

# Gateway ETHERNET

## 1 Application and Function

The Gateway ETHERNET is designed to collect, filter and decode wireless M-Bus telegrams from Engelmann / OMS-compliant radio devices and forward the data to an FTP server account in various file formats.

## 2 Contents of the Package

- Gateway ETHERNET
- Installation kit
- Installation and Operating Instructions
- Declaration of Conformity

## 3 General Information



### Power is supplied via PoE (Power over Ethernet) only!

- The technical regulations for electrical installations must be observed.
- This product fulfils the requirements of the European Council Directive on Electromagnetic Compatibility (EMC Directive) 2014/30/EU.
- The Gateway left the factory in conformance with all applicable safety regulations. All maintenance and repair work is to be carried out only by qualified and authorized technical personnel.
- The instrument must be stored and transported at temperatures above-freezing.
- **Instruments with activated radio function are not allowed on air freight.**
- To clean the Gateway (only if necessary), use a slightly moist cloth.
- To protect against damage and dirt the Gateway should only be removed from the packaging directly before installation.
- All specifications and instructions listed on the data sheet, installation and operating instructions and in the Application Notes must be adhered to.
- Instruments, parts and batteries which have been replaced or exchanged must be disposed of according to relevant environmental regulations.
- The Gateway does not require any maintenance.
- Further information can be obtained at [www.engelmann.de](http://www.engelmann.de).

## 4 Disposal



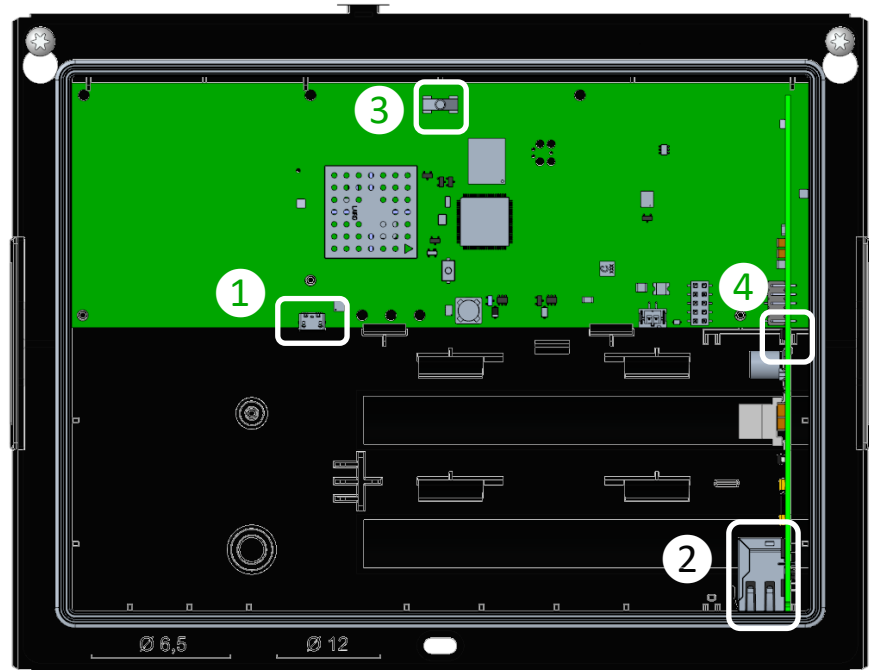
As far as disposal is concerned, the gateway is a waste electronic appliance in the sense of European Directive 2012/19/EU (WEEE) and it must not be disposed of as domestic waste. The relevant national, legal regulations must be observed as the appliance must be disposed of via the channels provided for this purpose. The local and currently valid legislation must be observed.

If the electronic device contains personal data, you are responsible for deleting it yourself before disposing of it. Replaced or defective parts must also be disposed of in an environmentally friendly manner.

## 5 Connectors on the Circuit Board

- 1 Micro-B USB connector (for configuration purposes)
- 2 Ethernet connection
- 3 Green Status-LED
- 4 Blue LED with power supply via Ethernet (PoE)

Figure 1: Gateway inside view



## 6 Mounting the Gateway

### 6.1 Installation site

- An interference-free data connection and unimpaired radio reception are mandatory.
- The wall should be flat and smooth, and suitable for drilling holes.
- Before drilling, please ensure that no electrical wires, supply lines or pipes inside of the wall will be hit.
- The Gateway has to be mounted with at least two opposite screws.
- To prevent overheating direct sunlight must be avoided.

### 6.2 Mounting tools

- Concrete drill (6) mounted in a (hammer) driller.
- Screwdriver (TX25) or cordless electric screwdriver with 5 cm extension and TX25 bit.

### 6.3 Mounting part 1: case (bottom)

- Remove the cover (unlock the black clamps by pressing them a bit into the housing).
- Mark the position of the mounting holes on the wall and drill them.
- Mount the case on the wall using the enclosed screws and dowels.

## 7 Commissioning

- Establish power supply by connecting the PoE cable. A blue LED lights up on the Ethernet module. The green status LED will now flash every 30 seconds.
- Connect your laptop using a USB cord (Micro-B plug to A plug) with the Gateway. The query on the network can take up to 90 seconds the first time. As soon as the gateway can be reached via the USB interface, the green status LED will begin to flash every second.
- **Configure the Gateway with the Engemann software „Device Monitor“.**
- Disconnect the USB cord from the Gateway. The green status LED will once again flash every 30 seconds.

## 8 Mounting Part 2: Case (Cover)

- Press the cover onto the bottom case until the black clamps snap in.
- Mount the numbered adhesive seal enclosed on the appropriate place. The added bar code label can be used for the purpose of documentation.



## 9 Operating Conditions

	Power over Ethernet
Possible interfaces in addition to wireless M-Bus	Ethernet
Ambient temperature	-20 °C to 40 °C
Protection class	IP20

## 10 Time

The Gateway has an integrated real-time-clock, to ensure timing functions. The clock must be set during the first configuration. Automatic changeover between standard and summer time is not supported. The time will be synchronized with the stored SNTP server every time an upload of the data starts.

In the event of power loss and resumption, the gateway time is automatically synchronized with the SNTP.

Parameter	Possible settings	Factory setting
Time zone (GMT)	-11 to +12	+1

## 11 Interfaces and Options

### General information about the interfaces:

Installation of radio components between or behind heating pipes, or the presence of other bulky metallic obstacles directly over or in front of the housing must be avoided.

The transmission quality (range, telegram processing) of radio components can be negatively influenced by instruments or equipment with electromagnetic emissions, such as telephones (particularly LTE mobile radio standard), Wi-Fi routers, baby monitors, remote controls, electric motors, etc.

In addition, the construction of the building has a strong influence on the transmission range and coverage.

Furthermore, when using installation boxes (substations) they must be equipped with non-metallic covers or doors.

### 11.1 Radio interface wireless M-Bus EN 13757-3, -4

Interface for reception of meter data.

#### 11.1.1 Technical data wireless M-Bus

Frequency	868 MHz
Protocol	wireless M-Bus based on EN 13757-3,-4
Selectable modes	T1; C1; T1/C1; S1
Telegrams	<ul style="list-style-type: none"> <li>- short telegram for AMR (in conformity to OMS generation 2, 3, 4)</li> <li>- long telegram with monthly values (in conformity to Engelmann specification)</li> </ul>
Encryption	AES: Advanced Encryption Standard; key length: 128 bits

With Power over Ethernet, 1500 meters can be processed. To reduce the number of collectable devices, it is possible to use whitelist for desired and blacklist for not-desired devices. Each list supports wildcards and up to 1000 entries. The whitelist can also be restricted by the blacklist.

#### 11.1.2 Configuration wireless M-Bus

Parameter	Possible settings	Factory setting
Mode	T1; C1; T1/C1; S1 unidirectional	T1/C1; unidirectional

Antenna	internal, external	internal
AES-128-Encryption	<ul style="list-style-type: none"> <li>- not encrypted</li> <li>- encrypted (mode 5/7): <ul style="list-style-type: none"> <li>- Master Key</li> <li>- key per meter</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- not encrypted</li> <li>- Engelmann Master Key</li> </ul>

### 11.1.3 Timings wireless M-Bus

Parameter	Possible settings	Factory setting
Collect time	00:00 - 23:59	00:15
Collect time frame	1 - 255 minutes	32 minutes
Point in month	begin, middle, end of month	-
Weekdays	Monday - Sunday (any weekday)	Sunday
Weeks in a month	1 - 5	2; 4
Months	1 - 12	1 - 12

## 11.2 Ethernet interface

The interface serves for the upload of the collected, time synchronization with an SNTP server and firmware updates.

### 11.2.1 Technical data Ethernet

Standards	IEEE 802.3i (10BASE-T, 10 Mbit) IEEE 802.3u (Fast Ethernet, 100 Mbit) IEEE 802.3 auto-negotiation (10/100 Mbit)
Media Interface Exchange	Auto-MDIX is not supported
Network	RJ45 Standard (8-Pin MagJack) 10Base-T: <ul style="list-style-type: none"> <li>- UTP CAT 3/4/5/5e (100 m max.)</li> </ul> 100Base-T: <ul style="list-style-type: none"> <li>- UTP CAT 5/5e (100 m max.)</li> </ul>
PoE	IEEE 802.3af (Typ 1) – PoE up to 15,4 Watt

### 11.2.2 Configuration of data transmission

Parameter	Possible settings	Factory setting
File format	CSV; XML; RAW	CSV
File name (estate)	The first part can be chosen freely (the MAC address will be used if this part is empty). The second part is the current timestamp.	

Dispatch type	FTP upload
Mode	Active; passive
Server	adjustable
User / password	adjustable

### 11.2.3 Zeitkonfiguration FTP-Datei Ablage

Parameter	Possible settings	Factory setting
Start time	00:00 - 24:00	01:00
Upload timeframe	1 - 255 minutes	30 minutes
Point in month	begin, middle, end of month	-
Weekdays	Monday - Sunday	Sunday
Weeks	1 - 5	2; 4
Months	1 - 12	1 - 12

## 11.3 Interval Mode

The interval mode is used to set the interval between collect times and FTP upload times, i.e. in which period the data is collected and then uploaded to the FTP server.

The interval mode must be activated manually:

- First select in the top two fields *Collect timings* and *FTP upload timings* the button „Disable“ and then „Write“
- In the Interval mode field, enter the desired interval between 10-1439 min in the input field at the bottom center

If the gateway Ethernet is addressed via the USB connection, the gateway goes into configuration mode and interrupts the interval; as soon as the USB connection is disconnected again, the gateway resumes its functions in the previously set interval mode.

The screenshot displays the 'Timings' configuration page, which is divided into three main sections:

- Collect timings:** Features a 'PC time' button, a 'Duration (min)' input field (set to 32), and a 'Point in time' section with radio buttons for 'Month start' (checked), 'Month middle', and 'Month end'. It also includes a 'Days' section with checkboxes for Mo, Tu, We, Th, Fr, Sa, and Su (checked), and a 'Weeks of month' section with checkboxes for 1, 2, 3, 4, and 5.
- FTP upload timings:** Features a 'PC time' button, a 'Random (min)' input field (set to 0), and a 'Point in time' section with radio buttons for 'Month start' (checked), 'Month middle', and 'Month end'. It also includes a 'Days' section with checkboxes for Mo, Tu, We, Th, Fr, Sa, and Su (checked), and a 'Weeks of month' section with checkboxes for 1, 2, 3, 4, and 5.
- Interval mode:** This section is highlighted with a red border. It contains a 'Disable' button, an input field for 'Interval (min), [10-1439]', and 'Read' and 'Write' buttons.

#### 11.4 USB interface

The USB interface (Micro-B connector, Figure 1 connector 1) is used to configure the Gateway with the „Device Monitor“ software. (A converter chip inside of the Gateway provides a COM-port.)

#### 11.5 Option: external antenna connector

Depending on the installation site, the wireless M-Bus and/or mobile radio receiving strength might vary. Using external antennas and their cables, receiving strength can be enhanced on site or moved to locations with better reception. To use an external antenna, the antenna connectors on the PC must be fed through the housing.

### 12 Manufacturer

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