00 72 88 A8

App Session Key DA AA 05 22 09 12 8A 15 3D A9 1E FD DC 29 9F FD

Status ● 54 seconds ago

Frames up 14 [reset frame counters](#)

Frames down 1

LORAWAN

Aktiv Over-The-Air-Aktivierung verwenden

Anwendungs-Kennung (AppEUI)
 Little-Endian (MSB)
 Big-Endian (LSB)

00:51:58:16:85:67:3C:9C

Geräte-Adresse

637612935

Netzwerk-ID

19

Network-Session-Key

8D:F3:8D:7C:6F:3D:DE:58:7B:D2:1E:C0:00:72:88:A8

GENERIEREN

Applikations-Session-Key

DA:AA:05:22:09:12:8A:15:3D:A9:1E:FD:DC:29:9F:FD

GENERIEREN

Datenrate SF 7 - BW125 Klasse Klasse C

Sendeleistung 8 dBm

ENDGERÄTE-KENNUNG (DEVEUI)

Endgeräte-Kennung (DevEUI)
 Little-Endian (MSB)
 Big-Endian (LSB)

CC:A0:E5:FF:FE:01:AD:B7

The Network ID parameter is not directly visible in the server interface. This value is constant for the respective server provider and therefore does not change. A list of possible Network IDs for various LoRa server providers can be found in [the following table](#). Please note that the values in this list are displayed in hexadecimal format, whereas the LoRa module interface expects them in decimal format. A conversion is necessary here as well.

13 Editing sub-configurations using the LoRa Downlink packet

The LoRa module or LoRa plugin can be configured via a downlink packet to specify individual values or in blocks. The packet to be sent must be sent to port 2 of the LoRa module via the server interface. This packet can be viewed in the configuration interface and copied to the computer's clipboard. From there, it can be pasted into the respective server interface. This functionality is explained below using the example of setting a new spreading factor. To use this feature, a LoRa module firmware version higher than v0469 is required. First, the value to be configured must be located in the interface. Once found, right-clicking opens the submenu for downlink packet configuration. The value selected when right-clicking is also used in the next step to generate the downlink packet. The pop-up window that opens displays the packet to be written and automatically copies it to the clipboard when you press the "Yes" button.

LORAWAN

Aktiv Over-The-Air-Aktivierung verwenden

Session Resumption verwenden

Kein Re-Join beim Booten (gespeicherte Session-Daten verwenden)

Anwendungs-Kennung (AppEUI) Little-Endian (MSB) Big-Endian (LSB)

Anwendungs-Schlüssel (AppKey)

Datenrate Klasse

Sendeleistung

ENDGERÄTE-KENNUNG (DEV EUI)

Endgeräte-Kennung (DevEUI) Little-Endian (MSB) Big-Endian (LSB)

Anwendungs-Schlüssel (AppKey)

Datenrate Klasse

Sendeleistung

ENDGERÄTE-KENNUNG (DEV EUI)

Endgeräte-Kennung (DevEUI) Little-Endian (MSB) Big-Endian (LSB)

Befehl zum Senden LoRaWanConfiguration.DefaultDataRate

12 86 0B 07 03

In die Zwischenablage kopieren?

The downlink packet in the clipboard can now be sent to the LoRa module to be configured using a server interface.

DOWNLINK

Scheduling

replace
first
last

FPort

Confirmed

Payload

bytes
fields

12 86 0B 07 03

5 bytes

After transmission, the LoRa module will apply the desired changes and implement them after a subsequent restart.

Similarly, the configuration data of the LoRa module can also be accessed in read mode using a downlink packet. The steps are the same as for write access. However, in step 2, you must select "Command to read the subconfiguration." The downlink packet will then be displayed in a pop-up window and can be copied to the computer's clipboard by clicking the "Yes" button. The packet is then sent again to port 2 of the LoRa module via the interface.

The following list provides a general overview of common downlink commands along with the resulting response from the LoRa module.

| Parameter to be changed | Command to send (hexadecimal) | Response from the LoRa module |
|-------------------------|--|--|
| Device timestamp | <p>Short format 0x18 XX XX XX XX</p> <p>- XX XX XX XX : uint32 timestamp (little-endian)</p> <p>Long format 0x18 CC XX XX XX XX</p> <p>- 0xCC: Selection byte: - 0x01: The following value is a uint32 delta value between the device's timestamp and a reference source</p> <p>- 0XX XX XX XX : uint32 timestamp (little-endian)</p> | <p>0x98 06</p> <p>- 0x98: Response Set RTC Time - 0x06: Acknowledgement</p> |
| Data transmission | <p>0x12 89 01 07 XX</p> <p>- 0x12: Request byte for writing the subconfiguration - 0x89: Subconfiguration data transfer - 0x01: Subbyte for active flag - 0x07: Configuration version</p> <p>- 0XX: Value of the active flag - 0x00: Transmission is inactive - 0x01: Transmission active</p> | <p>0x92 89 01 07 06</p> <p>- 0x92: Response byte for writing the subconfiguration - 0x89: Data transmission subconfiguration - 0x01: Subbyte for active flag - 0x07: Configuration version - 0x06: Acknowledgement</p> |
| Transmission interval | <p>0x12 89 07 07 XX XX XX XX</p> <p>- 0x12: Request byte for writing the subconfiguration - 0x89: Subconfiguration data transmission - 0x07: Subbyte for transmission interval - 0x07: Configuration version</p> <p>- 0XX XX XX XX : uint32 transmission interval (little-endian)</p> | <p>0x92 89 07 07 06</p> <p>- 0x92: Response byte for writing the subconfiguration - 0x89: Subconfiguration data transmission - 0x07: Subbyte for transmission interval - 0x07: Configuration version - 0x06: Acknowledgement</p> |



| | | |
|---|---|---|
| Time-synchronous transmission | 0x12 95 01 07 XX | 0x92 95 01 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x95: Subconfiguration Real-time synchronous data transmission - 0x01: Low byte for active flag - 0x07: Configuration version - 0xXX: Value of the active flag <ul style="list-style-type: none"> - 0x00: Transmission is inactive - 0x01: Transmission active | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x01: Subbyte for active flag - 0x07: Configuration version - 0x06: Acknowledgement |
| Time-synchronous transmission interval | 0x12 95 03 07 XX XX XX XX | 0x92 95 03 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x03: Subbyte for transmission interval - 0x07: Configuration version - 0xXX XX XX XX : uint32 transmission interval (little-endian) | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x03: Subbyte for transmission interval - 0x07: Configuration version - 0x06: Acknowledgement |
| Time-synchronous time window, minimum wait time | 0x12 95 04 07 XX XX XX XX | 0x92 95 04 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x04: Subbyte for minimum wait time - 0x07: Configuration version - 0xXX XX XX XX : uint32 value in seconds for minimum time window (little-endian) | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x04: Subbyte for minimum wait time - 0x07: Configuration version - 0x06: Acknowledgement |
| Time-synchronous time window, maximum wait time | 0x12 95 05 07 XX XX XX XX | 0x92 95 05 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x05: Subbyte for minimum wait time - 0x07: Configuration version - 0xXX XX XX XX : uint32 value in seconds for maximum time window (little-endian) | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x95: Subconfiguration for real-time synchronous data transmission - 0x05: Subbyte for minimum wait time - 0x07: Configuration version - 0x06: Acknowledgement |
| Change of the transmission frame used | 0x12 90 01 07 XX | 0x92 90 01 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x90: LoRa frame subconfiguration - 0x01: Subbyte LoRa frame type - 0x07: Configuration version - 0xXX: Frame type value <ul style="list-style-type: none"> - 0x01: Simple frame type - 0x02: Extended frame type | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x90: LoRa frame subconfiguration - 0x01: Subbyte LoRa frame type - 0x07: Configuration version - 0x06: Acknowledgement |
| Energy register conversion | 0x12 XX 08 07 OBIS Data | 0x12 XX 08 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0xXX: Counter of the type of registers to be set: <ul style="list-style-type: none"> - 0x0B: DVS / WS 74 - 0x0C: MDVH4006 / DVH4013 - 0x0F: IEC1107 meter - 0x14: DWSB / EHZ base counter - 0x08: Energy register | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0xXX: Counter for the type of register to be set: <ul style="list-style-type: none"> - 0x0B: DVS / WS 74 - 0x0C: MDVH4006 / DVH4013 - 0x0F: IEC1107 meter - 0x14: DWSB / EHZ base meter |



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| | <ul style="list-style-type: none"> - 0x07: Configuration version - Obis Data: List of all desired energy registers in hexadecimal notation. Listed consecutively without separators | <ul style="list-style-type: none"> - 0x08: Energy register - 0x07: Configuration version - 0x06: Acknowledgement |
| Automatic reset | 0x12 85 01 07 XX | 0x92 85 01 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x85: Subconfiguration Automatic Reset - 0x01: Subbyte for active flag - 0x07: Configuration version - 0xXX: Value of the active flag <ul style="list-style-type: none"> - 0x00: Transmission is inactive - 0x01: Transmission active | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x85: Automatic reset subconfiguration - 0x01: Low byte for active flag - 0x07: Configuration version - 0x06: Acknowledgement |
| Automatic reset time interval | 0x12 85 03 07 XX XX XX XX | 0x92 85 03 07 06 |
| | <ul style="list-style-type: none"> - 0x12: Request byte for writing the subconfiguration - 0x85: Subconfiguration for automatic reset of data transmission - 0x03: Subbyte for the reset time interval - 0x07: Configuration version - 0xXX XX XX XX : uint32 value in seconds for reset time interval (little-endian) | <ul style="list-style-type: none"> - 0x92: Response byte for writing the subconfiguration - 0x85: Automatic reset subconfiguration - 0x03: Subbyte for the reset time interval - 0x07: Configuration version - 0x06: Acknowledgement |