BAB TECHNOLOGIE GmbH

APPMODULE Documentation

Version 1.2.1
Type: Extension, KNX/TP, EnOcean
Item no.: 10490, 10495, 13501

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EN

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1 APP MODULE

Thank you for buying the **APP**MODULE. The **APP**MODULE is a unique integration server that you can customise using the apps from the BAB APPMARKET. This documentation will help to familiarise you with the product and facilitate implementation.

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Figure 1: APP MODULE KNX/TP

Product name:	**APP**MODULE
Intended use:	Module to run applications
Design:	Modular device (REG)
Item number:	10490 (Extension), 10495 (KNX/TP), 13501 (EnOcean)

1.1 FUNCTIONAL OVERVIEW

The **APP**MODULE links building automation to third-party applications that otherwise cannot be controlled by building control. The connection is established with applications that can be installed on the **APP**MODULE. You can select your very own combination of apps, and purchase individual apps from the BAB APPMARKET (https://www.bab-appmarket.de/de/). The **APP**MODULE is available as "Extension" for EIB**PORT**, with KNX/TP- or with EnOcean interface.

1.2 APP MODULE FUNCTIONAL PRINCIPLE

On delivery, the **APP**MODULE contains only the basic software and has no application installed. You can purchase and download the applications for the **APP**MODULE in the BAB APPMARKET. For that purpose you will need an APPMARKET account and an **APP**MODULE registered in the APPMARKET.

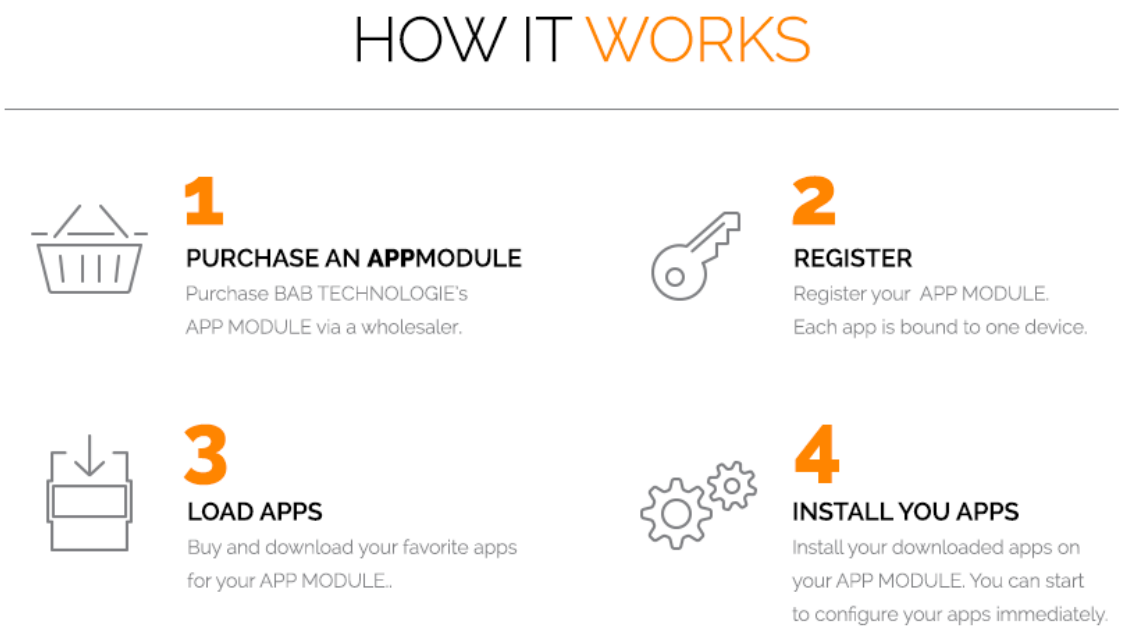

Figure 2: APP MODULE – How it works

You can find the APPMARKET on https://www.bab-appmarket.de/

1.3 TECHNICAL DATA

Article No.: 10490 (Extension) | 10495 (KNX/TP) | 13501 (EnOcean)

- Operating voltage: 12-32V DC
- Typical power consumption 300 mA at 12V DC
- Power consumption: <= 5 W
- Connection: Power supply via screw-type terminal
- Resistant to climate: EN 50090-2-2
- Ambient temperature: -5 to +35 °C
- Rel. humidity (non-condensing): 5% to 80%

Mechanical data

- Assembly: Modular device (REG) housing 4 TP
- Dimensions (W x H x D) in mm: 70 x 90 x 63
- Housing: Plastic
- Degree of protection: IP20 (according to EN 60529)

Interfaces:

- Ethernet over RJ-45 female connector
- KNX®/TP connection
- EnOcean®: external SMA antenna

EnOcean specifications:

- Operating frequency: 868.3 MHz
- Range: 300 m in free space / 30 m in buildings (varies depending on building material)
- Input objects: unlimited
- Output objects: 128
- External antenna: 2.50 m cable, magnetic base and SMA connector

Specific features

- A wide range of different smart home apps can be combined on one device
- SDK available for manufacturers and developers
- A steadily growing app portfolio available in the BAB APPMARKET (bab-appmarket.de)

Software requirements

- Operating System independent
- Communication: Network interface
- Browser: current standard browser

1.4 SCOPE OF DELIVERY AND INTERFACES

The scope of delivery of **APP**MODULE includes the following content:

- 1x **APP**MODULE Extension, KNX/TP or EnOcean (currently being planned)
- 1x enclosed CD
- 1x 2.50 m antenna with magnetic base (for EnOcean only)

A power supply unit for the device is NOT included in the scope of delivery!

In addition to the connection for the power supply (**12-32 V DC**), the **APP**MODULE has the following interfaces:

- 1 x RJ 45 Ethernet 100Mbit/s Full Duplex
- KNX® / TP connection or SMA female connector for EnOcean (planned)

FACTORY SETTING ON DELIVERY:

IP address: 192.168.1.224
Username: "admin"
Password: "admin"

1.5 UPDATES

We reserve the right to offer firmware updates free of charge for the **APP**MODULE. We inform you about new firmware in our newsletter or on our homepage. The update files are available in the download section on our homepage.

www.bab-tec.de

1.6 IMPORTANT INFORMATION ON THE OPERATING INSTRUCTIONS

We reserve the right to make technical and formal changes to the product in the interests of technical progress. The information in this documentation may therefore not necessarily be up to date.
Information on current **APP**MODULE firmware and on this description (**"APP**MODULE documentation") can be found at www.bab-tec.de.

1.7 FUNCTIONAL SAFETY

If there are certain requirements to minimize risks for people or objects (functional safety), additional measures are obligatory, which must be considered during planning and implementation. When using the APPs in the **APP**MODULE, there are interactions with many devices/connections (e.g. Internet) in the system, which may lead to risks. Especially failure of individual devices or functions or connections can lead to malfunction of the system. There are different ways to minimise the risks. That depends on the system and customer requirements.
These measures must always have the required independence from the operation of the system (APP MODULE with APP) and must always be available.

2 ASSEMBLY

The operating voltage of the APP MODULE is 12-32 V DC

The device shown here is the **APP**MODULE KNX/TP (form factor identical for all models), REG housing 4 TE. Dimensions (width x height x depth): 70 x 90 x 63 mm

- In order to ensure easy connection of the power supply, remove the screw plug-in terminals (see figure below).
- Now connect the power supply cables to the respective screw plug-in terminals (see figure below). Please consider the **polarity**!
- Now, you can replug the screw plug-in terminals into the **APP**MODULE.
- In the next step, snap the device onto the mounting rail according to DIN EN 60715.

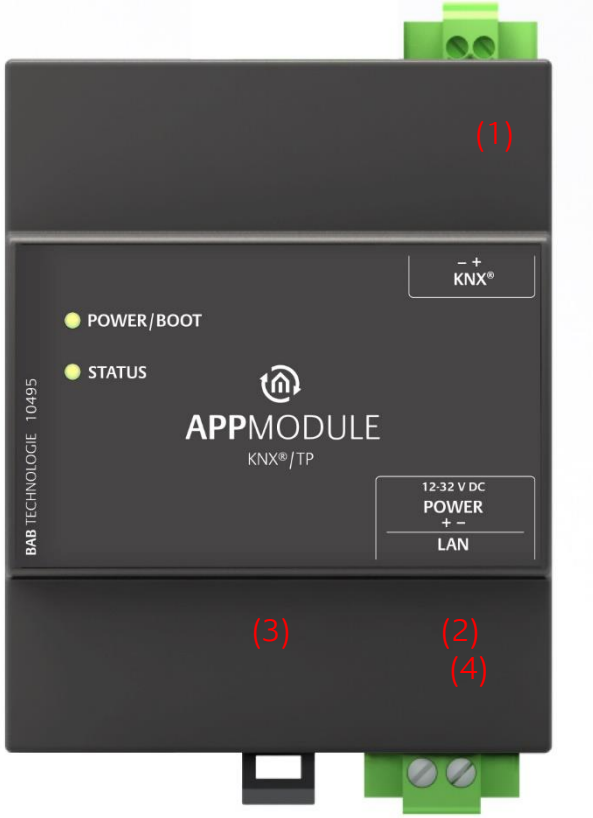

Figure 3: APP MODULE connection diagram

	APP MODULE features
(1)	KNX/TP connection (type 10495) via screw plug-in terminal
(2)	Power supply via screw plug-in terminal 12-32V DC
(3)	USB connection (is not activated)
(4)	RJ-45 female connector for Ethernet LAN

2.1 LED STATUS

The **APP**MODULE has two DUO LEDs ("Power/Boot" and "Status"). Each DUO LED has a green and a red LED.

POWER / BOOT LED

LED display	Status
OFF	The device is not ready for operation. No operating voltage is supplied.
GREEN	The device is ready for operation.
FLASHING ORANGE	The device is booting.

STATUS LED

LED display	Status
OFF	The device is booting.
FLASHING GREEN	The device has been started; the LED simulates a "heartbeat". The flashing interval increases depending on the device utilisation.
FLASHING RED	Communication takes place via KNX.

Explanation:
The green "Power/Boot" LED lights up as soon as the **APP**MODULE is supplied with power. Two to three seconds after the power supply has been switched on, this LED also starts to flash red (flashing orange) until the booting process has been completed. Then the LED is permanently illuminated green, while the "Status" LED flashes green (simulates a "heartbeat"). The flashing frequency increases depending on the device utilisation.

It takes approx. **2 minutes** to start the **APP**MODULE.

2.2 INITIAL OPERATION

If the **APP**MODULE has been mounted and started as described in chapter "Assembly", commissioning can now be continued as specified below.

Factory setting on delivery:

IP address	192.168.1.224
Subnet mask	255.255.255.0
Username	admin
Password	admin
Device Name	AppModule

Note: The password must be changed immediately when logging in for the first time. If the password is lost, the device cannot be reset!

2.2.1 LANGUAGE

Web interface

The language used for the **APP**MODULE Web interface is based on the language set in the browser. German and English are currently available in the **APP**MODULE. If the browser is set to a language other than German or English, English is displayed in the **APP**MODULE interface.

Java application (EnOcean Editor)

The language in the “EnOcean Editor” Java-based application adjusts to the language set in the browser after start-up from the browser. If the app is used in BAB STARTER, the language set in the operation system applies. English is used if a language other than German or English is set.

2.2.2 SYSTEM REQUIREMENTS

- Current browser (e.g. Firefox, Chrome, Safari, etc.)
- If applicable, an app from the APPMARKET (https://www.bab-appmarket.de/de/)
- For EnOcean configuration: BAB STARTER or current JVM & JVM browser plugin

2.2.3 ESTABLISHING CONNECTIONS

In order to configure the **APP**MODULE, a current browser and a network connection to the device are required. If the device is in the condition of delivery, it can be accessed at the above-mentioned IP address and the network settings must be adjusted to the address range, where necessary. Please follow the information given in the chapter "*Adjusting the network settings of your computer*" for this purpose.

SPECIFIC FEATURES OF ENOCEAN APP MODULE (13501)

If you use an EnOcean **APP**MODULE, please note that the EnOcean configuration operates with Java applets. To use this configuration, you will need either BAB STARTER to launch EnOcean Editor directly or the current Java Virtual Machine (JVM) plus the relevant plugin in the browser (a Java plugin is automatically managed by the browser).

2.2.3.1 CALLING UP THE APP MODULE WEB INTERFACE

The **APP**MODULE is configured via its web interface so that it can be configured via each web browser. The "EnOcean Editor" layers are Java applications and also require a Java Virtual Machine (JVM) or the BAB STARTER (see "*Establishing connections*").

In order to call up the web interface, please proceed as described below:

- Open a browser and enter the IP address of the **APP**MODULE into the address line (Information about the factory settings can be found in chapter "*Initial Operation*")

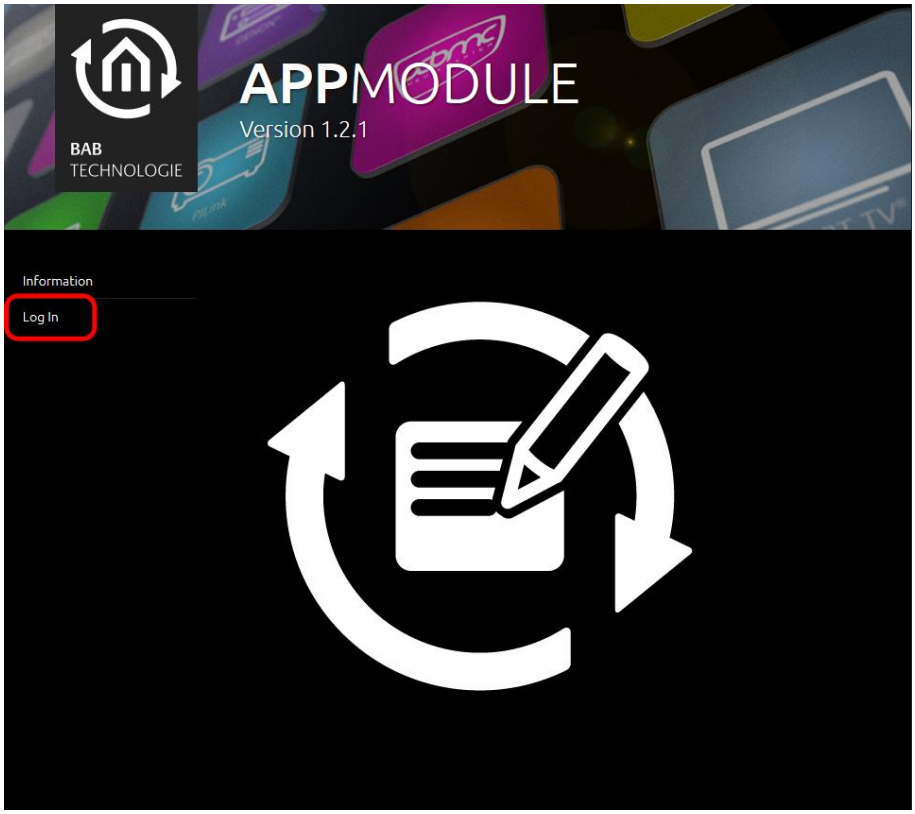

Figure 4: APP MODULE start page

- You will reach the **APP**MODULE start page. The “Login” unlocks the “Configuration” Functions whereas “Information” shows general system information.

- Use the user data to log in to the web interface: "Log In". (Information on the authorisation settings can be found in chapter "*Initial Operation*")

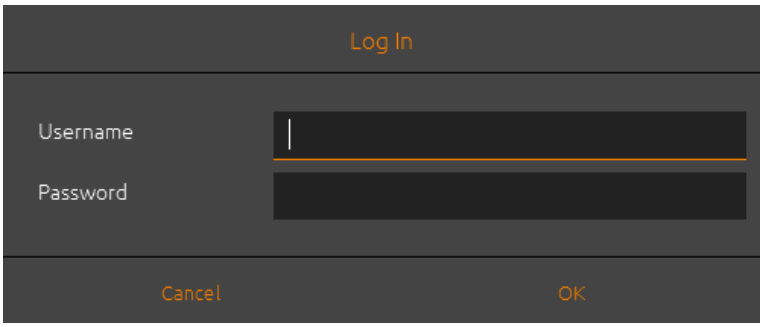

Figure 5: Logging in to the web interface

- You can then also access the "Configuration" menu item. See chapter "*Configuration*"

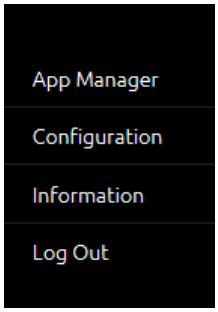

Figure 6: "Configuration" menu item

- To return to the main menu, just click on the header graphic.

Figure 7: Back via the header graphic

2.2.3.2 DISCOVER THE DEVICE WITH THE HELP OF BAB STARTER

If you do not know the network settings of the device, the BAB STARTER can help you to find out with which IP address the device is available. The software is available for Windows and MAC systems and can be found on the supplied CD or at www.bab-tec.de in the download section. For detailed information, please observe the separate documentation with respect to BAB STARTER!

BAB STARTER INSTALLATION

For Microsoft Windows you receive a *.zip file to download. For MAC OS X, a *.mpkg file is available.

Note: A detailed description for BAB STARTER can be found in the related documentation on the supplied CD or can be downloaded at www.bab-tec.de.

Windows installation

- Run "BAB_STARTER_[Version]_setup.exe" to start the installation.
- Follow the instructions in the InstallShield Wizard and click on "Continue".
- In the end, confirm the installation with "Finish".

Thereafter, the BAB STARTER can be found in the Windows Start menu folder "BAB TECHNOLOGIE GmbH".

MAC OS installation

- Double click on "BAB STARTER_[Version].mpkg".

Note: It is possible that your system will advise you of a non-verified developer. In this regard, please note the information on the "Apple Gatekeeper"; see: https://support.apple.com/de-de/HT202491 (as of 5 October 2015)

- Follow the instructions of the installation process and click on "Continue" to continue the installation.

The message "The installation was successful" confirms the successful installation. The BAB STARTER icon now appears in the "Programs" folder.

RUN BAB STARTER

Click on the BAB STARTER program icon to start the application

Figure 8: BAB STARTER icon

Note: Beneath the Device discovery mentioned below, with BAB STARTER you could also start the EnOcean Editor without having a local Java Virtual Machine (JVM) installed.

To display all active BAB devices in the network, click on the "Search for Devices..." menu after you have called up the STARTER.

Figure 9: BAB STARTER – start menu

DEVICES IN THE FOREIGN NETWORK AREA

Whether a device is in the network area of your computer is highlighted by the contrast intensity of the entries. If the entry is displayed with low contrast, the device is not in the same network area (subnet) and cannot be reached without changes.

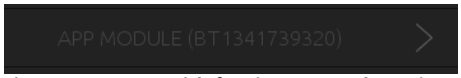

Figure 10: Entry with foreign network settings

To learn more about the network settings of the device, click on the respective entry and then on "Details".

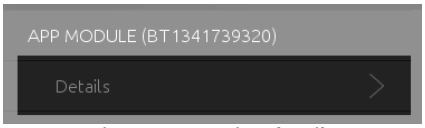

Figure 11: Device details

The following display shows the serial number, firmware, IP address (host) and net mask (display not implemented).

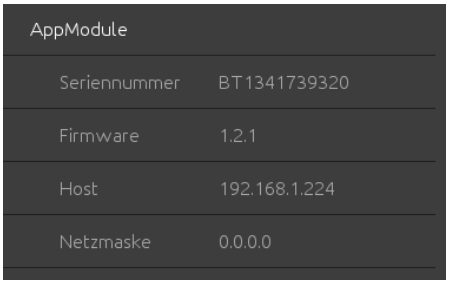

Figure 12: Display of the device details

- To bring the device into the network area of your computer, please proceed as described in chapter "*Adjusting the network settings of your computer*".

DEVICES IN THE SAME NETWORK AREA

If the contrast is sharper, this means that the device is in the same network area (subnet) and can be accessed immediately.

Figure 13: Entry in the same subnet area

Click on the entry so that the next menu opens. Apart from the device details, you can access the SYSTEM here, which leads you to the configuration surface of the **APP**MODULE. If you have an **APP**MODULE EnOcean (Article-No. 13501) you can also start the EnOcean Editor ("EnOcean Configuration") from here (checkout chapter "*APP MODULE EnOcean*" in case you have an EnOcean device).

2.2.3.3 ADJUSTING THE NETWORK SETTINGS OF YOUR COMPUTER

In order to adjust the network settings of your computer and establish a connection to the device, please proceed as described below:

- Open the IP address settings (under Windows 7):
- Click "Start Button" --> "Control Panel" --> "Network"
- Select "Network Connection", then "LAN Connection" ("Intel PRO1000 GT" in the figure below).

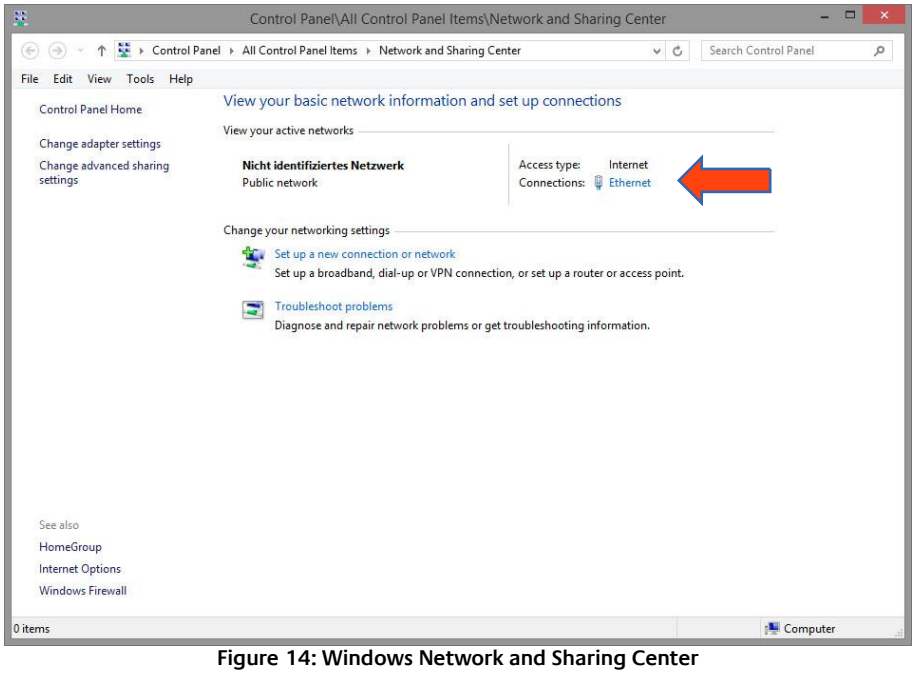

Figure 14: Windows Network and Sharing Center

- Then click "Properties":

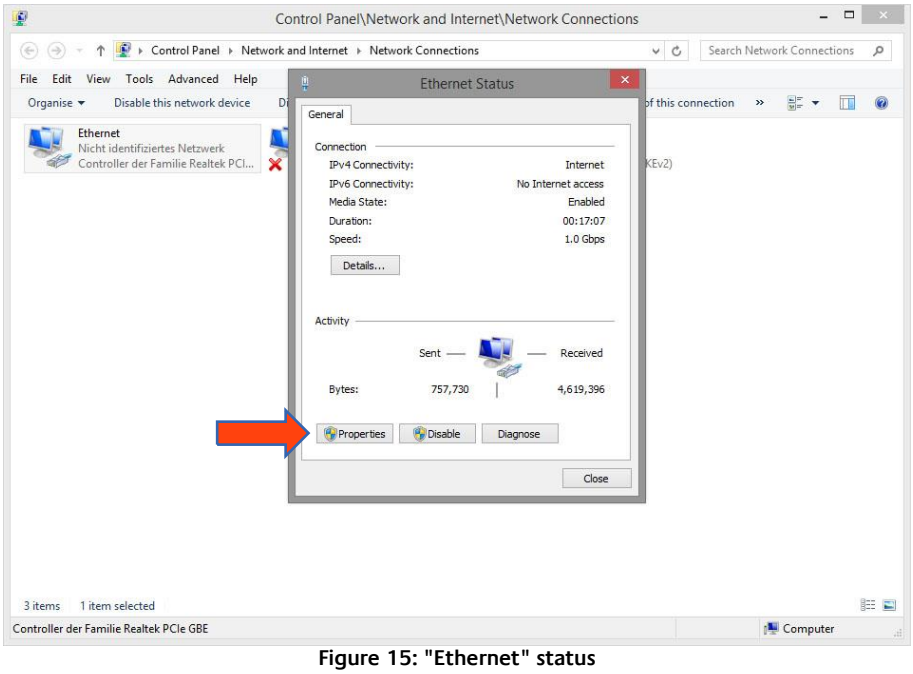

Figure 15: "Ethernet" status

- Select "Internet protocol Version 4 (TCP/IPv4)" and click "Properties" again:

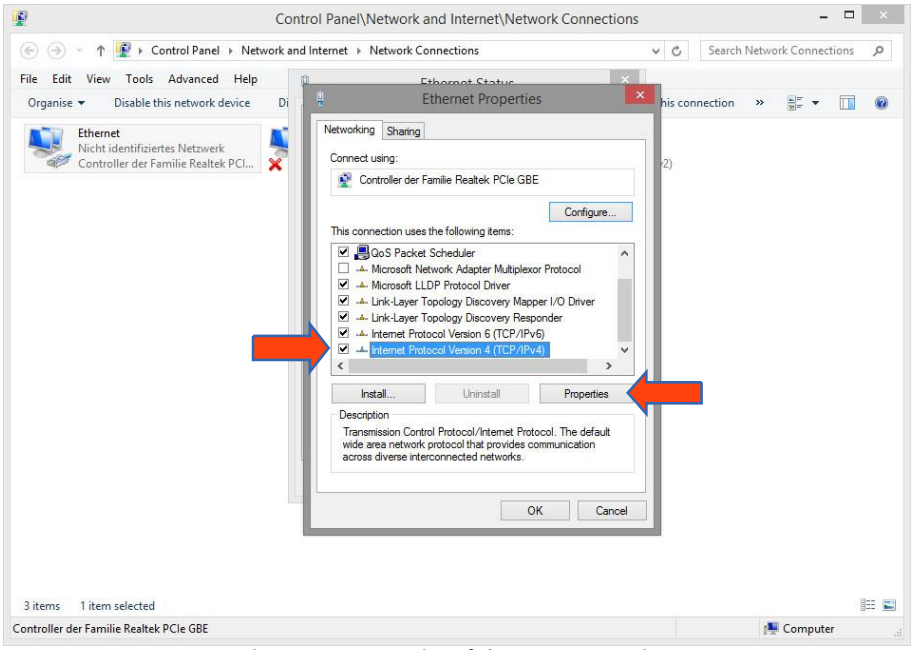

Figure 16: Properties of the LAN connection

- Now note down the current IP address settings or take a screenshot in order to ensure that you can reset the IP address setting following the configuration of the **APP**MODULE.
- Now change the IP address settings (IP address and subnet mask) as required:

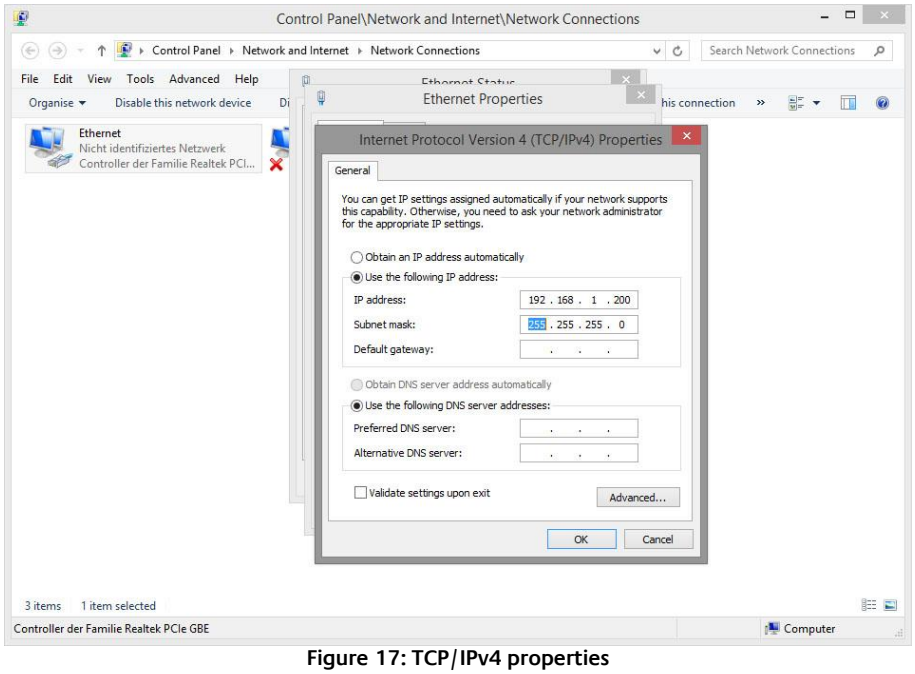

Figure 17: TCP/IPv4 properties

Example of a valid configuration for the factory settings of the **APP**MODULE:

- Free IP address: 192.168.1.228
- Subnet mask: 255.255.255.0
- Now confirm your input with "OK".
- Close all windows until the "Windows Network and Sharing Center Settings" window is shown.

Thus, you have adjusted the network settings of your PC to those of the **APP**MODULE. You can access the web interface of the **APP**MODULE by means of the browser. Restore the original network settings of your PC by following the steps described above as soon as you have configured the **APP**MODULE correspondingly.

If the IP address of your PC and your **APP**MODULE are in the same network mask, you can continue with the configuration.

2.2.3.4 ADJUSTING THE NETWORK SETTINGS OF THE APP MODULE

If the network prerequisites have been created, you can now access the configuration of the **APP**MODULE in order to adjust the network settings to the local requirements there. To do this, please proceed as described below:

- Enter the IP address of the **APP**MODULE in the address line of your browser (for factory settings: 192.168.1.229).

Figure 18: APP MODULE Webinterface

- The start page of the **APP**MODULE opens up. Click "Log In".
- A login dialog appears. For factory settings, the login data is as follows:

Username:	**admin**
Password:	**admin**

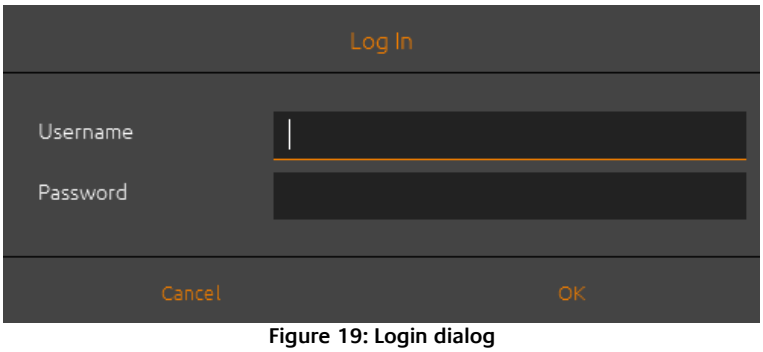

Figure 19: Login dialog

Note: The password must be changed immediately when logging in for the first time. If the password is lost, the device cannot be reset!

Note: Logging in only works if the browser is authorised to save cookies!

- The view on the start page changes. You can now access the following levels:
  - App Manager
  - Configuration
  - Information
  - Log Out

- In order to change the IP address of the **APP**MODULE, please click "Configuration"

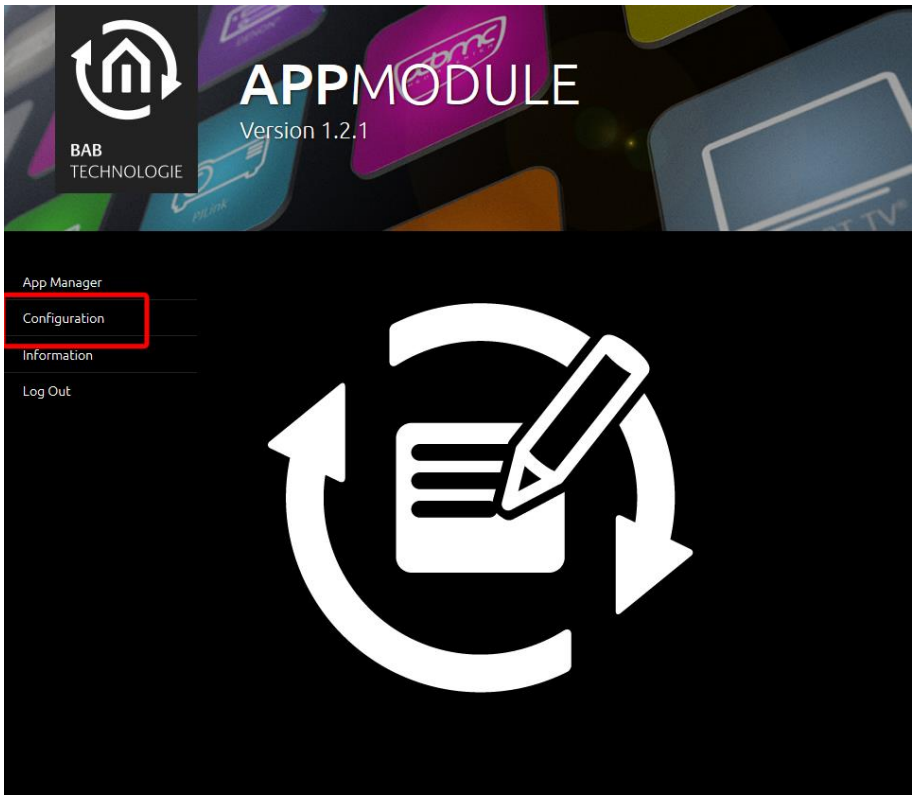

Figure 20: APP MODULE – Main Menu

The configuration menu opens up. You can make the following settings in the "Network" menu item:

DHCP: If DHCP is active, the device automatically obtains the network settings. A DHCP server must be available in the local network.

IP address / subnet mask / gateway: Field for the static assignment of IP addresses. Please make also sure that the subnet mask (often 255.255.255.0) and the gateway entry are correct. (Often the IP address of the WLAN router).
Note: Without a correct gateway entry, the device will not be able to communicate with the Internet.

DNS server: DNS is the abbreviation for Domain Name System. The DNS server converts Internet addresses, for example "www.bab-tec.de" into the IP address "85.214.89.170" and vice versa. Without a valid DNS entry, NTP-, weather- or UPnP services do not work.

NTP server: NTP is a free service for synchronising the system time of Internet-compatible devices. If it is not possible to establish the connection to an NTP-Server, the system time must always be checked and adjusted manually (see menu "*General*")
NTP-Server list: e.g. http://www.pool.ntp.org/zone/europe

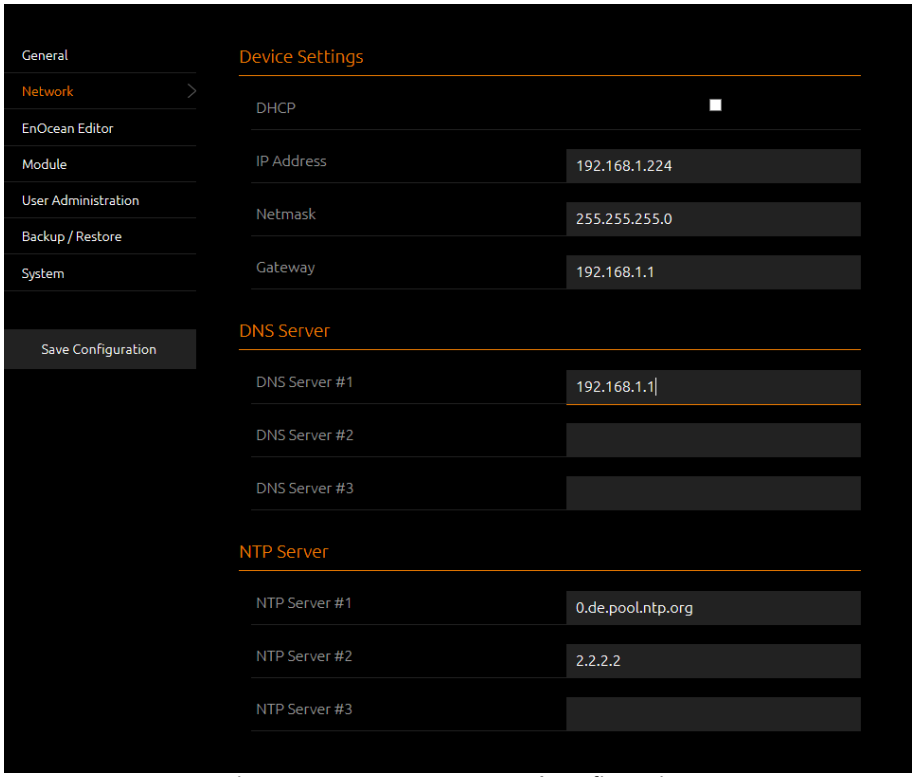

Figure 21: APP MODULE Network configuration

Change the IP address settings as required. In order to save the settings made, click "Save Configuration". The server in the device is restarted, the browser automatically connects to the new IP address if possible.

Note: Please bear in mind that you might have to reset the IP address of your computer to the initial value in order to be able to access the APP MODULE after the change has been made.

Specialty when activating DHCP

If you have activated DHCP for the **APP**MODULE according to the steps mentioned above, please use the BAB STARTER like depicted in the chapter "*Discover the device with the help of BAB STARTER*" to find out the current IP-address.

3 APP MODULE EXTENSION

The Extension **APP**MODULE (10490) is an extension for EIB**PORT** available thanks to the facility coupling protocol implemented. A KNXnet/IP server is also implemented.

3.1 CONNECTING THE APP MODULE EXTENSION TO EIBPORT

Before the **APP**MODULE can communicate with EIB**PORT**, facility coupling needs to be set up.

Note: For facility coupling between EIBPORT and the APP MODULE to work, communication over UDP with port 1735 (or another port if set) is required. Security installations in more complex networks can prevent this communication.

SETTING UP THE CONNECTION IN THE APP MODULE

In the **APP**MODULE, go to the "Configuration" -> "Module" menu. Information on accessing the **APP**MODULE Web interface can be found in "*Calling up the APP MODULE web interface*".

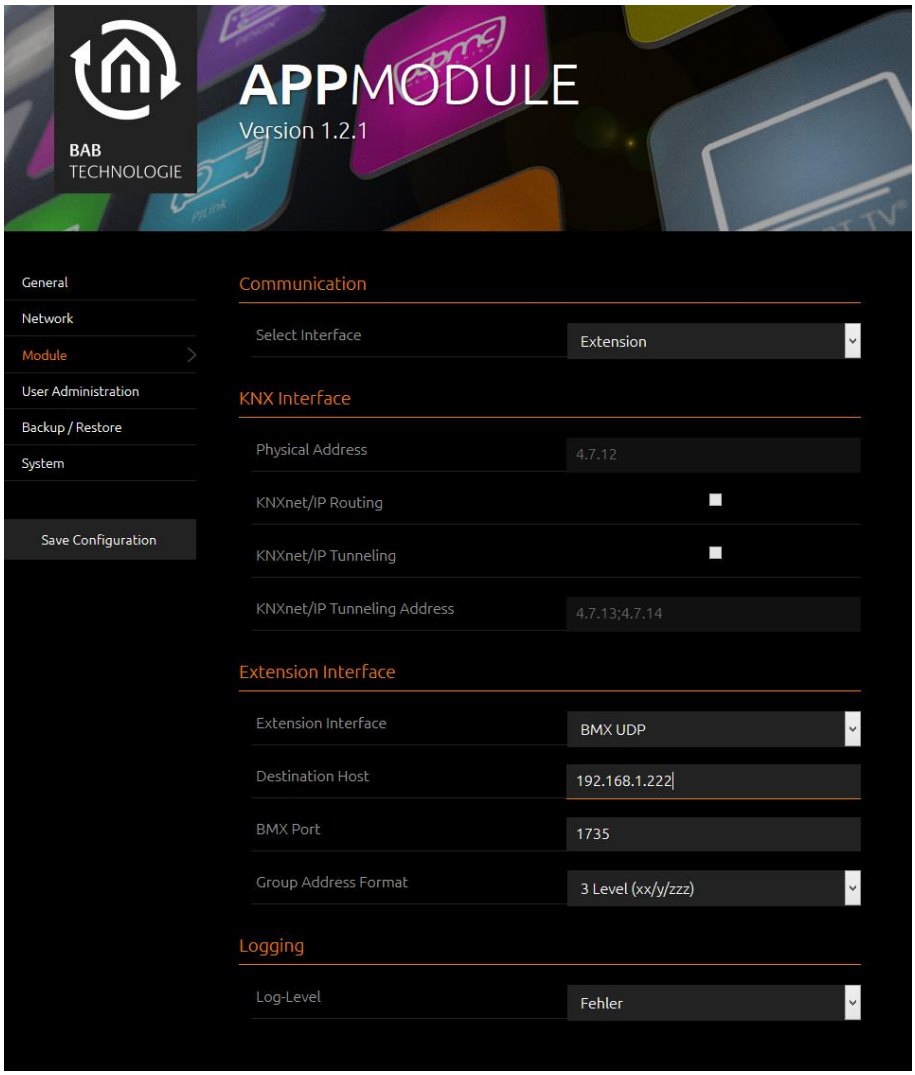

Figure 22: Configuration of the Extension Module

- Select “Extension” under “Select interface”. This enables the “Extension interface” section.
- *Target host:* For “Target host”, enter the address of the required EIB**PORT** (e.g. 192.168.1.222).
- *BMX UDP port:* In the standard scenario, the facility coupling in EIB**PORT is set to** BMX port 1735 (you can check this in EIB**PORT under “**System” – “Configuration” – “Advanced EIB (yabus) settings” – “BMX UDP port”).
- *Group address format:* Not relevant here. Enter “3 Level (xx/y/zzz)”.

This sets up communication from the **APP**MODULE to EIB**PORT**. Communication from EIB**PORT to the APP**MODULE must be set up at the EIB**PORT end**.

SETTING UP THE CONNECTION IN EIBPORT

To set up the connection in EIB**PORT,** you will need the EIB**PORT** “Facility coupling” job. For detailed information on the job, please see the EIB**PORT** documentation.

- In EIB**PORT,** open the “Job editor” (“Editor” – “Window” – “Job editor”) and add a new “Facility coupling” job.

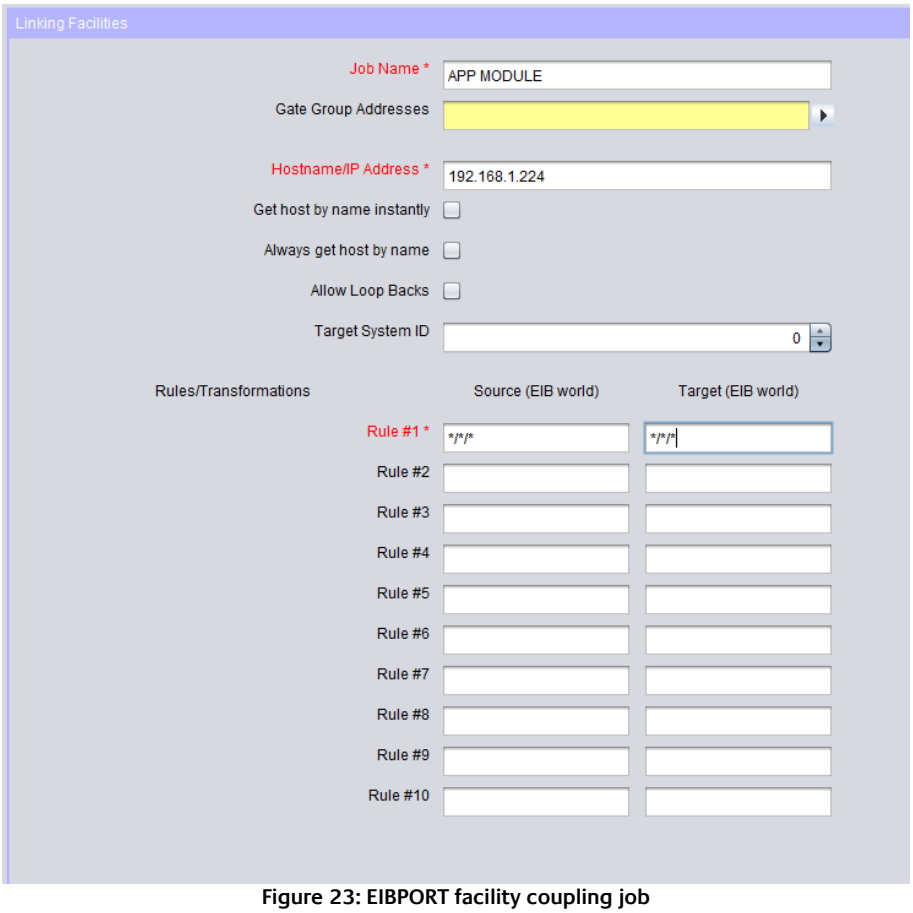

Figure 23: EIBPORT facility coupling job

The following fields must be configured:

- *Host name / IP address:* Enter the address of the **APP**MODULE to which you wish to connect here (e.g. 192.168.1.224).
- *Target system ID:* Please do not change this value. The system ID must be “0”.

- *Rule #1:* Enter the wildcard rule "*/*/*" in both fields (source & target). This rule transfers all group addresses.

The job is active as soon as you save and the group addresses are transferred.

3.2 USING KNXNET/IP IN THE APPMODULE EXTENSION

The Extension **APP**MODULE contains a complete KNXnet/IP server. KNXnet/IP Routing can be used for a connection to KNX/TP (must be provided by another device with a KNX/TP interface, e. g. a KNX-IP-Router) and KNXnet/IP Tunneling as an interface for ETS.

Proceed as follows to set up the KNXnet/IP server:

- Open the "Configuration" – "Module" and select "KNXnet/IP" under "Select interface". This enables the "KNX interface".

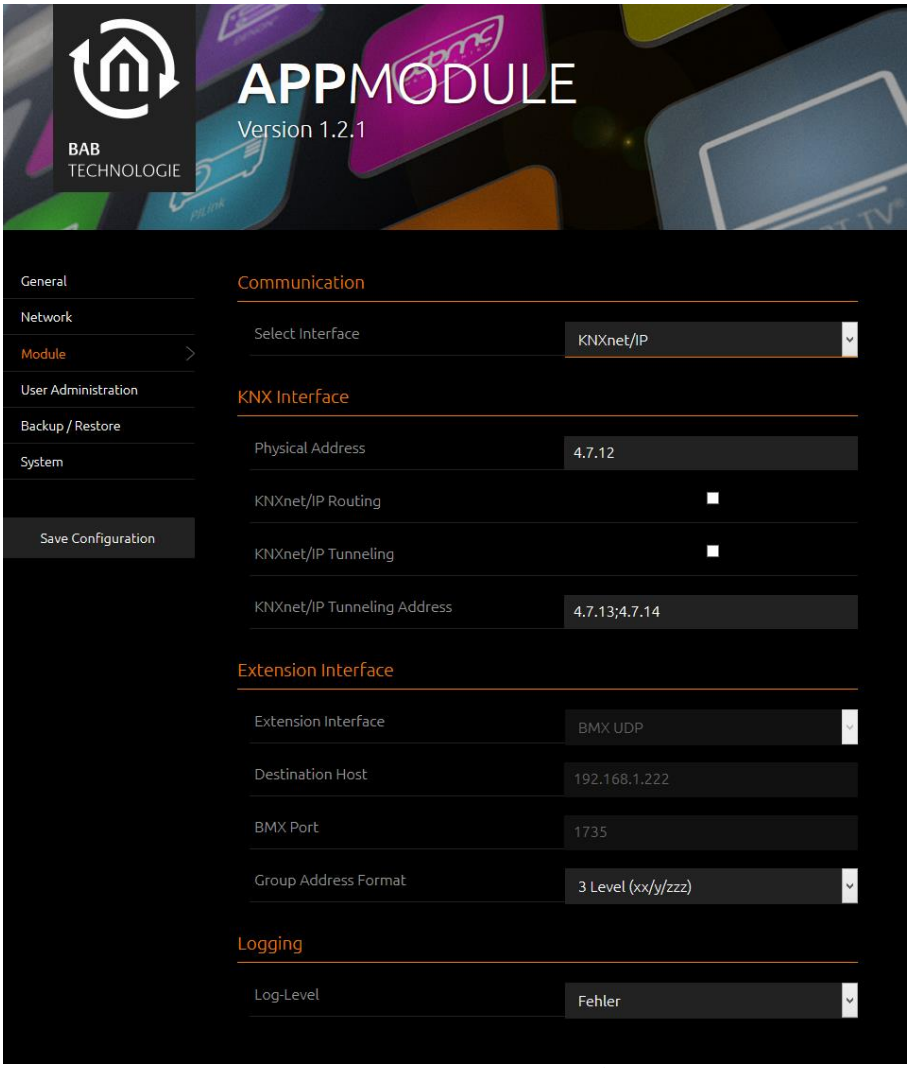

Figure 24: Extension APPMODULE KNXnet/IP interface

More information on KNXnet/IP setup can be found in "*Module (KNX/TP configuration)*".

4 APPMODULE KNX/TP

4.1 APPMODULE KNX/TP COMMISSIONING

There is no ETS application for the **APP**MODULE KNX/TP (item no. 10495). All KNX-related settings are made over the Web interface of the **APP**MODULE.

Note: For the ETS project, please use a dummy application to record the use of the physical address of the APP MODULE.

- Access the website of the **APP**MODULE and log on (see "*Calling up the APP MODULE web interface*").
- Switch to the "Configuration" > "Module" menu.

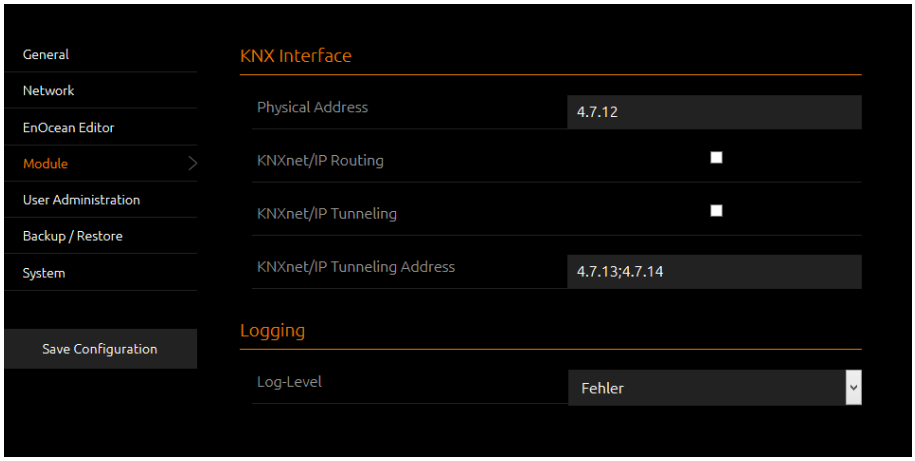

Figure 25: KNX configuration

- Change the "Physical address". Please follow the rules for assigning physical addresses in a KNX system.

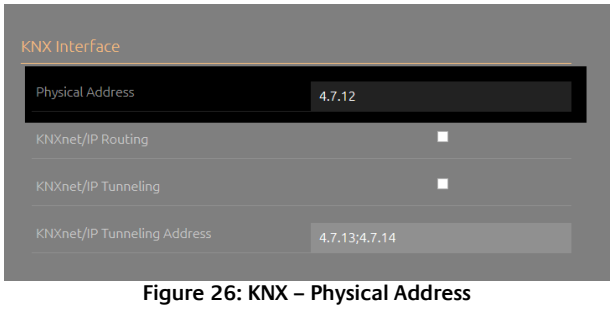

Figure 26: KNX – Physical Address

- Assign at least 2 physical addresses (not used in the relevant line) for KNXnet/IP Tunneling.

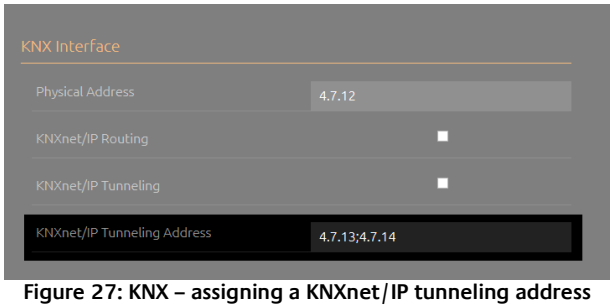

Figure 27: KNX – assigning a KNXnet/IP tunneling address

Note: These addresses are required for establishing a connection for the commissioning software ETS for use of the APP MODULE as an interface to KNX. As of ETS 5, at least 2 free addresses are required here.

- Save the configuration.

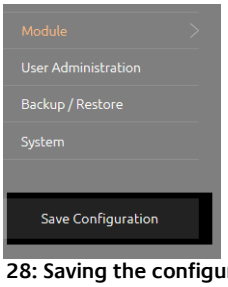

Figure 28: Saving the configuration

4.1.1 MODULE (KNX/TP CONFIGURATION)

The KNX-specific settings of the **APP**MODULE are made in the "Module" menu. The KNX settings are available both for a **APP**MODULE KNX/TP (10495) and for the **APP**MODULE EnOcean (13501) & **APP**MODULE Extension (10490). For the **APP**MODULE EnOcean & **APP**MODULE Extension, the settings are used to configure the KNXnet/IP server.

Physical address: Here, you can determine the physical address to be used by the **APP**MODULE in the KNX network. Please make sure that the physical address corresponds to the installation site and does not occur twice.

KNXnet/IP Tunneling Address: This address is used by the internal KNXnet/IP server for a KNXnet/IP Tunneling connection established to the device (using the **APP**MODULE as a programming interface). Please note that this addresses must not be the same as the physical address (see above) and that they must not be used by any other devices in the line either. Please note that for the latest ETS software are at least two addresses required here.

KNXnet/IP Routing: Activates KNXnet/IP Routing for coupling lines and areas via IP. Can only be activated if the physical address corresponds to that of a line or area coupler. KNXnet/IP Routing is based on multicast and all devices send to a multicast group 224.0.23.12. Since multicast packages are usually not transferred by routers, "routing" only works within a subnet.

KNXnet/IP Tunneling: Activates KNXnet/IP Tunneling access to the device. This connection can be used to program KNX devices or to exchange data. The **APP**MODULE is the server. The above address is used as the physical address for the connection. For each address, only one connection can be established at any one time. On the TCP/IP layer, the connection is made by means of unicast to UDP port 3671.

- Click "Save configuration" to apply the settings.

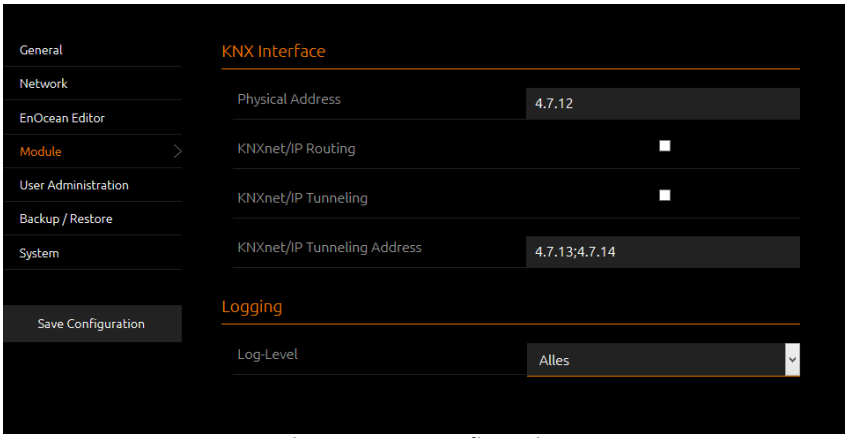

Figure 29: KNX configuration

LOGGING

Set the level of detail for the apps' log messages. Log messages can be accessed in each instance. See "*Instance* ".

The meaning of the Loglevels:

- Fehler = Errors
- Warnungen = Warnings
- Info = Information
- Fein = Detailed
- Alles = All

5 APP MODULE ENOCEAN

5.1 INITIAL OPERATION OF APP MODULE ENOCEAN

Please connect the plug of the magnetic base antenna to the SMA connector at the housing. Without an antenna, the device has only low transmission and received powers. As soon as the device has started, the EnOcean interface can be used.

Further information on the teaching and controlling of EnOcean devices can be found in chapter "*Usage of the EnOcean Editor*"

TECHNICAL DETAILS ABOUT THE ENOCEAN INTERFACE

EnOcean (868 Mhz):	
Operating frequency:	868.3 Mhz
Range:	300 m in the free field / 30 m in the building (depending on the building material)
Input objects:	Any number
Output objects:	128
External antenna:	2.50 m cable, magnetic base and SMA plug connector.

5.2 CALLING UP THE ENOCEAN EDITOR

A detailed description for the EnOcean Editor can be found in chapter "*Usage of the EnOcean Editor*"!

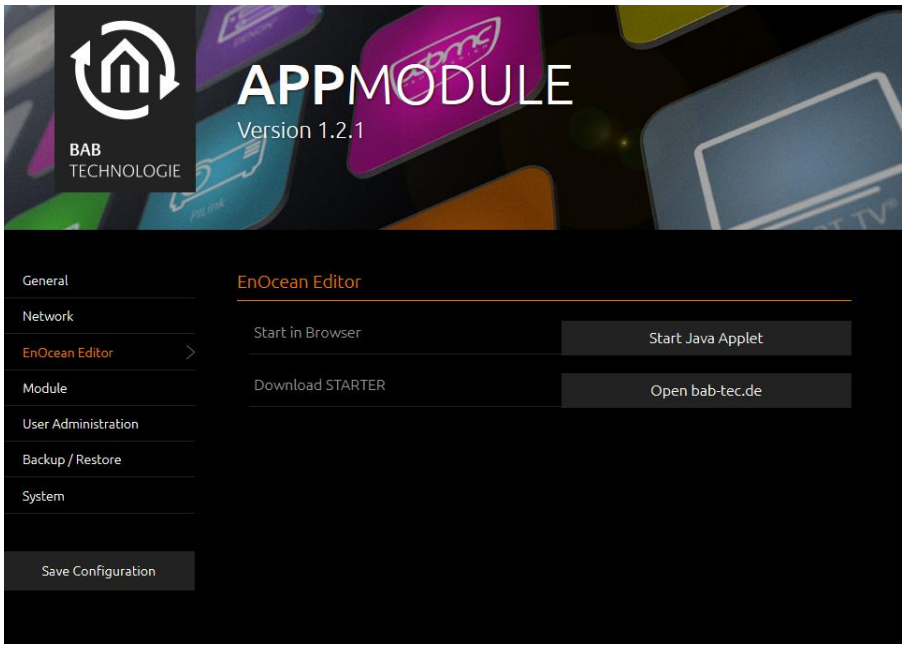

Figure 30: Configuration – EnOcean Editor

The EnOcean Editor is a Java application which requires starting a local Java machine via the Java plugin of the browser. You have two (2) options:

1. You call the EnOcean Editor directly in the browser; "Start Java applet"

In this regard, please note the following information:

- Please use a browser with an active Java plugin and observe the information on *Java settings / preparations on the client PC*

- The Java plugin for Google Chrome has not been available any more since Chrome 42. Please use Firefox instead.

2. You use the BAB STARTER which you can download from our website; "Open bab-tec.de website".

In this regard, please note the following information:

- With BAB STARTER, you can start the Java application directly without having to use a browser or a local Java installation! See *Using the EnOcean Editor with BAB STARTER*.

5.2.1 USING THE ENOCEAN EDITOR WITH BAB STARTER

To install and start the BAB STARTER, please observe the description and information in chapter "*Discover the device with the help of BAB STARTER*".

If the **APP**MODULE is in the same network area, the BAB STARTER menu for the **APP**MODULE is shown after you have clicked on the corresponding entry.

Figure 31: BAB STARTER – APP MODULE menu

- Click on "ENOCEAN CONFIGURATION" in order to start the EnOcean EDITOR.

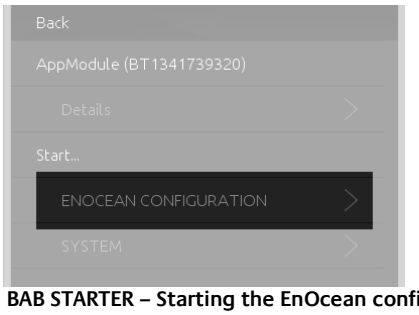

Figure 32: BAB STARTER – Starting the EnOcean configuration

- A login screen appears. Please log in with the user data of the **APP**MODULE. Information about the user data is available in chapter "*User administration*"

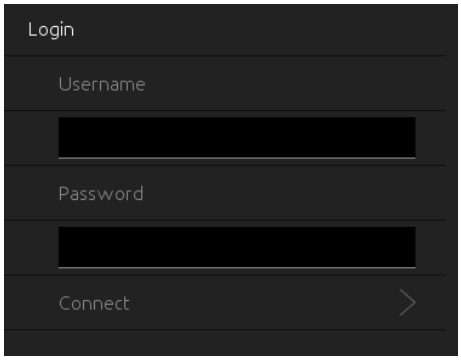

Figure 33: BAB STARTER – EnOcean configuration login

- The application starts directly within the BAB STARTER

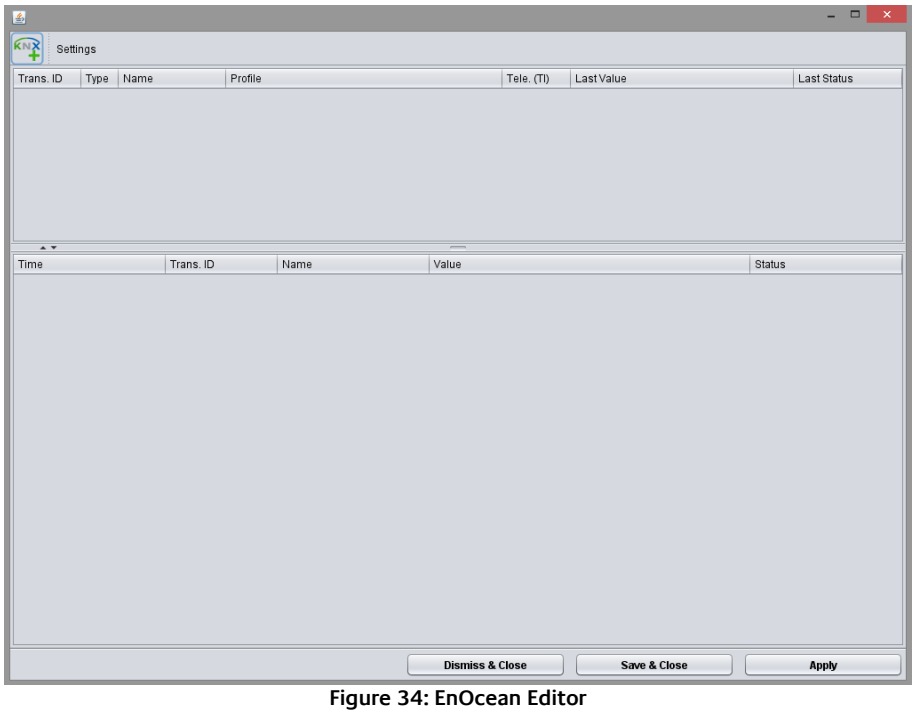

Figure 34: EnOcean Editor

5.3 USAGE OF THE ENOCEAN EDITOR

In order to open the EnOcean Editor please follow the description in chapter "*Calling up the EnOcean Editor*"!

5.4 OPERATING PRINCIPLE ENOCEAN

An EnOcean radio network consists of sensors and actuators. The sensors utilize your ambient energy to transmit the corresponding radio signal. So that an actuator can interpret and respond to the signals of a sensor, the actuator must be adapted to the sensor. The so-called EnOcean Profiles (EEP) determine how the data provided by the sensor are to be interpreted. Thus, it is important that sensor and actuator utilize the same EnOcean Profile (EEP).

Device categories / sensors
EnOcean distinguishes between three device categories in its sensor technology. The device category gives information about the kind of EnOcean signal involved and simultaneously about what the receiver can expect.

- Switch module: A module which sends out a corresponding radio signal via user interaction. That is switches, rockers, position and key card switches as well as window handles.
- 1 byte sensor: A sensor which sends out information of 1 byte size.
- 4 byte sensor: A sensor which sends out information of 4 byte size.

Actuators
Actuators will perform their controlling on the basis of sensor signals. Therefore, sensor and actuator have to be adapted to each other. Thus, it is important to know which EnOcean profile is to be emulated to address a LINKMOUDULE actuator correctly. The actuator manufacturer will inform you about which profile the actuator utilizes.

EnOcean Profiles (EEP)
The EnOcean profiles (EnOcean Equipment Profile - EEP) define the device category, the function and the device specification. During the **APP**MODULE configuration, the KNX parameters automatically adapt to the selected profile. The profile consists of 3 number pairs separated by a hyphen:
XX-XX-XX

The different positions represent the following:
ORG-FUNC-TYPE

- ORG determines which messages form the communication base (see also 'Device categories/sensors').
- FUNC determines which device is involved, that is e.g. a switch or a temperature sensor.
- TYPE determines the exact specifications of the device functionality.

Transmitter ID (Trans. ID)
Is a definite device address which only exists once. This address allows the sending device to be identified.

Teaching Telegram / LRN Telegram
Is a special telegram used to "teach" the sensor to recognize the actuator, that is, to adapt the actuator to the sensor. It is important for the actuator to know from which hardware address it gets its sensor data. There are several kinds of adapting mechanisms. Please consider the respective descriptions.

5.5 ENOCEAN CONFIGURATION

The APPMODULE internally works with the KNX group address system. In order to continue to use received EnOcean signals within the device or to trigger EnOcean telegrams, KNX group addresses must be used. You will find information about this in chapter "*KNX Addressing*".

In order to access the corresponding **APP**MODULE configuration mask, please consider the chapter"*Calling up the EnOcean Editor*"). The window generally consists of three areas:

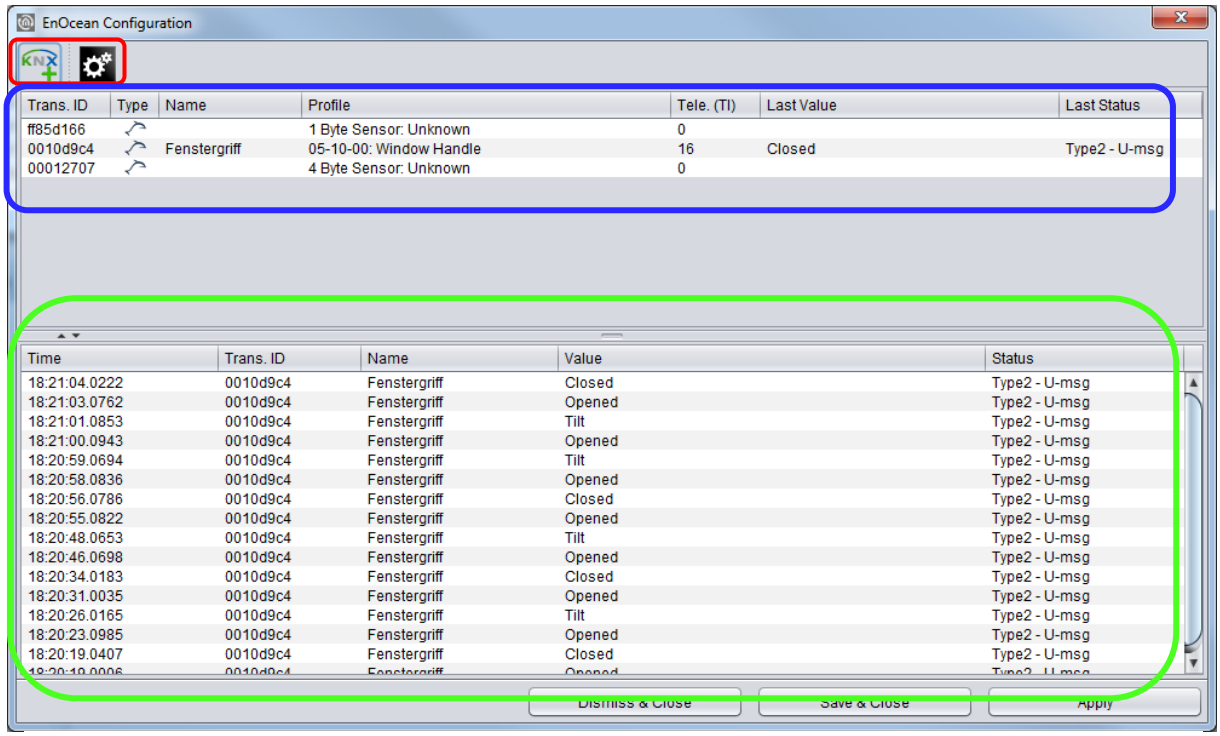

Figure 35: EnOcean Configuration

- (Red) *Configuration Menu*: Basic settings of the EnOcean module are adjusted here and the EnOcean devices are emulated.
- (Blue) *Device List:* All EnOcean devices are ordered and listed here in the order of their device ID (Trans. ID).
- (Green) *Telegram List:* All received EnOcean telegrams are listed here in the order of their arrival time.

Additionally, at the bottom of the window there are the action buttons available for securing or discarding the settings.

5.5.1 ENOCEAN SETTINGS

The EnOcean settings show the hardware parameters of the incorporated EnOcean module (TCM 300 Transceiver). The following settings can be performed:

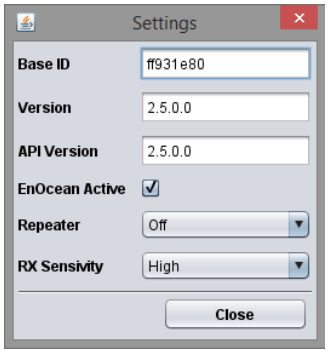

Figure 36: EnOcean Settings

EnOcean active
Here, you can switch the module on or off.

Repeater
The repeater function is used to repeat a receiving signal in order to increase its range. The following settings are available:

- *Off:* Repeater function is turned off.
- *Level 1:* The telegram is repeated by one repeater only.
- *Level 2:* The telegram is repeated by two repeaters.

RX sensitivity
Determine the receiving sensitivity in which you want the EnOcean module to work. You can choose between "Low" and "High".

5.5.2 ADAPTING THE ENOCEAN DEVICE

All EnOcean devices within range are displayed both in the device list and in the telegram list as they are sending something. As already mentioned, the EnOcean telegram must be connected with a group address in order to make it usable for the **APP**MODULE. This is done as follows:

1. Mark the device of interest in the device list.

Advice: If you are not sure which device has which Trans. ID, activate the device of interest and look up in the device list for which device the telegram counter increases (column "telegrams").

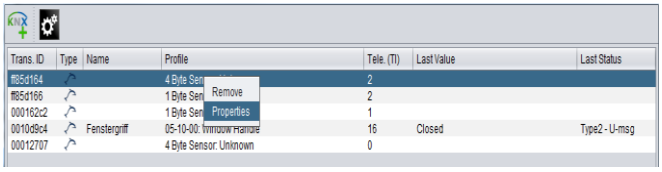

Figure 37: Calling up properties

2. When you have detected the device of interest, mark it with the mouse, press the right mouse button and click '*Properties*'. Alternatively, double-click on the device.

3. The window "*EnOcean Device Configuration*" will open. Via this dialogue, the EnOcean devices will be "adapted.

4. Initially, assign a definite "*Device Name*", referring to the device function. In the input screen, you will further find the following parameters:

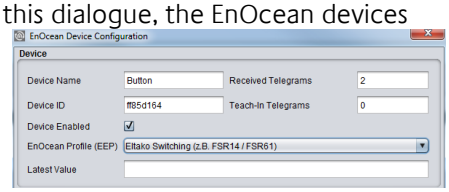

Figure 38: EnOcean Device Configuration

- *Device ID:* This is the unique device address through which the device is identified.
- *Received Telegrams:* Here, the number of telegrams already received by the **APP**MODULE from this device is counted.
- *Teach-in Telegrams:* If the device should send teach-in telegrams, their number is shown here.
- *Device Active:* If you would like to keep the device in the EnOcean configuration without using it, you can deactivate it for the **APP**MODULE usage via this option.

- *EnOcean Profile (EEP):* The different EnOcean devices are defined via so-called profiles. Hereby, the device category involved is detected as early as at the signal input and a pre-selection is made. Then it is also possible to select from the profiles known from the **APP**MODULE. As soon as a profile is selected, the corresponding KNX parameters are shown underneath.
- *Last Value:* This field interprets the payload of the last radio signal from this device ID according to the selected profile. If there is no profile selected, the crude data are shown.

5. Select the corresponding profile of your EnOcean device. If you are not sure about which profile your device 'speaks', please contact the manufacturer of the device. After the right profile has been selected, one or more input fields appear in the "*Parameters*" area:

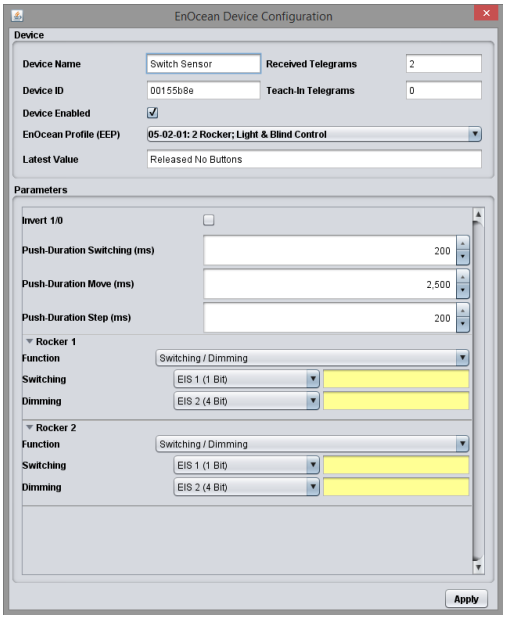

Figure 39: EnOcean Device Configuration

Different parameters appear depending on which profile has been selected. If one switch (rocker) has been selected, various additional functions can be carried out (see chapter "*Configuration example for EnOcean* ").

6. Now, enter the corresponding KNX group addresses in the address fields to obtain a connection to the selected EnOcean device. You will find detailed information about the KNX group addresses and their assignment in chapter "*KNX Addressing*".

7. When you have entered the addresses in the parameters as requested, close the *EnOcean Device Configuration* window.

8. Save the changes in the window "*EnOcean Configuration*" via the button "*Save & Close*" or "*Assume*" (the window stays open).

As soon as this step is taken, the entered KNX telegrams are triggered via EnOcean signals. In order to be able to use the addresses more easily later, you should enter them into the ESF data with a definite designation (see Chapter "*KNX Addressing*")

5.5.3 EMULATING ENOCEAN DEVICES

The **APP**MODULE provides a Transceiver Module which not only permits receiving but also sending EnOcean telegrams. In order to do this, the **APP**MODULE emulates an EnOcean device. Via a configuration mask, you can determine which device is emulated with which KNX telegram by the **APP**MODULE (the device internally works with KNX group addresses also during the EnOcean execution).

Assigning a new emulated device

In order to assign a new device, please click the KNX logo in the configuration menu. Thus, a window designated "*New Emulated Device*" will open.

In the upper half of the window, you will be asked to choose a hardware address. The address is unique and 128 different addresses can be assigned in total. If a device has already been assigned, the device name is highlighted in red on the ID list.

Selecting the device category
Depending on which actuator is to be controlled by EnOcean, the appropriate device category has to be selected. Additionally, the appropriate profile can be preselected directly beneath the corresponding category. By confirming with "*OK*", the settings will be confirmed and the "*EnOcean Device Configuration*" window will open.

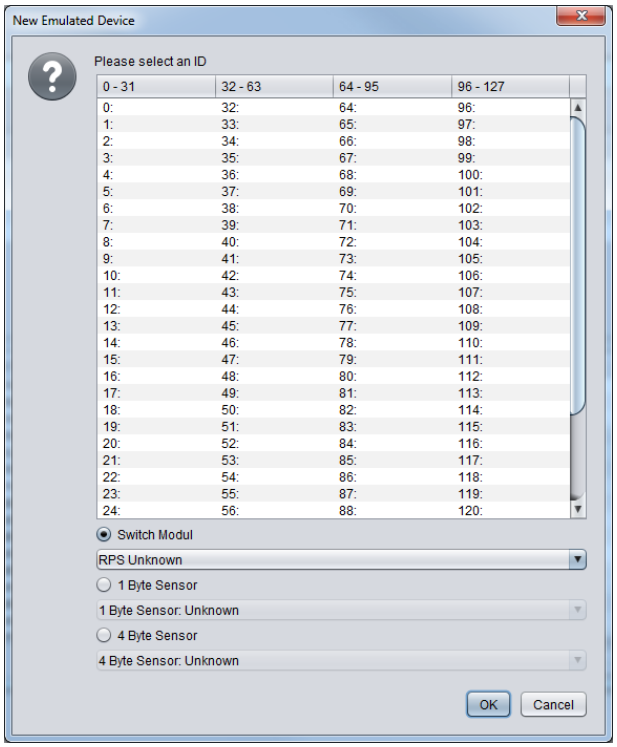

Figure 40: Emulating EnOcean device

Defining emulated device ("EnOcean Device Configuration")
The device assigned in this way is initially provided with a definite device name. Additionally, the following parameters are presented (see also chapter "*Example: Emulate temperature sensor*")

- *Device ID:* Is the definite hardware address you have selected before. Can not be modified at this point.
- *Received Telegrams:* Shows the number of telegrams already received from this hardware address. In an emulated device, this number should generally be "0".
- *Teaching Telegrams:* Shows the number of "teaching telegrams" already sent from this hardware address.
- *Device Active:* If you would like to keep the device in the EnOcean configuration without using it, you can deactivate it for the **APP**MODULE usage via this option.
- *EnOcean Profile (EEP):* Here, the profile the emulated device should use is selected. The profile settings depend on the actuator to be communicated with. If the profile is unknown, the manufacturer of the actuator can provide information.
- *Last Value:* This field interprets the user data from the last telegram according to the selected profile or simply displays it.

After all settings have been performed as requested, continue with the corresponding KNX parameters in the lower window section. These comply with the profile and are sent as KNX telegrams when there has been an EnOcean signal detected at receipt.

5.5.3.1 EXAMPLE: EMULATE TEMPERATURE SENSOR

Profile
"07-10-03 temperature, target value" is selected as the profile.

Parameters
According to this profile, the following parameters are available:

- *Basic Target Value:* Enter the basic target value for the actuator here. 20°C are preselected.
- *Maximum Target Value Modification:* Enter the maximum value in °C to modify the target value here. 3°C are preselected here.
- *Temperature:* Enter the group address transmitting the current temperature value (data type EIS 5) here.
- *Target Value:* Enter the group address to modify the absolute target value (data type EIS 5) here

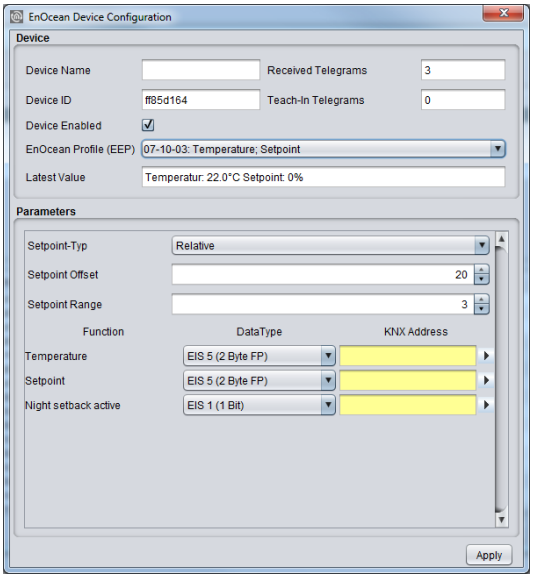

Figure 41: Receiving EnOcean device parameters

- *Sending Teaching Telegram:* When the corresponding actuator is in the "learning" mode, the emulated sensor can be adapted via this trigger.

When all parameters are set as required, close the window "EnOcean Device Configuration" and save your settings via the "Save & Close" or "Accept" button.

5.5.4 KNX ADDRESSING

The **APP**MODULE addressing concept is based on the group addressing of the KNX system. Sending EnOcean Telegrams as well as transmitting received telegrams is performed based on KNX group addresses only. The KNX group address is a 16 bit address which is split in a so-called 'real' and a 'virtual' section. Additionally, there is a 2-digit as well as a 3-digit representation:

3-digit:
MG= Main Group / CG= Central Group / SG= Subgroup
MG / CG / SG

2-digit:
MG= Main Group / SG= Subgroup
MG / SG

Note: The APP MODULE interface only supports the 3-digit representation.

Real / Virtual Address Space
The KNX address space ranges in total from 0/0/0 to 31/7/255 (in the 3-digit representation). Therein, the range from 15/7/255 is designated as real address space and the address space from 16/0/0 to 31/7/255 as virtual address space.

Note: For the communication between EnOcean and KNXnet/IP Routing, only the real address space is used.

5.5.5 CONFIGURATION EXAMPLE FOR ENOCEAN PUSH-BUTTON (ROCKER)

In the following, an exemplary configuration for sending and receiving of an EnOcean push-button (Rocker) profile (profile "*05-02-01: 2Rockers, Light & Blind*") is shown.

5.5.5.1 APP MODULE AS THE RECEIVER (ACTUATOR)

This switch provides either one or two rockers and transmits their status within a radio signal. In order to link these radio signals with KNX, various functions are available:

- *Switch / Dim:* The EnOcean push button can be used as a switch and as a dimmer. Thereby, a long keystroke is interpreted as a dim command.
- *Push Button:* When pushing the button, an EIS 1 telegram of the value 1 is triggered. When 'letting go', a telegram of the value 0 is triggered. One address can be assigned per position respectively (I and O).
- *Switch:* When pushing the button, the status is only changed once; either a 1 or a 0 is sent.

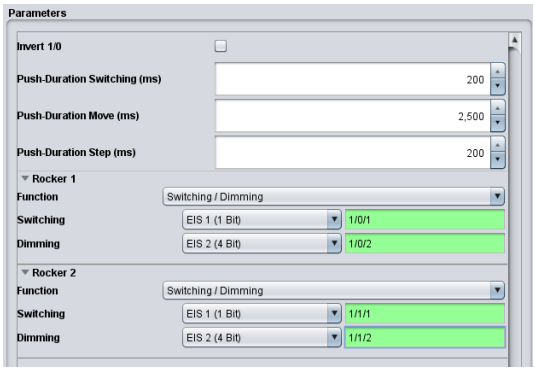

Figure 42: Receiving KNX parameters

- *Blind:* For the "Move" and the "Step" commands, there is one address entered respectively (EIS 1).

Additionally, the output to the KNX addresses can be inverted. In this case, the actual output "1" becomes "0" and vice versa.

5.5.5.2 APP MODULE EMULATES ENOCEAN PUSH BUTTON

When the profile mentioned above is emulated by the **APP**MODULE, the parameter screen looks slightly different. The "switch" is missing as this function cannot be carried out with EnOcean.

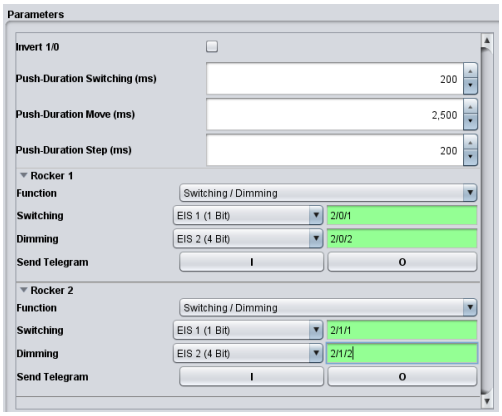

Figure 43: Sending KNX Parameters

Functions

- *Switch / Dim:* There is one switch and one dim address for each rocker. The information on if it was switched or dimmed is sent in the KNX via different group addresses.
- *Push Button:* For the button, there is one address for the value "0" and one for the value "1". At reception on the respective input object, the corresponding EnOcean signal is transmitted.
- *Blinds:* The blind control also consists of two EIS 1 objects. One is for the 'Move' command ("1"), the other one for the 'Step' command ("0").

Sending a Telegram
These buttons may be used to adapt the emulated device to the actuator of interest. These two buttons simulate the respective rocker directly from the EnOcean configuration.

Inverting
The respective EnOcean output values are inverted. The "1" becomes a "0" and vice versa.

5.6 USING KNXNET/IP IN THE ENOCEAN APPMODULE

The configuration module (KNX) in an **APP**MODULE EnOcean (13501) is used for configuring the device KNXnet/IP server. The KNXnet/IP server is operated with the addresses set on the device. For more information, please see "*Module (KNX/TP configuration)*".

6 APP MANAGER

You can install and manage apps under the menu item “App Manager”. In order to manage an App or to change functions/instances, just click on the corresponding App.

You can find the functions of each APP on the homepage of BAB APPMARKET (https://www.bab-appmarket.de/de/) or from the ToolTips of the corresponding application.

1. Please call up the web interface of your **APP**MODULE:

   <IP address APP MODULE>

2. Click on the menu item „App Manager“, here highlighted red.

Figure 44: APPMODULE Start menu

3. You have entered the menu, where a list of all on the device already installed Apps are shown. In order to install another App, click on " Install App". See figure below, highlighted red.

Figure 45: Install APP

4. Click on “Select app” and a window will open. Select the app that you previously loaded from the APPMARKET and click “OK”. See “*APP MODULE functional principle*” for information on purchasing apps.

Figure 46: Select APP

5. As soon as the next window opens, the installation was successful. Now, click on "OK" and parameterise your APP.

6.1 INSTANCE

As soon as the App is installed, you can create so called “Instance”. An Instance is one of several objects of the same class.

In order to create an instance, click on the following symbol "Create Instance".

Figure 47: Create Instance

With the icons on our site, you can start instances, edit parameters, display the LOG, copy or delete instances.

Figure 48: Instance functions

Colour	Function
Red	Start instance
Yellow	Edit parameter
Blue	Display log
Green	Copy instance
Orange	Delete instance

6.1.1 NOTATION OF GROUP ADDRESSES

The group addresses in the **APP**MODULE can either be displayed in 2-digit notation ([XX/XXXX]) or 3-digit notation ([XX/X/XXX]). The **APP**MODULE ***always*** converts the group addresses into 3-digit display, no matter in which way they were entered.

7 CONFIGURATION

7.1 SAVING THE CONFIGURATION

As soon as you have applied changes, such as on the name and the IP address of the **APP**MODULE and want to save them, click on the button "**Save configuration**".

7.2 GENERAL

Click on “Configuration” to make changes to the general settings.

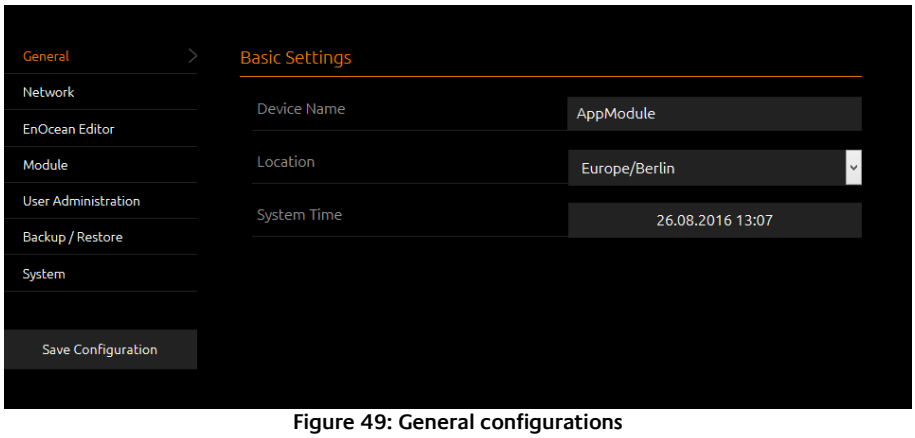

Figure 49: General configurations

Device name: Here, you can assign an individual device name for your **APP**MODULE. This name is then displayed in the “Discovery Tool” and BAB STARTER.

Location: Edit the installation site so that the correct time zone can be set.

System time: The current system time of the device is shown. Clicking the button synchronises the system time of the device with that of the local PC. To synchronise the system time automatically, please use the NTP service. See “*Network*”.

Note: The system time must be correct for the software to run properly. Please make sure that the system time is always correct. If synchronisation with NTP is not possible, correct the system time manually.

7.3 NETWORK

DHCP: If DHCP is active, the device automatically obtains the network settings. A DHCP server must be available in the local network.

IP address / network mask / gateway: If DHCP is not active, the network settings must be carried out statically. In case of doubt, contact your network administrator as to which settings are to be carried out. Please note that an IP address may never be assigned twice!

DNS server: DNS is the abbreviation for Domain Name System. The DNS server converts Internet addresses, for example "www.bab-tec.de" into the IP address "85.214.89.170" and vice versa. Without a valid DNS entry, NTP-, weather- and UPnP-service do not work.

NTP server: NTP is a free service for synchronising the system time of Internet-compatible devices. If time synchronisation is not possible, please correct the system time manually. See "*General*".
NTP server list: e.g. http://www.pool.ntp.org/zone/europe

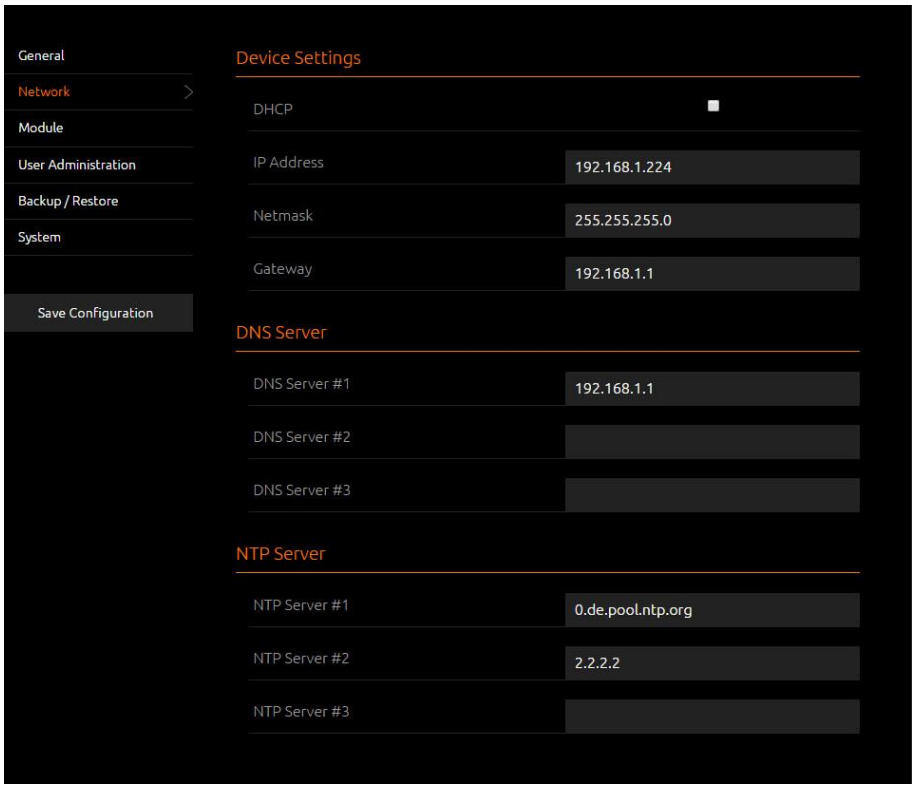

Figure 50: APP MODULE – Network settings

7.4 MODULE

The “Module” configuration menu is used for configuring the KNX parameters. The parameters are relevant for all **APP**MODULE versions, Extension (10490), KNX/TP (10495) and EnOcean (13501). With Extension (10490) and EnOcean (10495), the configuration regulates KNXnet/IP communication. For more information, please see “*Module (KNX/TP configuration)*”.

7.5 ENOCEAN EDITOR

Displayed with the EnOcean **APP**MODULE device module (13501). More information on configuration is available in “*APP MODULE EnOcean*”.

7.6 USER ADMINISTRATION

The user data required to access the **APP**MODULE Web interface is managed here. This user data is also requested when you access the EnOcean Editor from BAB STARTER. To change or add users, click “User administration” in the “Configuration” menu item.

Note: Make sure that you always assign secure passwords and follow standard password guidelines.

DISABLE PASSWORD RECOVERY

If this option is selected, the password cannot be reset and the device must be sent in if you lose the password.

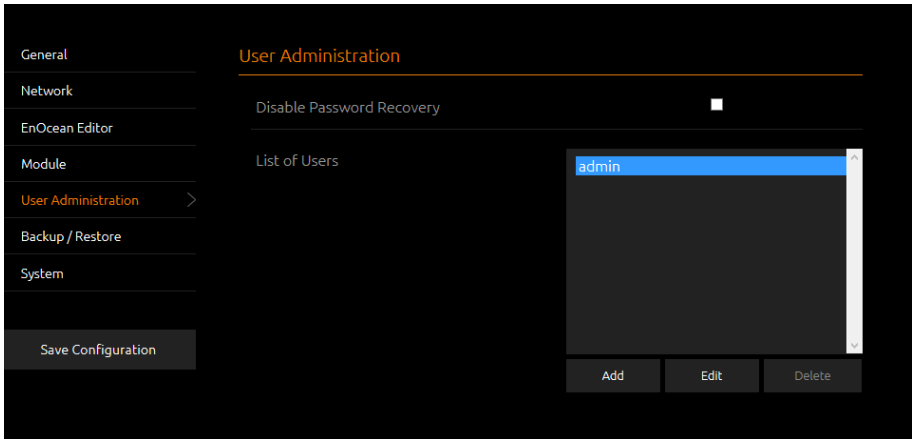

Figure 51: User administration

7.7 BACKUP THE SETTINGS

The configuration data of the **APP**MODULE should be backed up at regular intervals in order to ensure that the current configuration status can be restored at any time.

Note: Please note that apps and app instances must be saved separately. This is particularly important before a firmware update.

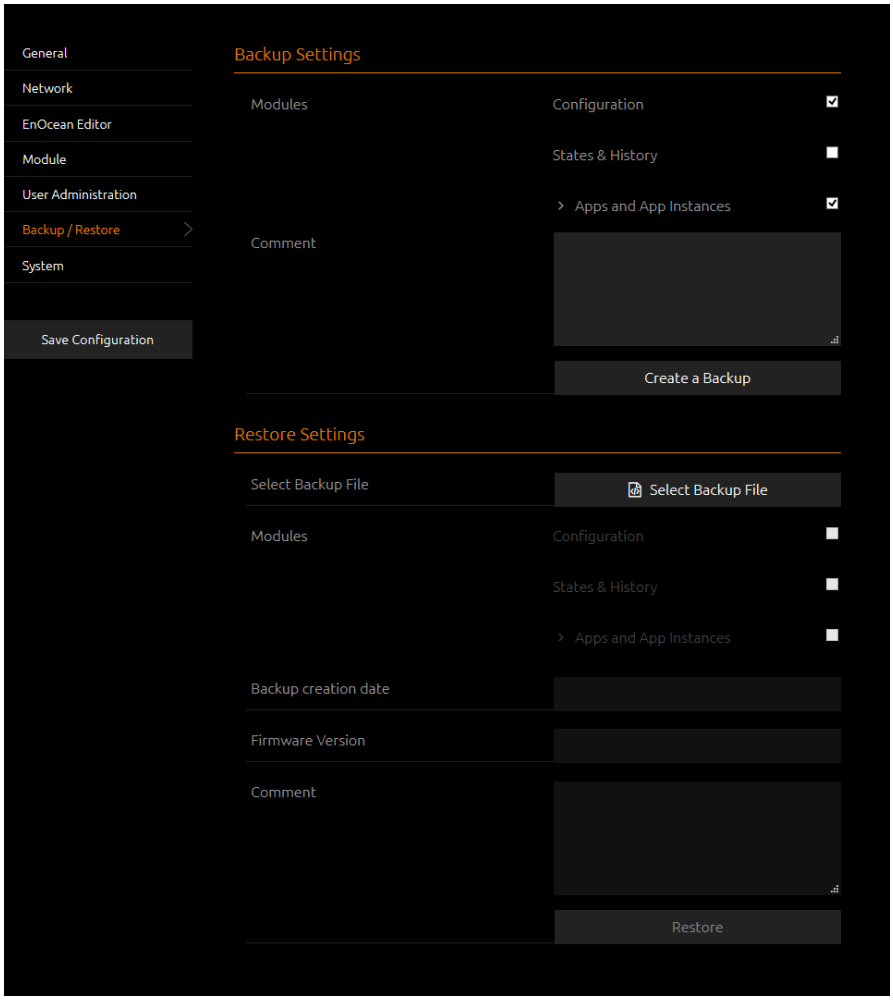

Figure 52: Backup / Restore

CREATING A BACKUP

Select the checkboxes under "Modules" to set which configuration data is to be backed up.

- *Configuration:* All configuration data except for app configuration data.

Note: The network settings are not backed up; these are separate from the backup data.

- *Statuses & logging:* The address status table and logging table are backed up. This is important, as it ensures that the status information can also be restored. Otherwise, status information will be established on the basis of the current telegram communication.

- *Apps and app Instances:* Backs up all app-related data. Individual apps and instances can be selected for backup from the drop-down menu.

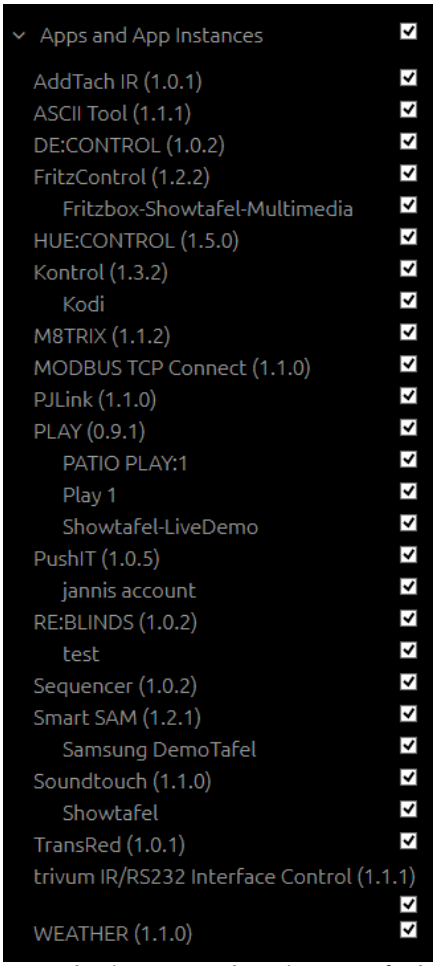

Figure 53: Selecting apps and app instances for backup

Comments regarding the backup can be added in the “Comments” field.

- Click on “Create backup” to launch the backup process.
- The backup file is generated by the system and provided automatically for download using the browser download dialogue.

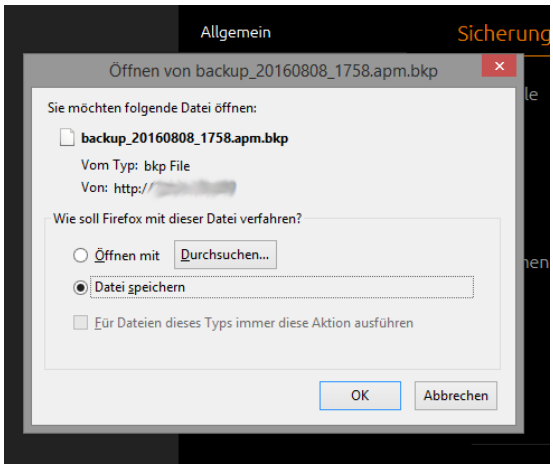

Figure 54: Downloading backup

RESTORING A BACKUP

- Select an **APP**MODULE backup file using the "Select backup file" button. The files have the extensions "*.apm.bkp".
- Information for the selected file is displayed in the "Backup created on", "Firmware version" and "Comments" fields.
- The "Modules" field shows which modules are available in the selected backup file. You can also use the checkboxes to select which modules are to be restored.
- *Configuration:* All configuration data except for the app configuration data.

Note: The network settings are not part of the backup file.

- *Statuses & logging:* The address status table and logging table are restored. This is important, as it ensures you can access the status information in the apps after restore.
- *Apps and app instances:* Restores the app-related data. Individual apps and instances can be selected for restore from the drop-down menu (see *Figure 53: Selecting apps and app instances for backup*).

7.8 SYSTEM / FIRMWARE UPDATE

SERVICE

Here, you can restart the control software for the apps and the apps (“Restart software”), or the entire device (“Restart device”).

FIRMWARE UPDATE

Each **APP**MODULE can be updated. The firmware update is free of charge. The current firmware files can be found on the BAB homepage. Proceed as follows to update the device:

- Download the current firmware image from the download area www.bab-tec.de.
- Unpack the file to any folder.

Note: Generate a new backup including all apps and app instances before you launch the update (see “*Backup the settings*”). The update process restores the factory settings.

- Open “Configuration” – “System”.

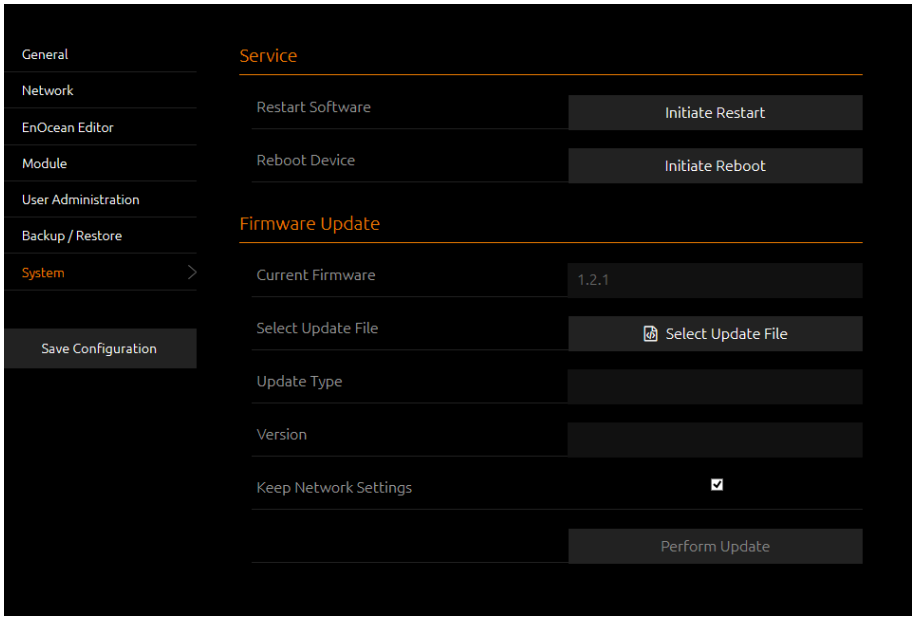

Figure 55: Configuration – System

- Select the firmware image file (*.bin extension) using the “Select update file” dialogue. Update type and version are displayed.
- Decide whether you want to retain the network settings – “Keep network settings”.

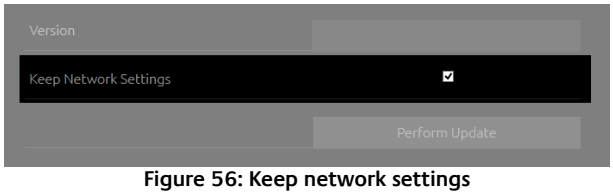

Figure 56: Keep network settings

Note: If the “Keep network settings” checkbox is not selected, the APPMODULE can be accessed at the default IP address after the update.
(For factory settings, see “*Initial Operation*”)

- Launch the update by clicking on “Perform Update”.

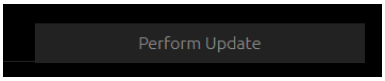

Figure 57: Perform update

- Wait until the update is complete. The Web interface is updated automatically once the process has been successfully completed.

- The update restores the device factory settings (except for the network settings; see above). Individual settings are only loaded again when you restore a backup (see "*Backup the settings*").

8 INFORMATION

Important information on the **APP**MODULE can be found here. Please have this information ready if support is required.

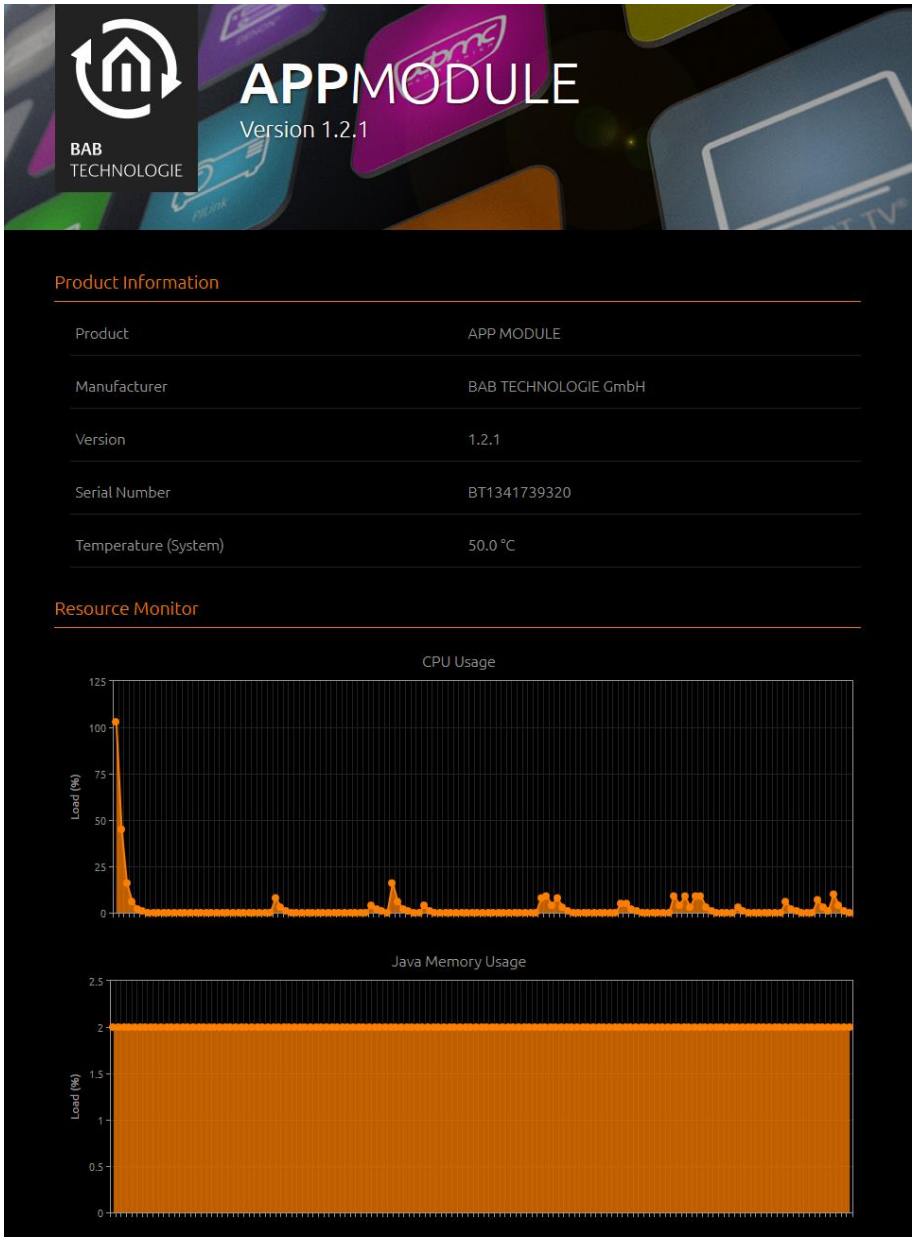

Figure 58: System Information

9 JAVA SETTINGS / PREPARATIONS ON THE CLIENT PC

PC requirements
In order to be able to use the **APP**MODULE EnOcean Editor without BAB STARTER directly from the Browser, you need Java and a browser. Thus, the editor is independent of the operating system.

Java and browser versions
We recommend using a current version of Google Chrome, Apple Safari or Mozilla Firefox as a browser. Please note that a current Java version has been installed and that the Java browser plug-in is up-to-date. If Java has not been installed yet, you will find a current version at www.java.com. Please check the following settings of your computer before starting any work in the **APP**MODULE EnOcean Editor.

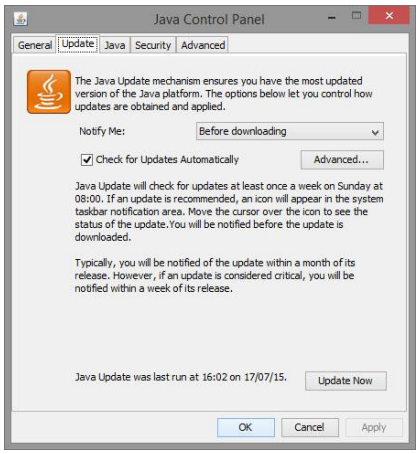

Figure 59: Updating Java

Deleting and deactivating temporary files
Please close all browser windows (also download windows etc.) and switch to the Java Control Panel via "Start" > "System Control" > "Java". On the first tab, "General", there are the "Settings" of the "Temporary Internet Files". Please remove the tick at "Leave Temporary Files on Computer" and delete all files using the "Delete files "button.

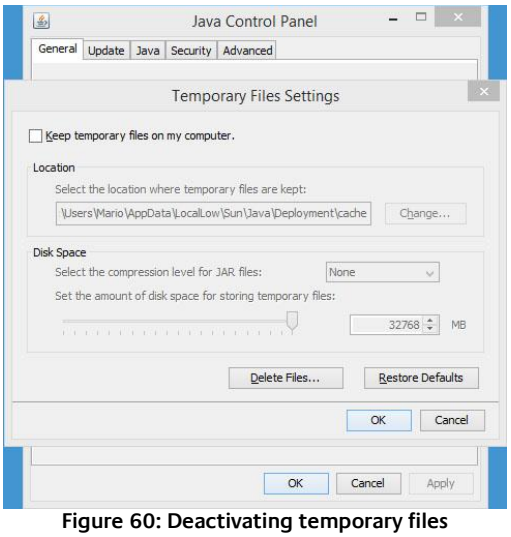

Figure 60: Deactivating temporary files

Expanding main memory for Java / deactivating old Java versions
Switch from the "General" tab to the "Java" tab. Please open the settings for the Java Runtime Environment via "Displays". The window shows you all Java versions installed on the computer; if several versions are installed, please de-install all versions except the current version. Double click into the "Java Runtime Parameters" field and enter "-Xmx256M"(pay attention to the minus sign). Then press "Enter" and leave the window using "OK".
In the "Java Control Panel" window below, it is important that you click "Apply" before closing the window with "OK".

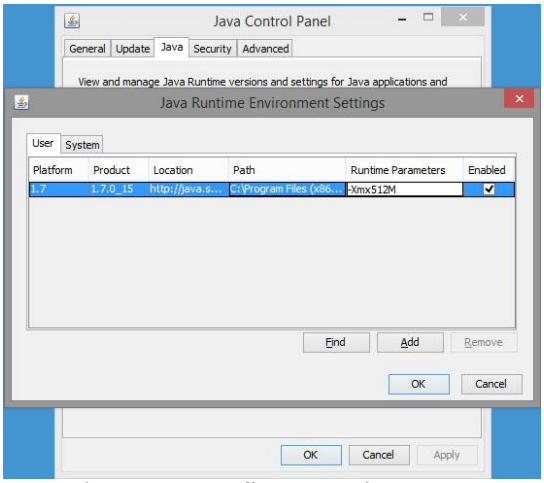

Figure 61: Expanding Java main memory

Afterwards, please also empty the cache data of your browser. Instructions on how to do this can be found on the Internet or in the help file of the browser. After all steps have been carried out and completed, the browser must be restarted.