

# QUICK-START EMU M-BUS CENTER

ENGLISH

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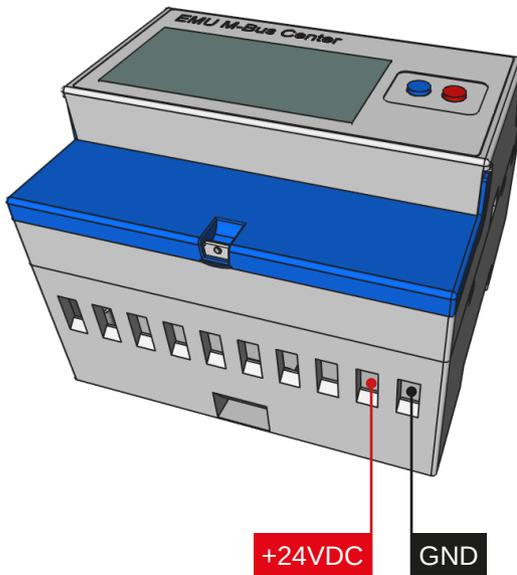
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Version 1.3 - Subject to modifications and amendments

# INSTALLATION

## POWER SUPPLY

The EMU M-Bus Center requires a 24VDC power supply with at least 1A. The connectors are located on the lower terminal block:



## RECOMMENDATION

Power supply unit MDR-20-24

IN: 100-240 VAC | OUT: 24 VDC / 1A

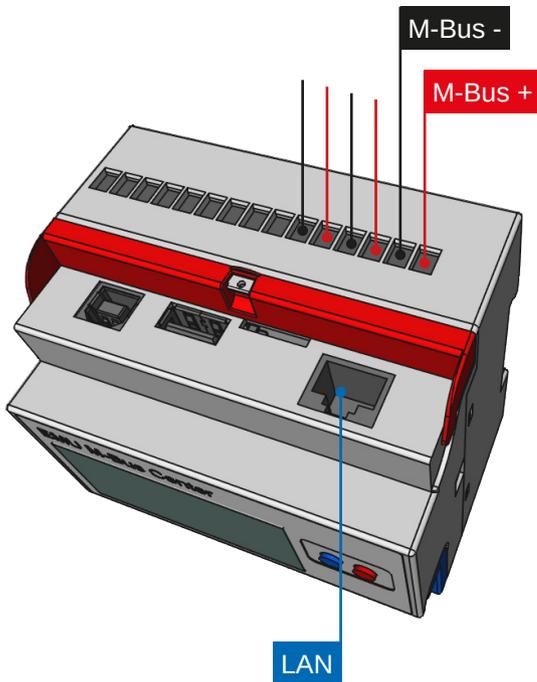
EMU part number: **940076**

## NETWORK CONNECTION

The EMU M-Bus Center has a standard RJ-45 LAN connection. The connector is located on top of the device (see below):

## CONNECT METER (M-BUS)

The EMU M-Bus Center has 3 parallel M-Bus clamps. The connectors are located on the upper terminal block (see below):



# START-UP PROCEDURE

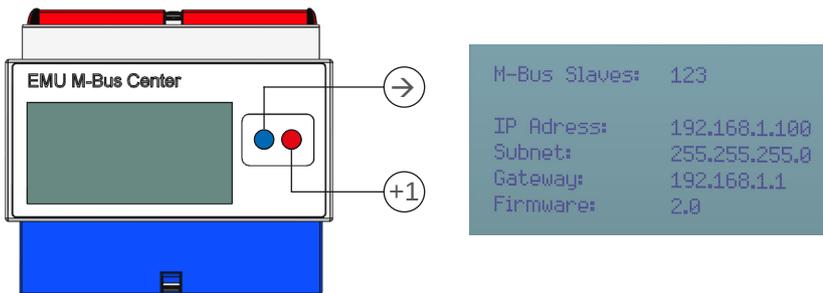
## DEFAULT NETWORK CONFIGURATION

The standard setting for the EMU M-Bus Center is DHCP. The IP address appears on the display after the device is started (approx. 45 seconds). If no DHCP server is available, network settings can be configured manually on the device.

## MANUAL NETWORK CONFIGURATION

Follow these steps to configure the IP address, subnet mask, and standard gateway manually:

- Hold the **blue button** for at least 5 seconds
- A cursor will appear in the first place of the IP address
- Use the **red button** to increment the digits (+1)
- Use the **blue button** to move one place to the right



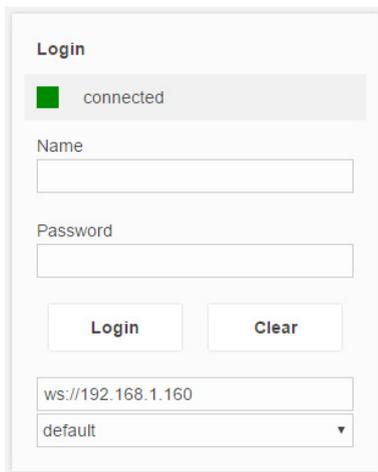
- Repeat this process until you have reached the last place
- Finally push the **blue button**

Now, the EMU M-Bus Center can be reached at the configured IP address.

## LOGIN

All additional configuration steps are made via the EMU M-Bus Center interface. The web interface is accessed as follows:

- Start your web browser
- Enter the **IP address** of the EMU M-Bus Center into the browser's address bar
- Now the login screen will appear
- Standard login
  - Name: **admin**
  - Password: **123**
- Log in by clicking **Login** or pressing **Enter**
- After logging in, the Home screen of the EMU M-Bus Center will appear



The screenshot shows a web browser window with the title "Login". At the top, there is a green status bar with a small green square and the text "connected". Below this, there are two input fields: "Name" and "Password". Under the "Name" field, there is a button labeled "Login". Under the "Password" field, there is a button labeled "Clear". At the bottom of the form, there is a text input field containing "ws://192.168.1.160" and a dropdown menu with "default" selected.

## WEB INTERFACE

After successful login, the Home screen of the EMU M-Bus Center will appear first.

Return to the home screen from any sub-menu by **clicking the EMU logo** in the top left area.

Since the web interface is an application and not a website, the browser's „back“ button does not work!

One of the EMU M-Bus Center's **four sub-menus** can be selected in the middle of the Home screen.

Set your desired **language** in the dropdown menu in the bottom right.

The screenshot displays the EMU M-Bus Center web interface. At the top left is the EMU logo. The top right shows the user 'admin'. The main status bar contains the following data:

Mbus Voltage	Mbus Current	Temperatur 1	Temperatur 2
40.44 V	5 mA	24.9 °C	NaN °C

In the center, four sub-menu buttons are visible, highlighted by a red box:

- Meter overview
- Meter configuration
- Logger configuration
- System integration

The bottom status bar shows:

- Status reading (4 Slaves)
- 2/10/2017 - 11:26:13 AM
- S/N 87047 FW 1.1.5693.r1
- Language dropdown: English

## SETTING THE TIME

The correct system time is a prerequisite for the accurate logging of measurement values. The EMU M-Bus Center works internally with UTC time. It is calculated automatically based on the entered local time and time zone setting.

Follow these steps to set the time:

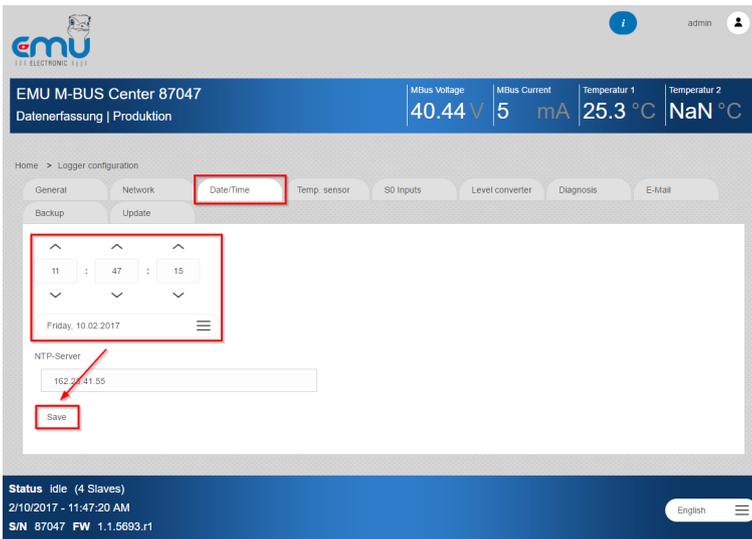
- Select **Logger configuration** on the Home screen



- Set the correct time zone using the **General** tab

- To apply the changes, confirm the settings with **Save**.

- The current local time and date can be set in the **Date/Time** tab



The screenshot displays the EMU M-BUS Center 87047 web interface. At the top, there is a status bar showing 'EMU M-BUS Center 87047' and 'Datenerfassung | Produktion'. To the right, there are four data fields: 'Mbus Voltage' (40.44 V), 'Mbus Current' (5 mA), 'Temperatur 1' (25.3 °C), and 'Temperatur 2' (NaN °C). Below this, the 'Date/Time' tab is selected and highlighted with a red box. The configuration area shows a time picker set to 11:47:15 and a date picker set to Friday, 10.02.2017. Below the time and date pickers, there is an 'NTP-Server' input field containing '162.207.41.55' and a 'Save' button, both highlighted with red boxes. At the bottom of the interface, there is a status bar showing 'Status idle (4 Slaves)', '2/10/2017 - 11:47:20 AM', and 'S/N 87047 FW 1.1.5693.r1'. A language selector for 'English' is also visible.

- To apply the changes, confirm the settings with **Save**.
- Now, your system time is set

## HINT!

A valid **NTP time server** can be configured in the **Date/Time** tab. If an internet connection (including configured Gateway) is available, the EMU M-Bus Center synchronizes the system time with the configured NTP server.

E.g. time server of the Swiss Federal Institute for Metrology (METAS):  
***metasntp11.admin.ch***

## SEARCH/ADD METERS

Meters connected via M-Bus can either be added via **automatic search**, or **added manually** to the EMU M-Bus Center using a known primary or secondary address. The automatic search can be applied to one or all **Baudrates**.

Follow these steps to add meters to the M-Bus Center:

- Select **Meter configuration** in the Home screen



- For an automatic search, select the desired **Baudrate** in the **Search** tab to start the scan
- Start the search via **Secondary address** or **Primary address**

- For manual recording, select the **Type** of address (prim = primary, Sec = secondary), the meter's **Baudrate**, as well as the **Address** in the **Add** tab.

The screenshot displays the EMU M-BUS Center 87047 web interface. At the top, there is a navigation bar with the EMU logo and the text 'EMU M-BUS Center 87047' and 'Datenerfassung | Produktion'. Below this, a status bar shows real-time data: 'Mbus Voltage 40.44 V', 'Mbus Current 5 mA', 'Temperatur 1 25.3 °C', and 'Temperatur 2 NaN °C'. The main content area is titled 'Home > Meter configuration' and features a 'Meter' section with an 'Add' button highlighted in red. Below the 'Add' button, there is a form with a 'Baudrate' dropdown menu set to 'default' and a 'Type' dropdown menu set to 'Sec'. An 'Address' input field contains the value '0'. A 'Save' button is located at the bottom of the form, also highlighted in red. The bottom status bar shows 'Status idle (4 Slaves)', the date and time '2/10/2017 - 12:00:27 PM', and the device information 'S/N 87047 FW 1.1.5693.r1'. A language selector 'English' is visible in the bottom right corner.

- Click **Save** to add the meter

## CHECKING THE METER

After an automatic search, or manual recording, the detected meters are shown in the meter list.

Follow these steps to open the meter list:

- Select **Meter configuration** in the Home screen



- Select the **Meter** tab

ID	Name	Secondary adress	Manufacturer	Medium	Read-out cycle	Last read-out	Status	
1	SO-Input-1	900		Other	default	2/10/2017 - 1:54:23 PM		Details
5	Temperatur Sensor-1	1000		Other	default	11/30/2016 - 8:53:31 AM		Details
7	EMU Electricity Meter	1007	EMU	Electricity	default	2/10/2017 - 12:10:10 PM		Details
8	CALEC ST	320569	AMT	Heat (outlet)	default	2/10/2017 - 1:54:38 PM		Details
9	Temperatur Sensor-2	1001		Other	default			Details



Meter found - successfully read



Meter indicates error



Meter is current - can no longer be read



Meter- not yet read

## CONFIGURE READ-OUT CYCLE

Follow these steps to configure the **read-out cycle** of the connected meters:

- Select **Logger configuration** on the Home screen



- Select the desired cycle in the **General** tab

EMU M-BUS Center 87047  
Datenerfassung | Produktion

MBus Voltage: 40.44 V | MBus Current: 5 mA | Temperatur 1: 25.3 °C | Temperatur 2: NaN °C

Home > Logger configuration

General | Network | Date/Time | Temp. sensor | SO inputs | Level converter | Diagnosis | E-Mail

Backup | Update

Name: EMU M-BUS Center 87047

Location: Datenerfassung | Produktion

Time zone: Brussels, Copenhagen, Madrid, Paris

Default read-out cycle: 1 min | MBus Request Timeout [ms]: 0

Save | Reboot

Status idle (4 Slaves)  
2/10/2017 - 12:27:04 PM  
S/N 87047 FW 1.1.5693.r1

English

- Click **Save** to activate the selected cycle.

## ATTENTION!

M-Bus has its limits: Reading 10 devices with a read-out cycle of 10 seconds is impossible from a technical perspective. Recommended: 15 Min.

## VIEWING MEASUREMENTS

Follow these steps to view the **measuring values** of the connected meters:

- Select **Meter overview** in your Home screen.



- Select the **Medium** (Electricity, Water, Heat, Gas, Solar, Other)
- Click the **Details** button of the desired meter in the **meter list**

The screenshot shows the EMU M-BUS Center 87047 interface. At the top, there are status indicators for MBus Voltage (40.47 V), MBus Current (18 mA), Temperatur 1 (24.6 °C), and Temperatur 2 (NaN °C). Below this is a navigation breadcrumb: Home > Meter overview > Electricity meters. The main section is titled 'Electricity meters' and contains a table with the following data:

Name	Primary address	Secondary address	Manufacturer	Last read-out	Status	
AP Support	0	88885	EMU	2/10/2017 - 2:35:17 PM	<span style="color: green;">✔</span>	Details
AP Prüfen & Eichen	0	88886	EMU	2/10/2017 - 2:35:19 PM	<span style="color: green;">✔</span>	Details
AP Engineering	0	88887	EMU	2/10/2017 - 2:35:30 PM	<span style="color: green;">✔</span>	Details
AP Endtest	0	88888	EMU	2/10/2017 - 2:35:35 PM	<span style="color: green;">✔</span>	Details

Below the table, it indicates '4 Rows total'. At the bottom of the interface, there is a status bar showing 'Status reading (4 Slaves)' for '2/10/2017 - 2:36:20 PM' and 'S/N 87047 FW 1.1.5693.r1'. There is also an 'English' language selector and a menu icon.

- Now, the current values of the measurements transmitted via M-Bus are displayed in the **measurement table**.
- **Additional information**, such as **Manufacturer**, **Medium**, etc. is also shown.
- It is also possible to view a **Chart** with a selectable time period for energy consumption.

The screenshot shows the EMU M-BUS Center 87047 web interface. At the top, there is a header with the EMU logo and navigation links. Below the header, a status bar displays key measurements: Mbus Voltage (40.44 V), Mbus Current (5 mA), Temperatur 1 (24.9 °C), and Temperatur 2 (NaN °C). The main content area is titled 'AP Prüfen & Eichen' and includes a 'Refresh' button. A table of metadata is displayed, with a red box highlighting the 'Manufacturer' row, which shows 'EMU' and a last read-out time of '2/10/2017 - 3:13:11 PM'. Below this, a table of energy consumption is shown for Friday, 10.02.2017. The table has columns for '#', 'Name', 'aktuell', and 'Unit'. A red box highlights the 'Chart' link in the 'Unit' column for the first row, 'Active energy import / Tariff 1', which has a value of 1837.157 kWh.

#	Name	aktuell	Unit
0	Active energy import / Tariff 1	1837.157	kWh
1	Active energy import / Tariff 2	0.000	kWh
2	Active power / Phase L1	0.093	kW
3	Active power / Phase L2	0.000	kW
4	Active power / Phase L3	0.000	kW

# CONFIGURING FTP UPLOAD

The EMU M-Bus Center can upload the data automatically to an FTP server after each reading. Follow these steps to configure the **FTP upload**:

- Select **System integration** in your Home screen



- Select the **FTP** sub-tab in the **Upload** tab
- Execute minimal server settings
  - Server address, Port (if it differs from 21)
  - Username, Password, File Path
  - Encryption (FTPS or SSL connection)

The screenshot shows the EMU M-Bus Center 87047 web interface. The top navigation bar includes the EMU logo and the text 'EMU M-BUS Center 87047 Datenerfassung | Produktion'. The main content area is titled 'System integration' and contains several tabs: 'Data-Export', 'Upload', 'BACnet', and 'BACnet BBMD'. The 'Upload' tab is selected, and within it, the 'FTP' sub-tab is active. A red box highlights the configuration fields for the FTP server: 'Server', 'Port', 'Username', 'Password', 'Path', and an 'SSL' checkbox. Below the form, there are options for 'Export-Type' (csv, Com..., Stand., Germ...), 'Separator', and 'Export Language', along with 'Save' and 'Upload' buttons.

- Activate **FTP Upload**
- Determine **Export-Type**

The screenshot shows the EMU M-BUS Center 87047 web interface. The top navigation bar includes the EMU logo and a user profile icon labeled 'admin'. The main header displays system status: 'EMU M-BUS Center 87047' and 'Dalenerfassung | Produktion'. Real-time data is shown: MBus Voltage (40.44 V), MBus Current (5 mA), Temperatur 1 (25.3 °C), and Temperatur 2 (NaN °C). The breadcrumb trail is 'Home > System integration'. The 'Upload' tab is active, showing the 'FTP' configuration section. The 'On' checkbox is checked. The 'Export-Type' dropdown is set to 'csv'. The 'Save' button is highlighted.

- Click **Save** to apply settings

Now, uploads will occur after each meter reading (in the defined **read-out cycle**).

## HINT!

The FTP upload is logged under the **Logger configuration** in the **Diagnosis** tab. Use this to determine why the connection may not have worked.

# CONFIGURING EMS ISO 50001 UPLOAD

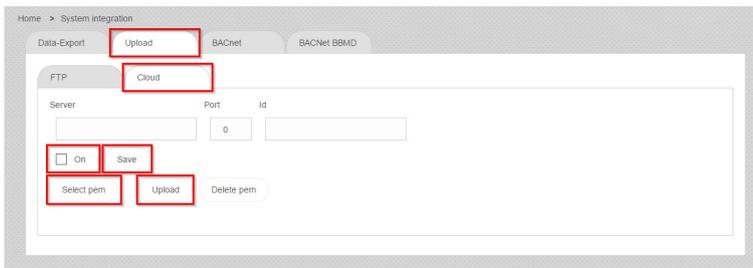
The EMU M-Bus Center can be used together with the ISO 50001 energy management and billing software EMU / Helvatron Joulio-Web.

Follow these steps to configure the upload to the EMS and billing software:

- Select **System integration** in your Home screen.



- Select the **Cloud** sub-tab in the **Upload** tab
  - Use **select pem** to select the certificate generated by Joulio Web
  - **Upload** the certificate
  - Select **On** to activate the cloud upload
  - Click **Save** to apply settings



# TECHNICAL DATA

Voltage Supply $U_{\text{Nominal}}$	24V DC (20 – 28V DC)
Max. Current consumption $I_{\text{Max}}$	900mA
Ambient Temperature $T_{\text{Amb.}}$	0..55 °C
IP Code	IP20
Approval	IEC / EN 61000-6-2; IEC / EN 61000-6-3
Energy management	ISO 50001
<b>Mechanical Data</b>	
Installation	35mm DIN Rail
Enclosure-Width	5 module, 90mm
Weigth	approx. 400 g
Enclosure material	Polycarbonat, recyclable, incombustible
<b>Interfaces</b>	
Ethernet	10BASE-T / 100BASE-TX
USB	Typ A (Master); Typ B (Slave) for M-Bus level converter
Memory-Card	microSD
Temperature sensor	2 x PT1000 Input Deviation max. +/- 2 °C ( $T_{\text{Amb.}}$ -10..+60 °C)
Relay contact	2 x Form A Max. switch capacity: 5A / 277V AC Indication error-state M-BUS
S0 pulse inputs	4 x isolated S0 inputs Terminal 2, 4, 6, 8: Output 13V DC / 15mA Terminal 1, 3, 5, 7: Input optocoupler
M-BUS	3 x ports (parallel)
<b>M-BUS</b>	
Compatibility	Electricity-, heat-, water-, gas-meter with M-Bus specified in EN 13757-2, -3 (former EN1434-3)
Max. current load $I_{\text{M-BUS max}}$	375mA (250 x 1.5mA)
Baudrates	300, 600, 1200, 2400, 4800, 9600
Addressing	Primary- or secondary addressing
Send Application Reset Subcode	Yes (can be disabled)
Send SND_NKE	Yes (can be disabled)
<b>BACnet IP</b>	
Profile	B-ASC
Function	M-BUS to BACnet Gateway
Additional function	BBMD



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