PX787

DMX / DALI 1ch

User manual

Table of Contents

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

1   Description

PX787 is a DMX-512 control signal converter for DALI protocol.

DMX / DALI 1ch is an advanced converter that allows to combine lighting installations based on the DALI protocol with DMX-512 control system. Using the PX787, you can connect devices working in the DALI protocol to the controller sending the DMX-512 signal.

The device is equipped with two DMX ports and one DALI port.

Managing PX787 settings is possible by means of buttons and screen or by means of a built-in Web Server. Changing the settings includes:

- searching for DALI devices
- change of ballast parameters (e.g.: brightness, address, "*fade time*", "*fade rate*", etc.)
- change of converter network settings
- firmware upgrade

Moreover, the RDM protocol was implemented in the PX787.

DMX / DALI 1ch has been placed in a housing adapted for mounting on a 35mm DIN rail and is supplied with 12 – 24V DC safe voltage. Please note that the DALI line must have external power supply.

2   Safety conditions

PX787 is a device powered with safe voltage 12 – 24V DC; however, during its installation and use the following rules must be strictly observed:

1. The device may only be connected to 12 – 24V DC with current-carrying capacity compatible with technical data.
2. All the conductors should be protected against mechanical and thermal damage.
3. In the event of damaging any conductor, it should be replaced with a conductor of the same technical data.
4. Connection of DMX signal can only be made with shielded conductor.
5. All repairs and connections of outputs or DMX signal can only be made with cut off power supply.
6. The PX787 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 duster only.

3   Connectors and control elements

Ethernet port

signaling diodes

display

PX787 DMX 2 DALI
192.168.0.50

PX 787

programming keyes

DALI   DMX

+ | − |GND + | − |GND ⌐DA⌐ | ⌐DA⌐ + | −
DMX IN   DMX OUT   DALI   12-24VDC

DMX input

DMX output

DALI output

power supply
12 - 24V DC
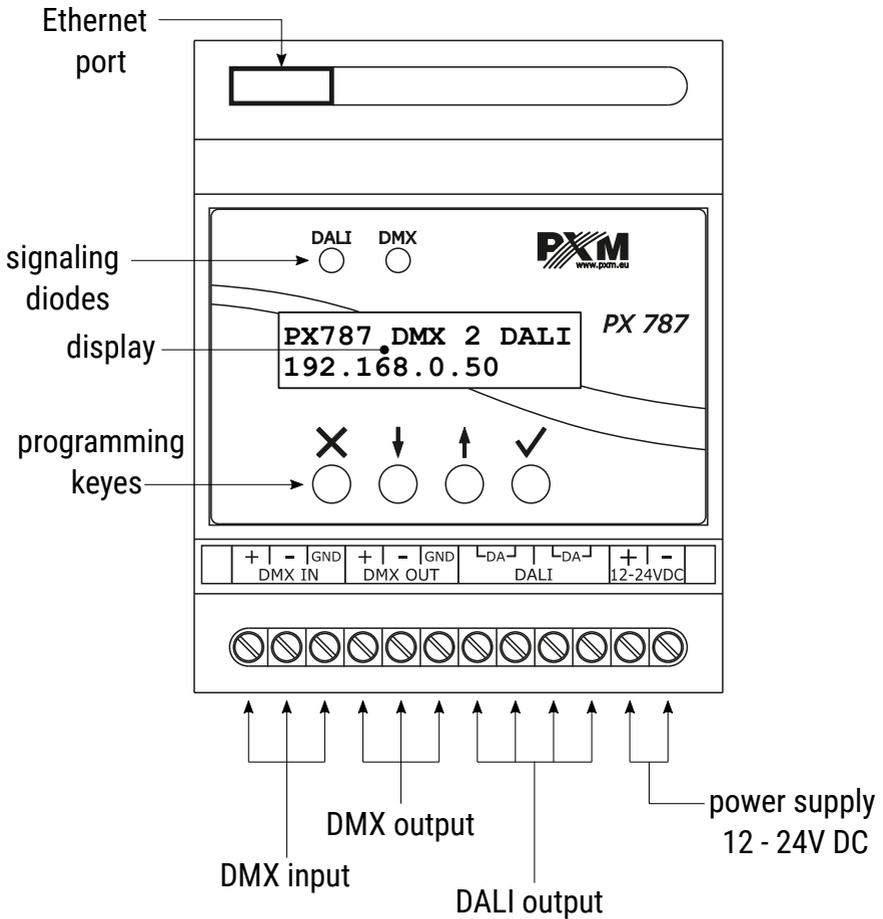
4   Programming using buttons

4.1   Navigating the menu

✕ (escape)   - allows to exit the parameter being programmed
without saving any changes or to move to a higher
menu level

↓ (next)   - moves you back through the menu or decreases
values being set

↑ (previous)   - moves you forwarding through the menu or increases
values being set

✓ (enter)   - allows to enter the programming mode and confirm
the values set

A field that is editable is shown within square brackets [...], and the ↓ / ↑
button allows to change the value of such a field. If you press ✓ you will be
taken to another field or the value will be saved and you will exit the edit mode
for a given parameter.

The icon -> allows to go deeper into the command tree.

4.2   Description of information parameters

On-screen menu allows to read information parameters related to the converter, such as:

- converter model and current IP address (if an address is provided by DHCP, an asterisk * is added)
- number of ballasts found by PX787 (e.g. 8) and information about DALI line power supply (*Power OK / NO Power*)
- converter serial number and version number of the software installed
- individual MAC address of the device
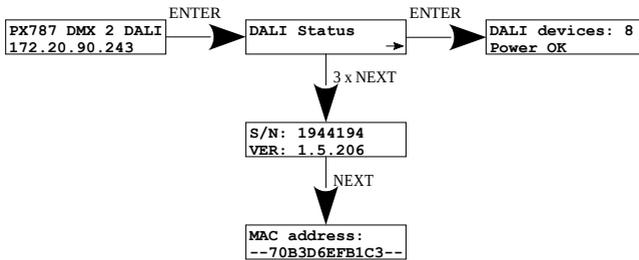
4.3   Converter network settings

PX787 gives you the ability to change network settings in the [Network config] menu. The following parameters can be changed: static IP address [IP address], subnet mask [Subnet mask] (subnet mask edited by changing the CIDR in the range of 1 – 30), default gateway [Gateway address] and enabling [On] or disabling [Off] support [DHCP].

If DHCP is **turned off**, the converter works according to the static network configuration. If DHCP is **turned on**, the converter will start up using static settings, but will attempt to acquire new network configuration from the DHCP server.

```
PX787 DMX 2 DALI     ──ENTER──▶   DALI Status
172.20.90.243                                  →
                         │ NEXT
                         ▼
                    Network config  ──ENTER──▶  IP address   ──ENTER──▶  IP address
                                    →            192.168.0.50             [192]168.000.050
                                                      │ NEXT
                                                      │                  Subnet mask [1]
                                                      │                  128.0.0.000
                                                      │                        ▲ PREV
                                                      ▼                        │
                                                 Subnet mask  ──ENTER──▶  Subnet mask [24]
                                                 255.255.255.0             255.255.255.000
                                                      │ NEXT                     │ NEXT
                                                      │                          ▼
                                                      │                  Subnet mask [30]
                                                      │                  255.255.255.252
                                                      ▼
                                                 Gateway address ──ENTER──▶ Gateway address
                                                 192.168.0.1               [192]168.000.001
                                                      │ NEXT
                                                      ▼
                                                 DHCP Client  ──ENTER──▶  DHCP Client
                                                 Off                       [Off]
                                                                                │ NEXT
                                                                                ▼
                                                                          DHCP Client
                                                                          [On]
```

NOTE! After making changes to the network settings, save them in the
[Settings] menu by selecting [Save and reboot] – according to the diagram
below. The settings will be saved and the device will restart.

```
PX787 DMX 2 DALI  ──ENTER──▶  DALI Status
172.20.90.243                               →
                      │ 2 x NEXT
                      ▼
                 Settings     ──ENTER──▶  Save and reboot  ──ENTER──▶  Rebooting...
                          →
```
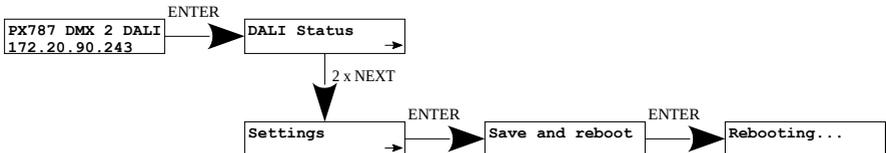
4.4 Restore default settings

To restore the default settings, go to the **[Settings]** menu and then select **[Factory defaults]**. When restoring factory settings, the device will restart and the following changes will be made to the device:
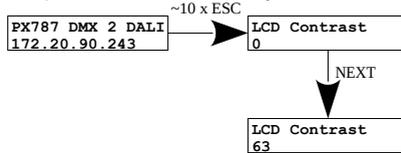
- **IP address**: 192.168.0.50
- **mask**: 255.255.255.0
- **default gateway**: 192.168.0.1
- **DHCP**: Off
- **clearing** the DALI line addressing settings **table** available via the web interface
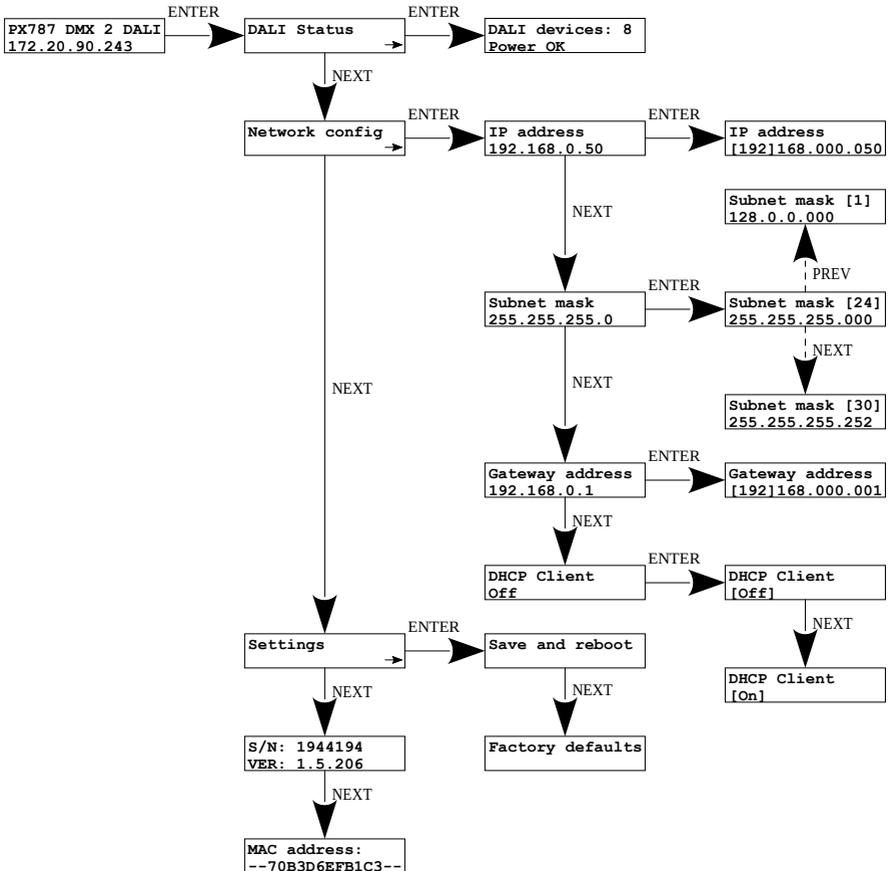- **deleting** saved **ballasts** from the list
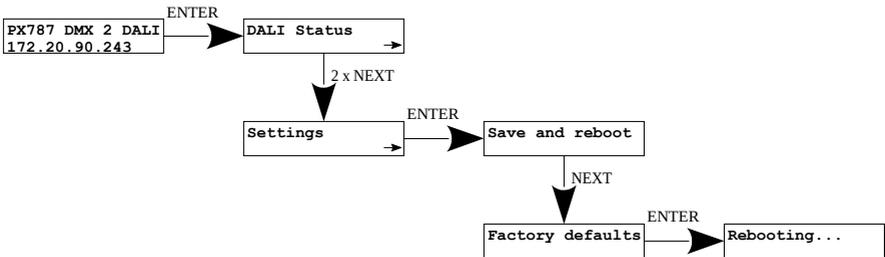
4.5 Setting the display contrast

If the device has a problem with the readability of messages displayed on the screen, it is possible to change its settings. To do this, press the ~10x *Esc* button. The contrast can be set in range from 0 to 63. If the screen is illegible and only "▓" characters are visible or the screen is completely white, after pressing the ~10x *Esc* button, the device will signal being in the **[LCD Contrast]** menu by flashing the diodes alternately in green and blue.

With the *Next* or *Prev* find the appropriate value (it is recommended to press the *Next* key to find the value in which the screen becomes readable, and then use the *Next* and *Prev* keys to adjust the value to suit your needs). To exit [LCD Contrast] menu, press the *Enter* key.

~10 x ESC

```
PX787 DMX 2 DALI          LCD Contrast
172.20.90.243     ───▶    0
```
                              │ NEXT
                              ▼
```
                          LCD Contrast
                          63
```

4.6   Menu scheme in PX787

```
                    ENTER                      ENTER
PX787 DMX 2 DALI  ───▶    DALI Status    ───▶    DALI devices: 8
172.20.90.243                                    Power OK
```
                              │ NEXT
                              ▼
```
                    ENTER             ENTER
     Network config  ───▶  IP address  ───▶  IP address
                           192.168.0.50       [192]168.000.050
```
                              │ NEXT
                              ▼
```
                                              Subnet mask [1]
                                              128.0.0.000
```
                                              ▲ PREV
```
                    ENTER
     Subnet mask     ───▶    Subnet mask [24]
     255.255.255.0           255.255.255.000
```
                              │ NEXT   │ NEXT
                              ▼   ▼
```
                                              Subnet mask [30]
                                              255.255.255.252
```
```
                    ENTER
     Gateway address ───▶    Gateway address
     192.168.0.1             [192]168.000.001
```
                              │ NEXT
                              ▼
```
                    ENTER
     DHCP Client     ───▶    DHCP Client
     Off                     [Off]
```
                                                   │ NEXT
                                                   ▼
```
     Settings        ───▶    Save and reboot   DHCP Client
                     ENTER                     [On]
```
          │ NEXT   │ NEXT
          ▼   ▼
```
     S/N: 1944194       Factory defaults
     VER: 1.5.206
```
          │ NEXT
          ▼
```
     MAC address:
     --70B3D6EFB1C3--
```

5 Connecting the converter with a PC

The module has a built-in Web Server, which allows to change all settings via a web browser. To use the web interface, it is necessary to connect the PX787 module to a computer.

In automatic mode (DHCP), after connecting to the network the converter attempts to get the network configuration from a DHCP server (e.g router). Thanks to this, manual configuration of networks parameters is not needed. In the absence of a DHCP server on the network the converter will operate according to the static configuration (manual setup). When selecting static addressing, configure the network parameters so that the PX787 works in the same subnet as the computer and that there is no conflict of IP addresses (devices must have unique IP addresses in the network).

If the converter obtained the IP address from the DHCP server, unplugging the network cable will cause the loss of the assigned IP address. If PX787 is reconnected to the network, it will try to get a new address from the DHCP server, if it fails to receive the address, it will work according to the saved static settings.

It is recommended to use automatic addressing and connect the converter to the network with a running DHCP server

If the converter is connected directly to the computer (no DHCP server), it is necessary to manually set the network parameters of both the computer and PX787 so that they work in one network and connect the devices with a crossover Ethernet cable.

5.1 Change of the computer network configuration

The procedure for changing the computer network configuration varies depending on the operating system. Windows® 7 system is an example here.

Change of the computer network configuration in the Windows® 7 operating system in done in the following:

1. Click **[Start]**

2. **Select [Control Panel]** tab **Control Panel**

3. Go to **[Network and Internet]** tab

   Network and Internet
   View network status and tasks
   Choose homegroup and sharing options

4. Enter **[Network and Sharing Center]**

   Network and Sharing Center
   View network status and tasks   Connect to a network
   View network computers and devices   Add a wireless device to the network
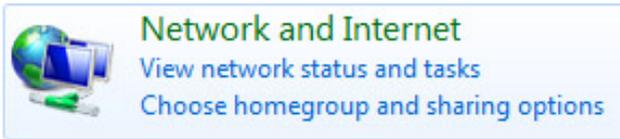
5. In the left panel select the **[Change adapter settings]**

   Control Panel Home
   Change adapter settings
   Change advanced sharing settings

6. **Right-click on [Połączenie lokalne] (Local area connection) and choose the [Properties]**
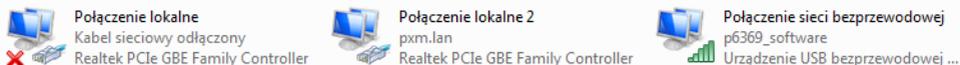
7. In the new window that appears, select **[Internet Protocol Version 4 (TCP/IPv4)]** and then press properties
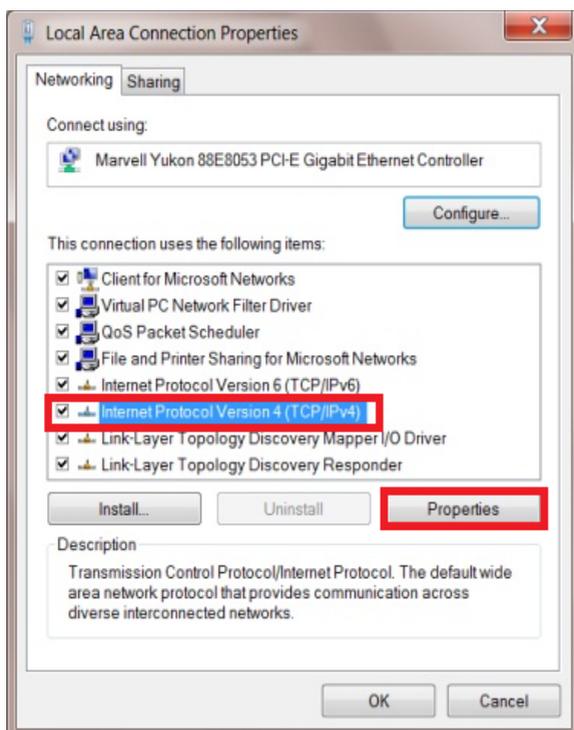
8. In the next window, select **[Use the following IP address:]**
To connect directly (computer − driver) with a controller that has a default configuration, use the sample settings:
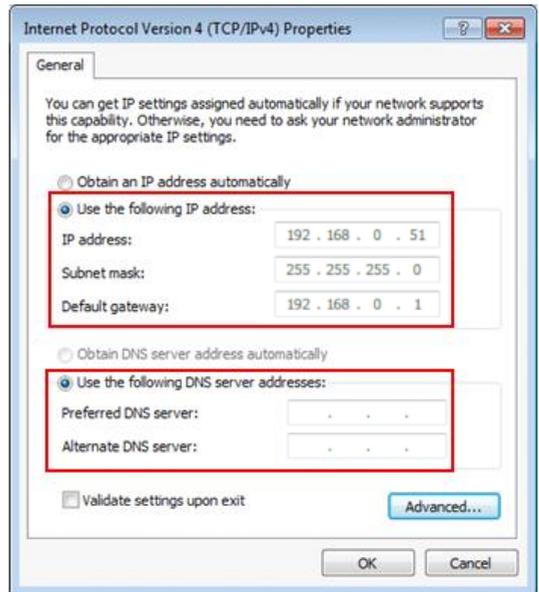
IP address:	192.168.0.51
Subnet mask:	255.255.255.0
Default gateway:	192.168.0.1

5.2 Connecting converter directly to the PC

When connecting the converter directly to a computer it is recommended to use a braided cable.

PC connected with
a cross Ethernet cable

Default network settings of PX787:
IP : 192.168.0.50
Mask : 255.255.255.0
DHCP : Off

DALI   DMX

PXM

PX787 DMX 2 DALI   *PX 787*
192.168.0.50

✕   ↓   ↑   ✓

| + | − |GND| + | − |GND| ⌐DA⌐ | ⌐DA⌐ | + | − |
|DMX IN| | |DMX OUT| | |DALI| |12-24VDC| |

Examples of PC network settings:
IP : 192.168.0.51
Mask : 255.255.255.0
DHCP : Off

NOTE! Remember that the PX787 converter and the computer should be in the same network and there is no conflict of IP addresses.

5.3 Connecting the converter using a router

When connecting the converter to the router, there are two options for network settings. The first of these is the use router with a DHCP server running, the network configuration on all devices in the network is set automatically. The second option is to connect the converter and PC to a switch or router that does not support DHCP server, in this case all devices in the network must have manually configured network settings in such a way that each device operates in the same network and has a unique IP address.

5.3.1 Automatic addressing

The diagram below shows the connection of the device with the router on which the DHCP server operates:

PX787 network settings downloaded automatically from the DHCP server:
DHCP : On

Router with a DHCP server running

DALI   DMX

PX787 DMX 2 DALI
172.20.90.243*

PX 787

× ↓ ↑ ✓

+ − GND + − GND ⌐DA⌐ ⌐DA⌐ + −
DMX IN   DMX OUT   DALI   12-24VDC

A computer connected to the router via WiFi with automatically downloaded network settings from a DHCP server:
DHCP : On
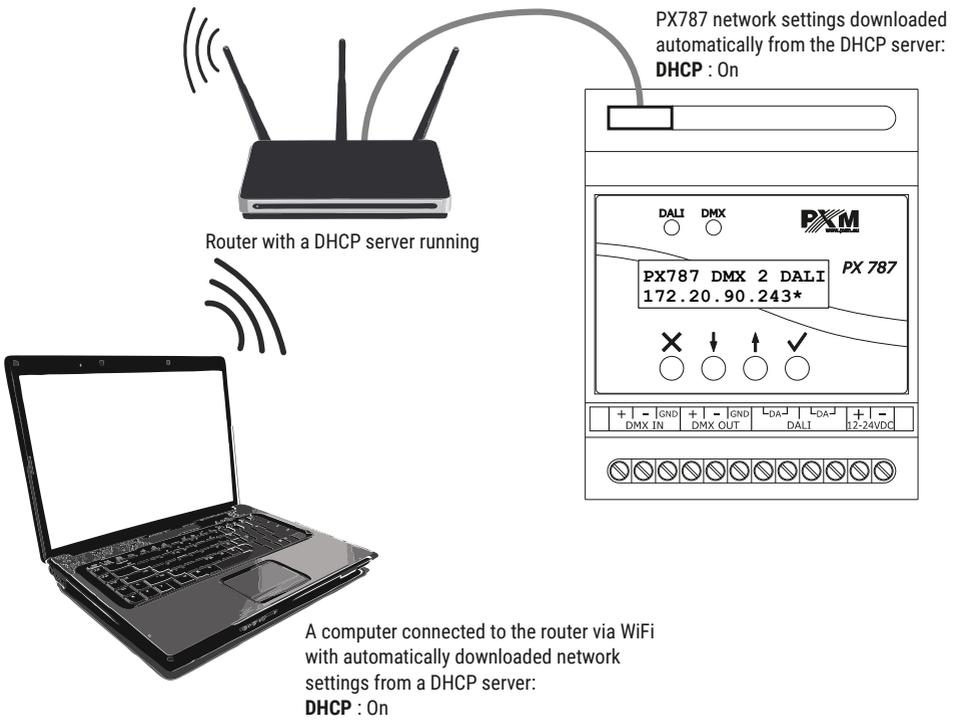
5.3.2 Static addressing

Below is an example diagram of network settings of the converter, router and PC, in the case when the DHCP server in the network is not running:

Router with DHCP server disabled:
IP : 192.168.0.1
Mask : 255.255.255.0
DHCP : Off

PX787 network settings:
IP : 192.168.0.50
Mask : 255.255.255.0
Gate : 192.168.0.1
DHCP : Off

DALI   DMX   **PXM**

PX787 DMX 2 DALI   *PX 787*
192.168.0.50

✕   ↓   ↑   ✓

| + | − | GND | + | − | GND | ⌐DA⌐ | ⌐DA⌐ | + | − |
| DMX IN | | | DMX OUT | | | DALI | | 12-24VDC | |
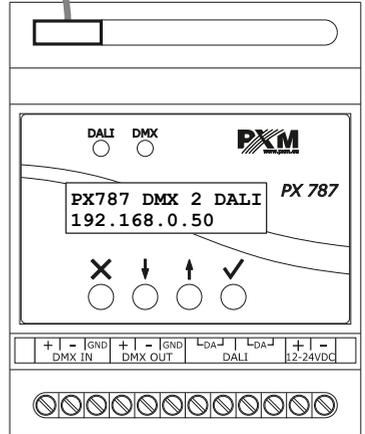
Examples of network settings
of a PC connected to the router via WiFi:
IP : 192.168.0.51
Mask : 255.255.255.0
Gate : 192.168.0.1
DHCP : Off

The advanced converter connection from the external network is described in section 7 Remote connection.

6   WWW interface

The device has a built-in Web Server that starts with the device. To open the PX787 management panel, enter the device's IP address in the browser (default is 192.168.0.50).

NOTE! Pay special attention if the PX787 is in the same network as the device on which the browser is running or in the router there are redirects configured accordingly.

Supported browsers:

- *Google Chrome* – from version *79.0.3945.117*
- *Mozilla Firefox* – from version *72.0.2*
- *Opera* – from versions *66.0.3515.44*
- *Edge* – from versions *79.0.309.71*

6.1 WWW window structure

The following tabs are available in the main menu:

- *Home* – graphic representation of all DALI output channels and all DMX input channels

- *Controller* – displays all found ballasts, in this tab it is possible to edit their parameters

- *Converter* – tab responsible for addressing DALI outputs and DALI groups on individual DMX input channels, enabling and disabling DMX → DALI signal conversion

- *Admin* – is used for local device name changes, network settings and software updates

<u>The following options are in the upper right corner:</u>

- device serial number

- language change (EN / PL)

- restarting the device

- device and manufacturer information:

Device model	PX787
Description	DMX to DALI Interface 1CH
Manufacturer	PXM Marek Żupnik Sp.k

PXM
Marek Żupnik spółka komandytowa
Podłęże 654
32-003 Podłęże
www.pxm.eu

tel. +48 12 385 83 06
tel. +48 12 385 83 07
tel. +48 12 385 83 08
fax. +48 12 626 46 94
mail: info@pxm.pl

6.2 Preview of DALI and DMX channels

After entering the converter website, the first tab is *Home*. In this tab you can read:

- values sent on the DALI line to all possible 64 devices and 16 groups
- values received at the DMX input from all 512 channels
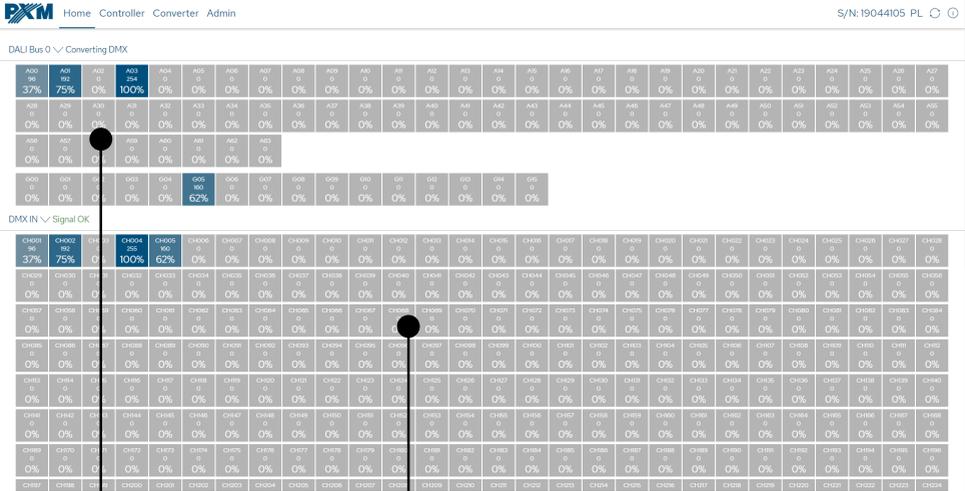
DALI outputs
and DALI groups

DMX signal inputs

6.3   Controller

The *Controller* tab allows to manage found ballasts on the DALI line. It is possible to quickly search for devices or initiate a search for devices that were not previously in the PX787 memory. In addition, the status of the DALI line is displayed – is it powered by an external power supply and the amount of ballasts found.

Description of displayed parameters:

- *DALI Bus* – if the line is powered from an external source and works correctly, the message *Operational* is displayed, in the event of a power failure of the DALI line the message *No power supply* is displayed
- *Ballast found* – amount of ballasts found on the line

- *Ballast type* – type of ballast found (*Fluorescent lamp, Emergency lighting, Discharge lamp, Low Voltage Halogen, Supply Voltage Regulator, DALI to 0-10V, LED Module, Relay, Color control, Sequencer*)
- *Groups* – group numbers to which the ballast is assigned
- *Address* – address to which the ballast is assigned
- *Name* – custom ballast name (saved locally)
- *Actual level* – power with which the ballast is currently working
- *Search* – searching for devices on the line again
- *Reinitialize* – searching for devices on the line again (associated with changing the DALI address settings and deleting the custom name assigned to devices previously configured)
- *Reset* – resets the DALI device selection
- *Paste settings* – pastes the settings previously copied to the marked ballasts (more information in chapter 6.3.2 Copy settings)

NOTE! Making changes to the ballast parameter settings is blocked if converting the DMX signal to the DALI line is active. To unlock the ability to edit ballast settings, select the *Converter* tab and then turn off converting (press *CONVERTER ON*).

6.3.1 Actions available for ballasts

For each device found on the DALI line via PX787 it is possible to select an action.

- *Identify device* ☼ – when pressed, the device brightens and darkens for identification
- *Copy settings* ⊡ – copies settings, which can then be pasted into selected devices (for more information see chapter 6.3.2 Copy settings)
- *Edit options* ⊠ – goes to the ballast parameters configuration

- *Light source type* – information on the type of ballast (*Fluorescent lamp, Emergency lighting, Discharge lamp, Low Voltage Halogen, Supply Voltage Regulator, DALI to 0-10V, LED Module, Relay, Color control, Sequencer*)
- **Firmware version**
- *Address* – device address on the DALI line
- *Custom name* – individual ballast name, the name is stored in the PX787 memory
- *Set target level* – brightness level for which the ballast is to be set in the range 0 – 254
- *Power ON level* – default brightness after ballast on
- *Fade time* – time determining the speed of transition between brightness levels
- *Fade rate* – number of steps per second determining the speed of transition between brightness levels
- *Minimum level* – minimum ballast brightness
- *Maximum level* – maximum ballast brightness
- *Failure level* – ballast brightness in the event of a DALI line failure
- *Physical minimum* – minimum brightness level factory set in the ballast
- *Scenes* – brightness level of scenes, the value of 255 means that ballast will ignore this scene (16 scenes)
- *Group membership* – assigning ballast to selected group / groups

6.3.2 Copy settings

The web interface allows to copy the configured ballast settings to other devices on the DALI line. This option speeds up the configuration of many ballasts (if they are to have the same parameters).

To do this, first configure the device, and then in the *Controller* tab select the icon 🔲 in the *Actions* column.

After copying the parameters, select the devices on the left to which they are to be pasted.

If the parameters have been copied and the devices to which they are to be pasted are selected, the *Reset and Paste settings* settings buttons become active. The *Reset* button removes all selections, while *Paste settings* starts the process of copying the settings to the selected ballasts.

Ballast type

#0 ☐	⚙	LED Module
#1 ☑	⚙	LED Module
#2 ☐	⚙	LED Module
#3 ☑	⚙	LED Module
#4 ☑	⚙	LED Module
#5 ☑	⚙	LED Module
#6 ☐	⚙	LED Module
#7 ☐	⚙	LED Module

Ballast found 8

RESET	PASTE SETTINGS

6.4 Converter

This tab is responsible for assigning DALI addresses to specific DMX input channels and enabling or disabling the conversion of DMX signal to DALI.

To address any DALI channel or group, hold the mouse and release it on the appropriate DMX address (drag & drop). To change the assignment of a DALI address to a DMX channel, you must first remove the DALI address (press LPM and press *Remove item?*) from the DMX table, and then put it back.
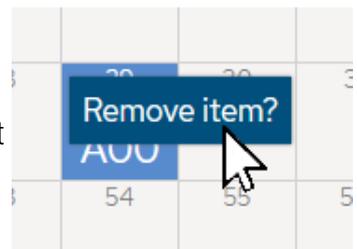
It is still possible to automatically address by selecting the *Auto-patch* button, the addresses will be set as follows:

DMX input

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
A00	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	A36	A37	A38	A39	A40	A41	A42	A43	A44	A45	A46	A47	A48	A49
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
A50	A51	A52	A53	A54	A55	A56	A57	A58	A59	A60	A61	A62	A63	G00	G01	G02	G03	G04	G05	G06	G07	G08	G09	G10
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
G11	G12	G13	G14	G15																				

NOTE! After making changes manually or after automatically assigning DALI addresses and groups to DMX channels, save the changes by clicking the *Save table* button. If the table is saved correctly, a message will appear at the top of the page with a green background *Patch table changed on device*.

PXM   Home Controller Converter Admin   S/N: 19044105 PL

Patch table changed on device.

CONVERTER ON	AUTO-PATCH																			SAVE TABLE		CLEAR TABLE	

DALI addresses   DMX input

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
A00	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

6.5   Admin

The converter network settings, renaming, exporting and importing settings to and from the file, as well as the firmware update can be set in the *Admin* tab.

- **Device label** – custom device name set by the user
- **Serial number**
- **MAC** – individual MAC address of the network card
- **IPv4** – setting the IP address
- **Gateway** – default gateway setting
- **Mask** – setting the subnet mask
- **DHCP** – enable or disable DHCP support

By selecting *Export* you can save the network settings and DALI line addressing to a file, by clicking *Import* you can load the configuration from the file.

Software update is possible after selecting the *Upgrade* button and then selecting the update file.

7 Remote connection

The converter allows to log in to device from an external network via the internet, for this purpose it should be:

- have an external IP address on the router assigned by the internet provider and be able to establish connection from outside (incoming packets are not blocked by the provider's and router's firewall)
- redirect port 80 to the IP address of the converter working in the local network (so-called forwarding port)
- unblock selected port in the router's firewall
- the address of the converter / converters in the local network can not change (the converter must have a static IP address set or the DHCP server must assign the same addresses to the same devices each time)

NOTE! The destination port of the device is always port 80, for added security it is recommended to redirect other ports from the external network to port 80 in the local network.

Example: by sending a query to the external IP address of a router with port number 12345 (e.g. 66.77.88.99:12345), the router will forward this query to the address of the device with port number 80 (e.g. 192.168.0.50:80).

A virtual server defines the mapping from the WAN service port to the LAN server. All requests from the Internet to the designated service port will be redirected to the device specified by the server IP Address.

	Service Port	IP Address	Internal Port	Protocol	Status	WAN	Edit
☐	12345	192.168.0.50	80	TCP or UDP	Enabled	pppoa_0_35_3_d	Edit

Add New	Enable Selected	Disable Selected	Delete Selected

NOTE! In most routers available on the market, you can set a static IP address by the DHCP server based on the MAC address of the device. For example, for a device with the MAC address 70:B3:D5:EF:B1:60 the IP address 192.168.1.15 will always be assigned by the DHCP server (example below).

Static assignment

IP Address 192.168.1. `15`

MAC address `70` : `b3` : `d5` : `ef` : `b1` : `60`   `Add`

NO.	IP Address	MAC address	Delete
1	192.168.1.15	70:B3:D5:EF:B1:60	`Delete`

Most routers available on the market usually have several parameters in port forwarding options:

- forwarding number
- port or port range for redirection
- the IP address of the device to be redirected to
- protocol type (TCP / UDP or both)
- attach / delete diversion

7.1.1 One converter in the internal network

Examples of network settings:

- external IP address: 66.77.88.99 (example address)
- converter IP address: 192.168.1.50
- mask: 255.255.255.0
- target device port: 80
- protocol: TCP or TCP/UDP (in this case option "*Both*")

<u>Below is the screen of the example setting in the router:</u>

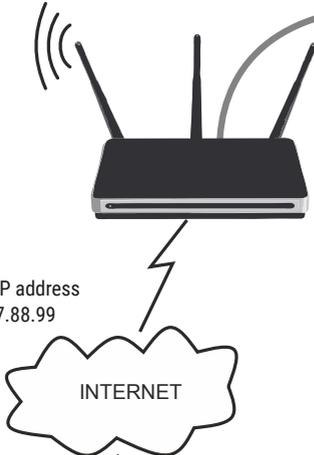| NO.	Start Port-End Port		LAN IP	Protocol	Enable	Delete
1.	80	80	192.168.1. 50	Both ▼	☑	☐
2.			192.168.1.	TCP ▼	☐	☐
3.			192.168.1.	TCP ▼	☐	☐
4.			192.168.1.	TCP ▼	☐	☐
5.			192.168.1.	TCP ▼	☐	☐
6.			192.168.1.	TCP ▼	☐	☐
7.			192.168.1.	TCP ▼	☐	☐
8.			192.168.1.	TCP ▼	☐	☐
9.			192.168.1.	TCP ▼	☐	☐
10.			192.168.1.	TCP ▼	☐	☐

If the router does not have the option to set up one port forwarding, create a range (from 80 to 80). If everything is correctly configured to open the web interface, enter the external IP address in the browser window (e.g. 66.77.88.99) or if you have redirected another port to internal port

number 80 (e.g. 66.77.88.99:12345) – described in detail in section 7 More than one converter in the internal network.
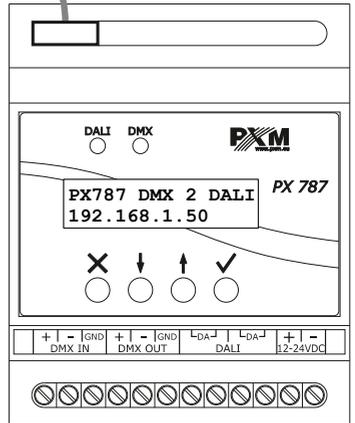
Example of connection without using other ports:

Router network settings:
IP : 192.168.1.1
Mask : 255.255.255.0
DHCP : Off
Port 80 forwarding
to the device address (192.168.1.50)

External IP address
e.g. 66.77.88.99

INTERNET

DALI   DMX   PXM
www.pxm.es

```
PX787 DMX 2 DALI   PX 787
192.168.1.50
```

✕   ↓   ↑   ✓

```
+  −  GND  +  −  GND  ⌐DA⌐  ⌐DA⌐  +  −
  DMX IN      DMX OUT      DALI    12-24VDC
```

PX787 network settings:
IP : 192.168.1.50
Mask : 255.255.255.0
Gate : 192.168.1.1
DHCP : Off

A computer connected to the internet

7.1.2 More than one converter in the internal network

Examples of network settings:

- external IP address: 66.77.88.99 (example address)

- IP address of the first converter: 192.168.1.50

- IP address of the second converter: 192.168.1.51

- mask: 255.255.255.0

- target device port: 80

- protocol: TCP or TCP/UDP (in this case option "*Both*")

Below is a screen with examples of settings in the router (port forwarding 2000 and 2001 to the appropriate IP address of the converter and port 80):

A virtual server defines the mapping from the WAN service port to the LAN server. All requests from the Internet to the designated service port will be redirected to the device specified by the server IP Address.

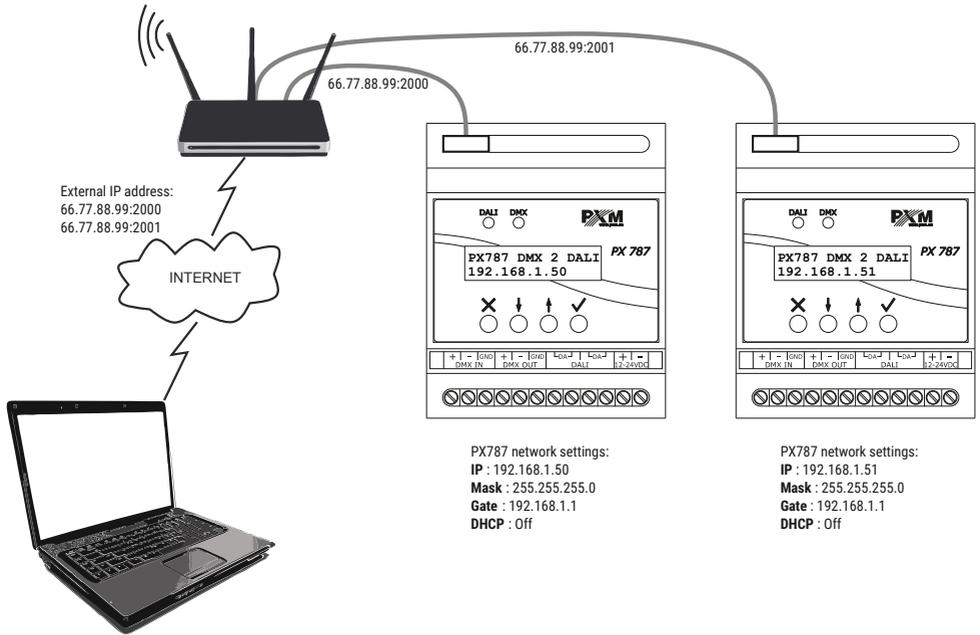|	Service Port	IP Address	Internal Port	Protocol	Status	WAN	Edit
☐	2000	192.168.1.50	80	TCP or UDP	Enabled	pppoa_0_35_3_d	Edit
☐	2001	192.168.1.51	80	TCP or UDP	Enabled	pppoa_0_35_3_d	Edit

Add New	Enable Selected	Disable Selected	Delete Selected

In this case, port 2000 indicates a device with IP address 192.168.1.50 and sends a query to port 80 in the internal network. The query sent to port 2001 will send a query to the other device with the address 192.168.1.51.

Example of connecting more than one converter with port forwarding:

Router network settings:
IP : 192.168.1.1
Mask : 255.255.255.0
DHCP : Off
Port 2000 forwarding to the device address (192.168.1.50:80)
Port 2001 forwarding to the device address (192.168.1.51:80)

66.77.88.99:2001

66.77.88.99:2000

External IP address:
66.77.88.99:2000
66.77.88.99:2001

INTERNET

DALI   DMX   PXM

PX787 DMX 2 DALI   PX 787
192.168.1.50

✗   ↓   ↑   ✓

+ | – |GND| + | – |GND| └DA┘ └DA┘ | + | –
DMX IN   DMX OUT   DALI   12-24VDC

DALI   DMX   PXM

PX787 DMX 2 DALI   PX 787
192.168.1.51

✗   ↓   ↑   ✓

+ | – |GND| + | – |GND| └DA┘ └DA┘ | + | –
DMX IN   DMX OUT   DALI   12-24VDC

PX787 network settings:
IP : 192.168.1.50
Mask : 255.255.255.0
Gate : 192.168.1.1
DHCP : Off

PX787 network settings:
IP : 192.168.1.51
Mask : 255.255.255.0
Gate : 192.168.1.1
DHCP : Off

A computer connected to the internet

8 RDM – available parameters

The PX787 supports the DMX – RDM protocol. DMX protocol allows only of a one-way data transmission, while its extension the RDM protocol can transmit information in two directions. This makes possible to simultaneously send and receive information, and hence the possibility of monitoring activities of the compatible devices. Thanks to RDM some available settings of compatible devices may be programmed using this protocol.

List of supported RDM parameters by PX787:

Parameter name	PiD	Description
SUPPORTED_PARAMETERS	0x0050	all supported parameters
PARAMETER_DESCRIPTION	0x0051	description of additional parameters
DEVICE_INFO	0x0060	information concerning the device
SOFTWARE_VERSION_LABEL	0x00C0	firmware version of the device
DMX_START_ADDRESS *	0x00F0	DMX starting address; Range 1 – 512
IDENTIFY_DEVICE *	0x1000	device identification; Two states are possible: identification disabled (value 0x00) and identification enabled (value 0x01)
DEVICE_MODEL_DESCRIPTION	0x0080	device description, e.g. name
MANUFACTURER_LABEL	0x0081	manufacturer description, e.g. name

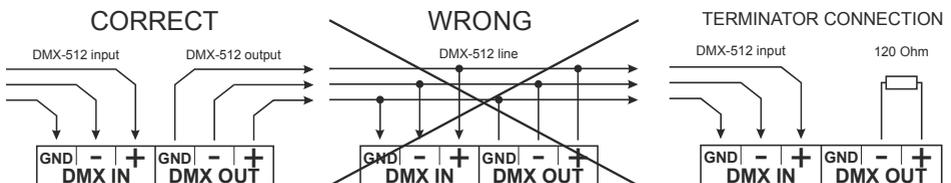| Parameter name	PiD	Description
DEVICE_LABEL *	0x0082	additional device description; It is possible to enter an additional device description using up to 32 ASCII characters
FACTORY_DEFAULTS	0x0090	device default settings
DMX_PERSONALITY	0x00E0	DMX operational mode
DMX_PERSONALITY_ DESCRIPTION	0x00E1	description of individual operational modes
RESET_DEVICE	0x1001	restarting the device
DEVICE_UPTIME	0x8000	time since last power on
SERIAL_NUMBER	0x8010	device serial number
CURRENT_IPV4_ADDRESS	0x8080	current device IP address
CURRENT_IPV4_GATEWAY	0x8081	current gateway address
CURRENT_IPV4_SUBNET	0x8082	current subnet (mask)
ETHERNET_MAC	0x8083	device MAC address
DHCP_ENABLE *	0x8084	DHCP settings; Disabled (value 0x00) and enabled (value 0x01)
STATIC_IPV4_ADDRESS *	0x8085	IP address settings; Text input, e.g. 192.168.1.100
STATIC_IPV4_GATEWAY *	0x8086	gate settings; Text input, e.g. 192.168.1.1
STATIC_IPV4_SUBNET *	0x8087	subnet settings (mask); Text input, e.g. 255.255.255.0

* - editable parameter

9   Indication lights

Converter is equipped with 2 indicators signaling:

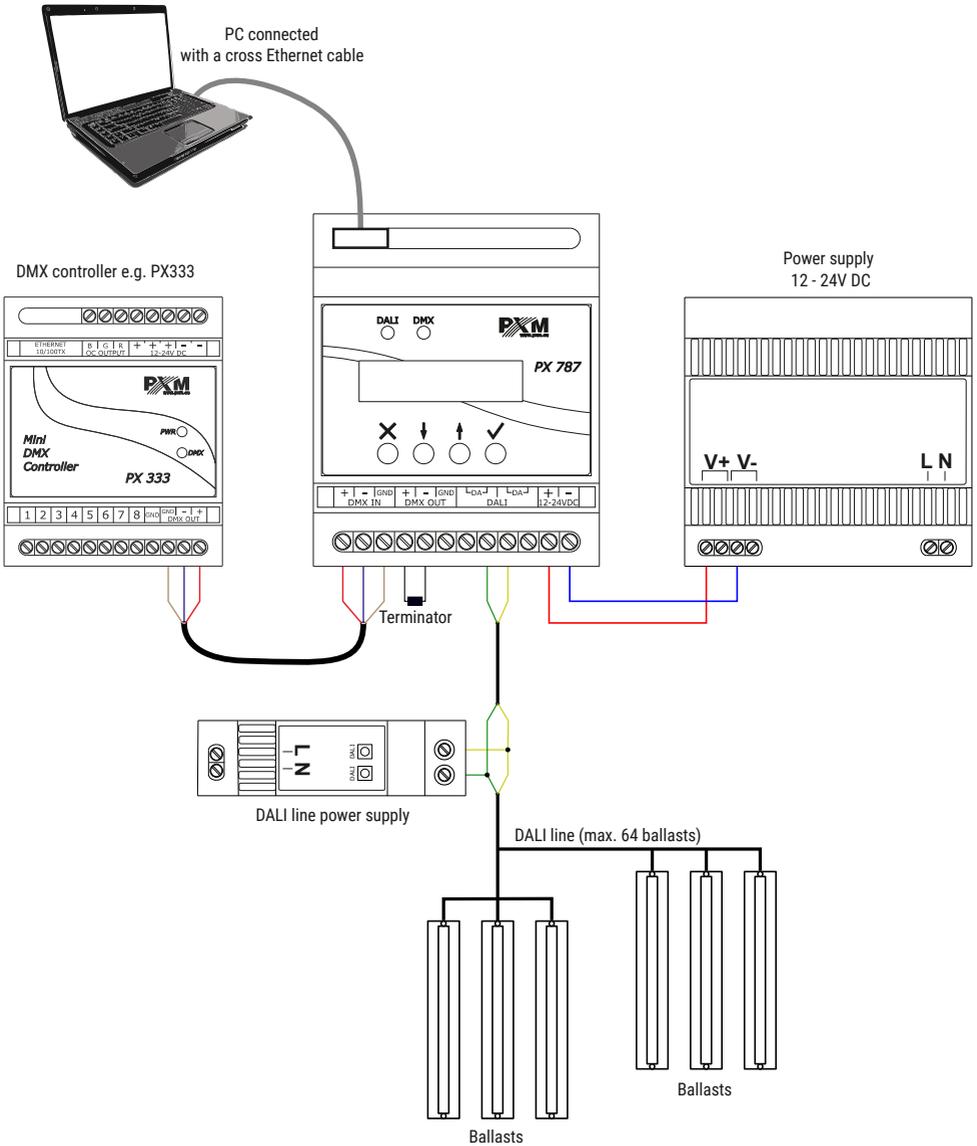| Indicator	Action	Function
green ⬤ DALI	flashing / steady on	communication on the DALI line
	is off	the converter does not send any commands on the line
blue ⬤ DMX	flashes	receiving DMX signal
	is off	no DMX signal

10   DMX signal connecting

PX787 have to be connected to DMX line in serial mode, with no branches on DMX control cable. That means that DMX line, from the signal source, must be connected to **DMX IN** pins of PX787 and later, directly from **DMX OUT** pins to the next device in DMX chain.
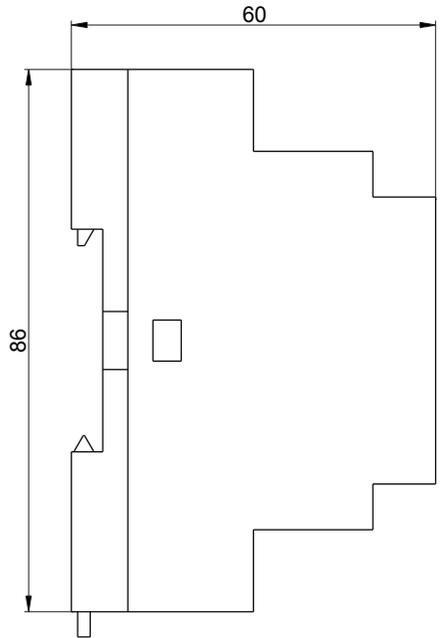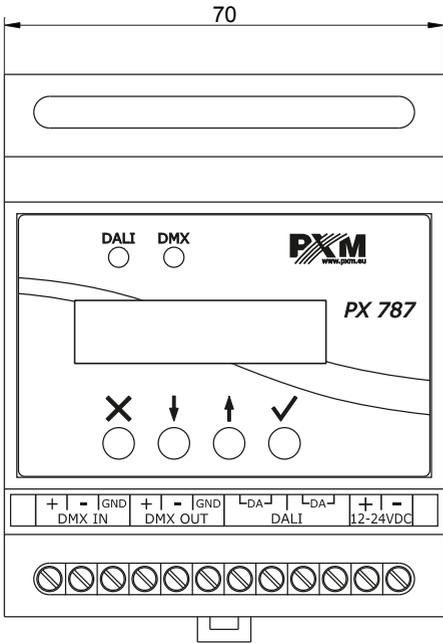
If the PX787 is the last DMX chain receiver there should be terminator (resistor 120 Ohm) mounted between "**+**" and "**-**" pins of **DMX OUT** section.

11   Connection scheme

PC connected
with a cross Ethernet cable

DMX controller e.g. PX333

ETHERNET
10/100TX

B G R
OC OUTPUT

+ + + − −
12-24V DC

PXM

Mini
DMX
Controller

PWR

DMX

PX 333

1 2 3 4 5 6 7 8 GND − +
DMX OUT

DALI   DMX

PXM

PX 787

✕   ↓   ↑   ✓

+ − GND + − GND ⌐DA⌐ ⌐DA⌐ + −
DMX IN   DMX OUT   DALI   12-24VDC

Terminator

Power supply
12 - 24V DC

V+ V−   L N

DALI line power supply

DALI line (max. 64 ballasts)

Ballasts

Ballasts

12 Dimensions

13 Technical data

type	PX787
power supply	12 – 24V DC
power consumption	max. 1W
DMX input / output	1 / 1
DALI ports	1
Ethernet ports	1
DMX channels	512
support for RDM protocol	yes
number of supported DALI devices	64
programming	LCD display 2 x 16 and 4 buttons Web Server RDM
version of the DALI protocol	1.0
weight	0.15kg
dimensions	width: 70mm height: 86mm depth: 60mm

DECLARATION OF CONFORMITY

PXM Marek Żupnik spółka komandytowa
Podłęże 654, 32-003 Podłęże

we declare that our product:

Product name: DMX/DALI 1ch

Product code: PX787

meets the requirements of the following standards, as well as harmonised standards:

PN-EN IEC 63000:2019-01	EN IEC 63000:2018
PN-EN 62368-1:2015-03	EN 62368-1:2014
PN-EN 61000-4-2:2011	EN 61000-4-2:2009
PN-EN IEC 61000-6-1:2019-03	EN IEC 61000-6-1:2019
PN-EN 61000-6-3:2008	EN 61000-6-3:2007

and meets the essential requirements of the following directives:

2011/65/UE DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
Text with EEA relevance.

2014/30/UE DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)
Text with EEA relevance.

2014/35/UE DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

PXM
Marek Żupnik spółka komandytowa
32-003 Podłęże, Podłęże 654
NIP 677-002-54-53

mgr inż. Marek Żupnik.