



MANUAL

maxi | Mk II



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1 Introduction

Safety information

is shown as follows in this manual:

 Danger
<p>Failure to observe this safety information will result in death or serious injury to persons.</p>
 Warning
<p>Failure to observe this safety information may result in death or serious injury to persons.</p>
 Caution
<p>Failure to observe this safety information may result in minor to moderate injury to persons.</p>
Notice
<p>Information on avoiding damage to the device or on the correct use of components and documents.</p>

Notation and symbols used

Notice	
<p>The following notation and symbols are used in this manual.</p>	
<p><Buttons></p>	<p>The notation <Button> is used for buttons that must be mentioned in the running text.</p>
	<p>Graphic symbols are also used for buttons where suitable.</p>
<p>Network commands as well as file and product names</p>	<p>Network commands, such as <i>tracert</i> or <i>ping</i>, are written in italics. The same applies to file and product names.</p>

Copyright protection

This document is protected by copyright. Reproduction, reprinting, even of extracts, as well as reproduction of the images, even in a modified state, is only permitted with the written consent of the manufacturer.

Warranty

This manual must be read carefully before installing and commissioning the device. The warranty entitlement lapses if the device is installed by untrained personnel. Harm caused by disregarding the allowable connected loads and ambient conditions or by using unsuitable tools is also excluded.

Limitation of liability

All information and notes in this manual were compiled taking the applicable standards and regulations, best engineering practice and the manufacturer's extensive knowledge and experience into consideration.

The manufacturer assumes no liability for indirect and direct damage due to:

- Ignorance of this manual
- Improper use
- Use of untrained personnel
- Damage due to incorrect installation
- Unauthorised modifications to the hardware and software
- Use of non-approved components

The obligations agreed in the delivery contract, the general terms and conditions as well as the manufacturer's delivery conditions and the legal regulations applicable at the time of the conclusion of the contract apply.

Target group

This manual is intended for specialist personnel who are familiar with the configuration of gateways in building automation.

Intended use

The gateway is intended exclusively for coupling networks in building automation, with the connection values specified in the technical data.

Notice

This manual is part of the product and must remain with the end customer.

2 Safety

General

The hardware and software present no direct hazards. However, in their function as a gateway between networks in building infrastructures, they are able to seriously disrupt the interaction of network components.



Warning

Misconfiguration of hardware and software!

Faulty configuration of hardware and software can cause malfunctions in the building infrastructure on network components, sensors or actuators, **for example:**

- Monitoring devices, such as fire alarm or intrusion detection systems, are deactivated.
- Machines and fans start up unexpectedly.
- Gate valves and other valves open or close unintentionally.

Under certain circumstances, this can lead to serious injuries or death.

The gateway should only be configured by specialist personnel who are familiar with network configuration!

A connection to a network must not be established before the device has been fully configured!



Warning

Electric shock hazard!

When installing and connecting the device, live parts of the overall system in the control cabinet or other system parts may come into contact.

Under certain circumstances, this can lead to serious injuries or death.

Electrical devices may only be installed and connected by qualified electricians.

3 Classification and purpose

Classification

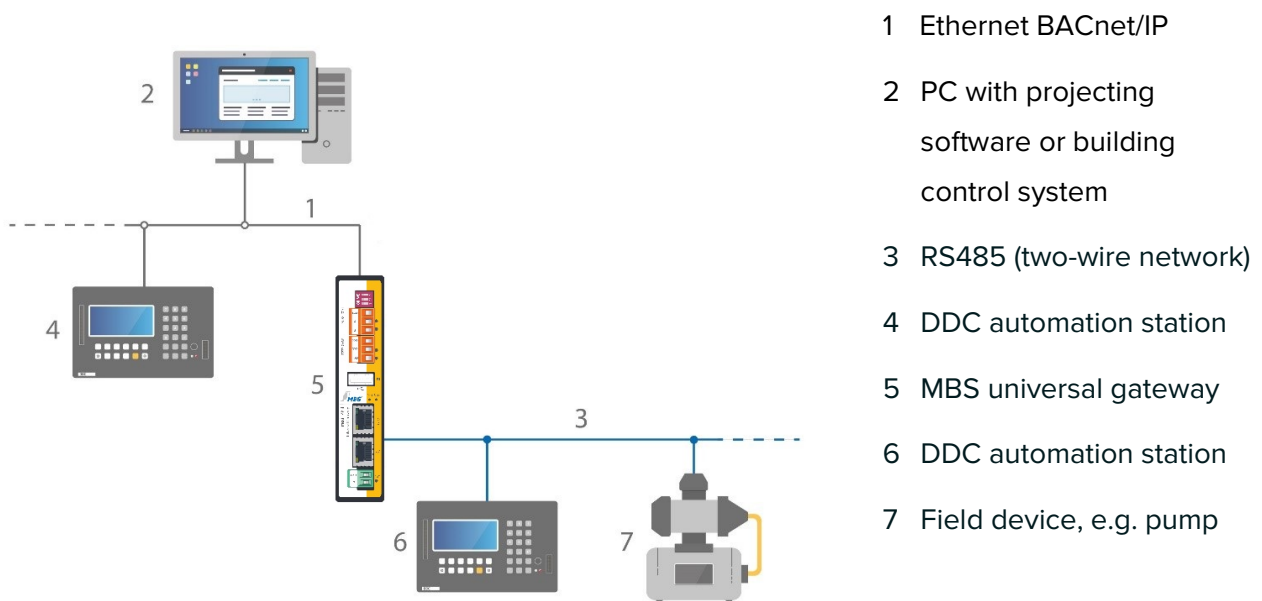
The devices of the UGW (Universal Gateway) product family, with their different interfaces, serve as gateways between different networks.

Purpose

The universal gateway (UGW) maxi | Mk II offers 20,000 data points in the basic version and 40,000 data points in the extended version. It therefore reduces the number of hardware components in a control cabinet. It also requires less space, wiring and electricity.

Manufacturer-specific communication protocols can be added if required.

Typical maxi | Mk II universal gateway deployment scenario



4 Specifications and connected loads

Casing	Metal casing for top-hat rail mounting
Protection class	IP20
Assembly	DIN top-hat rail TS35 in accordance with EN 60715
Weight	448 gram
H/W/D dimensions in millimetres	141/30/99 (104 including DIN top-hat rail adapter)
Lateral spacing to other devices	≥ 15 mm
Ambient temperature	0–45 °C, 32–113 °F
Ambient humidity	20–80 percent relative humidity, non-condensing
Power supply	+12 V to +24 V DC +/- 15% (PELV), LED to indicate the power supply
Power consumption	5 watts
RS485 COM1	RS485 interface 4-pin Weidmüller connector with the connectors: SGND (signal ground) A- inverted wire B+ non-inverted wire LED TX and RX to display sending and receiving data

RS232 COM2	<p>RS232 interface</p> <p>4-pin Weidmüller connector with the connectors:</p> <p>SGND (signal ground) RXD send data TXD receive data</p> <p>LED TX and RX to display sending and receiving data</p>
LAN1	<p>RJ45 10/100/1000 MBit Ethernet</p> <p>Link indicates a LAN connection</p> <p>10/100 indicates the connection speed</p>
LAN2	<p>RJ45 10/100/1000 MBit Ethernet</p> <p>Link indicates a LAN connection</p> <p>10/100 indicates the connection speed</p>
Number of possible data point connections	<p>20,000 (article number 11-0033) expansion to 40,000 (article number 13-0007)</p>

5 Installation



Warning

Electric shock injury hazard!

The device may only be installed in a control cabinet (top-hat rail) when the power is disconnected.

The system must be disconnected for installation.

The gateway is **exclusively** operated with a supply voltage of 12 V to 24 V direct voltage (protective extra low voltage).



Warning

Electric shock injury hazard and damage to device!

Connecting the device to deviating, excessively high supply voltages may lead to serious injuries or death.

No supply voltages that deviate from the connection values specified in the technical data may be used.

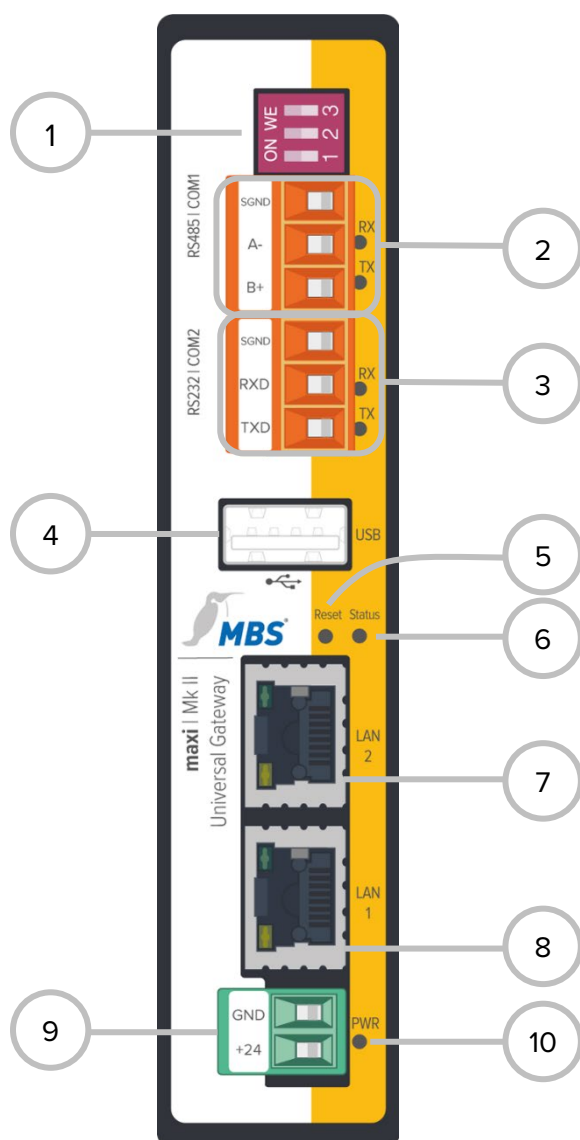
Notice

A sufficient distance (≥ 15 mm) to the other components on the top-hat rail is recommended for mounting the device in the control cabinet.

This ensures better heat dissipation, which can have a positive influence on the service life of the device.

The connection lines used must be suitable for the ambient temperature range specified in the technical data.

6 Connections and operating controls



1 DIP switches

- S1 bias voltage for RS485 interface
- S2 bias voltage for RS485 interface
- S3 120 Ohm termination impedance (termination)

2 RS485

- SGND signal ground
- A- inverted wire (RX LED yellow)
- B+ non-inverted wire (TX LED yellow)

3 RS232

- SGND signal ground
- RXD send data (RX LED yellow)
- TXD receive data (TX LED yellow)

4 USB

- USB 2.0, max. 500 mA

5 Reset

- DIP switch

6 Status

- LED

7 LAN 2

- RJ45 10/100/1000 MBit Ethernet

8 LAN 1

- RJ45 10/100/1000 MBit Ethernet

9 Power supply

- GND, ground
- +24 volt supply voltage (PELV)

10 PWR

- LED (green)

7 Configuration

Web server

The gateway has an integrated web server for configuration. The web server provides the configuration settings in the form of websites. The web interface is used, for example, to configure the IP and other settings. All changes must be saved by clicking <Save>. Following changes to the network configuration, it is sometimes necessary to restart the gateway.

Notice



In order to follow this manual, the web server language must be set to English by clicking the symbol.

Under factory settings, the web server is accessible at the following IP address:

IP address under factory settings:	169.254.0.1
Subnet mask	255.255.0.0
Username	gw
Password (under factory settings)	GATEWAY

Network connection

For configuration, the gateway must be connected to the computer using a network cable.

The computer then **automatically** (APIPA) receives a free IP address in the address range 169.254.x.x and can communicate directly with the gateway.

If there is no direct (point to point) connection between the device and the computer or if the IP address is not assigned automatically, it must be configured **manually** on the computer (e.g. IP address 169.254.0.5 / subnet mask 255.255.0.0).

Notice

It is important that the manually configured IP address is not already in use by other devices on the network.

The way to configure the network connection on the computer depends on its operating system.

Login and usage

Enter the IP address of the gateway web server in a web browser:

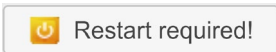


`http:// 169.254.0.1`.

You must enter your username and pre-set password to log on to the web server.

The password should be changed on the configuration pages (Menu item *General > Password*).

8 User interface, operation and functions

After successful login, the configuration interface appears with an overview page. The upper menu bar is used for main navigation through the configuration areas.



Notice

The REFRESH symbol must always be used to update the screen in the web server.

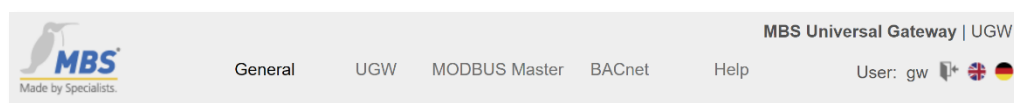
Using the web browser's standard refresh button will log you out of the web server.

Some configurations require the device to be restarted. This is indicated in these instructions with **<restart required>**. The web server shows the button opposite at the top of the screen.

Upper menu

The web interface contains the following menus for configuring the gateway:

- General
- UGW communication driver
- MODBUS Master
- BACnet
- Help



The menu items *General*, *Help* and *UGW* are always available. The other menu items are determined by the universal gateway drivers installed. The freely-selectable MBS Gateway name is also displayed above the menu bar. All MBS Gateway settings and functions can be found in the *General* menu. These are independent of the drivers installed. Documents and diagnosis functions can be accessed via the *Help* menu.

The username of the current user is shown in the top right. The meanings of the symbols are as follows:



Log out of user interface

Change language

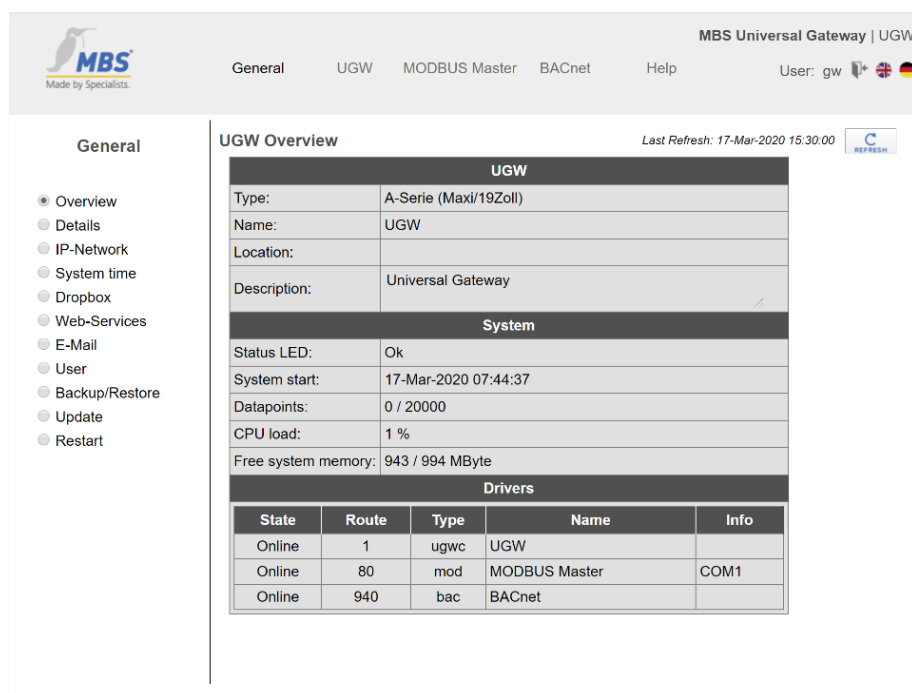
Left-hand lower menu

Each menu has submenus, shown in the left-hand column, which you use to load the individual configuration pages/screens.



8.1 General menu

General > Overview

After logging in, the universal gateway loads an overview page for the device.




MBS Universal Gateway | UGW

General UGW MODBUS Master BACnet Help User: gw  

General

- Overview
- Details
- IP-Network
- System time
- Dropbox
- Web-Services
- E-Mail
- User
- Backup/Restore
- Update
- Restart

UGW Overview Last Refresh: 17-Mar-2020 15:30:00 

UGW	
Type:	A-Serie (Maxi/19Zoll)
Name:	UGW
Location:	
Description:	Universal Gateway

System	
Status LED:	Ok
System start:	17-Mar-2020 07:44:37
Datapoints:	0 / 20000
CPU load:	1 %
Free system memory:	943 / 994 MByte

Drivers				
State	Route	Type	Name	Info
Online	1	ugwc	UGW	
Online	80	mod	MODBUS Master	COM1
Online	940	bac	BACnet	



Type UGW type display

Name, installation location, description

This project-specific information serves to identify the universal gateway. The name also appears in the upper-left part of the menu and is displayed for you to check when backing-up data.

Status LED This describes the current status of the status LED on the front of the universal gateway.

System start Time of last system start.

Data points Displays the number of used data points and licensed data points.

CPU load Displays CPU usage in %. Avoid prolonged CPU usage of over 50%.

RAM Displays the size of the used and total RAM in Mbyte. Too little free space can lead to operational problems.

Driver Lists the current statuses of the drivers (depending on which drivers are installed). If a driver is not online, this suggests a booting problem or a problem with the configuration of a driver. Use the diagnostics tool in the help menu to find out more information to solve the problem.


General > Details

In the UGW, you can store information on the device name, the installation location, a description of the UGW and contact partner details. This information is used to better identify the relevant UGW in the network when using several UGWs.

Edit the input fields (free text) and save the configuration by clicking <Save>.

UGW details Last Refresh:

Parameter	Value
Name:	UGW
Location:	
Description:	Universal Gateway
Contact person:	ONI

 Save

General > IP network

Configuring IP LAN1 (if necessary LAN2) network settings.

IP network settings

Network adapter LAN1					
MAC address:	50:2D:F4:10:38:FF				
IP address:	<input type="text" value="169.254.0.1"/>				
Netmask:	<input type="text" value="255.255.0.0"/>				
Network adapter LAN2					
MAC address:	50:2D:F4:10:39:00				
IP address:	<input type="text" value="192.168.0.1"/>				
Netmask:	<input type="text" value="255.255.255.0"/>				
Default gateway					
Gateway:	<input type="text" value="NONE"/> <input type="button" value="Delete"/>				
Advanced IP-Routing					
Nr.	IP	Netmask	Gateway	Adapter	Edit
					<input type="button" value="+ Add"/>
Network name info					
Hostname:	<input type="text" value="ugw"/>				
Nameserver 1:	<input type="text"/>				
Nameserver 2:	<input type="text"/>				
Services					
Webserver access:	<input type="text" value="https (80 redirected to 443)"/>				
HTTPS Certificate:	<input type="button" value="Datei auswählen"/>	<input type="button" value="Keine ausgewählt"/>	<input type="button" value="Delete"/>	<input type="button" value="Upload"/>	
SSH:	<input type="checkbox"/> Off <input checked="" type="checkbox"/> On				
<input type="button" value="Save"/>					

For the Ethernet interface(s), configure the IP address, network mask and standard gateway (if required). The network adapter's MAC address is displayed.

Network name

Enter a host name as well as two name servers here for name resolution.

Services

Use the drop-down list *Web server access* to select which protocols to use to access the gateway in the network:

- Active port 80 with unencrypted http protocol
- Active port 443 with encrypted https protocol
- Active ports 80 and 443.

Click **<Save>** to apply the changed IP network settings.

The new IP settings are applied upon saving. It is necessary to log in again after the IP address has been changed. If IP network services with an IP name resolution are required, it is necessary to enter at least one IP name server.

The secured https protocol can also be used to access the web server. To access the web server in this way, enter “https://” before the IP address in the web browser.

Notice

If communication protocols that operate via the network are installed on the gateway, you need to carry out a system restart.

This is necessary because the drivers of such protocols only apply the settings when the system is booting up.

For the exact IP settings, you may have to contact your local network administrator.

If the IP network is not required for gateway operation, leave the standard settings as they are. This makes it easier to access the gateway later.

General > System time



The universal gateway has an integrated, battery-powered, real-time clock for time keeping within the system. Several protocols require the current time. The system time must therefore be synchronised. Automatic time synchronisation is advisable. However, this is not possible for every system.

The network time protocol (NTP) is a standard for synchronising clocks in internet protocol communication networks. The time can be set manually and also via an NTP sever or BACnet time synchronisation.

The time zone can be set in order to localise the system. Adjustments are made automatically for daylight saving time based on this time zone. Date and time formatting is also based on this.

A complete system restart is required to apply the settings.

System time settings

Mode	Settings
<input checked="" type="radio"/> Manual time setting	Date: Tuesday, 17.03.2020  Time: 16 h : 21 m : 42 s  <input type="button" value="Set clock"/>
<input type="radio"/> NTP time synchronization	NTP Server: <input type="text" value="pool.ntp.org"/>
<input type="radio"/> Evaluate BACnet time synchronization	
Timezone:	<input type="text" value="Universal"/>
Time format:	<input type="text" value="24 hour"/>
Date format:	<input type="text" value="dd-Mon-yy"/>
<input type="button" value="Save"/>	

Manual time setting

This is the manually time setting by using the input fields. Clicking **<Update>** will automatically populate the input fields with the current time on your PC.

<Set time> saves the set time in the gateway.

NTP time synchronisation

When NTP time synchronisation is used, the UGW takes its time from the specified NTP server.

BACnet time synchronisation

The UGW listens for and evaluates sent BACnet messages for time synchronisation.

Notice

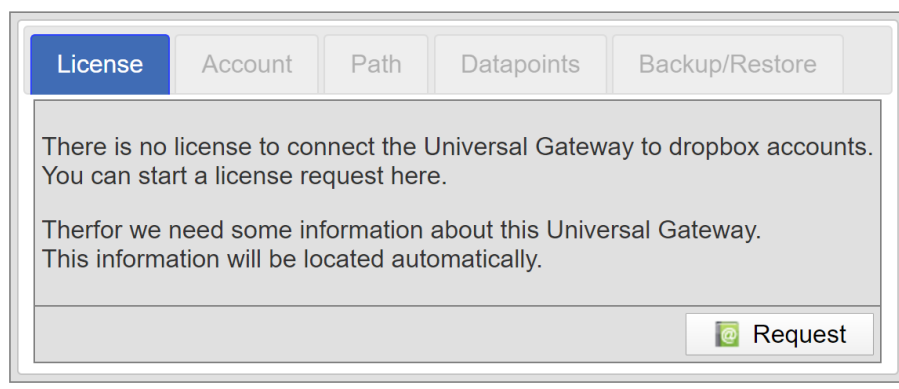
Time synchronisation via BACnet can only be used if the BACnet driver is installed and if there is a time synchronisation master in the BACnet network. You may have to contact the BACnet network coordinator to set this up.

For time synchronisation via NTP, it must be possible to access an NTP server from the IP network.

General > Dropbox

The Dropbox function can be enabled as an option. To do so, you must contact MBS Support.

Dropbox settings



The screenshot shows a settings window with a tabbed interface. The 'License' tab is selected. The text inside the window reads: 'There is no license to connect the Universal Gateway to dropbox accounts. You can start a license request here. Therfor we need some information about this Universal Gateway. This information will be located automatically.' At the bottom right, there is a button with a '@' icon and the text 'Request'.

Clicking **<Request>** and **<Email>** will load the email client and automatically generate the required message content.

The recipient is pre-set as **support@mbs-solutions.de**. The email should not be edited.

General > Web services

The MBS Gateway offers web services to read data point lists or change data points. To activate web services, you must check the **Web services active** box.


The configuration file for the data point list (Systems) can be edited directly.

Web-Services settings

Web-Services enabled

Content of configuration file

```
# UGW-WEB - settings
# file: /ugw/config/plants.cfg
# changed: 06.07.2019 13:45:00
#
[plant_1]
id = 1
name =Anlage 1
```

 Save

General > Email

Configuring email services.

E-Mail settings

E-Mail service enabled

E-Mail originator:

SMTP-Server

IP address:

IP port:

Connection type:

Authentication:

Username:

Password:

General > User

The password for the user “gw” can be changed on this configuration page. For security reasons, you are required to enter the current password once and then the new password twice.

User account settings

Options

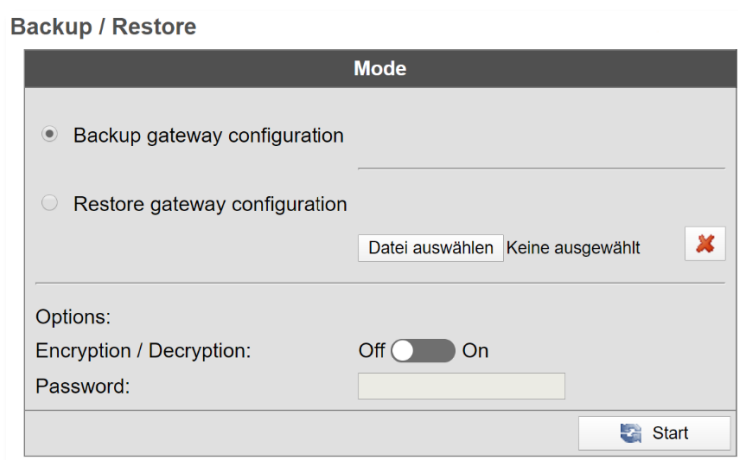
Password options:

Accounts

	User	Description	Account type	Edit	Info
1	gw	default user	Admin	<input type="button" value="Edit"/>	(default-password)

General > Backup / Restore

The entire gateway configuration can be backed up and restored. The backup consists of a *tgz* archive file.



The screenshot shows a dialog box titled "Backup / Restore" with a "Mode" section. It contains two radio buttons: "Backup gateway configuration" (selected) and "Restore gateway configuration". Below the radio buttons are two buttons: "Datei auswählen" and "Keine ausgewählt" (disabled), with a red "X" icon to the right. Underneath, there is an "Options:" section with "Encryption / Decryption:" set to "Off" (toggle switch) and "On", and a "Password:" field. A "Start" button is located at the bottom right.

Create gateway data backup:

The backup file is saved by clicking **<Start>**. The data backup includes all the gateway's settings and is stored locally on your PC.

Restore gateway data backup:

When you select the *Restore gateway data backup* option, the gateway reads an available data backup from the computer's local data storage device and restores the configuration.

The backup file is loaded after clicking **<Search>** and then **<Start>**. A dialogue box will show the archive contents.



The screenshot shows a dialog box titled "Backup/Restore" with a "Backup information" section. It contains a table with the following data:

Backup information	
Created at:	23.03.2020 12:27:40 V4_0
Name:	UGW
Location:	
IP address:	169.254.0.1
Filename:	/ugw/uploads/restore.tgz

Below the table, there is a warning message: "ATTENTION: If you restore the backup archive, the current configuration will be lost." followed by the question "Do you really want to restore the archive?". At the bottom, there are "Ok" and "Cancel" buttons.

The new configuration will be applied once you confirm the dialogue box with **<Ok>** and restart the gateway.

Notice

It is only possible to restore data backups that are intended for the gateway. It may only be possible to restore parts of faulty data backups.

General > Update

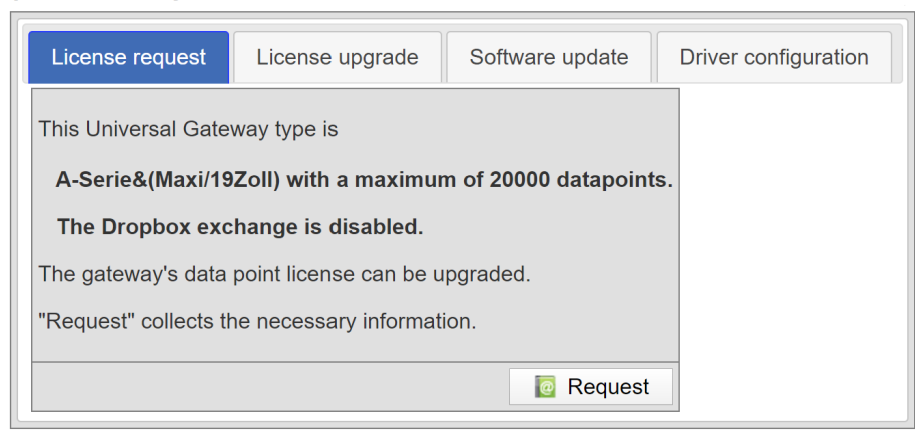
The MBS UGW offers the following options for licence and software updates:

- License request
- License upgrade
- Software update
- Driver configuration

License request

The current licence is displayed.

Update Gateway license/software



License request | License upgrade | Software update | Driver configuration

This Universal Gateway type is
A-Serie&(Maxi/19Zoll) with a maximum of 20000 datapoints.
The Dropbox exchange is disabled.

The gateway's data point license can be upgraded.
"Request" collects the necessary information.

Request

When requesting a new universal gateway licence, it is possible to increase the number of data points to 40,000.

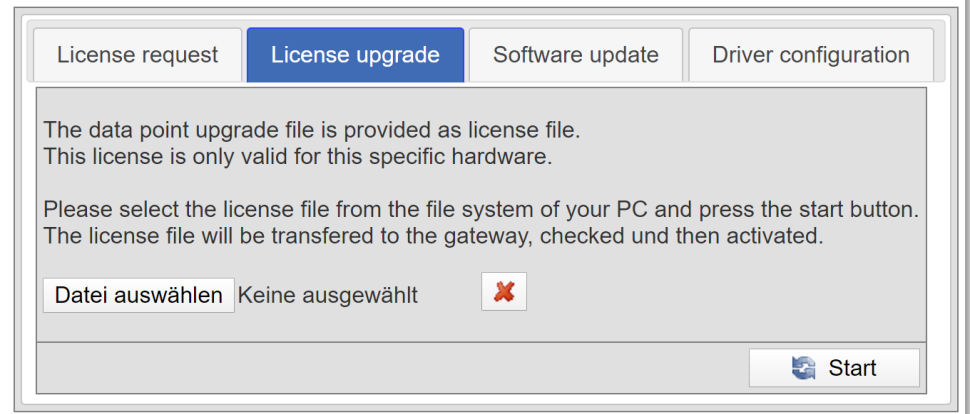
Clicking **<Request>** and **<Email>** will load the email client and automatically generate the required message content.

The recipient is pre-set as **support@mbs-solutions.de**. The email should not be edited.

Licence upgrade

You can load the new licence in the gateway under this tab.

Update Gateway license/software



The screenshot shows a software interface with four tabs: 'License request', 'License upgrade' (selected), 'Software update', and 'Driver configuration'. The main content area contains the following text:

The data point upgrade file is provided as license file.
This license is only valid for this specific hardware.

Please select the license file from the file system of your PC and press the start button.
The license file will be transferred to the gateway, checked und then activated.

Below the text is a file selection area with a button labeled 'Datei auswählen', the text 'Keine ausgewählt', and a red 'X' icon. At the bottom right, there is a 'Start' button with a play icon.

You will receive a valid licence file from the manufacturer of the universal gateway. This licence file must be located on the computer connected to the gateway.

Notice

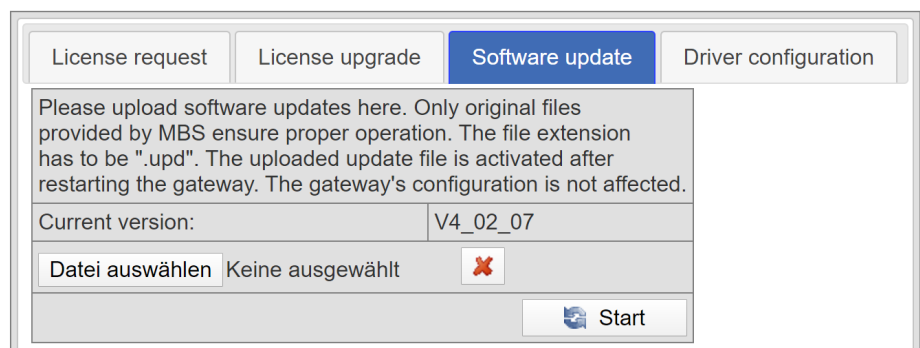
The licence file is only valid for the device the request was sent from. The licence file cannot be transferred to other devices.

Clicking **<Search>** will load the licence file into the input field. Clicking **<Start>** will transmit the licence file to the universal gateway where it will be validated. The licence has now been updated.

Software update

Software additions and fixes mean that it is sometimes necessary to update the universal gateway software. The update file provided must be located on the computer connected to the gateway and transmitted from here to the gateway.

Update Gateway license/software



The screenshot shows the same software interface as above, but with the 'Software update' tab selected. The main content area contains the following text:

Please upload software updates here. Only original files provided by MBS ensure proper operation. The file extension has to be ".upd". The uploaded update file is activated after restarting the gateway. The gateway's configuration is not affected.

Current version: V4_02_07

Below the text is a file selection area with a button labeled 'Datei auswählen', the text 'Keine ausgewählt', and a red 'X' icon. At the bottom right, there is a 'Start' button with a play icon.

Clicking **<Search>** and **<Start>** will transmit the new firmware file to the gateway.

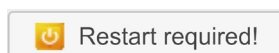
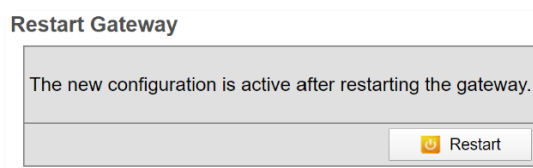
Driver configuration

You can configure active drivers and define which interfaces they run on under this tab.

License request								License upgrade								Software update								Driver configuration							
Route	Name	Type	Command	Options	Serial	Datapoint file																									
<input type="checkbox"/>	10	LONTalk	lon	/ugw/bin/Drv.lon			/ugw/config/lon1.txt																								
<input type="checkbox"/>	20	P90 GLT	p90	/ugw/bin/Drv.glt700		???	/ugw/config/p90glt1.txt																								
<input type="checkbox"/>	30	P90 DDC3000	p90	/ugw/bin/Drv.p90		???	/ugw/config/p90ddc1.txt																								
<input type="checkbox"/>	60	M-Bus	mbus	/ugw/bin/Drv.mbus		???	/ugw/config/mbus1.txt																								
<input type="checkbox"/>	70	EIB	eib	/ugw/bin/Drv.eib		???	/ugw/config/eib1.txt																								
<input checked="" type="checkbox"/>	80	MODBUS Master	mod	/ugw/bin/Drv.mod	-R -m MASTER	COM1	/ugw/config/modmster1.txt																								
<input type="checkbox"/>	90	MODBUS Slave	mod	/ugw/bin/Drv.mod	-R -m SLAVE	???	/ugw/config/modslave1.txt																								
<input type="checkbox"/>	170	Log. Verknuepfungen	gw	/ugw/bin/Drv.gw			/ugw/config/gw1.txt																								
<input type="checkbox"/>	300	Schneider Intercom	sic	/ugw/bin/Drv.schneider		???	/ugw/config/schneider1.txt																								
<input type="checkbox"/>	310	OPC server	opc	/ugw/bin/Drv.opc			/ugw/config/opc1.txt																								
<input type="checkbox"/>	350	RK512	rk512	/ugw/bin/Drv.rk512		???	/ugw/config/rk5121.txt																								

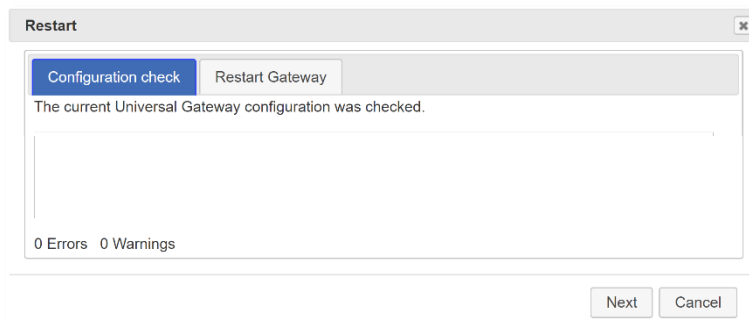
General > Restart

Changing the configuration, importing a data backup or adjusting any other the settings require you to restart the Gateway.

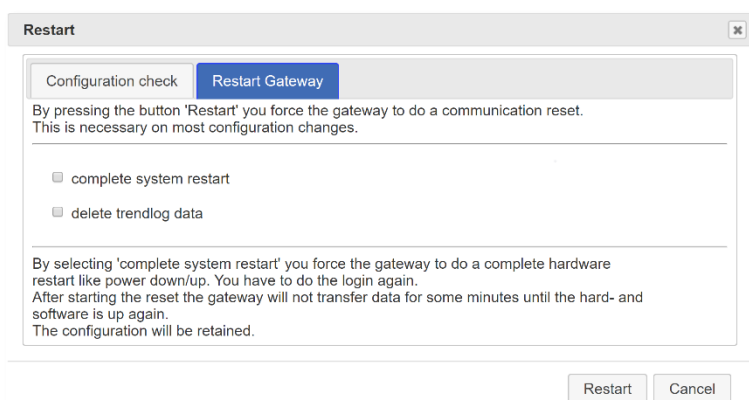


If the system needs to be restarted, this will pop up below the upper menu bar as a **<Restart required!>** button. Alternatively, you can restart the gateway by going to the menu and clicking **General > Restart**.

Before restarting, the gateway will check the configuration and display the results of this check. If the configuration is faulty, detailed messages will be shown.



When you click **<Next>** or the *Restart gateway* tab, you will see the possible restart options.



Complete system restart

This takes approx. 1 minute. Automatically selected when changing certain system settings.

Delete historical data

Deletes all data collected up to this point, e.g. *BACnet Trendlog data*. This is necessary to conduct a smooth restart without collected test data during commissioning.

Notice

If neither of these options are selected, the gateway will carry out a simple restart. This will take approx. 10 seconds.

A restart for a software update may take up to 4 minutes.

Notice

Once the gateway is fully configured, we recommend carrying out a complete system restart, deleting all historical data. You should then check if everything was booted properly. This ensures that the gateway would restart properly even in the event of a power failure.

Clicking **<Restart>** and confirming the dialogue text will begin the restart.

8.2 Driver menus

General

Every installed communication driver is listed as a separate menu item in the upper menu bar. The first submenu item on the left, **Status**, lists the current statuses of a driver's data points. Some selected drivers also have their own submenu, which you can use to adjust particular settings for that communication driver.



You can navigate the data point list with the arrow key.

Page size

The **Page size** drop-down list defines the maximum number of data points that can be displayed at the same time.

Update interval

The **Update interval** drop-down list defines the time interval after which the data point list is automatically updated.

Each data point has a unique address and name, as well as other properties such as current timestamp, flags, type and value.



The meanings of the data point flags are as follows:

- Valid value V
- Sensor fault F
- Incorrect data point E
- Local operator value L
- Set value/actual value automatic mode -
- Locked, cannot be changed at the moment O
- Upper limit warning W

- Upper limit alarm A
- Upper range of values S
- Lower limit warning w
- Lower limit alarm a
- Lower range of values s
- Historical value H
- Value has changed c
- New data point definition N
- Deleted data point definition D
- Changed data point definition C

Time stamps, types and values are self-explanatory.

Data points that can be changed have two values. The first value is the actual (current) value. The second value is the set (nominal) value, i.e. the last value assigned by the UGW driver.

	The Info button shows the properties of the selected data point.
	The Edit button shows the current set value. You can also input a new set value which will be sent to the driver as a command.









8.3 UGW menu

This communication driver is found on every MBS Gateway. This driver's data points provide information on the gateway's internal system status. Like all other data points, these data points can be edited via data point mappings and mapped onto BACnet and/or LON objects, for example.

UGW > Status

The current statuses of MBS Gateway data points are displayed and can be edited here.

1 – UGW datapoint status

Address	Name	Timestamp	Flags	Type	Value	
_error	Driver error	23-Mar-2020 14:12:07	c.....V	I32	0	
_status	Driver state	23-Mar-2020 14:12:07	I32	0	
fatal	'fatal' level errors.	23-Mar-2020 14:12:07	c.....V	I32	0	
button	Digital input on the front panel of UGW-C box.	23-Mar-2020 14:12:07	c.....V	I32	0	
relay	Digital output on the front panel of UGW-C box.	23-Mar-2020 14:12:07	c.....V	I32 I32	0 0	 
led	Application LED on the front panel of UGW-C box.	23-Mar-2020 14:12:07	c.....V	I32 I32	0 0	 

Clicking on the **Info** button will show the detailed properties of a data point.

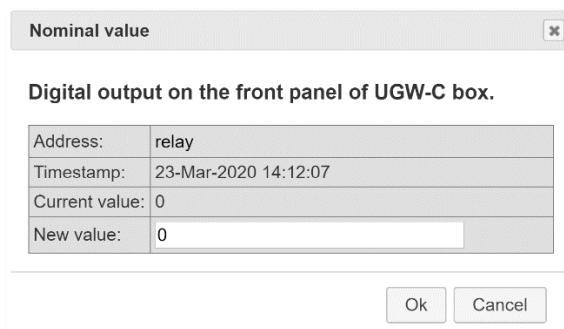
Datapoint information ✕

Last Refresh: 23-Mar-2020 16:19:44

Datapoint	
Address	1 error
Name	Driver error
Actual Value	
Time	23-Mar-2020 14:12:07
Flags	c.....V
Value	0

Close

By clicking on the **Edit** button, you can edit a data point's set value. You can enter the new set value in the **Set value** dialogue box and click **<Ok>** to confirm.



Nominal value

Digital output on the front panel of UGW-C box.

Address:	relay
Timestamp:	23-Mar-2020 14:12:07
Current value:	0
New value:	0

Ok Cancel

UGW > Settings

You can adjust further driver settings on this configuration page.

1 – UGW driver settings

Parameter	Value	Description
IgnoreFailure:	<input type="checkbox"/>	Ignore the 'failure' datapoints for LED state
Memory check:	<input checked="" type="checkbox"/>	Enables free memory checking
Free memory:	497 kBytes	Low limit of free memory

Save

IgnoreFailure

There are so-called *failure* data points in communication with communication devices. These show whether communication with a device is working (value 0) or if communication with a device is faulty (value 1). The values of these data points are also represented in the gateway's status LED display. Checking the box will deactivate this setting.

Monitor RAM

This box must be checked to monitor the gateway's free storage space. The *Free RAM* row will then define the lower limit of free memory. If available RAM drops below this value, the UGW will restart the communication software.

Clicking **<Save>**, closing the dialogue box and carrying out a simple restart of the gateway will activate the function.

8.4 MODBUS Master menu



The Modbus protocol is a communication protocol based on a master/slave and client/server architecture. The version with serial interface (RS485) is used for the MBS UGW.

If the Modbus Master driver is installed, the MODBUS Master menu will be displayed.

MODBUS Master > Status

This page displays the current statuses of all Modbus Master data points. These data points can be used for data point mapping. The **Info** button loads details on the data points. If needed, you can change Modbus values using the **Edit** button.

80 – MODBUS Master datapoint status

Address	Name	Timestamp	Flags	Type	Value	
_error	Driver error	23-Mar-2020 14:12:07	c.....V	I32	0	
_status	Driver state	23-Mar-2020 14:12:07	c.....V	I32	4	

MODBUS Master > Settings

Here general settings for the Modbus Master driver are edited.

80 – MODBUS Master driver settings

```

Content of configuration file
# SlowBus      int    adds an extra delay of N milliseconds before sending
#              repeaters time to switch directions
#
# Test

[MODBUS-MASTER]
Baudrate = 9600
Databits = 8
Parity = no
Stopbits = 1
Rsttype = RS485
  
```

Notice

You must click **<Save>** and carry out a simple restart of the gateway to apply the new changes.

#

Rows with a hash # at the beginning are classified as comments.

Rows without # at the beginning are activated settings.

MODBUS Master > Files




The entire Modbus Master configuration is saved in three files:

modmster1.cfg	Driver
modmster1.txt	Data points
dispatch.txt	Global dispatch file

These files can be transferred between the computer and the gateway here (download/upload).

The **Edit** buttons open dialogue boxes in which you can edit the relevant files directly. No further file transfers are required for this.

80 – MODBUS Master configuration files

Configuration	File	Gateway --> PC	PC --> Gateway	Edit
Driver:	/ugw/config/modmster1.cfg	Start Download	Start Upload	
Datapoints:	/ugw/config/modmster1.txt	Start Download	Start Upload	
Global dispatch:	/ugw/config/dispatch.txt	Start Download	Start Upload	




8.5 BACnet menu

BACnet is a widespread network protocol for building automation and stands for “Building Automation and Control network”. If the BACnet driver is installed on the MBS UGW, the BACnet menu will be displayed.

BACnet > Status

This page displays the current statuses of all BACnet data points. These data points can be used for data point mapping. The **Info** button loads details on the data points. If needed, you can change BACnet values using the **Edit** button.

940 – BACnet datapoint status

Address	Name	Timestamp	Flags	Type	Value	
_error	Driver error	23-Mar-2020 14:12:07	c.....V	I32	0	
_status	Driver state	23-Mar-2020 14:12:07	c.....V	I32	4	
failure	Failure BACnet	23-Mar-2020 14:12:07	c.....V	I32	0	

BACnet > Settings


General settings for the BACnet driver and the BACnet data links are made here. Clicking **<Save>**, closing the dialogue box and carrying out a simple restart of the gateway will apply the changes.

940 – BACnet driver settings

Startup delay:	60	seconds
Password DCC/RD:	ugw	
Default priority:	12	
Disable Default-NC-Object:	<input type="checkbox"/>	
Datalinks:	BACnet IP	
BACnet PTP:	<input type="checkbox"/>	

BACnet IP

Parameter	Value
Network number:	1
LAN name:	LAN1
UDP-Port:	47808
IP-Mode:	Normal

 Save

Start delay

Here, you can set a start delay for BACnet failure detection. When restarting the UGW, BACnet communication will only be switched on after this time has elapsed. This allows a remote station to recognise if the UGW has been restarted by the absence of BACnet requests. The value “0” sends a *BACnet restart notification* message as an unconfirmed COV notification to the registered recipient when restarting.

DCC/RD password

You can set a password (max. 50 characters) to protect DCC (Device Communication Control) and RD (Reinitialize Device) BACnet services. The password is case-sensitive.

Default priority

Set the default priority.

Disable Default-NC-Object Disables requirement for a Notification Class Object (NC).

Data links

You can set which BACnet data links are to be used via the *Data links* drop-down list.

The following are supported:

- BACnet IP (Ethernet)
- BACnet MS/TP (two-wire connection) via RS485
- Simultaneous BACnet IP and BACnet MS/TP.

BACnet PTP

By checking this box, you can enable communication via the *Point-To-Point* BACnet half-router in addition to the BACnet data links. This is necessary for BACnet operation with a modem.

A) Gateway mode: Data links = BACnet IP

The following operating types are possible for BACnet IP connection: Normal, BACnet BBMD (BACnet Broadcast Management Device) and BACnet Foreign Device.

BACnet BBMD and FD configuration is necessary for operation of the entire IP network. To ensure this is set up correctly, you may have to contact the BACnet network coordinator.


a) IP mode = normal

940 – BACnet driver settings

Startup delay:	60	seconds
Password DCC/RD:	ugw	
Default priority:	12	
Disable Default-NC-Object:	<input type="checkbox"/>	
Datalinks:	BACnet IP	
BACnet PTP:	<input type="checkbox"/>	

BACnet IP

Parameter	Value
Network number:	1
LAN name:	LAN1
UDP-Port:	47808
IP-Mode:	Normal

 Save

Network number Defines the network number of the BACnet network for the data link.
(Value = 1 ... 65,534).

Notice

The network numbers of the configured data links must be unique within the network.

LAN name Name of the data link interface

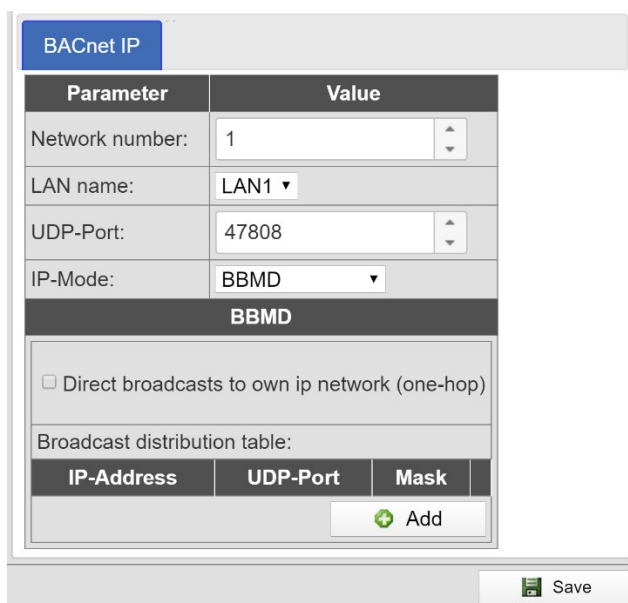
UDP port Defines the UDP port of the BACnet/IP network as a decimal number.
The default value is 47808 (“0xBAC0” – hexadecimal).

IP mode Defines the gateway’s IP mode for this data link.

- *Normal*: Standard operating mode for a BACnet IP data link
- *BBMD*: Operating mode as “BACnet Broadcast Management Device”.
- *Foreign Device*: Operating mode as “Foreign Device”

b) IP mode = BBMD

The gateway provides BBMD functionality for its own IP subnetwork and allows logins of external FD or BBMD devices.



The screenshot shows a configuration window titled "BACnet IP". It contains a table with the following parameters and values:

Parameter	Value
Network number:	1
LAN name:	LAN1
UDP-Port:	47808
IP-Mode:	BBMD

Below the table, there is a section titled "BBMD" with a checkbox for "Direct broadcasts to own ip network (one-hop)" which is currently unchecked. Underneath is a "Broadcast distribution table" with columns for "IP-Address", "UDP-Port", and "Mask". An "Add" button with a green plus icon is located at the bottom right of the table area. A "Save" button is at the bottom right of the entire configuration window.

Direct broadcasts to own IP network (one hop)

This option enables the use of “one hop” mode for BBMD. This mode is seldom used in networks and should only be set if the network planner explicitly plans for this.

Broadcast distribution table The table lists all BBMDs which are queried in a broadcast in addition to the devices in the particular network, in order to reach the devices from other networks.

Clicking <Add> will create a new list entry.

c) IP Mode = Foreign device

The gateway is set as a foreign device subscriber to the BACnet network.

BACnet IP	
Parameter	Value
Network number:	1
LAN name:	LAN1 ▼
UDP-Port:	47808
IP-Mode:	Foreign Device ▼
Foreign Device	
IP-Address BBMD-Server:	
UDP-Port BBMD-Server:	47808
Reregister interval:	300 sec.

Save

IP Address BBMD Server The IP address of the BBMD which is to be used by the UGW for logging in as a foreign device.

BBMD server UDP port Defines the BBMD server’s UDP port as decimal number (Standard value: 47808 dec. (0xBAC0 hex.)).

Reregister interval Time in seconds after which the gateway must reregister with the BBMD.

B) Gateway mode: BACnet PTP = activated

BACnet Point-To-Point is designed for communication via null-modem. The UGW is a half-router in BACnet PTP mode. Together with the dial-up part, it constitutes a BACnet router for a complete BACnet network. The BACnet networks must be configured correspondingly. The network number helps identify a BACnet network and must be unique within the entire BACnet network.

This mode is currently unavailable.

BACnet PTP:

BACnet PTP

Parameter	Value			
Connect timeout:	60 <input style="width: 30px;" type="text"/> seconds			
Idle timeout:	60 <input style="width: 30px;" type="text"/> seconds			
Automatic dialup:	C2,U3,C15,C16 <small>C=confirmed,U=unconfirmed</small>			
Incoming password:	ugw			
External networks				
Networknumber	Telephonnr. 1	Telephonnr. 2	Telephonnr. 3	Password
<input style="width: 40px; height: 20px;" type="button" value="Add"/>				

Connect timeout

Timeout for establishing a modem connection. If no connection is established within this time, it counts as a connection attempt. There is a maximum number of *APDU retries* (connection attempts).

IDLE timeout

If no relevant data are transferred within this time during a connection, the connection is terminated.

Automatic dial-up

Determines which BACnet services are the subject of a connection attempt. This is a list of “confirmed” and “unconfirmed” items with the BACnet enumeration of services.

- C2 – Confirmed Event Notification
- U3 – Unconfirmed Event Notification
- C15 – Confirmed Write Property (initiated by MBS Gateway)
- C16 – Confirmed Write Property Multiple (initiated by MBS Gateway)

Incoming password

BACnet PTP password for dialling-up the universal gateway.

External networks








The external networks that can be accessed via BACnet PTP are configured here. The network number indicates the accessible BACnet network. You can specify up to three telephone numbers under which the BACnet counterpart station can be reached. These are dialled consecutively by a modem as part of the “Connect timeout” phase. The password is used to log into the counterpart station.


BACnet > Device object

The BACnet device object in the universal gateway has a specific function that the other BACnet objects don't have. APDU parameters for BACnet transmission are set here. The device instance and device name can also be set.

These properties are for BACnet device identification and must be unique within the entire BACnet network. To set this up properly, you may have to contact the BACnet network coordinator.

940 – BACnet device object

Property	Value
Device instance:	2000
Device name:	UGW 
Description:	UGW-C Client/Server 
Location:	in the rack behind me 
Vendor-Identifier:	50
Vendor-Name:	MBS GmbH Krefeld
Model-Name:	UGW-C
Firmware-Revision:	Revision 1.2
APDU Max-Length-Accepted:	1476 - IP,Ethernet ▼
APDU Timeout:	3000  millisec.
APDU Retries:	5 
APDU Segmentation-Supported:	0 - Both ▼
APDU Max-Segments-Accepted:	5 
APDU Segment-Timeout:	2000  millisec.

 Save



Device instance	Defines the device instance number of the gateway. This must be unique within the overall BACnet network. The value range of this property is between 0 and 4,194,302.
Device name	Defines the UGW device name, which also must be unique.
Description	Defines the BACnet description of the UGW. This is free descriptive text.
Location	Defines the BACnet location of the UGW. This is free text for the installation location.
Vendor identifier	The manufacturer ID for unique identification of the device manufacturer.
Vendor name	Manufacturer name as a unique designation of the device manufacturer.

Model name	UGW model designation.
Firmware revision	Firmware version of the UGW software.
APDU max. length accepted	Maximum telegram size in bytes. The following values are possible: 50, 206, 480, 1024 and 1476 bytes.
APDU timeout	This value in milliseconds defines the period of time after which an acknowledgement-dependent telegram is deemed to have failed in the absence of confirmation. The default value is 3000 ms.
APDU retries	This value defines how often a failed telegram is to be repeated (Standard = 5).
APDU segmentation supported	Possible values: 0-both, 1-transmit, 2-receive, 3-no
APDU max. segments accepted	Defines how many segments are accepted as a maximum.
APDU segment timeout	This value defines the period of time after which an acknowledgement-dependent, segmented telegram is deemed to have failed in the absence of segment confirmation (Standard = 2000 ms).


BACnet > Objects

The BACnet object configuration is displayed here. Data points can be filtered according to object type using the upper panel of buttons. The available BACnet objects are listed below.

Object names and descriptions can be edited directly in the input fields in the object list.

The **Edit** button opens a dialogue box with the object-specific properties of the data points.

940 – BACnet objects

<input checked="" type="radio"/> All	<input type="radio"/> Analog-Input	<input type="radio"/> Analog-Output	<input type="radio"/> Analog-Value	<input type="radio"/> Binary-Input
<input type="radio"/> Binary-Output	<input type="radio"/> Binary-Value	<input type="radio"/> Multistate-Input	<input type="radio"/> Multistate-Output	<input type="radio"/> Multistate-Value
<input type="radio"/> Trendlog	<input type="radio"/> Schedule	<input type="radio"/> Notification-Class	<input type="radio"/> Eventlog	
Object-Id	Object-Name	Description		Trend
NC-1	NOTIF-1	Default notification class object		




BACnet > Files

The entire BACnet configuration is saved in three files:

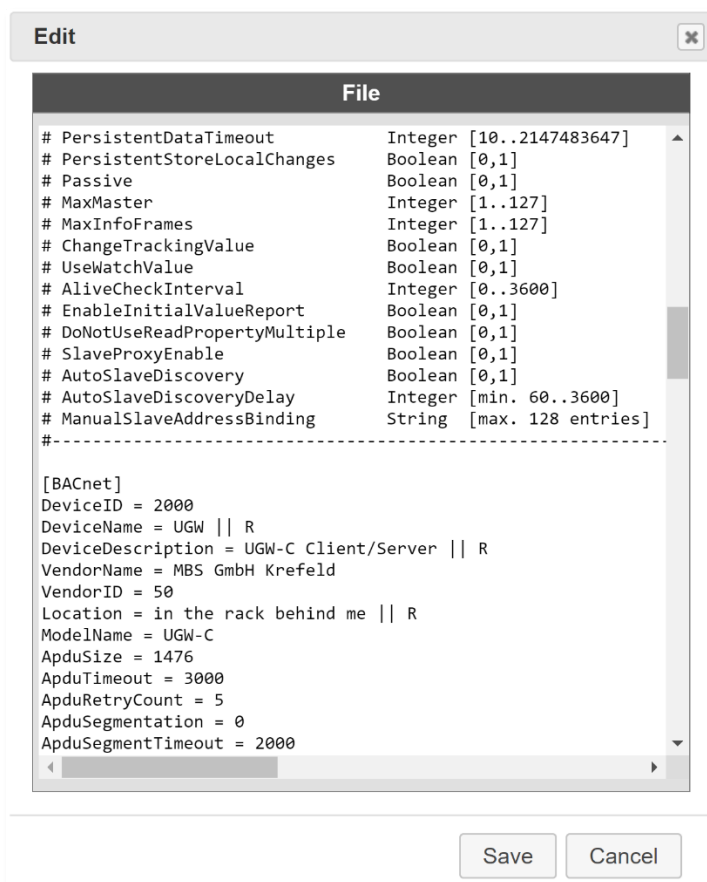
bac1.cfg	Driver
bac1.txt	Data points
dispatch.txt	Global dispatch file

These files can be transferred between the computer and the gateway here (download/upload).

940 – BACnet configuration files

Configuration	File	Gateway --> PC	PC --> Gateway	Edit
Driver:	/ugw/config/bac1.cfg	<input type="button" value="Start Download"/>	<input type="button" value="Start Upload"/>	
Datapoints:	/ugw/config/bac1.txt	<input type="button" value="Start Download"/>	<input type="button" value="Start Upload"/>	
Global dispatch:	/ugw/config/dispatch.txt	<input type="button" value="Start Download"/>	<input type="button" value="Start Upload"/>	

The < **Edit** > buttons open dialogue boxes in which you can edit the relevant files directly.



No further file transfers are required for this.

Notice

You must click <**Save**> and carry out a simple restart of the gateway to apply the new changes.



#

Rows with a hash # at the beginning are classified as comments.

Rows without # at the beginning are activated settings.

BACnet > Persistent data

940 – BACnet Persistent data

 Delete all persistent data	 Copy all persistent data to configuration	
Object	BACnet value	Configured value

BACnet > EDE file (Engineering Data Exchange)

The BACnet objects and functions projected in the gateway can be shared with other partner companies in projects in the form of an itemised CSV file (Engineering Data Exchange).

Notice

Start

The EDE file is automatically generated and downloaded onto the computer as a compressed file in *tgz* format.

940 – BACnet EDE file

The configured BACnet objects and functions of the gateway can be exchanged with partner companies by a special Excel table file.

This EDE file (EDE = Engineering Data Exchange) will be generated automatically.

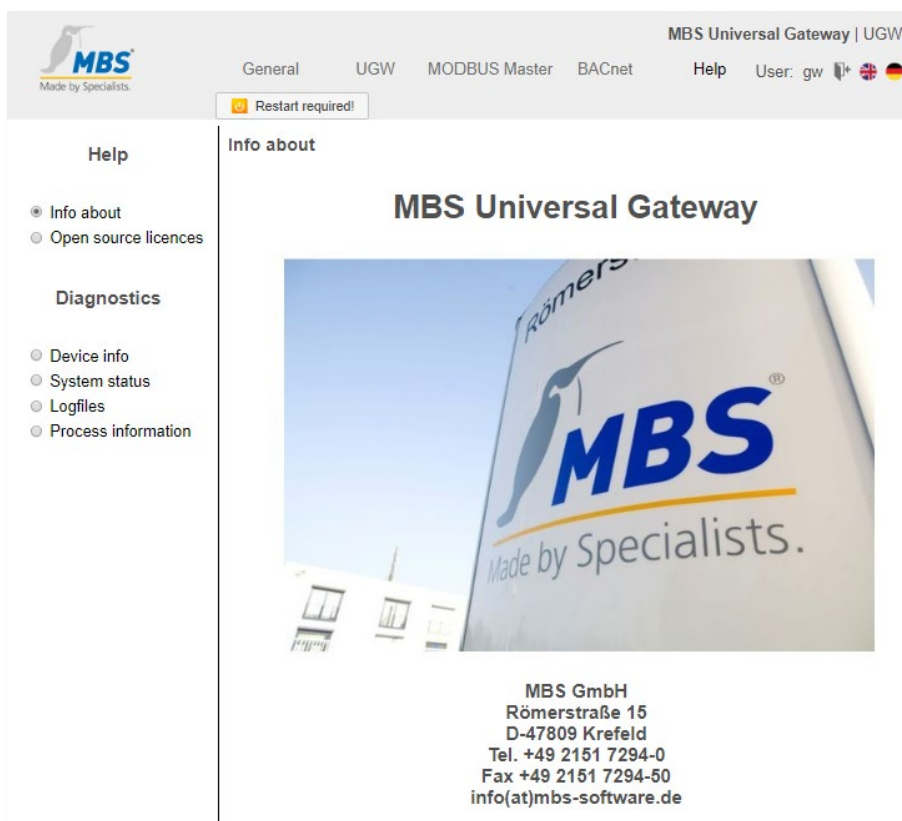
Press here [Start](#) to start generating and download the compressed archive file to your PC.

8.6 Help menu

Contact information for the manufacturer and other system data are displayed in the **Help** menu.

Help > Info about

This page contains information about the manufacturer of the universal gateway.



The screenshot displays the MBS Universal Gateway (UGW) web interface. The top navigation bar includes 'General', 'UGW', 'MODBUS Master', 'BACnet', and 'Help'. The 'Help' menu is expanded, showing 'Info about' as the selected option. The main content area features the title 'MBS Universal Gateway' and a large image of the MBS logo on a building facade. Below the image, the contact information for MBS GmbH is provided: Römerstraße 15, D-47809 Krefeld, Tel. +49 2151 7294-0, Fax +49 2151 7294-50, and info(at)mbs-software.de. A 'Restart required!' notification is visible in the top right corner.



Help > Device info

This page displays general information about the universal gateway.

Gateway type	Manufacturer's internal hardware designation
GW version	Information on the manufacturer's internal protocol ID
OS version	Universal gateway software version
Build info	Software Build info
Data points	Number of data points used/number of licensed data points
System start	Displays the last time the universal gateway was booted
Free RAM	Size of used RAM and total RAM in Mbytes (Too little free space can lead to operational problems.)
Last update	Status of last firmware update

Help > System status

This page displays a detailed system map of the gateway. This also includes the driver status, data points and data point maps, among other things.

Help > Log files

You can activate/deactivate a more detailed version of the log records for each communication driver using the buttons **<ON>** and **<OFF>**.

Log records provide information on how the programme is running and any communication problems.

The previous (historical) log outputs can be displayed by clicking **<Show history log>**.

Clicking **<Start for 60 sec.>** provides the current log outputs for 60 seconds after pressing the button.

This process can be ended by pressing **<Stop>** at any time.

Logfiles

Routing	Type	Name	Status	Verbose	
80	mod	MODBUS Master	Online	<input type="checkbox"/> ON	<input type="checkbox"/> OFF
940	bac	BACnet	Online	<input type="checkbox"/> ON	<input type="checkbox"/> OFF

```

23.03.20 19:04:09 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: ProcessTimer 17495 sec
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
23.03.20 19:04:10 Drv.bac: Time2BACnetDateTime(1584990250 => 23.03.2020 19:04:10.00)
23.03.20 19:04:10 Drv.modmxc4: Config_SM.state = 0
  
```

Help > Process information

The statuses of all operating system processes are provided here. The *Mem* (memory usage) and *CPU* (processor utilisation) columns give important information on the status of a process.

8.7 Reset options

With the hardware-reset button, the device can also be reset without calling up the configuration interface.

Notice

You can find the reset button on the front of the router, underneath the USB port. The reset button can only be pushed with a suitable tool.

The following changes are made depending on how long you hold the button for.

1–5 seconds	Restart
up to 10 seconds	The IP address will be set to 169.254.0.1 (default) until the next restart (reset LED will flash red).



9 Product support

Manufacturer	MBS GmbH Römerstraße 15 47809 Krefeld
Telephone	+49 21 51 72 94-0
Fax	+49 21 51 72 94-50
Email	support@mbs-solutions.de
Internet	www.mbs-solutions.de
	wiki.mbs-software.info
Service times	Monday to Friday: 8.00 to 12.00 13.00 to 17.00

10 Conformity



EU declaration of conformity

Manufacturer: MBS GmbH
 Address: Römerstr. 15
 47809 Krefeld, Germany
 Product: maxi | Mk II


The designated product conforms with the provisions of the following EC directives, including all applicable changes:

1907/2006/EU REACH	Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
2011/65/EU RoHS	Directive of the European Parliament and the Council dated 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
2014/35/EU Low voltage directive	Directive on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
2014/30/EU EMC	Directive of the European Parliament and the Council dated 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

The following EMC standards have been applied:

EN 55032:2015	Electromagnetic compatibility of multimedia equipment – Emission requirements CISPR 32:2015 Limit class B
EN 55024:2010 + A1:2015	Information technology equipment – Immunity characteristics – Limits and methods of testing CISPR 24:2010 + A1:2015. Industry interference immunity level in accordance with generic standard EN 61000-6-2
EN 61000-4-2	Interference immunity against electrostatic discharge (ESD)
EN 61000-4-3	Interference immunity against high-frequency electromagnetic fields
EN 61000-4-4	Interference immunity against electrical fast transient bursts
EN 61000-4-5	EN 61000-4-5 Interference immunity against surge voltages
EN 61000-4-6	Interference immunity against conducted HF disturbances

Krefeld, 9 July 2019

Signature 
 Name Nils-Gunnar Fritz
 Function Managing Director