

PC Application

PX333

User manual



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Manufacturer reserves the right to make modifications in order to improve app operation.

PXM Marek Żupnik sp.k.

Podłęże 654

32-003 Podłęże

BDO register number 000005972

tel. +48 12 385 83 06

mail: info@pxm.pl

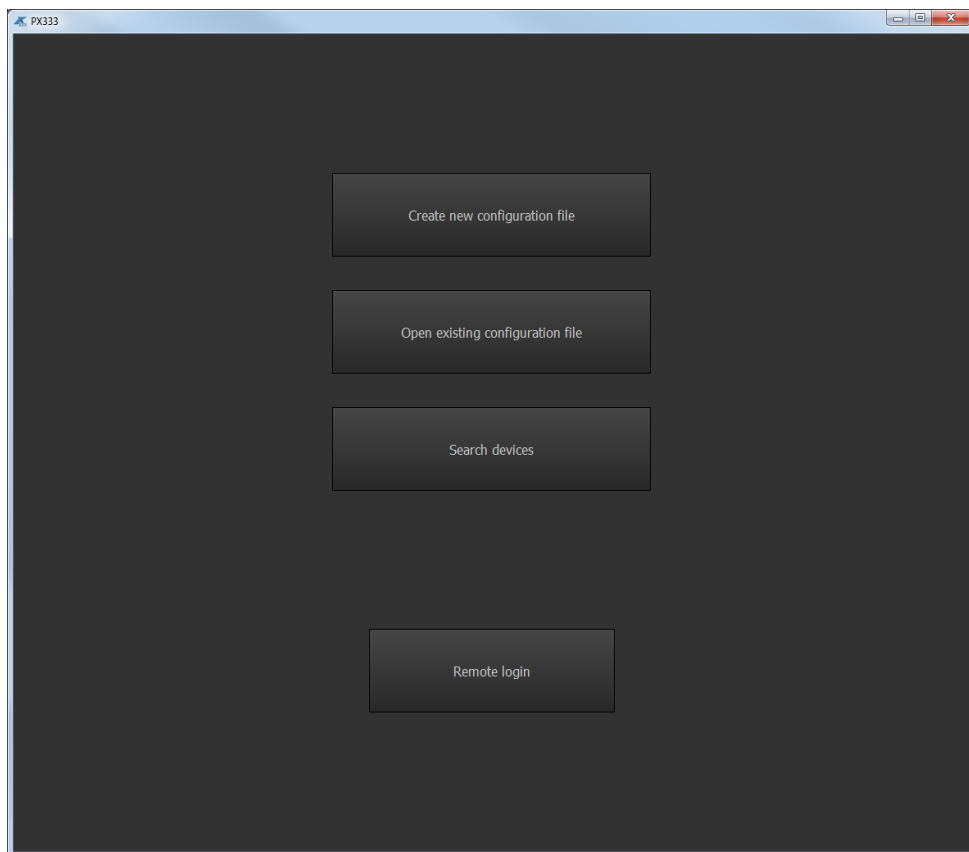
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Soft. 2.1

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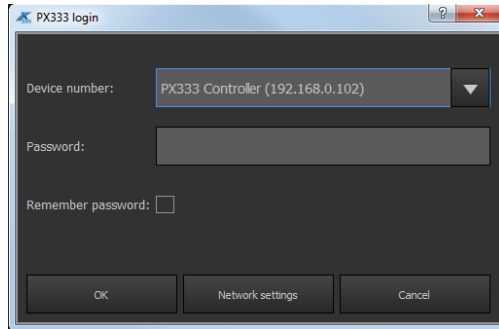
1 Beginning



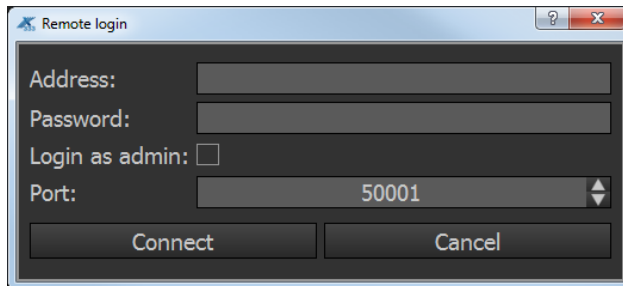
After launching the application, the welcome dialog will appear and the user will be able to choose from the following options:

- **[Create new configuration file]** – the application goes to the main window, a new configuration file is opened,
- **[Open existing configuration file]** – the application displays a selection window for a file saved on a disc,

- **[Search devices]** – the application searches for controllers in the local network,



- **[Remote login]** – a screen is displayed where you enter the address of the device (IP or domain name), your password and the port of the device located in the external network (as described in the PX333_M_PL_x-x manual in point 6.2).



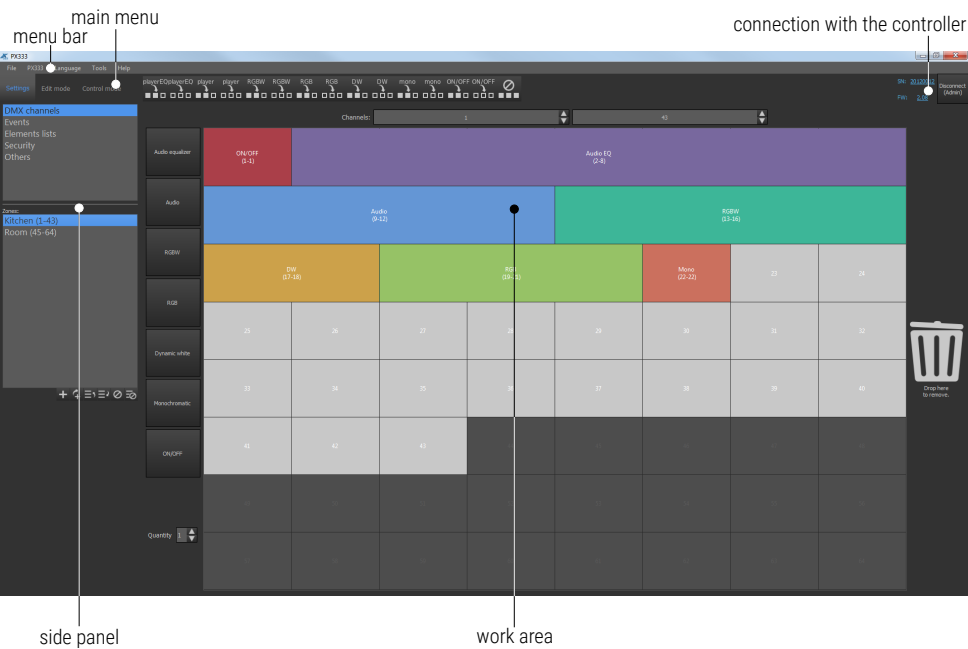
NOTE! The configuration will be downloaded automatically when using **[Search devices]** or **[Remote login]**.

NOTE! Changes made to the configuration are not sent to the device on an ongoing basis. Configuration upload and download is described in section 5 Configuration.

1.1 Construction of the application window

The information presented in the program are grouped on the left side panel, divided into the following tabs: [Settings], [Edit mode], [Control mode] and in the main menu as a drop-down menu: [File], [PX333], [Language], [Tools], [Help]. In addition, the central part of the application window is a work area.

Example of application window:



1.1.1 Menu bar

- **[File]**
 - **New** – clears the existing configuration, if user select this option, the program asks whether to save the currently edited configuration,
 - **Open** – opens the existing configuration file,
 - **Save** – saves changes in the configuration. If the configuration was not saved, user can specify where to save the file.
 - **Save As...** – saves changes in the configuration under a given name,
 - **Exit** – closes the application,
- **[PX333]**
 - **Search** – the application searches for controllers in the local network,
 - **Connect** – remote connection to the controller,
 - **Disconnect** – disconnects the application and device,
 - **Get configuration** – downloads configuration from the controller to the application,
 - **Send configuration** – sends configuration to the controller,

- **DMX Preview** – available when the application is connected with PX333. In this tab, you can view the values on DMX channels and a list of currently running elements.

Currently running		DMX output							
Program 4 (Kitchen)		1	2	3	4	5	6	7	8
		0	100	100	100	101	101	101	101
		9	100	100	101	101	101	101	101
		17	101	101	101	101	101	0	0
		25	0	0	0	0	0	0	0
		33	0	0	0	0	0	0	0
		41	0	0	0	0	0	0	0
		49	0	0	0	0	0	0	0
		57	0	0	0	0	0	0	0

DMX channel number

DMX value

- [Language]
 - *English*,
 - *Polish*,
- [Tools]
 - **Modbus report** – controller function assignment table to the modbus register, which contains elements from the current configuration,
- [Help]
 - **About** – displays software information,
 - **Contact** – displays contact details of the manufacturer,
 - **Manual** – opens the user manual (the instruction is displayed in the language of the application).

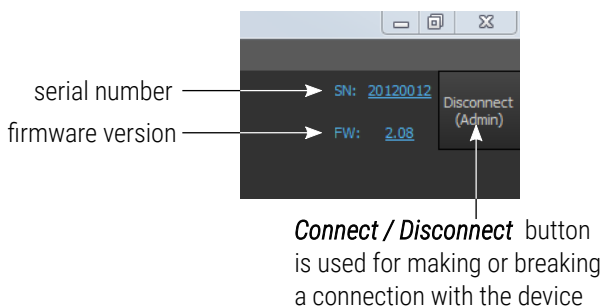
1.1.2 Main menu

- **[Settings]** – edition of zones, devices, events, lists, security options in the controller and **[Others]** – i.e. PWM settings and a description of the controller,
- **[Edit mode]** – editing programs and scenes,
- **[Control mode]** – ability to turn on and off scenes and programs directly from the application. It is active only when connected to the controller

NOTE! The contents of the working area are changed depending on the tab selected in the side panel.

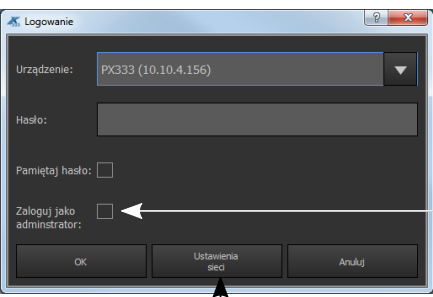
1.2 Information about the device, login and change of network settings

In the upper right corner there is a window supporting connection with the controller.



NOTE! Information on the serial number and software version is displayed only when the application is connected to the controller.

Pressing the **[Connect]** button displays the window for logging on to the controller.



drop-down list with all available controllers in a given network (the label and IP address of the device are displayed on the list)

password to log on to the controller

for entering the administrator password, it is necessary to confirm this option in the check box

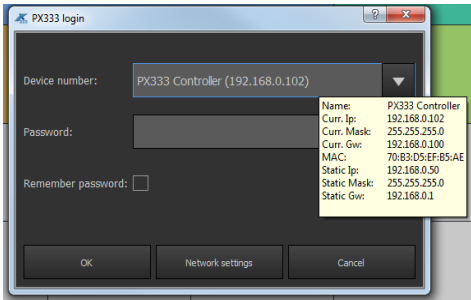
changing network settings

1.2.1 First login

Leave the **[Password]** box blank for the first login and confirm with the **[OK]**. By default, the controller is not password protected.

NOTE! If the client account (Client 1, Client 2, Client 3) is created in the application, the administrator password cannot be saved. Option **[Login as admin]** is only visible if client accounts were created in the program. When you point the mouse cursor over the controller name, the application displays advance network configuration.

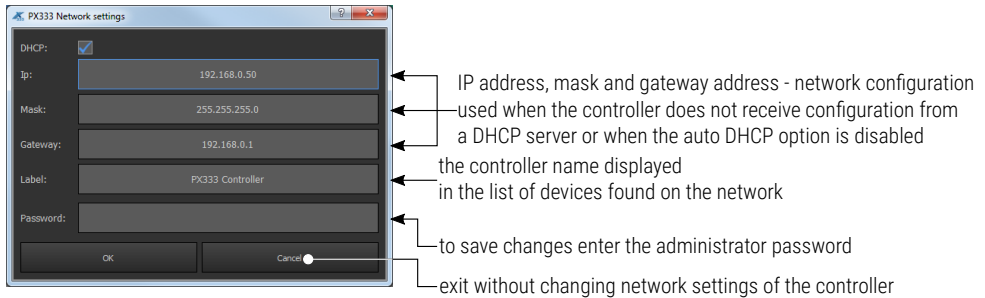
After hovering the cursor over the name of the controller, the application will display the advanced network configuration.



Name:	PX333 Controller
Curr. Ip:	192.168.0.102
Curr. Mask:	255.255.255.0
Curr. Gw:	192.168.0.100
MAC:	70:83:D5:EF:B5:AE
Static Ip:	192.168.0.50
Static Mask:	255.255.255.0
Static Gw:	192.168.0.1

1.2.2 Network settings

By selecting the **[Network settings]** option in the login window, the user can change the driver settings.



- **[Label]** – can contain a maximum of 16 characters,
- **[DHCP]** – if the function is selected, the address is automatically assigned from the DHCP server. If the function is not checked or the device is not connected to the DHCP server, a static address entered by the user is used. After connecting to the controller, configuration is automatically downloaded from the device and uploaded to the application.

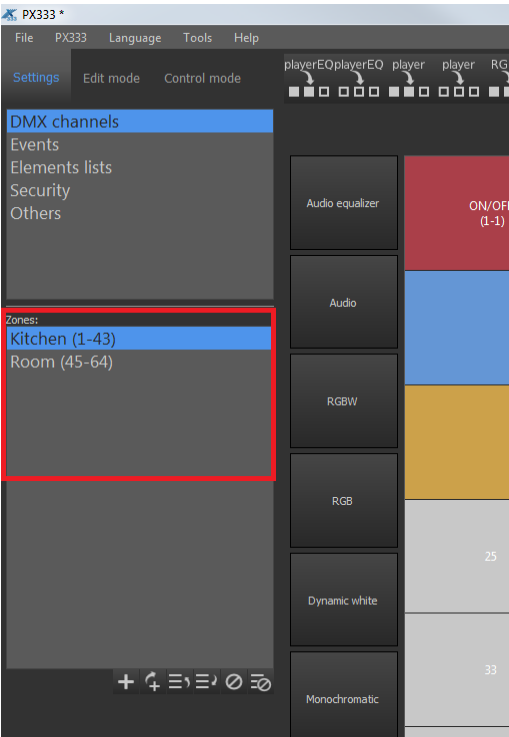
2 Settings

The **[Settings]** tab is active only when the user is logged in as an administrator or when working without connection to the device – the settings are then saved to a locally created configuration file.

2.1 DMX channels

In the [DMX channels] tab, the user can create DMX channel zones and assign selected devices to them. A maximum of 16 zones can be created. Each zone has a name (max. 16 characters) and the range of channels it covers. Zones may overlap.

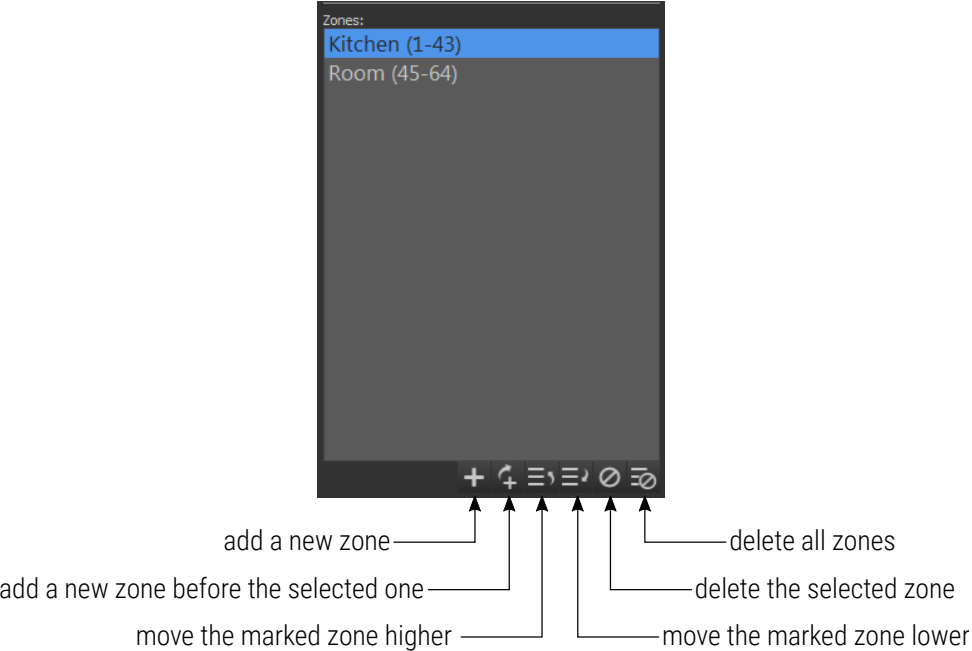
When adding a new zone, the DMX channel range is set to 1 – 64 by default. It is possible to change the range of channels.



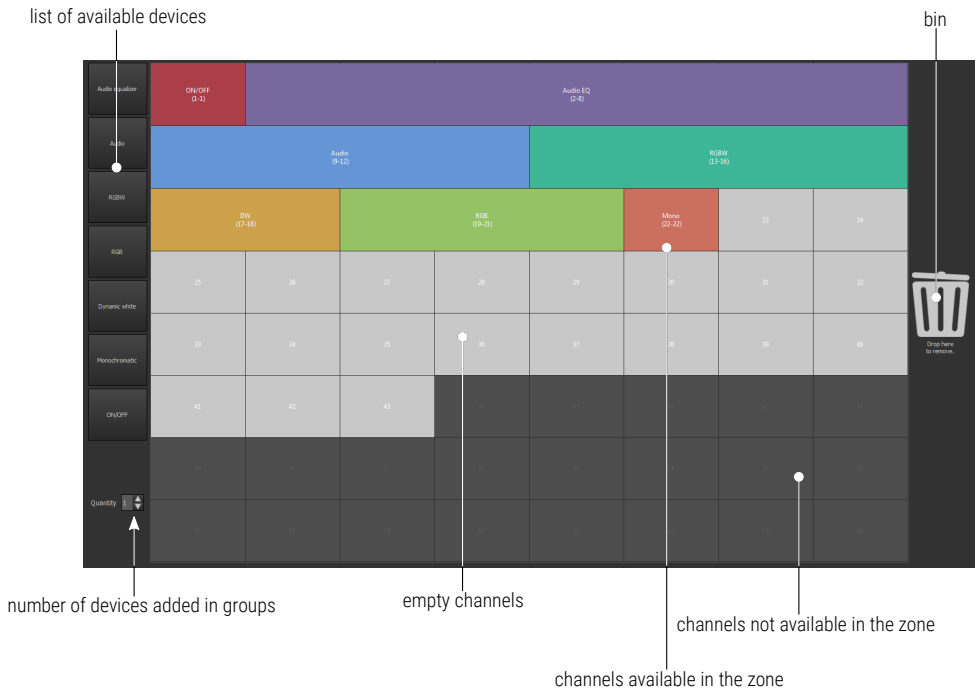
The side panel shows a list of the created zones.

NOTE! When the list of zones is empty, the workspace is inactive.

Below the list of zones there is a toolbar responsible for managing the zones.



Construction of the working area:



Grid of numbered DMX channels – devices are assigned to DMX output channels. Only one device can be assigned to one channel. There are 7 different devices in the program library, which differ in the number and type of channels.

NOTE! When adding devices, it is not possible to "ungroup" the channels, the device must form a coherent block of channels. If the device does not fit on the grid, the program signals an illegal action and highlights the channel in red, and "dropping" the device will not add it.

Devices can be added:

- **Individually**

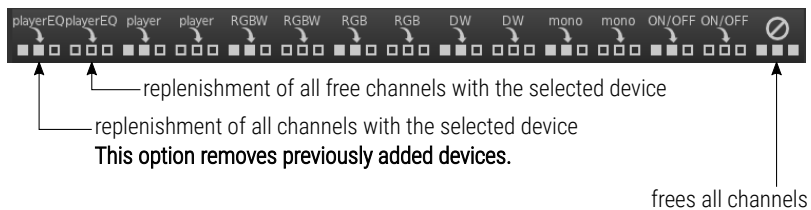
- using the "drag and drop" technique – put the mouse pointer on the device you want to copy or move. Keeping the left mouse button pressed, "drag" the object onto the empty field on the DMX channels grid. As you drag the device onto the grid, the app continuously highlights the channels that would be occupied by the device if it were dropped at this point.

Fixtures added to the DMX net can be moved on it in the same way.

- by clicking on the name of the device – the device will be inserted on the DMX grid in the first free place with the appropriate number of free channels.

- **In groups**

- by using the buttons for assigning the maximum number of devices



- the **[Quantity]** option allows you to define how many devices are to be added at the same time. Use the "Drag and Drop" technique to add the selected fixtures to the DMX channel grid. The devices will be added one by one, starting from the selected channel.

Devices can be removed:

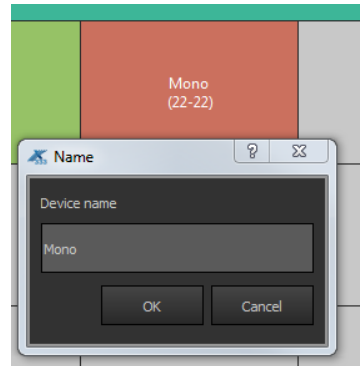
- **Individually**
 - to remove a device from the DMX mesh, the user can right-click on any device channel or drag the device to the trash can icon on the right side,
- **In groups**
 - to remove all devices, click on the **[Clear all channels]** icon located on the toolbar above the DMX channels grid.

Renaming

The devices in the grid display as channel blocks. The block displays:

- DMX channel numbers occupied by the device,
- device name.

It is possible to change the device name by double-clicking any device tile on the grid. The name can be up to 16 characters long.



Available devices in the application library:

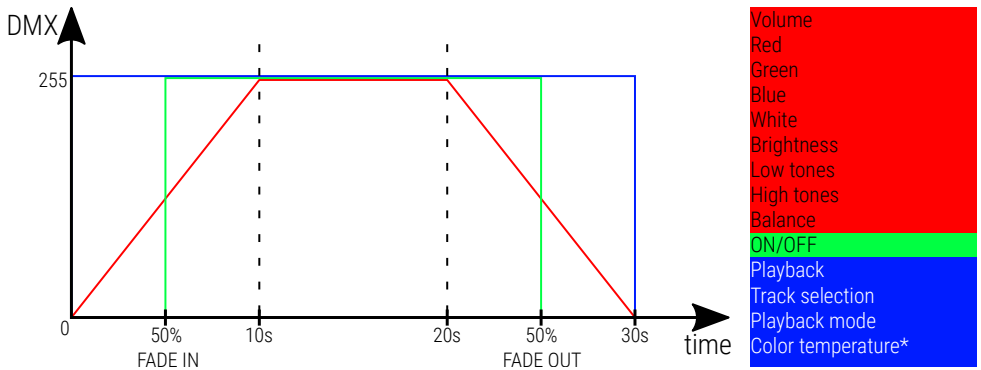
Designation	Type	Channels	Type of channels	Fade*	Master**
Audio equalizer	Media player	7	<ul style="list-style-type: none"> • Playback • Track selection • Playback mode • Volume • Low tones • High tones • Balance 	<ul style="list-style-type: none"> • Volume • Low tones • High tones • Balance 	-
Audio	Media player	4	<ul style="list-style-type: none"> • Playback • Track selection • Playback mode • Volume 	<ul style="list-style-type: none"> • Volume 	-
RGBW	RGBW lamp	4	<ul style="list-style-type: none"> • Red • Green • Blue • White 	<ul style="list-style-type: none"> • Red • Green • Blue • White 	<ul style="list-style-type: none"> • Red • Green • Blue • White
RGB	RGB lamp	3	<ul style="list-style-type: none"> • Red • Green • Blue 	<ul style="list-style-type: none"> • Red • Green • Blue 	<ul style="list-style-type: none"> • Red • Green • Blue
Dynamic white	Dynamic White lamp	2	<ul style="list-style-type: none"> • Color temperature • Brightness 	<ul style="list-style-type: none"> • Brightness • Color temperature*** 	<ul style="list-style-type: none"> • Brightness
Monochromatic	Monochrome lamp	1	<ul style="list-style-type: none"> • Brightness 	<ul style="list-style-type: none"> • Brightness 	<ul style="list-style-type: none"> • Brightness
ON/OFF	Switch	1	<ul style="list-style-type: none"> • ON/OFF (255 or 0) 	<i>switch after 50% of fade time</i>	-

* – rising and falling channels in scenes and programs

** – dimmable channels, converted by the master parameter

*** – when the lamp was on before changing the scene or step, there is a smooth transition between color temperatures

Scheme of an exemplary operation of a scene (rise time 10s / duration 10s / fall time 10s):



* – the diagram above shows a situation where the brightness of the DW lamp was 0% when the scene was turned on

2.2 Events

Once you have selected the **[Events]** tab in the left side panel, a table of events and a list of actions for the selected event will be displayed in the work area.

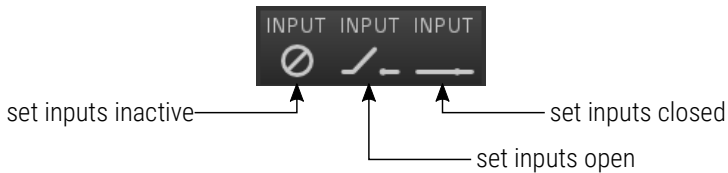
The following events are available

- **PX333 ON** – running the controller (power on),
- **INPUT 1 – INPUT8** – signals on the subsequent control inputs.

The digital inputs only work in one state (shorted / open) depending on the configuration. The input is set as normally open and will activate the event when the input is shorted. Inputs marked as normally shorted perform the event when the circuit is opened.

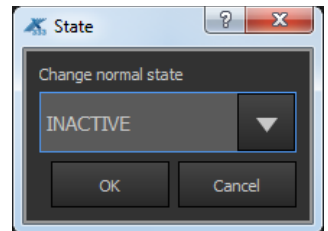
For events of inputs you can define the characteristics of the input:

- **In groups**



The above options are available on the toolbar. Selecting one of them sets the same characteristics on all inputs.

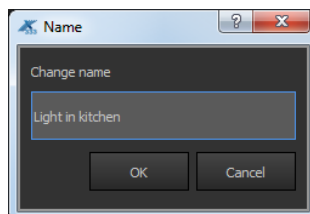
- **Individually** – double-click on the status of appropriate event, and then, select the specification of the input from a drop-down menu.



Changing the name of the event:

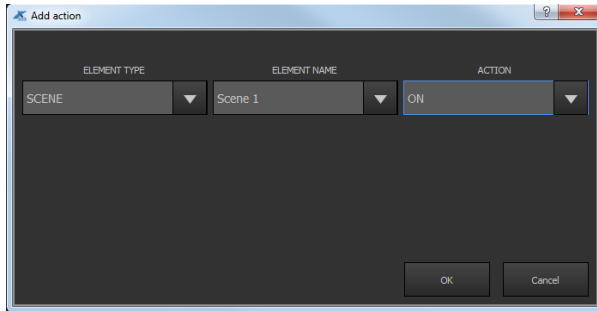
To change the name, double-click the event name in the table, the application will display a window.

The name can contain a maximum of 16 characters.



Adding actions to events:

When adding an action to the list, an element is added along with a defined action to be performed on it.



NOTE! The user can assign up to 16 actions to each of the 9 events.

The toolbar on the right side of adding actions to events:



add an action to the event

delete the selected action within the selected event

remove all previously defined actions from one event

Description of actions available for all elements:

ELEMENT	ACTION	ACTION RESULT
Scene	ON	<ul style="list-style-type: none">• If the scene was off – it turns it on.• If the scene was on – resets the elapsed duration.• If the scene belongs to a group of elements – it disables all other elements in this group (including suspended programs).• If the scene was rising – nothing happens.• If the scene was falling – it stays turned back on.
	OFF	<ul style="list-style-type: none">• If the scene was on – it turns it off.• If the scene was off, nothing happens.• If it was rising – it turns off.
	TOGGLE	<ul style="list-style-type: none">• If the scene was off – it works like turn on.• If it was on, it works like turn off.• If it was rising or falling – the direction is changed.
Program	ON	<ul style="list-style-type: none">• If the program was off – it turns it on.• If the program was on – nothing happens.• If the program was paused – it resumes its operation.• If the program belonged to any group of elements – all elements from that group are disabled (also programs suspended).

ELEMENT	ACTION	ACTION RESULT
Program	OFF	<ul style="list-style-type: none"> • If the program is running or paused, turn it off. • If the program was turned off – nothing happens. • Decreasing the current value occurs during the interrupted program. If time has not been defined – decreases happens during the time when the current step would fall.
	TOGGLE	<ul style="list-style-type: none"> • If the program was turned on – it turns it off. • If the program was turned off – it turns it on. • If the program was paused – it resumes its operation.
	PAUSE	<ul style="list-style-type: none"> • If the program is running, pauses it. • If the program is turned off or paused – nothing happens.
	RESTART	Discontinues the running of a program and enables it anew. Resets the existing number of repeats.
	DECR. MASTER	Decrease the master parameter by 1 / 255 unless the value of 0 has been reached.
	INCR. MASTER	Increases the master parameter by 1 / 255 unless the value of 255 has been reached.
	SET MASTER	The master of a program is set to the value provided by the event.

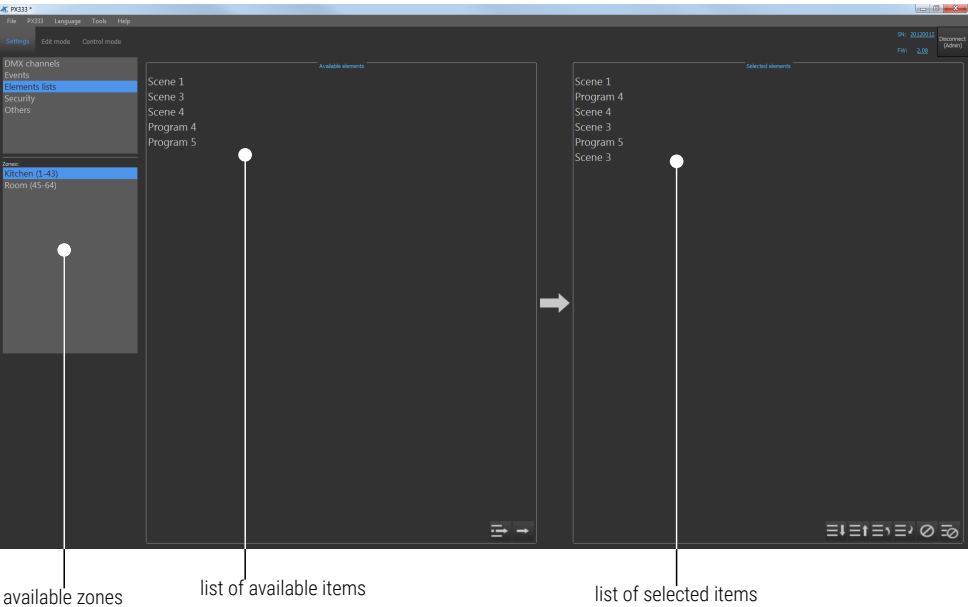
ELEMENT	ACTION	ACTION RESULT
Elements list*	NEXT	<ul style="list-style-type: none"> • The first call runs the first item in the list. • Subsequent calls take you to the next step.
	PREV	<ul style="list-style-type: none"> • The first call runs the last item in the list. • Subsequent calls take you to the previous step.
	OFF	Resets the step counter.
Zone	ALL ON	Turns on all scenes and programs in the zone. If the elements inside the zone are assigned to one group, the last element in the group will be started.
	ALL OFF	Turns off all scenes and programs in the zone.
	INCR. MASTER	Increases the master parameter by 1 / 255 unless the value of 255 has been reached.
	DECR. MASTER	Decrease the master parameter by 1 / 255 unless the value of 0 has been reached.
	SET MASTER	The master of a zone is set to the provided value.

* – a detailed description can be found in point 2.3. Elements lists

2.3 Elements lists

Item lists are a list of consecutive items from a given zone. Each zones has its own list of scenes and programs, the list may be empty.

After selecting the **[Elements lists]** tab in the side panel, a list of created zones appears below. If you select a zone, the list of available elements in the given zone and the target list of selected elements are displayed in the work area.



Adding elements to the list of elements is as follows:

1. In the side panel, select the zone for which the list of elements will be created. The elements available in the zone are displayed in the **[Available elements]** table.
2. Add the items you are interested in from the **[Available elements]** table to the **[Selected elements]** table.

NOTE! The selected item may appear on the list many times, but all items on the list cannot be more than 16.

Moving list items is possible as follows:

1. With the buttons available on the right in the left list of items (**[Available elements]**).



adds the selected item to the list of selected items

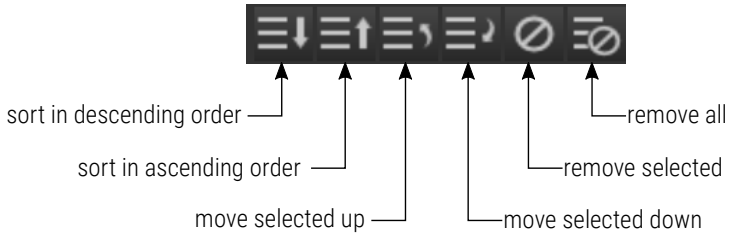
It is possible to select several elements at the same time by pressing the "Ctrl" key and selecting the elements with the mouse.

adds all elements located in the left column
to the list of selected elements

If, after selecting the **[Add all]** option, the list of selected elements would contain more than 16 (the maximum allowable number), the application will display the message "***Max elements reached!***".

2. Using "drag and drop" – it is possible to move several selected elements at the same time selecting them with the "Ctrl" button pressed.

Toolbar at the bottom right of the list [Selected element]:



2.3.1 Operation of the list

The first or last item from the list is launched after the *next* or *previous* action. Subsequent calls to *next* or *previous* move to the next or previous element on the list.

When a scene is launched from the list, its duration is set to infinite, similarly when a program is launched from the list – it will loop until the *next* or *previous* action is called again.

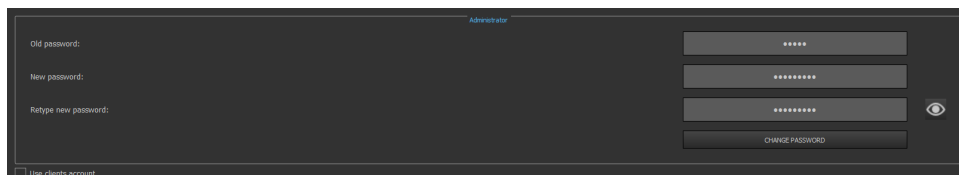
Items on the list of items can also be run in control mode or by events. Then their duration is consistent with the previously defined one ([**Control mode**] tab).

NOTE! If a list of elements is "started" in a given zone (e.g. using buttons), then all the elements on that list, but previously activated in a different way, will be automatically disabled.

2.4 Security

In the [**Security**] tab, there is an option to change the administrator password, it is available only when the application is connected to the controller.

When changing the administrator password, enter the current password and the new password twice.

The screenshot shows a dark-themed user interface for the 'Security' tab. At the top, the word 'Administrator' is displayed in a small blue font. Below it, there are three input fields for password management: 'Old password:', 'New password:', and 'Retype new password:'. Each field is accompanied by a password mask (dots) and a toggle icon (an eye) to the right. Below these fields is a 'CHANGE PASSWORD' button. At the bottom left, there is a checkbox labeled 'Use clients account'. An arrow points from the text below to this checkbox.

The administrator can activate additional customer accounts

NOTE! When changing the password for the first time, the **Old password** field should be left blank.

There are 3 levels of access for user accounts and they can be activated simultaneously:

- **Client1** – allows only for activating / deactivating scenes and programs and accessing the buttons of the panel of events, which means that edition is not possible for this level of access.
- **Client2** – has the same authorization as **Client1**, and additionally, has access to the slider of scenes, master and basic program options (x-fade, master, speed). The changes are stored in temporary memory (they will be deleted after restarting the controller).
- **Client3** – has the same authorizations as **Client2**, and additionally, the changes are uploaded to the memory controller.

The screenshot displays a user interface for managing accounts. The top section, titled 'Administrator', contains three password input fields labeled 'Old password:', 'New password:', and 'Retype new password:'. Each field is followed by a password mask (dots) and a toggle icon (eye). Below these fields is a 'CHANGE PASSWORD' button. The bottom section, titled 'Clients', features a checkbox labeled 'Use clients account' which is checked. Below this, there are three rows for client selection: 'Client1', 'Client2', and 'Client3'. Each row has a checked checkbox, a password mask, and a toggle icon (eye).

NOTE! Each additional user account should have a different access password.

2.5 Others

In the [Others] tab, it is possible to set addresses for three PWM outputs (range 1 – 64).

In addition, it is possible to change the name and description of the device. The device name is visible when searching for drivers in the network and can be up to 16 characters long. The device description may have a length of max. 64 characters.

Output 1: ☒ enable

Output 2: ☒ enable

Output 3: ☒ enable

1

2

3

Driver info

Name: PIC32 Controller

Description: Controller under roof

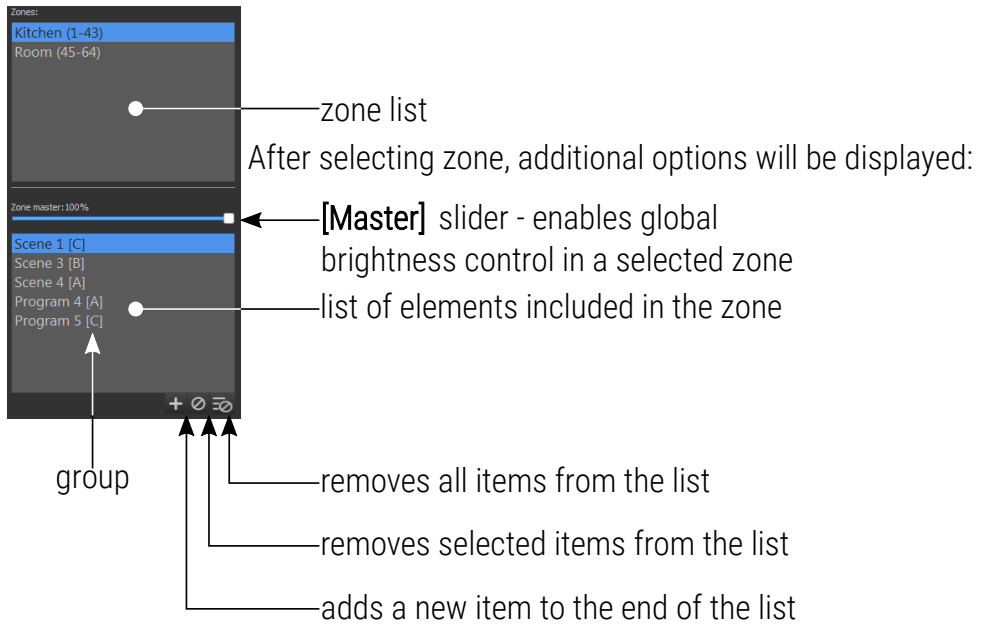
3 Edit mode

The editing mode is also available when working offline (i.e. without connection to the device), and the settings are then saved to a file locally on the computer.

NOTE! The user must connect to the device to send the saved settings to the file.

Only the user who is logged in as an administrator can edit the settings, users 1, 2 and 3 cannot access the edit mode.

Side panel content:



Each zone can contain a maximum of 24 items, including a maximum of 16 scenes and 8 programs. In total, all zones can have a maximum of 32 scenes and 8 programs.

Next to the name of an element on the list, there is a symbol of the group to which it belongs (if it has been previously defined and the element has been added to the group).

In the workspace there is a panel for editing the selected element. If no element is selected – the panel is empty.

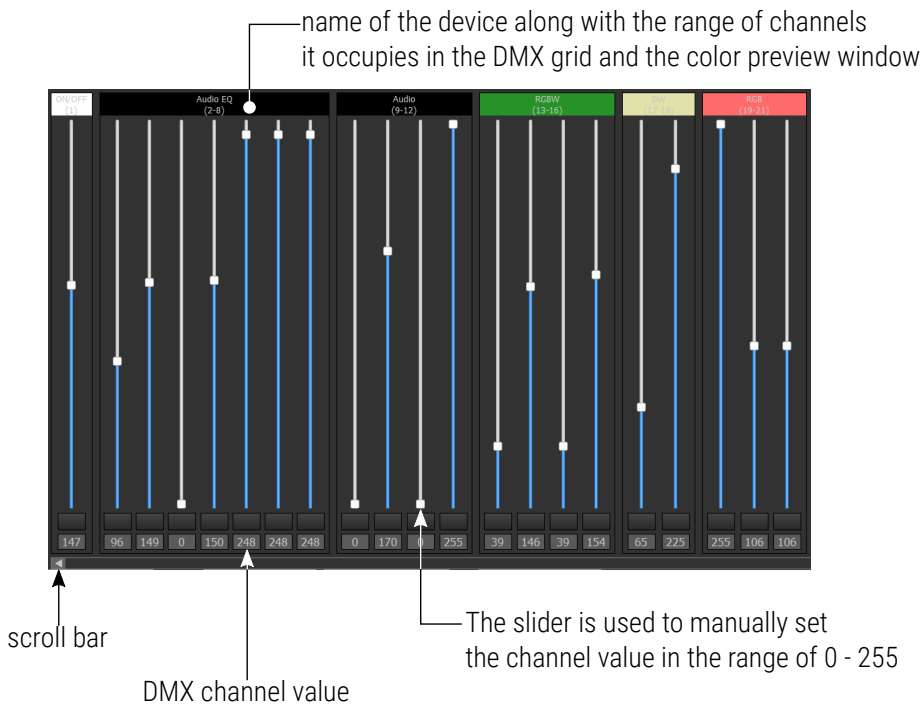
The master parameter only affects those channels where the brightness device is assigned (RGB, RGBW, Dynamic white and Monochromatic).

3.1 Create and edit scenes

If a scene is selected from the list of available elements of the zone, in the edit panel there will appear sliders that correspond to the output DMX channels assigned to a particular zone and are grouped in the device, according to the table of DMX channel available in the **[Settings]** tab → **[DMX channels]**.

NOTE! If the device is only partially available in a selected zone – i.e. not all of its channels are in the zone – it is shown as inactive and you cannot control it.

Edit mode workspace:



The slider and the text box are coupled together. Each device is described and has a color / status preview window.

Sliders and the entire device can be selected and controlled in groups. Selection of channels and selection of devices are independent of each other. If you change the value of a channel that is selected, the value in all the other selected channels will also be changed.

Under channel sliders there are scene parameters. The **[Group]** box is a drop-down list with available groups. It is not necessary to add an element to the group.

NOTE! The groups are not inter-territorial, i.e. if a group is already “in use” on a different zone, its name does not appear in the drop-down list. If the element from a given zone is assigned to the selected group, its symbol will appear next to its name on the list of elements of the zone. Activation of element from the group will automatically disable all other elements belonging to that group.

Scene time options:

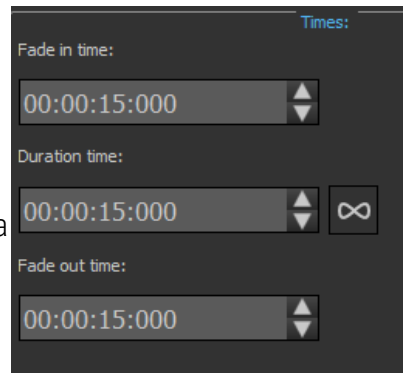
- fade in time,
- duration time,
- fade out time.

Each of the fields may have a maximum value of 23h59m59.9s entered, and the value of fields can be changed with an accuracy of 0.1s.

NOTE! The sum of all times cannot be equal to 0.

If the duration of a scene is set to infinite, its text field is inactive.

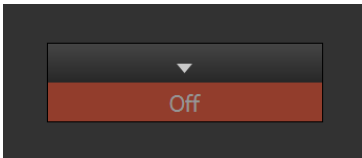
Right-clicking on the time window opens a contextual window with commands such as: Undo (previous action), Redo, Cut (selected value), Copy, Paste, Delete, Select all, Step up and Step down.



Next to the scene parameters there is a panel for the control of the selected device. The control box includes elements adjusted to the selected devices.

Controls for individual devices:

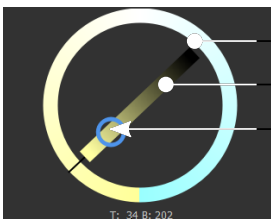
- **ON/OFF** – single channel on / off. DMX values 0 – 122 mean OFF, values 123 – 255 mean that the switch is set to ON.



- **Mono** – single brightness control channel

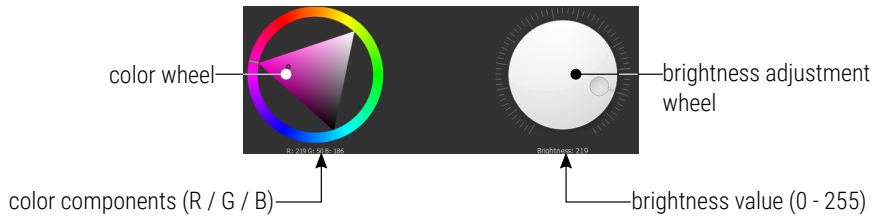


- **DW (Dynamic white)** – two channels to control the color temperature and brightness

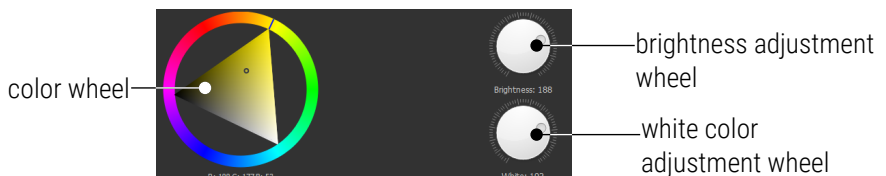


- color temperature wheel
- brightness control bar
- brightness slider
- color temperature (T) and brightness (B) values

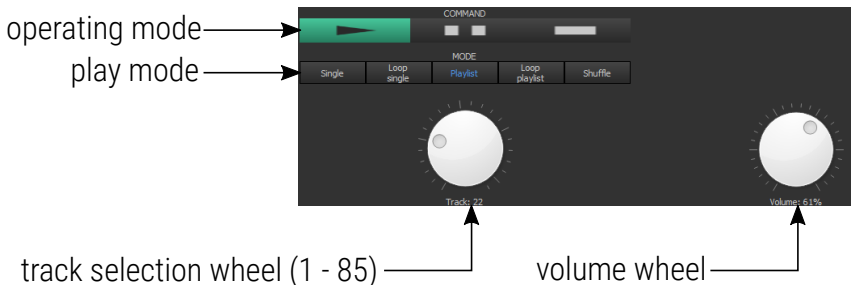
- **RGB** – three-channel color changing wheel and brightness adjustment wheel. The color wheel allows for precise color adjustment.



- **RGBW** – three-channel color changing wheel, brightness and white adjusting wheel



- **Audio** – four sliders, control and mode buttons, and two wheels for selecting track number and volume



○ Channel 1 – operating modes:

- **play** (DMX 128 – 255),
- **pause** (DMX 64 – 127),
- **stop** (DMX 0 – 64),

○ Channel 2 – track number selection

DMX value	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33
Track number	1	2	3	4	5	6	7	8	9	10	11
DMX value	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	61-63	64-66
Track number	12	13	14	15	16	17	18	19	20	21	22
DMX value	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	91-93	94-96	97-99
Track number	23	24	25	26	27	28	29	30	31	32	33
DMX value	100-102	103-105	106-108	109-111	112-114	115-117	118-120	121-123	124-126	127-129	130-132
Track number	34	35	36	37	38	39	40	41	42	43	44
DMX value	133-135	136-138	139-141	142-144	145-147	148-150	151-153	154-156	157-159	160-162	163-165
Track number	45	46	47	48	49	50	51	52	53	54	55
DMX value	166-168	169-171	172-174	175-177	178-180	181-183	184-186	187-189	190-192	193-195	196-198
Track number	56	57	58	59	60	61	62	63	64	65	66
DMX value	199-201	202-204	205-207	208-210	211-213	214-216	217-219	220-222	223-225	226-228	229-231
Track number	67	68	69	70	71	72	73	74	75	76	77
DMX value	232-234	235-237	238-240	241-243	244-246	247-249	250-252	253-255			
Track number	78	79	80	81	82	83	84	85			

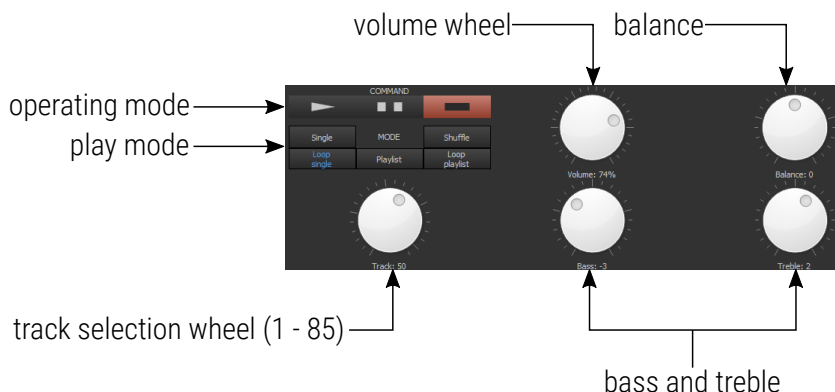
○ Channel 3 – playback mode:

- **Single** – the selected track is played once (0 – 64),
- **Loop single** – the selected track is played back repeatedly (65 – 127),
- **Playlist** – playback starts in sequence from the selected track, then stops after the last track (128 – 191).
- **Loop playlist** – starting from the selected track, playback is in the order of tracks, after the last track, the first track is played (192 – 249),
- **Shuffle** – playback is random (250 – 255).

- Channel 4 – volume control

The volume change is linear according to the following distribution: for a DMX signal with a value of 0, the volume is 0%, and for a value of 255, the volume is 100%.

- **Audio EQ** – Seven sliders, control and mode select buttons, and five wheels for selecting track number, volume, balance, bass and treble



- Channel 1 – 4 – same functions as in **Audio**.
- Channel 5 – bass adjustment (-10 – +10).
- Channel 6 – treble adjustment (-10 – +10).
- Channel 7 – balance adjustment (L -10, -9 ... 0 ... +9, +10 R).

For each of the three additional (5, 6, 7) channels, the adjustment by DMX control is performed for the same values (table below).

DMX value	0-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-135
Adjustment value	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0
DMX value	136-147	148-159	160-171	172-183	184-195	196-207	208-219	220-231	232-243	244-255	
Adjustment value	1	2	3	4	5	6	7	8	9	10	

Toolbar above the edit panel:

select channels:

- red (Shift + r)
- green (Shift + g)
- blue (Shift + b)
- white (Shift + w)
- temperature (Shift + t)
- brightness (Shift + d)

- all channels 100% (Page Up)
- all channels 0% (Page Down)



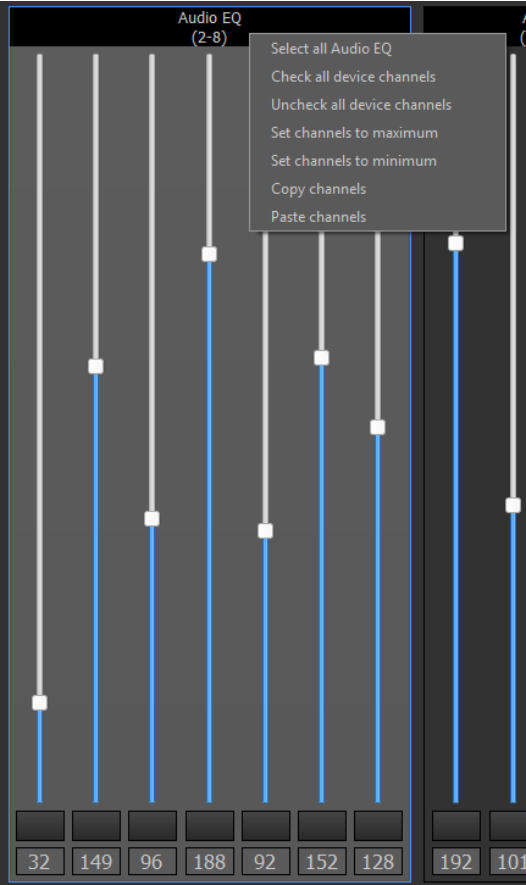
- check all channels (Ctrl + a)
- un check all channels (Shift + Ctrl + a)

- copy scene (Ctrl + c)
- paste scene (Ctrl + v)

show empty channels (Ctrl + e)

preview mode (available only when connected to the controller) selecting this option allows for the current preview of the edited scene or program step, without the need to upload the configuration to the controller (Ctrl + m)

Right-clicking on the preview panel opens a context menu together with appropriate control elements:



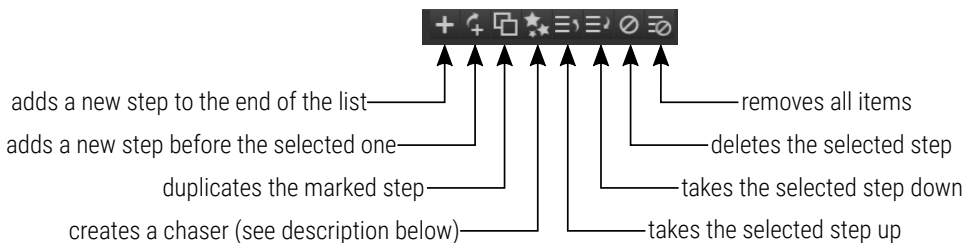
NOTE! Copying and pasting channels is only possible between devices of the same type, e.g. *RGB* ↔ *RGB*.

3.2 Creating and editing programs

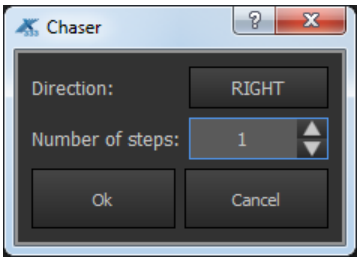
If the **[Program]** is highlighted on the list of available zone elements, below is displayed a list of steps for the program. For each program you can create a maximum of 64 steps.

Program defining involves the creation and specifying of the appearance of the next steps. Each step is defined in the same way as the scene. Additionally, you can define program option and step duration.

Below the list of steps there is a toolbar:



Creating a chaser – allows to quickly create a simple transition of pattern to all devices.

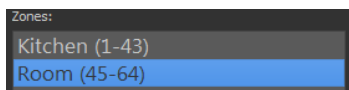


NOTE! Chaser option is available only if channels (selected zone) are assigned to devices of the same type. Selecting this option will display a dialog box with parameters: the number of steps and direction.

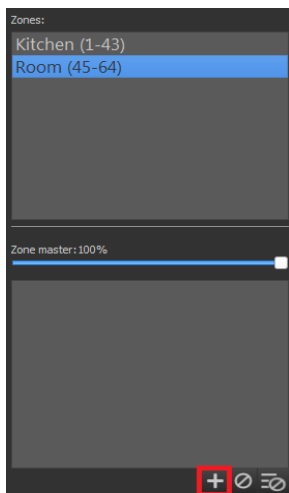
Then, the application will create in the current program (if the maximum limit of steps is not exceeded) an appropriate number of new steps (under the currently selected step), which will contain the same color "formula" as the selected step, but moved in the desired direction. This allows you to create, e.g. the effect of "running point".

Creating a program is as follows:

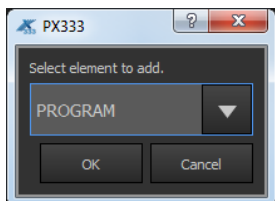
1. Select the zone for which you want to create a program (highlight it).



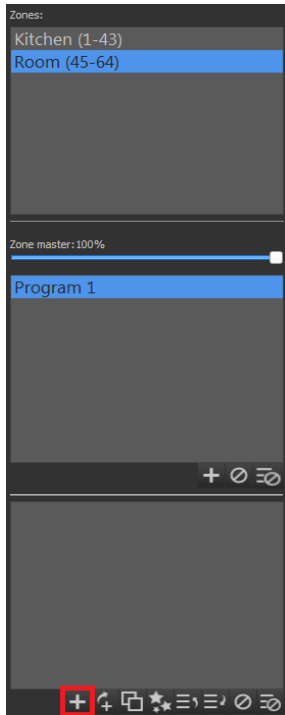
2. In the zone elements window below, click **[Add new]**.



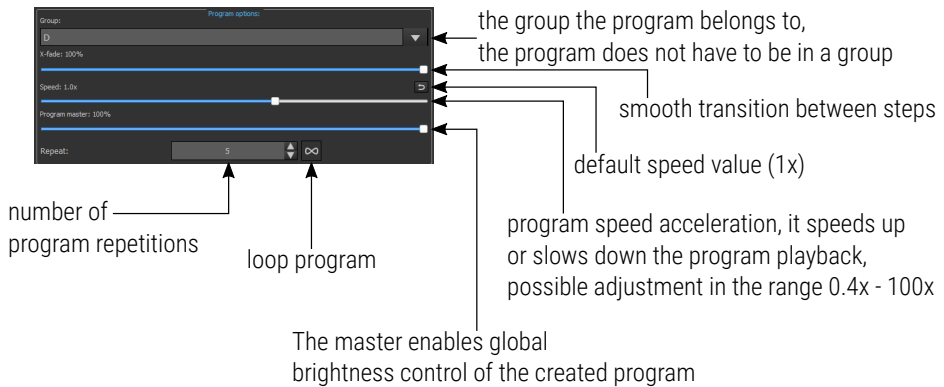
3. Select **[Program]** from the drop-down list and confirm with **[OK]**.



4. **[Add new]** program step in the window that appeared below the zone items.



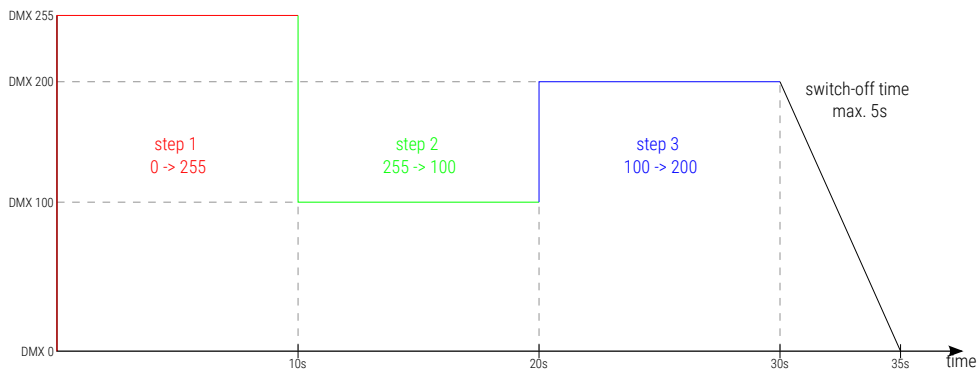
Two setting items appear below the work area with devices: **[Program options]** and **[Step options]**. Parameters set in the **[Program options]** window are global for the entire program and include:



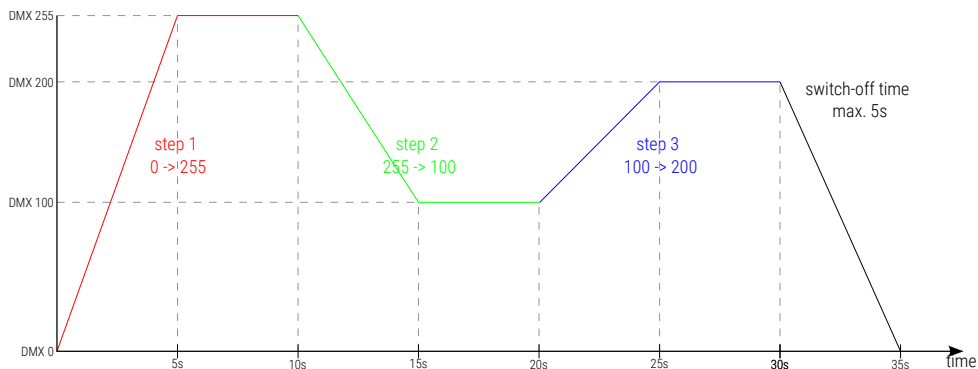
An example of how X-fade works in three cases:

- 1 – X-fade 0% / steps – DMX 255 → 100 → 200 / step time: 10s / speed x1 / program is executed 1x
- 2 – X-fade 50% / steps – DMX 255 → 100 → 200 / step time: 10s / speed x1 / program is executed 1x
- 3 – X-fade 100% / steps – DMX 255 → 100 → 200 / step time: 10s / speed x1 / program is executed 1x

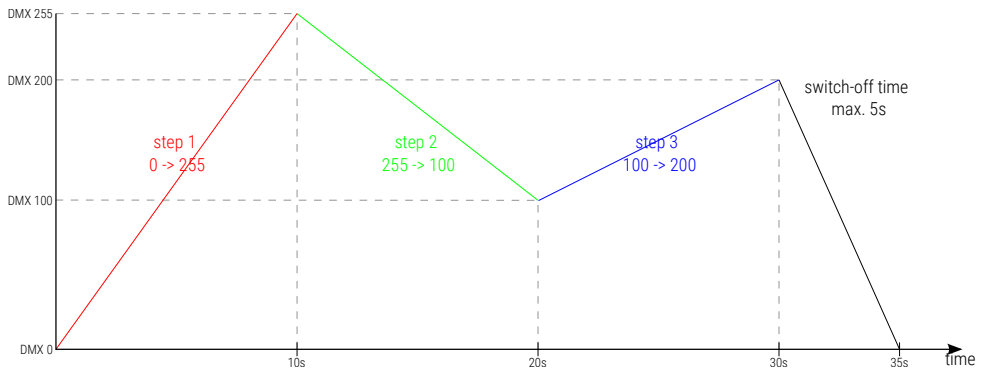
Case 1. At X-fade 0%, the steps change "staggered".



Case 2. With an X-fade of 50%, the following steps "enter" 50% of the duration of the entire step. For example, when the step is set to 10s, then 5s will be "enter" and the remaining 5s will be "duration" of the step.

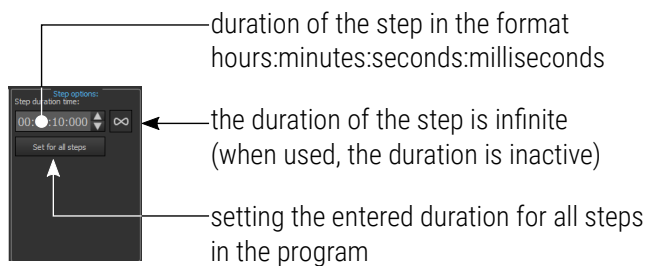


Case 3. With X-fade 100%, the steps after full "entry" immediately go to the next one.



NOTE! The time of switching off the program (automatic or forced) depends on its speed and **[X-fade]**, but cannot be longer than 5s.

Parameters set in [Step options] apply only to the currently edited step and include:

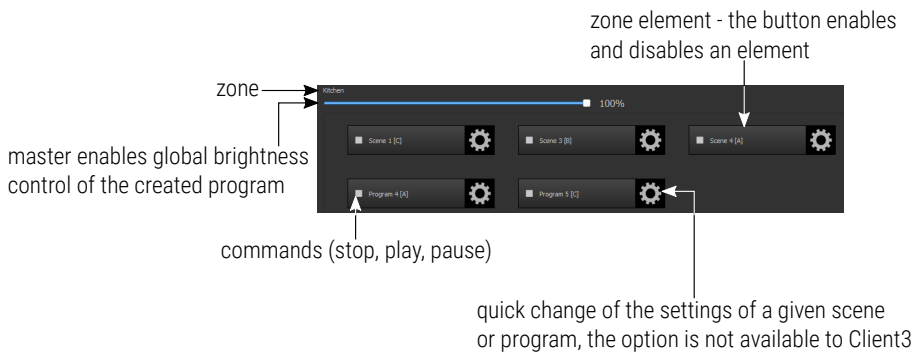



The program editing toolbar has the same tools as when creating a scene (chapter 3.1 Create and edit scenes). Scene channel values (whole scene) can be copied to program step and vice versa.

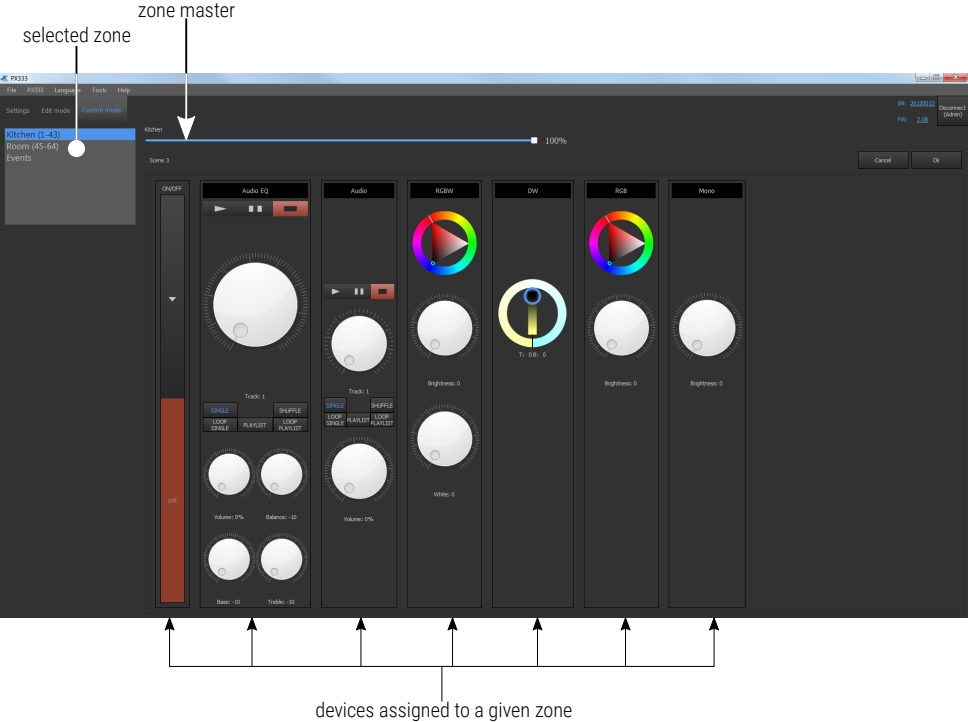
4 Control mode


The configuration shown in the application, in the **[Control Mode]** tab is always up to date with the configuration on the controller. All changes made in this mode are regularly sent to the controller, without pressing the **[PX333] → [Send configuration]** option. During the transition to control mode, the application enforces configuration synchronization.

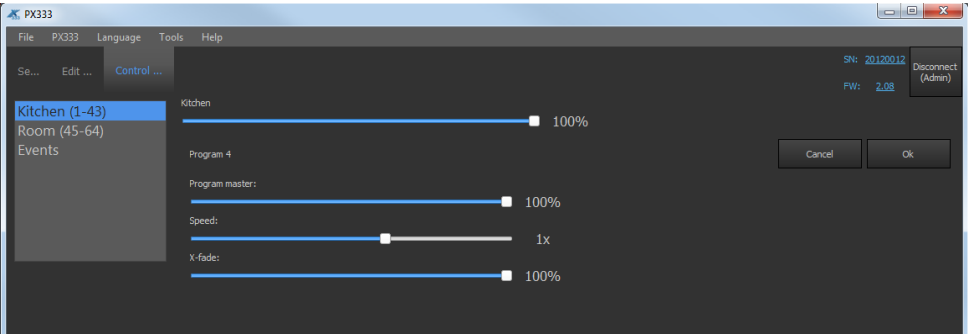
A list of zones is displayed in the left panel. The **[Events]** option is added at the end of that list. If you select the zone, it will be displayed in the main menu. All elements available in the zone are displayed as buttons.



After selecting the  symbol next to the stage, the application will display a list of devices in the zone with the controls:

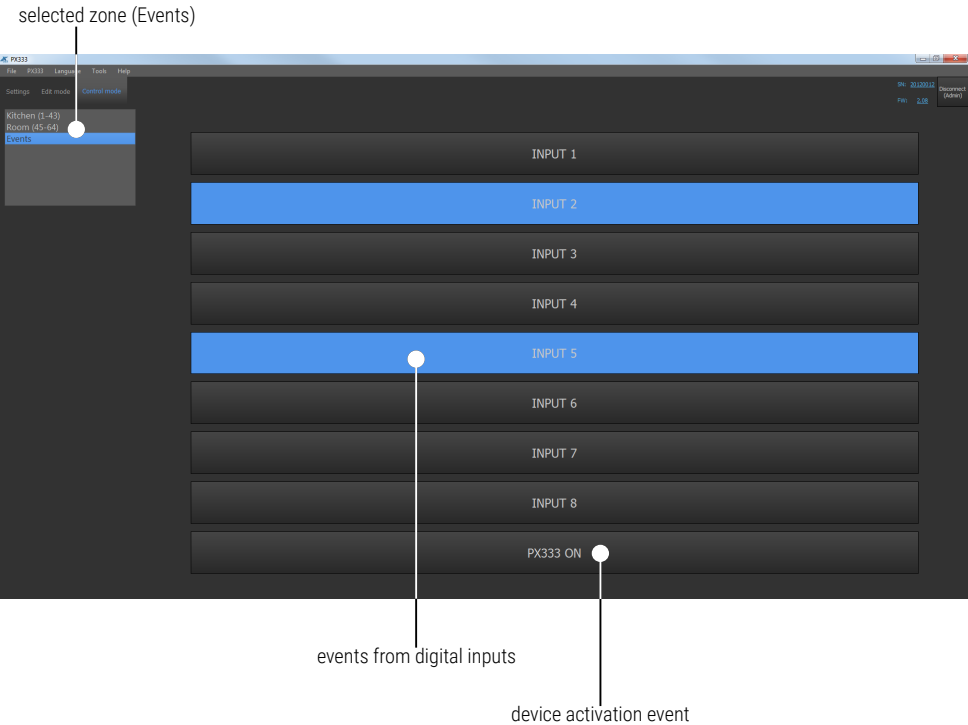


After selecting the  symbol next to the program, the application will display: sliders for editing the zone master, program master, playback speed and program X-fade parameter.



The **Events** "zone" displays the *Input* buttons signaling the state of the given input (if Input is highlighted in **blue**, the input is shorted), additionally, you can manually simulate the device activation event (*PX333 ON*).

Clicking any *Input* or *PX333 ON* button will trigger a specific event.



NOTE! To use the *Input* buttons, you must activate them in the **[Settings]** → **[Events]** tab (2.2 Events).

5 Configuration

The configuration saved in the program is not continuously transmitted to the controller.

To send the created configuration file to the device, select **[PX333] → [Send configuration]** from the menu. This action will overwrite the configuration that was saved in the controller.

To download a configuration that is currently stored in the device, select **[PX333] → [Get configuration]** from the menu. This action will overwrite the configuration that is currently opened in the program.

The configuration file can also be saved on your computer. To do this, select **[File] → [Save]** or **[Save As...]**.

A configuration file saved on a disk can also be uploaded to the application by selecting **[File] → [Open]**.

6 Modbus protocol

The PX333 controller has implemented support for the Modbus TCP/IP protocol in the slave mode. With it, you can influence the operation of the controller by running scenes / programs and obtain information about the status of individual elements.

To display the Modbus report in the application, select from the main menu: **[Tools] → [Modbus report]**.

The report contains Modbus register addresses assigned to individual elements of the current configuration.

NOTE! Changes in the configuration may change the addresses of the registers assigned to scenes, programs and actions.

Examples of functions supported by the Modbus protocol are presented below.

Parameter reading:

- DMX channel values
- digital input status
- scene / program status

Control:

- triggering events
- operation of areas
- scene / program actions
- operation of element lists

The master device connects via the standard Modbus TCP / IP port (port number 502) to the controller.

Table 1 is divided into read (*READ ONLY*) and write (*WRITE ONLY*) parameters. The first column contains the parameter name and their number. The second column tells about which Modbus protocol function should be used. The third column contains the addresses of individual parameters to which the command should be sent. Addresses are presented in both decimal and hexadecimal format. The last column contains the allowed values for each parameter. For read functions it is the expected response value, for write (control) functions it is the transferred value.

Table 1.

		Parameter	Modbus function	Address		Value
				dec	hex	
R E A D O N L Y	DMX OUT		Read Holding Registers	0	0000	0 – 255
	64			1	0001	
				
				63	003F	
	DIGITAL INPUT		Read Holding Registers	4096	1000	0 – 1
	8			4097	1001	
				
				4103	1007	
	SCENE STATUS		Read Holding Registers	8192	2000	0 – 3
	32			8193	2001	
				
				8223	201F	
	PROGRAM STATUS		Read Holding Registers	12288	3000	0 – 3
	8			12289	3001	
				
				12295	3007	

Parameter		Modbus function	Address		Value
			dec	hex	
W R I T E O N L Y	EVENT	Write Single Register	16384	4000	0 – 8
	1				
	SCENE ACTION	Write Single Register	20480	5000	0 – 2
	32		20481	5001	
			
			20511	501F	
	PROGRAM ACTION	Write Single Register	20736	5100	0 – 7
	8		20737	5101	
			
			20743	5107	
	PROGRAM MASTER ACTION	Write Single Register	20992	5200	0 – 100
	8		20993	5201	
			
			20999	5207	
	PROGRAM X-FADE ACTION	Write Single Register	21248	5300	0 – 100
	8		21249	5301	
			
			21255	5307	
	PROGRAM SPEED ACTION	Write Single Register	21504	5400	0 – 255
	8		21505	5401	
			
			21511	5407	

Parameter		Modbus function	Address		Value
			dec	hex	
W R I T E O N L Y	LIST ACTION	Write Single Register	21760	5500	0 – 2
	16		21761	5501	
			
			21775	550F	
	ZONE ACTION	Write Single Register	22016	5600	0 – 1
	16		22017	5601	
			
			22031	560F	
	ZONE MASTER ACTION	Write Single Register	22272	5700	0 – 100
	16		22273	5701	
...			...		
22287			570F		

The interpretation with a short description of the values for each parameter is presented in Table 2.

Table 2.

Parameter		Range	Description
R E A D O N L Y	DMX OUT	0 – 255	<u>Get DMX channel value</u>
	DIGITAL INPUT	0 – 1	<u>Get digital input state</u>
			0: OFF
			1: ACTIVE
	SCENE STATUS	0 – 3	<u>Get scene status</u>
			0: OFF
			1: RISING
			2: ON
			3: FALLING
	PROGRAM STATUS	0 – 3	<u>Get program status</u>
			0: OFF
			1: RISING
			2: ON
			3: FALLING
W R I T E O N L Y	EVENT	0 – 8	<u>Trigger event</u>
			0 – 7: DIGITAL INPUTS
			8: CONTROLLER POWER ON
	SCENE ACTION	0 – 2	<u>Trigger program action</u>
			0: ON
			1: OFF
			2: TOGGLE

Parameter		Range	Description
W R I T E O N L Y	PROGRAM ACTION	0 – 7	<u>Trigger program action</u>
			0: PLAY
			1: PAUSE
			2: STOP
			3: TOGGLE
			4: RESTART
			5: RESUME
	PROGRAM MASTER	0 – 100	<u>Set program master</u>
	PROGRAM X-FADE	0 – 100	<u>Set program x-fade</u>
	PROGRAM SPEED	0 – 255	<u>Set program speed</u>
	Speed formula: $\text{step} = (\text{value} * \text{nominal speed}) / 100$		Step = 0.01s
			25: 0.25 * nominal speed
			75: 0.75 * nominal speed
			150: 1.5 * nominal speed
			255: 2.55 * nominal speed
	LIST ACTION	0 – 2	<u>Trigger element list action</u>
			0: NEXT
			1: PREV
	ZONE ACTION	0 – 1	2: OFF
			<u>Trigger zone action</u>
			0: ALL ON
	ZONE MASTER	0 – 100	1: ALL OFF
			<u>Set zone master</u>