

PX140

# Advanced Light Controller

Manual



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*The manufacturer reserves the right to change the operation and handling of the controller in order to improve the product.*

# 1. GENERAL DESCRIPTION

PX140 Advanced Light Controller allows to control complex architectural lighting installations. It has 24 on/off type inputs, DMX-512 standard input and output, RC-5 type remote control input and USB port to communicate with the environment. The module is mainly intended to control slow lighting changes.

The device is programmed with the application for Windows platform through the USB port, after configuration operates entirely independently. Control mode of the module may be external, with keys (for instance with the movement detectors or dusk switches), remote control or DMX controller, or internal, according to built-in actual time clock, that allows to precisely schedule the events and program them in up to 1024 timers.

PX140 Advanced Light Controller allows also to define 3072 scenes and join them into 512 programs, consisting of 999 steps maximum each.

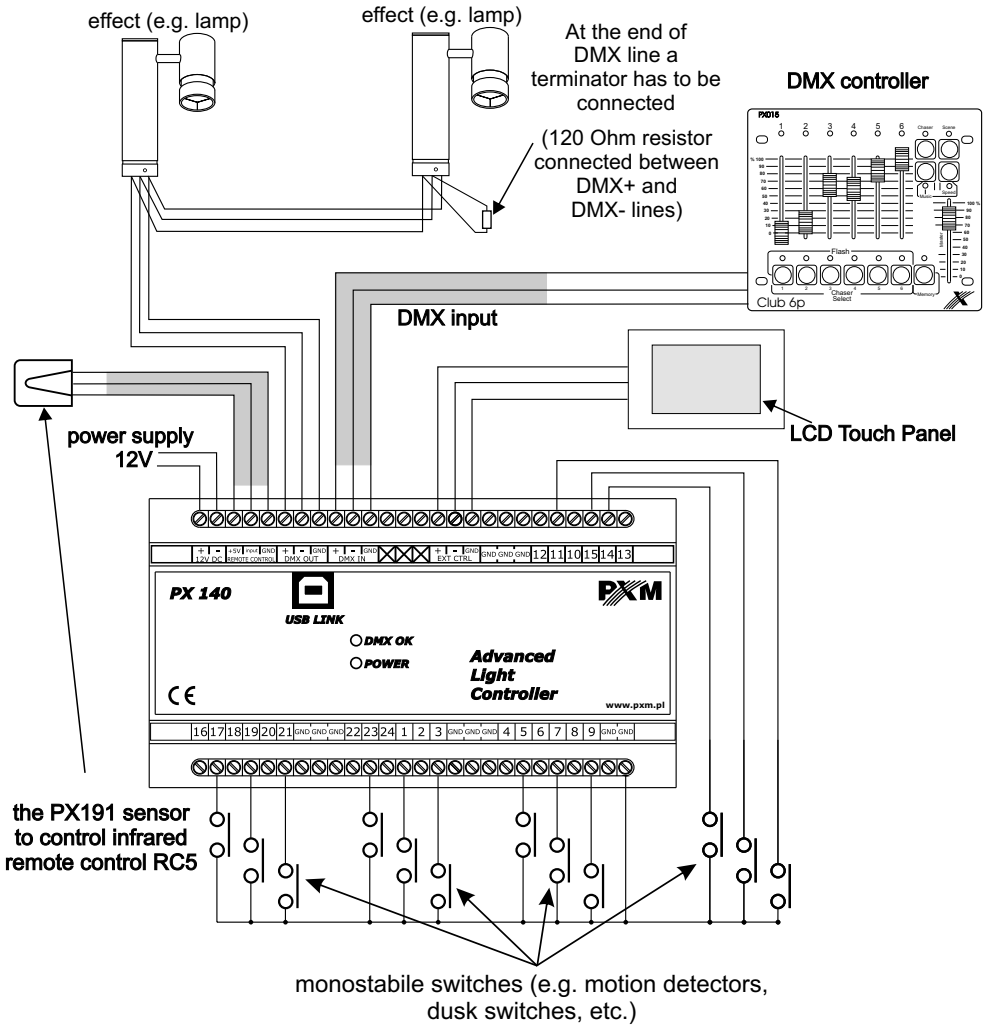
The additional convenience is the application for creating the lighting configurations' visualisations, installed automatically with the controller's software. It allows to compose the lighting installations design on the PC screen. The comprehensive effects' libraries allow to render the environmental conditions precisely.

# 2. SAFETY CONDITIONS

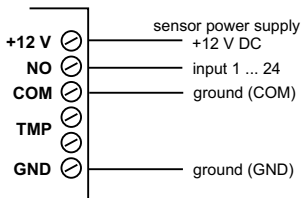
PX140 is a device powered with safe voltage 12 - 24 V; however, during its installation and use the following rules must be strictly observed:

1. The device can be connected to 12-24 V DC (stabilised voltage) with current-carrying capacity compatible with technical data.
2. All the conductors should be protected against mechanical and thermal damage.
3. In case of damage to a conductor, it should be replaced with a conductor of the same technical data and attestations.
4. Connection of DMX signal can be made with a shielded conductor only.
5. All repairs, connecting and disconnecting of cables can only be made with cut off power supply.
6. The device should be strictly protected against contact with water and other liquids.
7. All sudden shocks, particularly dropping, should be avoided.
8. The device cannot be turned on in places with humidity exceeding 90%.
9. The device cannot be used in places with temperature lower than +2°C or higher than +40°C.
10. Clean with damp cloth only.

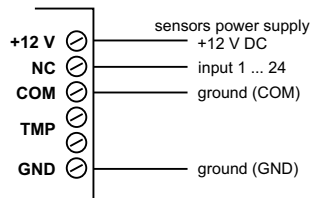
### 3. CONNECTIONS SCHEME



#### NO type sensor connecting



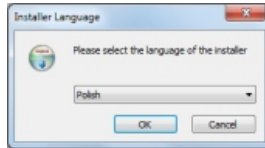
#### NC type sensor connecting



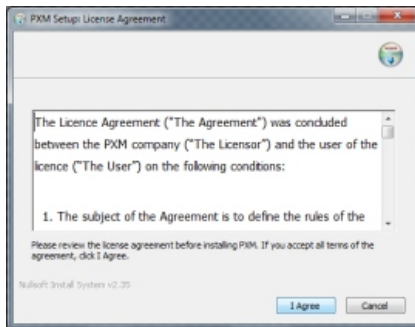
## 4. INSTALLATION OF SOFTWARE

An application *instPx140.exe* is put on a CD enclosed to the controller. Installation will start automatically after launched. The installed application is designed for programming and configuring the PX140. The device should not be connected to the computer before and during the installation.

In the first step, the installer asks you to select the installation language (*Installer Language*) used for installation. You may choose from: Polish, English, German and French. Select your language and press OK.

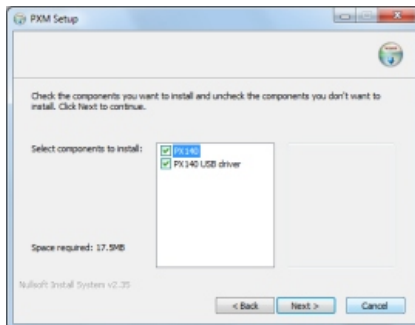


When your preferred language has been chosen, the next window, Software license agreement, appears – this could include a licence agreement between the software User and PXM. Read the terms and conditions carefully. If you agree to the conditions, click Agree as this is required to proceed. You may also abort the installation by clicking Cancel.

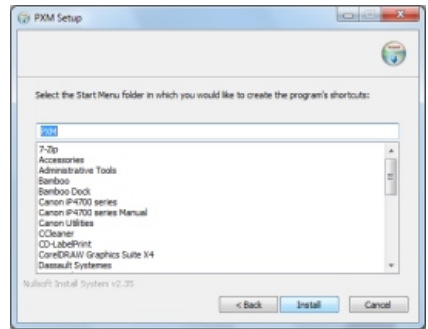
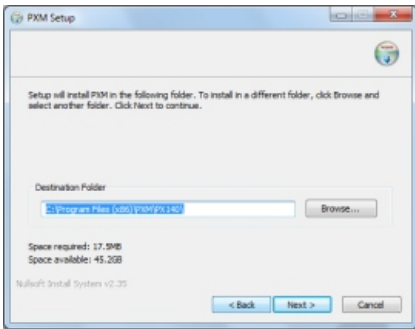


Once agreed to the licence terms and conditions, the Select components window appears. This is used to select elements to be installed in the system.

You can select PX140 software and device drivers PX140 - PX140 USB driver. In order to get familiar with the functions of the PX140 software without connecting the controller, one can deselect the second option. If you desire full functionality, select both and press Next button.



Next window Select folder in the Start menu is designed for folder selection in the Start menu in which a shortcut to the software will be installed. Default name is recommended. You do not have to create the shortcut in the Start menu – in order to do so, select option Do not create shortcuts. Having configured all the options, press Install button.



Next window lets you know, that the installer is ready to copy files. By clicking *Next* key you accept all previous conditions and provoke the installation begins.

Next window Select folder in the Start menu is designed for folder selection in the Start menu in which a shortcut to the software will be installed. Default name is recommended. You do not have to create the shortcut in the Start menu – in order to do so, select option Do not create shortcuts. Having configured all the options, press Install button.

The installer will proceed to the installation process. Its progress will be displayed.

After the installation process has been completed, a Close button will be activated. Press it to finish the installation. After the process is finished, the software is installed and fully functional.

## 5. CONTROLLER SOFTWARE

The installed Px140 application is located in Start/Programmes/PXM (if a default PXM folder was selected during the installation).

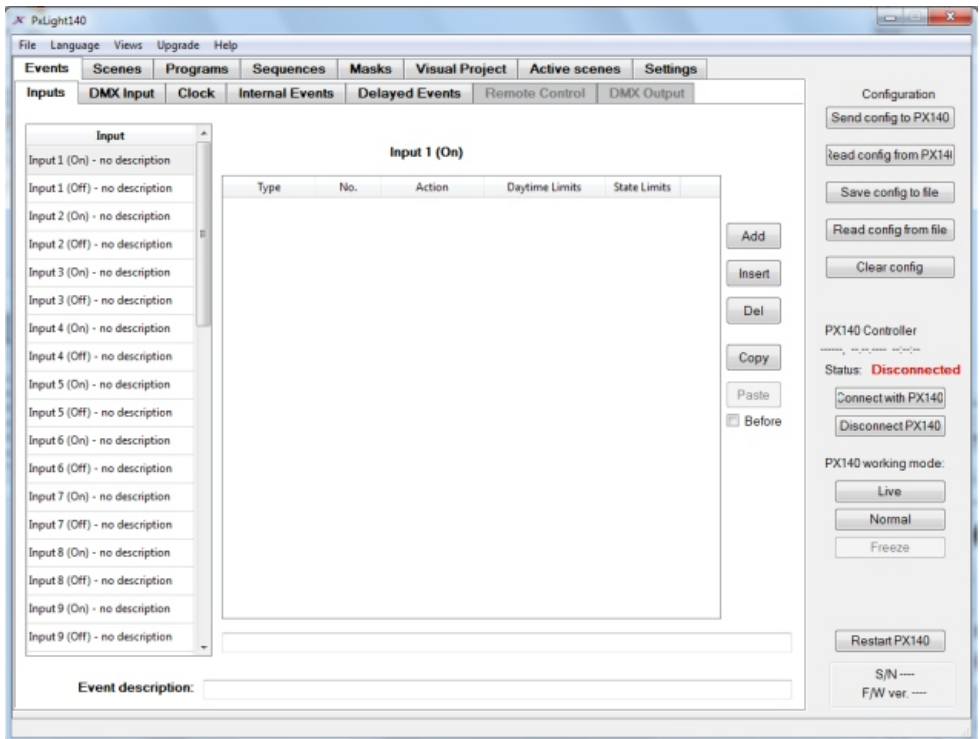
The software allows for an easy configuration and setting of parameters of the controller. Connecting the device to the PC computer is made via USB.

The application is available in four language versions - Polish, English, German and French. Other versions are available upon request.

The software can be launched on PC computers with Microsoft Windows XP or newer. The application and its updates can be downloaded free of charge from the website: <http://www.pxm.pl>.

### 5.1. CONNECTING THE CONTROLLER TO A PC COMPUTER

After installing the software, launch the application and, after that, connect the controller to the computer with the USB cable. After the first connection, the standard device installation procedure will be executed. you must show then the controller's driver's location that appeared at the end of the *PX140installation* process or allow an automatic search for the driver (recommended). Do not allow to search for the driver in the Internet.





The connection will be established after clicking the *Connect to Px140* key, placed on the right side of the application window. The *Connected* status will be displayed, as well as the actual time and date read from the device, controller's serial number and firmware version. To define most of the parameters, you do not need to connect the controller – the settings can be saved in the .cfg140, and after the connection has been established you may send the configuration to the device.

## **5.2. MENU**

### **5.2.1. Main menu**

Main menu is located at the top of the application window.

#### **File**

*Load file* – loads the configuration file from the hard drive.

*Save to a file* – saves the configuration file on the hard drive.

*Delete* – deletes selected elements of the configuration.

*End work* – finishes operation of the application.

#### **Language**

Allows for selecting the operation language of the application. Available languages: Polish, English, German and French

#### **View**

*Show inputs* – opens the window with ON/OFF input values of the controller.

*Show statuses* – shows the current condition of the controller – values on inputs and outputs, as well as active configuration elements.

*Show DMX output* – opens the window with DMX output channels values.

*Show DMX input* – opens the window with DMX input channels values.

*Designing mode* – opens the visualisation window in the designing mode.

*Visualisation mode* – opens the visualisation window in the programming mode.

*Close all* – closes all additional windows.

#### **Update**

*Search for update* – directs the user to the manufacturer's website in order to search for software driver updates. The search will be performed manually.

*Update* – allows for selecting the update file from the hard drive.

*Verify* – allows for verifying the update file.

#### **Help**

*Help* – displays the window with contact data needed to get help.

*About the software* – displays the version of software and contact data of the manufacturer.

## 5.2.2. Configuration menu

The following keys are available on the right hand side of the main window in the *Configuration* field:

*Send config to* – sends programmed settings to the controller,

*Read configuration from* – loads the controller settings to the application,

*Save config to file*, *Read config from file* and *Clear config* – have same functionalities as the corresponding keys in the main menu.

Below is the status of the connection to the controller and *Connect with PX140* and *Disconnect Px140*.

Below are the keys that allow for choosing the running mode of the controller connected to the software:

*Live* – all changes that are being made during the programming of scenes are visible,

*Normal* – during the programming process the controller does not stop its operation,

*Freeze* – operation of the controller is paused.

In addition, the *Restart PX140* key is available that enables to restart the controller, for instance after important settings change.

Serial number of the controller and firmware version are displayed at the very bottom of the field during the connection with the controller.

The screenshot shows a 'Configuration' panel with several buttons and status information. At the top, under the heading 'Configuration', there are five buttons: 'Send config to PX140', 'Read config from PX140', 'Save config to file', 'Read config from file', and 'Clear config'. Below these is the status for the 'PX140 Controller', showing the date and time 'Pt. 14.02.2014 15:15:04' and a 'Status: Connected' in green. There are two more buttons: 'Connect with PX140' and 'Disconnect PX140'. Under the heading 'PX140 working mode:', there are three buttons: 'Live', 'Normal' (highlighted in blue), and 'Freeze'. At the bottom, there is a 'Restart PX140' button and a green box displaying the controller's 'S/N 8C0805-0098' and 'F/W ver. 3.03.0009'.

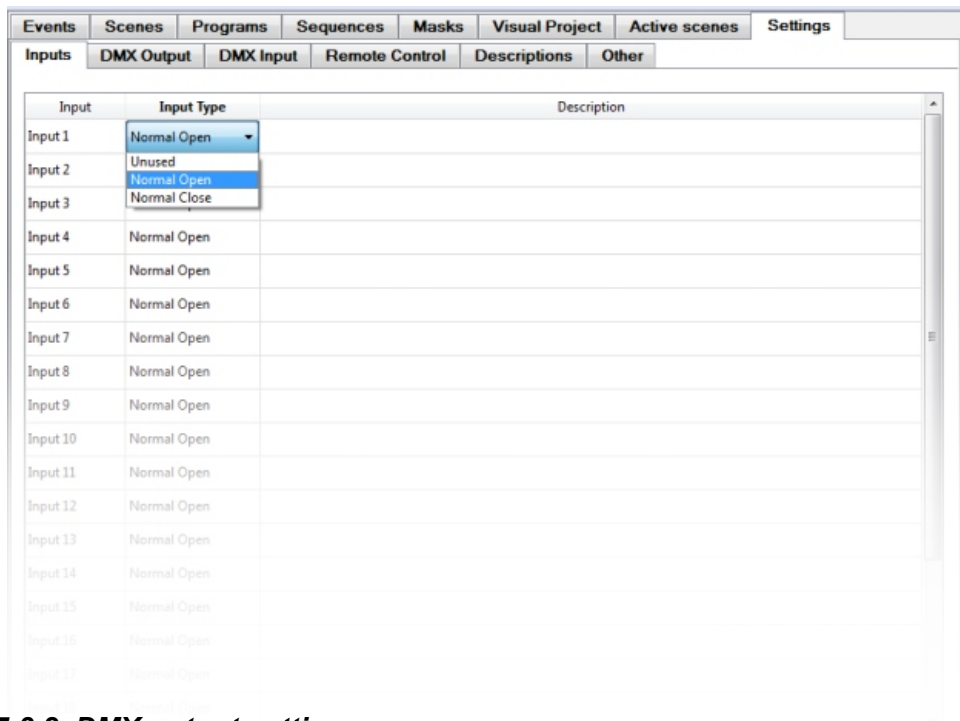
## 5.3. SETTINGS

The main tab *Settings* allows for changing various settings of the controller.

### 5.3.1. Input settings

In *Inputs* settings tab, every single input of 24 can be declared as *Normal open*, *Normal close* or *Unused*. *Normal open* input would be treated as off, whereas the closed input as on. *Normal close* - closed input would be treated as off, whereas opened input as on. *Unused* - this input would be ignored.

To define the control input, double-click the requested input in an *Input type* section and select the chosen status from the list. A comment can be added to every input. This would facilitate its identification.



### 5.3.2. DMX output settings

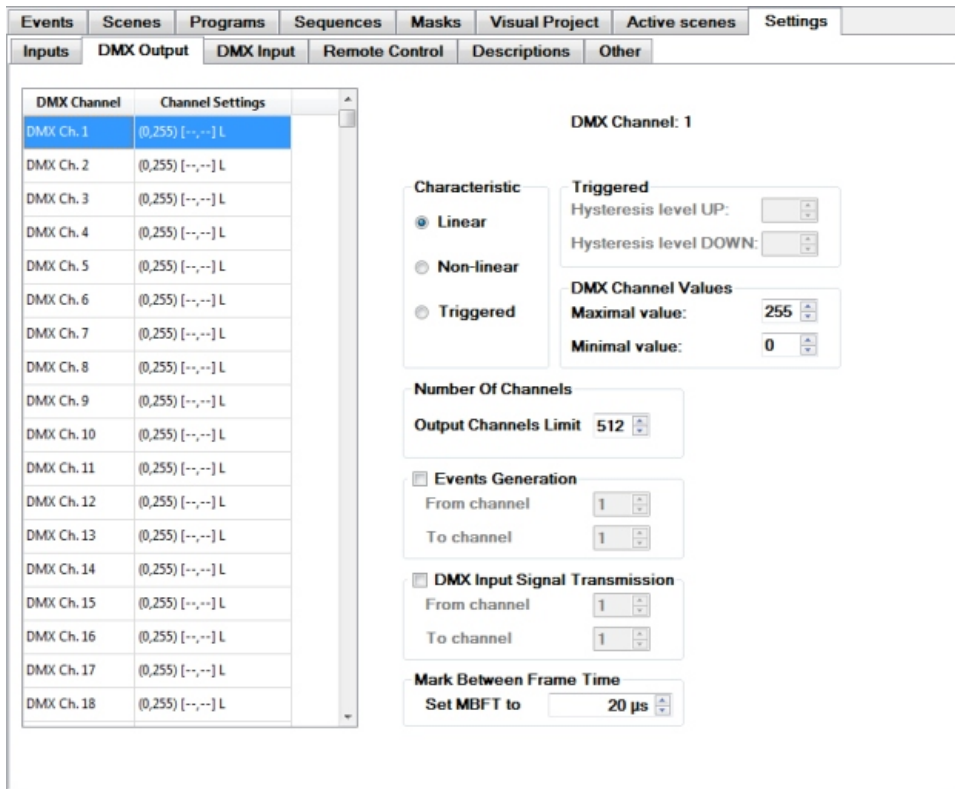
Parameters of the DMX output channel can be defined in *DMX output* tab. Output characteristics can be defined individually after selection of a channel in the table on the left side of the window. The following values can be chosen in the *Characteristics* section: Linear, Nonlinear or Triggered (on/off). If *Triggered* has been selected, a *Triggered* section shall appear in which one can change hysteresis parameters.

**The linear characteristics** are for the steady increment of channel value according to control values.

**The nonlinear characteristics** result in steady increment of channel values in reference to the used limits.

**The triggered characteristics** allow for setting the upper and lower limit of hysteresis (values below the limit will activate the channel with minimal brightness, values over the top limit – maximum brightness). The values for the lower threshold range from 0 to 254, for the top between 1 and 255.

For every single channel, you can set the minimal and maximal value in the *DMX Channel Values* section. One can set the maximal value in the range between 1 to 255, and the minimal value in the range from 0 to 254.



In the *Number of Channels* section, one can reduce the number of all controlled channels to a range used by the installed receivers (24 is the required minimal number for DMX protocol). Reduction of the number of channels may positively affect the performance of the controller.

The *Events generation* section allows for selecting the range of channels which could generate events. In order to optimise the operation of the controller, set the range of channel as large as possible or, if the function is not used, leave the field disabled.

The *DMX Input Signal Transmission* parameter allows for determining the range of channels which can be rewritten directly from the DMX input without conversion via the controller. The transparency of channels is controlled from the *Events* level (chapter 5.4.1. *Events defining*) or *Sequence* (chapter 5.4.4. *Sequence defining*).

The *Mark between frame time* allows for changing the Mark Between Frames field in the transferred DMX signal. Lengthened field will slow down the output DMX signal; however, it is sometimes necessary to make the receiver read the signal correctly.

### 5.3.3. DMX input settings

The *DMX input* tab enables setting the maximal number of DMX input channels in the *Limit the DMX input channels* section. Such a limitation will be displayed in the channel table below. The table allows for selecting channels which could control scene and mask stages.

If the channel is selected in the table, the brightness of a scene or a mask could be controlled while defining an event from the given channel.

Selecting the channels can be performed by individual selection of the chosen channel in the table or with the use of keys located at the bottom of the screen.

Events Scenes Programs Sequences Masks Visual Project Active scenes Settings

Inputs DMX Output **DMX Input** Remote Control Descriptions Other

Limit input DMX channels to: 512

Checked channels can set scenes' and masks' phases

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
+0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
+32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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+416	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
+448	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
+480	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Choose all  or choose every 2  In range from 1 to 512

Select  Deselect  Invert

### 5.3.4. Remote control settings

The controller can cooperate with a remote control transmitting in the RC5 code. To do so, the correct connection of PX191 infrared sensors is required (chapter 3. CONNECTION DIAGRAM). In the *Remote control* tab, one can define parameters for the wireless controller. Each configuration of the remote control is saved in the .rcu format. The *Save to file* key saves the file on the hard drive; *Read from file* key – loads the configuration from the file; *Read from controller* – loads the configuration from the controller; *Clear setting* – removes configuration; *Send to controller* – sends it to the PX140.

When you are not going to use the remote control, it is recommended to tick the Don't use RCU box, which will positively affect the operation of the controller.

### Setting of the remote control address

In order to configure the remote control, select its address in the *System address* field. The address can be set manually by typing in a value from the range of 0 - 31 in the *Forced* field and confirming it by pressing the *Set* key. The address can be downloaded from the remote control (if the controller is connected with the application). In order to do that, press the *Get from RCU* key and press any key on the remote control. If successful, the remote control address shall display next to the *Current system address*.

### Remote control buttons settings

In order to define the remote control buttons, select the relevant button from the table on the left. In the *Selected Button* field, provide the code number manually by setting the value in the *Forced code* and confirm by the *Set* button. If the controller is connected with the application, one can download the code from the remote control. In order to do that, press *Get code from RCU* button. Next, press the selected button on the remote control. Its code will be displayed on the left side next to the selected button. The button can be set as not used.

Events	Scenes	Programs	Sequences	Masks	Visual Project	Active scenes	Settings
Inputs	DMX Output	DMX Input	Remote Control	Descriptions	Other		

Button	Code	Description
Btn 1	--	no description
Btn 2	--	no description
Btn 3	--	no description
Btn 4	--	no description
Btn 5	--	no description
Btn 6	--	no description
Btn 7	--	no description
Btn 8	--	no description
Btn 9	--	no description
Btn 10	--	no description
Btn 11	--	no description
Btn 12	--	no description
Btn 13	--	no description
Btn 14	--	no description
Btn 15	--	no description
Btn 16	--	no description
Btn 17	--	no description
Btn 18	--	no description

**Current system address: undetermined**

**System Address**

Do not use RCU

**Forced**    0

**Selected Button**

Not used

**Forced code**    0

**Button description**

Aby dodać opis do klawisza należy wybrać klawisz z listy, wpisać opis na dole strony w polu *Opis klawisza* i nacisnąć Enter. Nowy opis pojawi się w polu po lewej stronie obok kodu klawisza. Opis będzie również widoczny przy zdarzeniu wywołanym przez ten klawisz (rozdział 5.4.1. *Definiowanie zdarzeń*).

### **5.3.5. Descriptions**

The *Descriptions* tab allows for adding and editing descriptions of different elements of configuration. The following options are available in the *Choose description category* field:

- States,
- Panels,
- Inputs,
- RCU inputs,
- Scenes,
- Masks,
- Programmes,
- Timers,
- Delays (Events: delay end),
- Sequences (Events: sequence start),
- Events: DMX input,
- Events: DMX output,
- Events: internal,
- Events: input state changed,
- Events: RCU keys events.

Once you have selected the category, all elements available in this category will be displayed. You can edit the description of the selected element in the *Description* column. These descriptions will be transferred to the controller.

### **5.3.6. Other settings of the controller**

The following parameters are available from the *Other* tab:

The *Controller Monitoring* field provides tools which enable you to monitor states of inputs, input and output DMX channel values, as well as internal states of the controller, such as the currently running programme or set (current) states.

Events	Scenes	Programs	Sequences	Masks	Visual Project	Active scenes	Settings
Inputs	DMX Output	DMX Input	Remote Control	Descriptions	Other		
<b>Controller Monitoring</b> Refresh rate (ms) <input type="text" value="100"/> <input type="button" value="Show inputs' states"/> <input type="button" value="Show input DMX values"/> <input type="button" value="Show output DMX values"/> <input type="button" value="Show internal states"/>		<b>Date and Time</b> <input type="text" value="piątek, 21.02.2014 14:26:47"/> <input type="checkbox"/> DST <input type="button" value="Set"/> <input type="checkbox"/> Use system date and time <input checked="" type="checkbox"/> Enable Daylight Saving Time <input type="checkbox"/> Calibration Adjustment: <input type="text" value="-8"/> <input type="button" value="Set"/>					
<b>Miscellaneous</b> <input type="checkbox"/> Enable communication with external panels		<input type="checkbox"/> Enable Sunrise / Sunset Events Location latitude: <input type="text" value="50°"/> <input type="button" value="Calculate"/> Location longitude: <input type="text" value="20°"/> <input type="button" value="Read from file"/> Time zone: <input type="text" value="GMT +1"/> <input type="button" value="Save to file"/>					
		<b>Events Generator</b> Choose event: <input type="button" value="Input"/> <input type="button" value="On"/> <input type="text" value="1"/> <input type="button" value="Generate"/>					
<b>Enable / Disable Delay Times</b> Start-up Time <input type="text" value="00:00:00.000"/> Shut-down Time <input type="text" value="00:00:00.000"/>		<b>Prolongation</b> Prolongation status: -- Expiry date: --- Password index: -- Password: <input type="text"/> <input type="button" value="Check status"/> <input type="button" value="Send"/>					

*Enable / Disable Delay Times* – time settings from the activation of the event allowing start-up/shut down of the power supply to the controller, that is the time after which the controller reaches the desired control or shuts down completely.

*Date and time* – allows for setting the clock of the controller (if connected to the application). Calibration enabled you to speed up or slow down the clock as internal electronic times tend to exhibit time discrepancies in reference to the actual time. One unit set in plus allows you to speed up the clock by 10.7 seconds in a month, whereas a unit set in minus allows for delaying the clock by 5.35 seconds in a month.

The field *Enable Sunset / Sunrise Events* allows for setting the longitude and latitude in which the device should operate, enabling the programming of events activating at sunset or sunrise. The programme will automatically calculate time for sunrise and sunset for every day after the Calculate button is pressed. The table can be saved in the .csv format or loaded from a relevantly generated file.



The table should not apply summer/winter time change – the controller calculates the said change itself if the DST(Daylight Saving Time) box is selected.

The *Events Generator* field generates any event in the configuration. It allows for viewing actions which are activated by the given event.

The *Prolongation* field – you can check the prolongation status here or enter the prolongation removing password (if the prolongation is set). You can get the password, unique for every single controller, from the producer, after all payments for the controller are settled. If the password is not entered before the prolongation expires, the device will be automatically blocked.

## **5.4. CONTROLLER PROGRAMMING**

### **5.4.1. Events defining**

The *Events* tab allows for assigning specific actions to events triggered by:

- Control inputs,
- DMX input channel,
- Integrated clock,
- Remote control,
- DMX output channel,
- and internally generated.

Events to which an action is assigned are highlighted in green on the list; brown colour – events which cannot occur due to the settings.

#### **5.4.1.1. Types of events**

##### **Control inputs (On/Off type)**

Every event whose function is to switch on or off the control inputs can be assigned with an action in the *Inputs* tab. There are 24 control inputs numbered according to the description on the controller housing to choose from. Enabling or disabling of the selected input could trigger the action assigned to it. Interpretation method of the input status can be set in the *Settings/Inputs* tab (chapter 5.3.1. *Inputs* settings).

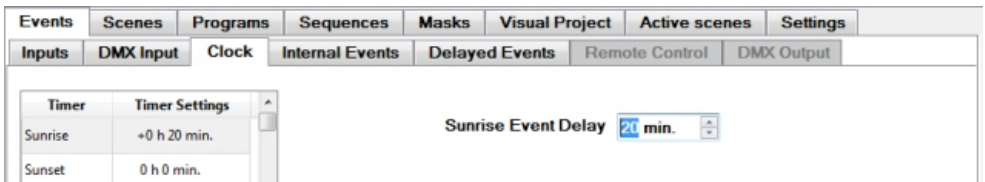
##### **DMX input**

Every event whose function is to switch on or off the one of the DMX channels can be assigned with an action in the *DMX Input* tab. There are 512 DMX input channels to choose from. If the channel is set as controlling the scene and mask stages (chapter 5.3.3. *DMX input* settings), every change of the channel value greater than 1 will generate an event from activation of the channel.

## Clock

The *Clock* tab allows for activating the selected actions at the defined time. For every single one of 1022 timers available, an hour, minute, day of the week, day of the month, month and year can be set. All these parameters can be set independently, which provides many options. Moreover, 2 special timers have been defined. They react to sunset and sunrise. The controller calculates the time for sunset and sunrise for the given day. In order to be able to set events at sunset/sunrise, one should enable this option in settings and provide the relevant parameters (chapter 5.3.6. *Other settings of the controller*).

The moment of occurrence of an event is understood as the start of the period defined by criteria. For instance, an event with undefined minute will start at the defined hour sharply.



## Internal Events

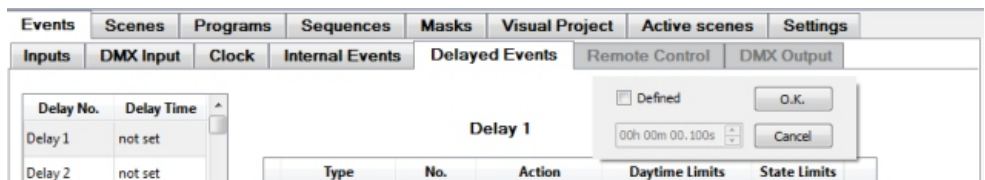
The *Internal Events* tab allows for assigning an action to virtual events. There is a selection of 1024 events to choose from. They can be generated via software of the controller or by external touch screens. The first internal event is triggered when the power of the controller is switched on.

## Delayed Events

The *Delayed Events* tab allows for programming 512 delays which can then be used when programming other events in order to initiate action after a defined period of time. Delays are also used by sequences (chapter 5.4.4. *Sequences defining*).

In order to programme a delay, select it from the list and double click in the *Delay Time* column and provide the correct value in the displayed window.

If the delay is highlighted green on the list, the delay is already in use (its start was assigned as action to another event). If the delay time is highlighted in brown, the delay is used by a sequence (chapter 5.4.4. *Sequence defining*) and its time can be edited from the sequence level only.



## Remote Control

The *Remote Control* tab allows you to assign actions to events resulting from the operation of the remote control. The tab is disabled as default. In order to use it, set the correct remote control address in remote control settings (chapter 5.3.4. *Remote Control* settings). There is a selection of events triggered by pressing, repeating and releasing 64 remote control buttons. Events highlighted brown cannot be defined due to the lack of the defined button code triggering the event. In order to programme an event, define the button key in the remote control settings (chapter 5.3.4. *Remote Control* settings). If an event is set for pressing and repeating the same button, the event for pressing the said button would be triggered first.

## DMX Output

The last tab which allows for assigning an action to every event which is to trigger or switch off one of the DMX output channels. The tab is disabled as default. In order to activate it, tick the appropriate box in the DMX output settings (chapter 5.3.2. *DMX Output* settings).

### 5.4.1.2. Description of the table

*Type* – an element on which the action is to be performed (e.g. scene).

*Number(No.)* – element number.

*Action* – an action to be performed.

*Daytime Limits* – 24h limitation for a given event. It defines at what time a defined action can be performed.

*States Limits* – limitation of the status for an event. If statuses were set, then they can be used to limit an action being set.

### 5.4.1.3. Available values

Daytime Limits can take the following values for each event type:

- Not set,
- Daytime only (depending on sunset and sunrise),
- Nighttime only (depending on sunset and sunrise),
- 0:00-23:50 (time set by the user).

Status limitation can take the following values for each status individually:

- Ignore,
- When set,
- When unset.

All Daytime Limits are set as *Not set* as default. All status limitations are set as *Ignore* as default.

Possible values for other parameters are presented in the table:

Type	Number	Action	Available for
Scene	All, 1 - 3072	On, Toggle, Freeze, Unfreeze, Off, Increase brightness, Decrease brightness,, Set brightness, Exclusive on	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Program	All, 1 - 512	On, Next step, Freeze, Unfreeze, Off, Exclusive on, Restart	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Sequence	All, 1 - 128	Start, Off	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Delay	All, 1 - 512	Start, Off	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Mask	All, 1 - 256	On, Toggle, Freeze, Unfreeze, Off, Increase intensity, Decrease intensity, Set intensity, Exclusive on	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output

Type	Number	Action	Available for
Set Status	All, A1 - A4, B1 - B8, ... I1 - I8	Activate, Deactivate, Toggle	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Enabling	---	Enable Disable	Inputs, Remote control
Save show	---	Save, Restore	Inputs, Remote control
DMX transmission	---	On, Off	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output
Message(Msg) for the panel	All, Panel 1, ... Panel 14	Message (Msg) 1 ... Message (Msg) 255	Inputs, DMX input, Clock, Internal event, Delayed events, Remote control, DMX output

#### 5.4.1.4. Type - description

**Scene, Program, Sequence, Delay, Mask** - allow you to perform an action for relevant elements of the controller elements programmed individually (chapters 5.4.2. - 5.4.5.).

**Set Status** – allows for setting or turning off a status which could affect other events (status limitation).

**Enabling** – allows you to trigger a module (*Enable* action) or to stop a module (*Disable* action). A switch (dusk switch) can be connected to an input for which such an event was assigned. This would trigger or stop the controller. Allowing input has the highest priority, which means that the controller does not perform any other action while starting up.

The time in which the controller would be fully started or fully stopped can be defined in *Settings/Other* tab: *Enable / Disable Delay Times* (chapter 5.3.6. *Other settings of the controller*).

NOTE: Events (*Start and Stop*) can be set as *Enabling* for one input only.

**Save show** – allows you to save and stop an operating programme (Save action) or to resume the saved status (Resume action).

**DMX transmission** – allows for turning on direct transmission via DMX protocol, which enables providing values externally to the DMX output channels, which were turned on in the Settings/DMX output/DMX transmission tab (chapter 5.3.2. *DMX output* settings).

**Msg for panel** – allows you to send feedback messages to PX181 touch screens connected to the controller.

### **5.4.1.5. Action – description**

**On/Start** – Turns on or starts the execution of the selected element.

**Toggle** – Switches the status of the given element (if off – turns it on, if on – turns it off).

**Freeze** – Stops an action for the given element (e.g. brightening the scene).

**Unfreeze** – Resumes the execution of the stopped action.

**Off** – Closes the given element.

**Increase brightness** – Increases the number of DMX channels by one bit.

**Decrease brightness** – Decreases the number of DMX channels by one bit.

**Set brightness/intensity** – Sets the value of DMX output channels in proportion to their initial control. The function is used to control an external controller or a touch screen.

**Exclusive on** – Turns on a given element and turns off all other simultaneously.

**Next step** – Allows for going to the next step of the programme without the need to wait for the entire current step to be finished.

**Restart** – Stops the programme and starts its execution from the very beginning.

**Activate** – Sets the status as active.

### 5.4.1.6. Event programming

Defining actions which execute events is performed in the same way, regardless of their type.

In order to define actions for the selected event, one should select the relevant event from the list of events on the left side. It is also possible to add a description of the given event at the bottom of the screen. The description will be displayed on the list of events and would ease its identification.

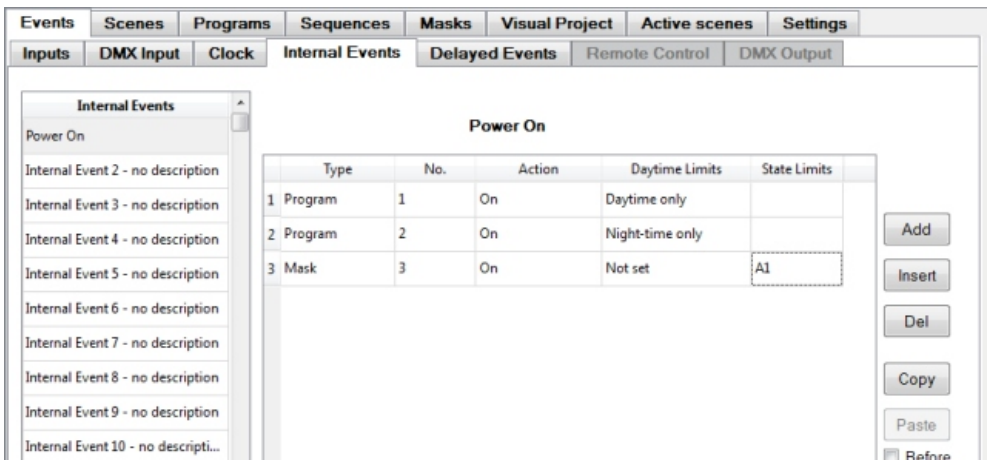
In order to add an element to the action list, one should press the *Add* button. The first element will appear on the list (it is disabled scene 1 without time limits and start is set as default). To change *Type*, *Action* or *Daytime Limits*, one should double click on the relevant field and select the desired value from the list. To select the element number, move to the desired field and type in the number. To set the status limit, double click on the relevant field and set the relevant parameters in the displayed window.

If no status is displayed in this field, it means that it is ignored. The capital letter means that the action will be performed if the given status is set, the small letter – if the status is not set.

Pressing the *Add* button again will add an element of the same type as the current one with its number greater by 1.

To insert an element before the selected element, move to the first element and press *Insert*. It will add a default element. To copy elements to the list of another event, select it, press the *Copy* button, select events which you want to copy on the list and press *Paste*. These elements will be added after the selected element. If these elements are to be added before the selected element, choose the *Before* option.

To delete an element from the list, move on the element and press the *Delete* button. If an element on the action list has a description set, selecting the element will display the description under the table.



## 5.4.2. Scenes defining

A scene is a static setup of DMX channel values, including the defined input, operation and closing times.

There are 3072 scenes to choose from in the PX140 controller. The main tab of the *Scenes* allows for programming them in several various methods.

To programme the given scene, select it from the scene list on the left hand side. Scenes highlighted in green have at least one channel value different from zero.

### 5.4.2.1. Single channels

In the first tab – *Single Channels* – it is possible to set a value for each of 512 DMX output channels with the use of a slider or by typing a number from the range of 0 - 255. The *Fade Up Time* parameter defines how long scene increment can last from the 0 value to the set value of DMX channels. The *Fade Down Time* is respectively defined by the time in which DMX channel value drops from the set value to 0. *Duration* defines how long the defined scene could last (excluding input and output times). Maximal input and output time of a scene is 1 hour, 49 minutes and 13.5 seconds (6553.5 seconds), maximal time for scene duration is 0.1 second shorter or indicated as infinite.

The screenshot shows the 'Scenes' tab in the PX140 controller software. The 'Single Channels' sub-tab is active. On the left, a list of 20 scenes is shown, with 'All red' (Scene 1) selected. The main area displays 10 sliders for DMX channels 1-10, with values 255, 0, 0, 255, 0, 0, 255, 0, 0, 255. Below the sliders are fields for 'Fade Up Time', 'Duration' (set to 'Infinite'), and 'Fade Down Time'. A 'Clear channels' button is also visible.

Channel	Value
1	255
2	0
3	0
4	255
5	0
6	0
7	255
8	0
9	0
10	255

Fade Up Time: 00[h] 00[m] 00.000[s]  
Duration: 00[h] 00[m] 01.000[s]  Infinite  
Fade Down Time: 00[h] 00[m] 00.000[s]

Clear channels

Description: All red



Total scene duration time is the *Fade Up Time + Duration + Fade Down Time*.

By pressing the *Clear channels* button, one can set values of all channels in the given scene to 0. A description of a scene can be added at the bottom in the *Description* field. The description will be displayed on the list to facilitate its identification.

### 5.4.2.2. Grouped channels

Scene programming is easier thanks to the *Grouped channels* tab which allows for setting values for many channels simultaneously. Relevant channels can be selected in the table manually or by using the *Selection* field, which allows for selecting, deselecting or inverting the selection of channels from the set range by the defined amount. It should be noted that the number of channels depends on the settings of DMX channel limitation in the main tab *Settings/DMX output* (chapter 5.3.2. *DMX output settings*).

Values of the selected channels can be set with the use of the slider (after selecting the *Enable values setting with slider* box). Values of the selected channels can be copied to other channels (after selecting the *Enable copying* option). To do that, set the parameter *Enable copying with relocation*, defining to which channels the copied values would be transferred, and press *Copy*. To set time parameters of the scene, go to the *Single Channels* tab.

The screenshot shows the software interface with the following components:

- Top Tabs:** Events, Scenes, Programs, Sequences, Masks, Visual Project, Active scenes, Settings.
- Sub-Tabs:** Single Channels, Grouped Channels, Copying, Coupled Scenes.
- Scene List (Left):** A list of 20 scenes. Scene 4 is selected and highlighted in blue. Its description is "no description".
- Channel Grid (Center):** A grid for "Scene 4" with 10 channels (1-10) and 24 rows (0-230). Channel 5 is selected, indicated by a blue checkmark in the 0 row.
- Selection Panel (Right):** Titled "Scene 4", it contains:
  - Radio buttons for "Select" (selected), "Deselect", and "Invert".
  - A section "Choose all or..." with:
    - "Choose every" with a value of 3.
    - "In range" with "from" 5 and "to" 30.
  - An "Execute!" button.
- Value Setting (Right):**
  - "Enable values setting with slider".
  - A vertical slider with a value of 150.
- Copying (Right):**
  - "Enable copying with relocation".
  - A "Copy" button.
  - A value of 1.

### 5.4.2.3. Copying

The *Copying* tab allows for copying the previously defined scenes. One can copy inside the current configuration and external configuration saved in a file. Not only DMX channels values are copied, but also time parameters and descriptions.

#### Current Configuration

To copy a scene or scenes, select the scene to which the parameters are to be copied from the list on the left hand side. If several scenes are copied, the selected scene will be the beginning of the scene range to which copying would be performed. As a next step, in the *Current Configuration*, set the range of scene numbers from which the data would be copied and press *Copy*.

The screenshot displays the 'Copying' tab in a software application. On the left, a list of 20 scenes is shown, with scene 4 ('no description') selected. The main area contains several panels:

- Current Configuration:** 'Copy from range: 2 to 3' and a text field containing 'All green'. A 'Copy' button is present.
- Another Configuration:** A 'File:' input field with 'Browse' and 'Open' buttons. Below it, 'Copy from range: 1 to 1' and 'Copy' and 'Release' buttons.
- Transparently from DMX input:** A checkbox that is checked. 'Save as' options are 'Scene' (selected) and 'Mask'. 'Use of existing values' is set to 'Overwrite'. 'Save as item' is '1' and a 'Save' button is present. A 'Hide monitor window' checkbox is also visible.
- Import / Export Scenes:** 'Import' (selected) and 'Export' radio buttons. An 'Import' button is present. Below, a 'File:' input field with 'Browse' and 'Choose' buttons. 'Copy from range: 1 to 3072' and 'Relocate scenes: 0' with a 'Relocate scenes' button.

#### Another Configuration

In the *Another Configuration* field one can copy data from the external configuration file saved on a hard drive. To do so, provide the path for the configuration file (.cfg140 format file) and press *Open*. Next, as in case of the current configuration, select the range of scenes to be copied and press *Copy*.

## Import/export of scenes

It is possible to export or import scenes from the .dmx file (CSV file format). To export scenes to the file, select *Export* option, provide a file name, define the range of scenes which are to be exported, and press the *Export* button.

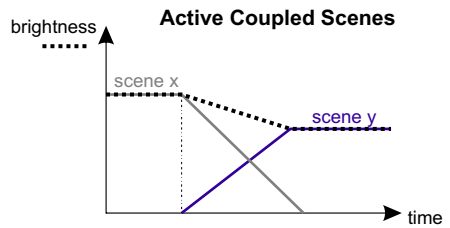
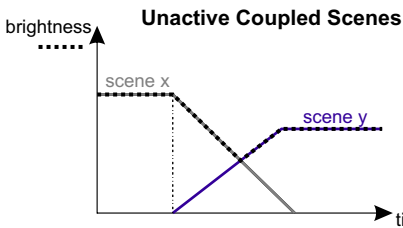
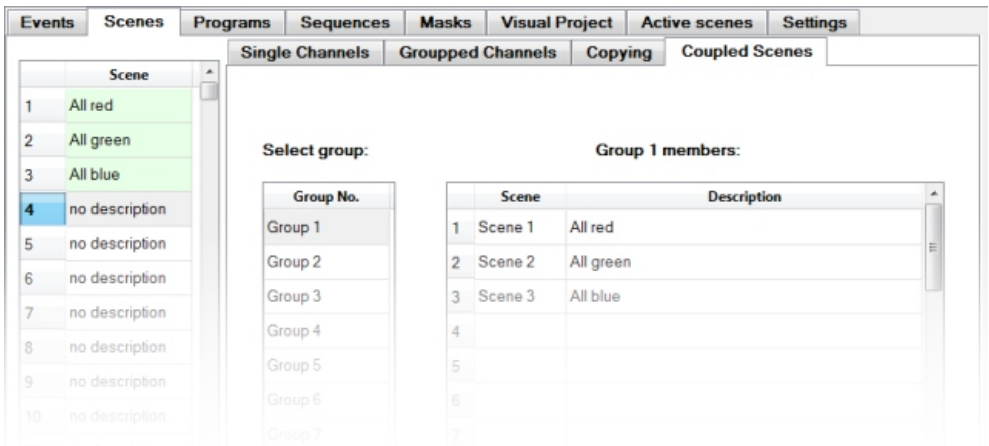
To import the previously exported scenes, select the *Import* option, provide the file name, press *Select*, define the range of scenes which are to be imported, define the possible relocation of the imported scenes and press *Import*.

### 5.4.2.4. Coupled scenes

The *Coupled Scenes* tab allows you to group scenes. This is done in order to facilitate programming and to avoid the dimming effect during the transition between scenes operating on the same channels.

An example figure presents the value of a DMX channel during the transition between two scenes. The second figure presents the effect of the use of associated scenes option.

The second characteristic of the solution is the fact that enabling the scene switches off all other scenes from the same group of associated scenes.



There are 15 groups at your disposal, maximum 64 scenes in each. To add a scene to a group, select the scene on the scene list, select the group to which the scene is to be added on the list and press *Add selected scene*. To delete the scene from the group, select the scene on the group list and press *Remove selected member*. One scene can be assigned to several groups at the same time.

### 5.4.3. Program defining

A program is a setup of subsequent scenes, including the defined raise times and duration times of each step. The next step of the programme is understood as the scene assigned to it. Down time of each step (excluding the last one) is defined by the raise time of the next step. The last time is also equipped with the decline time. Programmes can be defined in the main tab of *Programs*. There are 512 programmes to choose from, maximum 999 steps each; however, the total number of steps for all programmes cannot exceed 8192.

#### 5.4.3.1. Single steps

The *Single Steps* tab allows for setting parameters for every step of the selected program individually.

To type in settings for the program, select the given program from the list on the left side. Its description can be added at the bottom of the screen. It will be displayed on the program list and will facilitate its identification.

To define the number of steps in the program, provide a relevant value in the program in the *Number of scenes in program* field. Every new step is set as scene 1 as default, with zero raise time and 1 second duration time.

The screenshot shows the 'Programs' tab in the software interface. On the left, a list of programs is shown, with 'Program 1' selected. The main area displays the 'Single Steps' configuration for 'Program: 1'. A table lists 10 steps, each with a scene number of 1, a fade up time, a duration, a fade down time, a program time, and an event status. Below the table are several control fields: 'Number of scenes in program' (15), 'Recurrences number' (1), 'Chained event' (Nothing), and 'Fade down time after break' (00:00:01.000). There are also buttons for 'Scenes' Sequence', 'Edit current scene', 'Insert', 'Delete', 'Copy', 'Paste', and 'Replace'. At the bottom, there are text boxes for 'Current scene description' (All red) and 'Program description' (Program 1).

Scene No	Fade Up Time	Duration   inf.	Fade Down Time	Prog. Time	Event
1	00:00:02.0	00:00:02.2	-	00:00:04.2	not set
2	00:00:02.0	00:00:02.2	-	00:00:08.4	not set
3	00:00:01.0	00:00:03.2	-	00:00:12.6	not set
4	00:00:02.0	00:00:02.2	-	00:00:16.8	not set
5	00:00:02.0	00:00:02.2	-	00:00:21.0	not set
6	00:00:00.0	00:00:01.0	-	00:00:22.0	not set
7	00:00:02.0	00:00:02.2	-	00:00:26.2	not set
8	00:00:02.0	00:00:02.2	-	00:00:30.4	not set
9	00:00:00.0	00:00:01.0	-	00:00:31.4	not set
10	00:00:00.0	00:00:01.0	-	00:00:32.4	not set

In the *Recurrences number* field, one can set how many times the program will be repeated after started. There are values in the range 1 - 100 or *infinite* to choose from. In the *Chained event* field, one can provide the sequence, delay or internal event number, which will be triggered after the operation of the program is finished.

In the *Fade down time after break* tab, one can provide fade time for the program in case of its earlier finish (e.g. turned off from the event level). The decline time can be left as *Do not use*. If so, it will depend on element increment time which has caused its closure.

Scenes subsequently displayed by the program are shown on the scene list. The description of the scene assigned to the selected step is displayed at the bottom of the screen above the program description.

*Scene Number* on the step list is the number of the given scene on the list in the *Scenes* tab. *Fade Up Time* defines the time for increment of the step. If this is not the first step, this is simultaneously the down time of the previous step. *Duration time* defines the duration time of the given step (excluding fade up and down times). If the program has the limited number of repetitions, then one can define the value in the *Decline time* column for the last step. This is the down time of the program after its completion. *Fade Up Time* can last from 0 to 6553.5 seconds (1 hour, 49 minutes, 13.5 seconds), *Duration time* from 0 to 6553.4 seconds or can be set as *infinite*. In the *Program Time* column, the total duration time of the program is displayed, including the given step as well. In the *Event* column, one can assign an internal event which will be triggered at the beginning of the given step.

To insert the next step before the selected one, press the *Insert* button. A new step is always added with default values. To insert the step with values copied from the existing step, move to the step before the new step is to be placed, press *Copy* and move to the step before which the new step is to be placed, and press *Paste*. To paste the step instead of the existing step, select the *Replace* option and press *Paste*. To delete the selected step, press *Delete*.

The *Scenes' sequence* button is designed for setting numbers of all scenes after the selected scene, increasing every next one by 1.

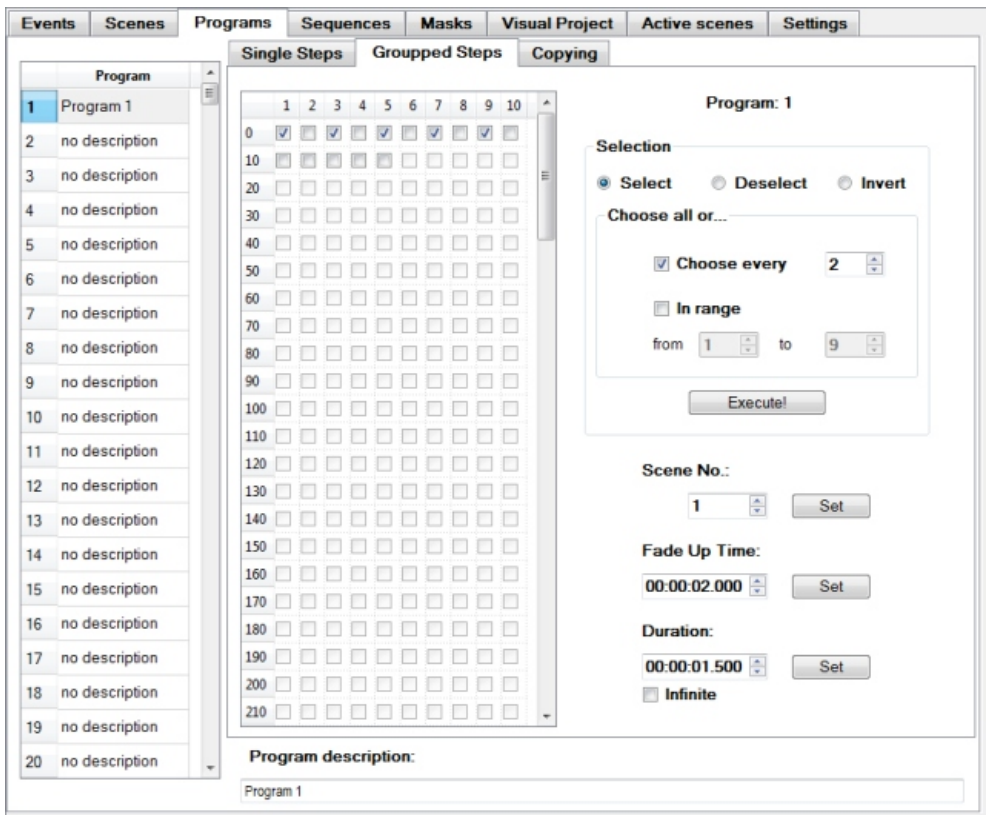
The *Edit current scene* button is designed for a quick switch to the selected scene edition (*Scenes/Single channels* tab).

### **5.4.3.2. Grouped steps**

The *Grouped Steps* tab allows for setting parameters for several steps simultaneously. The number of steps has to be previously defined in the *Single Steps* tab. An adequate number of steps is then active in the table on the left hand side.

Selected steps can be checked manually in the table or with the use of *Select* field (analogically to chapter 5.4.2.2. *Channel groups*).

Parameters which can be grouped for several steps are referred as *Scene numbers*, *Fade Up Time* and *Duration Time*. These parameters are described in the previous chapter.



### 5.4.3.3. Copying

The *Copying* tab allows for copying the existing program to the selected program. It is also possible to copy from the current configuration and from an external file. Scenes which create a program are also copied while copying as default. The *Unused scenes pool starts from* tab allows for defining the number of the first scene to which scenes from the copied program would be transferred. The *Reverse steps' order* allows you to copy the program with the reversed sequence of steps.

#### Current configuration

In the *Current configuration* tab one can copy programs previously defined in the internal configuration. To do so, select the first program on the program list to which you want to copy. Afterwards, in the *Copy from* field define the range of programs which are to be copied and press *Copy*. The application will copy scenes from the selected programs and create new programs from them with identical parameters of steps. If *Do not copy scenes* option is selected, the application will copy the program without copying the scenes.

## External configuration

Copying of the external configuration is performed similarly. This is done in the *Another configuration* field. It is necessary to provide a path to the configuration file at the beginning. While copying from the external configuration, scenes must be copied (to the unused scenes lot).

### 5.4.4. Sequence defining

A sequence allows you to generate different actions simultaneously (as Event) and/or in a defined sequence. The main *Sequences* tab includes the list of all 128 sequences which can be programmed. The main panel includes the list of all steps for the selected sequence generated in the given step. Sequences also enable creating very complex shows.

Every sequence comprises 512 steps as a maximum. Steps are performed subsequently as in the program. Every step has its defined *Duration Time* and in the *Global Time* column one can find the total duration time of the entire sequence to the given step.

The number of steps in a sequence can be set in the *Number of steps in sequence* or with the use of *Insert* and *Delete* buttons. After the completion of the given step, action assigned to it will be displayed on the bottom list. The action available to be triggered is the same as those for a delay (chapter 5.4.1.3. Available values - table). To add the next action, one should use the *Add* or *Insert* button. To delete the action from the list, select it and press *Delete*. All actions in the given step are performed simultaneously.

Zdarzenia | Sceny | Programy | **Sekwencje** | Maski | Wizualizacja | Aktywne sceny | Ustawienia

Sekwencja nr 1

Nr kroku	Czas trwania	Narastająco
1	0:00:07:100	0:00:07:100
2	0:01:20:000	0:01:27:100
3	0:00:30:000	0:01:57:100
zakończenie		

Liczba kroków sekwencji: 3

Rodzaj	Numer	Akcja	Ogr. dobowe	Ogr. stanu
1 Scena	2	Włącz	Nie ustawione	A1
2 Program	1	Wyłącz	Tylko w dzień	
3 Statusy	B2	Wyłącz	Nie ustawione	
4 Statusy	B3	Ustaw	Nie ustawione	
5 Opóźnienie	4	Start	Nie ustawione	

Opis sekwencji: Sekwencja 1

Buttons: Wstaw, Usuń, Zakończ pop. krok, Dodaj, Wstaw, Usuń, Kopiuj, Wklej, Przed

To quickly turn off all actions which were turned on in the previous step, move to the current step and press the *Finish previous step* button. This would add an option - disable all elements which were turned on by the previous step - to the list of actions of the given step.

The first unoccupied delay is reserved automatically during the creation of a sequence for every step (*Events/Delays*). Delays used by the sequence are highlighted in brown (on the delay list).

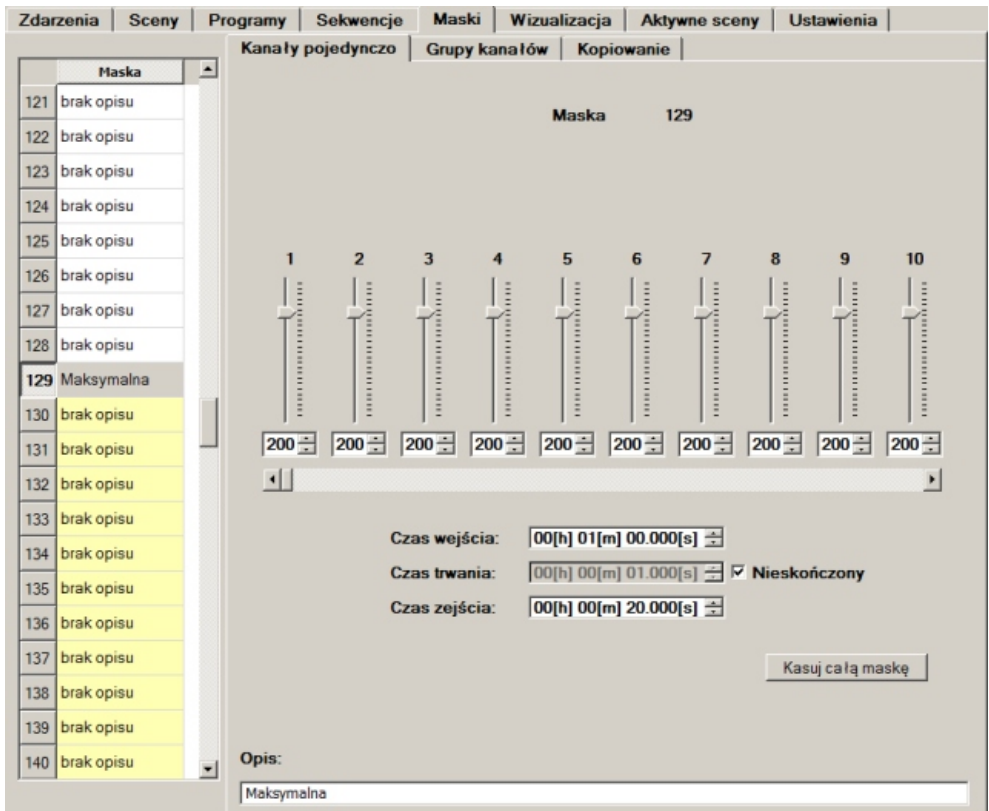
### 5.4.5. Masks defining

In the main *Masks* tab, there are 256 masks in three different types available. A mask, similarly to a scene, is a static setup of the values of all channels. The mask has priority over scenes and programmes; it modifies values of DMX output channels.

There are three different mask types available:

#### Proportional

It changes the value of the output channel proportionately to the set value. All channel values are set to 255 as default. This means that the mask does not change the output channel value. The reduction of the mask value to 127 for the selected channel will result in every value appearing on this channel decreased by half (when the mask is active).





If the mask has its value set to 0 on the selected channel, the channel will always be dimmed. Proportional masks take numbers 1 - 128 on the mask list and are highlighted in white.

### **Maximal value**

This type of mask allows for setting maximal value with which can be displayed on the given channel. Every greater value will be replaced by the maximal value. The value of all channels is set to 255 as default. These types of masks take numbers 129 - 192 on the mask list and are highlighted in yellow.

### **Minimal value**

This type of mask allows for setting the minimal value which can appear on the given channel. Every lower value will be replaced by the minimal value. The value of all channels is set to 0 as default. This type of mask takes numbers 193 - 256 on the mask list and is highlighted in green. The programming of masks is performed in the same way as in scene programming (chapter 5.4.2. *Scenes defining*).

## **5.4.6. Visual Project**

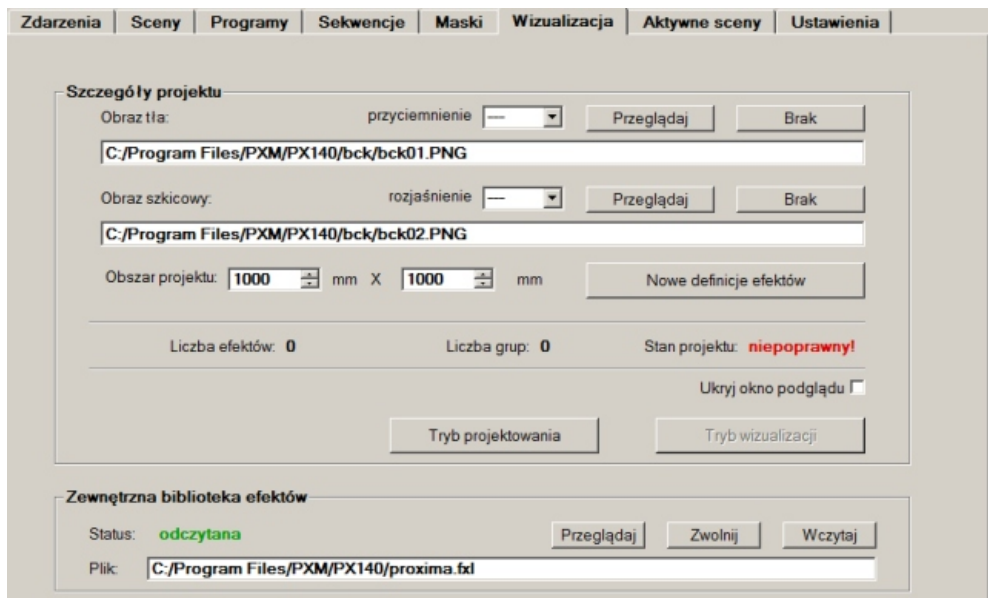
In the main *Visual Project* tab, one can create a graphic project for the location of elements which are controlled by the PX140 module.

For the correct operation of the visualisation mode, addresses of devices in the project have to correspond with addresses of devices in real configuration.

### **5.4.6.1. Visualisation settings**

To use the visualisation mode, define project parameters. Provide the path for the library file in the *External fixtures library* of effects (.fxl file format) and press *Read*. If the file is correctly read, the library status will change to read. To read the graphical background of the Project, provide two graphic files *Background image* and *Sketch image* in the *Project details* field. The *Sketch image* will be displayed during the designing process and it is recommended to be light, whereas the background view should be dark during the visualisation. Darkening and brightness of views can be adjusted. To display the project correctly, provide its height and width. The *Hide monitor window* option does not display view windows while viewing DMX channels during the visualisation at connection with the controller.

Visualisation settings are not transferred to the controller.



### 5.4.6.2. Designing mode

To go to designing, press *Design mode*. The graphic project window will be displayed.

#### Menu description

The window has its own menu. In the *Mode* menu one can change from the designing mode to visualisation (on condition that at least one device was correctly defined), save the project, or leave the project window. In the *Zoom* tab, one can adjust project enlargement to the current needs (the *Auto* mode adjusts enlargement to make the entire project visible). The *Lighten background* menu allows you to manipulate the brightness of the background. The *Select* menu allows for selecting objects in the project easily. The *Group management* menu allows you to group projects for easier programming.

#### Adding a device

To add a device to the Project, right click on the selected project place and choose *Add a fixture* from the list. This will open a new window in which device parameters should be set. In the *Library* window, select the supplier, model and version of the device. You can choose the device from the loaded library. In the *Descriptions* field, one can provide a *Label* and a *Comment* for easier identification of the device. The *Current position* field allows for changing the location of the object in the project. The *DMX channels* field enables addressing the device. If addresses of all channels of the device occupy the same block, provide the address of the first of them only in the *starting from* field. If addresses are not subsequent, press the *Relocation table* and address every channel individually. The *Rotation* field allows for rotating the device in the project plane (crucial for non-symmetrical devices). To confirm the given parameters, press OK.

In order to resign, press the *Cancel* button. Bear in mind, however, that the device was added and its parameters were not defined (the project is incorrect). Every incorrectly added device is highlighted in red, whereas every correctly added device is highlighted in green. You can change parameters of the device at any time by pressing the right mouse button on it and selecting from the *Edit fixture* list.

## Copying

To add a similar device, right click on the device, choose *Copy to clipboard* and right click on the selected location and press *Paste from clipboard*.

## Groups of devices

If a group of devices is often used together, one can add them to one group. Click *Group management* in the menu. A window will be displayed. In the *Groups* field, from the list one can choose groups of devices available in the project. To create a new group, click *Create new*, type its name in the bottom window and press *Rename* button. In the field *Membership of " "* to, there are two lists. One includes devices which belong to a selected group (*Members*), the second one includes other groups. You can modify group content with the use of *Add*, *Add All*, *Remove*, *Remove All* and *Copyselctions* buttons.

### 5.4.6.3. Visualisation mode

If the project is ready (it can be later modified at all times), press *Switch Mode* in the *Mode* menu. The window will change from the designing mode to visualisation - it can also be accessed from the visualisation tab by clicking the *Visualisation mode*.

In the visualisation, the *Background brightness* menu is changed to *Background darkness*, *Group management* will disappear and *Presentation mode* will appear. The following mode is available in the *Presentation* menu:

- *All fixt. on* – controls all devices into full brightness.
  - *Show channels offline* – allows for setting scenes without connecting the controller and lamps. After this mode is selected, additional *Select scene number* (1) as well as *Control of group lighting* menus appear. The number in brackets is the number of the currently edited scene.<sup>27</sup>
- Switching between scenes – use "+" and "-" on the keyboard or click *Choose scene no.* in the menu. Right click on the device to open the window in which one can set channel values of the device. Left click with the ctrl key to select more devices (selected devices are marked with a cross). Left click with the left alt key on the selected device to open a window for settings of channel values for all selected devices. You can also go to the next scene by copying the current settings, press "+" with the left ctrl pressed. Black colour of the lamp means that the lamp is turned off.

- *Show channels live* – at the connection with the controller, one can display its current operations on the screen. This mode allows for viewing programmes and sequences or reactions to events. Devices do not have to be connected to the controller – you can use the status view or output view.
- *Live design* – the mode allows for designing scenes when the application is connected to the controller. All changes are displayed by the controller on the flow.
- *All fixt. off* – turns off all devices in the project.

To leave the visualisation mode, select *Mode/Close* in the menu.

### **5.4.7. Active scenes**

The main *Active scenes* tab allows for creating a very complex configuration connecting the control level on DMX channel with ON/OFF input control. The user can define the DMX input channel for which 16 control levels are created. Each level has two scenes comprising a *Static* scene and a *In motion* scene.

Each of 24 control inputs can be connected to lamp sectors. If inputs are not active, to every lamp sector a static scene is triggered for the relevant level on the DMX channel. Activation of any of the control inputs launches (only for the given sector) the "In motion" scene which depends on the level of the DMX channel. When the input is switched off, the static scene will turn on again. Changes in the DMX channel affect all sectors simultaneously – irrespective of whether the Static or "In motion" scene is on for the given sector.

#### **5.4.7.1. Settings of active scenes**

To use the *Active scenes* function, select *Enable active scenes* in the *Settings* tab.

Static and "in motion" scenes for every of 16 levels are programmed as one scene for all lamp sectors. Then the controller divides every scene into 24 component scenes (1 scene to each sector). Therefore, it is necessary to reserve a joint block of 768 empty scenes (16 levels x 2 scene types x 24 sectors). Provide the number of the first scenes in the block in the *Starting from scene* field.

If scenes in the block are not empty, its content will be overwritten after the programming of active scenes has been completed.

In the *Starting int. event no.* field, provide the number of the first of 16 internal events which will be taken by the function for its needs. If any event was programmed, the window would be overwritten.

In the *Control channel no.* field, provide the number of the DMX input channel which will control levels. The selected channel will be disabled from the event level starting from the DMX input.

Fade Up and down times are the same for all generated scenes and can be set in *Fade Up time* and *Fade Down time* fields. Duration time of scenes is set as infinite.

Compound scenes can be designed in the graphic mode; however, one should first create a correct project for visualisation (chapter 5.4.6. *Visualisation*). After clicking the *Generate groups for visual project*, the relevant devices in the Project will be assigned to sectors. The *Compose compound scenes* function joins individual scenes into compound scenes and displays them in the *Compound scenes edition* tab. The *Apply* button divides joined working scenes into proper scenes (they will be displayed in the *Scenes* tab).

In the *Sectors ranges* table, provide the ranges of addresses for each sector. Every sector can have a different number of addresses. Ranges of addresses can overlap. For the correct operation of the configuration, the addresses must correspond with real addresses of devices.

Zdarzenia | Sceny | Programy | Sekwencje | Maski | Wizualizacja | Aktywne sceny | Ustawienia

Ustawienia | Edycja scen złożonych

Zezwól na aktywne sceny

Scena początkowa: 200

Pocz. zdarzenie wewn.: 35

Nr kanału sterującego: 5

Czas wejścia: 00[h] 00[m] 05.000[s]

Czas zejścia: 00[h] 00[m] 02.000[s]

Generowanie grup dla wizualizacji

Zestawienie scen złożonych

Zastosuj

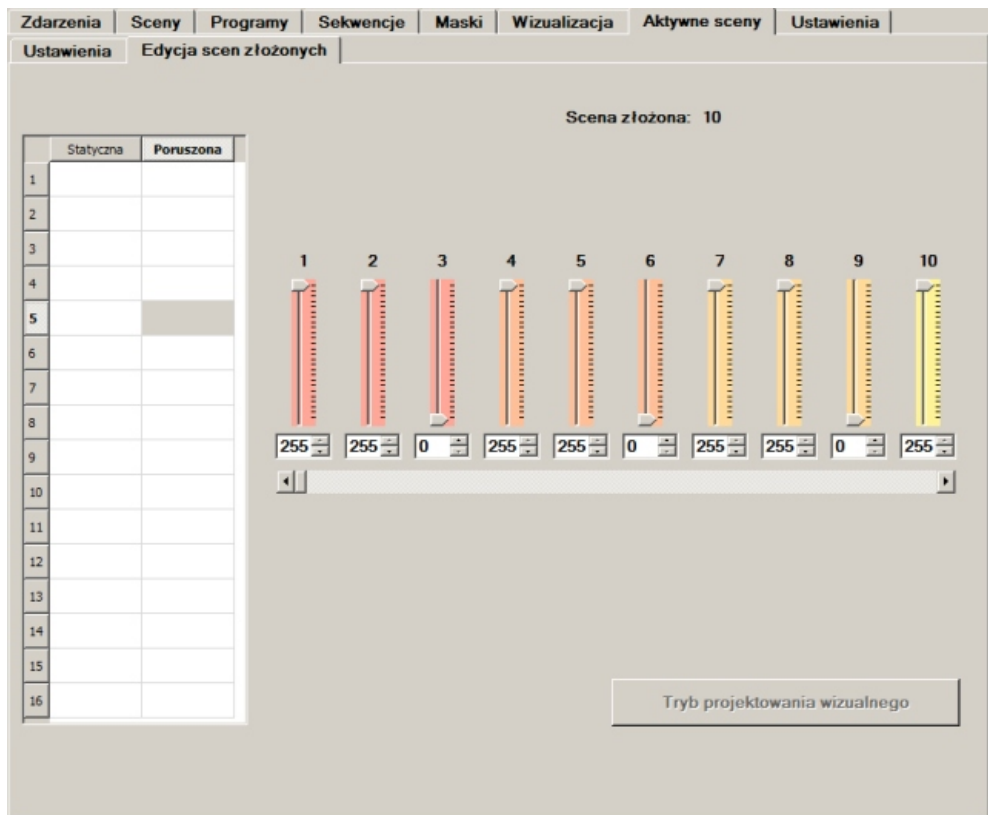
Zakresy sektorów

Sektor	Od kanału	Do kanału
1	1	3
2	4	6
3	7	9
4	10	12
5	13	15
6	16	18
7	19	21
8	22	24
9	25	27
10	28	30
11	31	33
12	34	36
13	37	39
14	40	42
15	43	45
16	46	48

### 5.4.7.2. Edit complex scenes

If all settings are defined, go to the *Compound scenes edition* tab. Scenes can be edited with the use of sliders (sliders are highlighted with colours of the corresponding sector) or go the visualisation mode with the use of the Visual designing mode (if the project was correctly defined).

After the defining of all scenes, press the *Apply* button in the *Settings* tab.



### 5.4.7.3. Use of active scenes

The controller generates events automatically from control inputs and internal events which trigger and turn off the relevant scenes, depending on the condition of inputs for the selected DMX channel. Relevant events and scenes generated by the application are described and manual modification is not recommended. Joined scenes are not transferred to the controller along with configuration. They are not saved in the .cfg140 format, either. Therefore, after the configuration is loaded, set the joined scenes from individual scenes in order to edit active scenes.

## 5.5. FINISHING WORK

To finish the work, save configuration changes to a file and/or send configuration to the controller (chapter 5.2. MENU). Next, press the *Disconnect PX140* button and select the *Exit* button from the File main menu.

## 6. TECHNICAL SPECIFICATION

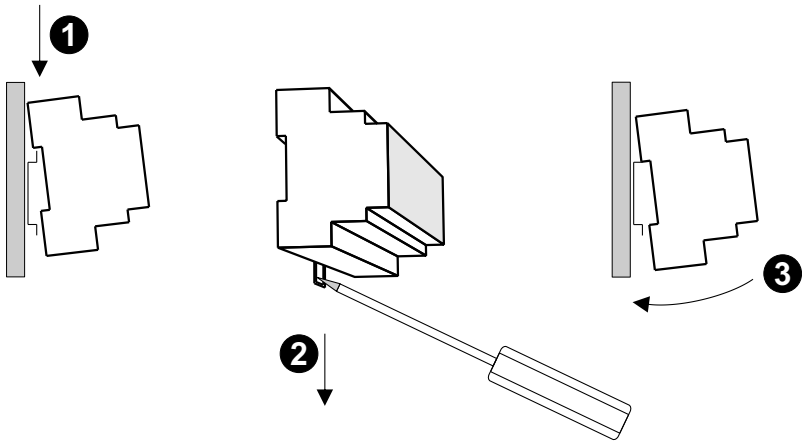
power supply	<b>12-24V DC</b>
max. power consumption	<b>400 mA</b>
interface	
DMX input channels	<b>512</b>
DMX output channels	<b>512</b>
control inputs	<b>24</b>
RC-5 remote control input	<b>1</b>
RS-485 input	<b>1</b>
USB port	<b>1</b>
Real-time clock (RTC)	<b>YES</b>
programmable	
scenes	<b>3072</b>
programmes	<b>512</b>
sequences	<b>128</b>
masks	<b>256</b>
timers	<b>1024</b>
delays	<b>512</b>
weight	<b>0,33 kg</b>
dimensions	
width	<b>157,5 mm (9 DIN rail modules)</b>
height	<b>86 mm</b>
depth	<b>60 mm</b>

## 7. ASSEMBLY

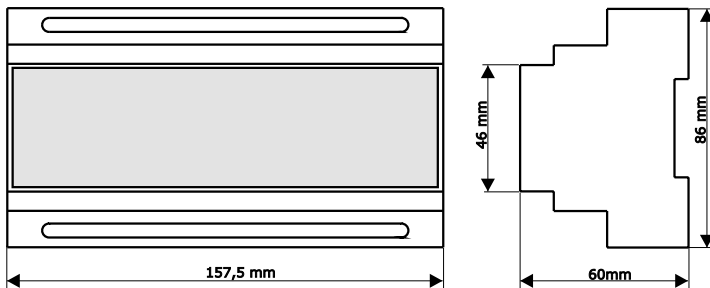
PX140 device is installed on the T35 rail for stable fixation.

**To install PX140 on the rail, perform the following steps:**

1. Put PX140 slantwise against the rail, attaching two taps on the back wall of the device to the top part of the rail.
2. Pull the snap downwards with a screwdriver or a similar tool.
3. Put the device against the rail but do not release the snap.
4. Release the snap.



## 8. TECHNICAL DRAWING







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fax: +48 12 626 46 94

e-mail: [info@pxm.pl](mailto:info@pxm.pl)  
<http://www.pxm.pl>

## DECLARATION OF CONFORMITY according to guide lines 2004/108/WE

Name of producer: PXM Marek Żupnik sp. k.

Address of producer: ul. Przemysłowa 12  
30-701 Kraków, Poland

*declares that the product:*

Name of product: **Advanced Light Controller**

Type: **PX140**

*answers the following product specifications:*

**EMC: PN-EN 55103-1:2012  
PN-EN 55103-2:2012**

*Additional information:*

Podłączenie sygnału DMX musi być wykonane przewodem ekranowanym, połączonym z pinem GND.



Marek Żupnik spółka komandytowa  
30-701 Kraków, ul. Przemysłowa 12  
NIP 677-002-54-53

Kraków, 14.05.2012

mgr inż. Marek Żupnik.