BAB TECHNOLOGIE GmbH

APPMODULE Documentation

Version 1.7.1
Type: IP, KNX, EnOcean
Item no.: 10491, 10495, 13501

Manual version IV
As of 02/2022
Date: 16. February 2022

EN

BAB TECHNOLOGIE GmbH

Hörder Burgstr. 18
D-44139 Dortmund

info@bab-tec.de

Tel.: +49 (0) 231 – 476 425 - 30
Fax: +49 (0) 231 – 476 425 - 59
www.bab-tec.de

TABLE OF CONTENTS

List of Figures

1 APPMODULE

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.

BAB TECHNOLOGIE GmbH

Figure 1: APPMODULE KNX

Product name:	**APP**MODULE
Intended use:	Module to run applications
Design:	Modular device (REG)
Item number:	10491 (IP), 10495 (KNX), 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 "IP" for EIB**PORT**, with KNX- or with EnOcean interface.

1.2 APPMODULE 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.
In addition to the download of the purchased applications, there is the option of integration into the terminal configurator including the purchase of a Smart Home App.

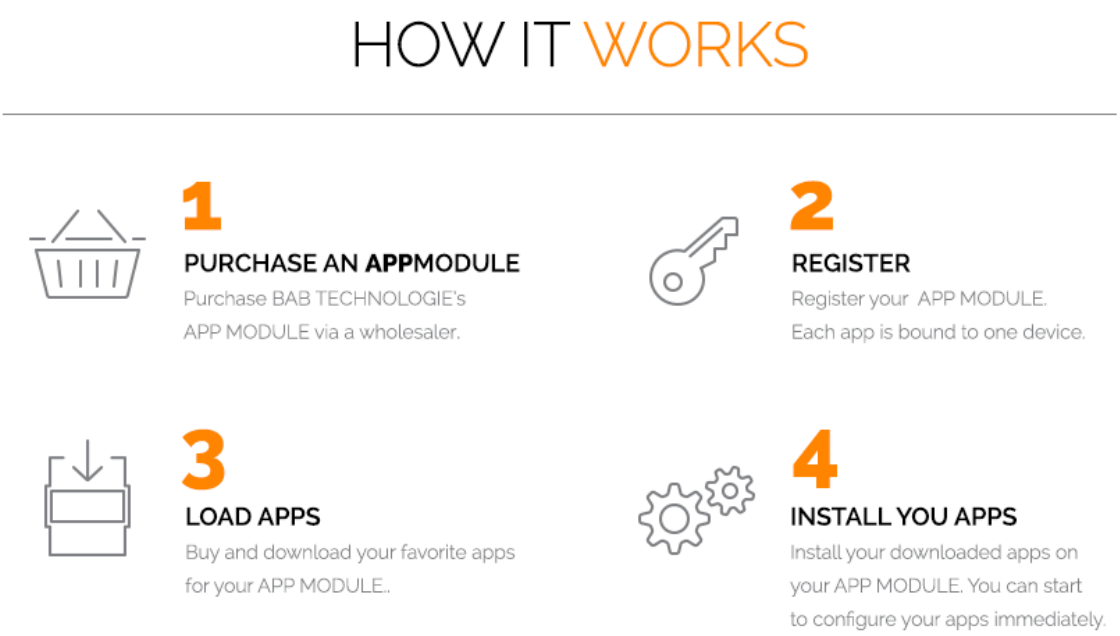


Figure 2: APPMODULE – How it works

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

1.3 TECHNICAL DATA

Article No.: 10491 (IP) | 10495 (KNX) | 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
- KNXconnection
- 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 IP, KNX 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"

SERIAL NUMBER / REGISTRATION KEY

The Serial Number (SN) and Registration Key are required to register the **APP**MODULE. You will find both as stickers on the packaging, in the quick start guide and as well on the backside of your device.

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 APPMODULE, 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 (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: APPMODULE connection diagram

	APPMODULE features
(1)	KNX 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. Mozilla Firefox, Google Chrome, Microsoft Edge,, Safari etc.)
  Do not use Internet Explorer
- 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.

CALLING UP THE APPMODULE 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*")

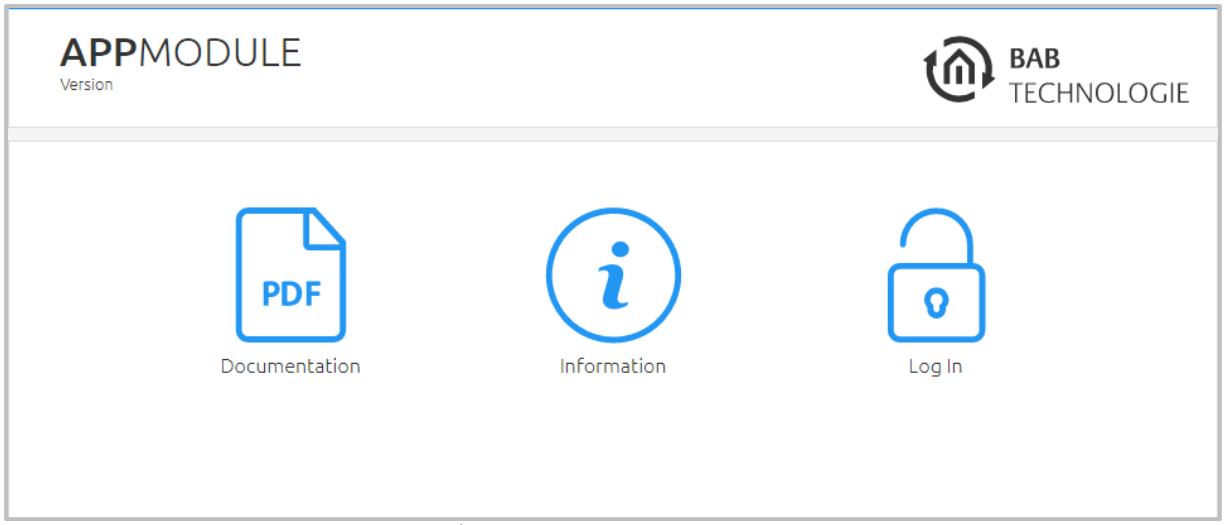


Figure 4: APPMODULE start page

- 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*")

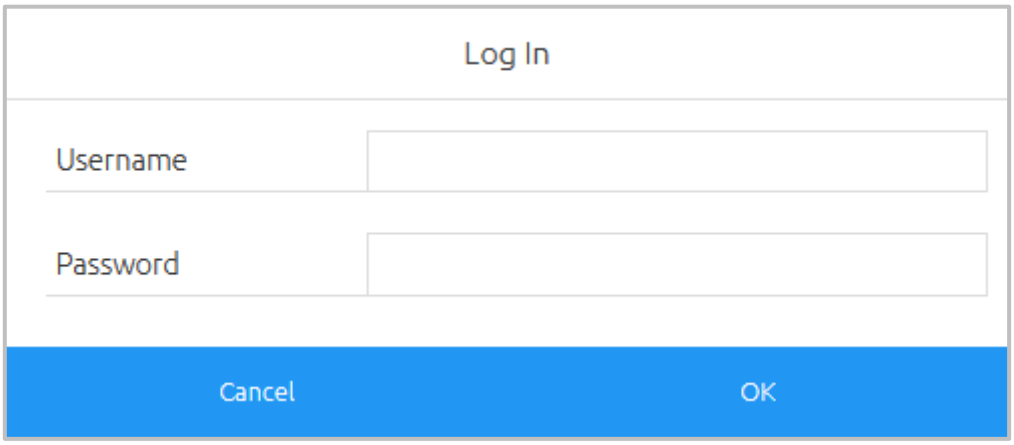


Figure 5: Logging in to the web interface

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

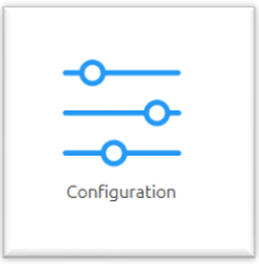


Figure 6: "Configuration" menu item

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

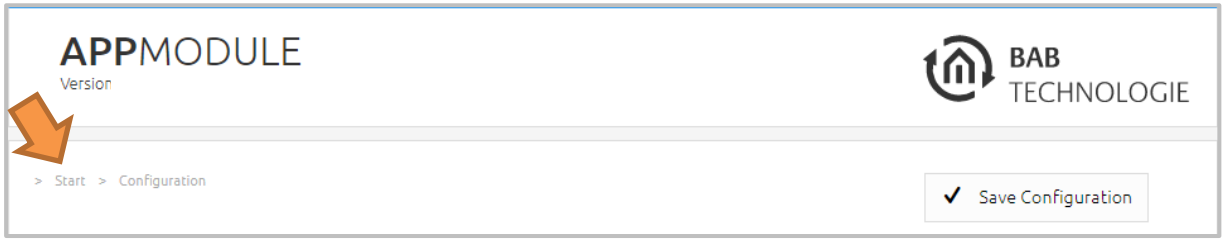


Figure 7: Back to the homepage

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).

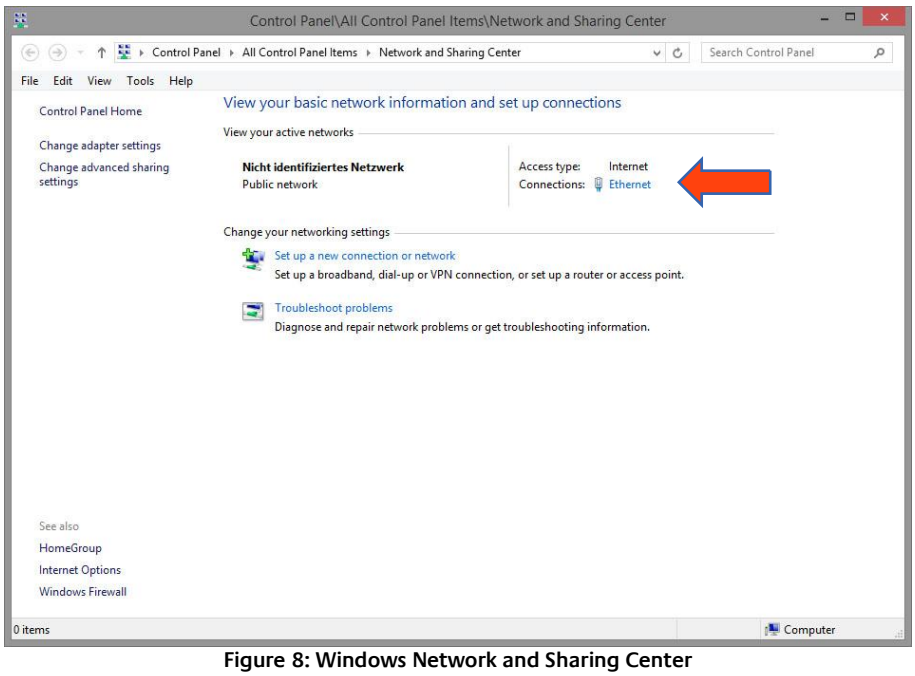


Figure 8: Windows Network and Sharing Center

- Then click "Properties":

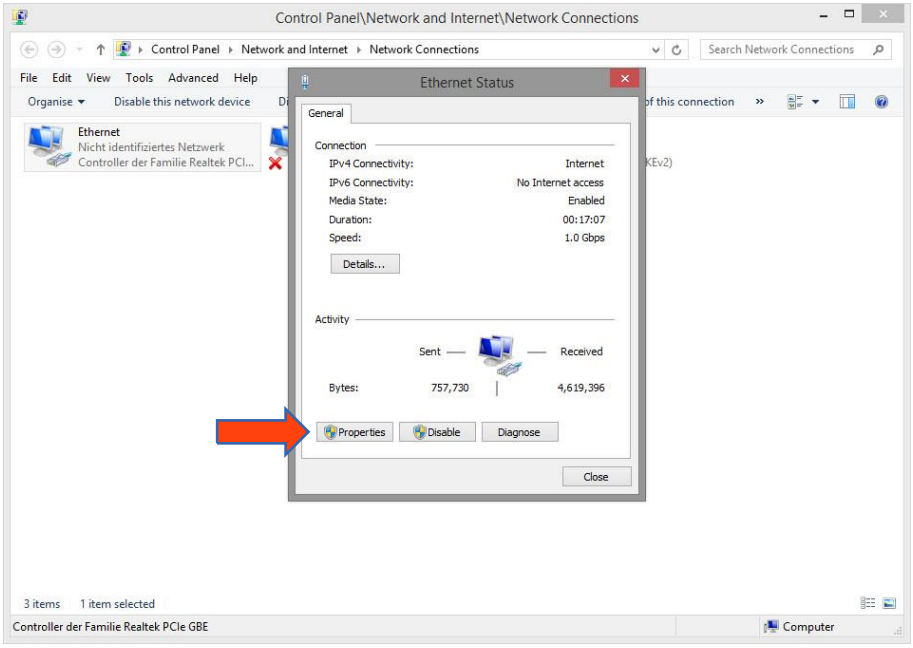


Figure 9: "Ethernet" status

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

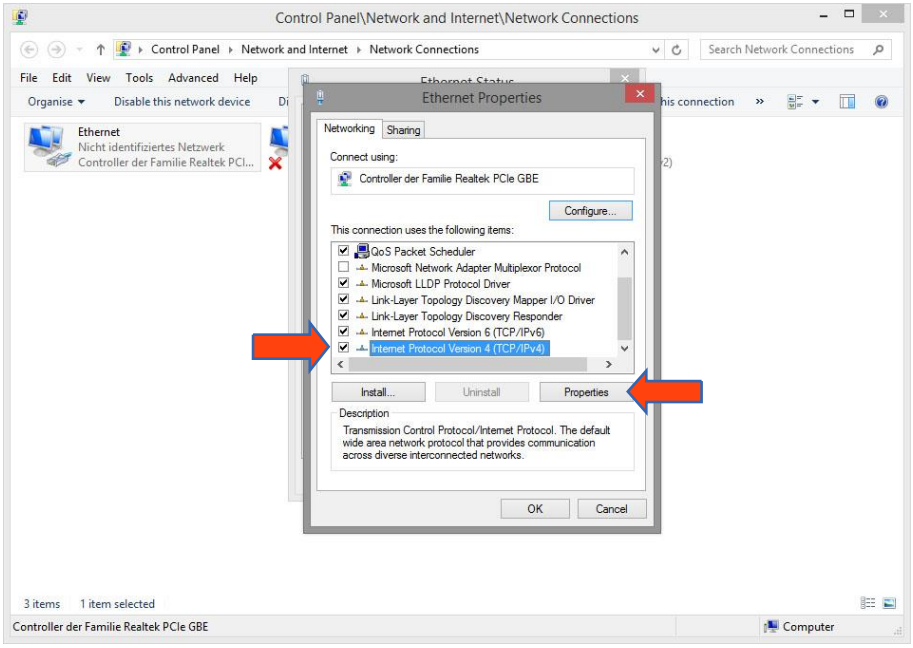


Figure 10: Properties of the LAN connection

- 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:

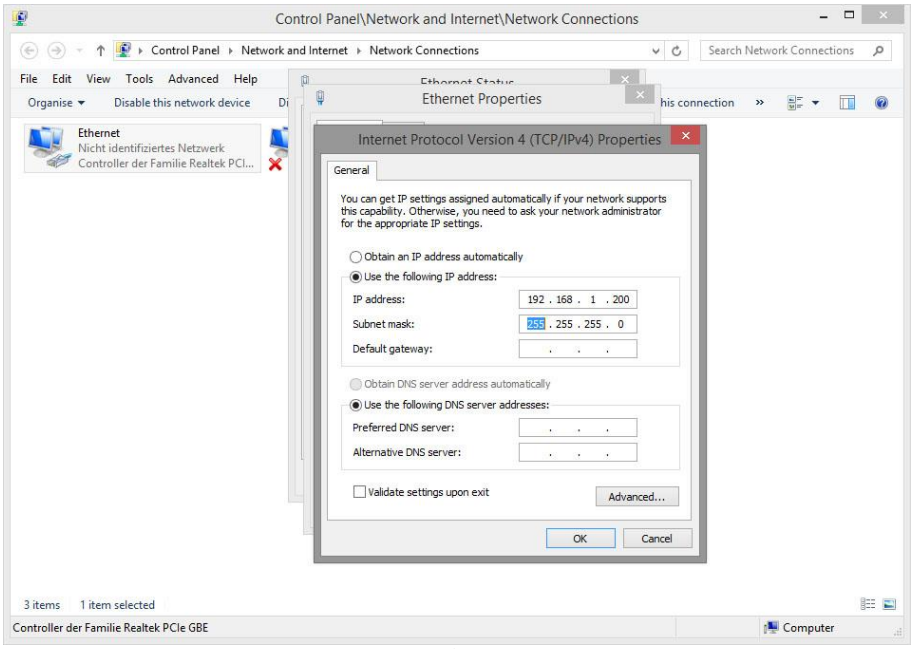


Figure 11: TCP/IPv4 properties

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.

ADJUSTING THE NETWORK SETTINGS OF THE APPMODULE

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).

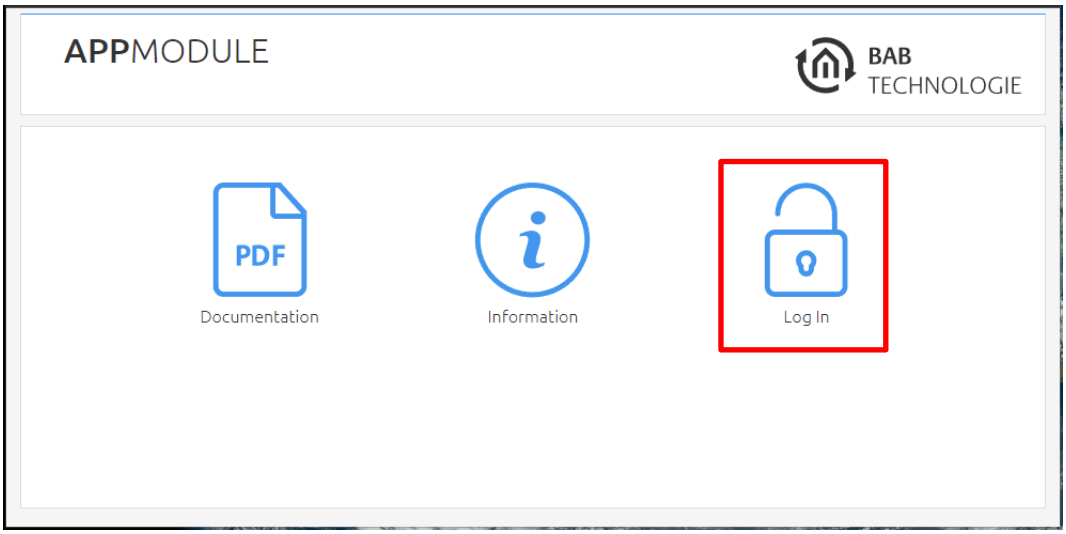


Figure 12: APPMODULE Webinterface

- 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**

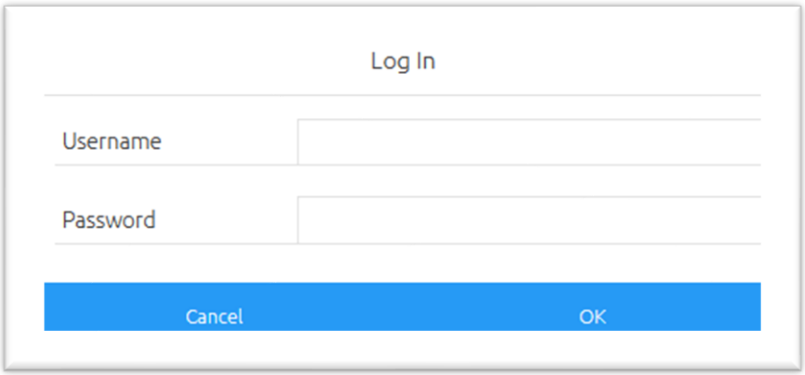


Figure 13: Login dialog

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"

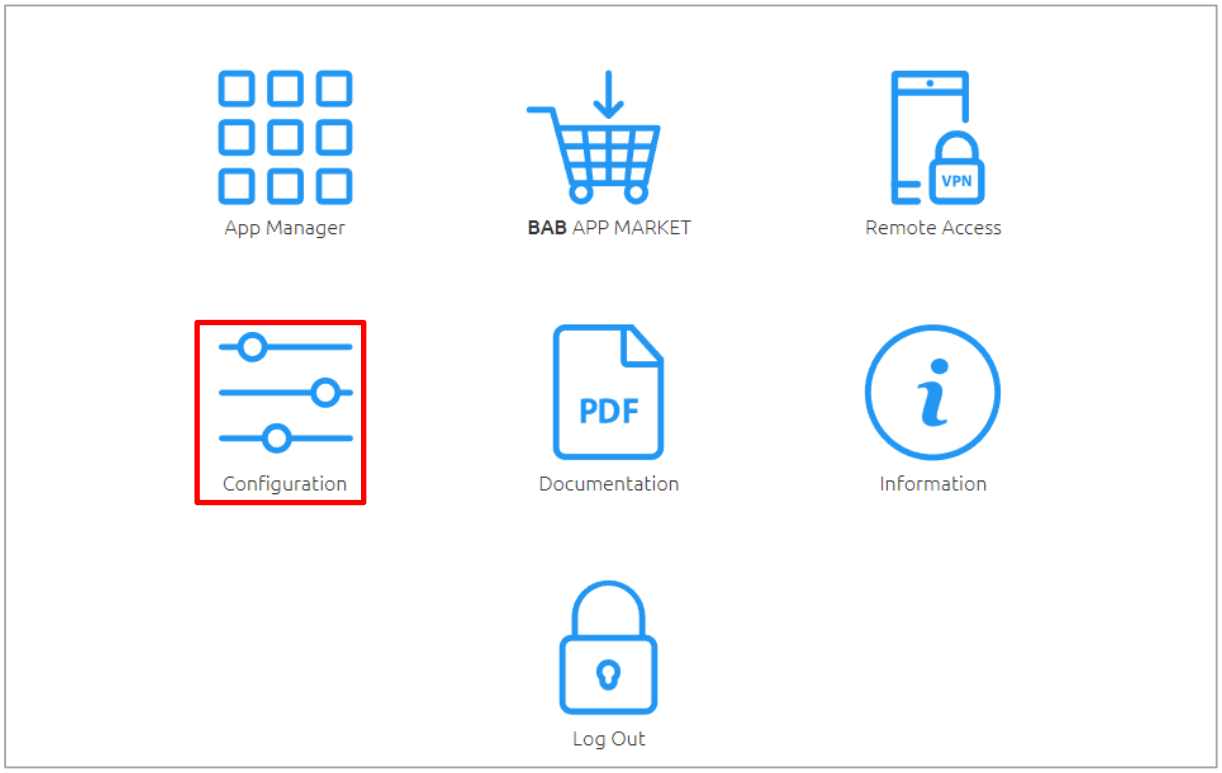


Figure 14: APPMODULE – Main Menu

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

DHCP:	If the DHCP service is enabled, the device will automatically obtain the network settings. The DCHP service assigns the IP address, the network mask and the default gateway to the APPMODULE. Therefore, a DHCP server, in private networks mostly the router, must be available in the local network. Note: If the DHCP service fails, the **APP**MODULE gets that with and is then reachable under the default IP address, network mask and standard gateway.
IP address / subnet mask / gateway:	Translated with www.DeepL.com/Translator 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

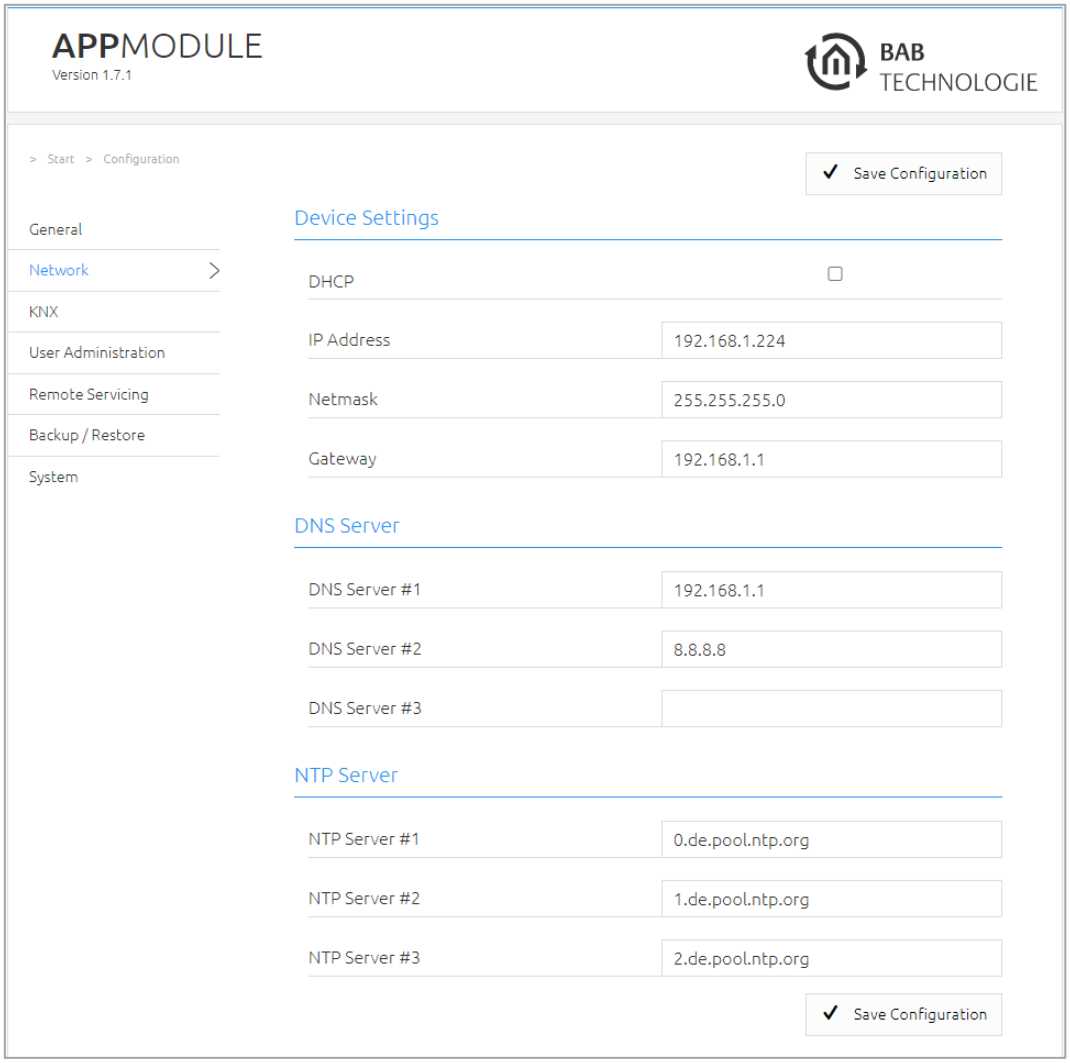


Figure 15: APPMODULE Network configuration

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 "Network" to find out the current IP-address.

3 APPMODULE IP

The IP **APP**MODULE (10491) is an IP for EIB**PORT** available thanks to the facility coupling protocol implemented. A KNXnet/IP server is also implemented.

3.1 CONNECTING THE APPMODULE IP TO EIBPORT

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

Note: For facility coupling between EIB**PORT** 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 APPMODULE

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".

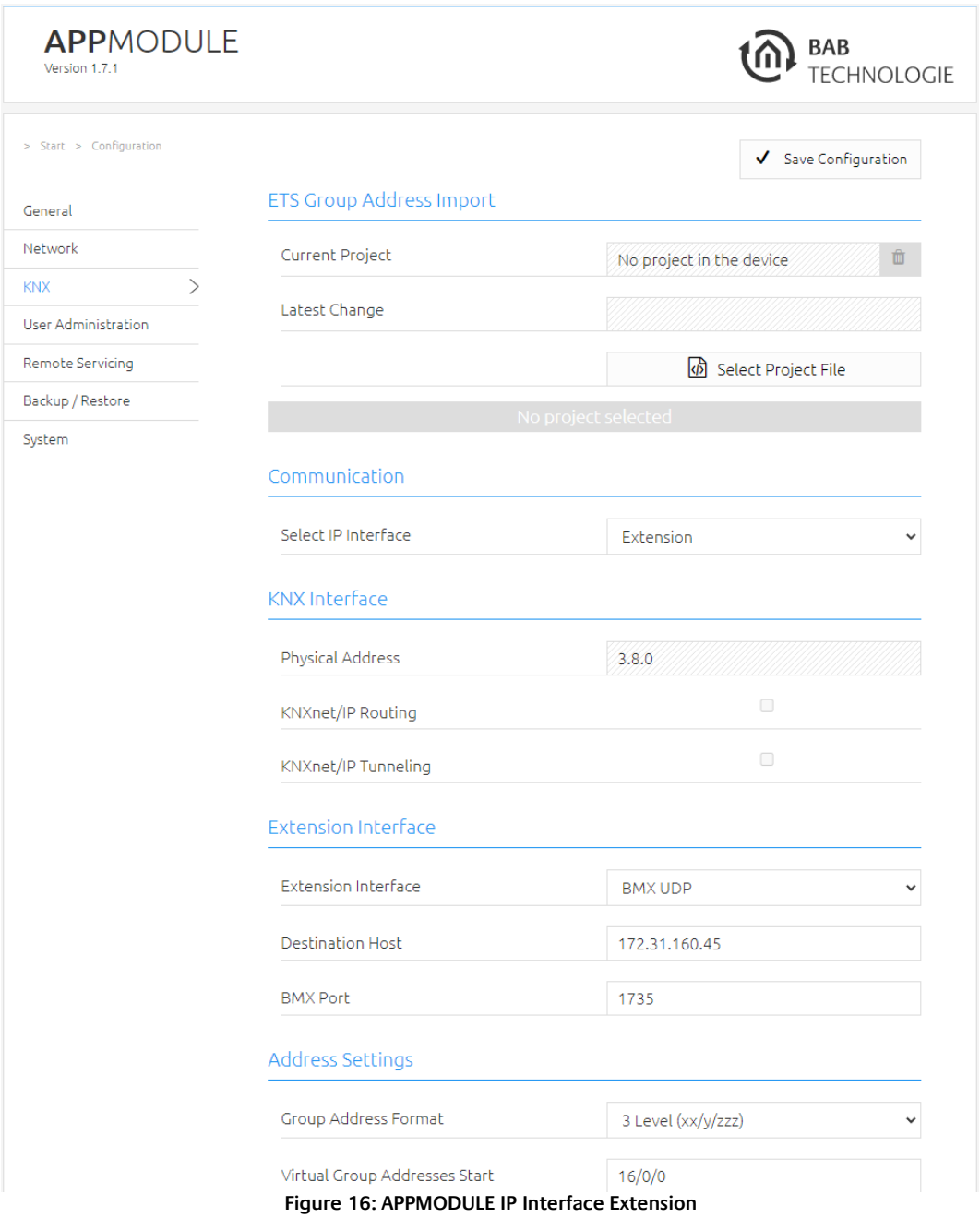


Figure 16: APPMODULE IP Interface Extension

- Select "Extension" under "Select IP 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.

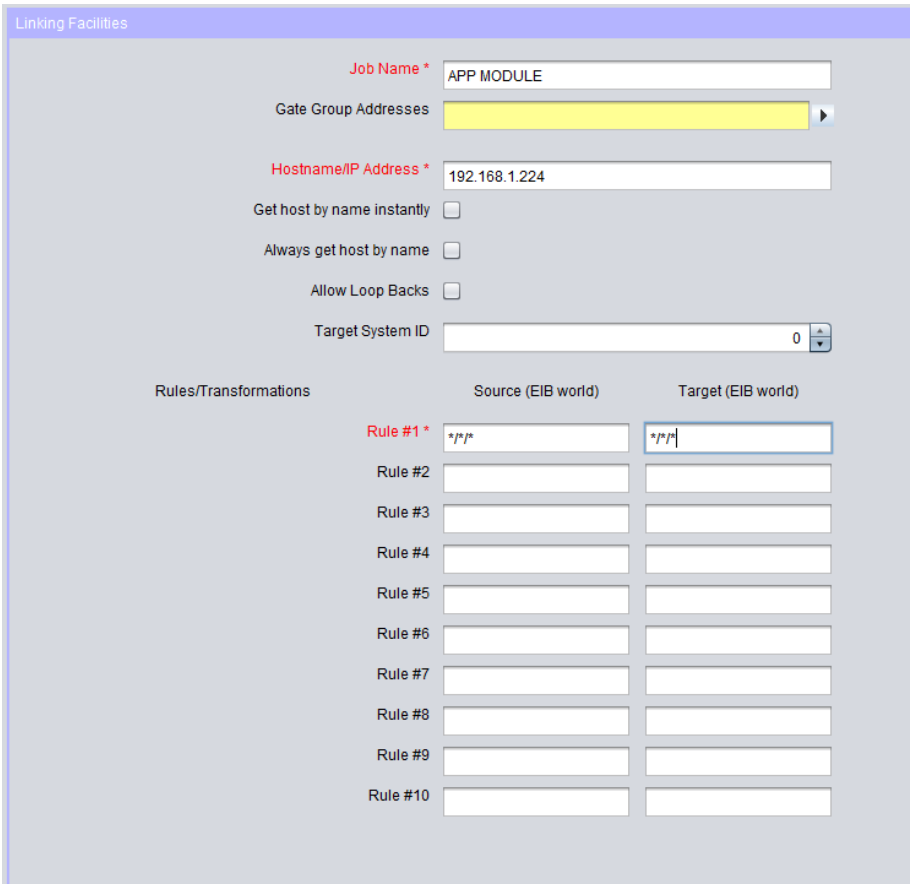


Figure 17: EIBPORT facility coupling job

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 KNX NET/IP IN THE APPMODULE IP

The IP **APP**MODULE contains a complete KNXnet/IP server. KNXnet/IP Routing can be used for a connection to KNX (must be provided by another device with a KNX 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".

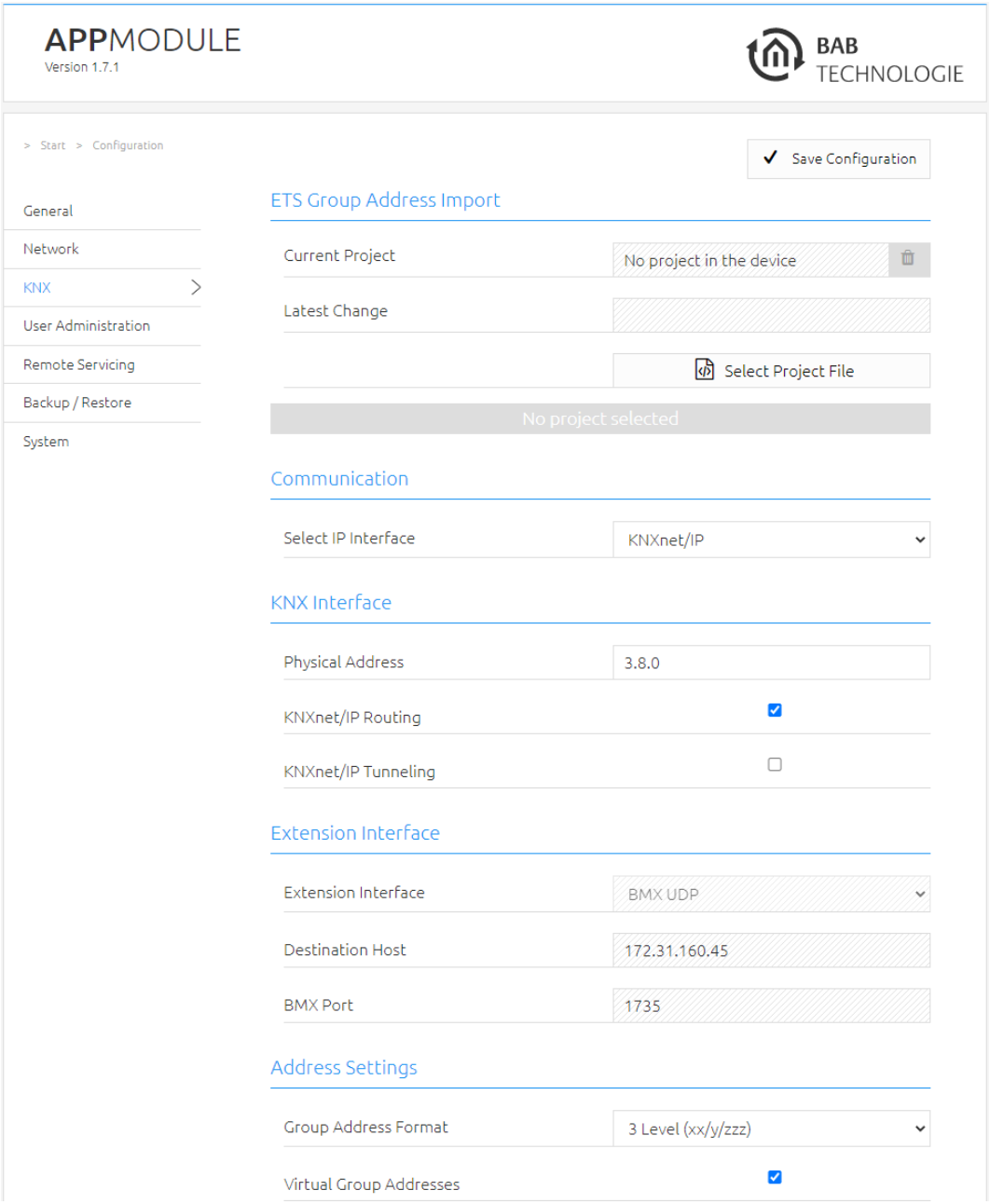


Figure 18: APPMODULE IP Interface KNXnet/IP

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

4 APPMODULE KNX

4.1 APPMODULE KNX COMMISSIONING

There is no ETS application for the **APP**MODULE KNX (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" > "KNX" menu.

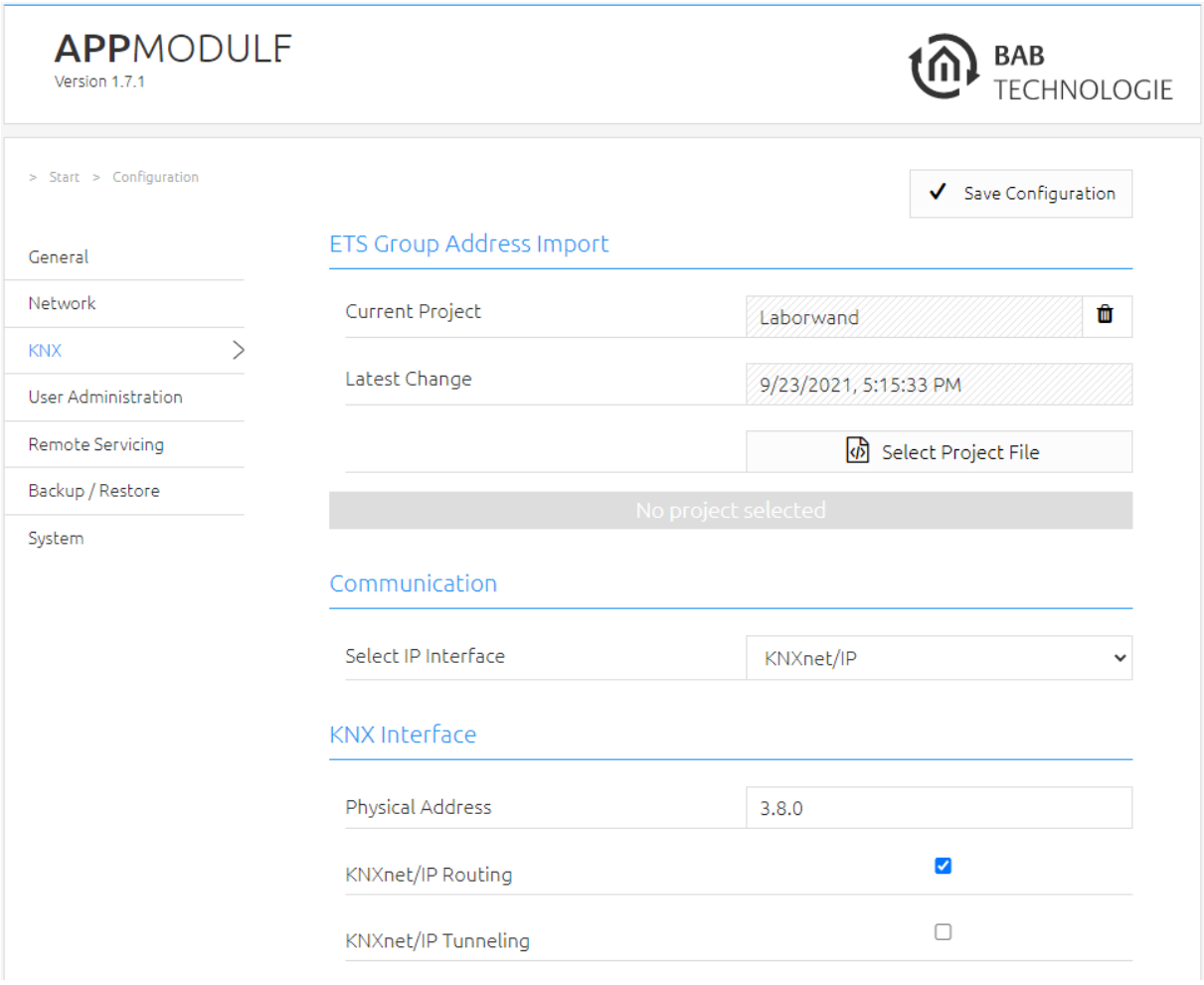


Figure 19: KNX configuration

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

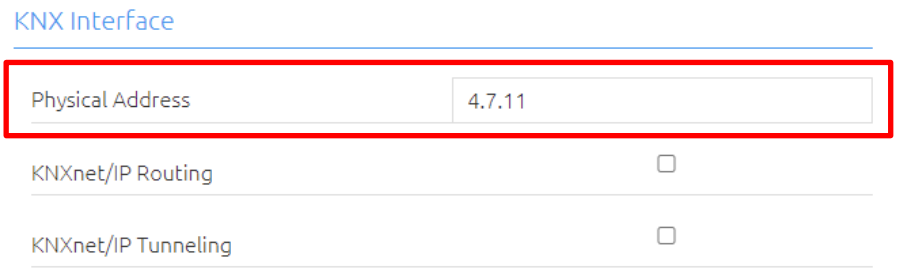


Figure 20: KNX – Physical Address

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

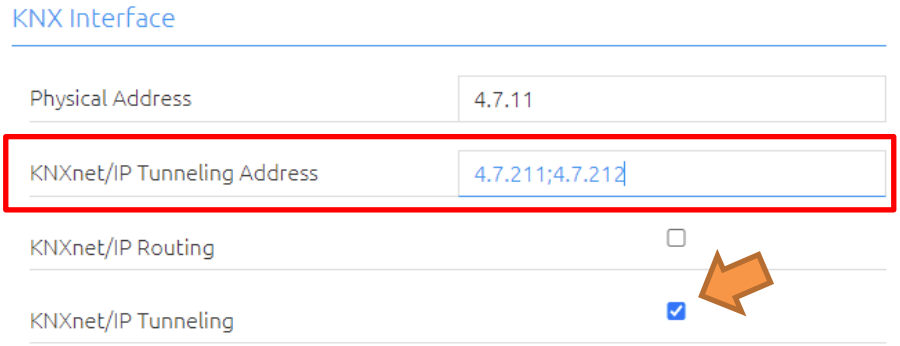


Figure 21: KNX – assigning a KNXnet/IP tunneling address

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.

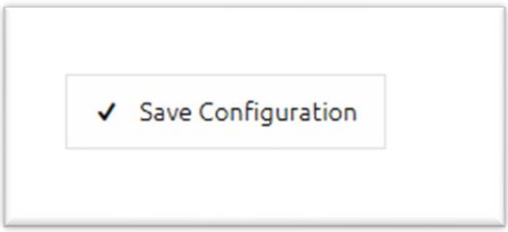


Figure 22: Saving the configuration

4.1.1 KNX CONFIGURATION

The KNX-specific settings of the **APP**MODULE are made in the "KNX" menu. The KNX settings are available both for a **APP**MODULE KNX (10495) and for the **APP**MODULE EnOcean (13501) & **APP**MODULE IP (10491). For the **APP**MODULE EnOcean & **APP**MODULE IP, 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 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.

KNXnet/IP Tunneling Addresses: After activating the KNXnet / IP tunneling, the input field for the tunneling addresses is displayed. This address is used by the internal KNXnet / IP server for a KNXnet / IP tunneling connection established to the device (use of the **APP**MODULE as programming interface). Please note that this address must not be the same as the physical address (see above) and that it is not used by any other device in the line.

Note: These addresses are used to establish a connection with the ETS commissioning software to use the **APP**MODULE as an interface to KNX. Since ETS 5, at least 2 free addresses are required here.

- Click "Save configuration" to apply the settings.

Note: The KNXnet/IP app for EnOcean is available in the APP MARKET for the **APP**MODULE EnOcean (13501).

4.1.2 ADDRESS SETTINGS (VIRTUAL GROUP ADDRESSES)

Setting the limit for the virtual group addresses.

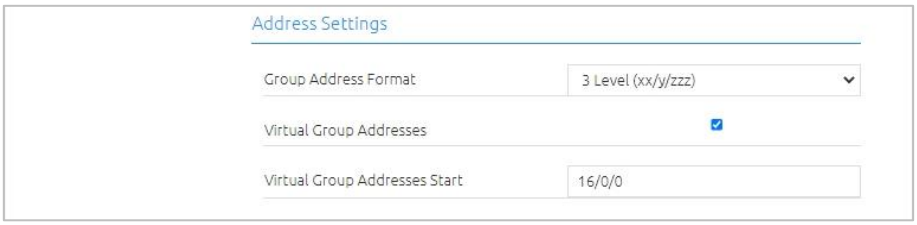


Figure 23 Address setting (virtual group addresses)

The virtual group addresses start by default (factory setting) with the group address 16/0/0 and go up to 31/7/255.

If the "virtual group addresses" checkbox are activated, the range of the virtual group addresses can be set individually if required.
To do this, enter the first KNX group address for the virtual group address range in the "Start of virtual group addresses" field.

This makes sense on the one hand if more KNX group addresses are required which can be sent on the KNX bus - but at the same time not to do without the virtual group address range in order to keep the telegram load on the KNX bus low.
For example, the start of the "virtual group addresses" can be set to 31/0/0. In this configuration, the **APP**MODULE sends all group addresses up to 30/7/255 on the KNX bus and from group address 31/0/0 to 31/7/255 only internally.
If the virtual group addresses are deactivated ("Virtual group addresses" checkbox), the **APP**MODULE sends all group addresses (from 0/0/0 to 31/7/255) to the KNX bus without exception.

Information: Telegrams from the virtual address range are not sent to the KNX bus, but can be used for internal communication in the **APP**MODULE.

5 APPMODULE ENOCEAN

5.1 INITIAL OPERATION OF APPMODULE 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.

ENOCEN KOMPATIBILITÄT

Eltako

Profil	Beschreibung	Produkte
80-02-01	Eltako Dimmen	Eltako FUD14 / FUD61 / FDDT65B
80-03-01	Eltako Beschattung	Eltako FSB14 / FSB61
80-04-01	Eltako Bewegungsmelder + Sensor	Eltako FBH65S
80-07-01	Eltako Tipp-Funk-Taster-Tracker	Eltako TF-TTB

Vier Byte

Profil	Beschreibung
a5-10-05	Temperatur, Sollwert, Anwesenheit
a5-08-01	Bewegungsmelder mit Licht, Temperatur Sensor

Ein Byte

Profil	Beschreibung
d5-00-01	Eingangskontakt

RPS

Profil	Beschreibung
f6-02-01	Rocker Switch
f6-03-01	Taster mit vier Wippen
f6-10-00	Fenstergriff

5.2 CALLING UP THE ENOCEAN EDITOR

A detailed description for the EnOcean Editor can be found in chapter "

Usage of the EnOcean Editor"!

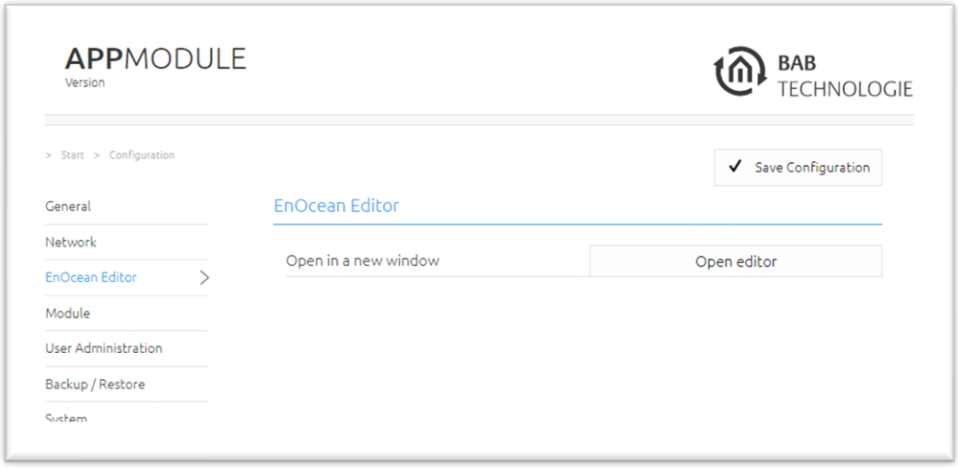


Figure 24: Configuration – EnOcean Editor

1. You call the EnOcean Editor directly in the browser.

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*"!

5.3.1 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.

5.3.2 ENOCEAN CONFIGURATION

The **APP**MODULE 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:

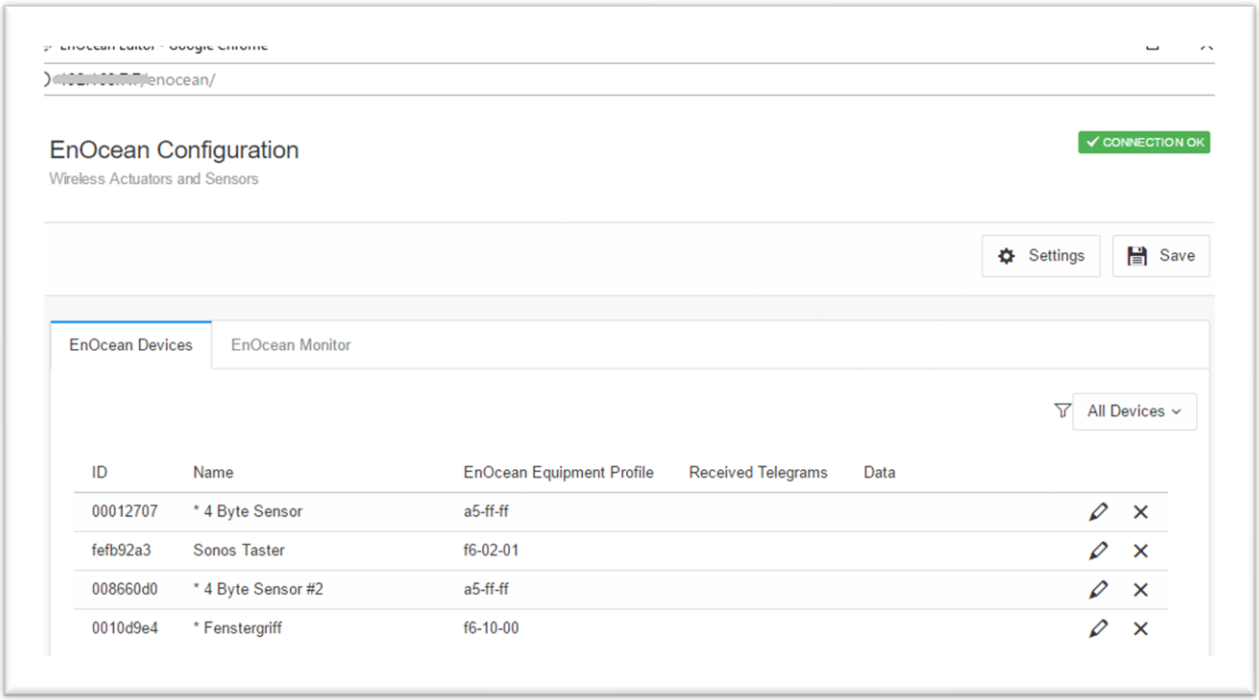


Figure 25: EnOcean Configuration - Devices

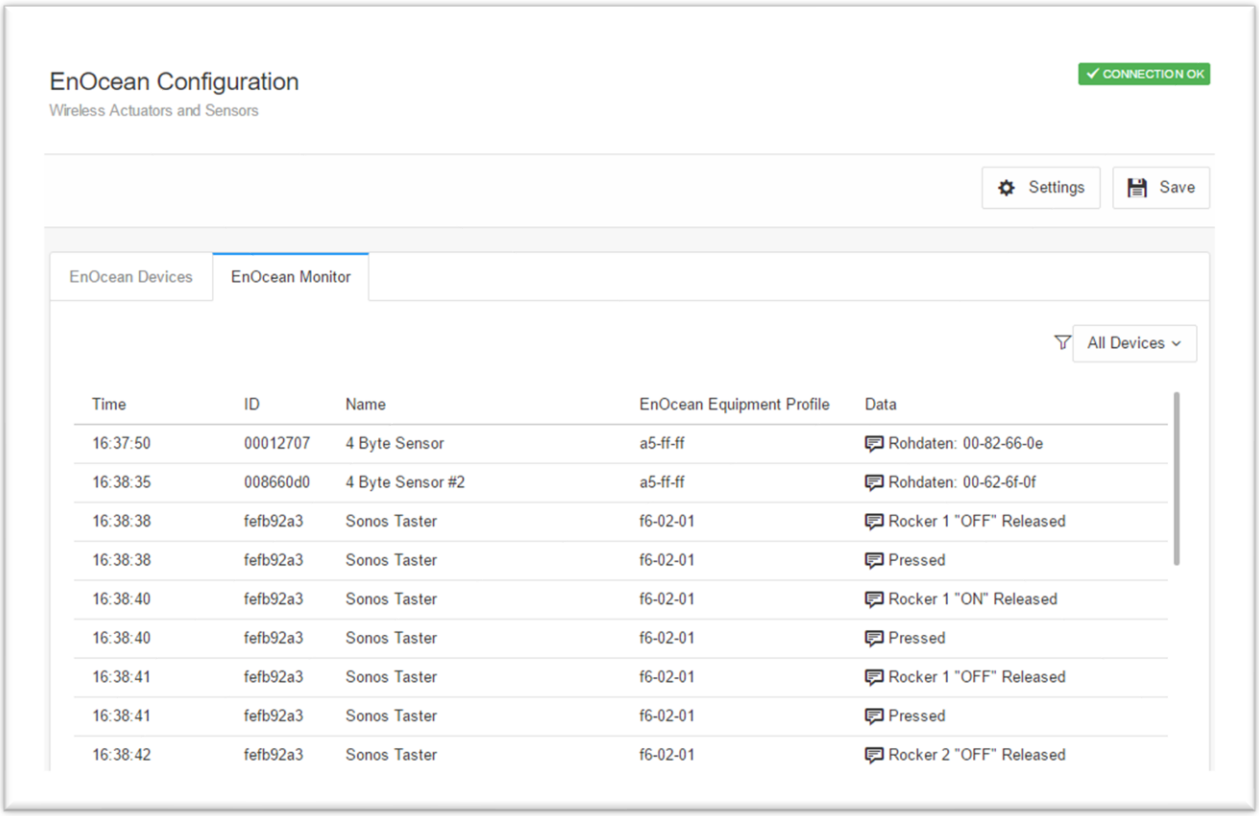


Figure 26: EnOcean Configuration - Monitor

Settings:

- Settings: You can configure the EnOcean module here.
- EnOcean Devices*:* Lists all EnOcean devices sorted by device id (trans. id).
- EnOcean Monitor*:* Lists all received EnOcean telegrams sorted by the time at which they were received.

5.3.3 ENOCEAN SETTINGS

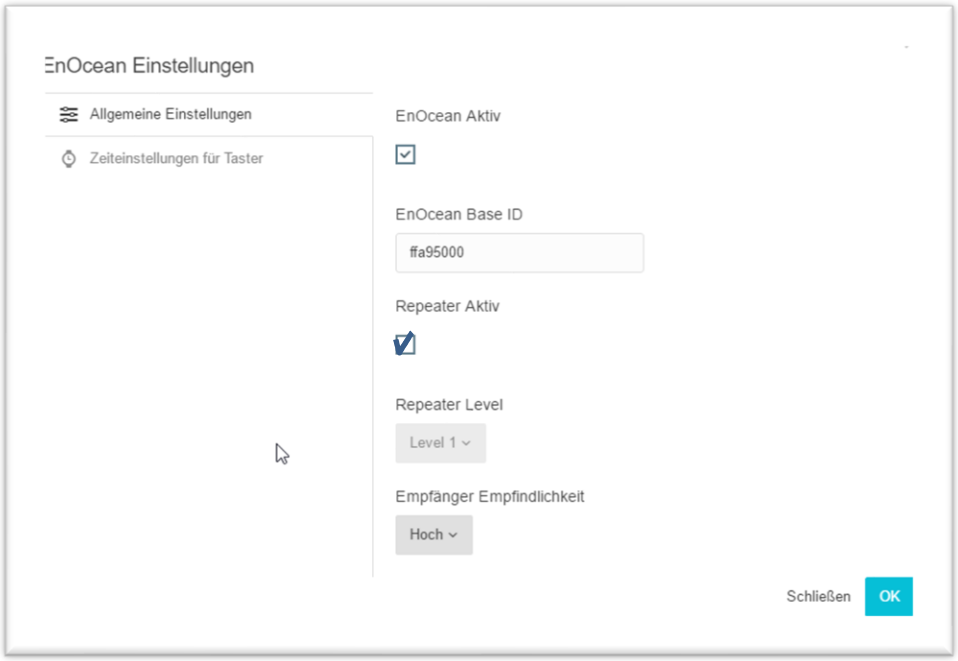


Figure 27: EnOcean Settings

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

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:

- *Check box activates:* Repeater function is turned on.
- *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".

5.3.4 ENOCEAN DEVICE TEACH-IN PROCEDURE

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.

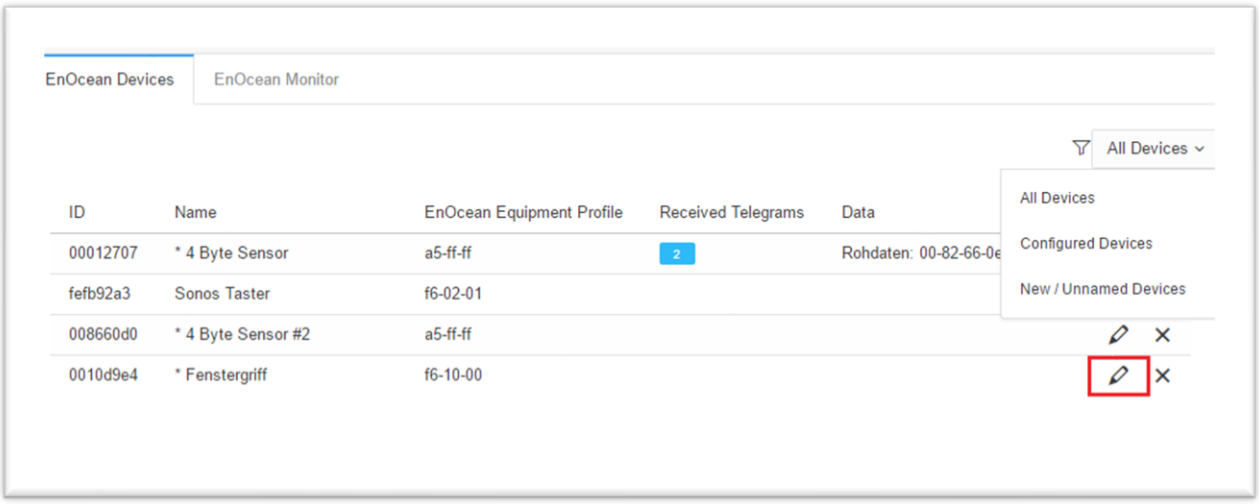


Figure 28: Calling up properties

- *All Devices:* Show all devices
- *Configured Devices:* Show only the devices which have already been configured
- *New / Unnamed Devices:* Show only the new and unnamed devices

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").

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.

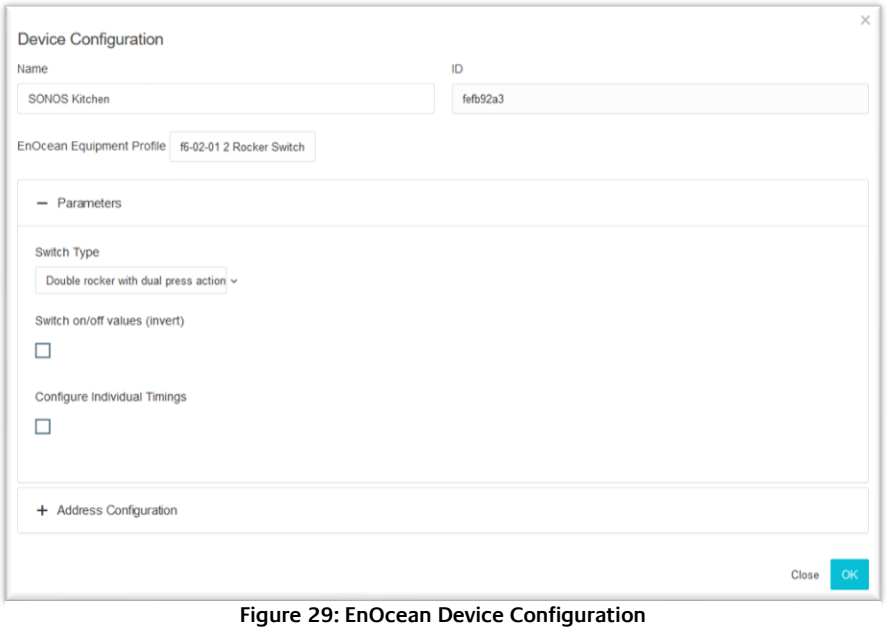


Figure 29: EnOcean Device Configuration

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

- *ID:* This is the unique device address through which the device is identified.
- *EnOcean Equipment 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.

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:

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. Choose your switch type in "Parameters".

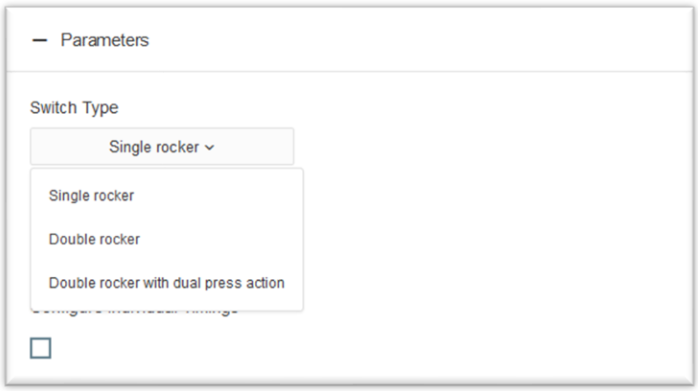
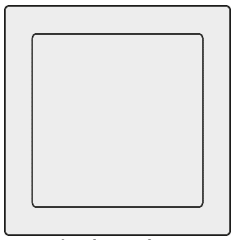
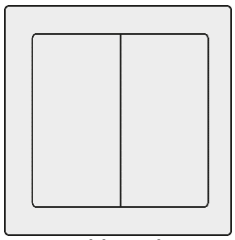


Figure 30: Parameters



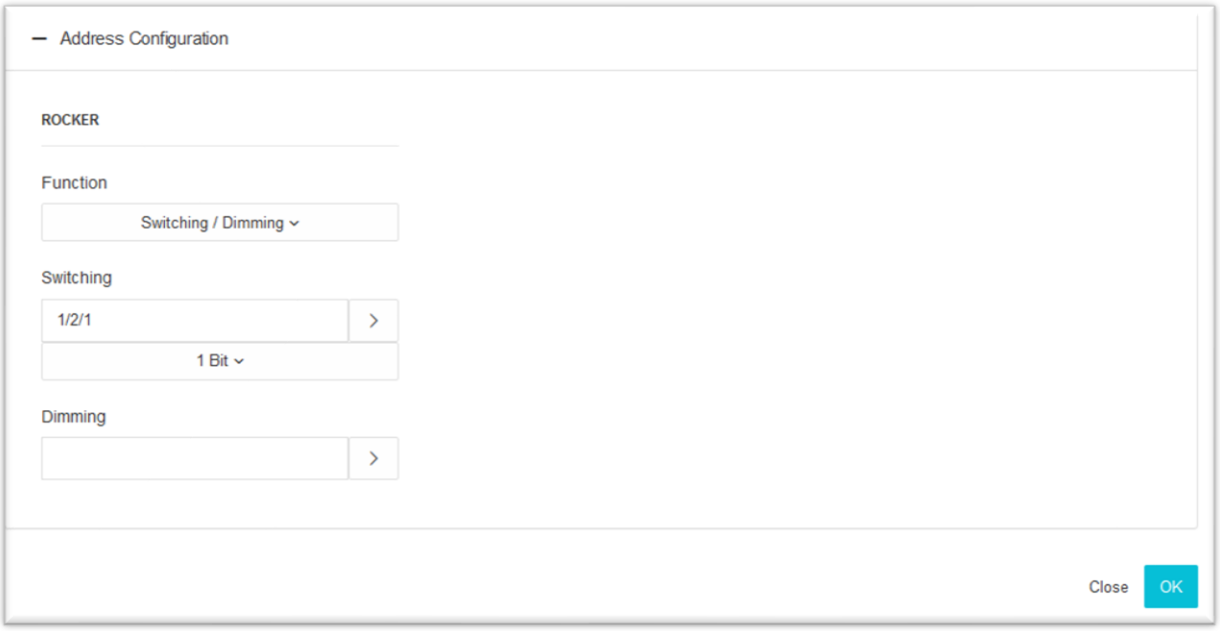
Single rocker



Double rocker

If you choose switch type "Double rocker with dual press action", the APPMODULE will give your two rockers switch a third switch function. This function will be triggered when you press both rockers simultaneously.

7. Next, open the "Address Configuration" configuration panel



8. 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".
9. When you have entered the addresses in the parameters as requested, close the *EnOcean Device Configuration* window.

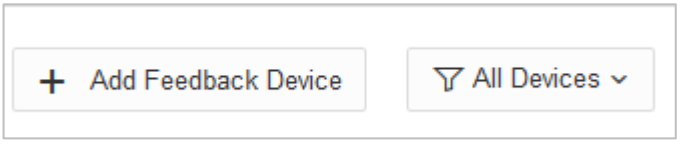
10. Save the changes in the window "*EnOcean Configuration*" via the button "*Save & Close*" or "*Assume*" (the window stays open).

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")

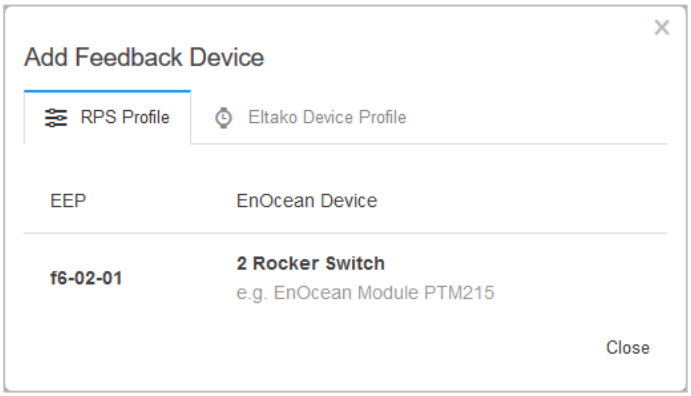
5.3.5 EMULATING ENOCEAN DEVICES

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).

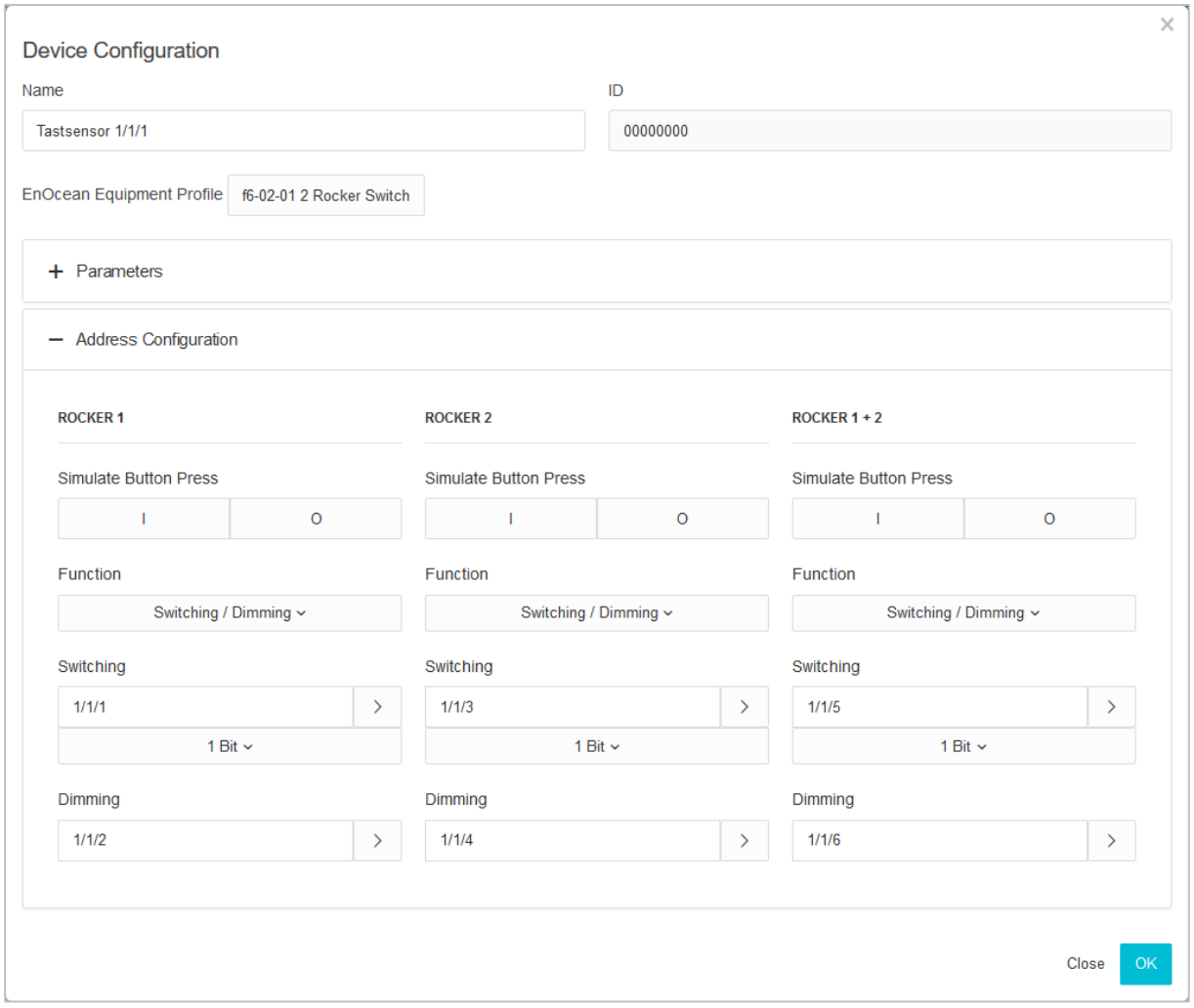
Creating an emulated device
Click on the button “Add feedback device” to create a new emulated EnOcean device. A new window will be opened.



Add feedback device
Depending on which actuator is supposed to be controlled, the matching device profile needs to be determined. The new emulated device will be added to the list of “EnOcean devices”



Defining emulated device
The device assigned in this way is initially provided with a definite device name. Additionally, the following parameters are presented



- *ID:* Is the definite hardware address you have selected before. Can not be modified at this point.
- *EnOcean Equipment Profil (EEP):* Here, the profile the emulated device should use is selected.

For more information regarding parameter and address configuration, please see „*Configuration example for EnOcean* “.

Simulate push the button
Here you can simulate a push button for each rocker, which sends a telegram.

5.3.6 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.

5.3.7 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.

APPMODULE 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:

Configuring Parameters:

- *Invert:* Inverts the telegram content sent on the KNX addresses. Telegram value "1" becomes "0" and vice versa.
- *Individual Timings:* Individual timings determine the length of button presses for switch, move, step.
- *Separate Action:* You can assign further KNX addresses for the separate action "both rockers at the same time". Please note that this is only possible for buttons with two rockers.

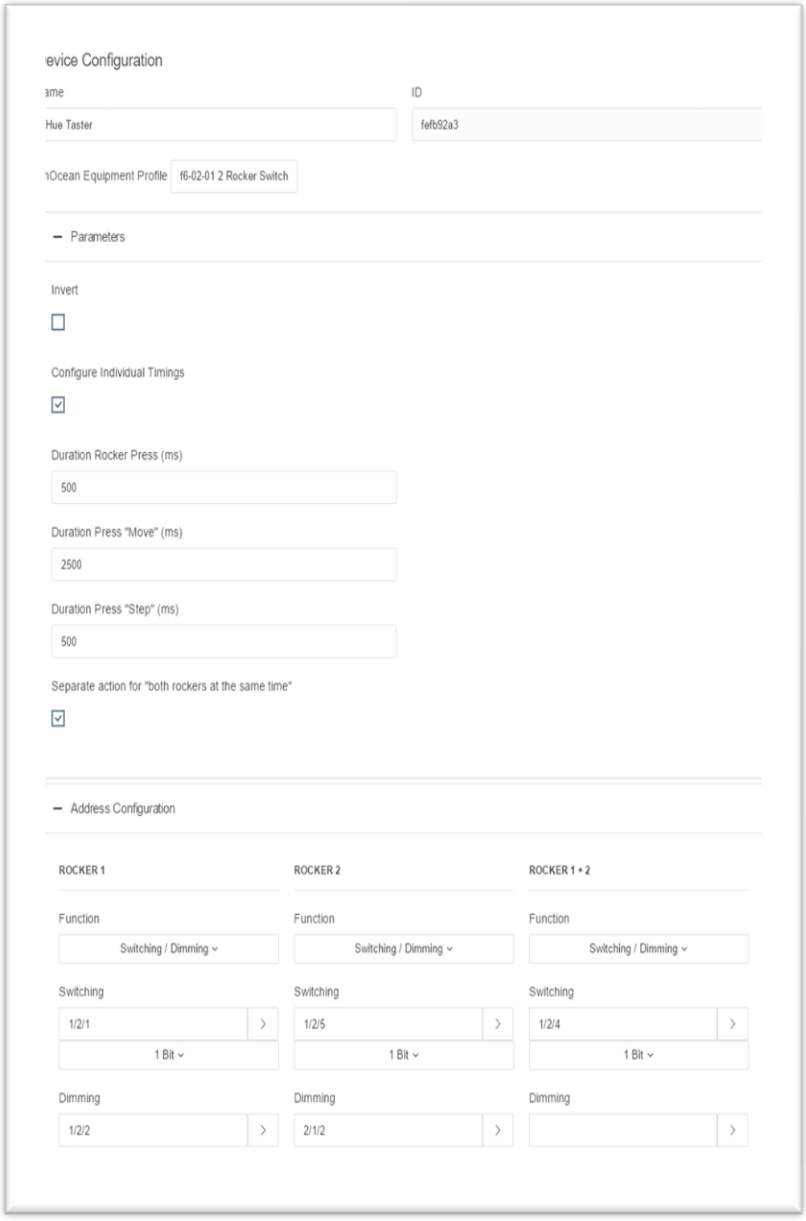


Figure 31: Receiving KNX parameters

Assigning Addresses:

- *Switching / Dimming:* The EnOcean button can be used as switch and dimmer. A long-press will be interpreted as a dimming command. When used as a switch, the button will send a 0 on "Off" and a 1 on "On".
- *Push Button:* Pressing "Off" will send an EIS 1 telegram with value 0. Upon releasing the button, another telegram with value 1 will be sent. Pressing "On" will send an EIS 1 telegram with value 1. Upon releasing the button, another telegram with value 0 will be be sent. You can assign one address for either position (I and O).
- *Blind:* Assign one address each for the commands "Move" and "Step" (EIS 1).

5.4 DELETE ENOCEAN DEVICES

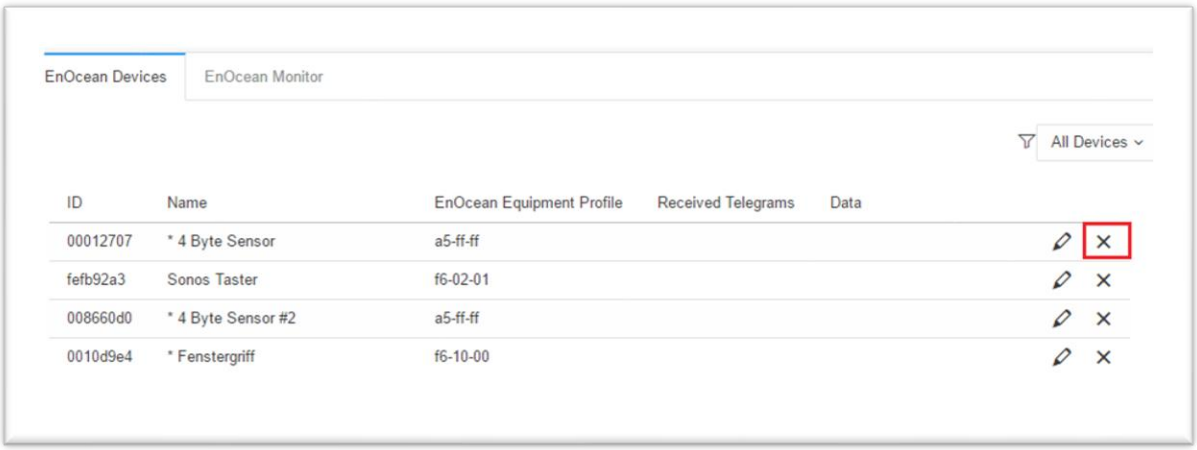


Figure 32: Devices delete

In order to delete an EnOcean device, click on the x symbol. You will be prompted to confirm that you really want to delete it.

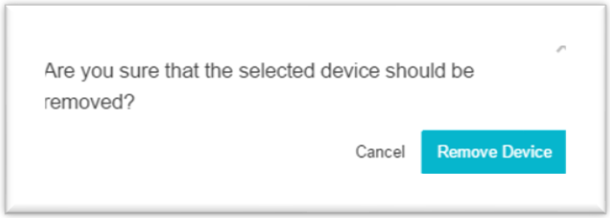


Figure 33: Devices delete confirm

Click on “Delete” to delete it. Afterwards, save the settings. Only then will the device really be deleted. If you do not save the settings after deleting devices, they will only be removed from the list but reappear with their configuration intact once they are rediscovered.

6 ETS PROJECT IMPORT

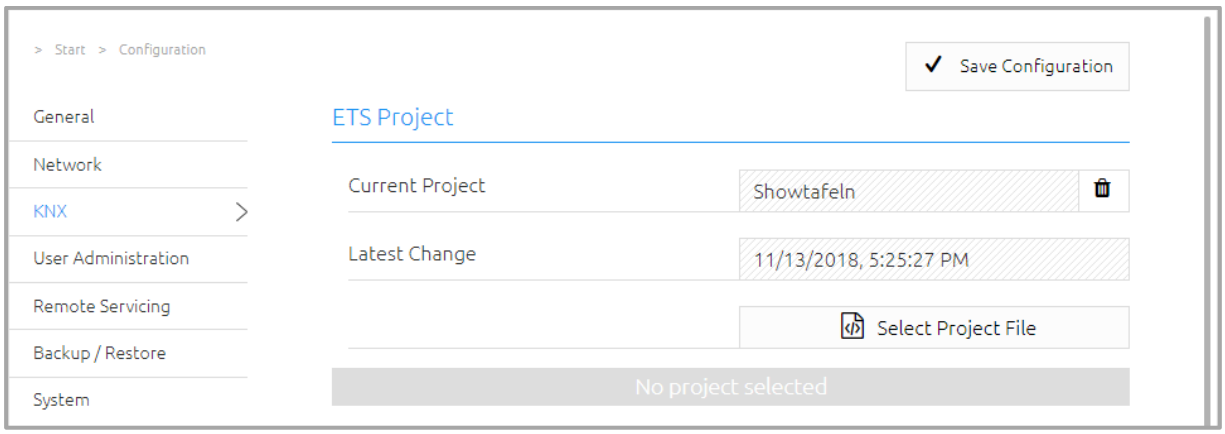


Figure 34: ETS Project Import

- **Current Project:** Shows the current imported ETS project.
- **Last Changed:** Shows the time when the currently imported project was last changed with the ETS.

The imported ETS project is then available in the App configuration.

USE ETS PROJECT

After the installation of an app for the APPMODULE the ETS project is available to you. Click with the left mouse button to the right of the input field for the group address.

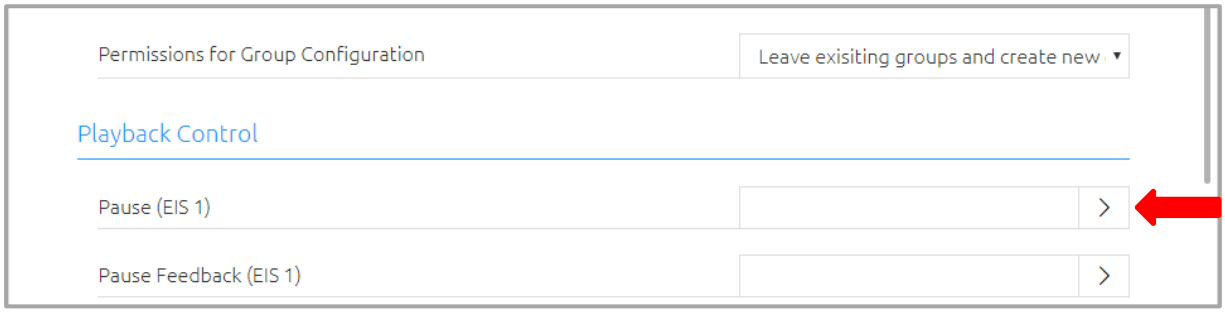


Figure 35: Open the "Group Address Selection" window

The window "Group Address Selection" opens, here you find the imported ETS project.

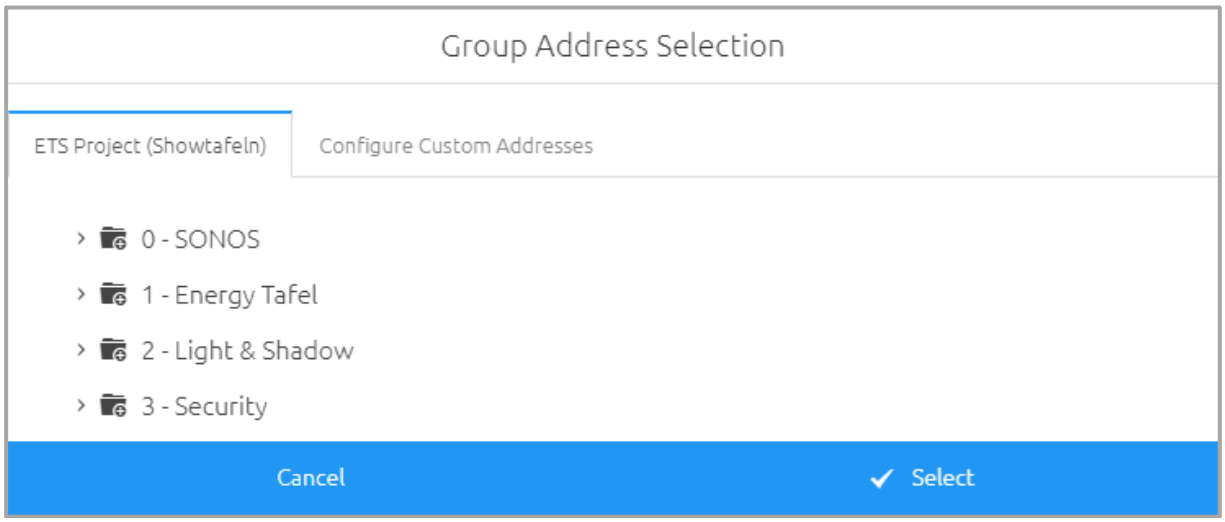


Figure 36: Group address selection

Navigate here like in a file browser. Click on a main group with the left mouse button. All middle groups of this main group are displayed. Click again with the left mouse button on a main group to close it again.
Click with the left mouse button on a middle group. All group addresses of this middle group are displayed. Click again with the left mouse button on a middle group to close it again.
You can transfer a group address to the group address field in two ways. Mark the group address with a click of the left mouse button and then press the "Select" button or double-click the group address with the left mouse button. In both cases, the group address is transferred to the group address field.

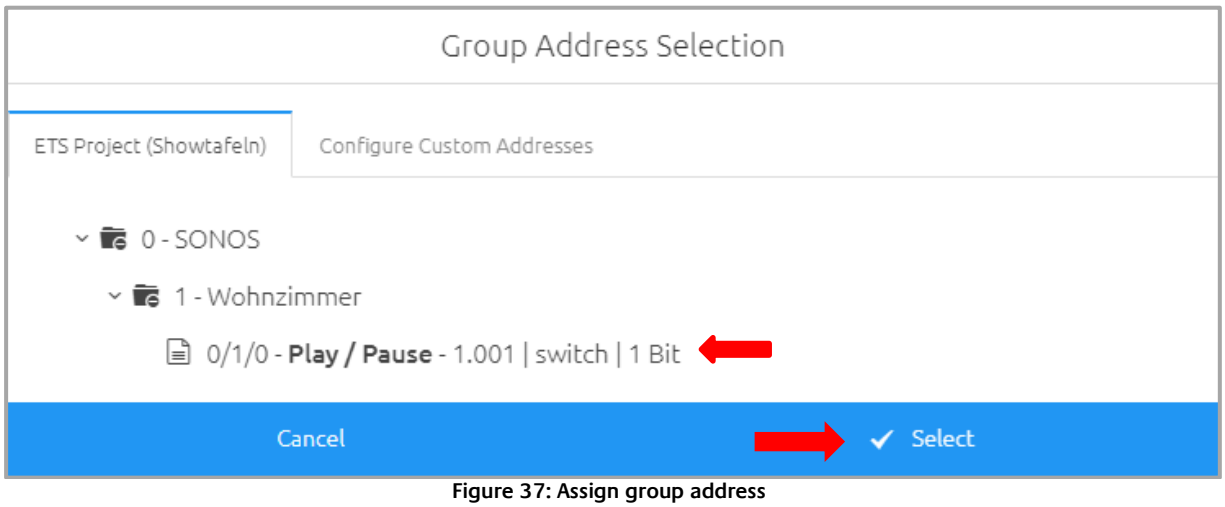
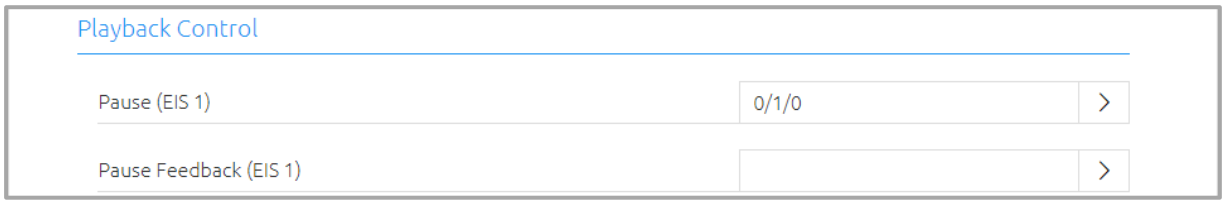


Figure 37: Assign group address



CONFIGURE CUSTOM ADDRESSES

Group addresses can be added manually in the " Group Address Selection " window. To do this, switch to the "Configure manual addresses" tab.

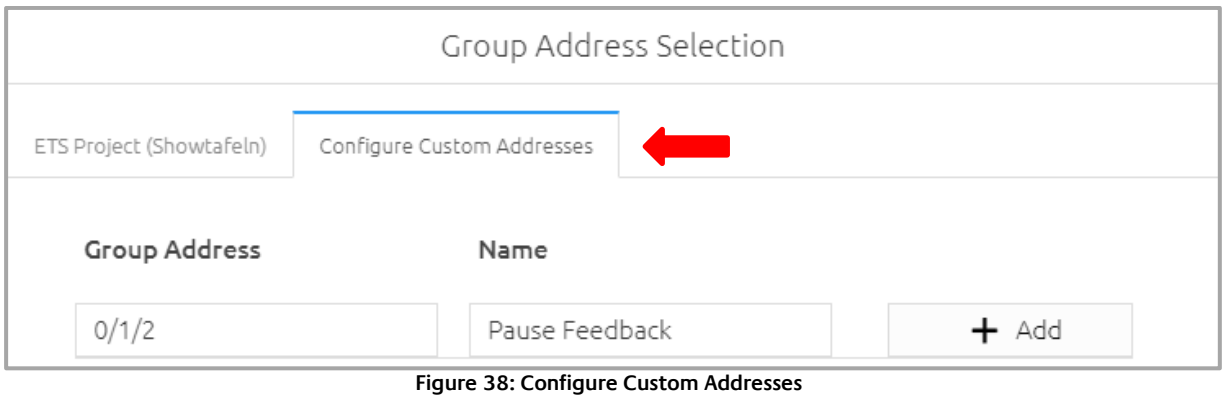
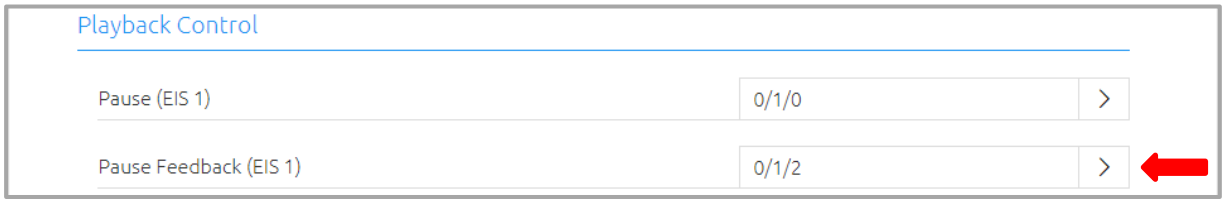


Figure 38: Configure Custom Addresses

Enter the group address and the name here. The group address can be entered as a 2-digit or 3-digit group address. The 2-digit group address is automatically converted into a 3-digit group address. With the button "Add" the group address is added to the input field for the group address. With a click on Save the group address is saved in the APPMODULE.



Note: If group addresses and the corresponding data points are greyed out in an imported ETS project, these data points are currently not implemented in the **APP**MODULE and are not required by any app.

7 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:
2. Click on the menu item „App Manager“, here highlighted red.

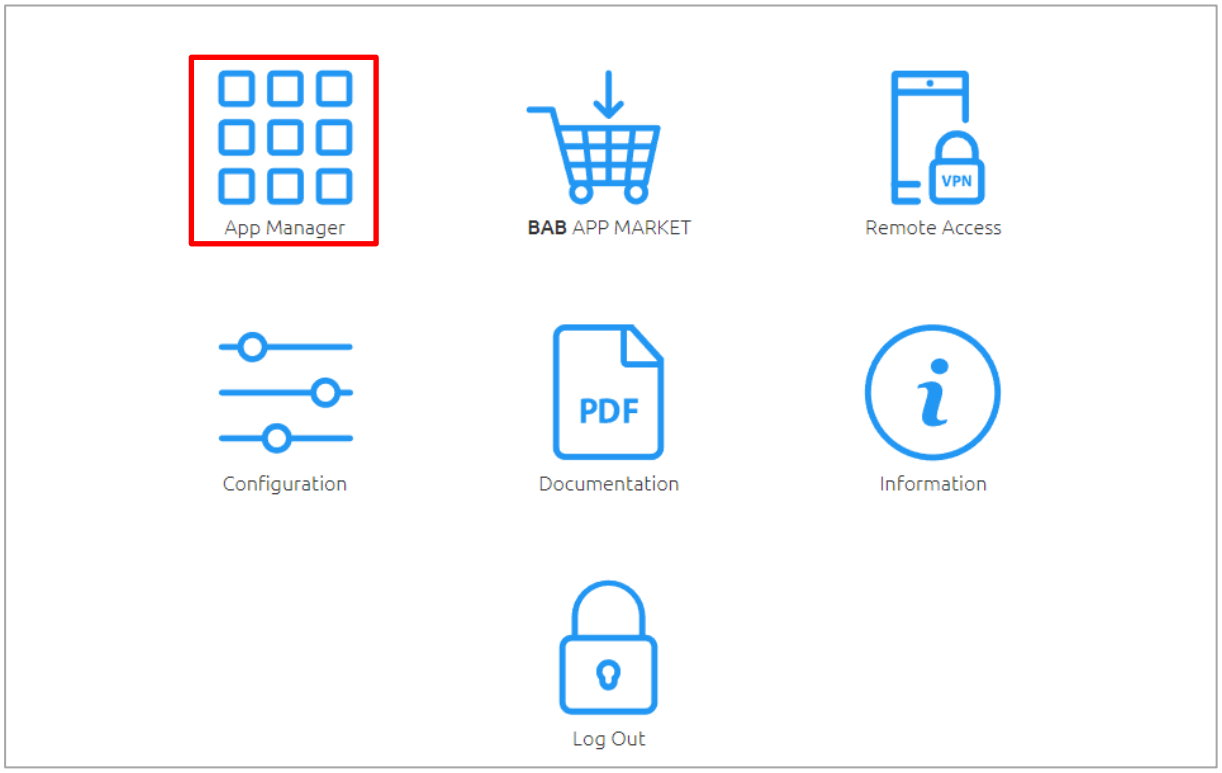


Figure 39: APPMODULE Start menu

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.

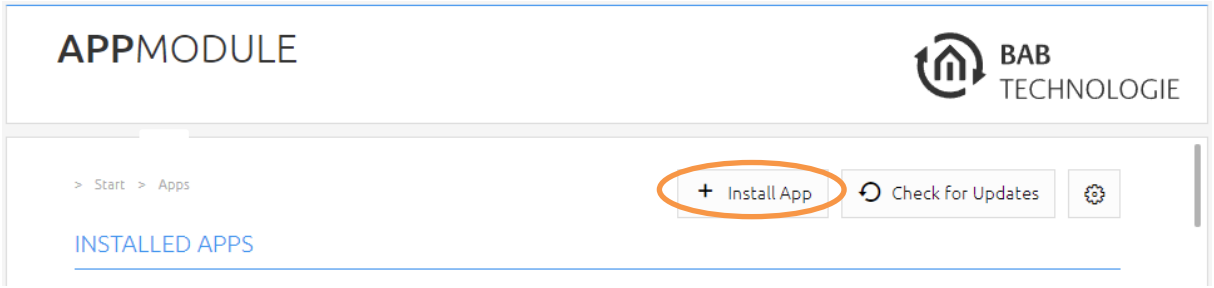


Figure 40: Install APP

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

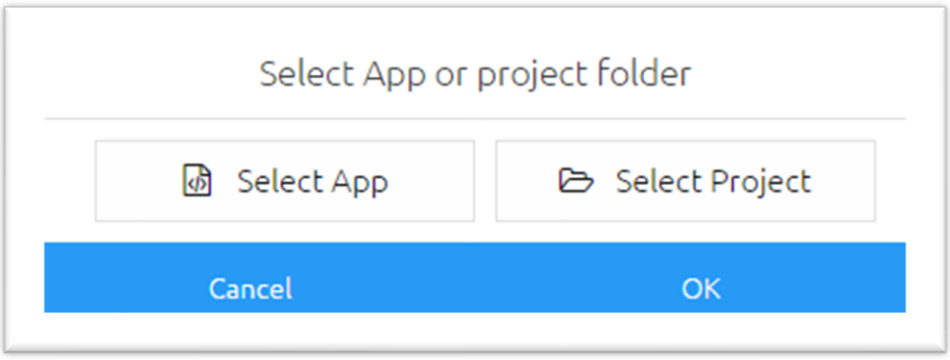


Figure 41: Select APP

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

Figure 42: Installation successful

7.1 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".

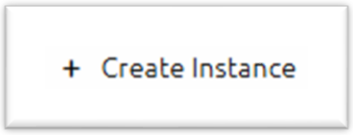


Figure 43: Create Instance

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

Figure 44: Instance functions

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

7.1.1 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.

Note: Virtual group addresses (16... 31) can be used internally to control interoperations between the apps. The virtual group addresses are not sent to the bus.

7.2 AUTOMATIC SMART HOME APP UPDATE

As of firmware 1.4.0, you no longer need to check the BAB APPMARKET for updates for installed apps. In the App Manager you can set if you want to search for updates automatically or if you want to trigger the search manually.
Open the App Manager and click on the button with the gear symbol.
Activate the automatic Smart Home App updates here. If the automatic app updates is deactivated, click on the Check for updates button to start a manual search.
If the automatic app update is activated, you can optionally use the Indicator Address (EIS 1) to display in a visualization, for example, that an app update is present (if a 0 is sent to the group address, no update is present, if a 1 is sent, one or more updates are present).

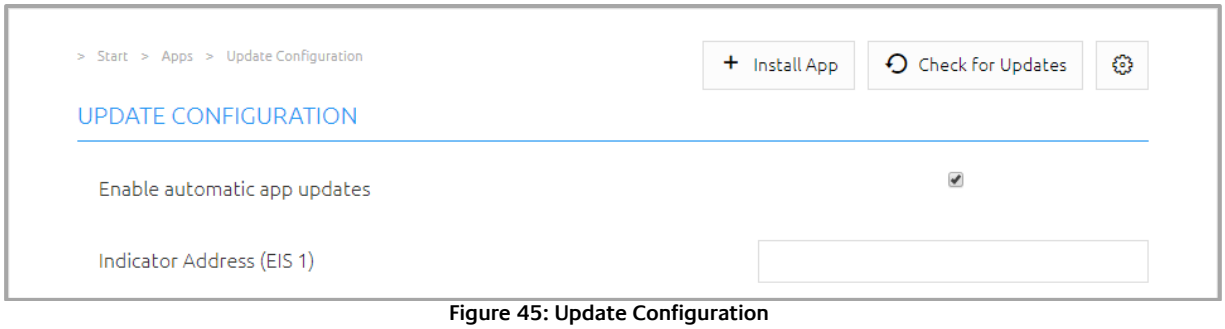


Figure 45: Update Configuration

If the Automatic App Update is activated, the **APP**MODULE checks for updates once a day. The time of the search depends on the last boot process of the **APP**MODULE and is determined automatically. The time cannot be set. If the automatic search is activated, the **APP**MODULE searches for updates directly after activation.
If an update is available for an installed Smart Home App, this is displayed in the App Manager.

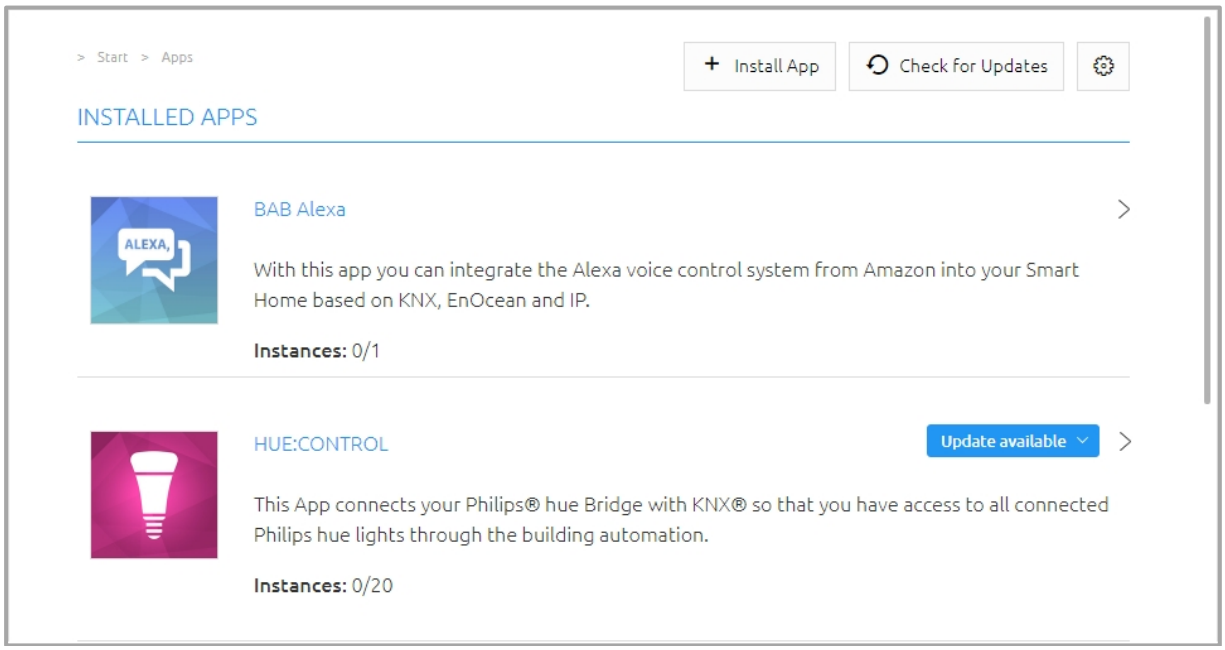


Figure 46: Smart Home App Update available

Click on the button "Update available". A window opens with the "ChangeLogs" of the APP.
All changes between the currently installed Smart Home App version and the App version provided for the update are displayed

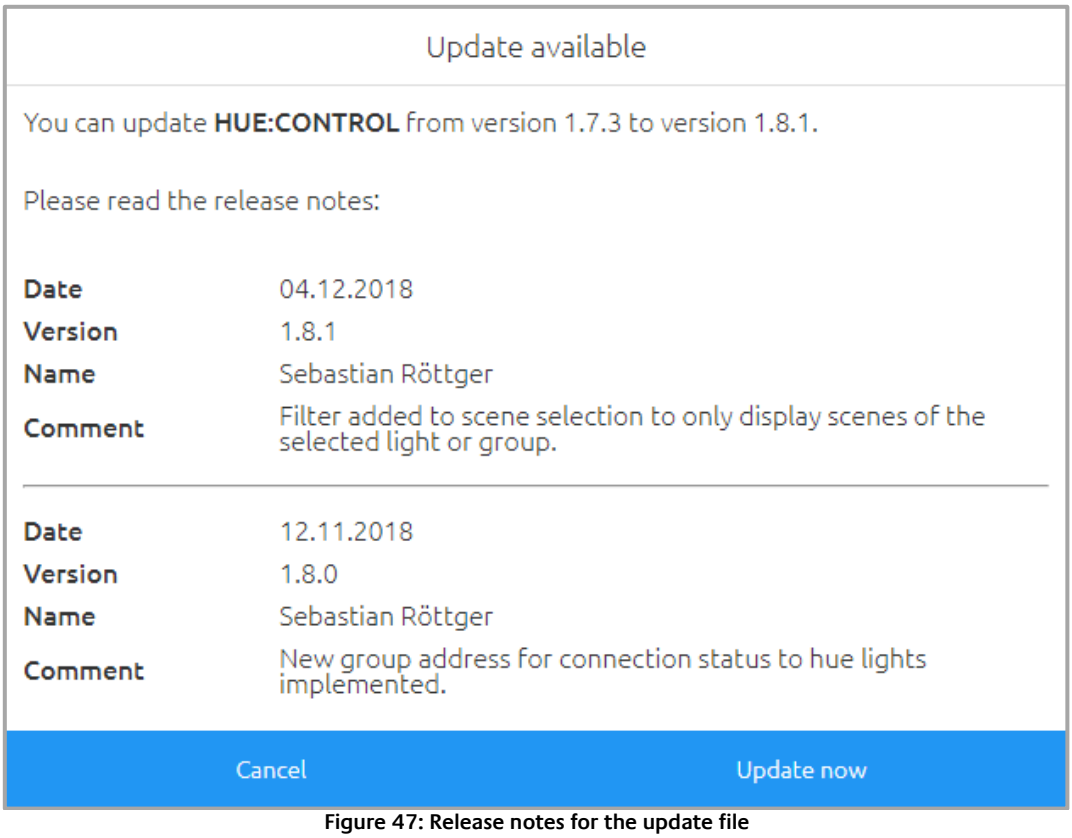


Figure 47: Release notes for the update file

Start the update with "Update now". The update will now be performed. Wait until the update is finished.

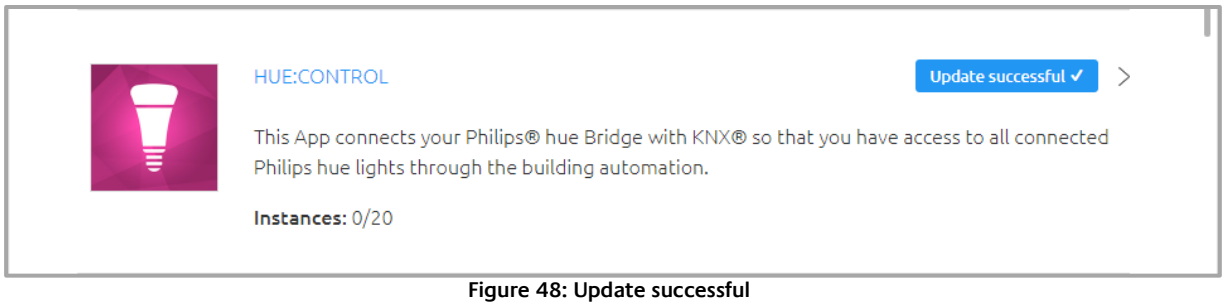


Figure 48: Update successful

The update of the app does not overwrite existing group addresses. Individual group addresses can be given If deleted, if the function to which the group address belonged is omitted. New functions must be assigned a new group address.

After the update, check the configuration of the Smart Home App.

8 CONFIGURATION

8.1 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**".

8.2 GENERAL

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

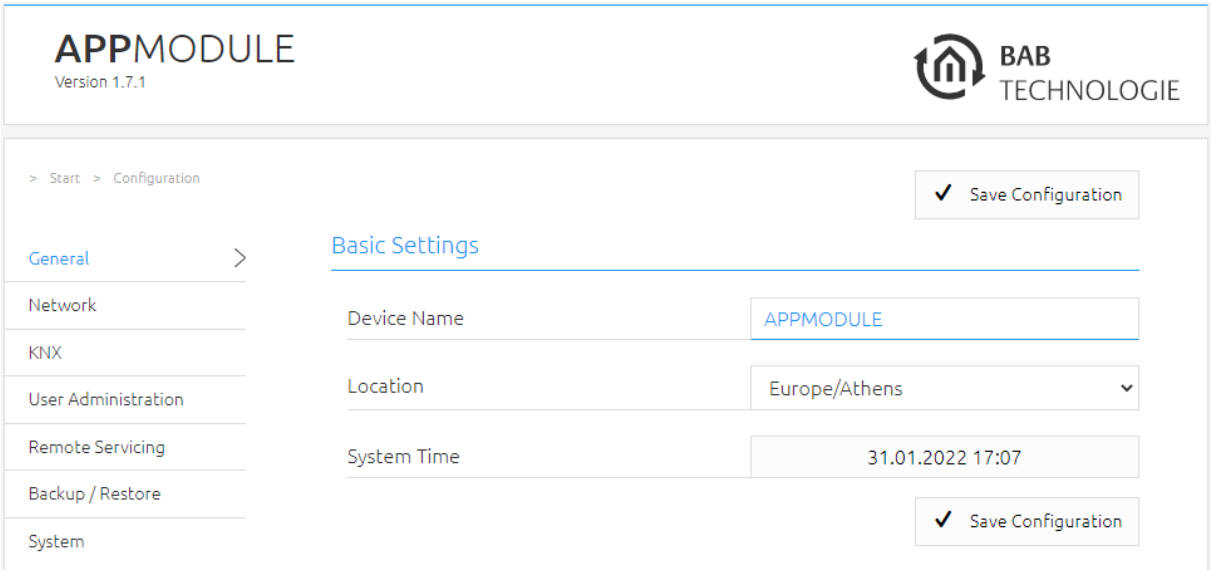


Figure 49: General configurations

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.

8.3 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

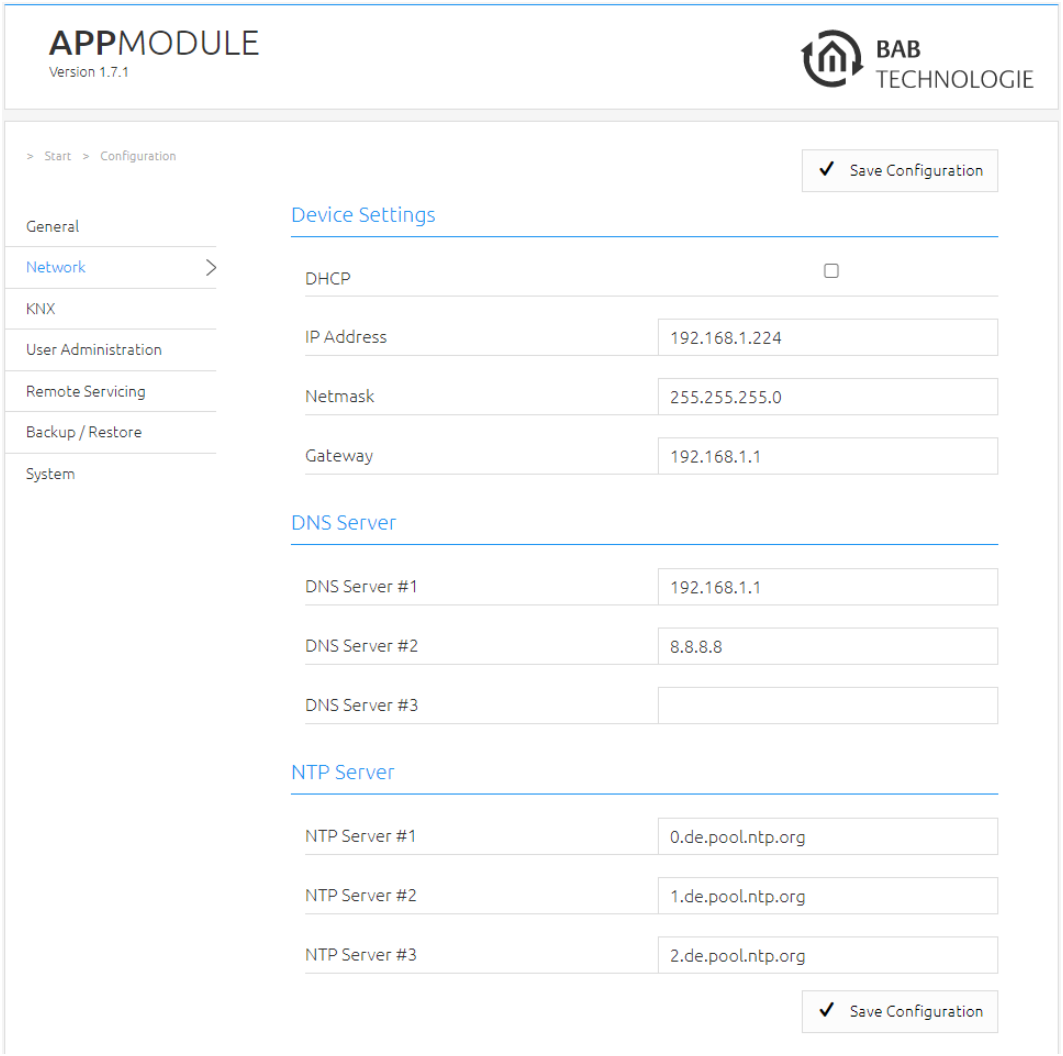


Figure 50: APPMODULE – Network settings

8.4 MODULE

The “Module” configuration menu is used for configuring the KNX parameters. The parameters are relevant for all **APP**MODULE versions, IP (10491), KNX (10495) and EnOcean (13501). With IP (10491) and EnOcean (10495), the configuration regulates KNXnet/IP communication. For more information, please see “KNX configuration”.

8.5 ENOCEAN EDITOR

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

8.6 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.

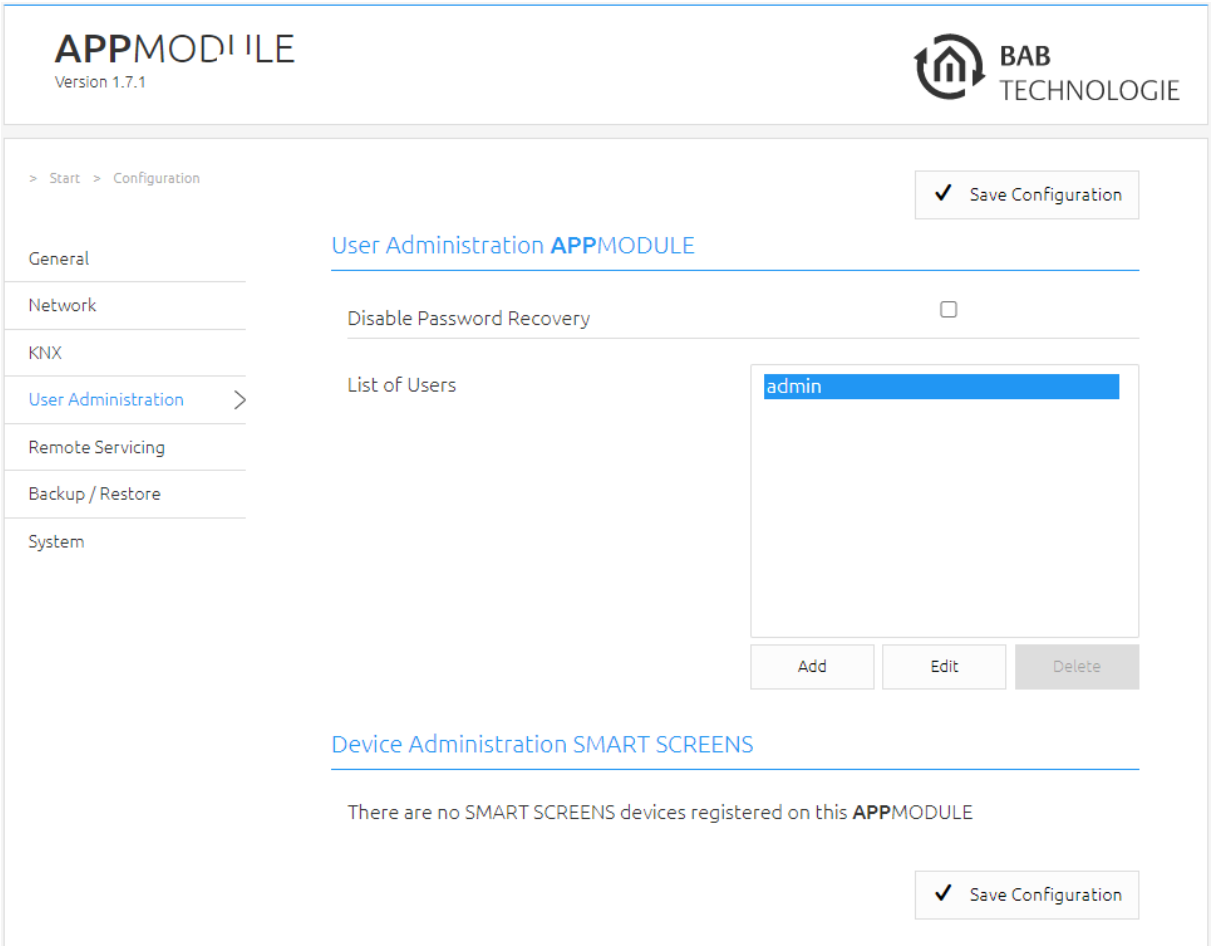


Figure 51: User administration

SMART SCREENS

The displayed device names here are used to inform which devices have been registered via the Smart Screens function. You haven’t influence to this login procedure and the stored credentials yourself. The registration is required for the synchronization of the mobile devices. If a mobile device should no longer be used, this device can be deleted and for memory released.

The functionality of the Smart Screen is described in a separate documentation.

8.7 REMOTE SERVICING

Remote Servicing is available as of firmware version 1.3.7.

Activate the Remote Servicing Access of the APPMODULE. Select a time between 2-12 hours after which the Remote Servicing Access is automatically closed. Remote Servicing Access is also deactivated again if the APPMODULE is restarted, this is independent of the set time. Remote Servicing Access can be deactivated at any time by clicking on "Deactivate Remote Servicing Access".
Activate the Remote Servicing Access by clicking on "Activate Remote Servicing Access".
Remote Servicing access is started. This process takes a few seconds and the Remote Servicing Access ID is displayed. Copy the ID and send it to info@bab-tec.de.

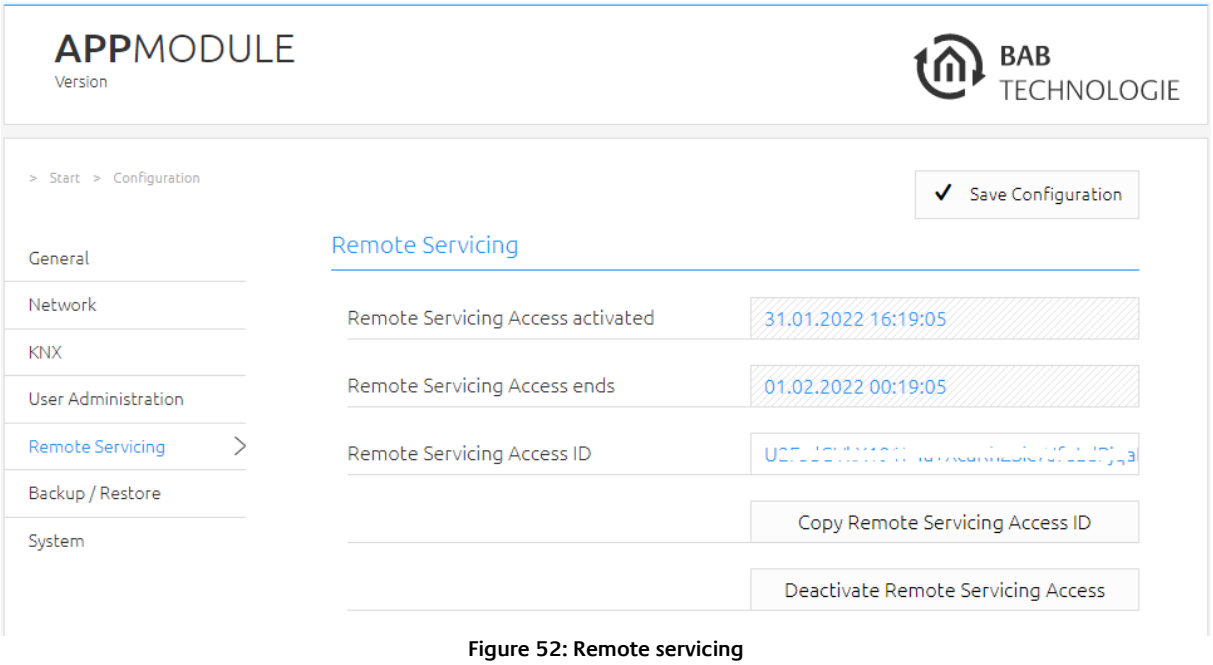


Figure 52: Remote servicing

Before you activate Remote Servicing Access, contact Support.

8.8 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.

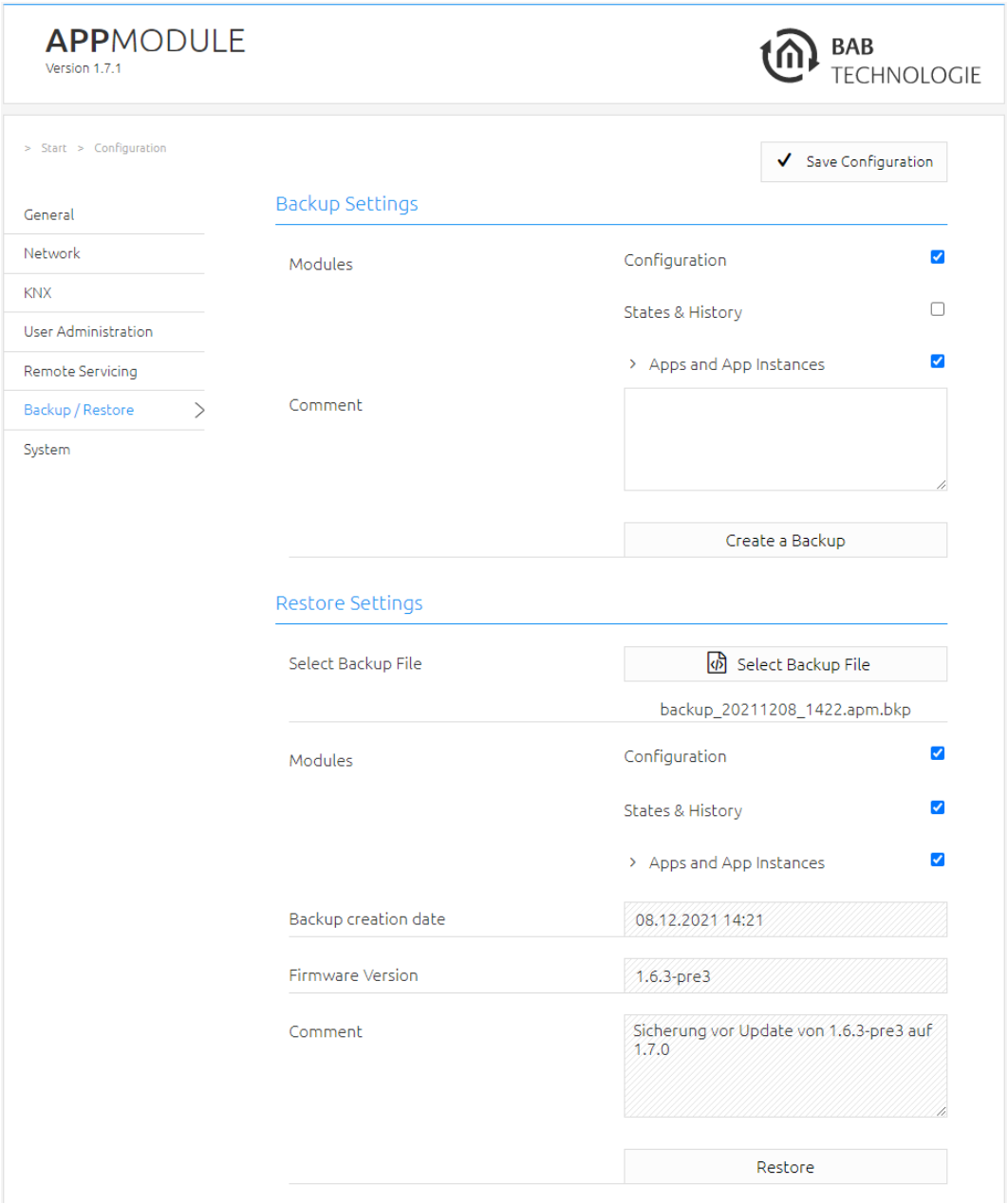


Figure 53: Backup / Restore

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.

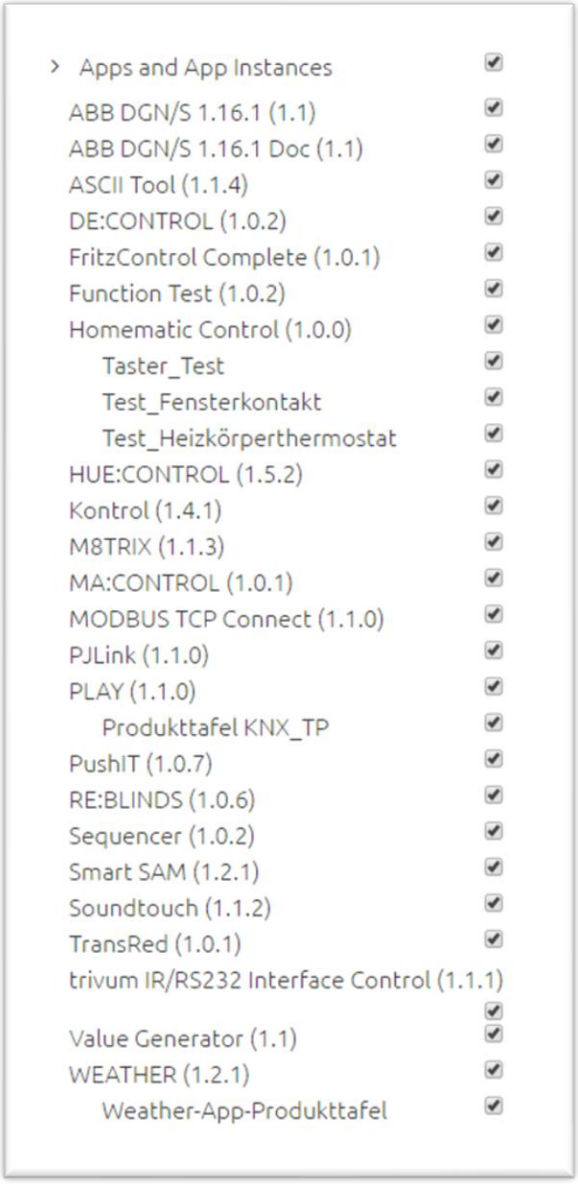


Figure 54: Selecting apps and app instances for backup

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.

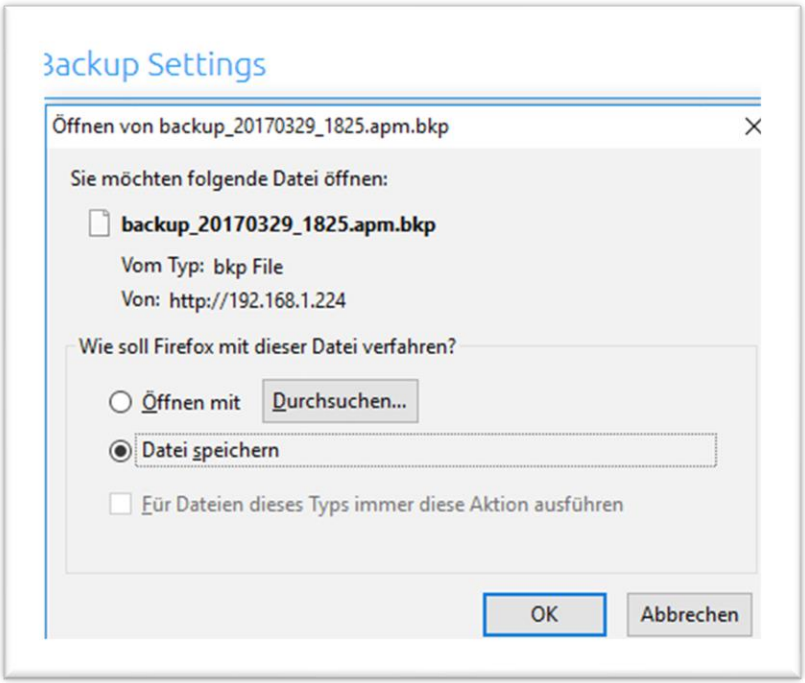


Figure 55: Downloading backup

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 above).

8.9 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”.

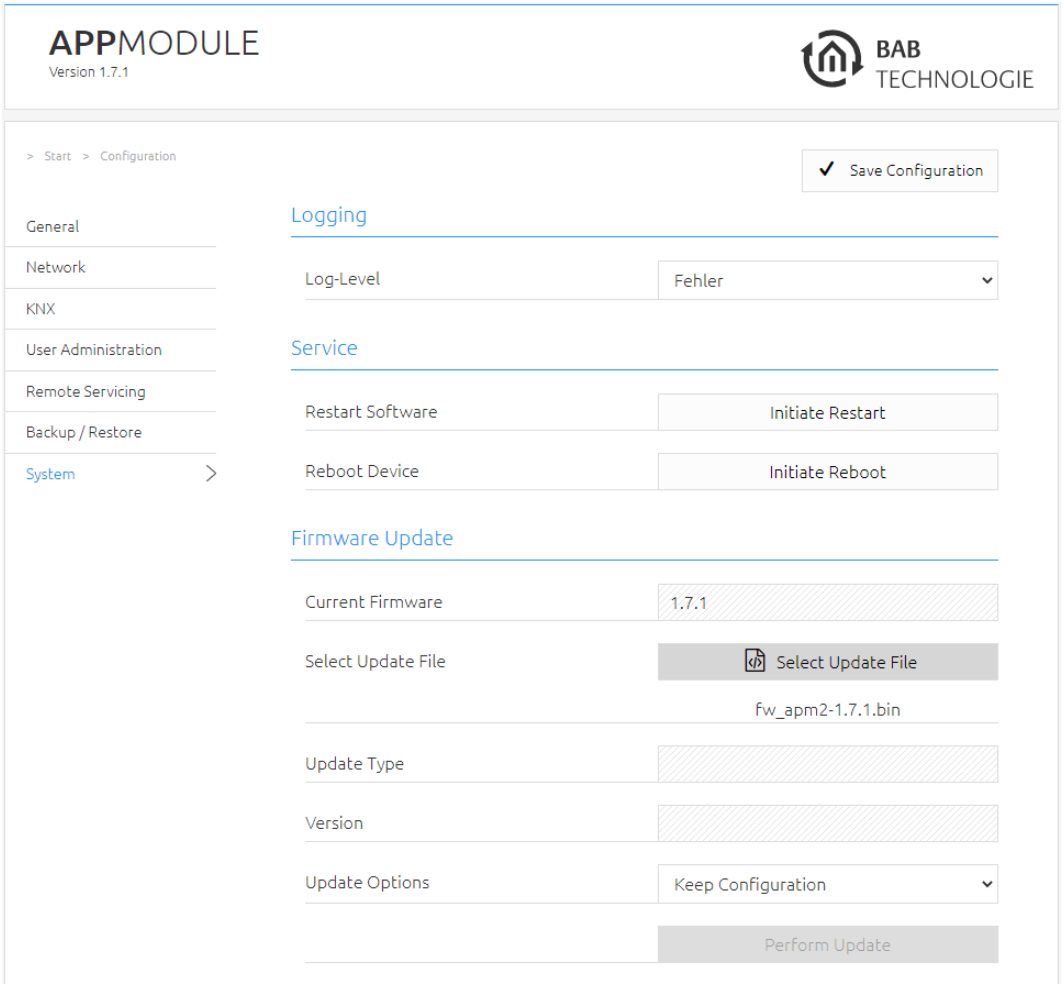


Figure 56: Configuration – System

- Select the firmware image file (*.bin extension) using the "Select update file" dialogue. Update type and version are displayed.
- Please choose one of the update options

1. *Keep Configuration:* All settings, apps and instances will be preserved
2. *Keep Network Settings:* Only the network settings will be preserved.
   Caution: all other settings as well as all your apps and their instances will be deleted
3. *Reset Configuration:* The device will be reset to factory defaults during the update.

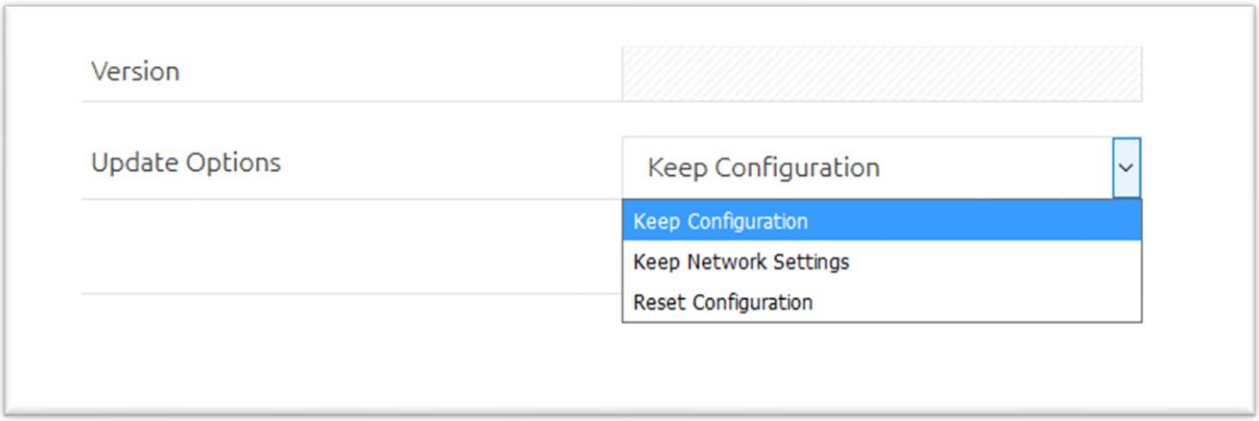


Figure 57: Keep network settings

Note: If the "Keep network settings" checkbox is not selected, the **APP**MODULE 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".

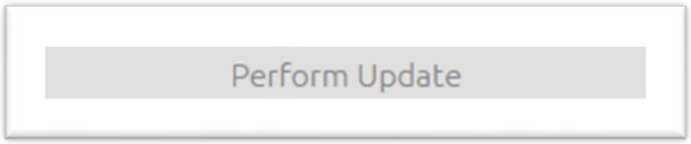


Figure 58: Perform update

- 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*").

9 REMOTE ACCESS - PLUG & PLAY VPN

In the menu item "Remote Access" there is the function from firmware version 1.7.0 to use the **APP**MODULE as a HOOC gateway in order to establish a secure VPN connection to your building control.

The integrated VPN solution eliminates the need to purchase and install costly additional hardware. The HOOC CONNECT E Gateway in the **APP**MODULE connects to the HOOC Cloud via an encrypted and secured VPN connection. It forms the heart of the HOOC VPN solution and offers a comprehensive user administration as well as many additional features such as a KNX bus monitor or alarm messages with push function.

Further instructions on setting up, configuring and using the Plug & Play VPN solution can be found in the separate document: "Documentation-HOOC".

More information at https://bab-technologie.com/hooc/?lang=en

The HOOC Gateway Manager Configuration menu is located on the **APP**MODULE webinterface under the “Remote Access” menu.

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

   <IP address APP MODULE>

2. Click on the menu item „Remote Access“, here highlighted red.

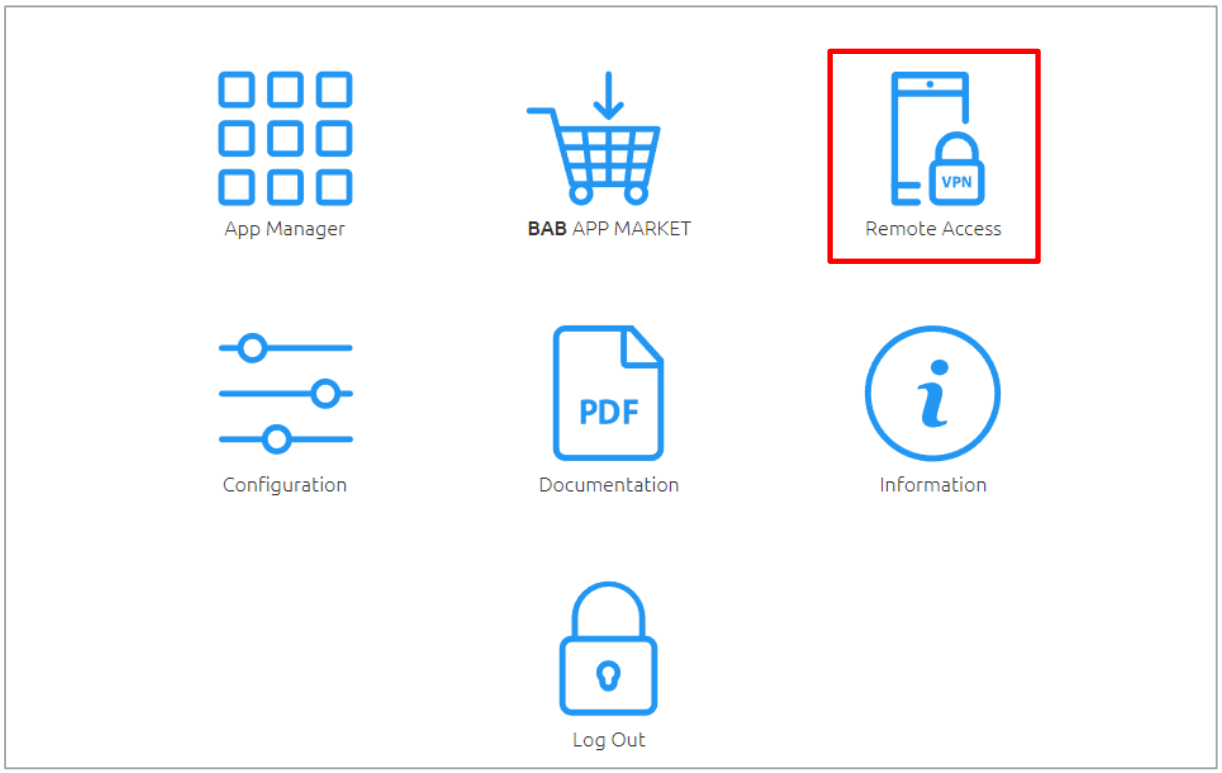


Figure 59: APPMODULE - Remote Access HOOC

10 INFORMATION

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

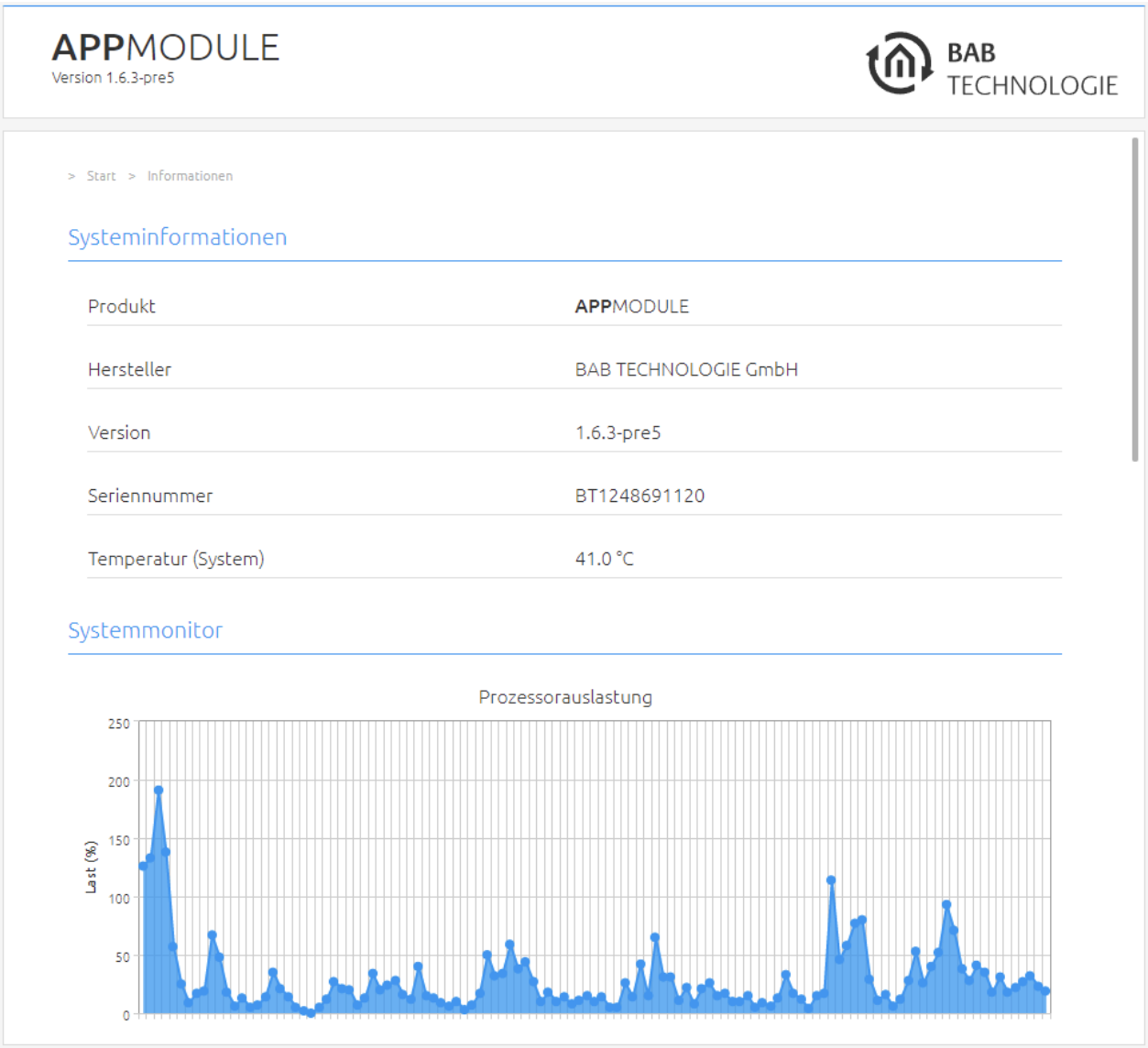


Figure 60: System Information

11 ATTACHMENT

Function	EIS type	Data point type	Typical value	Data	Identifier
Switching	EIS 1	DPT 1.yyy	[0] = Off | FALSE; [1] = On | TRUE	1 Bit	1-bit
Relative Dimming	EIS 2	DPT 3.yyy	**„Dimming steps“**: [[0],[2…7]] Darker [2, 4, 8, 16, 32, 64] -Steps and [[1],[2…7]] Brighter [2, 4, 8, 16, 32, 64]-Steps **„Start/Stop Diming“**: [0,8] Stop; [1] Darker und [9] Brighter	4 Bit	4-bit
Time	EIS 3	DPT 10.yyy	hh:mm:ss	3 Byte	Time
Date	EIS 4	DPT 11.yyy	dd:mm:yyyy	3 Byte	Date
Floating point number (short)	EIS 5	DPT 9.yyy	-671 088,64 … 670 433,28	2 Byte	2-byte float value
Percent, Position, Brightness, …	EIS 6	DPT 5.yyy	0 … 100%	1 Byte	8-bit unsigned value
Blinds Drive/adjust	EIS 7	DPT 1.yyy	[0] = up; [1] = down When driving [0,1] = stop	1 Bit	1-bit
Priority	EIS 8	DPT 2.yyy	[0], [1] Switch on, off; [3] = Forced off; [4] = Forced on	2 Bit	1-bit controlled
IEEE Floating point number (long)	EIS 9	DPT 14.yyy	4-Octet float value; IEEE 754	32 Bit	4-byte float value
Counter 16 Bit Unsigned	EIS 10u	DPT 7.yyy	0 … 65.535	16 Bit	2-byte unsigned value
Counter 16 Bit Signed	EIS 10	DPT 8.yyy	-32.768 … 32.767	16 Bit	2-byte signed value
Counter 32 Bit Unsigned	EIS 11u	DPT 12.yyy	0 … 4.294.967.295	32 Bit	4-byte unsigned value
Counter 32 Bit Signed	EIS 11	DPT 13.yyy	-2.147.483.648 … 2.147.483.647	32 Bit	4-byte signed value
Access control	EIS 12	DPT 15.yyy	Access data	4 Byte	Entrance access
ASCII Character	EIS 13	DPT 4.yyy	Char	1 Byte	Character
Counter 8 Bit Unsigned	EIS 14u	DPT 5.yyy	0 … 255	8 Bit	8-bit unsigned value
Counter 8 Bit Signed	EIS 14	DPT 6.yyy	-128 … 127	8 Bit	8-bit signed value
String	EIS 15	DPT 16.yyy	14 Characters	14 Byte	Character string

EIB/KNX devices exchange fixed prescribed data formats with each other. These are defined in types.
The old designations of the types are EIS (EIB Interworking Standard). The new designations are DPT (Data Point Type)