BAB TECHNOLOGIE

BAB TECHNOLOGIE GmbH

DUO**DMX** GATEWAY Documentation

Item no.: 12041(w), 12011(w), 12111(w), 12021, 12121,12031 und 12521

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1 INTRODUCTION

DMX (Digital Multiplex) is a control protocol in the event technology and therefore has a solid, reliable and simple design. The standard in its current form has existed since 1990. Due to its popularity, it offers a wide range of functions at low acquisition costs.

The DUO**DMX** GATEWAY has a network interface (LAN and WLAN, depending on the variant) and two independently configurable DMX outputs (DMX worlds) with 512 channels each, allowing you to control, for example, two rooms/areas separately.
The DUO**DMX** GATEWAY can be operated as a DMX master or slave. The gateway sends DMX packets in master mode and receives them in slave mode.
Nine different device variants position the DUO**DMX** GATEWAY ideally for usage in almost any required scenario. The device is used as DMX gateway for KNX® or EnOcean® systems but can also be operated as a standalone device – straight with a native App for iOS® and Android® smartphones for particularly easy operation.

The professional configuration software not only enables you to dim individual channels, but also to program complex sequences.

The DUO**DMX** GATEWAY is highly suitable for subsequent installation as a device installed in the ceiling. A corresponding adapter is available for top DIN rail installation.
In addition to the recessed ceiling version, the DUO**DMX** GATEWAY is also available as REG (Modular device (REG) housing 4 units).

2 THE GATEWAY

The DUO**DMX** GATEWAY is a ceiling installation device, and its compact size also enables specific installation situations. The REG variant (Modular device housing), on the other hand, is for installation in distribution boxes. The device has 2 separate DMX interfaces which are controlled separately.
Specifications:

Power supply:
- Power over Ethernet (PoE)   (via RJ-45 except REG variant)
- Terminal: 12-32VDC
- Power consumption: <= 1.2W

Mechanical data:
- Assembly: Ceiling installation / DIN rail adapter:
                                     Modular device housing 4 MW
                                     DIN rail EN 50022 – 35x7.5

- Dimensions (W x H x D) in mm:
  Ceiling installation   without fastening lugs: 50x26x116
                                     with fastening lugs: 50x26x146

  Modular device housing   70x90x63

Interfaces (model-dependent):
- KNX   via terminal (twisted pair)
- Network   via RJ45 connection
- Wireless network   via external SMA antenna (except REG variant)
- EnOcean   via external SMA antenna (except REG variant)
- 2xDMX 512   terminal, conductor cross-section: 1.5mm²
- Input feeler   terminal, conductor cross-section: 1.5mm²

2.1   VARIANTS

Standalone device variant (item no. 12041)
As a standalone device, the Gateway receives the DMX commands via the smartphone APP "DUO DMX APP". The device is connected to the network via a LAN cable.

WLAN standalone device variant (item no. 12041w)
It is similar to the standalone variant. The DUO**DMX** GATEWAY is connected with the network via WLAN instead of LAN.

IP device variant (item no. 12011)
As IP variant, the device receives its control commands via the "KNXnet/IP" protocol.
The KNX telegrams are sent and received via the KNXnet/IP routing protocol.
Therefore, the device must be connected with the network.

IP WLAN device variant (item no. 12011w)
It is similar to the IP variant. The DUO**DMX** GATEWAY is connected with the network via WLAN instead of LAN.

IP SR device variant (item no.: 12111)
The IP SR variant does not only allow for the sending of DMX commands due to incoming KNXnet/IP telegrams (see IP variant above) but also sends KNXnet/IP telegrams due to incoming DMX commands.
The KNX telegrams are sent and received via the KNXnet/IP routing protocol.
Therefore, the device must be connected with the network. The master/slave function (send/receive) can be adjusted separately for each DMX interface.

IP SR WLAN device variant (item no.: 12111w)
It is similar to the IP SR variant. The DUO**DMX** GATEWAY is connected with the network via WLAN instead of LAN.

KNX device variant (item no.: 12021)
As KNX twisted pair variant, the device is directly connected with the KNX bus.
The KNX telegrams are sent and received via the KNX bus.
In addition, KNX telegrams can also be received via network using the KNXnet/IP routing protocol.
For operation, network connection is not required.

KNX SR device variant (item no.: 12121)
The KNX SR variant does not only allow for the sending of DMX commands due to incoming KNX/TP telegrams (see KNX variant above) but also sends KNX/TP telegrams due to incoming DMX commands.
The master/slave function (send/receive) can be adjusted separately for each DMX interface.
The KNX telegrams are sent and received via the KNX bus.
In addition, KNX telegrams can also be received via network using the KNXnet/IP routing protocol.
For operation, network connection is not required.

EnOcean device variant (item no.: 12031)
As EnOcean variant, the device receives the control signals via the EnOcean radio system. The device only requires power supply. Moreover, an external antenna must be connected to the device. The *DMX-Configurator* software enables the connection with the EnOcean profiles. For operation, network connection is not required.

KNX SR device variant REG (item no.: 12521)
The "KNX SR REG" variant is largely identical to the KNX SR device variant (item no.: 12121).

3 ASSEMBLY

3.1 CEILING INSTALLATION VARIANT

The device can be used for ceiling installation but also for DIN rail assembly. For ceiling installation, the device is equipped with fastening lugs at two sides.
For DIN rail assembly, an adapter can be provided as an option. The fastening lugs are designed so that they can be dismantled on demand.

Figure 1: DUODMX GATEWAY with lugs

DIN rail adapter
The adapter is mounted to the housing with two screws included in the scope of supply. Make sure that the adapter is screwed to the housing through the two grooved holes only. These two holes are marked by the red circles on the picture.

Figure 2: DIN rail adapter

Note: Please use the two marked holes if you assemble the DIN rail adapter to the DUODMX GATEWAY. If you do not use the correct holes, the screw ends may touch the bottom side of the circuit board!

Please be careful if you want to loosen a device mounted on the DIN rail from the rail. If you apply excessive force when removing the gateway, the screws of the adapter might be ripped out from the housing.

3.1.1   CONNECTION DIAGRAM

The following figure is an overview of any available connection variants of the DUO**DMX** GATEWAY.
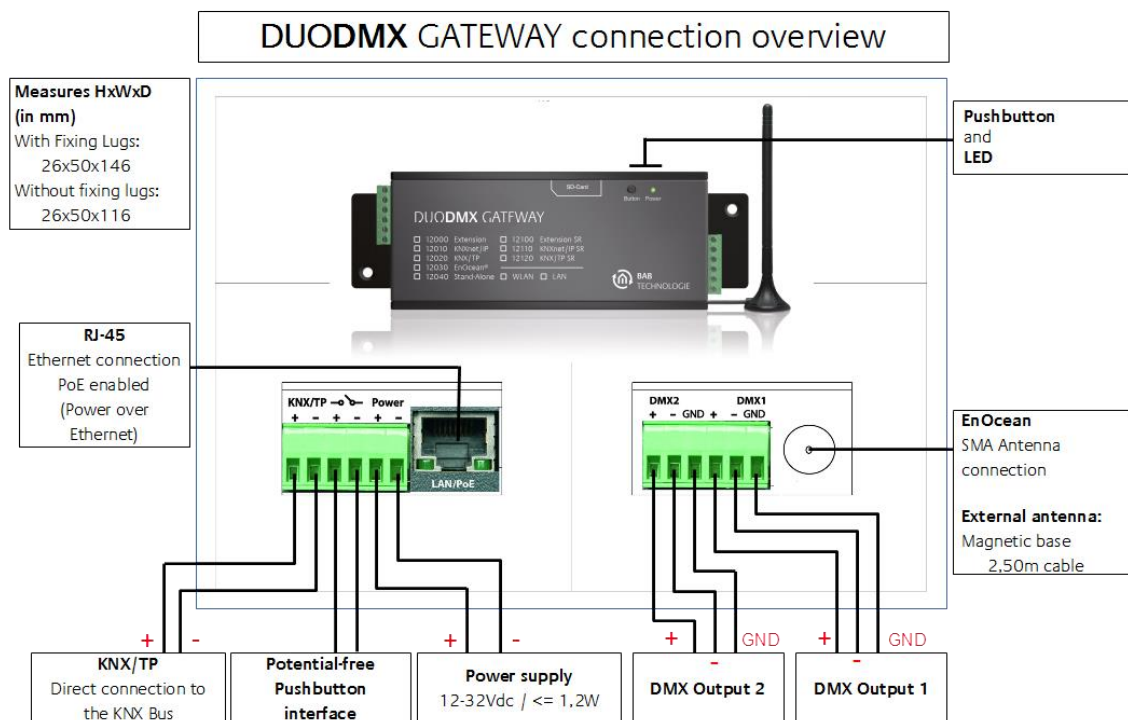
Figure 3: DUODMX GATEWAY – connection diagram

Connection with the DMX bus
The device has two independently operating DMX interfaces. Depending on the type of device, the interfaces can be configured as DMX master (sending) or as DMX slave (receiving) on demand. The device is connected via a 6-pin pluggable screw terminal, polarity is indicated on the housing. It is also possible to use just one DMX output. The connections are short-circuit-proof (for device type SR) and can be bypassed.

NOTE:

- **DO NOT CONFUSE the pluggable screw terminals (power supply side and DMX connection side)!**
- **Please take care of the correct polarity when installing the power supply!**

At the end of this document you will find a description of the assignment of DMX connectors and sockets.

3.2   MODULAR DEVICE HOUSING VARIANT

The device is used for DIN rail mounting, according to DIN EN 60715, in a REG housing 4 units. Dimensions (width x height x depth): 70 x 90 x 63 mm

- So that the power supply and the DMX bus cable can be connected conveniently, the screw-type plug-in terminals (see connection diagram below) are removable.

- At first, connect the cables of the power supply as well as the DMX bus cable to the screw terminals (see figure below). Please note the polarity!

- Afterwards, the screw-type plug-in terminals can be reconnected to the DUO**DMX** GATEWAY.

- The device can now be snapped onto the DIN rail, according to DIN EN 60715.

Figure 4: DUODMX GATEWAY REG

3.2.1 CONNECTION DIAGRAM

The following figure is an overview of any available connection variants of the DUO**DMX** GATEWAY REG variant.

Connection with the DMX bus
The device has two independently operating DMX interfaces. Depending on the type of device, the interfaces can be configured as DMX master (sending) or as DMX slave (receiving) on demand. The device is connected via two 3-pin pluggable screw terminal; polarity is indicated on the housing. It is also possible to use just one DMX output. The connections are short-circuit-proof (for device type SR).
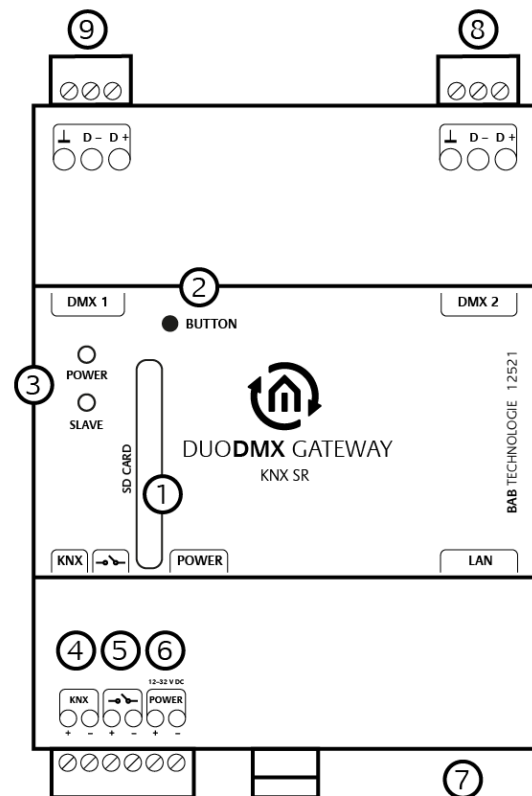
Figure 5: DUODMX GATEWAY – connection diagram

1. SD Memory Card Slot
2. button
3. LEDs
4. KNX/TP connection
5. potential-free pushbutton interface
6. power supply
7. Ethernet connector
8. DMX interface 2
9. DMX interface 1

NOTE:

- **DO NOT CONFUSE the pluggable screw terminals (power supply side and DMX connection side)!**
- **The polarity is indicated on the housing**
- **Please take care of the correct polarity when installing the power supply!**
  THE CONNECTIONS MUST NOT BE EXCHANGED!

4 INITIAL OPERATION

As a ceiling installation or REG device, the gateway can be installed close to the DMX system. You require the following components for operation:

- power supply (conventional or PoE)
- network connection (not mandatory but advantageous for configuration)
- DMX bus connection
- connection to one of the control media (network, KNX or EnOcean)
- *DMX-Configurator* software

The device is configured with the *DMX-Configurator* software via the network or an SD card. For this purpose, the device variant is unimportant.

IMPORTANT NOTICE: If you configure the device via the local network, the PC must be in the same IP address range as the DUODMX GATEWAY.
If configuration via the network is not possible, the project data can also be transferred with an SD card. <u>SD cards in NTFS format are not supported!</u>
In case that DUODMX cannot be found, you must deactivate all network interfaces except for the currently used network interface!
Please take care of the correct polarity when installing the power supply!

For this purpose, you need a commercial SD card (FAT format) and a card reader for your PC!

4.1 DMX-CONFIGURATOR INSTALLATION

First of all, you must install the *DMX-Configurator* software. The setup file for the installation of the software is on the enclosed CD or can be downloaded at www.bab-tec.de.

Installation instructions:
Double-click on the *setup.exe* file. The setup dialogue opens up:

Figure 6: DMX-Configurator setup dialogue

Click on *Next* to navigate through the menu. Confirm the licence agreement and select a place of installation on the hard disk. Finally select *Finish* so that the installation wizard will start installing the program.

Now you will find the program at *Start > Programs > BAB TECHNOLOGIE GmbH > DMX-Configurator*.

4.2 DMX-CONFIGURATOR UPDATE

If you want to install a newer version of the DMX-Configurator, it is important that you correctly uninstall the previous version beforehand. To this end, you must go to *Start > System control > Programs and Functions (Software in Windows XP)* and uninstall the *DMX-Configurator*. Select the new setup file now and proceed as described above.

4.3 FACTORY SETTINGS

The DUO**DMX** GATEWAY is supplied with the following factory settings:

- IP address: 192.168.1.223
- Subnet mask: 255.255.255.0
- Device name: MAC address of the device
- Physical KNX address: 15.15.255
- Multicast address KNXnet/IP ("routing"):224.0.23.12
  (can be changed as of firmware version 2.2.0.0)
- EIB**PORT** system ID: 0
  (cannot be changed)

In addition to the firmware, there is also a DMX-Configurator sample project in the installation registry of the DMX-Configurator software. If necessary, it can be used to overwrite the loaded project in the DUO**DMX** GATEWAY.

4.4 INITIAL COMMISSIONING

As a first step, connect a conventional 12-32V power supply (DC) to the appropriate pluggable screw terminals or to a PoE network connection (Figure 3) and connect the DUO**DMX** GATEWAY to the network. The green power LED is continuously on once the device has been started.
The second step is the configuration of the network settings.

For configuration, the PC must be in the same IP address range as the DUODMX GATEWAY.
If it is not possible to change the network settings of the PC, you can alternatively transfer the network settings by means of an SD card.

- Start the DMX-Configurator and switch to the menu screen *Extensions – DUO-DMX GATEWAY*.
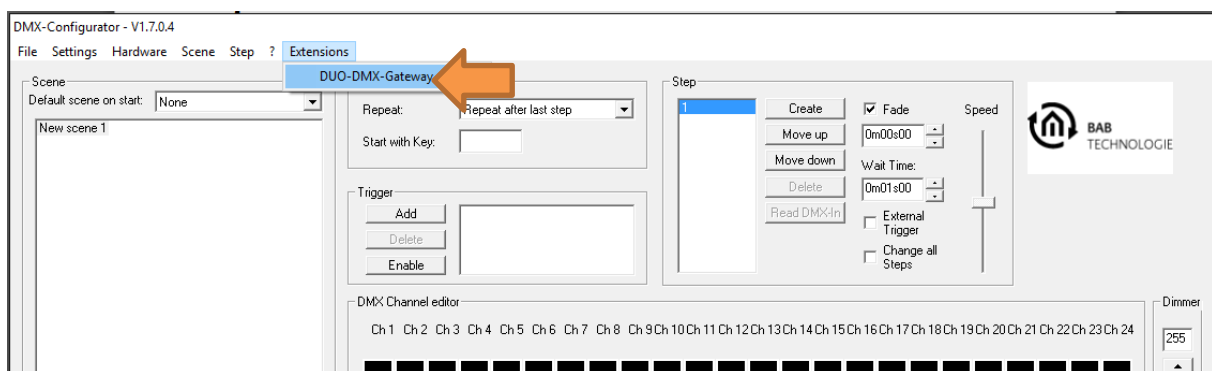
Figure 7: DMX-Configurator – extensions

- You are prompted to enter your device type. You have the following options (next figure):
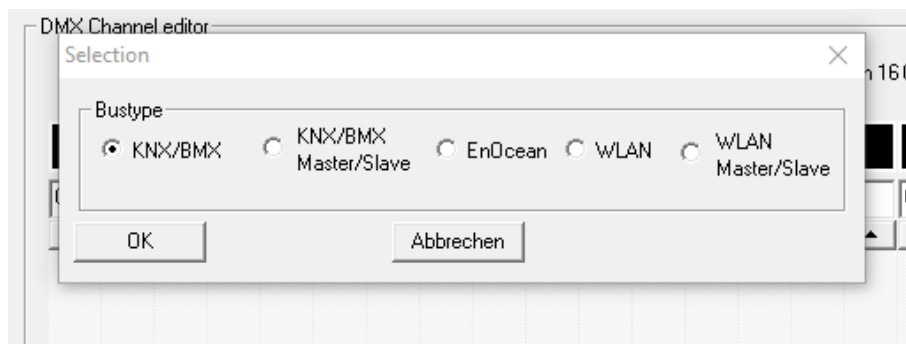
Figure 8: DMX-Configurator – type selection

a) *KNX/BMX* is for the following device types:
  - o Standalone (item no. 12041)
  - o IP (item no. 12011)
  - o KNX (item no. 12021)

b) *KNX/BMX* master/slave is for the following device types:
  - o IP SR (item no. 12111)
  - o KNX SR (item no. 12121)

c) *EnOcean* is for the following device type:
  - o EnOcean (item no. 12031)

d) *WLAN* is for the following device types:
  - o WLAN standalone (item no. 12041w)
  - o IP WLAN (item no. 10211w)

e) WLAN master/slave is for the following device type:
  - o IP SR WLAN (item no. 12111w)

Depending on your selection, various configuration windows are provided. For a detailed description, please read the chapter "*Extensions*".

**Please note: If you configure the device via the local network, the PC must be in the same IP address range as the DUODMX GATEWAY.
If configuration via the network is not possible, the project data can also be transmitted with an SD card.**

- The network settings of the device can be accessed as follows:
  For
  - o *KNX/IP*, *KNX/IP SR, select the **LAN/KNX** tab.*
  - o *WLAN and WLAN SR*, select the **LAN/KNX** tab.
  - o *EnOcean*, select the **LAN/EnOcean** tab.

The figure below shows the configuration for the KNX/BMX variant as an example.
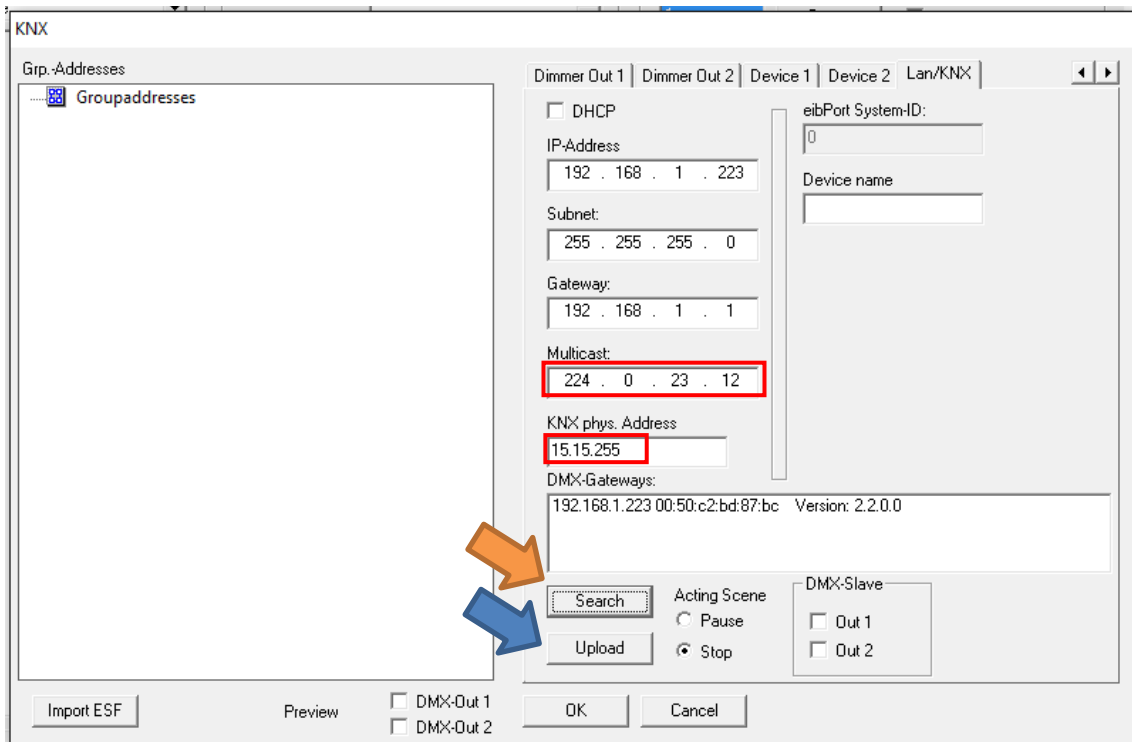
Figure 9: DMX-Configurator – device search

- Press the *Search* button (orange arrow) below the *DMX-Gateways* field. All DUO**DMX** GATEWAYs in the network are displayed, irrespective of the IP address settings of the PC.

- On the basis of the search result (the displayed IP address) you must now check whether it is necessary to adjust the IP address of the DUO**DMX** GATEWAY or not.

- If adjustment is necessary, make the required settings in the fields provided for this purpose (*IP address, subnet, gateway*).

- Do not change the Multicast address unless this is required.

- Then close the *Extension* window and save the project with *File > Save*.

CONFIGURATION UPLOAD via the network

- Mark the DUO**DMX** GATEWAY to which you want to upload the configuration.

- Press the *Upload* button to start the upload. The message *Upload completed* will show you that your upload has been successfully completed.
  (blue arrow)
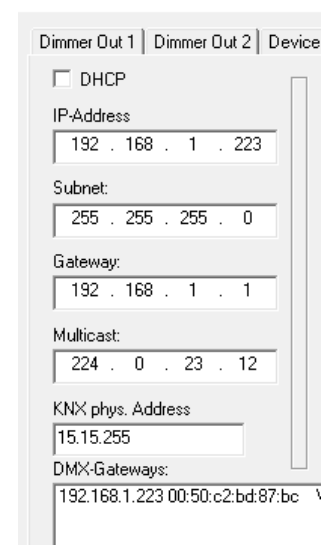
Figure 10: Adjusting the network settings

SAVING THE CONFIGURATION via SD card:

- Close and acknowledge the configuration with OK.

- Save the project (*File > Save* or *Save as*)

- Open the *File* menu again and save the project by means of the *Export HEX File* under a unique name in the desired folder.

- Insert your SD card in your card reader and make sure that the SD card does not contain any data.

- Then copy the generated HEX file onto the SD card and rename it to "*config.par*".

- Insert the SD card into the slot of the DUO**DMX** GATEWAY during operation. The status LED of the device will go out for short while for reading the data.
  As soon as the green status LED is on again, the configuration is loaded.
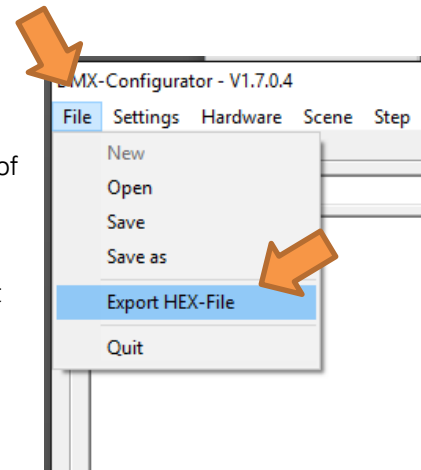
Figure 11: Saving the project

Please note: Only SD cards with FAT file system format are supported!

Third and last step of the network configuration:
- Restart the device by pressing the power button.

- Open the *DMX-Configurator* and check, as described in the steps above, whether the new IP address settings have been applied to the DUO**DMX** GATEWAY. From now on, you can transfer any configuration changes directly via the network (see chapter "*Transmission of configuration files*").

Further information is provided in chapter 5.5.2.3. LAN/KNX

4.5   IMPORTANT INFORMATION ON THE VERSION

Important notice: Please check for the most current version for both modules (software and firmware).

Reading the software version
The version number of the *DMX-Configurator* can be read from the title bar of the window.
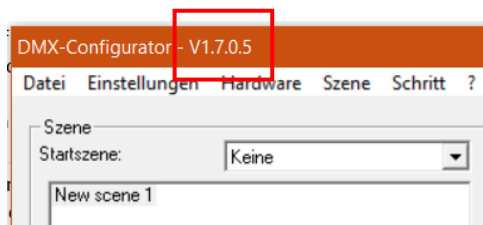
Figure 12: DMX-Configurator version

Reading the firmware version
Use the Search function in the *LAN/KNX* tab, *LAN/EnOcean* tab or *WLAN* tab in the *Extension* menu to find out which firmware your device is using (see also chapter "*Activation of the (DMX) preview*"). The firmware version is displayed together with the IP address and the device name.
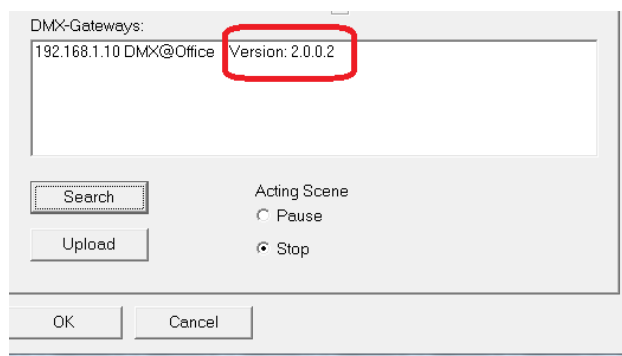
Figure 13: Display of the firmware version

If your device does not have the most current firmware version, you must make a firmware update (see chapter "*Firmware update*"). Once your DUO**DMX** GATEWAY has been equipped with the firmware 2.0.0.1 or higher, the configuration data can only be transmitted by the *DMX-Configurator* 1.6.0.0 or higher.

Older project data
Projects from older software versions can be opened with the current *DMX-Configurator* without any problems. If you have commissioned your DUO**DMX** GATEWAY with an older DMX-Configurator version, this version must be underlined reloaded to the DUO**DMX** GATEWAY once more using the current *DMX-Configurator* (1.6.0.0 or higher).

4.6 DEVICE BEHAVIOUR IN CASE OF POWER FAILURE AND SWITCHING ON THE POWER SUPPLY AGAIN

Device behaviour in case of power supply failure
The behaviour of the DMX end devices in case of power supply failure at the DUO**DMX** GATEWAY depends on the end devices. According to the DMX specification, components will switch to a save operating status (e.g. lamp off).

Behaviour when the power supply is switched on again
Once the supply voltage has been restored, all 512 DMX channels on both DMX interfaces are set to "0" by default.
In the scene configuration it is also possible to trigger a selected "Start scene" after switching on the power supply of the DUO**DMX** GATEWAY.
In this way, it is possible to determine whether the lighting should be switched on or a scene should be start without further action.
The configuration is carried out in the corresponding field "Default scene on start", select in this field the desired scene.
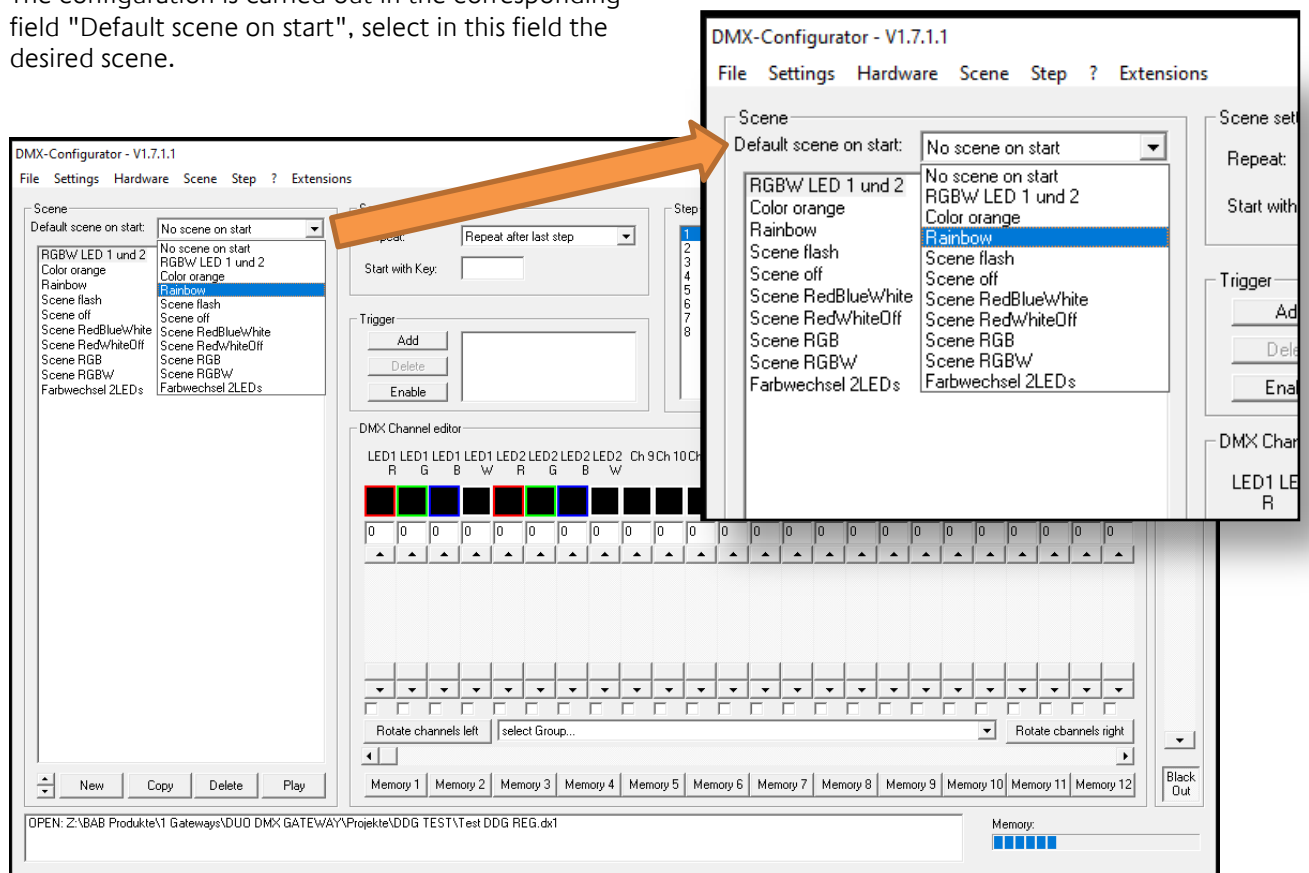
Figure 14 Choose Default Scene on Start

Behaviour in case of bus voltage failure (only KNX/TP device)
If the bus voltage fails but the power supply of the devices can be maintained, only the control of the DUO**DMX** GATEWAY is interrupted. The DMX signal is still sent so that the current "image" of the DMX output is maintained. The restoration of the bus supply does not change anything for the DMX (unless there are new KNX telegrams).

5   PROGRAMMING

The DUO**DMX** GATEWAY is programmed via the *DMX-Configurator*. In the *DMX-Configurator*, scenes are created which connect group addresses or EnOcean profiles with the dimmer channels or the scenes. The configuration is transmitted to the device via the network or via the SD card.

IMPORTANT NOTICE: In case that the DMX-Configurator cannot find the DUODMX, you must <u>deactivate</u> all network interfaces except for the currently used network interface!

5.1   ACTIVATING THE (DMX) PREVIEW FUNCTION

Together with the DUO**DMX** GATEWAY, the *DMX-Configurator* software offers the so-called *Preview* function. In the preview, any changes made to the DMX channel controllers are directly visible on the DMX device. Thus it is possible to directly test and change the sequences and scenes, if necessary, without having to transmit the configuration beforehand.

Note: Please note that the DMX preview permanently sends values until the DMX-Configurator is closed and the preview is activated. If you tried to control the DMX channels via the corresponding bus system during the transmission of values, the commands of the bus system would be overwritten by the activated preview. So make sure to use either the preview or the appropriate control system (KNX/TP, KNXnet/IP, EnOcean).

There are two preview variants:

1. **Broadcast preview:** All DUO**DMX** devices within the network are addressed by the preview, irrespective of the network settings and whether they comply with those of the PC on which the *DMX-Configurator* has been started. The preview signals are transmitted to the network by broadcast.

2. **Unicast preview:** Only the <u>selected</u> DUO**DMX** GATEWAY receives the preview signals. In this context it is important to make sure that the desired gateway and the PC are within the same network range. The signals are transmitted to a certain IP address by unicast.

You can also determine for which of both DMX outputs the preview signals are provided. Got to *Extension > DUODMX GATEWAY* to activate the preview.

The DMX-Out 1 and DMX-Out 2 preview functions stand for the DUO**DMX** GATEWAY interfaces 1 and 2.

Activating the broadcast preview
In order to activate the broadcast preview, you just have to select one of the two check boxes *DMX-Out1* or *DMX-Out2* (or both) and acknowledge your selection with OK. From now on, the preview signals are sent to the network via broadcast and are being run by all available gateways (figure at the top of the next page. Orange arrow).
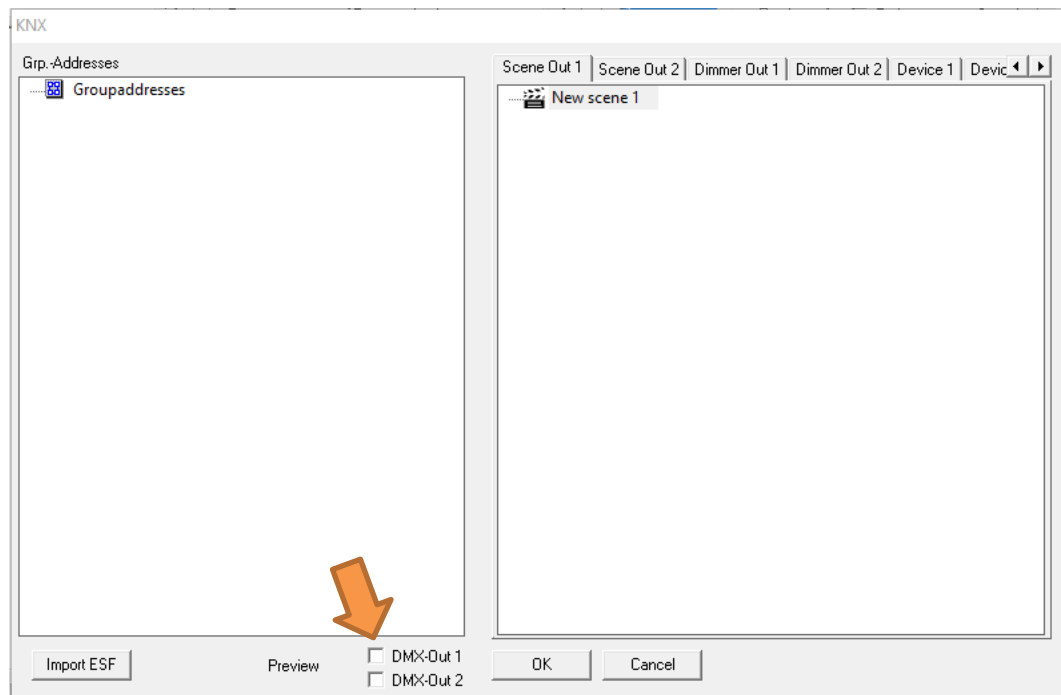
Figure 15: Broadcast preview

Activating the unicast preview

In order to direct the preview to a specific device, you must select this device on the *DMX Gateways* list. To this end, you must click on the *Search* button. All devices within the network are displayed with IP address (default setting is the MAC address) and device name. To activate the preview for only one of the devices on the list, the desired device must be marked (blue background) and then the preview must be ticked to activate it.
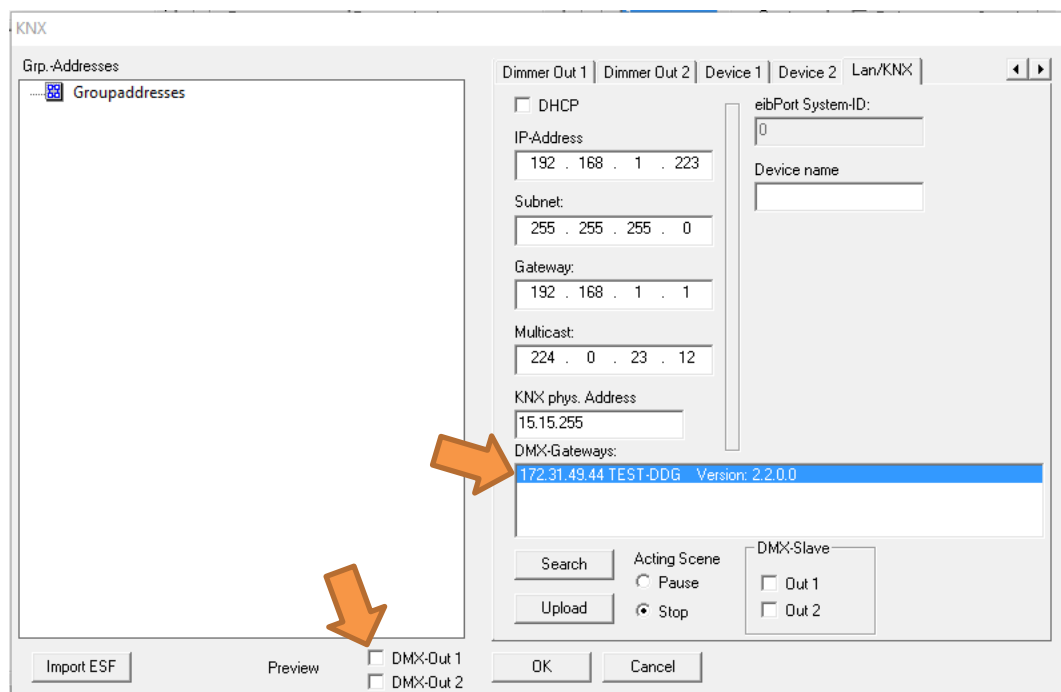
Figure 16: Unicast preview

Note: The preview is not a setting which must be transmitted to the gateway or saved in the project data of the *DMX-Configurator*. It only has to be activated in the corresponding *DMX-Configurator* and remains activated until the next software start.

5.2　SOFT ON / SOFT OFF

If the DMX channels are switched on and off via the 1Bit object, the dimming value 100% and 0% is set directly, i.e. "jumped" directly without intermediate steps.

With the option "Soft On/Off" a dimming function is activated for the first 128 DMX channels and switching on and off is carried out with intermediate steps and thus slower, softer.

The activated function "Soft On/Off" causes the DMX channels to be switched on (0% - 100%) and off (100% - 0%) with a total dimming time of 5.2 seconds.

The dimming time will be correspondingly shorter if it is not switched on at 0% or switched off at 100%. (Example. If the current dimming value is switched off at 50%, the dimming process is already completed after 2.6 seconds).

The function is activated and deactivated together for both DMX interfaces in the extension menu (orange arrow). After uploading the project data, the function is active and the DMX channels 1 - 128 switch on and off via the 1-bit object with a dimming time of 5.2 seconds.

NOTE: The function only interacts with the 1-bit object. If a DMX channel receives a dimming value during a dimming process, e.g. via the 1 byte object, the dimming process is interrupted immediately.
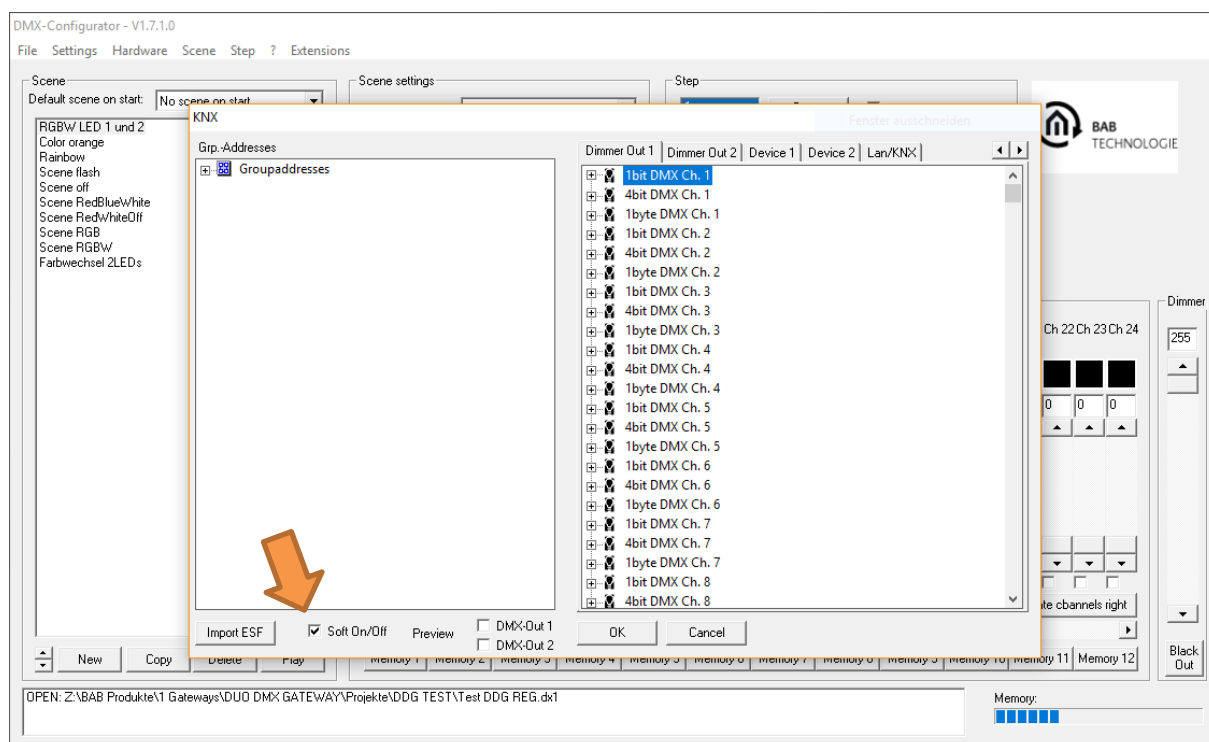

Figure 17: Soft ON / Soft OFF

5.3　FIREWALL SETTINGS

If a firewall is installed on the client computer, the ports 4042, 4044 and 4045 must be "enabled" for the *DMX-Configurator*.

5.4 DMX-CONFIGURATOR

The *DMX-Configurator* control software is used for the creation of light images (steps) and light scenes (scene). The resulting configuration data are transmitted to the device via the network or the SD card. Moreover, the preview function shows the changes made at the DMX controllers in the *DMX-Configurator* directly on the DMX end devices. The software is suited for any common Windows systems. It is provided on the supplied CD or at www.bab-tec.de (*Service > Downloads*).

5.4.1 USER INTERFACE

The user interface is clearly divided into 5 areas.

1. Administration of scenes
2. Scene settings
3. Administration of steps
4. DMX channel settings
5. Menu bar for settings
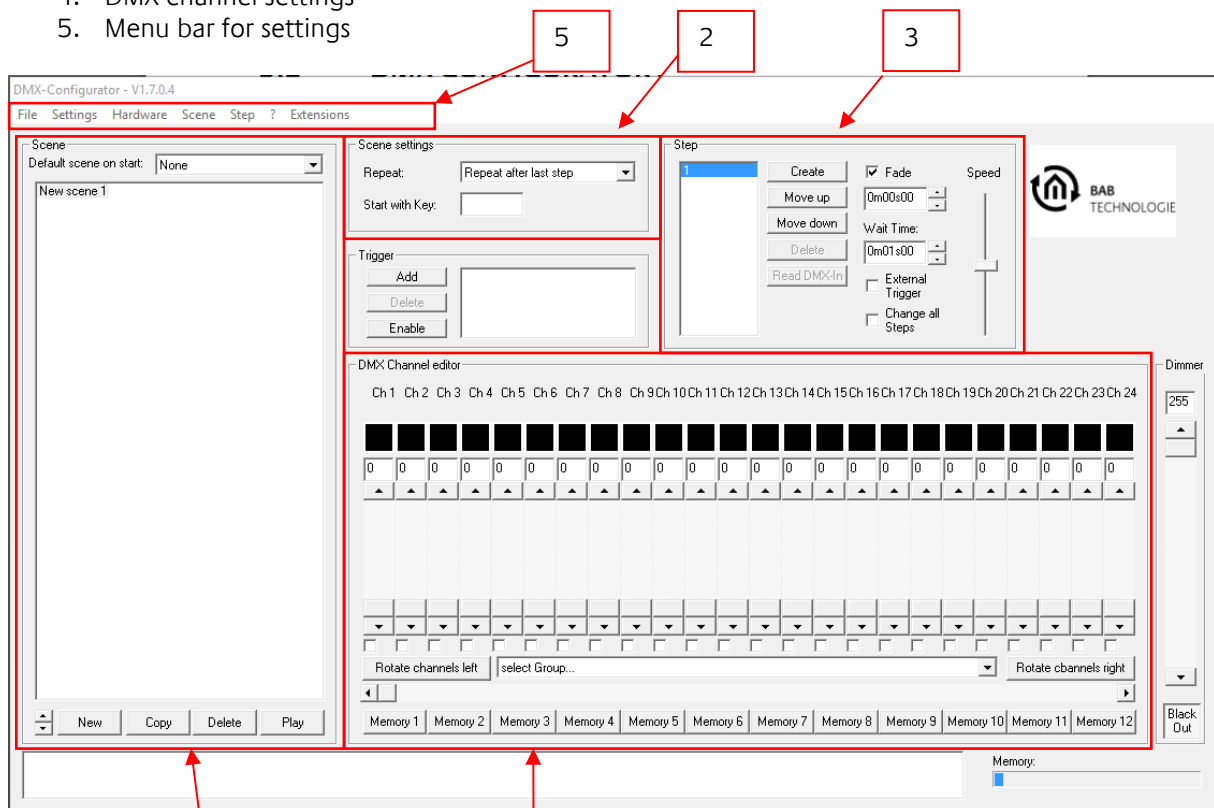
Figure 18: DMX-Configurator – user interface

Different functions for the configuration of the software and hardware can be accessed via the menu bar. These functions are separately specified below.

5.4.2   CHANGING THE LANGUAGE

In order to change the menu language of the *DMX-Configurator*, you must open the "?" (Question mark) Menu; after having changed the language, the *DMX-Configurator* must be restarted.

Figure 19: Changing the language

5.4.3   GENERAL DATA STRUCTURE

The light images are entered in two different steps. The first step is to create a scene which forms a group for the individual steps of the light sequence.

A scene may include one or more steps, whereas static light images are created with one step and dynamic light images with several steps.

5.4.4   CREATING SCENES

Before you enter the individual steps, you must select or create a scene.

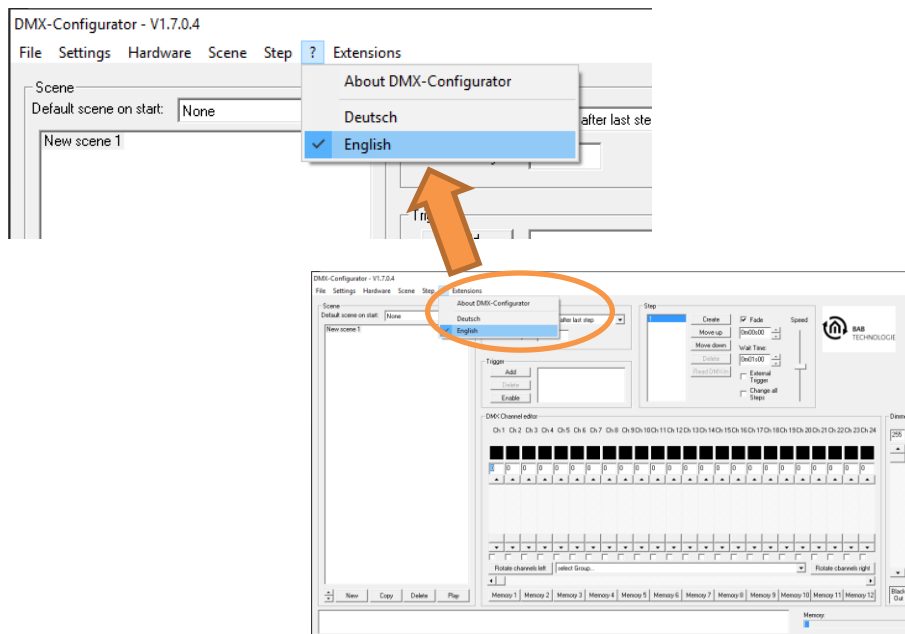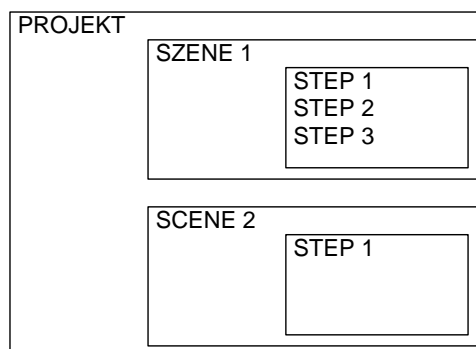A new scene is created with the *NEW* button (orange arrow). A *New scene* entry appears in the scene list (purple arrow). This name is freely editable. The first 15 characters are displayed on the APP.

The *Copy* button (green arrow) copies the selected scene with all of its steps.

The *Delete* button (blue arrow) deletes the selected scene with all of its steps.

The *arrow buttons* (red arrow) are used for changing the order of the scenes.
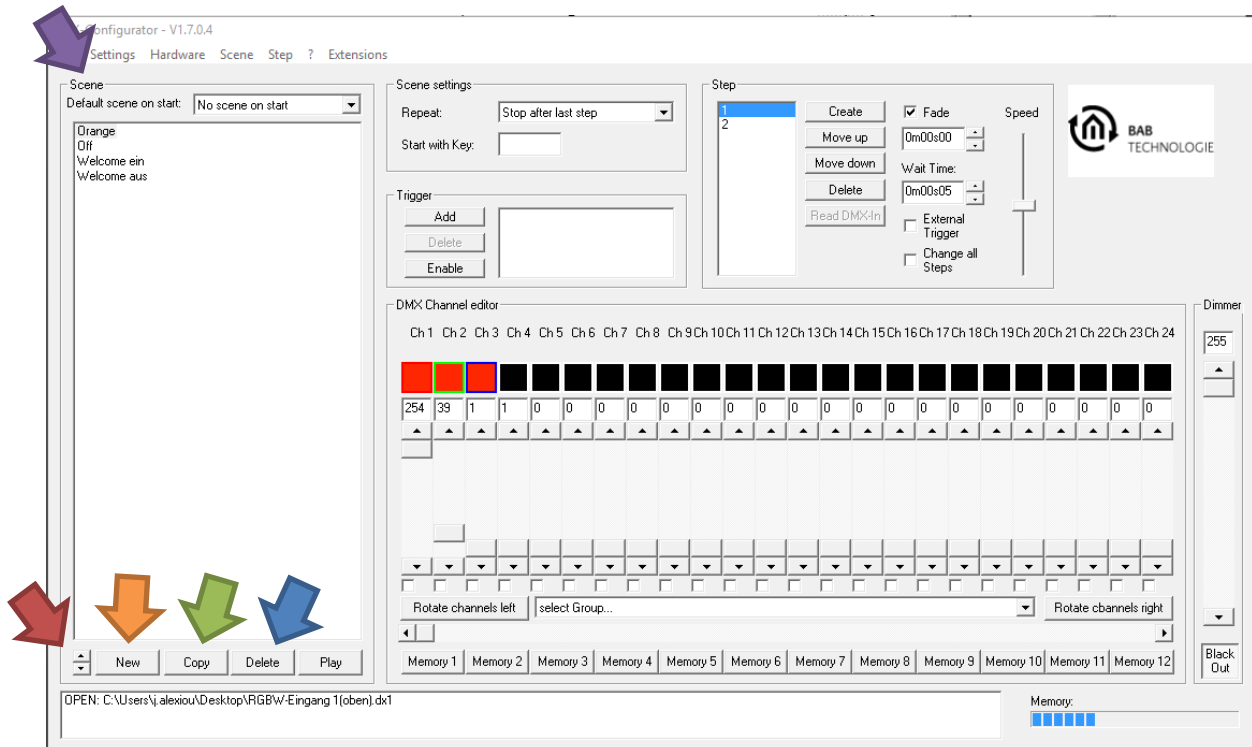
Figure 20: Scene list

Note: At the beginning of each scene, the *DMX-Configurator* assumes that the corresponding DMX channel values have the value "0". Therefore, it might be that a scene adds or does not change your DMX values to already existing values. As a consequence, the DMX end device displays incorrect values (colours).

This can be avoided if you start each scene with a step with the value "1" followed by a step with the value "0" (for the DMX channels which are not used). There is no *fade* between the steps and a minimum *wait time* of 10ms. In this way, each DMX channel is set to the desired value "0" before the actual scene begins. Depending on the requirements, we recommend that a special scene is created which is used for the "zeroing" of the desired DMX channels.

5.4.5   CREATING STEPS

Steps must be created and edited in order to create individual light images and to connect them with each other so that a dynamic light image is formed. Static light images are also possible.

Figure 21: Creating steps

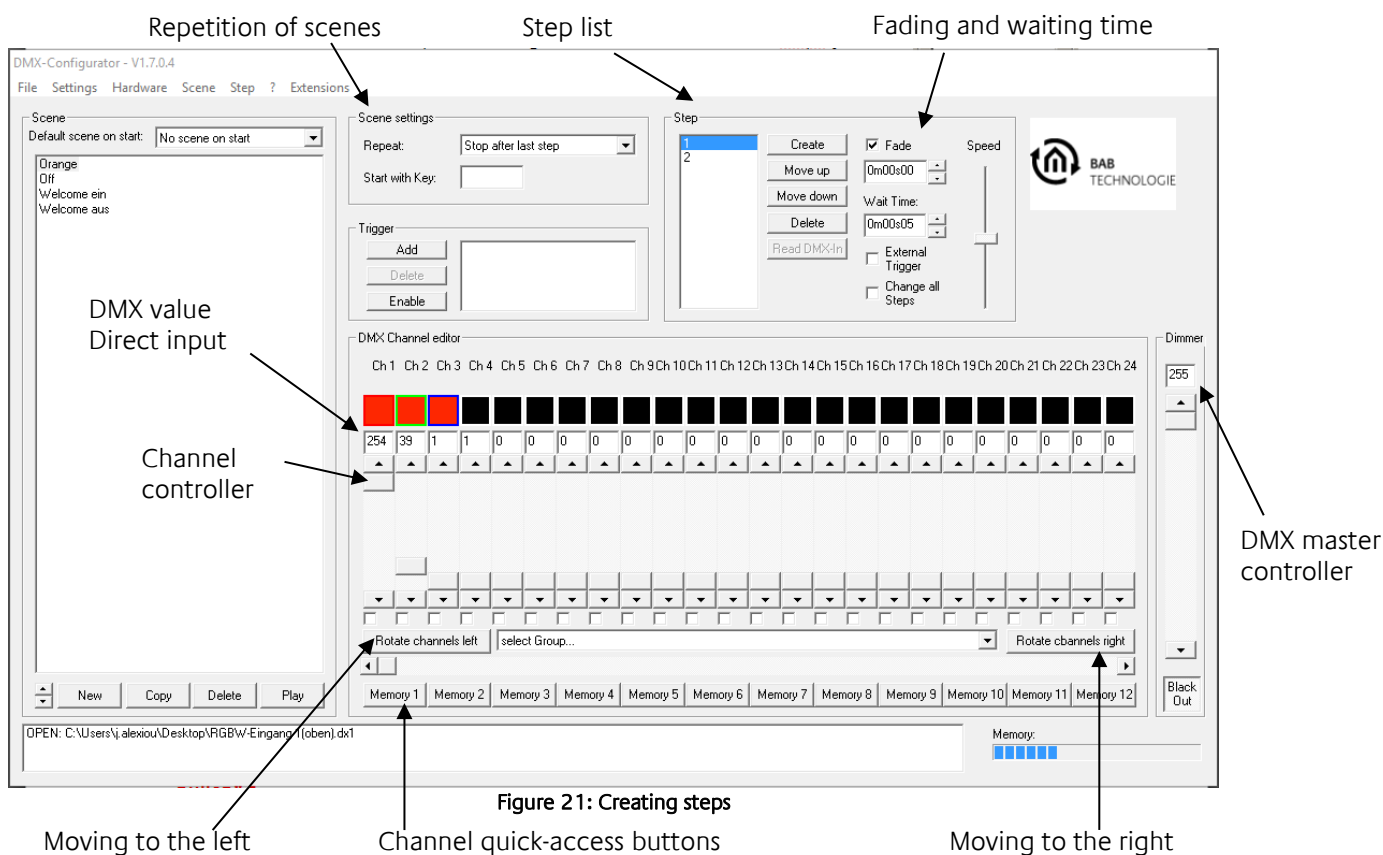Channel controllers are provided for the setting of different DMX values. They are marked with the channel number. To reach all 512 DMX channels, you must select the DMX channel range using the horizontal slider below.
You can allocate DMX channel numbers to the additionally provided channel quick-access buttons at the *Program settings* menu item which can then be accessed with a click.

For each step, different DMX values can be set for each channel. Dynamic light images can be created by a sequence of several steps with different DMX values. The *List of steps* includes all steps in their corresponding order. The transition between two steps is defined by the *fade time* and the *wait time* which can be adjusted separately for each step. With the option *Change all steps*, the changes to the *fade time* and the *wait time* are applied to all created steps.

Moving to the right/left
All present DMX values are shifted by one channel to the right (+1) or to the left (-1). This allows for the simple setting of "*running light*" scenes.

5.4.6   COLOUR PICKER

The colour picker allows for the easy input of RGB colour values. The three consecutive DMX channels (R/G/B values) are allocated to the selected colour. You can access the colour picker by right-clicking on the **first** RGB-DMX channel.
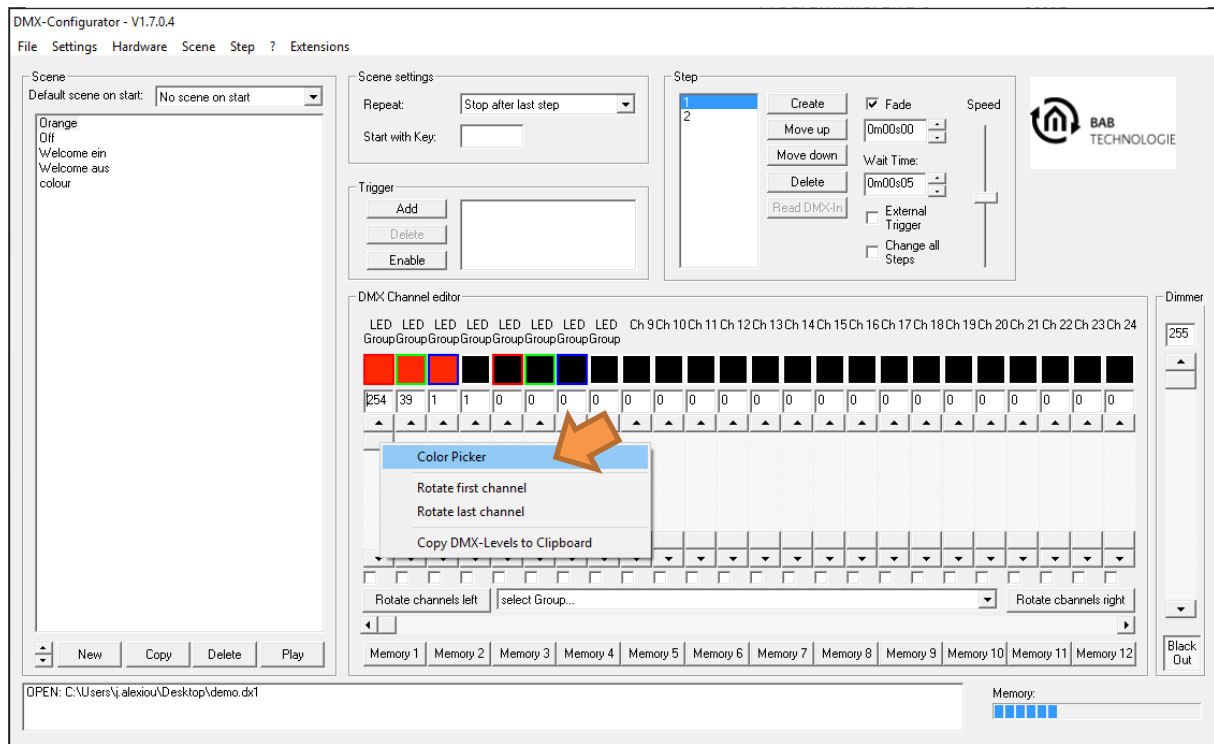
Figure 22: Colour picker selection

A menu opens up where you must left-click on the *colour picker* (orange arrow).

The dialogue of the *colour picker* is available in 2 different illustrations. On the left, there is the default illustration (*normal style*), and on the right, you see the colours in a colour circle (*round style*).

Select the colours as follows:
- Select the colour on the colour illustration.
- Select the brightness of the colour.
- Click on OK to apply the settings for R/G/B.

Colour

Figure 23: Colour picker – two screens

Brightness of the colour

Note: Right-click on the controller for colour brightness to set it in the centre for 50% brightness.

5.4.7 DMX GROUPS

DMX groups are suited for the simultaneous editing of several channels. There are 16 groups where you can combine any channels to form a group.

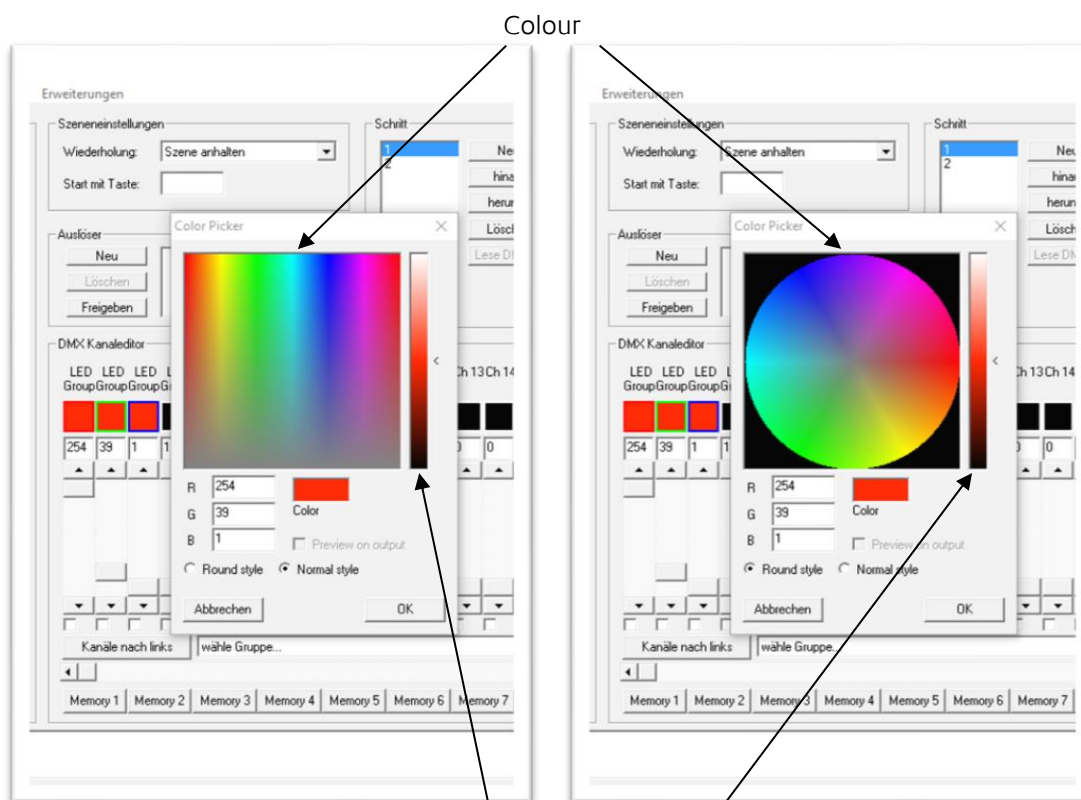To create or edit groups, select *Settings > Program settings* in the menu and go to the *Groups* tab.
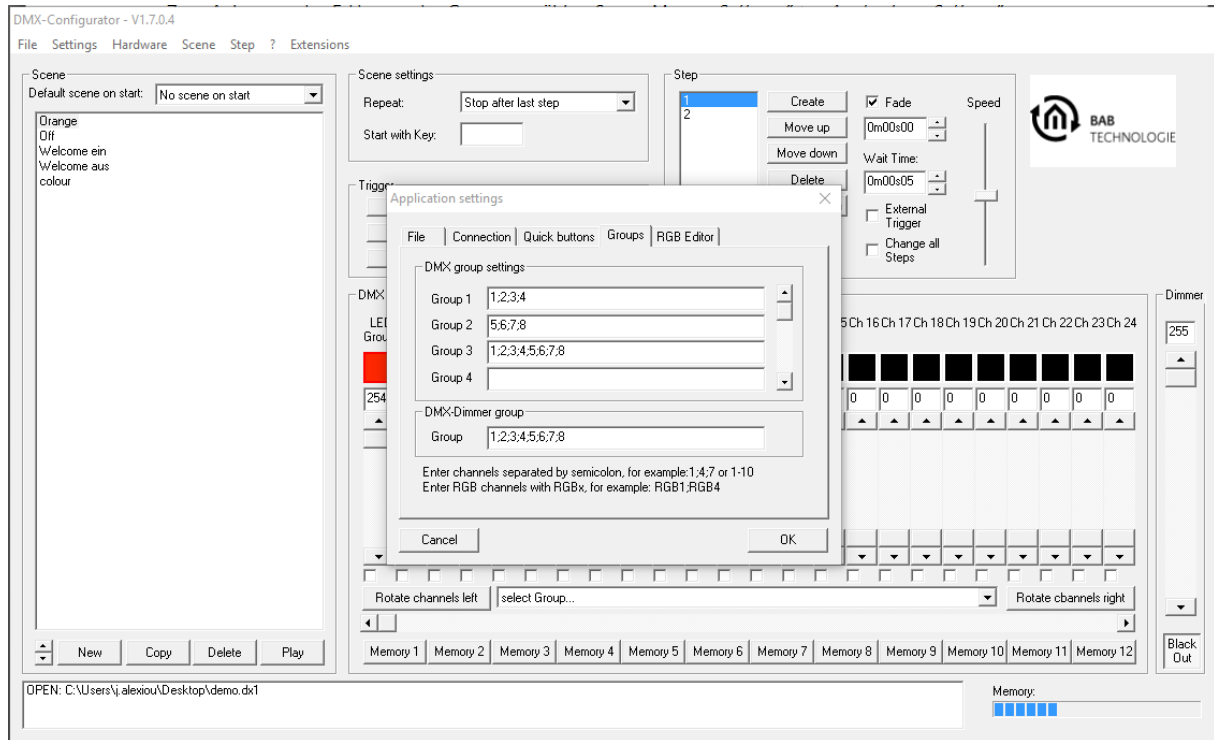
Figure 24: Defining DMX groups

Enter the DMX channels forming a group in the input field next to the group name. The DMX channels must be separated by a semicolon (;). It is possible that one DMX channel is allocated to different groups.

After having defined the groups, they are available in the group selection. If you select a group, the selected channels are marked by the control boxes and enabled. They are connected with each other, and all channels are set to the same value once you change one of the controllers.
Any additional channels which are not defined in a group can be manually selected by the control boxes and temporarily added.

Display of the channels arranged in groups

Group selection
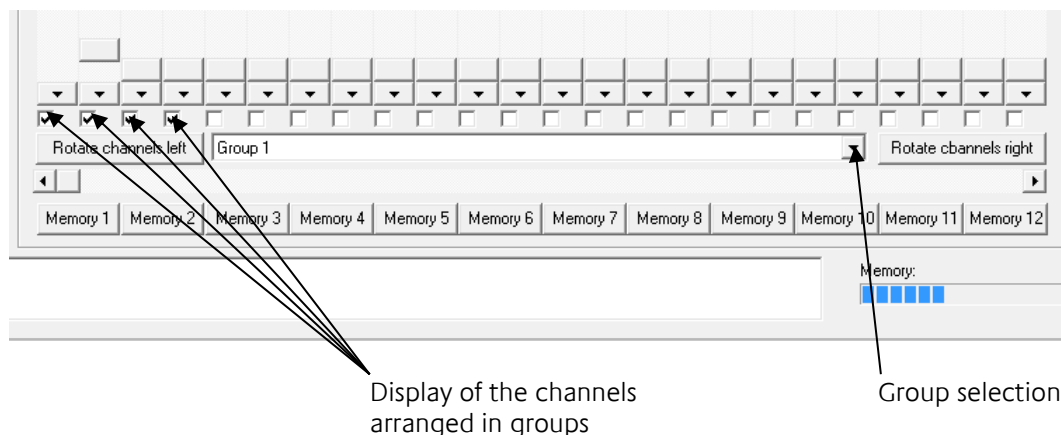
5.4.8 DMX MASTER GROUP

The master group is a specific group. The DMX channels included in the master group are scaled according to the master value when being output on the connected interface.

Example 1:   DMX value = 100%;   Master = 50% ➔   equals 50% in the output

Example 2:   DMX value = 50%;   Master = 50% ➔   equals 25% in the output
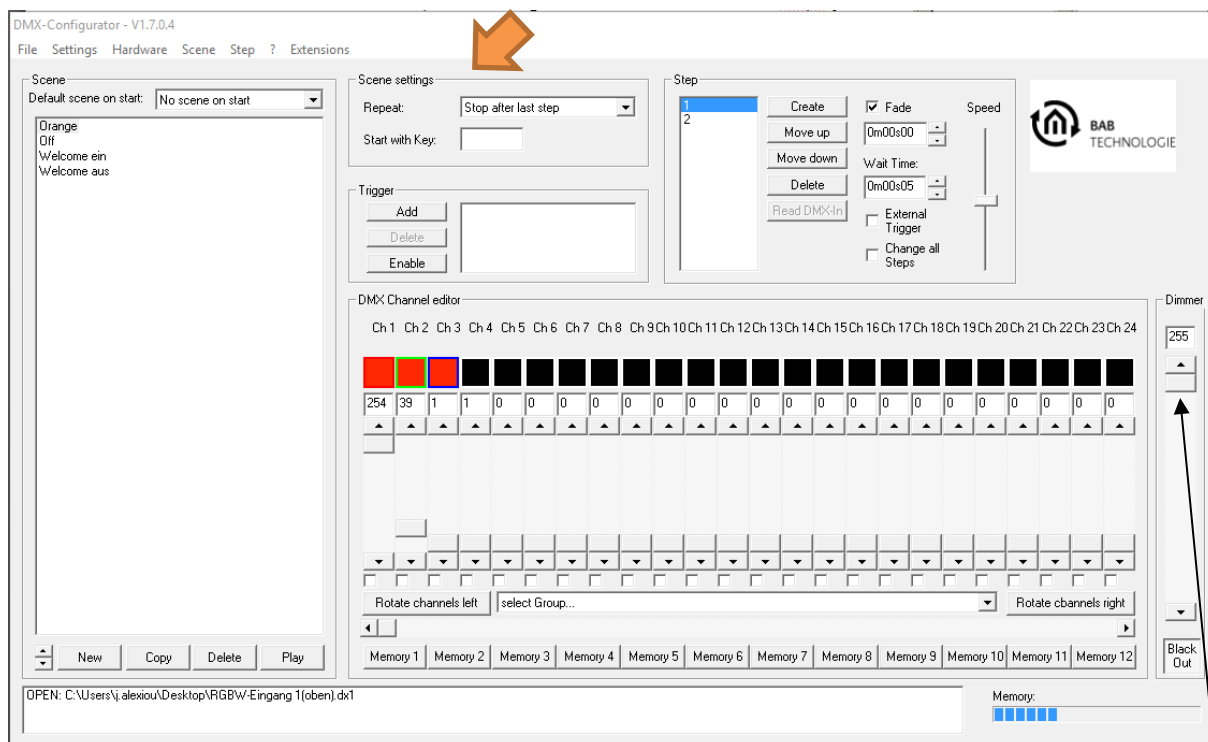
Figure 25: DMX master controller

DMX master controller

NOTE: This element is <u>only</u> effective for the reproduction (preview) of scenes with enabled preview function!

5.4.9 BEHAVIOUR OF SCENES

Scene settings: The actions which are being run after the last step of a scene are defined in the selection field of the scene settings (orange arrow).
- **Repeating scenes:** The scene is being run in repeat mode.
- **Stopping scenes:** After the last step, the execution is stopped. The light image of the last step is maintained.

5.4.10 SAVING AND LOADING PROJECTS

In the *File* menu item, you can save your created scenes and steps as a **Project** and open them again. The created files are saved in the specific *.dx1 format; besides the scenes and steps, they also include the channel settings.
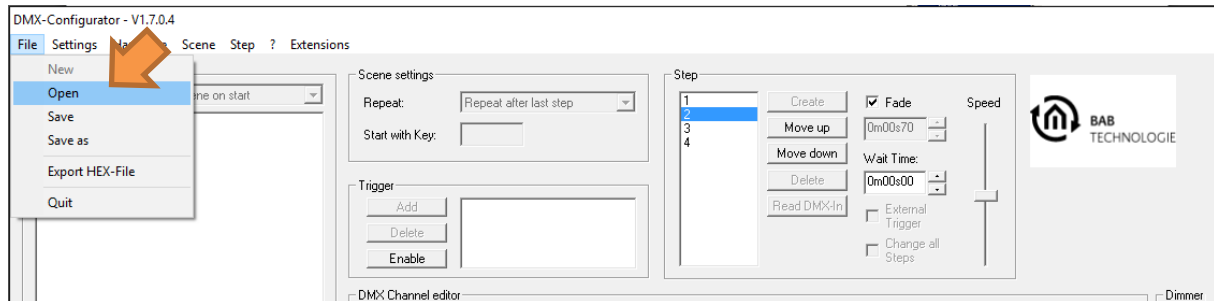
Figure 26: Loading and saving projects

5.4.11 EXPORTING AND IMPORTING SCENES

Moreover, you can separately save individual scenes. This is useful if you need the same scene in another project. Use the menu item *Scene > Export* to save individual scenes. The saved file has the extension *.scn*. Use the menu item *Scene > Import* to add an exported scene to your project.

Figure 27: Scene export and import

5.4.12 EXPORTING AND IMPORTING STEPS

Steps can also be saved separately. To this end, proceed analogously to the scenes. Use the menu item *Step > Export* to save individual steps. The saved file has the extension *.stp*. Use the menu item *Step > Import* to add an exported step to the end of the step list.

Figure 28: Export and import of steps

5.4.13   DEVICE MANAGEMENT

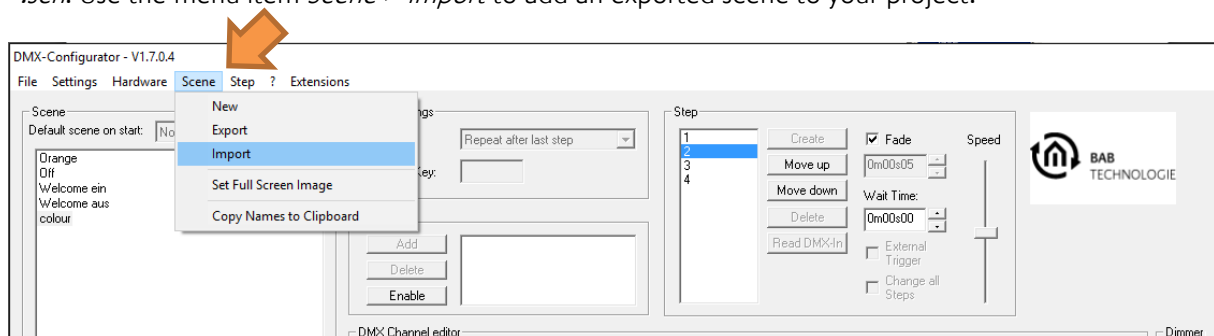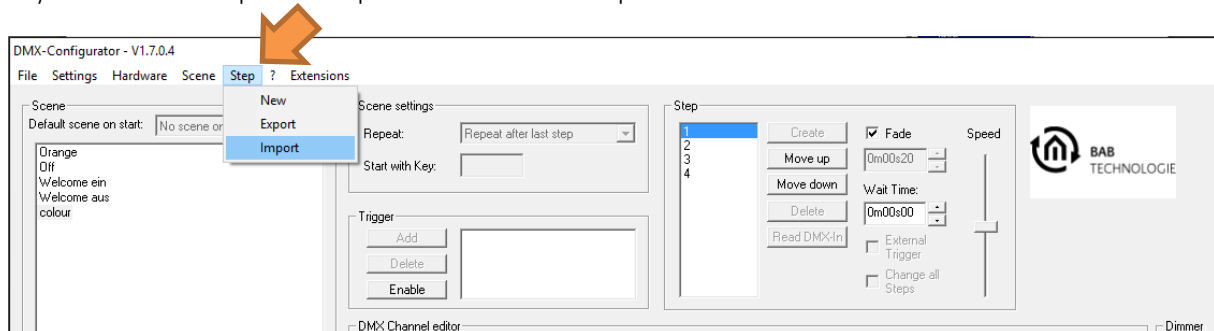To combine the individual DMX channels in one device, you must allocate the channels to this device. Go to the device management for this purpose. The device management can be accessed via the menu item *Settings > Device management*.
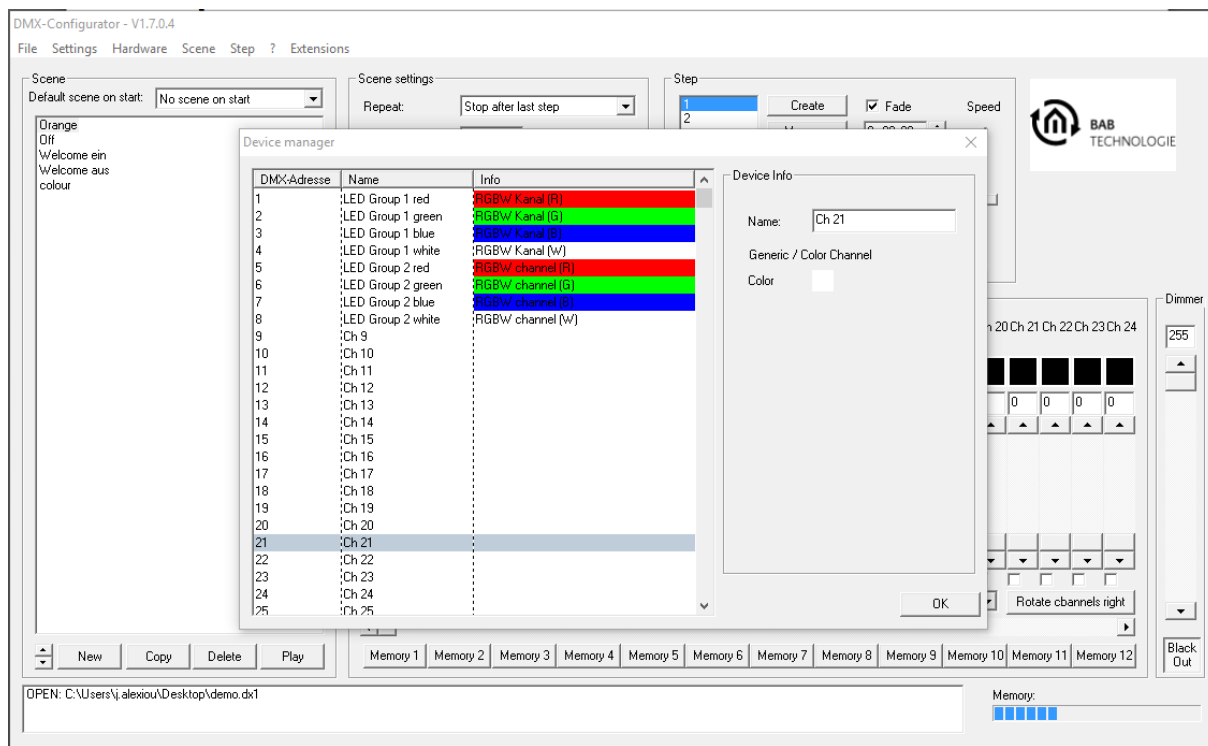

Figure 29: Device management

In the left half of the window, the DMX channels are listed individually (address 1 – 512). Once you have marked a channel, you can assign a name and a special colour to this channel. To this end, you must access the input screen at the right side. RGB and RGBW devices are defined as follows:

RGB device:
- Mark the first channel of the desired DMX device (e.g. channel 1 "Ch1").
- Enter the desired name of your DMX device in the *Name* field of the right-hand configuration window (e.g. RGB lamp 1).
- Now right-click on the channel and select *Add RGB channels*. The device management automatically adds the RGB channels.

The RGB device is defined. It is named after the name you have assigned in the first channel.

RGBW device:
- As above, but select *Add RGBW channels* in the context menu.

Note: The number of names that can be assigned in the device management is limited! A maximum of 225 names (each with a maximum of 15 characters per name) can be created. The default of 15 characters per name is explained by the fact that only 15 characters per DMX channel can be displayed in the app. Names with more than 15 characters reduce the maximum number of names and are not displayed in the app.

5.4.14 APPLICATION SETTINGS

The settings for the main program are under the menu item *Settings > Application settings*.
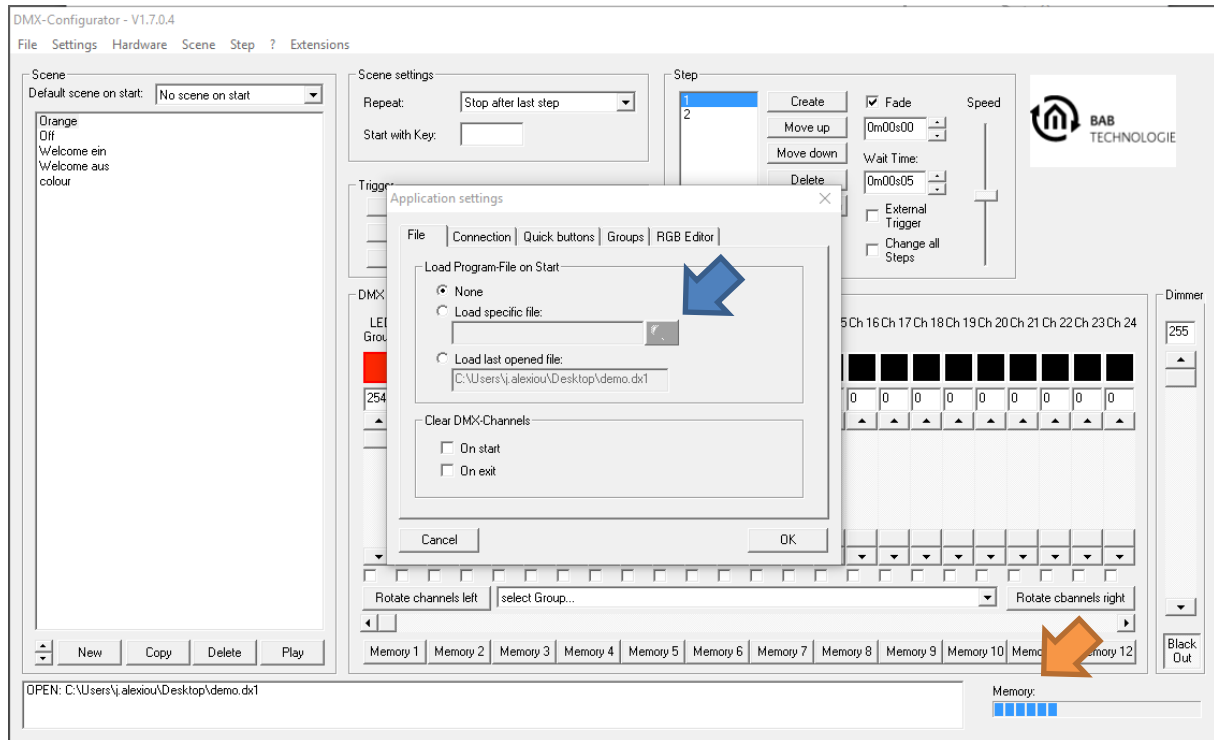
Figure 30: Application settings – file

The settings are divided into several groups.

If you directly load the file during the starting process, you define whether and which project is to be loaded during the start of the software.

- *None*: No project is loaded.
- *Load special file*: The indicated project is loaded. Select the project file with the field (blue arrow).
- *Load last file*: The previously opened project is loaded.

5.4.15 MEMORY LEVEL DISPLAY

As of *DMX-Configurator* version 1.6.0.0, there is a memory level display (orange arrow). The DUO**DMX** GATEWAY has a total memory capacity of 64 kbyte. The level display shows how much capacity of this memory is used up for your current configuration. If you transmit more information to a device, you will cause malfunctions.

Note: Some of the memory is used up by the communication objects right after the creation of a project.

5.5   *EXTENSIONS* MENU

The specific settings for the DUO**DMX** GATEWAY are made in the *Extensions* menu at the DUO**DMX** *Gateway* extension. Here, the device is connected with group addresses or EnOcean profiles, IP addresses are assigned and configuration data are transmitted. Moreover, it is possible to search for devices in the network, to activate the DMX preview and to switch between master and slave operation.

5.5.1   SELECTING THE DEVICE VARIANT

Before making the specific settings of the DUO**DMX** GATEWAY, the device variant must be selected. When selecting the *Extensions* menu for the first time, the following options appear:
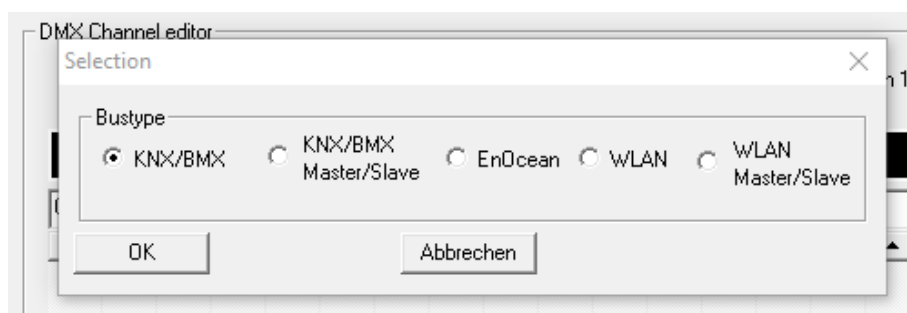

Figure 31: Selecting the device variant

Select the corresponding *bus type* for your device variant. Overview of bus types / device variants: (The marking on the front side shows which device variant you have.)

KNX/BMX is for the following device types:
  DUO**DMX** GATEWAY Standalone (item no. 12041)
  DUO**DMX** GATEWAY IP (item no. 12011)
  DUO**DMX** GATEWAY KNX (item no. 12021)

KNX/BMX SR is for the following device types:
  DUO**DMX** GATEWAY IP SR (item no. 12111)
  DUO**DMX** GATEWAY KNX SR (item no. 12121)

EnOcean is for the following device type:
  DUO**DMX** GATEWAY EnOcean (item no. 12031).

WLAN is for the following device types:
  DUO**DMX** GATEWAY Standalone WLAN (item no. 12041w)
  DUO**DMX** GATEWAY IP WLAN (item no. 10211w)

WLAN SR is for the following device types:
  DUO**DMX** GATEWAY IP SR WLAN (item no. 12111w)

Once you have selected the device type, the configuration window for the corresponding technology / bus type opens up. This selection is displayed once after the first access of the *DUO-DMX Gateway* extension.

5.5.2 KNX/IP CONFIGURATION

If the DUO**DMX** GATEWAY is a KNX or IP device, the KNX/BMX bus type must be selected for the device selection.
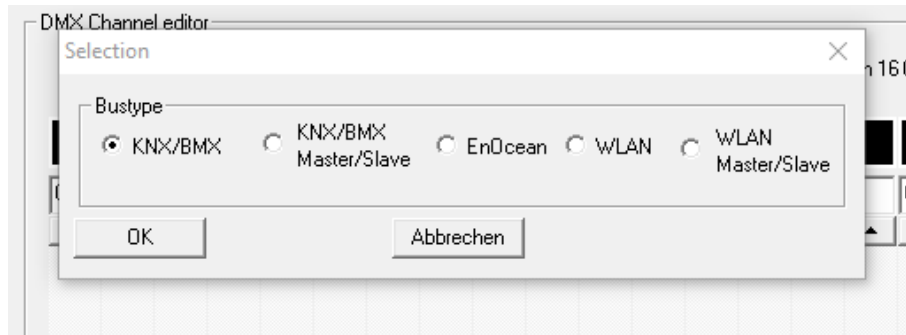

Figure 32: Device selection – KNX/BMX

This applies to the following device types:

- DUO**DMX** GATEWAY IP
  Controlled via the KNXnet/IP protocol (based on the network)
- DUO**DMX** GATEWAY KNX
  Controlled via the KNX twisted pair bus (two-wire bus).

In any case, the device is controlled via KNX group addresses but the transmission channel of the telegrams is different.

After having selected this bus type, the *Extension* window with KNX-specific parameters opens up. The window is divided into two parts: The left part of the window contains the group address administration and the right part of the window contains the connections with DMX and the *LAN/KNX* configuration.
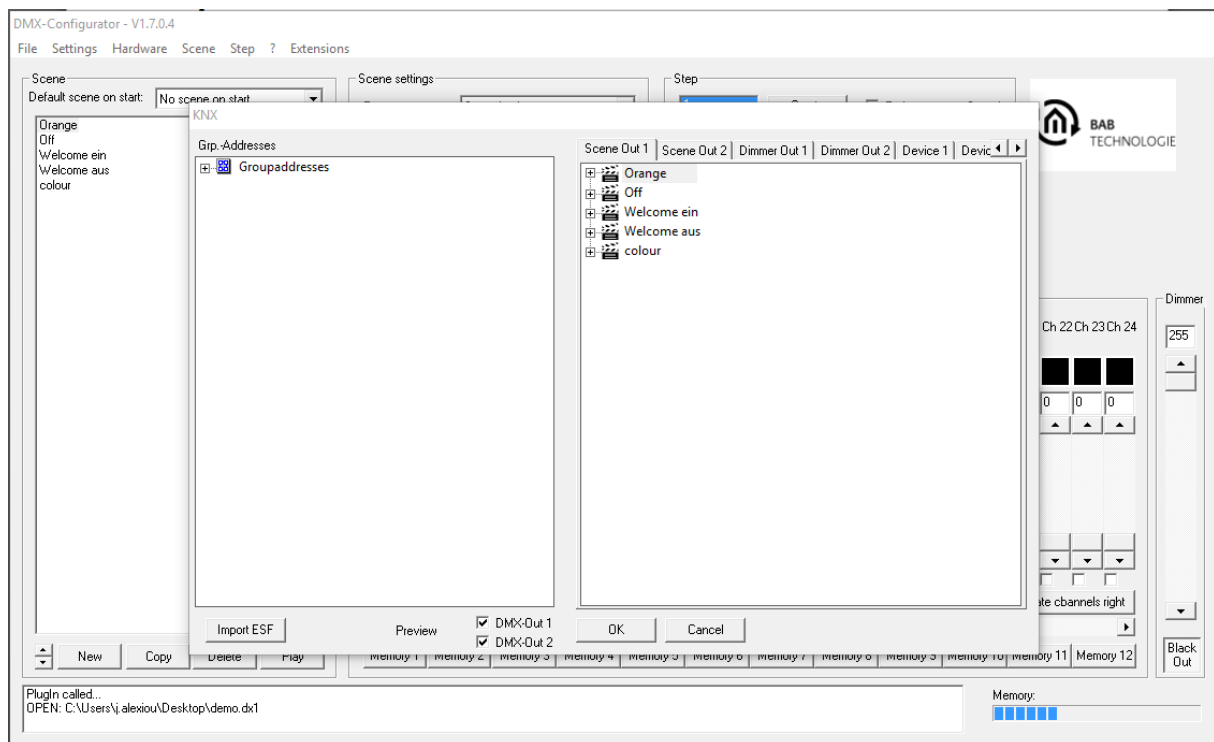

Figure 33: KNX/BMX configuration

5.5.2.1   GROUP ADDRESS ADMINISTRATION

The DMX channels and the created scenes of both DMX interfaces must be connected with group addresses. Otherwise, they cannot be controlled by the devices *IP, KNX, IP SR* and *KNX SR*. This is not necessary for the control via the DUO DMX APP. First of all, addresses must be provided in the group address administration. You have the following two options to this end:

1. Either creating group addresses in the *DMX-Configurator*, or
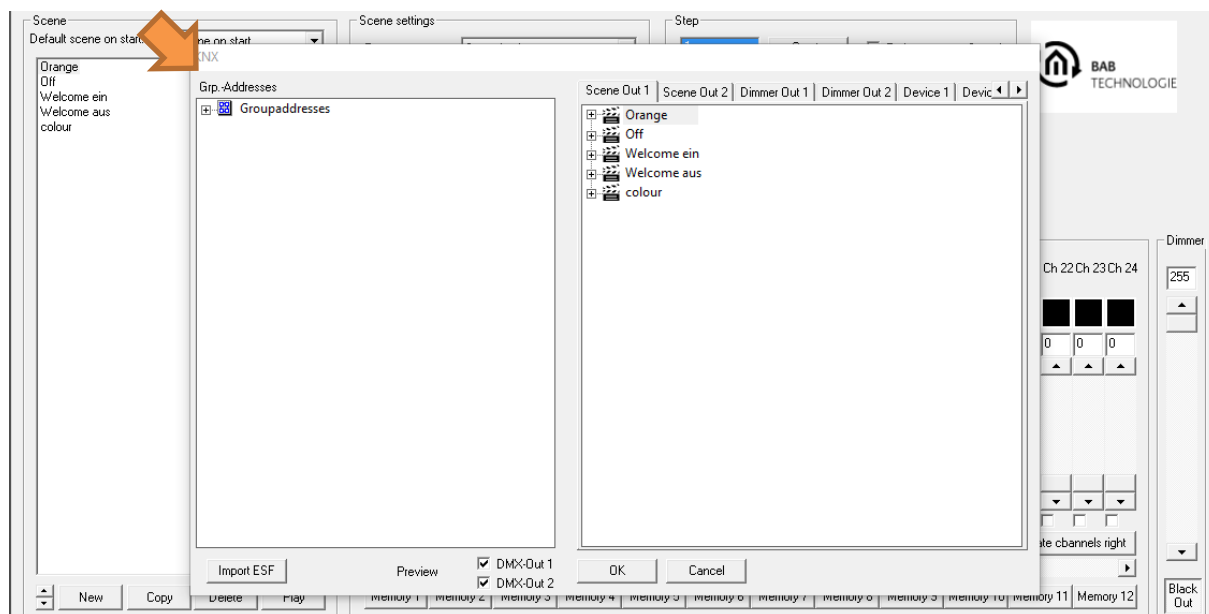2. Using the ESF data import.

Figure 34: Group address administration

CREATING GROUP ADDRESSES IN THE *DMX-CONFIGURATOR*

If there is no suitable ESF file with appropriate group addresses, the required group addresses can be created right in the *DMX-Configurator*. To do this, please proceed as described below:

1. **Creating main and middle group**
    Right-click in the empty group address field after having marked "*Group addresses*"; you are prompted to create a new main group and assign a name. Then right-click on the main group and create a middle group.

2. **Creating a group address**
    Create the desired group address by right-clicking on the middle group. A window pops up where you can enter the *Number, Name* and *Object type*.
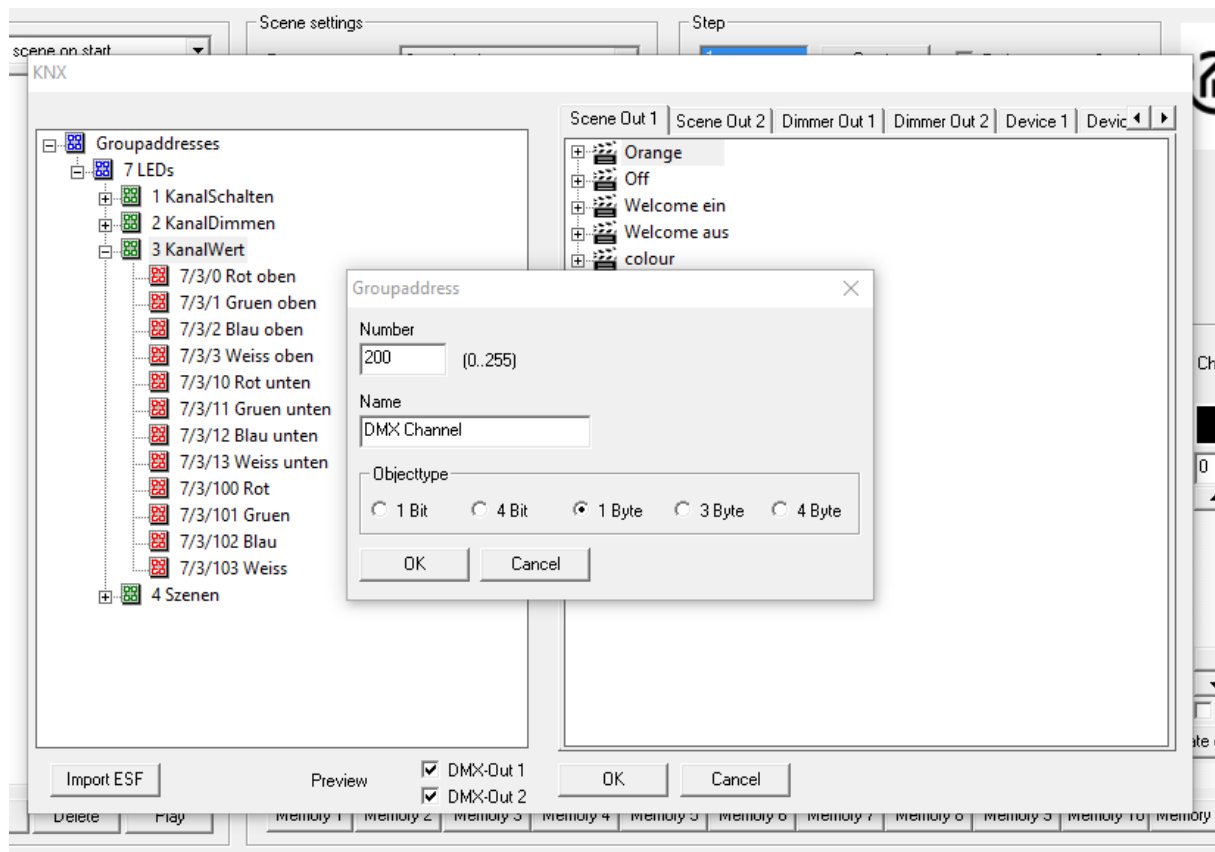
Figure 35: Creating group addresses

Object types:
- 1 bit: DPT 1.001 (EIS 1 Switch), value: [0.1]
- 4 bit: DPT 3.007 (EIS 2 Dimming relative), value: [lighter, darker, stop]
- 1 byte: DPT 5.001 (EIS 6 percent), value [0 – 100%, step size 0.4%]
- 3 byte DPT 232.600 RGB, value [R 0 – 255, G 0 – 255, B 0 – 255]
- 4 byte DPT 12.001 4 byte unsigned as RGBW, value [(0...4 294 967 295): 1st byte = R, 2nd byte = G, 3rd byte = B, 4th byte = W]

3. **Deleting entries:**
   To delete your entry, you must mark it and press the delete button (Del) on your keyboard.

USING THE ESF DATA IMPORT

To connect the group addresses of an ESF file (group address file with the extension *.esf), it must be exported directly from the ETS (or from the EIBPORT) beforehand. The following data types are relevant for all objects of the DUO**DMX** GATEWAY:

- 1 bit: DPT 1.001 (EIS 1 Switch), value: [0.1]
- 4 bit: DPT 3.007 (EIS 2 Dimming relative), value: [lighter, darker, stop]
- 1 byte: DPT 5.001 (EIS 6 percent), value [0 – 100%, step size 0.4%]
- 3 byte DPT 232.600 RGB, value [R 0 – 255, G 0 – 255, B 0 – 255]
- 4 byte DPT 12.001 4 byte unsigned as RGBW, value [(0...4 294 967 295): 1st byte = R, 2nd byte = G, 3rd byte = B, 4th byte = W]

To import an ESF file to the *DMX-Configurator*, proceed as follows:

1. **Importing an ESF (group address) file**
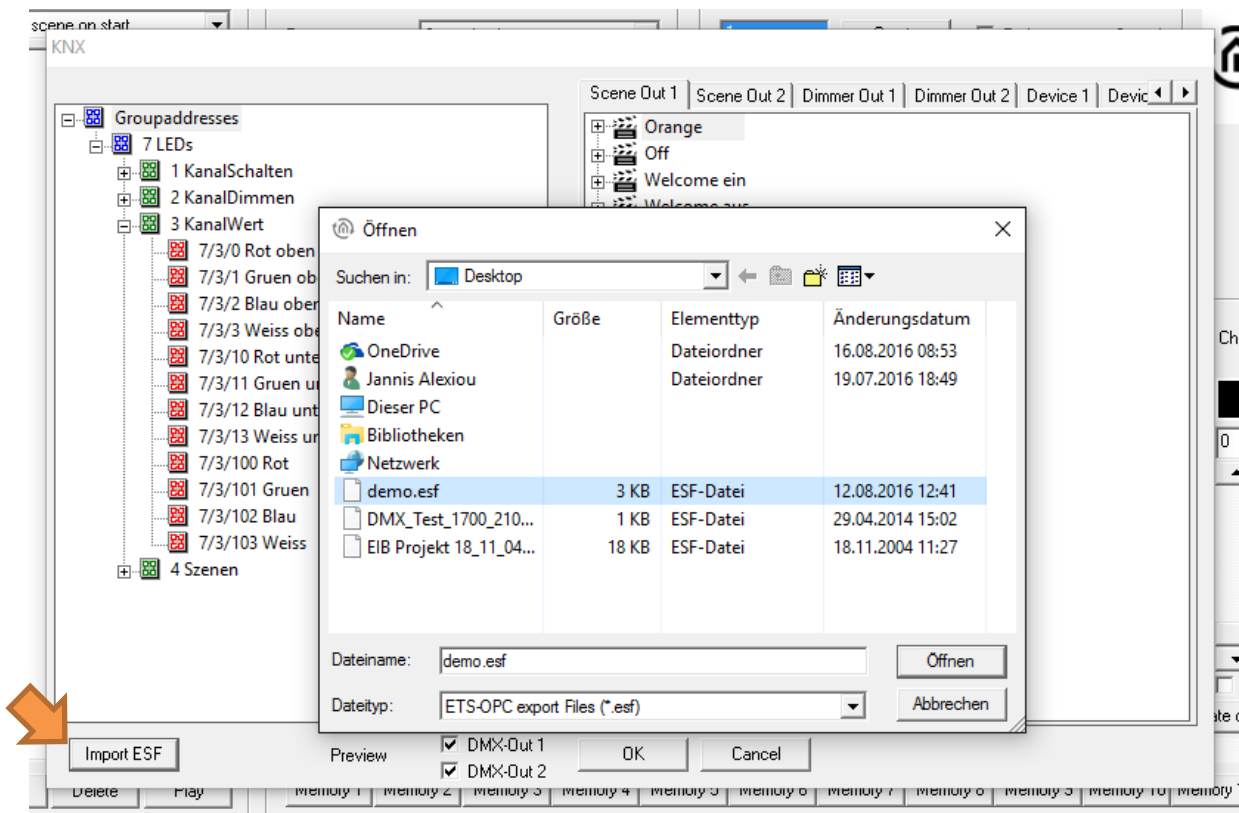   Open the menu *Extensions > KNX > Import ESF* in the *DMX-Configurator*.

Figure 36: Importing an ESF file

After having selected the desired ESF file, the address tree is displayed in the left window. Press "+" (plus) and "-" (minus) to expand or reduce the tree.

5.5.2.2   GROUP ADDRESS CONNECTION

Once the group addresses are available (see below). They can be used to connect the different DMX channels of the DMX interfaces. The created scenes are provided in the *Scene out* tab, the DMX channels are provided in the *Dimmer out* tab and the defined DMX lamps are provided in the *Device* tab.

CONNECTING THE SCENES (*SCENE OUT*)

All scenes created in the *DMX-Configurator* are listed in the *Scene out 1* and *Scene out 2* tabs. The scenes can be connected with the following data types:

- 1 bit: DPT 1.001 (EIS 1 Switch), value: [0.1]

Scenes are started by telegrams with the value "1" and stopped or interrupted by the telegram value "0" (see chapter "*LAN/KNX*").

To create a connection, please proceed as described below:

- Simply drag the desired group address from the address tree at the left side to the corresponding scene at the right side. Then the group address is illustrated below the scene. (see figure below)
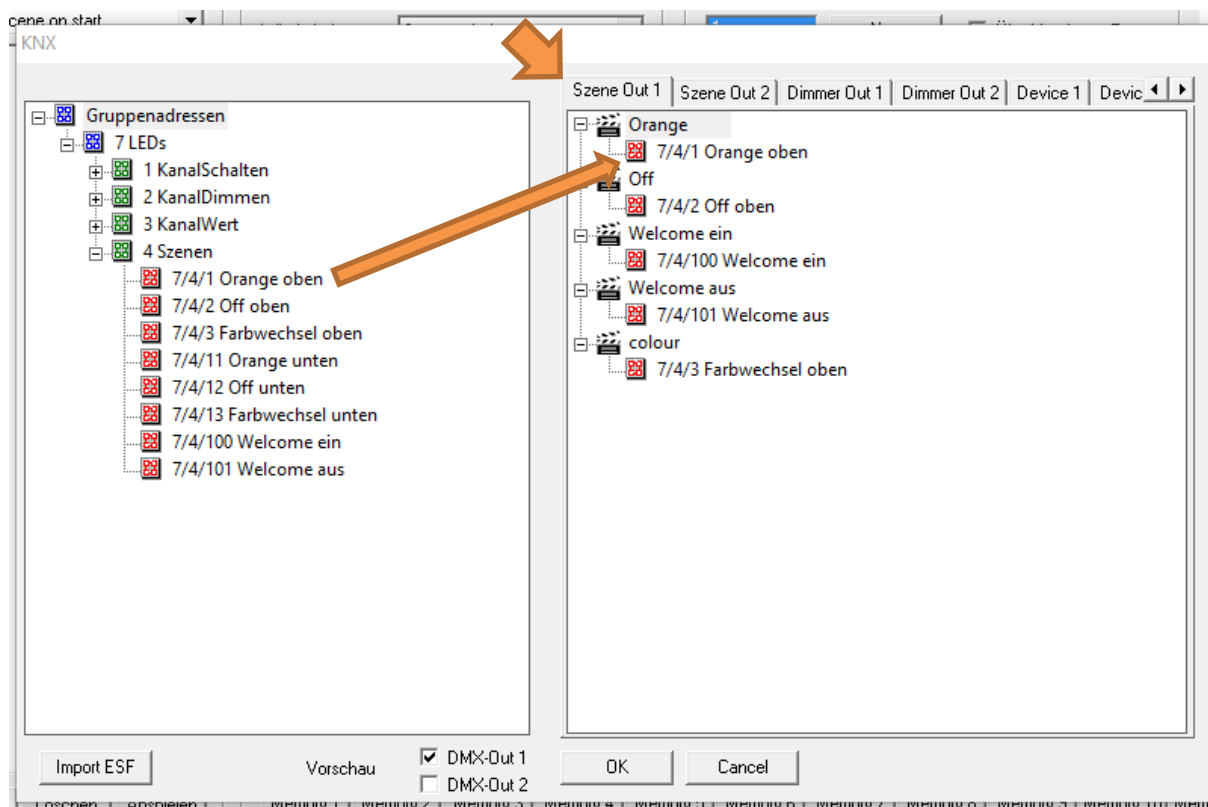

Figure 37: Connecting the group addresses with the scenes

Each scene can be started with any number of group addresses. All relevant addresses are dragged to the scene.

Note: The program automatically checks for the connection whether the selected group address has the correct data type for the communication object. If this is not the case, the connection is not possible and the group address cannot be connected.

CONNECTING THE DMX CHANNELS (*DIMMER OUT*)

Not only the scenes but also the DMX channels can be controlled individually. In this context, each of the 512 DMX channels represents its own *KNX actuator channel* with the data point types *1-bit switch*, *4-bit relative dimming* and *1-byte absolute dimming*.

- 1 bit: DPT 1.001 (EIS 1 Switch), value: [0.1]
- 4 bit: DPT 3.007 (EIS 2 Dimming relative), value: [lighter, darker, stop]
- 1 byte: DPT 5.001 (EIS 6 percent), value [0 – 100%, step size 0.4%]

The DMX channels can be connected with several KNX group addresses. In this context, the first group address is sending and receiving, while all other addresses are only receiving. **(Sending and listening group addresses)**

To create a connection, please proceed as described below:

- Simply drag the desired group address from the address tree at the left side to the corresponding communication object at the right side. Then the group address is illustrated below the object. (see figure below)
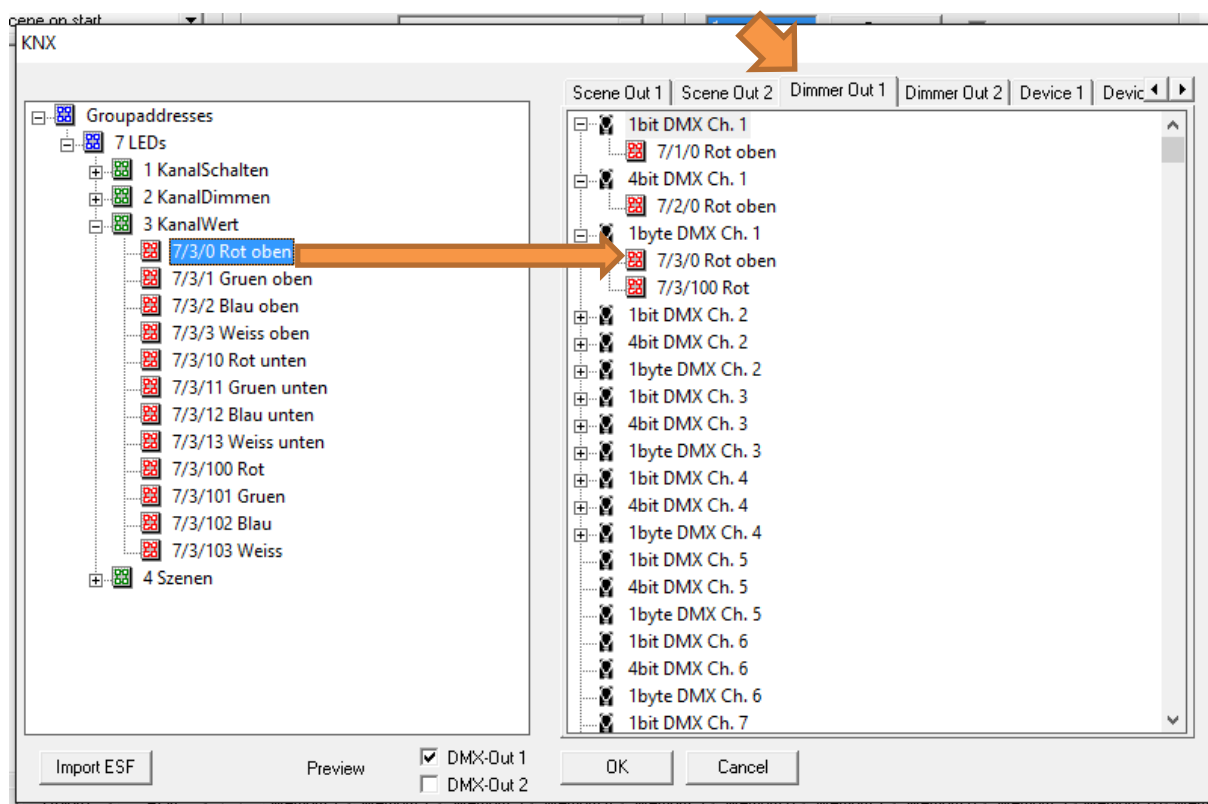

Figure 38: Connection of the dimmer channels

If a DMX channel is switched on via 1 bit, the 1-byte communication object adopts the previously set value. For example, if the 1-byte communication object was dimmed to 50% and then switched off, it starts at 50% when being switched on again. **(Memory function)**

STATUS FEEDBACK SIGNAL AND SCENES.

The DUO**DMX** GATEWAY behaves similarly to the KNX dimmer.
This means that if a DMX channel is switched on or off via a 1-bit or 4-bit KNX telegram, the DUO**DMX** GATEWAY sends a 1-byte KNX telegram with the current value as status feedback signal.
And vice versa, if a DMX channel is switched on or off via a 1 byte KNX telegram, the DUO**DMX** GATEWAY sends a 1 bit KNX telegram with the current status (ON/OFF) as status feedback signal.
This is the reason why the DUO**DMX** GATEWAY does not require a separate feedback signal address.

As of firmware version 2.2.0.4, the status of the DUO**DMX** GATEWAY is also sent if an ongoing scene has been stopped. Thus, visualisation elements are updated to the correct condition of the DMX devices with this status feedback signal.

Note: The program automatically checks for the connection whether the selected group address has the correct data type for the communication object. If this is not the case, the connection is not possible and the group address cannot be connected.

DMX channel value distribution

If the value of a DMX channel falls below a value of 10% (25), a "0" is sent on the 1-bit KNX object. If the value, however, exceeds the 10%, a "1" is sent on the 1-bit KNX object.

CONNECTION WITH PRE-DEFINED DEVICES

Besides the dimmer channels and the scenes, the group addresses can also be connected with DMX devices previously defined in the *DMX-Configurator.* In this context, a DMX device can either consist of 3 (RGB lamp) or 4 (RGBW lamp) DMX channels. To control these devices directly by a group address, the following data types must be used:

- ▪ 3 byte DPT 232.600 RGB, value [red 0 – 255, green 0 – 255, blue 0 – 255]
- ▪ 4 byte DPT 12.001 4 byte unsigned as RGBW, value [(0…4 294 967 295):
  1st byte = red, 2nd byte = green, 3rd byte = blue, 4th byte = white]

To combine the individual DMX channels in devices, please proceed as described in the chapter "*Device management*". Once the devices have been defined there, they appear automatically in the window *Device 1* (for DMX out 1) and *Device 2* (for DMX out 2). To create a connection, please proceed as described below:

- ▪ Simply drag the desired group address from the address tree at the left side to the corresponding device at the right side. Then the group address is illustrated below the object. (see also figure below)

Note: The program automatically checks for the connection whether the selected group address has the correct data type for the communication object. If this is not the case, the connection is not possible and the group address cannot be connected.
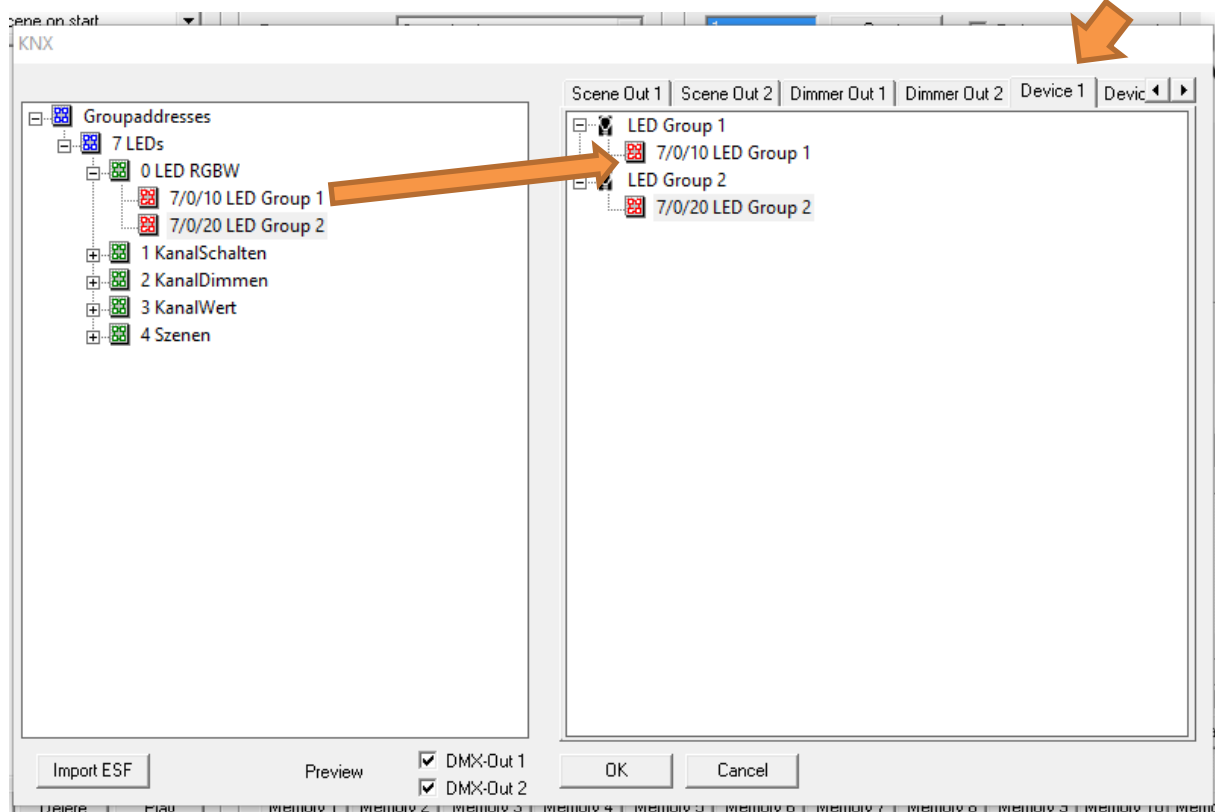

Figure 39: Connection with pre-defined devices

5.5.2.3 LAN/KNX

The settings specific for the network and for KNX are made in the *LAN/KNX* tab.

IMPORTANT NOTICE: In case that DUO DMX cannot be found, you must <u>deactivate</u> all network interfaces except for the currently used network interface!
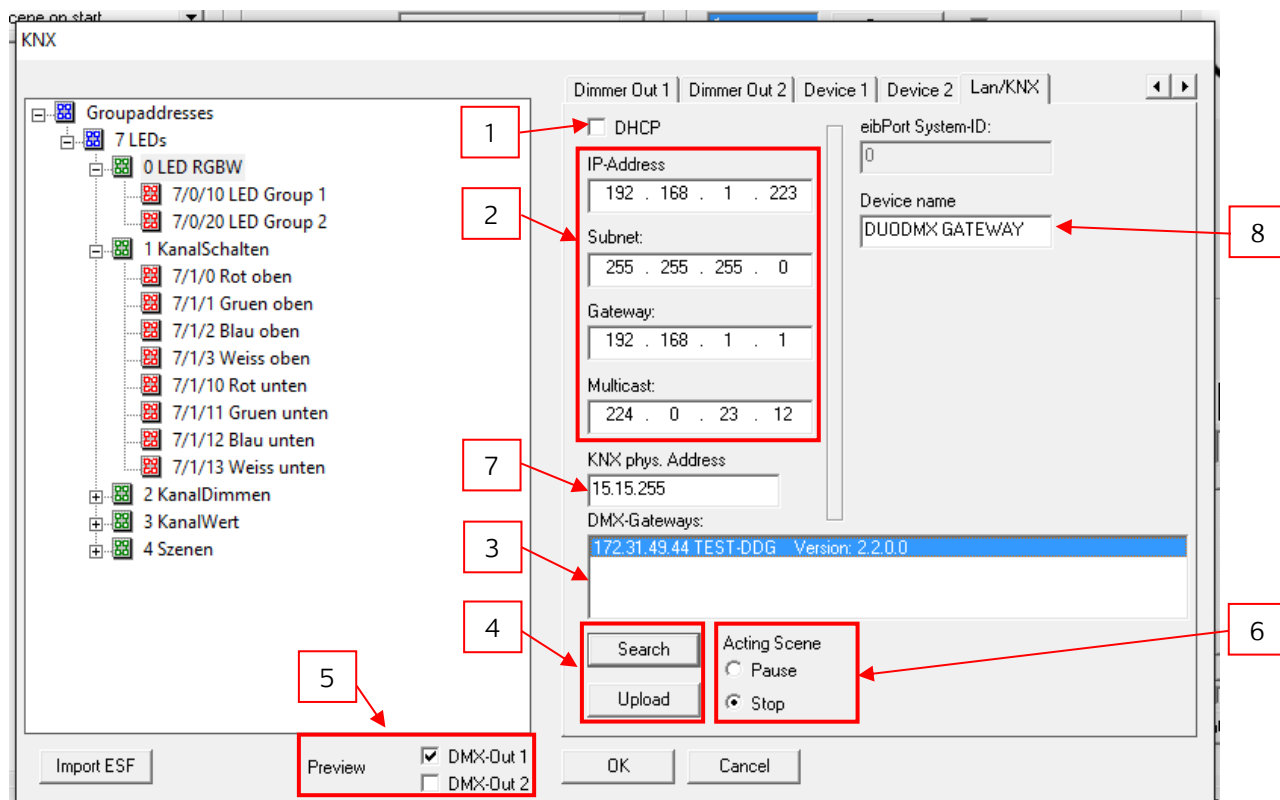

Figure 40: KNX DUODMX GATEWAY

1. Activating/deactivating DHCP
2. IP address setting and KNXnet/IP (routing) multicast group.
3. List of the DUO**DMX** GATEWAYs available in the network. Is reloaded by pressing the *Search* button. The corresponding gateway is indicated together with its IP address, the assigned name and the current firmware version number (as of firmware 2.0.0.1). If the device has not yet been assigned a name, its MAC address is indicated. With a mouse click, you can mark a device for the configuration data upload or the activation of the unicast preview.
4. Press the *Search* button to show all DUO**DMX** GATEWAYS available in the network. Once the desired device has been marked in the list and the *Upload* button has been pressed, all current configuration data are transmitted to the device via the network (PC and DUO**DMX** GATEWAY must be in the same IP address range).
5. You can specify at this point, for which of the both DMX interfaces you want to enable the preview. The preview is not enabled until you have ticked the check box (*broadcast preview*). If a device is also marked in the *DMX Gateways* list, the preview is only applicable to this device (*unicast preview*). In this case, the PC and the gateway must be in the same network range (subnet). (See also chapter *"Enabling the DMX preview"*).

6. Determines the behaviour of a started scene when a telegram with the value "0" is sent to its connected group address. In case of *Pause*, the ongoing scene is stopped and continues at this point once it has been triggered again. In case of *Stop*, the scene starts from the beginning once it has been triggered again.
7. Assign a physical address to the KNX variants of the device.
8. Here you can assign a unique name to each device. This name will appear in the *DMX gateways* list instead of the MAC address.

5.5.3   *IP SR* CONFIGURATION

If the DUO**DMX** GATEWAY is a KNX or IP device with integrated master/slave *SR* function (send/receive), the *KNX/IP master/slave* must be selected as bus type for the device selection.
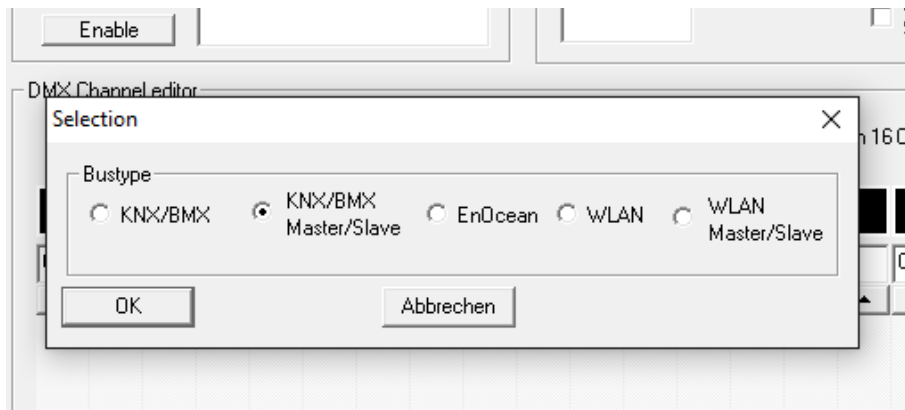

Figure 41: KNX/IP master/slave device selection

This applies to the following device types:

- 12111 DUO**DMX** GATEWAY IP SR
  Communication (sending/receiving) via the KNXnet/IP protocol (based on the network).

- 12121 DUO**DMX** GATEWAY KNX SR
  Communication (sending/receiving) via the KNX twisted pair (two-wire bus).

In any case, the device communicates via KNX group addresses but the transmission channel of the KNX telegrams is different. The configuration window of these device types is only slightly different to that of the IP configuration.

5.5.3.1   SPECIAL FEATURES OF THE MASTER/SLAVE (SR) FUNCTION

The device variants with the ending *SR* offer the option of using one or both DMX interfaces not only as DMX master (sending) but also as DMX slave (receiving). For this purpose, there are check boxes in the *LAN/KNX* tab (only after having selected the correct device variant, see above) where you can set the operating mode of the DMX interfaces separately.
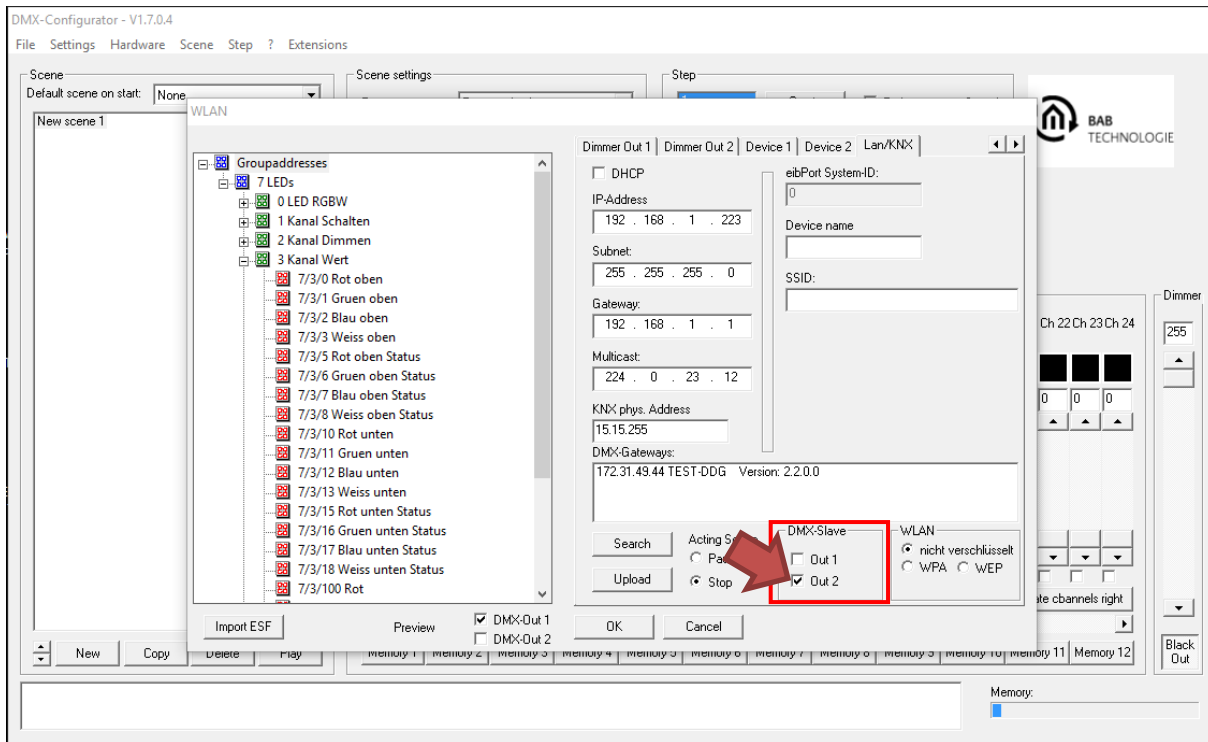
Figure 42: Configuration for DMX slave

By activating the check box, the corresponding DMX interface is switched to slave mode. A DMX master (DMX light control panel), for example, can be connected to this DMX interface.
Thus, commands are received from the DMX via the *SLAVE* DMX interface and forwarded to KNX.

See the following example. The configuration shows how a KNX actuator is controlled via a DMX mixing desk.
The DMX mixing desk is connected to the DMX interface 2 (see red rectangle; *Out 2* is selected as the slave (red arrow)).
In the *Dimmer Out 2* tab, the KNX group address 1/1/1 (EIS6, 1 byte) is assigned to the DMX channel 1 (orange arrow).
Thus, the received dimming value from the DMX channel 1 (0%-100%) is directly forwarded to the KNX group address 1/1/1.
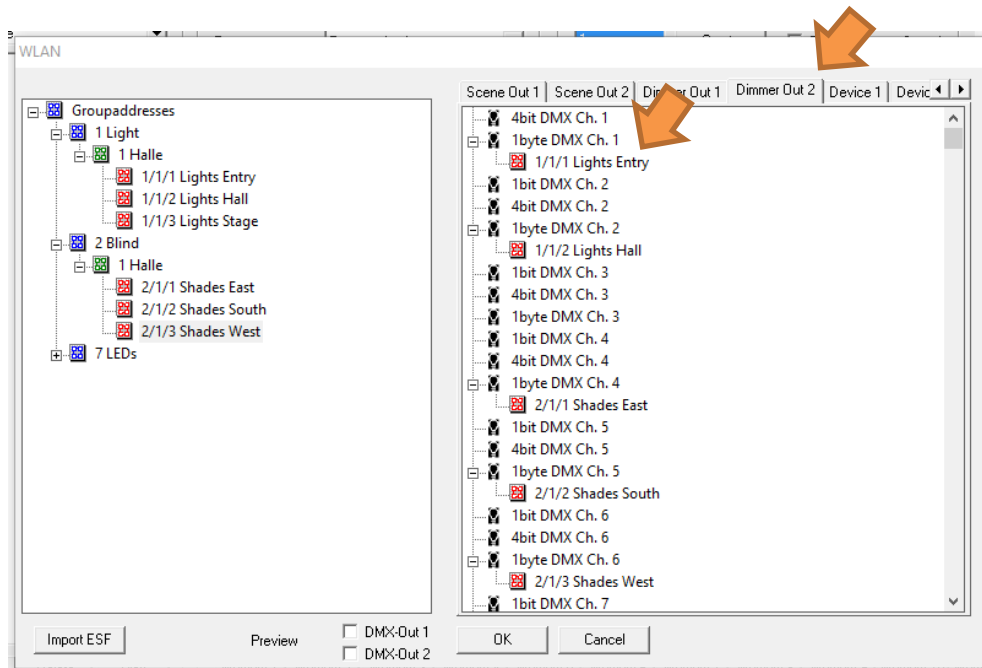
(EXCEPTION) FEEDBACK SIGNAL OF ANY INFORMATION FROM THE DMX WORLD

**PLEASE NOTE: THIS IS ONLY NECESSARY, IF ANY STATUS IS TO BE ACTIVELY SENT FROM DMX TO KNX (VERY HIGH TELEGRAM LOAD!)!
BY DEFAULT, THE DUODMX GATEWAY SENDS STATUS FEEDBACK SIGNALS TO KNX WITHOUT THIS KIND OF FEEDBACK SIGNAL!**

To allow for sending and receiving on a DMX line at the same time, it is possible to establish a link between interfaces. ONLY IF, for example; DMX Out 1 is defined as master and DMX Out 2 is defined as slave, YOU MAY connect both DMX interfaces directly with each other at the terminal.

To receive the DMX channel values as KNX telegram in slave mode, the corresponding output of the DMX interface in slave mode must be provided with an appropriate (feedback signal) group address. In this context, only the following communication objects of the dimmer channels are relevant (*Dimmer Out 1* and *Dimmer Out 2*):

- 1 bit: DPT 1.001 (EIS 1 Switch), value: [0.1]
- 1 byte: DPT 5.001 (EIS 6 percent), value [0 – 100%, step size 0.4%]

If the DMX interface 2 is configured slave, as in the example above (orange arrow), both communication objects of the corresponding DMX channel can be connected in *Dimmer Out 2* with the addresses for the status feedback signal.
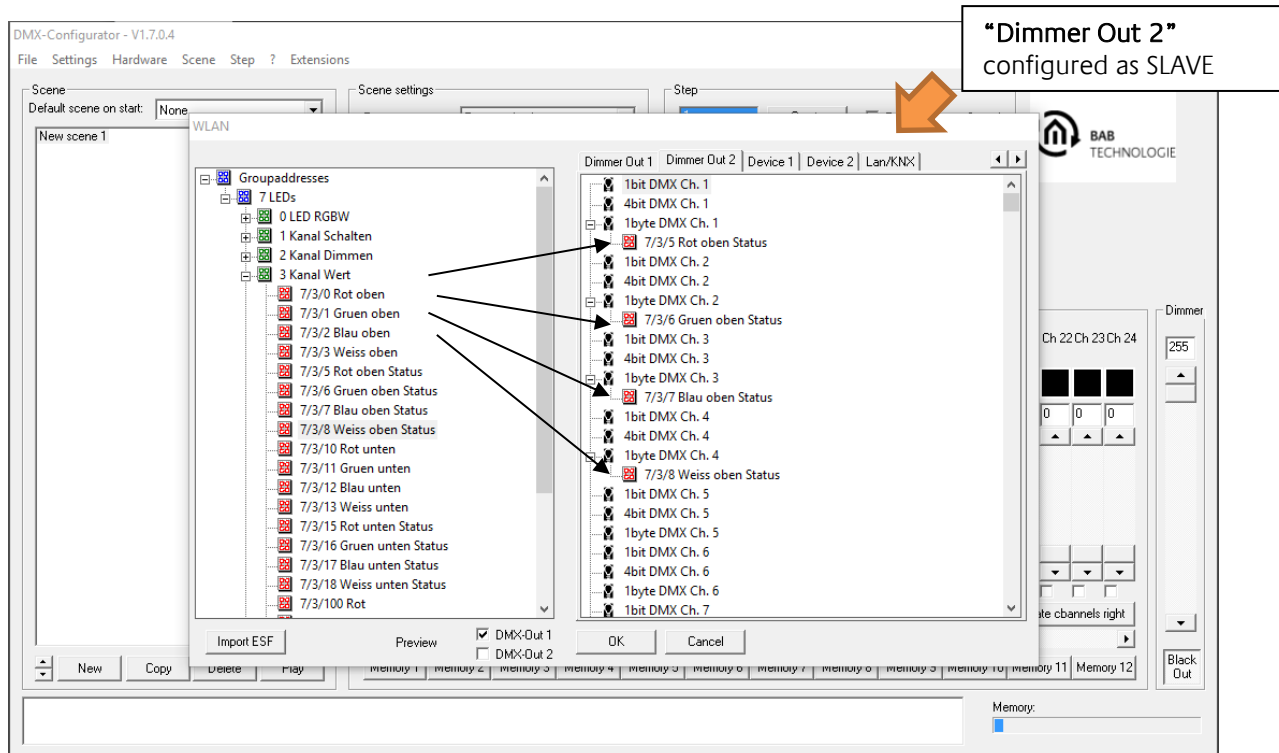

Figure 43: Connection with addresses for status feedback signal

Note: If you configure one DMX interface as DMX master and one DMX interface as DMX slave, please make sure not only to send on the group address of the configured DMX slave interface on KNX (the actual value coming from DMX) but also the feedback signal on the group address(es) of the DMX master (the current value of the communication object).

"Dimmer Out 1" configured as MASTER
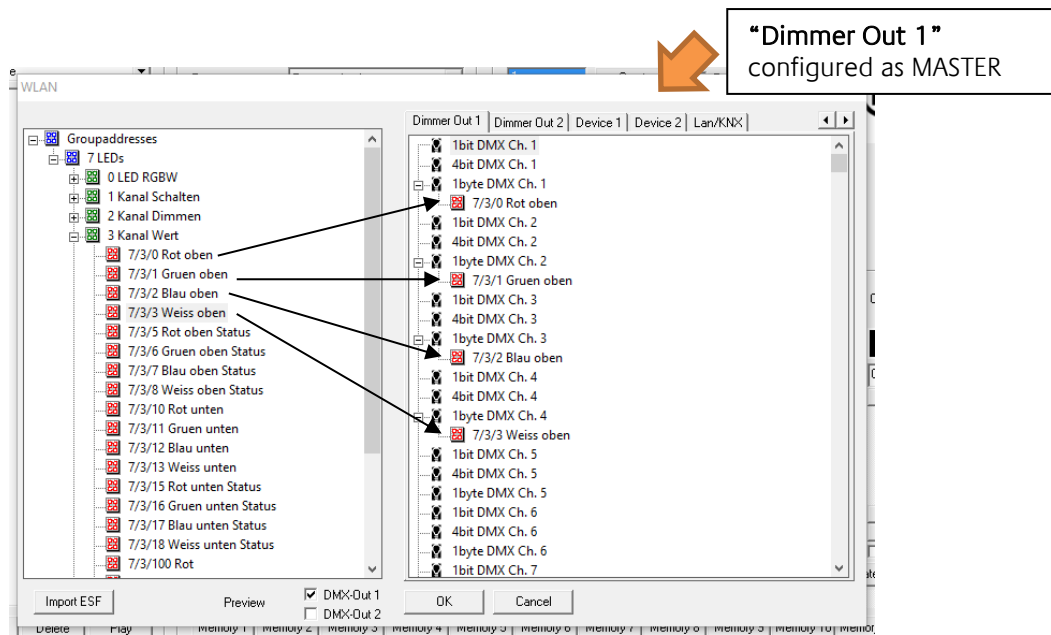
For a better understanding, the previous figure shows the assigned KNX group addresses for the control of the DMX channels in *Dimmer Out 1*.

5.5.3.2 GROUP ADDRESS ADMINISTRATION

See chapter "*Configuration for KNX/IP*".

Creating group addresses in the *DMX-Configurator*

See chapter "*Configuration for KNX/IP*".

Using the ESF data import

See chapter "*Configuration for KNX/IP*".

5.5.3.3 GROUP ADDRESS CONNECTION

See chapter "*Configuration for KNX/IP*".

Connecting the scenes (*Scene out*)

See chapter "*Configuration for KNX/IP*".

Connecting the DMX channels (*dimmer out*)

See chapter "*Configuration for KNX/IP*".

Connection with pre-defined devices

See chapter "*Configuration for KNX/IP*".

5.5.3.4 LAN/KNX

See chapter "*Configuration for KNX/IP*". In this case, the configuration only differs in the additional parameters for DMX master / slave (see above).

5.5.4   *ENOCEAN* CONFIGURATION

If the DUO**DMX** GATEWAY to be configured is a device with integrated EnOcean transceiver, you must select the *EnOcean* variant for device selection. The selection applies to the following device types:

- 12031 DUO**DMX** GATEWAY EnOcean
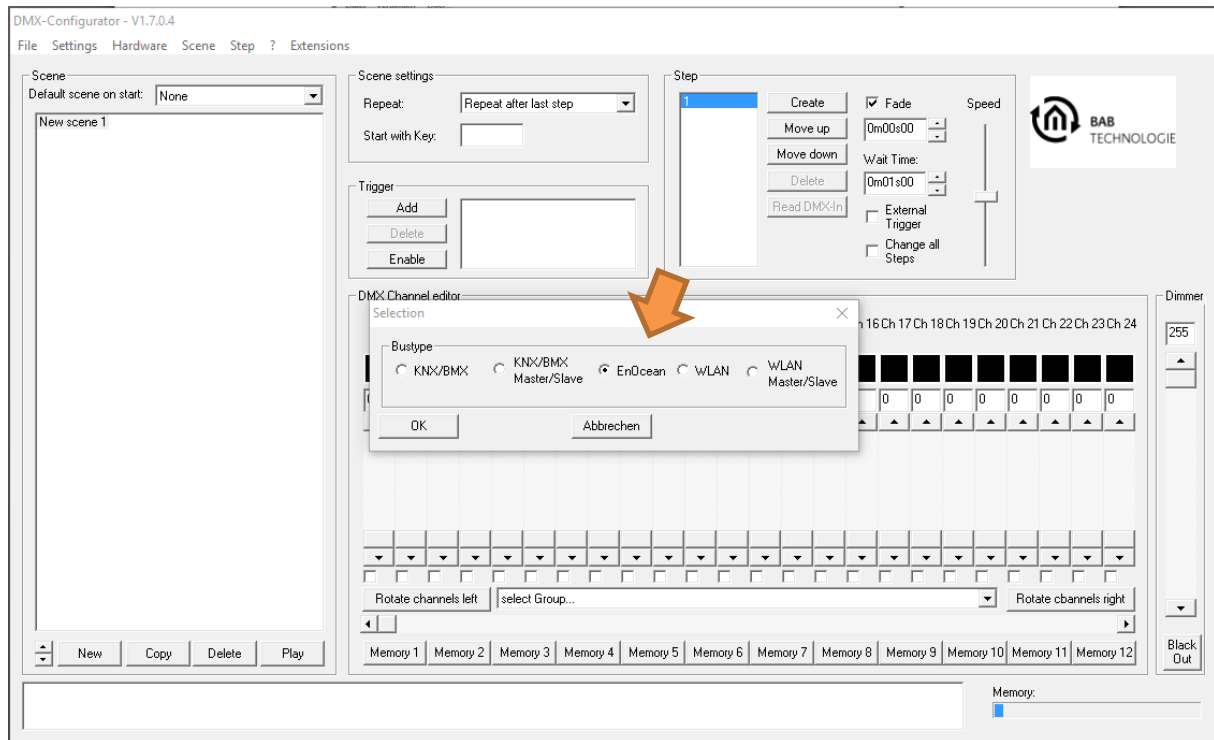 The device is controlled by EnOcean radio profiles.

Figure 44: EnOcean device selection

5.5.4.1   CONNECTION OF ENOCEAN PROFILES

The left half of the *Transmitter* column shows all EnOcean profiles received by the DUO**DMX** GATEWAY EnOcean. The profiles are displayed with their EnOcean-specific names. If you click twice on the profile name (no double-click!), you can rename it. To ensure better allocation at a later point in time, assign a unique name for EACH profile such as *Switch_Rocker1_ON.*
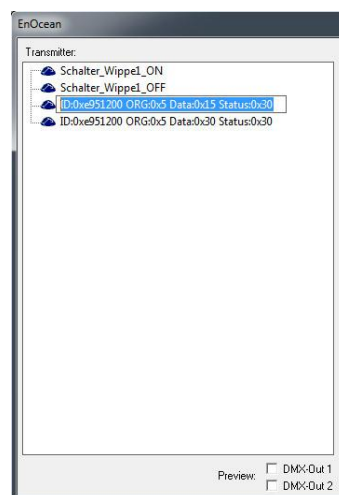
Figure 45: EnOcean configuration – naming profiles

In this context, the DUO**DMX** GATEWAY of the EnOcean variant supports the EnOcean profiles *ORG0x5* (for supported EnOcean profiles see chapter "Supported EnOcean profiles"). These profiles correspond, e.g. to tactile sensors or window handles. To delete a received profile from the list, you must mark it and delete it with the *Del* button. Once the profiles have been named as described above and light scenes have been created by means of the *DMX-Configurator* (see chapter "*Creating scenes*"), the profiles are simply assigned to the desired channels or scenes by drag & drop.
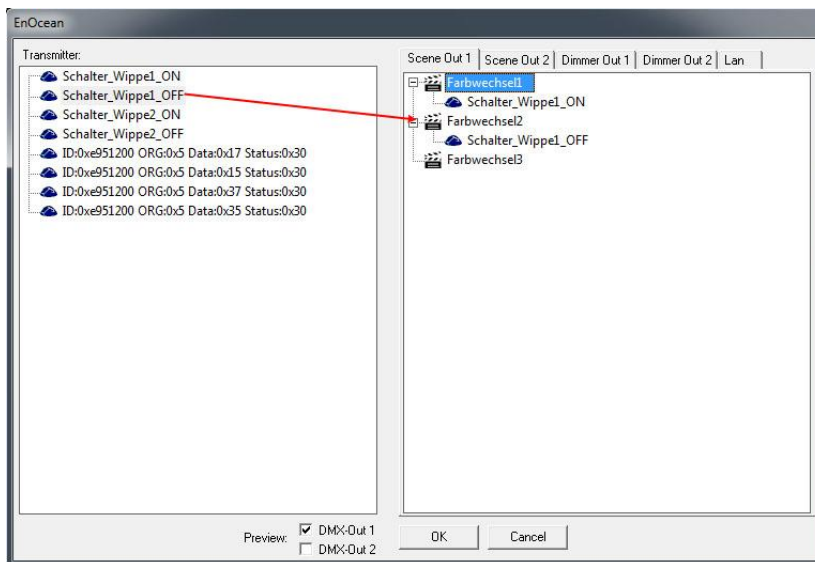
Figure 46: EnOcean – connection of scenes

CONNECTION OF SCENES

In case of EnOcean, the scenes are started and stopped with the same profile. This means that a rocker switch can start and stop or interrupt two different scenes. The behaviour of the scenes for an *OFF* or *STOP* telegram can be defined in the *LAN/EnOcean* tab.

It is also possible to connect several profiles with one scene. To delete a connection, you simply must mark it and then press the *Del* button.

CONNECTION OF THE DMX CHANNELS

To allow for the direct dimming of the DMX channels in the DMX outputs with EnOcean profiles, it is necessary to connect both profiles of a rocker switch for each channel.
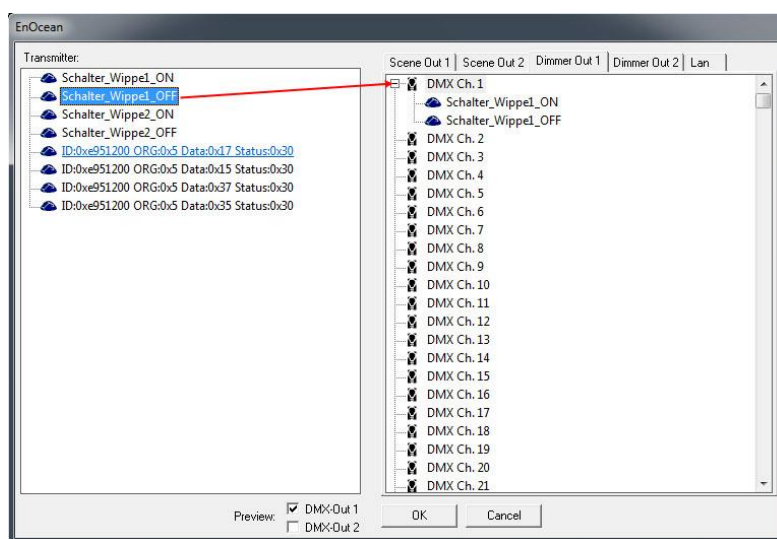

Figure 47: EnOcean – connection of the DMX channels

The DUO**DMX** GATEWAY identifies the dimming as soon as one of the buttons is pressed for more than 500ms, and it stops it, as soon as the button is released. Press the *ON* button of the rocker switch for brighter dimming and the *OFF* button for darker dimming.

ENOCEAN CONFIGURATION EXAMPLE

Below are the individual steps for controlling (switching and dimming) a DMX channel (e.g. the white channel of an RGBW lamp) with an EnOcean button (by means of a rocker switch):

1. Start the *DMX-Configurator*.
2. Open the *Extension* menu and select the EnOcean variant.
3. Press and release the EnOcean button at the ON side. This received EnOcean profile is immediately displayed on the left side of the window. (NOTE: the simple EnOcean button sends a unique EnOcean profile for both sides of the rocker switch!). See the following figure.
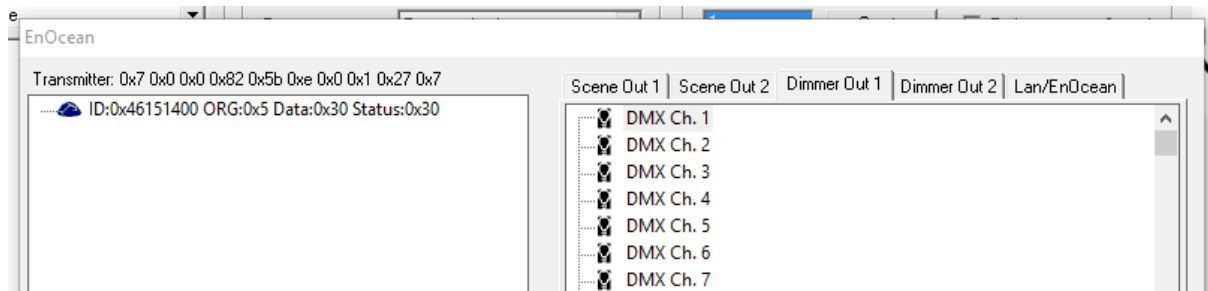
4. To avoid confusion, rename the profile e.g. to *Switch ON*.
5. Repeat the steps 3 and 4 for the OFF status of the rocker switch of the EnOcean button. Rename this profile accordingly e.g. to *Switch OFF*.
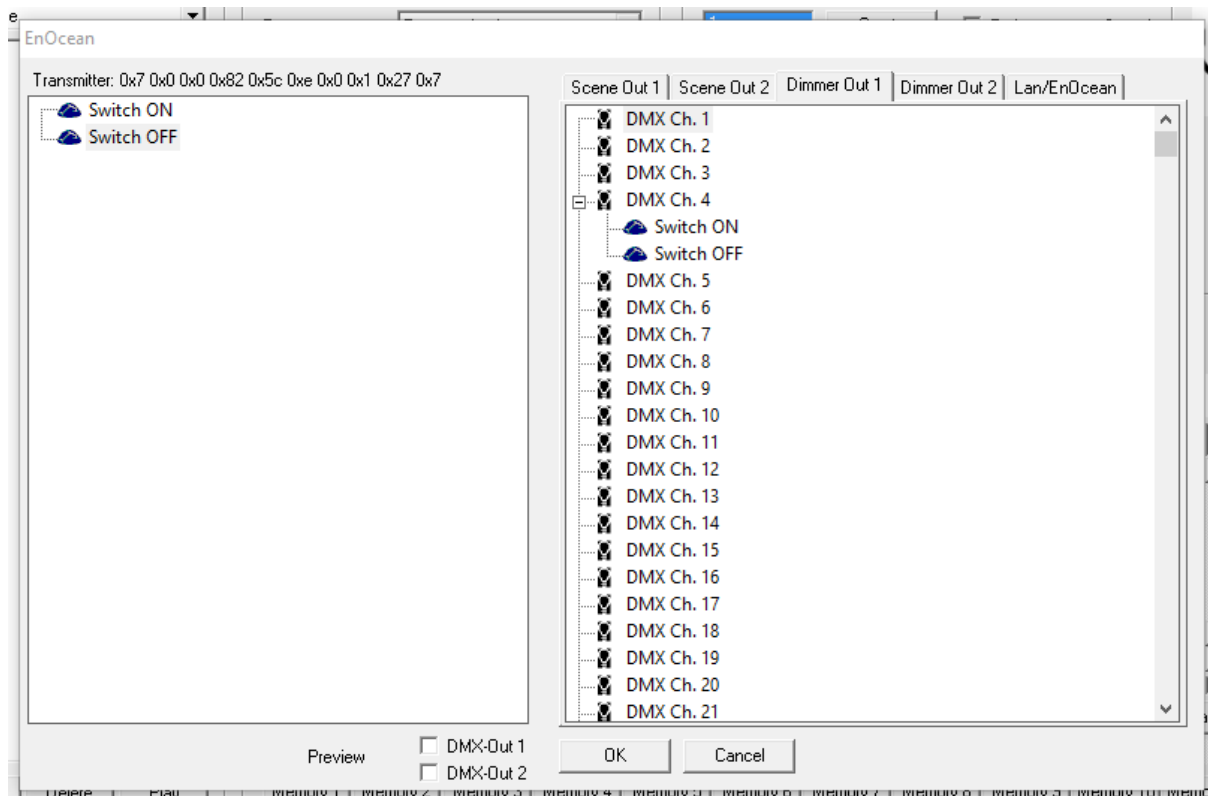
6. Before loading the configuration to the DUO**DMX** GATEWAY, the received EnOcean profiles must be allocated to the desired DMX channel. Both profiles (ON and OFF) are allocated to the same DMX channel. Both profiles are necessary for switching on and off, or for dimming.
The figure above shows the complete configuration which is necessary for switching on and off or for dimming the fourth DMX channel via an EnOcean tactile sensor.

5.5.4.2   LAN/ENOCEAN

Please use the chapter "*LAN/KNX*" (see above) for the description of the network settings, search function, behaviour of scenes and device names.

EXCEPTIONS FOR THE LAN/ENOCEAN CONFIGURATION

One exception for the DUO**DMX** GATEWAY EnOcean variant is that it also offers a *Repeater* function in addition to its *Gateway* function. In this context, the device repeats all received EnOcean signals thus increasing the signal range. There are two options
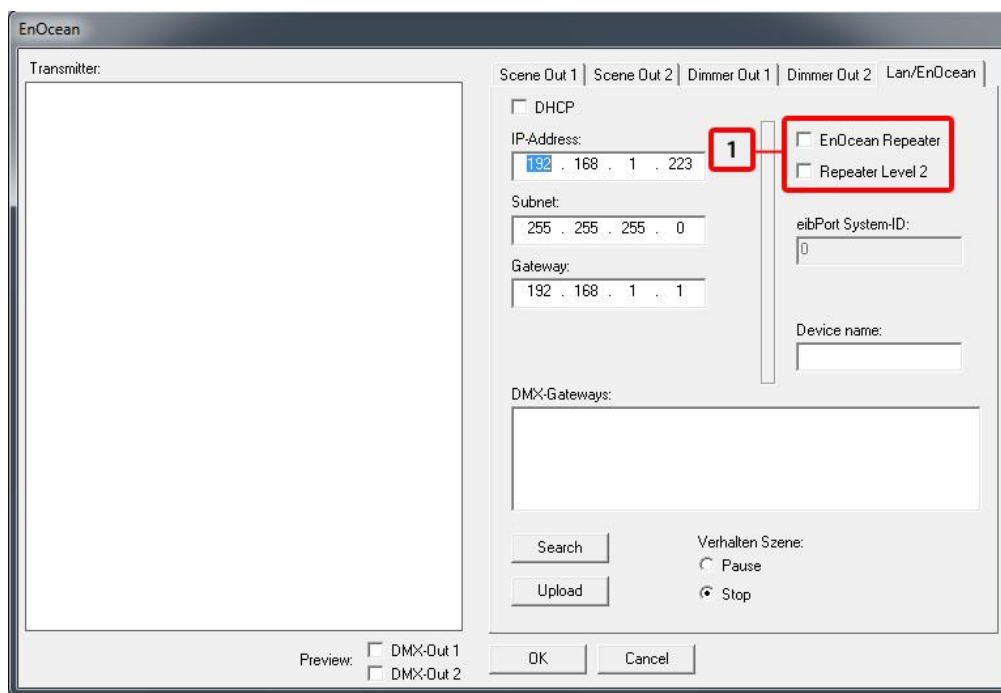

Figure 48: EnOcean – repeater function

1. Check boxes for the activation of the EnOcean repeater function.

EnOcean repeater
The device repeats all received EnOcean radio signals with low transmission power. Systems with several repeaters thus prevent signals from being repeated twice.

Repeater level 2
The device repeats the signals with full transmission power. This should only be used if you can ensure that the repeated signal does not reach a second repeater.

In case that DUODMX cannot be found, you must deactivate all network interfaces except for the currently used network interface!

5.5.5 *WLAN* CONFIGURATION

IMPORTANT NOTICE: <u>The configuration must be transmitted via an SD card (see</u> Transmitting via SD card <u>on page 59). The LAN connector is without any function in this variant!</u>

If the DUO**DMX** GATEWAY to be configured is a device with integrated wireless LAN module, the bus type *WLAN* or *WLAN master/slave* must be selected for the device selection. The selection applies to the following device types:

- 12041w DUO**DMX** GATEWAY Standalone WLAN
- 12011w DUO**DMX** GATEWAY IP WLAN
- 12111w DUO**DMX** GATEWAY IP SR WLAN
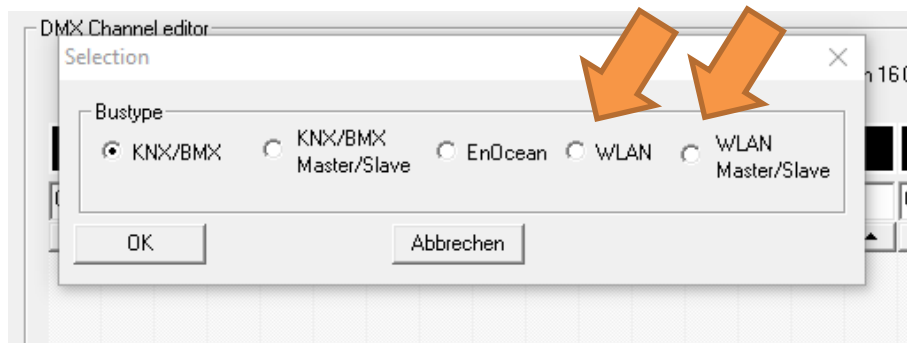
Figure 49: Device selection – WLAN

To connect the DUO**DMX** GATEWAY with the radio network, you must enter the SSID, the encryption type and the key. Exception: if there is no encryption for the WLAN.
The name of the radio network is entered under SSID (blue arrow). The encryption type is selected in the *WLAN* field (green arrow). WAP and WEP are supported. The key for the encryption is entered in the *Key* field (red arrow).

Figure 50: Radio network configuration

IMPORTANT NOTICE:
The configuration must be entered via an SD card, since the WLAN variant of the DUODMX
GATEWAY does not communicate via the cable network. The LAN connector is deactivated in this
variant!

The DUO**DMX** GATEWAY LED shows whether the remote access to the WLAN network was successful.

- GREEN LED flashes. The DUO**DMX** GATEWAY accesses the WLAN network or tries to access it.

- GREEN LED is on. The DUO**DMX** GATEWAY has successfully accessed the WLAN network.

- RED LED flashes. The WLAN MODULE of the DUO**DMX** GATEWAY has not been initialised.

In case that DUODMX cannot be found, you must deactivate all network interfaces except for the
currently used network interface!

5.5.6   CHANGING THE IP ADDRESS CONFIGURATION

To change the IP address settings of an already commissioned device, please proceed as follows:

Please note: For configuration, the PC must be in the same IP address range as the DUODMX GATEWAY.
If it is not possible to change the network settings of the PC, you can alternatively transfer the network settings by means of an SD card.

- If you have selected *KNX/BMX* and *KNX/BMX master/slave*, switch to the *LAN/KNX* tab, if you have selected *EnOcean*, switch to the *LAN/EnOcean* tab, and if you have selected *WLAN*, switch to the *WLAN* tab. The figure below shows the configuration for the *KNX/BMX* as an example.

- Press the *Search* button below the *DMX-Gateways* field. All DUO**DMX** GATEWAYs in the network are displayed, irrespective of the IP address settings of the local PC.
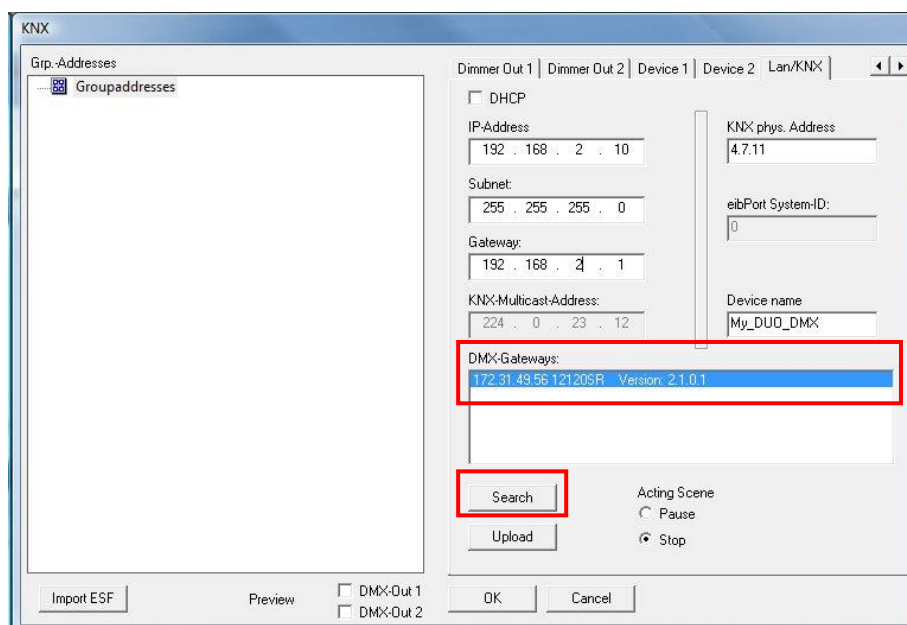
Figure 51: DMX-Configurator – LAN/KNX window

Note: If the device is not on the list even if after having pressed the *Search* button, you probably have a problem with your network configuration (e.g. firewall / router settings), or you have activated two network cards at the same time. Please check. In case of doubt, please contact the BAB Technologie support!

- Check the pre-set IP address of the Gateway in the *DMX Gateways* window.

- To provide the DUO**DMX** GATEWAY with a new configuration, you must adjust the IP address range of your PC so that it corresponds to the address range of the DUO**DMX** GATEWAY.

Note: Configuration data can only be transmitted if the DUODMX GATEWAY and the PC are within the same network range (subnet)!

To change the IP address of your PC, proceed as follows:

- Open the network settings of your computer (example: Windows 7) and assign an IP address in the subnet of the DUO**DMX** GATEWAY to your computer.
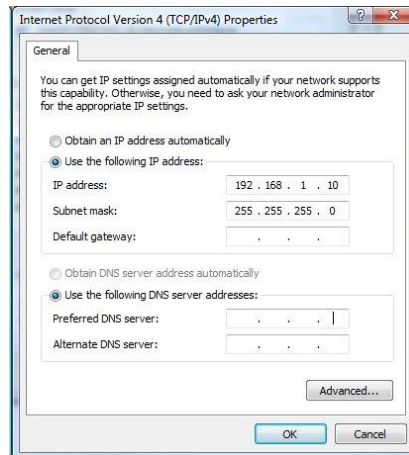

Figure 52: Windows – network settings

- Switch to the *LAN/KNX, LAN/EnOcean* or *WLAN* tab in the DMX-Configurator and change the IP address settings according to your requirements.
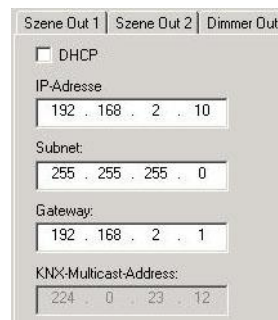
Figure 53: DMX-Configurator – IP address settings

- If you want, assign a name to your device.

- Search again for the DUO**DMX** GATEWAY and mark the desired device in the *DMX Gateways* list. Click on *Upload* to transmit the current settings from the *DMX-Configurator* to the DUO**DMX** GATEWAY. The successful transmission will be acknowledged with the message *"Upload successfully completed"*. Otherwise, you will receive an error message. If this is the case, you must check the network settings of your PC and the DUO**DMX** GATEWAY once more.
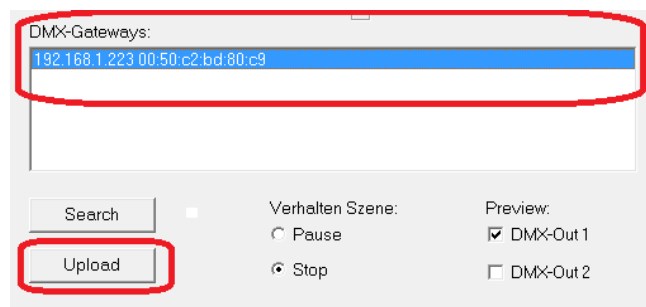
Figure 54: DMX-Configurator – transmitting the configuration

- Then quit the *LAN/KNX*, *LAN/EnOcean* or *WLAN* window by pressing *OK* and save the current settings as project file **.dx1* in the menu *File > Save as*. Please use this project file for the further project setup.
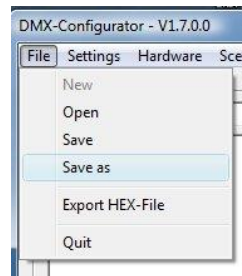

Figure 55: DMX-Configurator – saving the project

Note: If you want to use a new or different project, please mind the IP address settings. With every new project, the default IP address settings are provided in the configuration. For an existing project, the DUODMX GATEWAY will adopt the IP address settings from the project.

5.5.7 TRANSMITTING THE CONFIGURATION DATA

The configuration data can be transmitted via the network or via an SD card. The configuration data include:

- All DMX-relevant data (scenes, channels, devices)
- All connections
- IP addresses and configuration data

Exception: the settings for the *DMX preview*!

5.5.7.1 TRANSMITTING VIA NETWORK

To allow for the transmission of the data to the device via the network, the PC and the DUO**DMX** GATEWAY must be within the same network range (subnet). If necessary, change the network settings of your PC (see chapter "*Transmitting the network configuration*").

To transmit configuration data via the network, you must proceed as follows:

- If you have selected *KNX/BMX* and *KNX/BMX master/slave*, switch to the *LAN/KNX* tab, if you have selected *EnOcean*, switch to the *LAN/EnOcean* tab, and if you have selected *WLAN*, switch to the *WLAN* tab. The figure below shows the configuration for the *KNX/BMX* as an example.
- Press the *Search* button below the *DMX-Gateways* field. All DUO**DMX** GATEWAYs in the network are displayed, irrespective of the IP address settings of the PC.
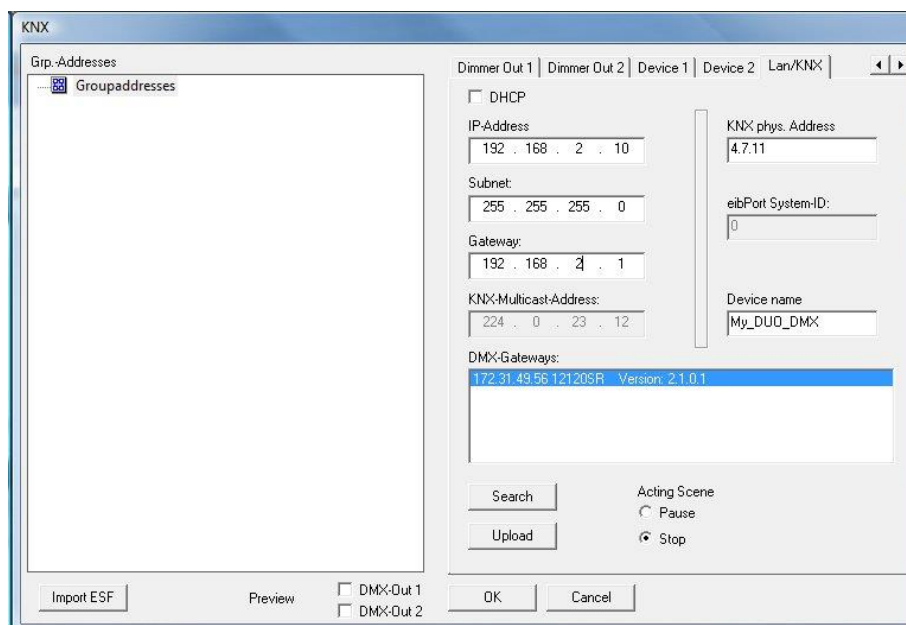
Figure 56: DMX-Configurator – LAN/KNX window

Note: If the device is not on the list even if after having pressed the *Search* button, you probably have a problem with your network configuration (e.g. firewall / router settings), or you have activated two network cards at the same time. Please check. In case of doubt, please contact the BAB Technologie support!

- Mark the desired device in the *DMX Gateways* list. Click on *Upload* to transmit the current settings from the *DMX-Configurator* to the DUO**DMX** GATEWAY. The successful transmission will be acknowledged with the message *"Upload successfully completed"*. Otherwise, you will receive an error message. Then check the network settings of your PC and the DUO**DMX** GATEWAY once more.
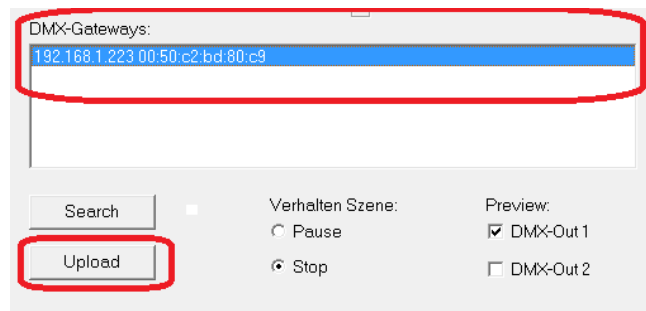
Figure 57: DMX-Configurator – transmitting the configuration

Note: By uploading the current settings, the configuration data are uploaded to the device but not saved on your PC. If you close the _DMX-Configurator_ without saving the project, all changes made will be lost.

5.5.7.2   TRANSMITTING VIA SD CARD

Besides saving the projects as DMX project files, they can also be exported as so-called _HEX_ files. This file format is required to transmit the configuration data to the DUO**DMX** GATEWAY via SD card. In this context, the configuration file must always have the same name (_config.par_) so that it can be identified and imported by the DUO**DMX** GATEWAY. The green _Power_ LED indicates the loading status (as long as the LED is off, the file is being imported). Configuration files are created as described below (after you have saved the project (as *.dx1 file)):

- Open the menu _File > Export HEX file_.
- Save the HEX file with a unique name in the desired folder.
- Create a folder for the _config.par_ file on your hard disk.
- Then copy the generated HEX file into the folder and rename it to _config.par_.
- Insert the SD card in the card reader and move the new _config.par_ to the SD card.
- Insert the SD card in the slot of the DUO**DMX** GATEWAY and wait until the green LED is on.

Ready.

6 DUO DMX APP

The DUO DMX APP allows for the direct control of DMX components. With the DUO DMX APP, the user can control the light (DMX devices) via a smartphone and the DUO**DMX** GATEWAY.

All DUO**DMX** GATEWAY variants (as of firmware 2.2.0.0) are compatible with the DUO DMX APP. This allows for an additional control (via the smartphone) in addition to the building automation system.

The configured lamps and scenes are automatically loaded by the DUO**DMX** GATEWAY. The lamps and scenes are, as usual, configured with the DMX-Configurator.

A special feature in this context is the use of the DUO**DMX** GATEWAY without KNX or EnOcean so that connections with KNX group addresses and EnOcean profiles are not necessary. Only the lamps are defined and the scenes created.

The DUO DMX APP is downloaded and installed via the Google Play Store or the Apple App Store.

6.1 CONFIGURATION OF LAMPS

To allow for the DUO DMX APP to control the lamps, it is necessary to know which DMX channels are assigned to a DMX lamp. The lamps are defined in the DMX-Configurator under *Settings/device management*. The procedure is the same as the procedure already described in this manual.

The precise procedure is described in chapter 5.4.13 on page 32.

6.2 CONFIGURATION OF THE SCENES

The scenes are also created in the same way as for the use without the APP. Scenes are centrally created with the DMX-Configurator and can be accessed by the APP (in addition to the group addresses and EnOcean profiles).

The configuration of the scenes is explained in detail in the chapters 5.4.3 to 5.4.5 on the pages 24 to 26.

6.3 HOW TO USE THE APP

After having started the APP, the start menu of the APP is displayed (see Figure 59: DUO DMX APP).

The following entries are available on the start page:

- **Demo**. Starts the demonstration even without an existing DUO**DMX** GATEWAY.
- Enter Gateway manually. Here, the IP address of the DUO**DMX** GATEWAY can be entered manually in case that the DUO**DMX** GATEWAY cannot be found automatically.
- Start Gateway search. Search for DUO**DMX** GATEWAYs in the local network.
- Available Gateways. Here, the available DUO**DMX** GATEWAYs are listed.

- *> Connect*. With this button, the selected DUO**DMX** GATEWAY is connected to the control. The selected DUO**DMX** GATEWAY is marked in the list at the right margin with an orange line.

6.3.1 CONNECTING THE APP WITH THE DUO**DMX** GATEWAY

Approach: MANUAL. *Enter Gateway manually.*
If the IP address of the DUO**DMX** GATEWAY is available, it can be entered manually. (See Figure 60: Manual IP address Input)

Approach: AUTOMATIC. *Start Gateway search.*
The DUO**DMX** GATEWAY also has a *Discovery* function. It is used for automatically searching for DUO**DMX** GATEWAYs. (See Figure 58: DUO DMX APP Search process activated)

Select the DUO**DMX** GATEWAY to be controlled by clicking on it. The orange line at the right side of the list shows the selected DUO**DMX** GATEWAY.

Press > *Connect* to connect the APP with the DUO**DMX** GATEWAY. The configuration data are automatically downloaded in this process.
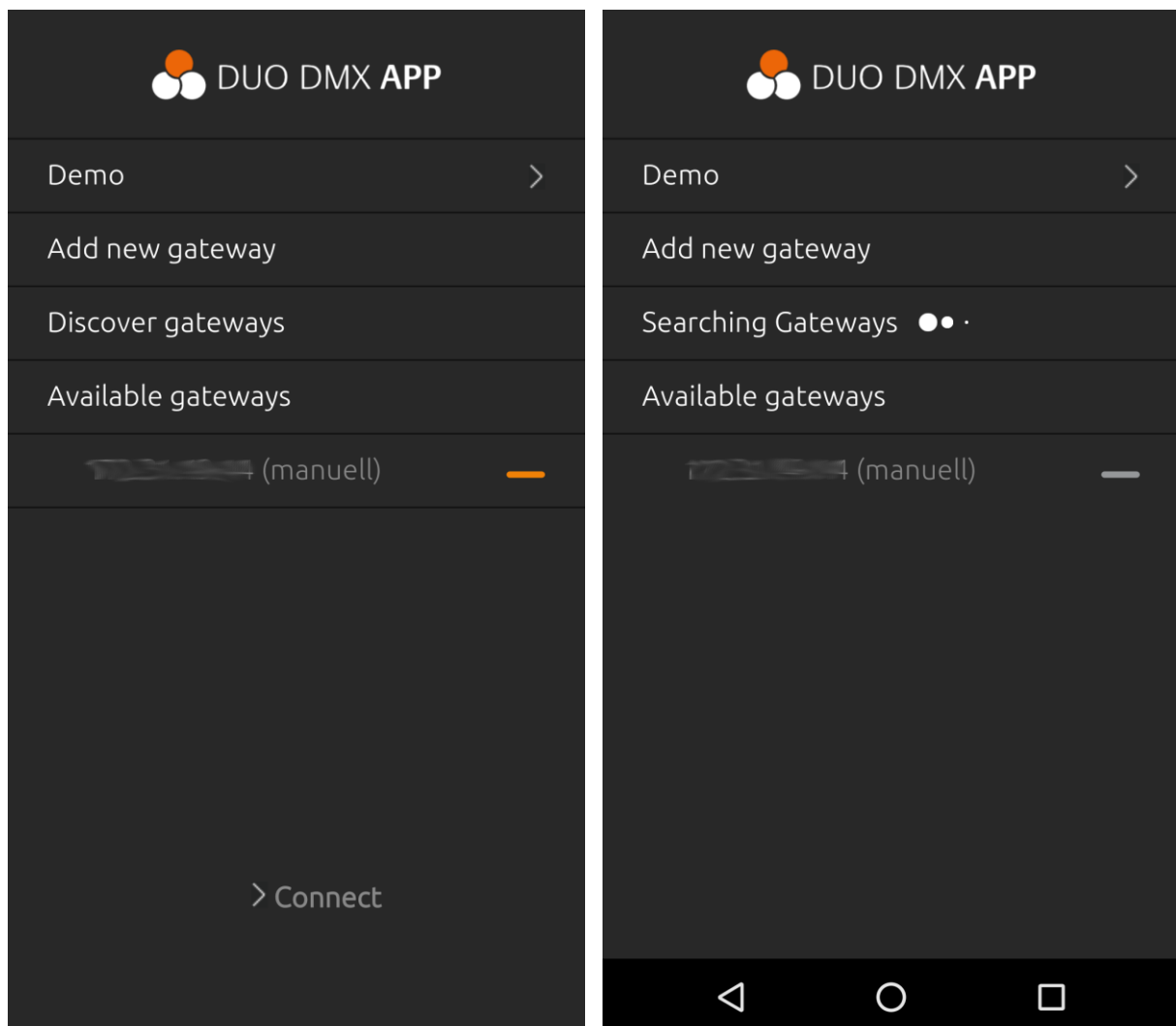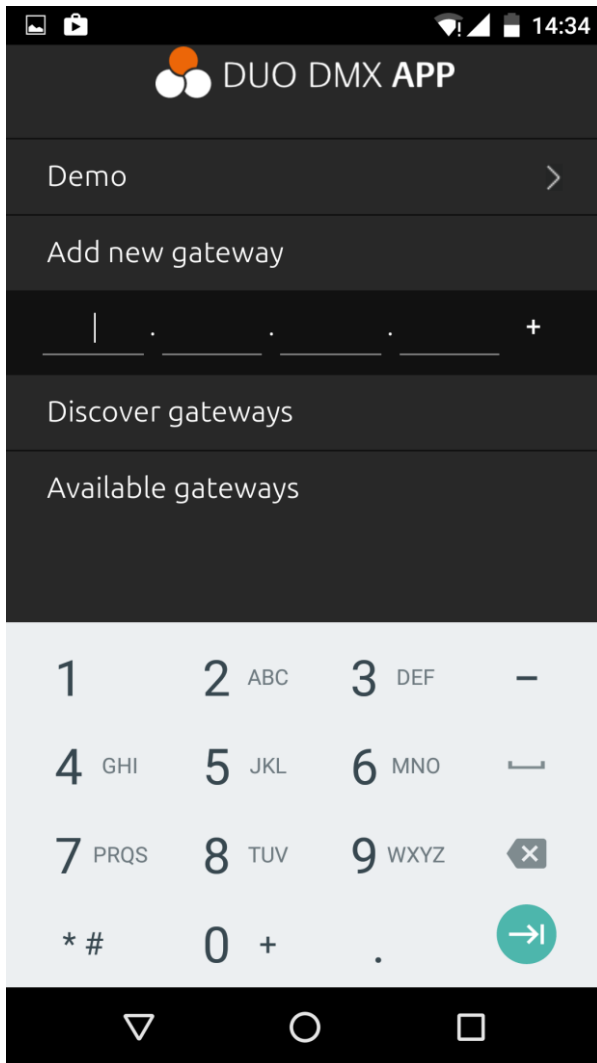
Figure 60: Manual IP address Input

6.3.2   CONTROL OPTIONS OF THE APP

After the connection, the following options are available (see left image on this page).

- Control of scenes
  A scene (also referred to as a sequence) is the course of settings for lamps. Scenes can be started or paused.
- Control of lamps
  This option allows the direct control of lamps. One-channel lamps are dimmed. RGB-lamps or RGBW-lamps are controlled by a colour circle (colour picker). It is also possible to directly pick colours via four fields. (See page 67)
- *Moods*
  Under this point, *Moods* are created, picked and managed. (See page 68)
- Settings
  The configuration includes the following options:
  - o activating the DEMO project
  - o saving the connected DUO**DMX** GATEWAYs
  - o providing four favourite colours
- Information **"About the DUO DMX APP"**
  Among others, the APP version is displayed here (figure see next page).
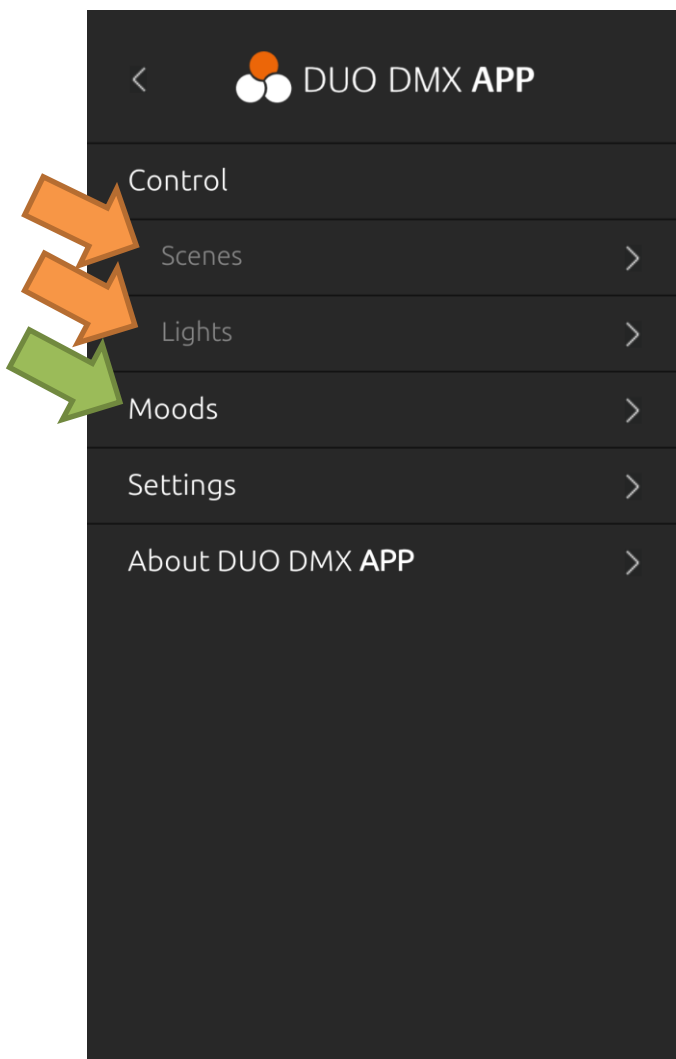
Figure 61: DUO DMX APP Start page
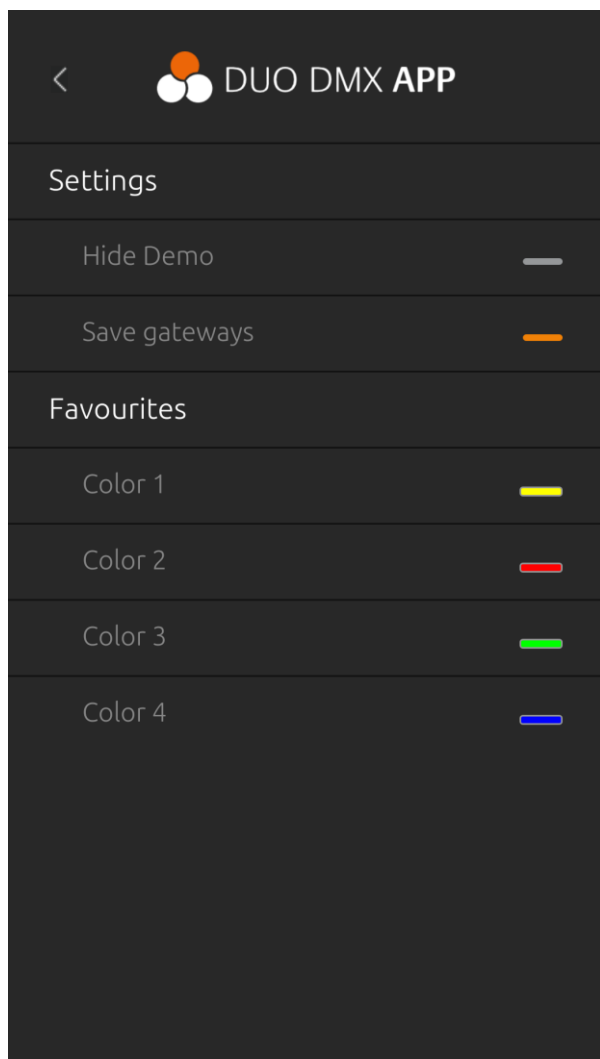
Figure 62: DUO DMX APP Settings
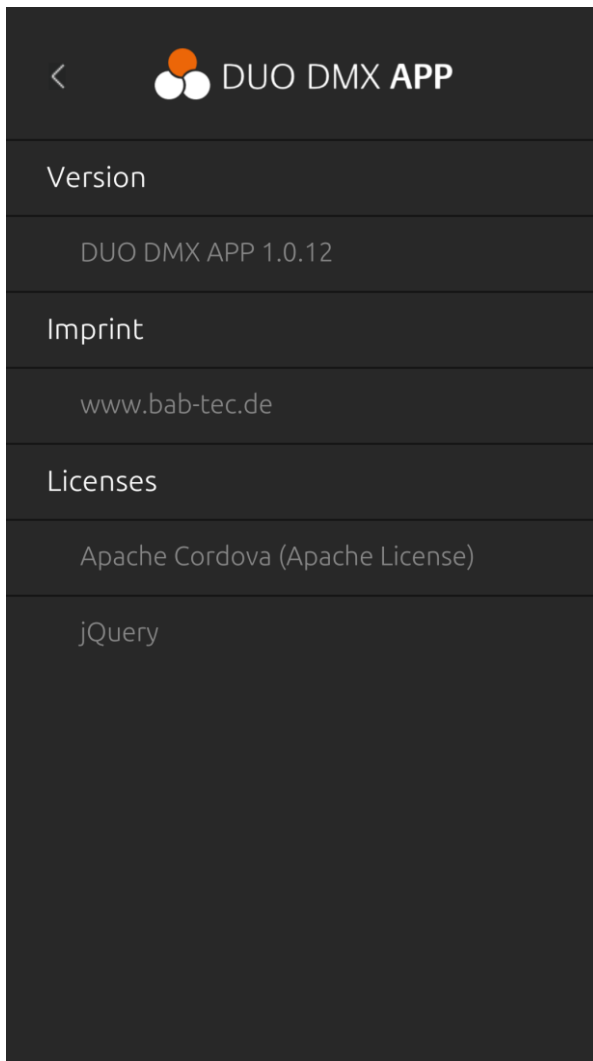
Figure 63: About the DUO DMX APP

6.3.3 PREPARING THE LAMPS AND SCENES

Using the DMX-Configurator, lamps are defined and scenes are created. They are read out by the DUO**DMX** APP when being connected.

However, what is missing regarding the control of the lamps and scenes via the APP is the information on which DMX output (DMX world) the individual lamps are to be connected and the scenes are to be reproduced. This information is not available for the APP; it must be defined by the user once (in the APP).

If an entry which has not yet been assigned to a DMX output is selected for the first time under the menu item *Lamps* or *Scene*, the selection menu pops up in which the DMX output can be assigned (left figure; output not yet selected).

The following figures (one for lamps, one for scenes) show the selection menu. *Output 1* and *Output 2* stand for the DMX outputs (DMX world) at the DUO**DMX** GATEWAY. The selected output is indicated by the orange marking.

NOTE: If the selection of the DMX output must be changed, the selection can be opened again by a long click on the lamp or the scene.
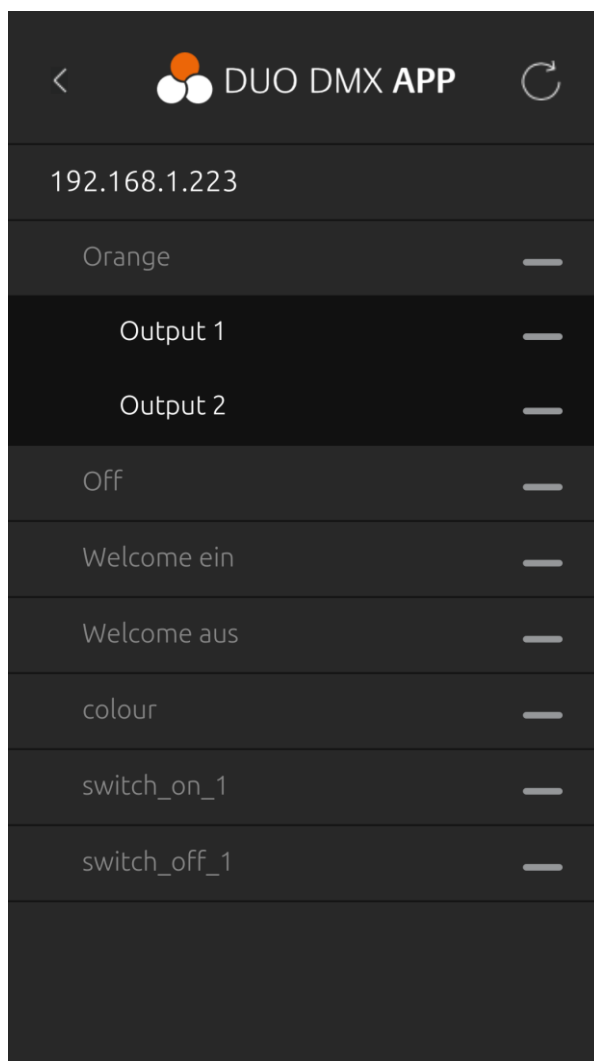
Figure 65: Assigning a scene to a DMX output   Figure 64: Assigning a lamp to a DMX output
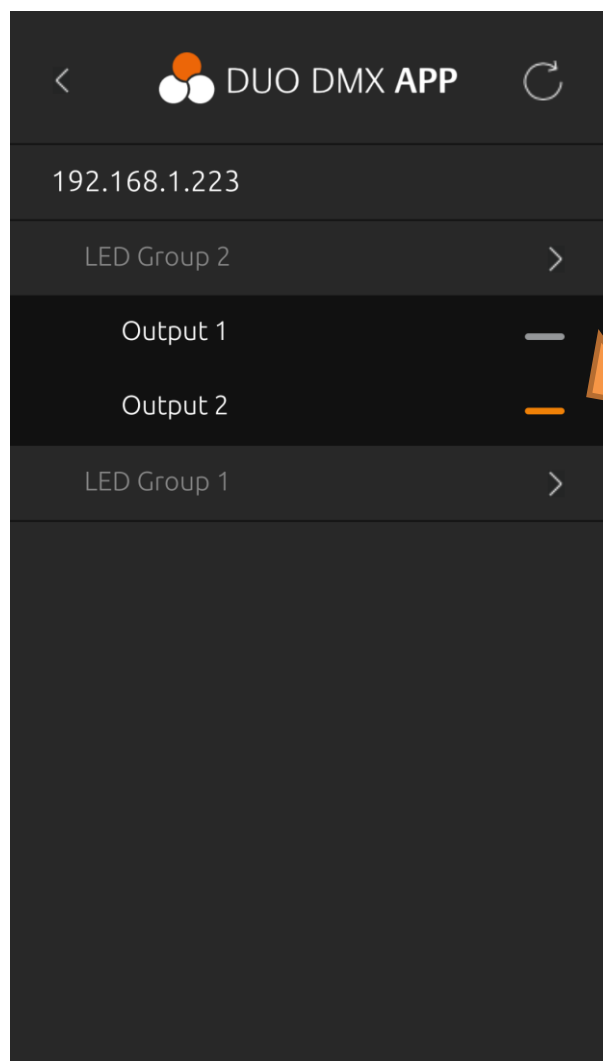
6.3.4   CONTROLLING THE LAMPS AND SCENES

After having assigned the DMX outputs (see previous chapter), the **lamps** and **scenes** can be accessed directly (Figure 61: DUO DMX APP Start page see orange arrows).

To be found under the inputs (Figure 61: DUO DMX APP Start page)

> Control of lamps and
> Control of scenes

The figures on this page show the available lamps (figure to the right) and scenes (figure to the left) of a project example.

The **scenes** are started by clicking on them. The figure on the right side shows which scenes have been started. (grey line = not active; orange line = active; see orange arrow)

NOTE: If the DMX output must be changed, the selection can be opened again by a long click on the lamp.
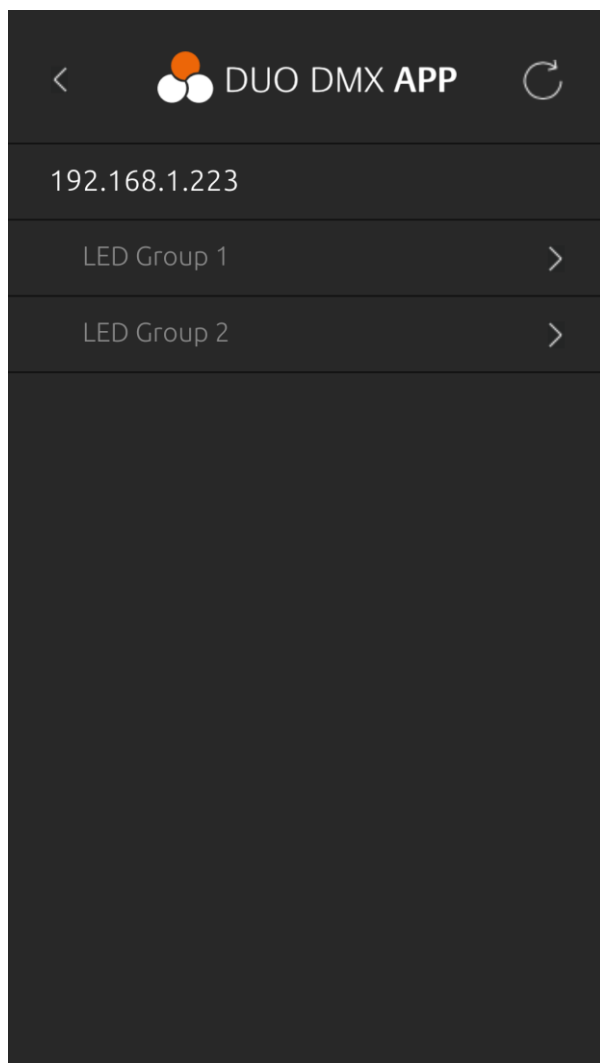
Figure 67: Control of lamps
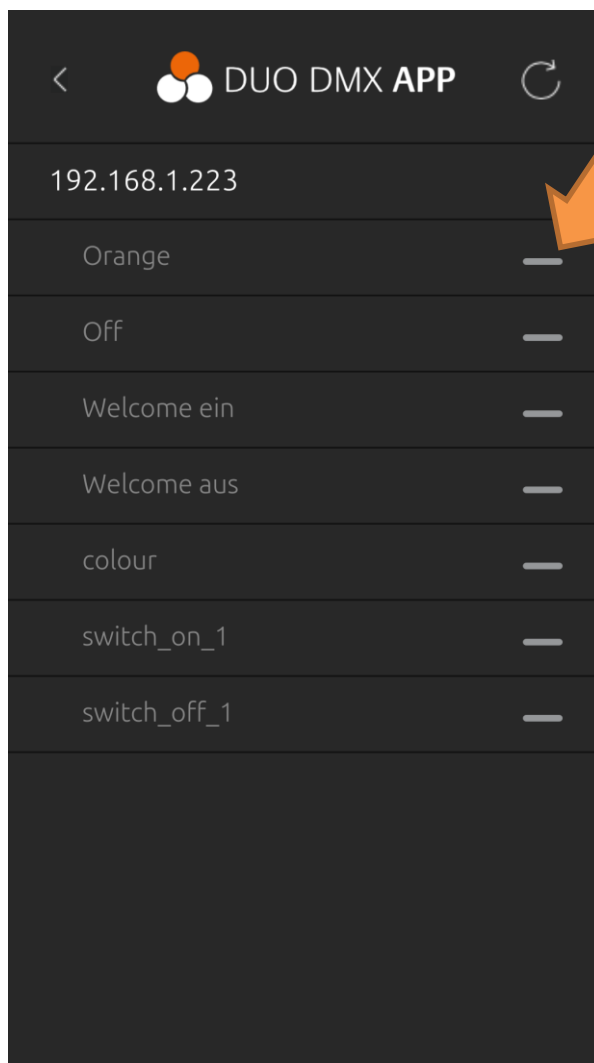
Figure 66: Control of scenes

To control the **lamps**, however, a screen opens up. There are two different control options.

- 1. Screen for the control of RGB or RGBW lamps (controlled by a colour circle; Figure 69: RGB(W) lamp 3(4) channel
- 2. Screen for the control of an individual channel (dimming with a slider; Figure 68: Lamp 1 channel)

NOTE: In case that one of the favourite colours has to be changed, the colour can be directly changed in the "Lamp control". It is not necessary to switch to the settings of the APP. To do so, the currently pre-set colour is applied by pressing and holding one of the four fields of the favourite colour for a longer time (see Figure 69: RGB(W) lamp 3(4) channel).
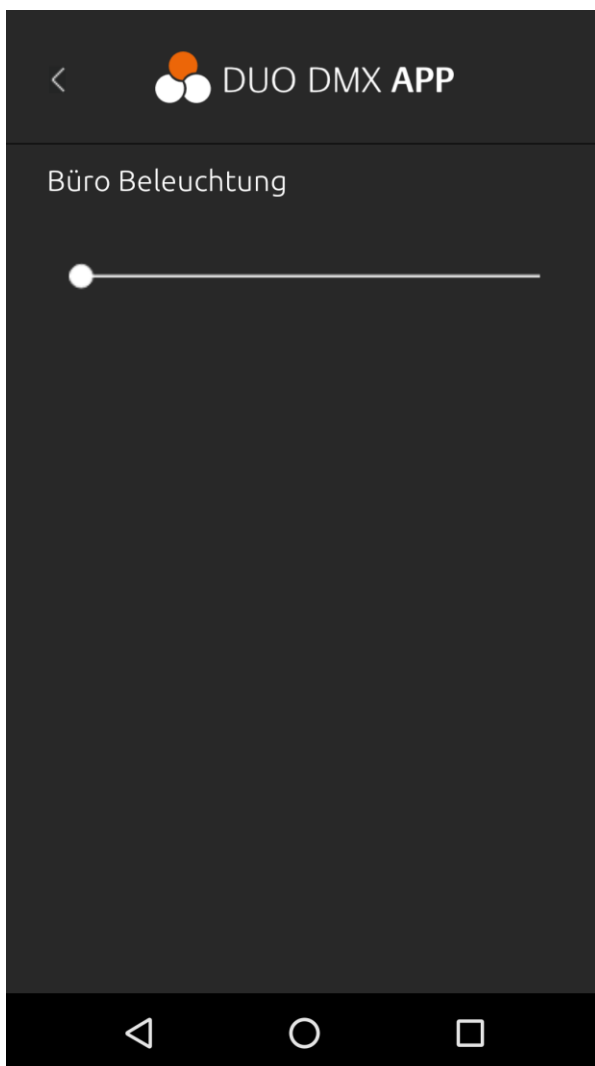
Figure 68: Lamp 1 channel (only dimming)   Figure 69: RGB(W) lamp 3(4) channel
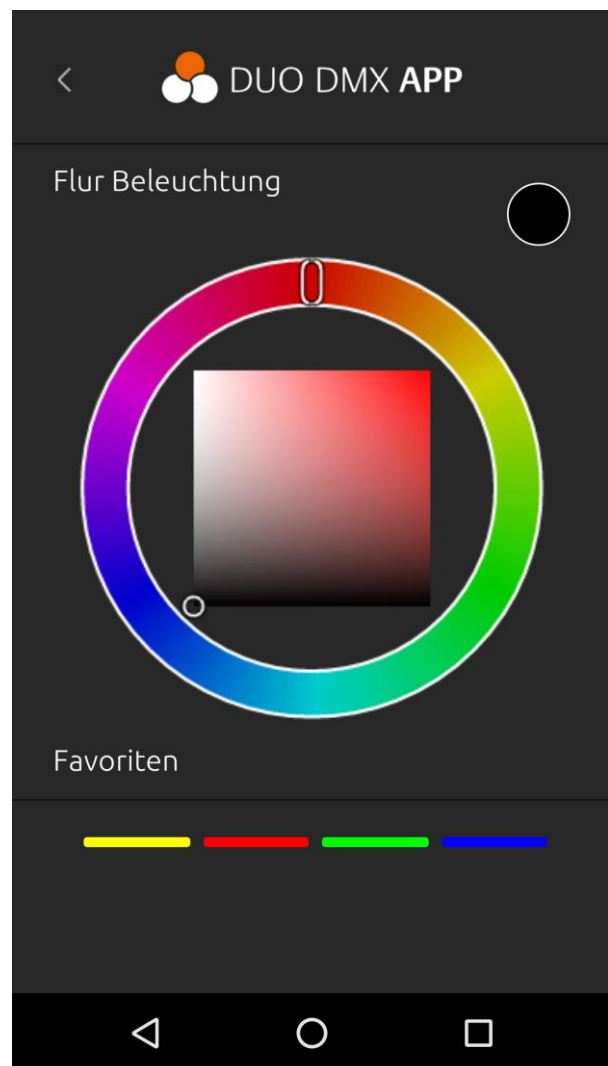
6.3.5   *MOODS* FUNCTION

With the *Moods* function, colour impressions are copied directly from your own pictures to the lamp settings. To do this, a picture is selected in the App, and five different colours are selected with a touch of your finger. These colours can be used as a sequence with adjustable speed or as individual colours.

The configuration and control are accessed via the *Moods* entry (Figure 61: DUO DMX APP Start page see green arrow).

6.3.5.1   ADDING *MOOD* AND SELECTING COLOURS

To select a picture for a new *Mood*, press **+** to open the selection dialogue (see Figure 70: Adding *Moods*).

Once the picture is selected, the APP shows the selected picture including the five automatically placed circles (see Figure 71: Selecting colours). These circles can now be shifted to the desired colours on the picture.

The bar above the picture shows the five currently selected colours. They will be reproduced in this order (from left to right) as a sequence.
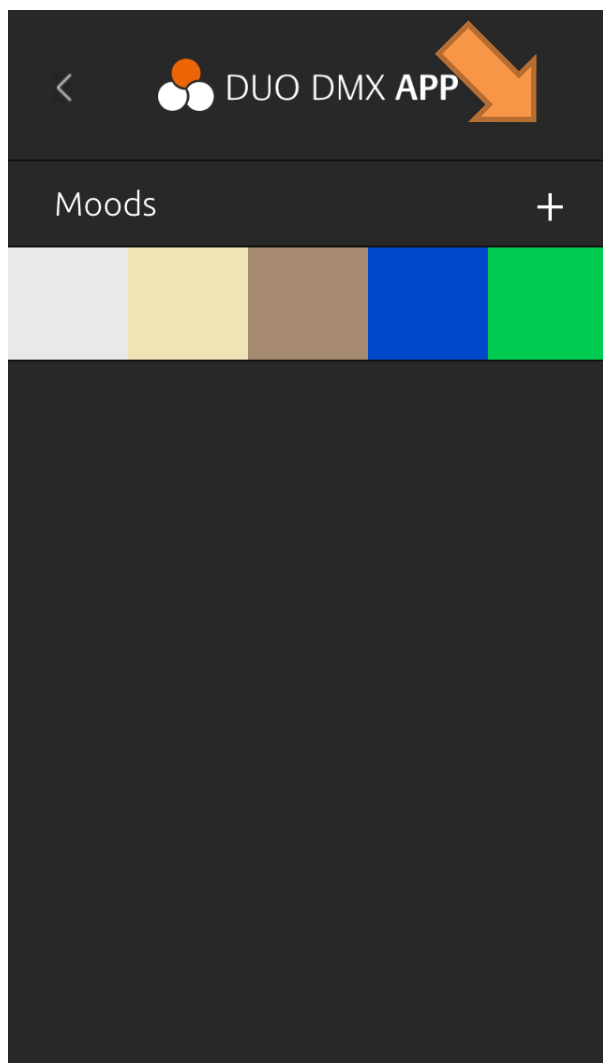
Figure 70: Adding *Moods*
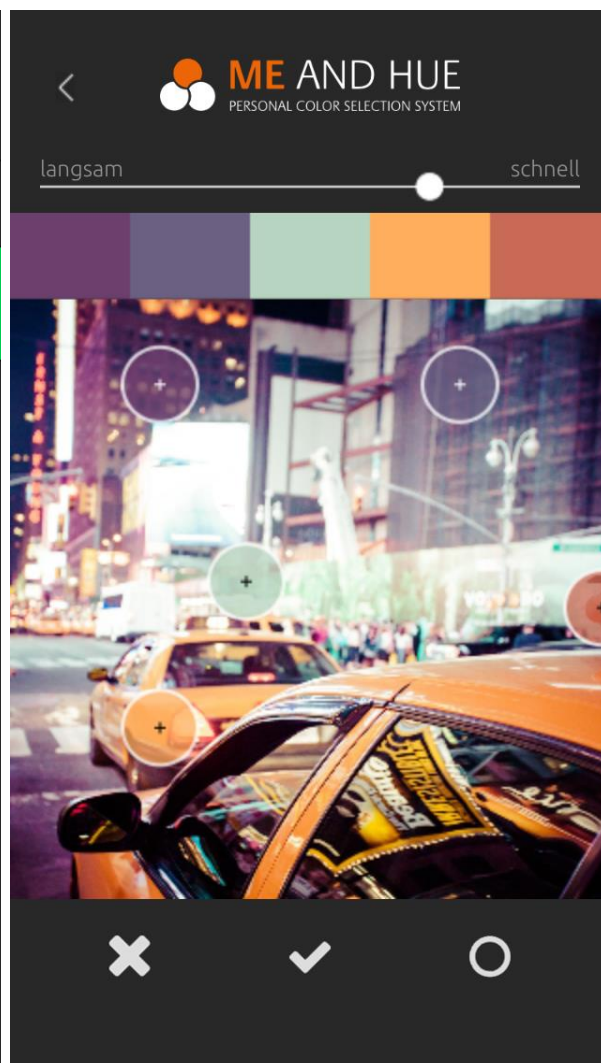
Figure 71: Selecting colours

The slider above the picture controls the speed of the sequence.

The three symbols below the picture have the following function: ✖ abort, ✔ apply, ⬤ open colour selection (see picture Figure 72: Creating *Moods* without a picture).

Selecting your OWN COLOURS:

With the colour selection (⬤) you can directly define the desired colours, i.e. create a sequence without a picture. With this symbol, the selected picture is faded out and a colour circle is displayed. Press the 🖼 icon to return to the picture selection.

If you want to change one of the five favourite colours, you must at first select the favourite colour to be changed (orange arrow; the selected favourite has a white outline) and then set the new colour in the colour circle (green arrow).

Press *Apply* (✔) to close the colour selection.
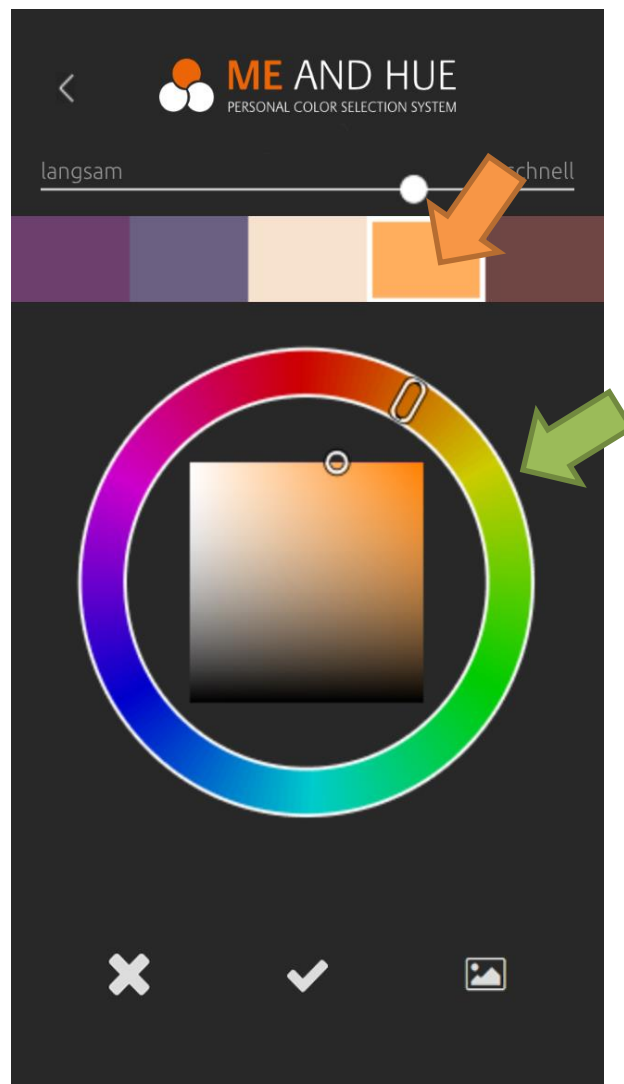
Figure 72: Creating *Moods* without a picture

6.3.5.2   OPERATING *MOODS*

Click on the *Moods* to select them on the *Moods* Screen (see left figure). A submenu opens up where the *Moods* can be changed (✏) or deleted (🗑). Press the symbol (💡) to open the *Moods* control (right figure).
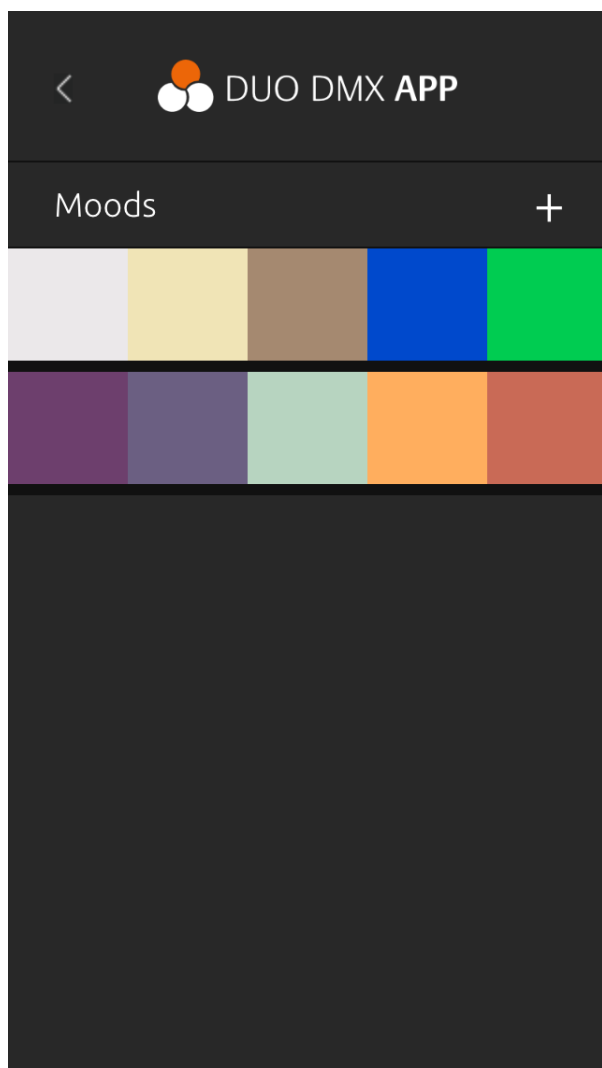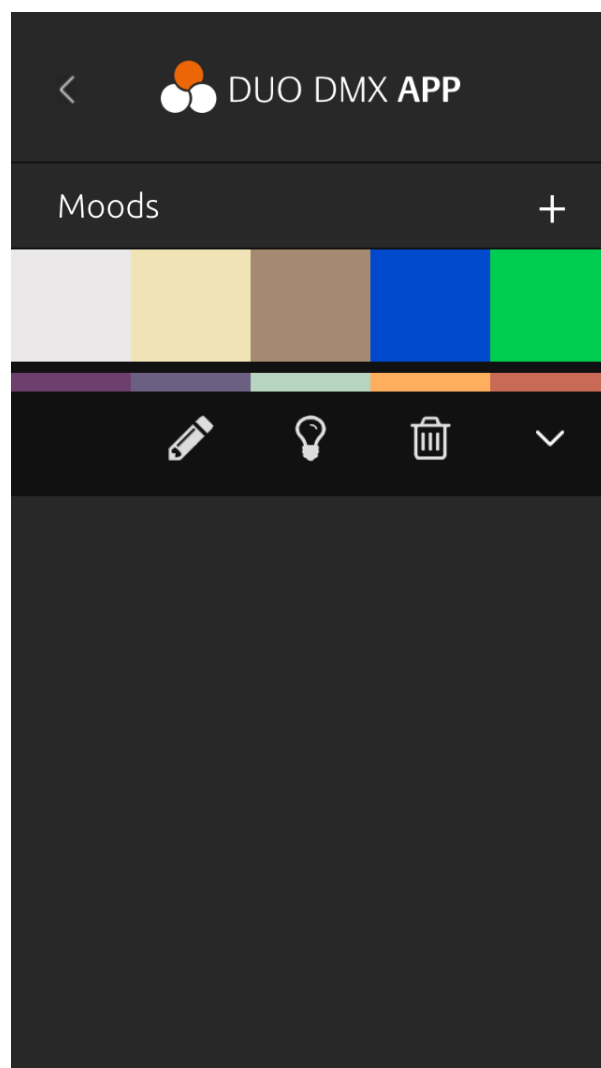

Figure 73: Overview of *Moods*

Figure 74: Configuration of *Moods*

Once you have opened the *Moods* control, a list of all configured DMX lamps appears. After having selected the lamp, the colours of the *Mood* are shown. The selected colour is now directly reproduced on this lamp.

Press the Play symbol to start the sequence and reproduce the colours of the *Mood* one after the other (right figure).

Note: The following also applies in this case: For the first access, you must define which lamp is to be reproduced on which DMX output. See left figure.
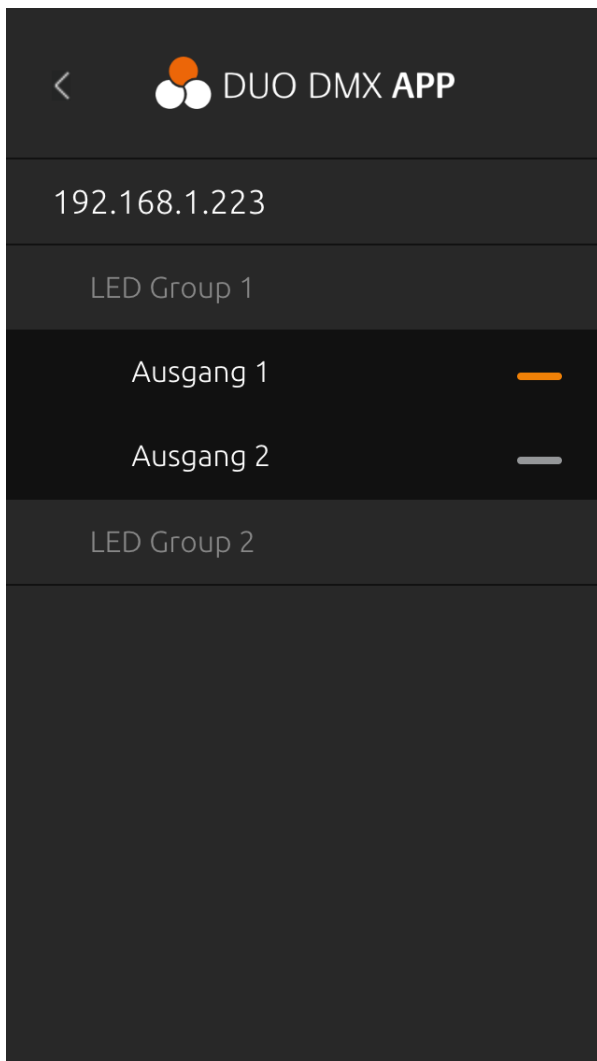

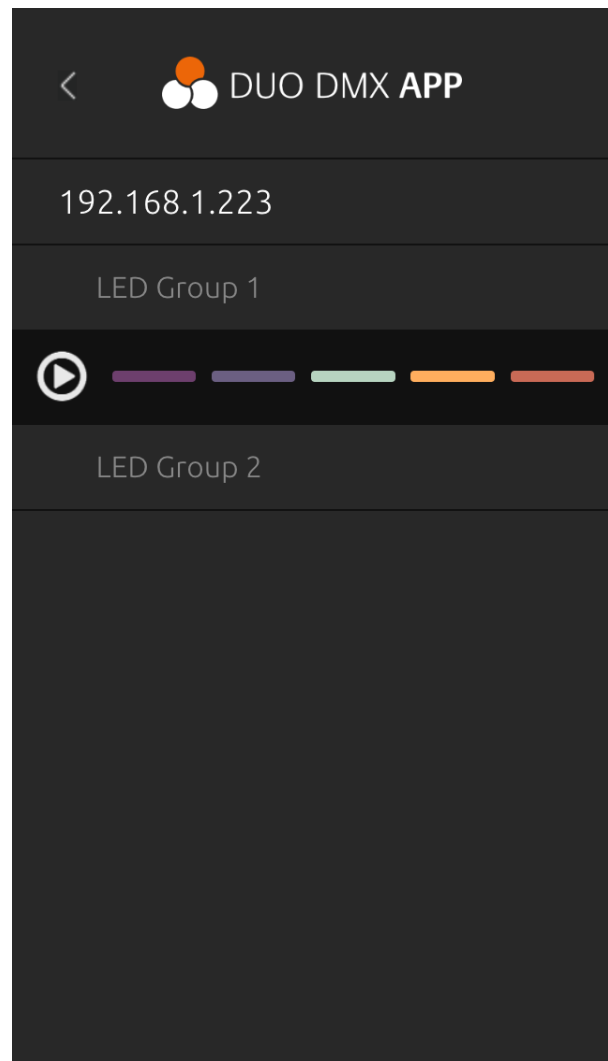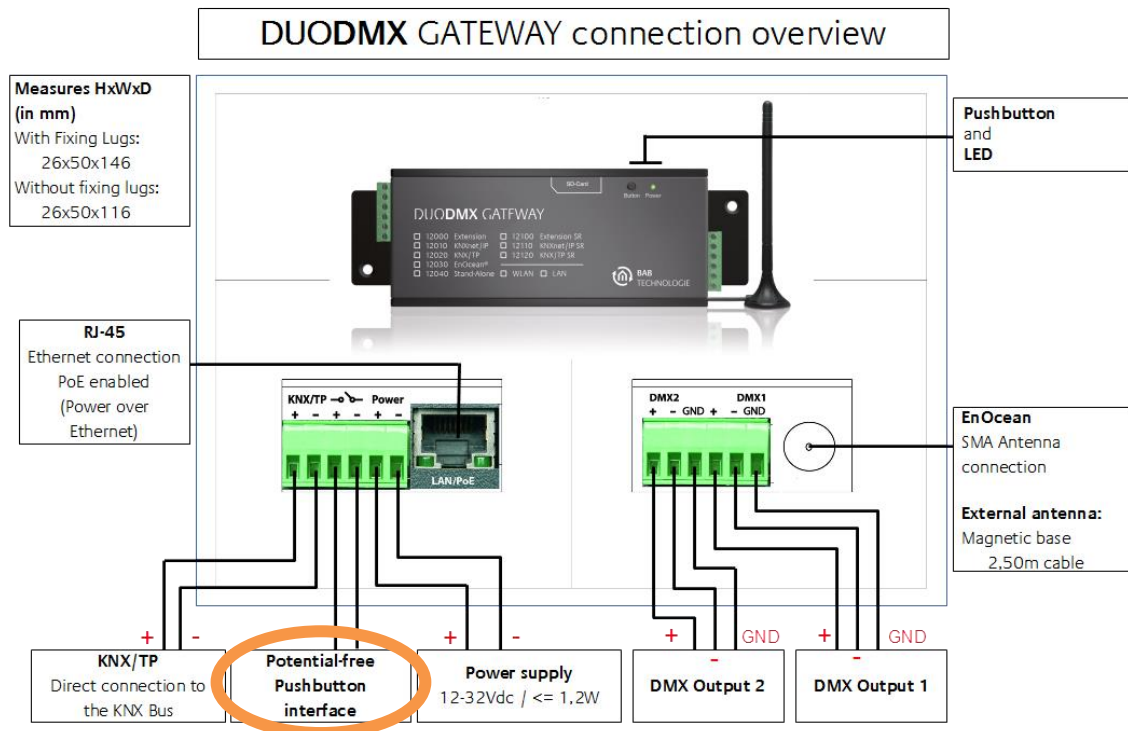Figure 76: Assignment of the DMX output

Figure 75: Selecting colours

7   TRIGGERING SCENES VIA THE BUTTON INPUT

It is possible to trigger manually defined light scenes via the potential-free input. To do this, the switch is connected to the third and fourth pole of the 6-pole plug-in screw terminal (at the side of the network connection, see figure).

For the potential-free input of the REG variant, the switch is also connected to the third and fourth pole of the 6-pole plug-in screw terminal.

Once the switch has been closed or opened, the DUO**DMX** GATEWAY triggers the light scene with the corresponding name.

The names of the light scenes are provided as follows and assigned to the DMX output:

Contact opened:

Scene name "switch_on_1"	->	Reproduce scene on DMX interface 1
Scene name "switch_on_2"	->	Reproduce scene on DMX interface 2
Scene name "switch_on_12"	->	Reproduce scene on DMX interfaces 1 and 2

Contact closed:

Scene name "switch_off_1"	->	Reproduce scene on DMX interface 1
Scene name "swtich_off_2"	->	Reproduce scene on DMX interface 2
Scene name "switch_off_12"	->	Reproduce scene on DMX interfaces 1 and 2

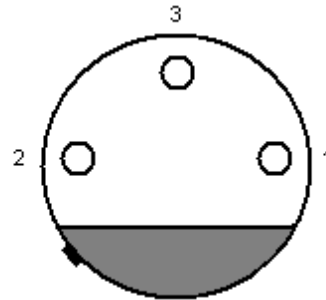**Note: Only one light scene each for the *opened* and *closed* status is permissible.**

8   DMX PLUG/SOCKET PIN ASSIGNMENT

3-pol. XLR Plug (Front view)
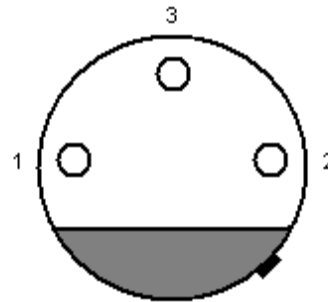1 – Ground/Screen

2 – DMX −

3 – DMX +

3-pol. XLR Socket (Front view)
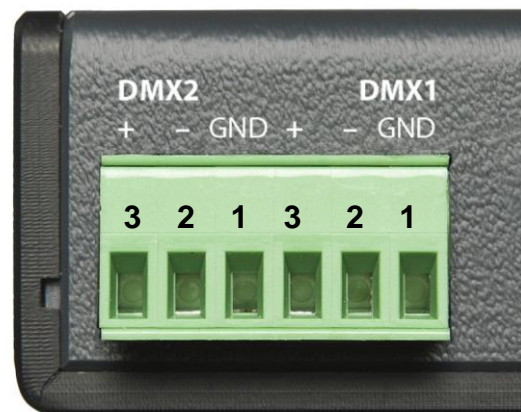1 – Ground/Screen

2 – DMX −

3 – DMX +

DUO DMX Gatway (Front view)
1 – Ground/Screen

2 – DMX −

3 – DMX +

9 FIRMWARE UPDATE

To update the DUO**DMX** GATEWAY firmware, please proceed as follows:

- Use an empty SD card and import the current firmware file. The firmware file must be named *dmxknx.fir*.
- Disconnect the DUO**DMX** GATEWAY from the power supply and insert the SD card in the SD card slot.
- Press the *Button* and keep it pressed while reconnecting the power supply.
- Wait until the LED of the DUO**DMX** GATEWAY no longer flashes; now you may release the button.
- Remove the SD card and restart the device by disconnecting and connecting the power supply.
- After the successful reboot, the device is available with the current firmware.
  The project data remain save.

10 CREATING ESF DATA

To create the desired ESF data for the connection in the *DMX-Configurator*, you have different options.

Creating ESF data from the EIBPORT
As of the firmware version 1.0.2 (version 3), the EIBPORT offers the option of exporting its address data as ESF file, to do this, switch to the menu *Editor > Extras > ESF Upload & data administration*. Create the desired addresses in EIBPORT and export them as ESF file.

Creating ESF data with ETS
To create the desired data with ETS, you require the application of a device which can handle the data types 1 bit or 1 byte. Then connect the desired addresses and export the data as ESF.

Creating your own ESF file
Search an existing ESF file which includes 1-bit and 1-byte communication objects, and open the file with a text editor. On the basis of the syntax, you can change the file so that it complies with your desired addresses and data types.

11   SUPPORTED ENOCEAN PROFILES

Here is the list of "EnOcean Equipment Profiles" (EEP) that can be used with the DUO**DMX** GATEWAY

F6-01: SWITCH BUTTONS

F6-01-01: Push Button

F6-02: ROCKER SWITCH, ROCKER

F6-02-01: Light and Blind Control - Application Style 1
F6-02-02: Light and Blind Control - Application Style 2
F6-02-03: Light Control - Application Style 1
F6-02-04: Light and blind control ERP2

F6-03: ROCKER SWITCH, 4 ROCKER

F6-03-01: Light and Blind Control - Application Style 1
F6-03-02: Light and Blind Control - Application Style 2

F6-04: POSITION SWITCH, HOME AND OFFICE APPLICATION

F6-04-01: Key Card Activated Switch
F6-04-02: Key Card Activated Switch ERP2

F6-05: DETECTORS

F6-05-00: Wind Speed Threshold Detector
F6-05-01: Liquid Leakage Sensor (mechanic harvester)
F6-05-02: Smoke Detector

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