

QUICK-START EMU M-BUS CENTER

ENGLISH

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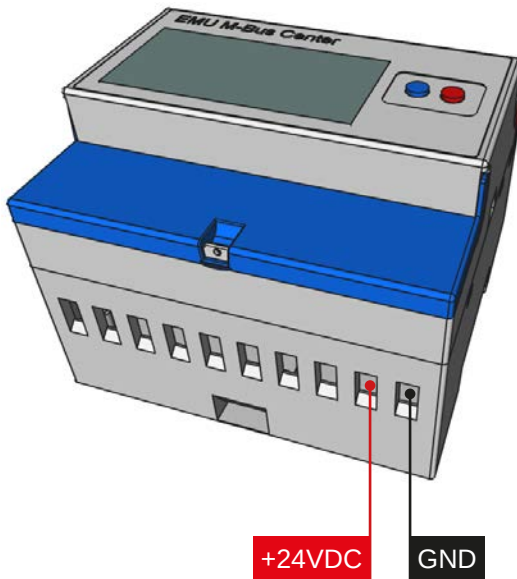
Version 1.3 - Subject to modifications and amendments



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

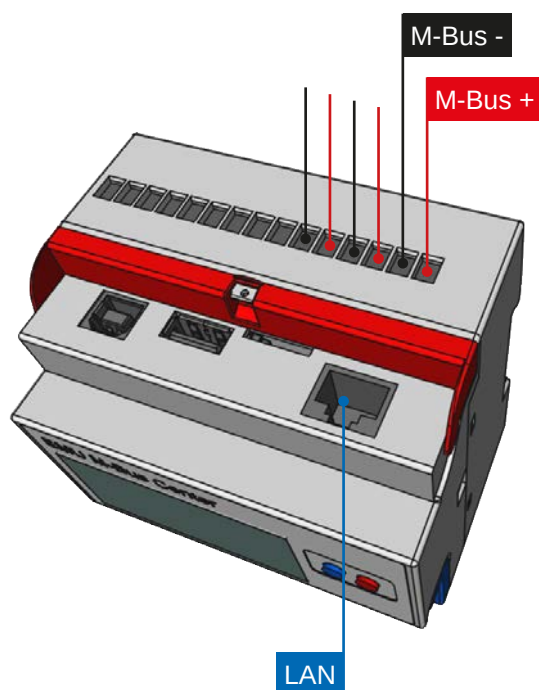
EMU part number: **940076**

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

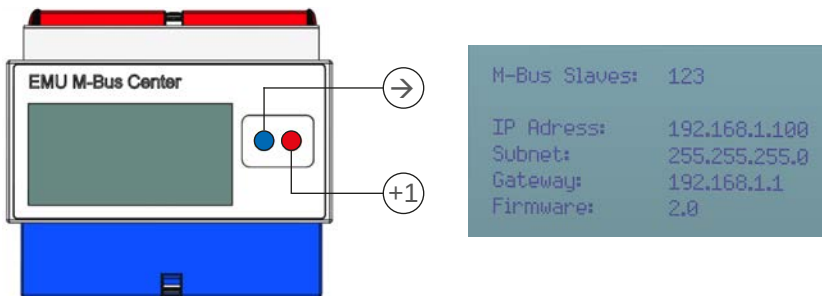
DEFAULT NETWORK CONFIGURATION

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



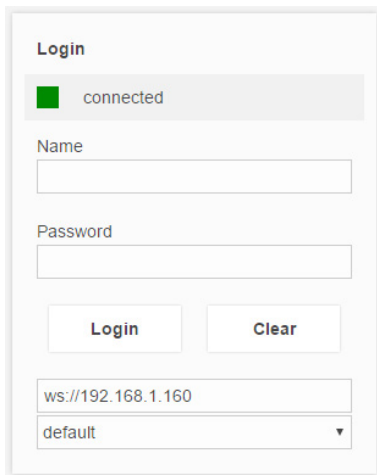
- Repeat this process until you have reached the last place
- Finally push the **blue button**

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 displaying the login page of the EMU M-Bus Center. The page has a light gray background. At the top left, the word "Login" is displayed in bold. Below it, there is a green square icon followed by the text "connected". Underneath, there are two input fields: "Name" and "Password". Below the "Password" field, there are two buttons: "Login" and "Clear". At the bottom, there is a text input field containing "ws://192.168.1.160" and a dropdown menu showing "default" with a downward arrow.

WEB INTERFACE

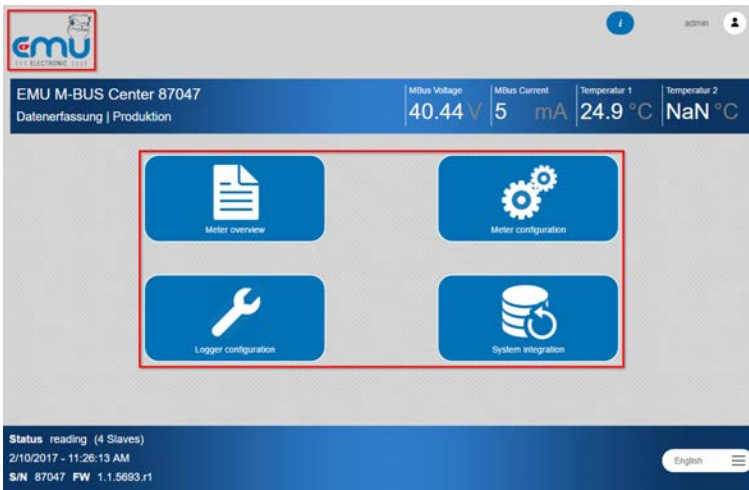
After successful login, the Home screen of the EMU M-Bus Center will appear first.

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.

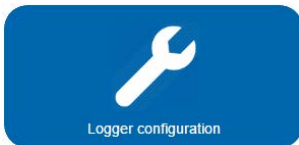


SETTING THE TIME

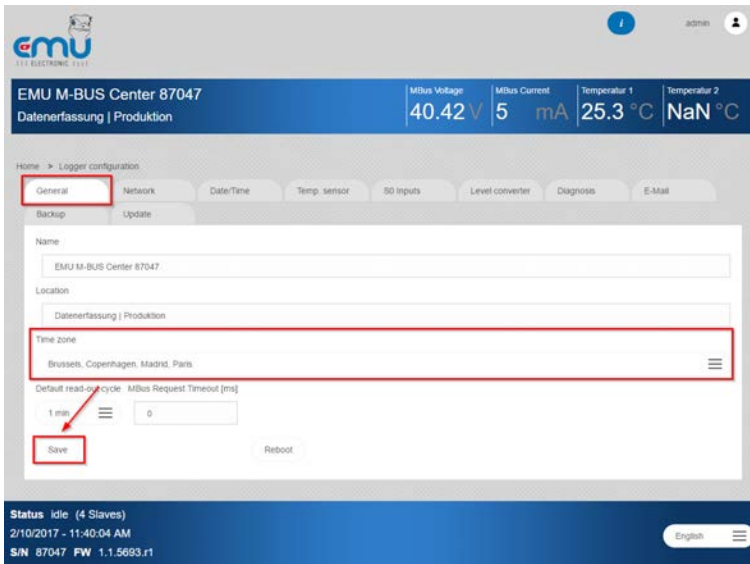
The correct system time is a prerequisite for the accurate logging of measurement values. The EMU M-Bus Center works internally with UTC time. It is calculated automatically based on the entered local time and time zone setting.

Follow these steps to set the time:

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



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

The screenshot shows the web interface of the EMU M-BUS Center 87047. At the top, there's a header with the EMU logo and the text "110 ELECTRONIC". Below this, a status bar displays "EMU M-BUS Center 87047" and "Datenerfassung | Produktion". To the right, it shows real-time data: "Mbus Voltage: 40.42 V", "Mbus Current: 5 mA", "Temperatur 1: 25.3 °C", and "Temperatur 2: NaN °C". The main content area is titled "Home > Logger configuration". It features a tabbed interface with "General", "Network", "Date/Time", "Temp. sensor", "IO Inputs", "Level converter", "Diagnosis", and "E-Mail". The "General" tab is selected and highlighted with a red box. Within this tab, there are fields for "Name" (filled with "EMU M-BUS Center 87047"), "Location" (filled with "Datenerfassung | Produktion"), and "Time zone" (which is highlighted with a red box and shows a dropdown menu with options like "Brussels, Copenhagen, Madrid, Paris"). Below the "Time zone" field, there's a "Default read-out cycle" section with a dropdown set to "1 min" and a "Mbus Request Timeout [ms]" field set to "0". A red arrow points from the "1 min" dropdown to the "Save" button, which is also highlighted with a red box. A "Reboot" button is located next to the "Save" button. At the bottom of the interface, a blue status bar shows "Status: idle (4 Slaves)", the date and time "2/10/2017 - 11:40:04 AM", and the serial number "S/N 87047 FW 1.1.5693.r1". There's also a language selector set to "English".

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

- The current local time and date can be set in the **Date/Time** 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 | 90 inputs | Level converter | Diagnosis | E-Mail

Backup | Update

Time: 11 : 47 : 15
Date: Friday, 10.02.2017

NTP-Server: 162.241.55

Save

Status: idle (4 Slaves)
2/10/2017 - 11:47:20 AM
S/N: 87047 FW: 1.1.5693.r1

English

- 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

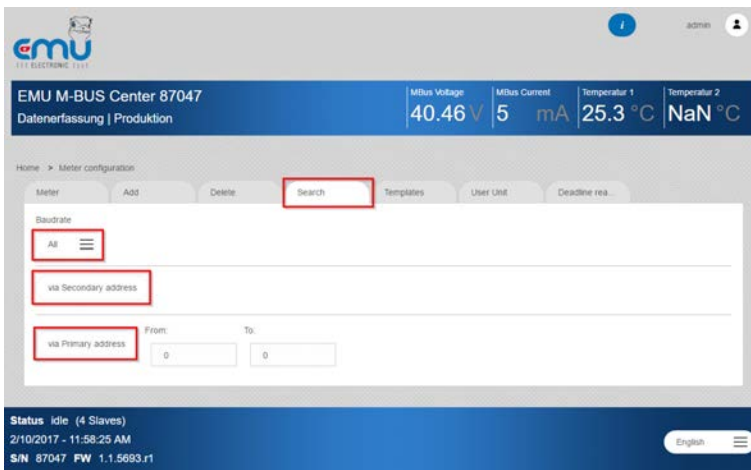
Meters connected via M-Bus can either be added via **automatic search**, or **added manually** to the EMU M-Bus Center using a known primary or secondary address. The automatic search can be applied to one or all **Baudrates**.

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 shows the EMU M-BUS Center 87047 web interface. The top header displays the EMU logo and the text 'EMU M-BUS Center 87047 Datenerfassung | Produktion'. Below this, a status bar shows 'Mbus Voltage' at 40.44 V, 'Mbus Current' at 5 mA, 'Temperatur 1' at 25.3 °C, and 'Temperatur 2' at NaN °C. The main content area is titled 'Home > Meter configuration' and features a navigation bar with buttons: 'Meter', 'Add', 'Delete', 'Search', 'Templates', 'User Unit', and 'Deadline res.'. The 'Add' button is highlighted with a red box. Below the navigation bar, a form is displayed with a 'Baudrate' section containing 'Sec' and 'default' radio buttons, and an 'Address' section with a text input field containing '0'. A 'Save' button is located at the bottom of the form, also highlighted with a red box. The bottom status bar shows 'Status idle (4 Slaves)', the date and time '2/10/2017 - 12:00:27 PM', and the serial number '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	50-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

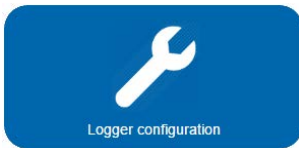


Meter- not yet read

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

The screenshot shows the EMU M-BUS Center 87047 web interface. At the top, there's a status bar with "EMU M-BUS Center 87047" and "Datenerfassung | Produktion". Below this, a navigation bar shows tabs: "General", "Network", "Date/Time", "Temp. sensor", "IO inputs", "Level converter", "Diagnosis", and "E-Mail". The "General" tab is selected and highlighted with a red box. Under the "General" tab, there's a "Backup" and "Update" section. Below that, there's a form with fields for "Name" (EMU M-BUS Center 87047), "Location" (Datenerfassung | Produktion), and "Time zone" (Brussels, Copenhagen, Madrid, Paris). The "Default read-out cycle" is set to "1 min" and is highlighted with a red box. Next to it is a "MBus Request Timeout [ms]" field set to "0". At the bottom of the form are "Save" and "Reboot" buttons. The footer shows "Status idle (4 Slaves)", "2/10/2017 - 12:27:04 PM", "S/N 87047 FW 1.1.5693.r1", and a language selector set to "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 web interface. At the top, there's a header with the EMU logo and user information. Below the header, a status bar displays key measurements: Mbus Voltage (40.47 V), Mbus Current (18 mA), Temperatur 1 (24.6 °C), and Temperatur 2 (NaN °C). The main content area is titled 'Electricity meters' and contains a table with the following data:

Name	Primary address	Secondary address	Manufacturer	Last read-out	Status	Details
AP Support	0	88885	EMU	2/10/2017 - 2:35:17 PM		Details
AP Prüfen & Eichen	0	88886	EMU	2/10/2017 - 2:35:19 PM		Details
AP Engineering	0	88887	EMU	2/10/2017 - 2:35:30 PM		Details
AP Endtest	0	88888	EMU	2/10/2017 - 2:35:35 PM		Details

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

- 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.

EMU M-BUS Center 87047
Datenerfassung | Produktion

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

Home > Meter overview > Electricity meters > Last read-out

AP Prüfen & Eichen Refresh

Primary address	0	Location	Production
Secondary address	88886	Cost center	
Medium	Electricity	Comment	
Manufacturer	EMU	Last read-out	2/10/2017 - 3:13:11 PM

Friday, 10.02.2017

#	Name	aktuell	Unit
0	Active energy import / Tariff 1	1837.137	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

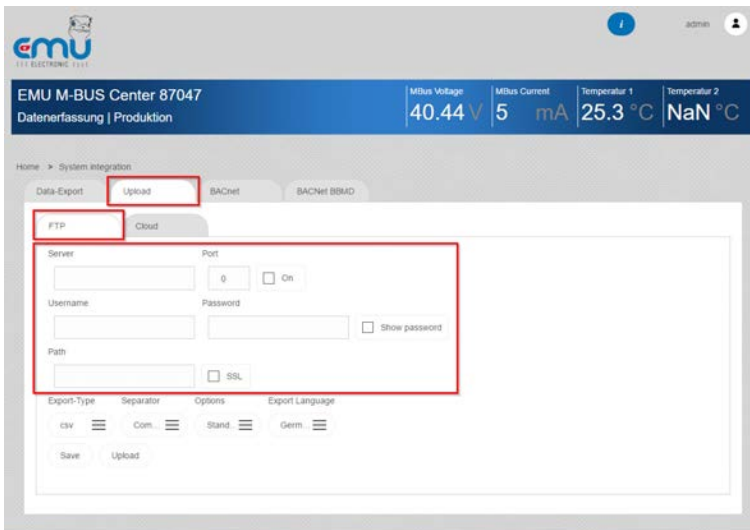
CONFIGURING FTP UPLOAD

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)

A screenshot of the EMU M-Bus Center web interface. The top header shows the EMU logo and "EMU M-BUS Center 87047 Datenerfassung | Produktion". A status bar displays "Mbus Voltage: 40.44 V", "Mbus Current: 5 mA", "Temperatur 1: 25.3 °C", and "Temperatur 2: NaN °C". The main menu includes "Data-Export", "Upload", "BACnet", and "BACnet BBRMD". The "Upload" tab is selected, and the "FTP" sub-tab is active. A red box highlights the FTP configuration fields: "Server", "Port", "Username", "Password", "Path", and "SSL". Below these fields are "Export-Type" (csv), "Separator" (Com), "Options" (Stand), and "Export Language" (Germ). "Save" and "Upload" buttons are at the bottom.

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

EMU M-BUS Center 87047
Datenerfassung | Produktion

Home > System integration

Data-Export Upload BACnet BACnet BMS

FTP Cloud

Server Port ☐ On

Username Password ☐ Show password

Path ☐ SSL

Export-Type Separator Options Export Language

csv Com... Stand Germ...

Save Upload

Status idle (4 Slaves)
2/10/2017 - 3:32:26 PM
S/N 87047 FW 1.1.5693.r1

English

- Click **Save** to apply settings

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

HINT!

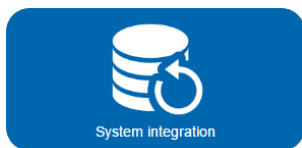
The FTP upload is logged under the **Logger configuration** in the **Diagnosis** tab. Use this to determine why the connection may not have worked.

CONFIGURING EMS ISO 50001 UPLOAD

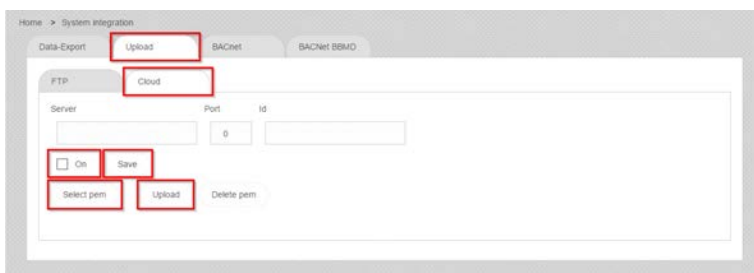
The EMU M-Bus Center can be used together with the ISO 50001 energy management and billing software EMU / Helvatron Joulio-Web.

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

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

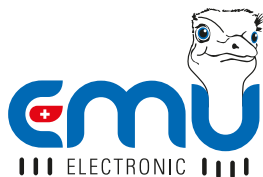


- Select the **Cloud** sub-tab in the **Upload** tab
 - Use **select pem** to select the certificate generated by Joulio Web
 - **Upload** the certificate
 - Select **On** to activate the cloud upload
 - Click **Save** to apply settings



TECHNICAL DATA

Voltage Supply U_{Nominal}	24V DC (20 – 28V DC)
Max. Current consumption I_{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
Mechanical Data	
Installation	35mm DIN Rail
Enclosure-Width	5 module, 90mm
Weigth	approx. 400 g
Enclosure material	Polycarbonat, recyclable, incombustible
Interfaces	
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)
M-BUS	
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)
BACnet IP	
Profile	B-ASC
Function	M-BUS to BACnet Gateway
Additional function	BBMD



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