

PX760

Gate 2

DMX RDM PoE

User manual



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

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# 1 Description

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Gate 2 DMX RDM PoE device was created for 2-way converting Art-Net / sACN protocol into two DMX and DMX ports on Art-Net / sACN.

The gate is powered by PoE (Power over Ethernet) in the IEEE 802.3af standard, which allows to power the device via twisted-pair cable without using an external power supply while transmitting data, it is optionally powered by 48V DC. The device is protected by a metal casing that protects it against mechanical damage.

The gate has two modes of merging signals from two sources: HTP and LTP. The protocol version is Art-Net4 (compatible with Art-Net 1 – 4).

The device is equipped with two DMX / RDM ports working in IN / OUT modes and one Ethernet port operating in the 10 / 100BaseTX standard. DMX ports are XLR connectors that have optical and galvanic isolation and are resistant to mechanical damage.

On the front panel there are four LEDs installed, two two-color ones responsible for data transfer on DMX / RDM ports and two one-color ones informing about the status of the Art-Net / sACN network connection.

The gate PX760 has a display and four buttons that allows to change the configuration: Art-Net / sACN, Ethernet and DMX settings (such as: Brake, MAB, MBF and the number of DMX channels transmitted).

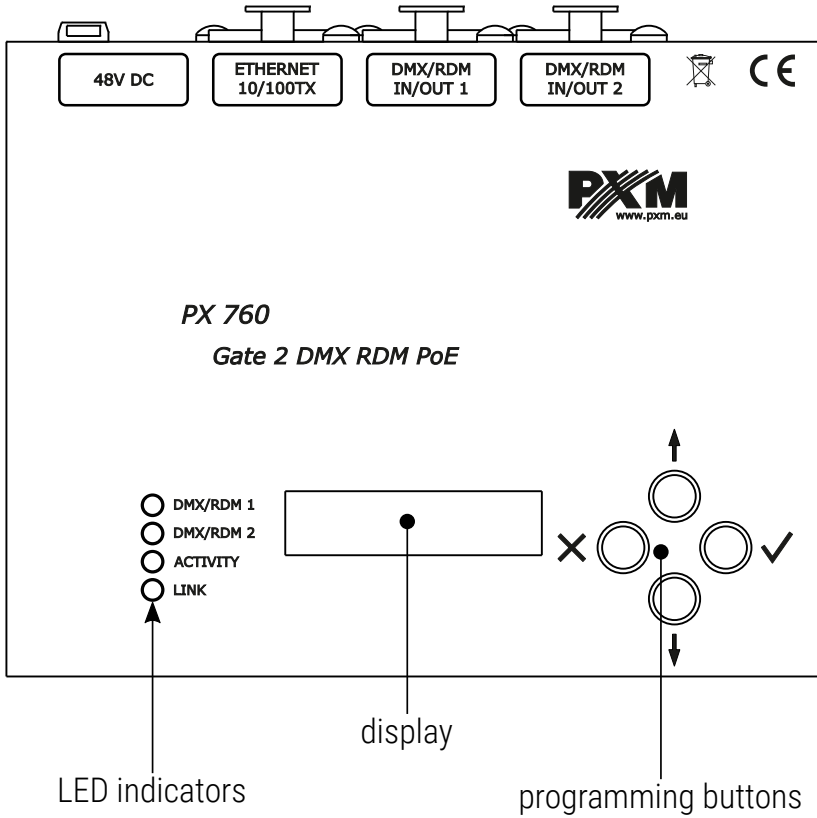
## 2 Safety conditions

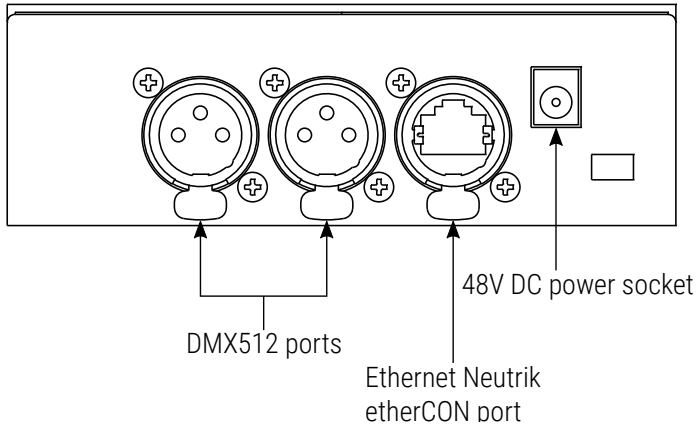
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PX760 Gate 2 DMX RDM PoE is a device powered with safe voltage 48V DC or power supply using twisted pair cable PoE (Power over Ethernet) in the IEEE 802.3af standard, however, during its installation and use the following rules must be strictly observed:

1. The device may only be connected to 48V DC (stabilized voltage) or PoE in the IEEE 802.3af standard 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. PX760 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





## 4 Power supply

The Gate 2 DMX RDM PoE device can be powered from two power sources. The first is PoE (Power over Ethernet) in the IEEE 802.3af standard using a twisted-pair cable, without using a power supply, the second is a standard 48V DC power supply from an external power supply (no power supply included). Power supply using twisted-pair cable is possible with simultaneous data transfer.

### The most important features of PoE:


- power supply and data transmission through one cable reduces installation costs
- range up to 100m with the use of appropriate cabling
- high security due to low voltage transmission
- easy installation

# 5 Programming the device

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## 5.1 Button features

- ✕ (escape) – allows you 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 forward through the menu or increases values being set
- ✓ (enter) – allows you to enter the programming mode and confirm the values set

Where a particular parameter is editable, in the bottom right-hand corner the edit symbol , and pressing ✓ allows you to proceed to edit the first field.

A field that is editable is shown within square brackets [...] or \*, and the ↓ / ↑ button allows you 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 give parameter.

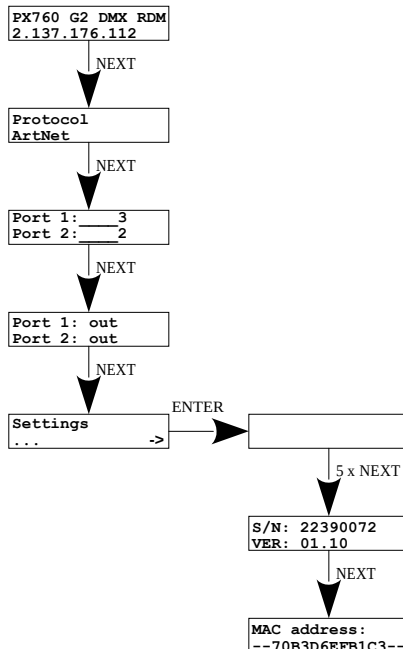
The icon -> allows you to go deeper into the menu.



## 5.2 Description of information parameters

The PX760 provides you with the following device information, such as:

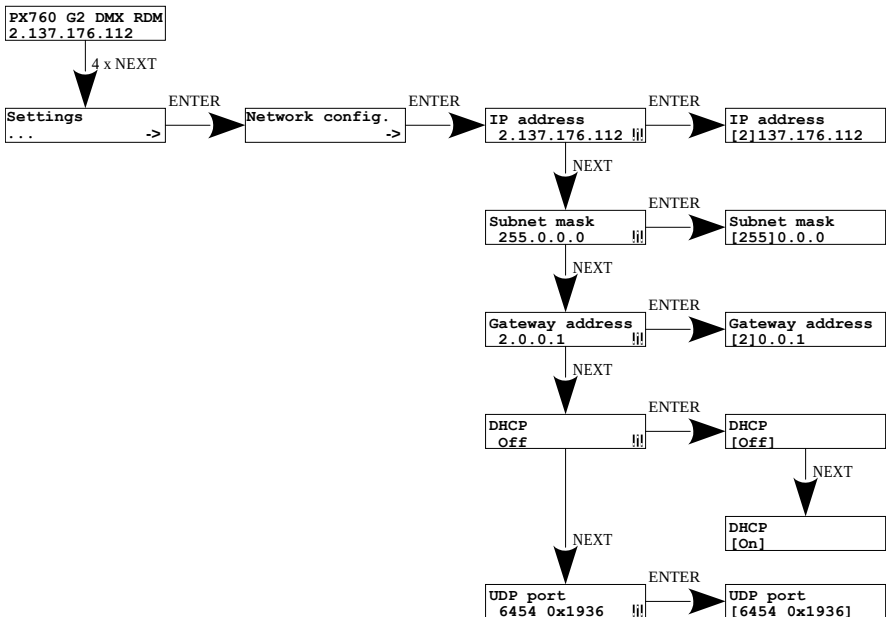
- gate model and current IP address (if an address is provided by DHCP, an asterisk \* is added),
- protocol (*Art-Net* / *sACN*),
- universe numbers on DMX ports,
- signal conversion direction (*in* / *out*),
- gate serial number and version number of the software installed,
- individual MAC address of the device.



## 5.3 Network settings

In the *Network config.* menu of the device you can change the gate static IP address *IP address*, static sub-net mask *Subnet mask*, default static gate *Gateway address*, turn on *On* or turn off *Off* the DHCP protocol *DHCP*, UDP port *UDP port*. The default port for the Art-Net protocol is port 0x1936 (6454 decimal).

If DHCP is *turned off*, the gate operates in a static configuration (*IP address*, *Subnet mask*, *Gateway address*). If DHCP is *turned on*, the gate will start up using static settings, but will attempt to acquire new network configuration from the DHCP server.



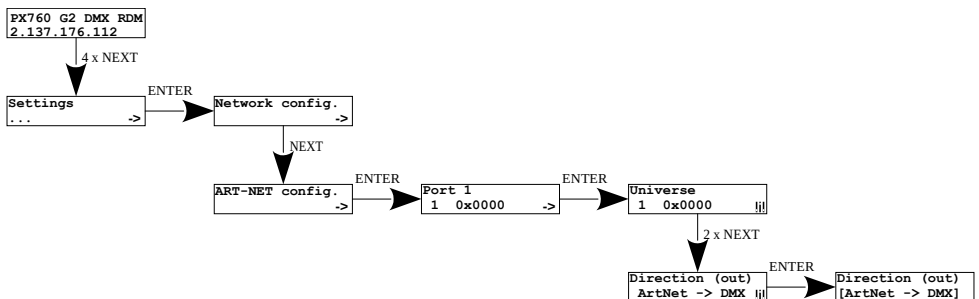
## 5.4 DMX IN / OUT port settings

The gate can work in four configurations of signal conversion:

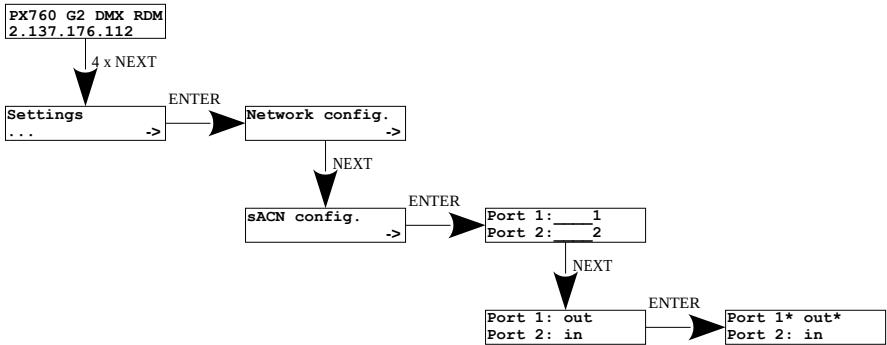
- Art-Net → DMX,
- DMX → Art-Net,
- sACN → DMX,
- DMX → sACN.

To do this, the DMX 1 or 2 ports must be set accordingly. The options are *in* and *out*. After selecting *out* the signal is converted from the Art-Net or sACN to the DMX output, analogically after selecting the *in* option, the signal from the DMX input is converted to Art-Net or sACN signal with the signal connection set (HTP / LTP) **Merge mode** – only available at Art-Net. For each port, the settings can be changed in the Art-Net network configuration **ART-NET config.** or sACN **sACN config.** in the **Port n:**. Information about the status of ports is available from the main menu.

### Setting in Art-Net mode:



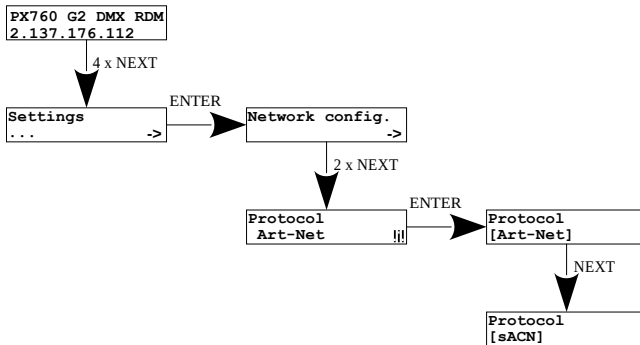
## Setting in sACN mode:



## 5.5 Art-Net/sACN protocol change

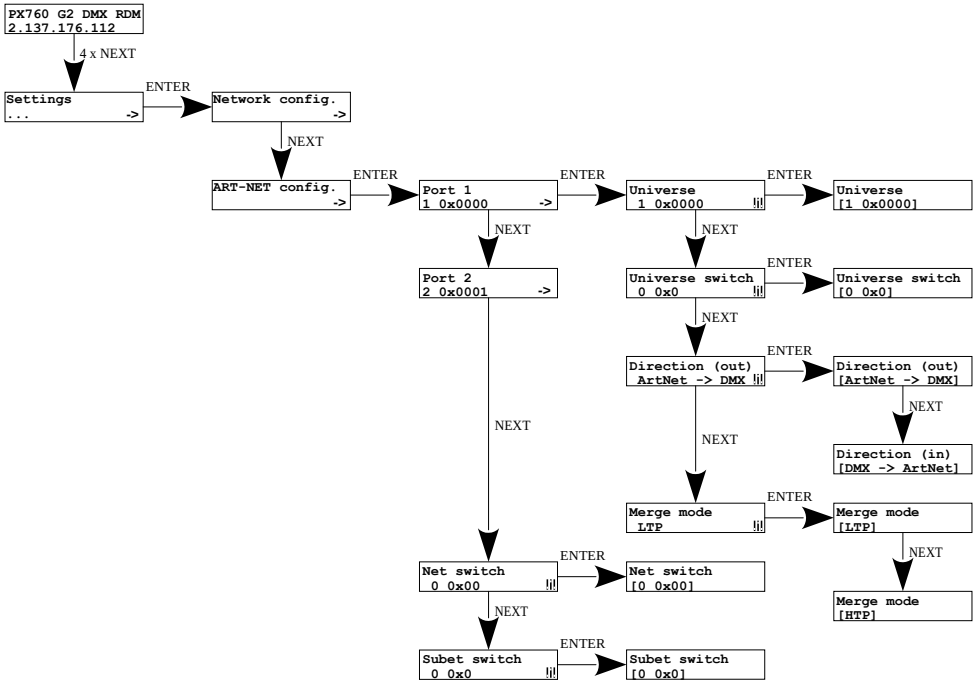
Before advanced configuration, the user should select the protocol in which the gateway is to operate. There are two options to choose from:

- *Art-Net*,
- *sACN*.



## 5.6 Art-Net configuration

Below is a diagram showing the *ART-NET config.* menu and a description of individual parameters that can be changed depending on the user's needs.



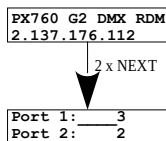
### Parameters:

- **Port 1 – 2** – individual settings of Art-Net ports,
- **Universe** – the universe number on which a given port runs. The selectable range is 0 – 32767. The number is displayed in two formats: decimal and hexadecimal.

Hexadecimal notation allows you to easily differentiate universe components, for example: **0xNNSU**, where:

- **NN**: (Net switch) network number in the Art-Net protocol (range 0 – 127 dec, 0x0 – 0x7f hex),
- **S**: (Sub-Net switch) sub-net number in the Art-Net protocol (range 0 – 15 dec, 0x0 – 0xf hex),
- **U**: Universe switch.

Using **Universe** you can change all 3 universe number components (**Net switch**, **Sub-Net switch** and **Universe switch**). There is a possibility of quick preview from the main menu of Universes assigned to a given port, the diagram below:



**NOTE!** A change of a port universe number that entails changing the components Net or Sub-Net will automatically result in a change of the universe of the other ports. This is due to specific nature of the Art-Net protocol addressing, where the gate has a common value for the fields Net and Sub-Net for all the four ports.

- **Universe switch** – universe number in the Art-Net protocol (range 0 – 15 dec, 0x0 – 0xf hex). Individual setting of a Universe switch value for a given port. It is a component of the entire Universe number for the port.

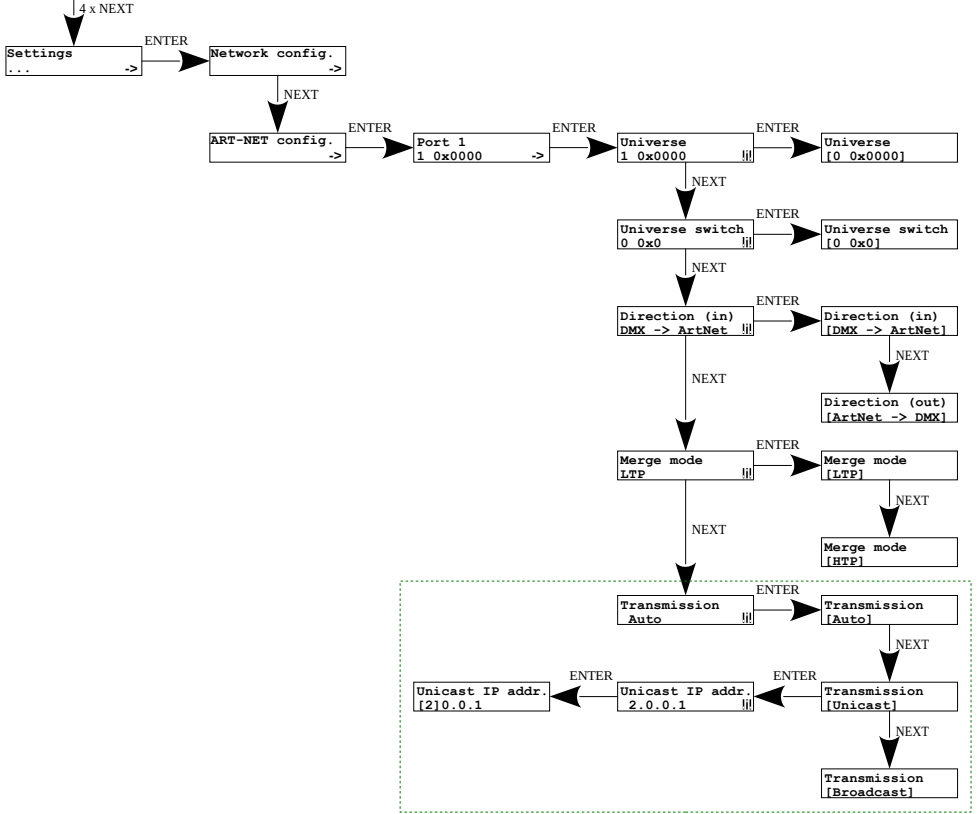
- **Direction** – setting the direction of signal conversion. Available Art-Net on DMX or DMX on Art-Net.
- **Merge mode** – port merging mode setting. Available values of **LTP** (Latest Takes Precedence) and **HTP** (Highest Takes Precedence).
- **Net switch** – setting a network value in the Art-Net protocol. It is a common setting for all the ports. The range is 0 – 127 (0x00 – 0x7f).
- **Subnet switch** – setting a sub-network value in the Art-Net protocol. It is a common setting for all the ports. The range is 0 – 15 (0x0 – 0xf)

### 5.6.1 Art-Net configuration in mode DMX → Art-Net

In the PX760 gate in the mode of converting the signal from DMX to Art-Net after the change of **Direction** in the chosen port on DMX → Art-Net, the **Transmission** parameter appears, in which options are available:

- **Unicast** – transmission, in which exactly one packet is sent to exactly one recipient – there is only one sender and only one recipient. After selecting this option, the recipient's IP address will appear on the screen.
- **Broadcast** – transmission mode consisting in sending by one port of packets that should be received by all other ports connected to a given network – one sender and many recipients
- **Auto** – the device sends packets only to "interested" devices with given packets. Based on the ArtPoll query and the obtained ArtPollReply response from another device, the PX760 creates an IP list to send packets.

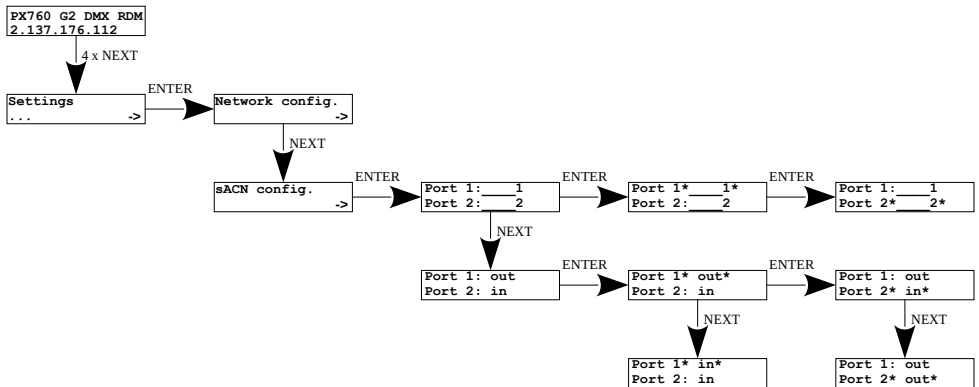
FX760 G2 DMX RDM  
2.137.176.112





## 5.7 sACN configuration

Below is a diagram showing the sACN config menu. and a description of individual parameters that can be changed depending on the user's needs.

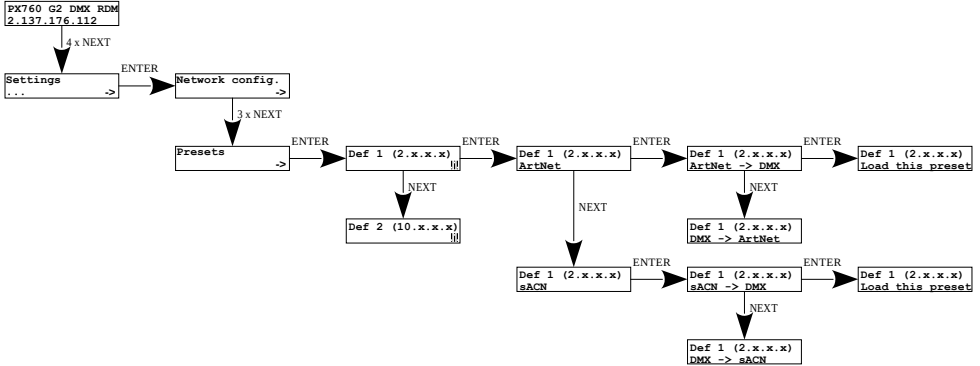


### Parameters:

- *Port 1 – 2* – settings of universes on DMX ports,
- *Port 1 – 2: in / out* – setting the direction of signal conversion.

## 5.8 Presets menu

In the gate are predefined 2 standard sets of factory settings: **2.x.x.x** and **10.x.x.x**, which additionally have the option of global change of signal conversion direction (*in / out*) and protocol change (*Art-Net / sACN*).



**NOTE!** Loading any preset will disable RDM on all DMX ports.

## 5.9 Settings for the other parameters

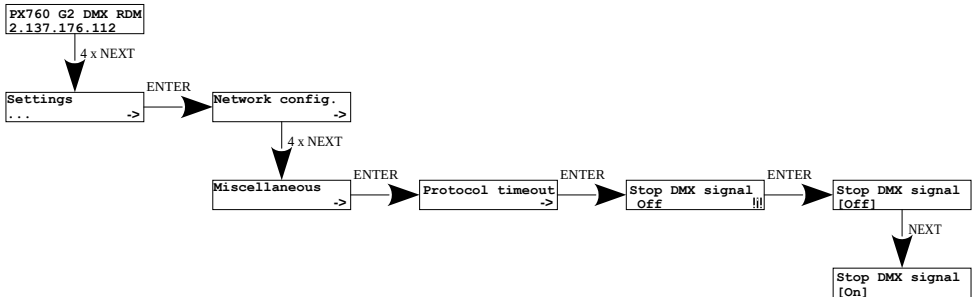
The menu containing the other settings of the *Miscellaneous* screen allows you to:

- change of device behavior when Art-Net / sACN signal disappears,
- changing parameters of DMX signals,
- changing RDM settings,
- switching on or off the screensaver and signaling diodes,
- displaying the number of detected devices supporting the RDM protocol on a given DMX port.

## 5.9.1 Art-Net / sACN signal loss

In the *Protocol timeout* menu, the user can define the *Stop DMX signal* parameter:

- **On** – disables DMX transmission when the Art-Net / sACN signal is lost,
- **Off** – the ports continue to transmit the last value.

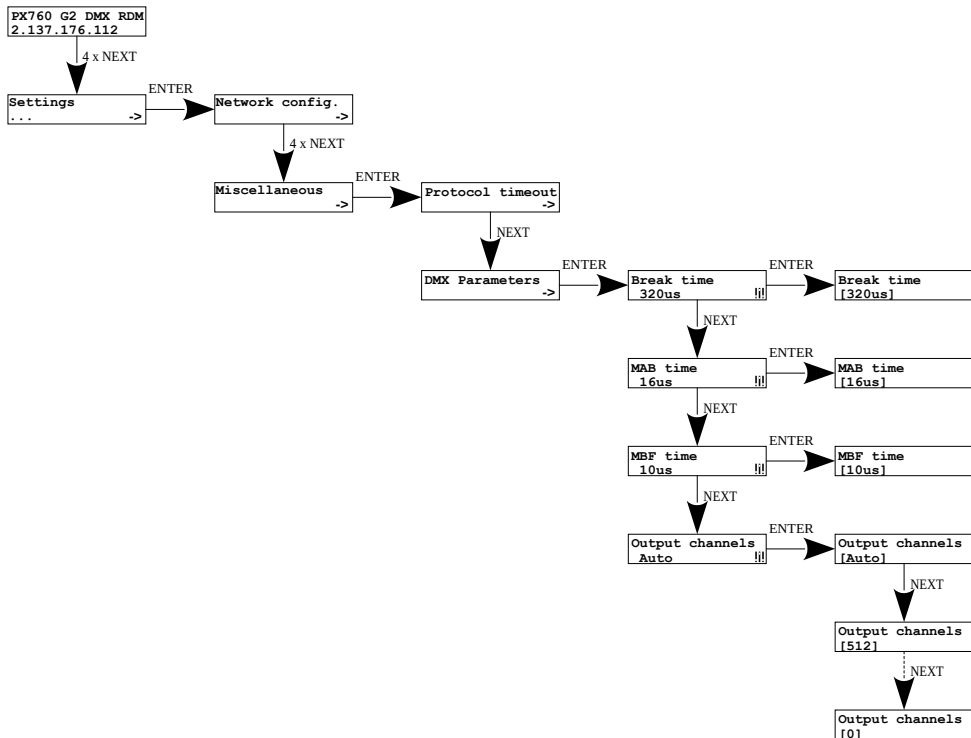


## 5.9.2 DMX parameters

Global configuration of DMX parameters:

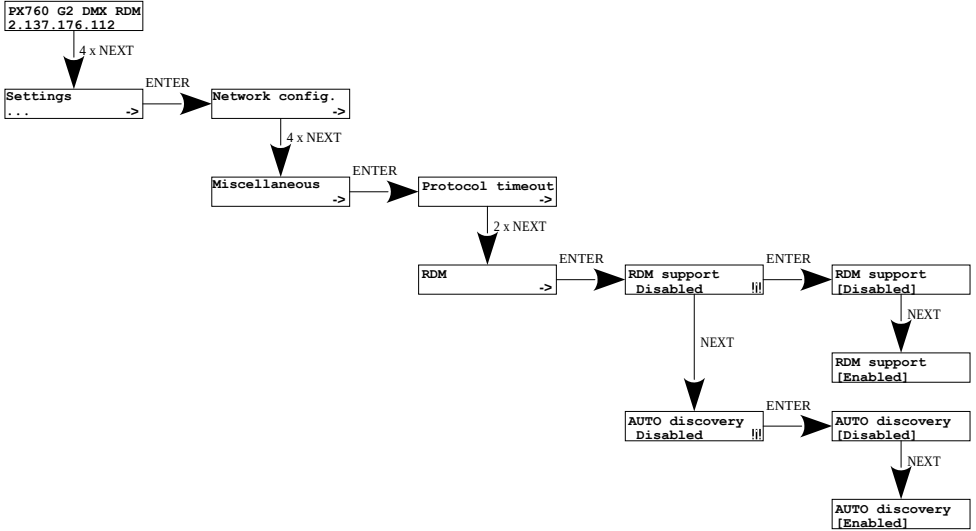
- **Break time** – duration of a low state along the line at the beginning of DMX packet transmission (range  $176\mu\text{s}$  –  $352\mu\text{s}$ ),
- **MAB time** – (Mark After Break) – MAB length – interval after the break that is present in each packet according to standard DMX (range  $12\mu\text{s}$  –  $88\mu\text{s}$ ),
- **MBF time** – (Mark Between Frames) – interval between DMX frames (channels). MBFs separate stop bits of one channel from the start bits of another channel (range  $0\mu\text{s}$  –  $76\mu\text{s}$ ).

- **Output channels** – defines the number of sent channels on a given port
  - **Auto** – the number of channels sent on the port will be equal to the number of channels received via the Art-Net protocol,
  - **0 – 512** – you can force the broadcasting of a selected number of channels in the range from 0 – 512.



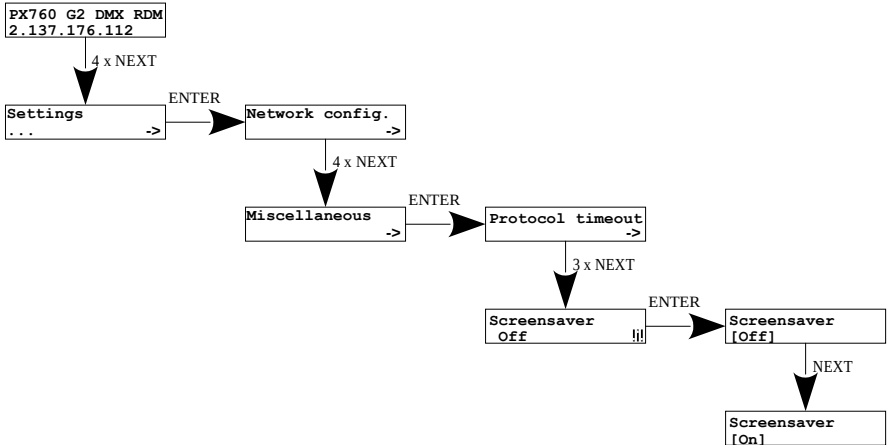
### 5.9.3 RDM

Configuration of the RDM protocol for a given port. You can enable / disable **RDM support** for RDM commands and enable / disable continuous search for devices supporting the **RDM Auto discovery** protocol. When starting the device, it is automatically searched.



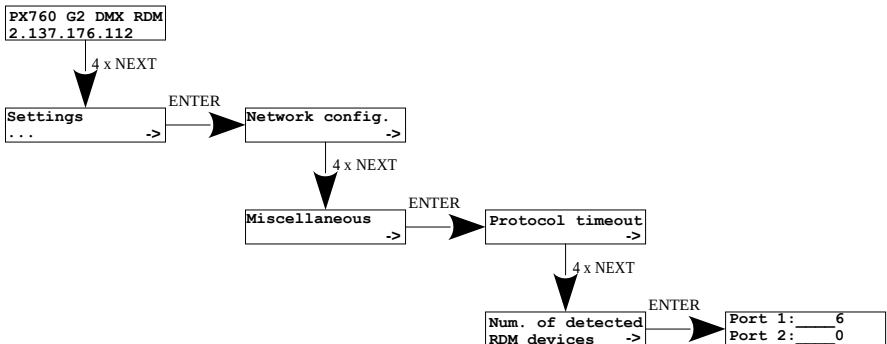
### 5.9.4 Turning off the screen and LEDs

Turning **On** or **Off** the screensaver and signaling diodes is available in the **Screensaver** menu. After 15 seconds, the display and all signaling diodes turn off. The device continues to work without interfering with other parameters. Press any key to restore the backlight.



### 5.9.5 RDM devices detected

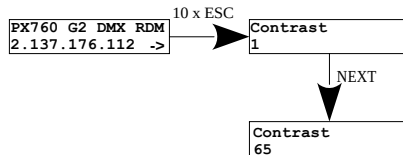
At the level of this menu, it is also possible to check the number of detected devices supporting the RDM protocol on a given DMX port *Num. of detected RDM devices* (the diagram shows 6 detected devices connected to the first DMX port).



## 5.10 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 1 to 64. 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 **Contrast** menu by flashing the DMX signal diodes alternately in **blue** and **orange**.

With the *Next* or *Previous* button, the appropriate value should be search blindly (it is recommended to press *Next* button to find the value in which the screen becomes readable, and then use the *Next* and *Previous* keys to adjust the value to suit your needs). To exit the **Contrast** menu, press the *Enter* key and accept the selected value.



## 6 Information communicated by LED indicators

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The indicators diodes on the front panel of the gate provide information on the status of the unit: the two upper LEDs are bi-color ones (**blue** – **orange**) and communicate the status of DMX-RDM. Each diode is assigned to one of the two DMX ports.

| Action  | Function   |
|---|--|
| blinking <b>blue</b> (every ~1s)  | DMX transmission through the port concerned  |
| blinking <b>blue</b> (every ~3s)  | hold the last value<br><b>Stop DMX signal – On</b>   |
| blinking <b>blue</b> (every ~0.5s)  | transmission using merging<br>(i.e. output data are a result of combining data from two Art-Net sources)         |
| blinking in <b>orange</b> (every ~1s)   | only RDM packets transmission through a given port   |
| blinking <b>orange</b> (every ~0.5s)  | searching for devices via RDM<br>(if <b>Auto discovery</b> option is enabled, there is a single flash every 10s) |
| blinking <b>blue</b> (every ~1s)  | DMX transmission through the port concerned  |
| blinking in <b>blue</b> and <b>orange</b> alternately at a faster rate on both DMX diodes | The device informs about being on the <b>Contrast</b> menu   |

The above information refers to the so-called normal operating mode.



### Additional information communicated by the LED indicators:

- if the screen saver mode is enabled or an “Art-Net Mute Indicators” command has been received, all the diodes **go out**,
- if the gate receives an “Art-Net Indicate” command, all the diodes start blinking,
- if Art-Net / sACN packets stop being received by a given port, then, depending on the *Protocol Timeout* option:
  - if *Stop DMX signal* is off *Off* the port will continue to send the last values and the diode will continue to blink in blue,
  - if *Stop DMX signal* is on *On* transmission through the port will stop and the diode will go out.

### Two single-color diodes at the bottom:

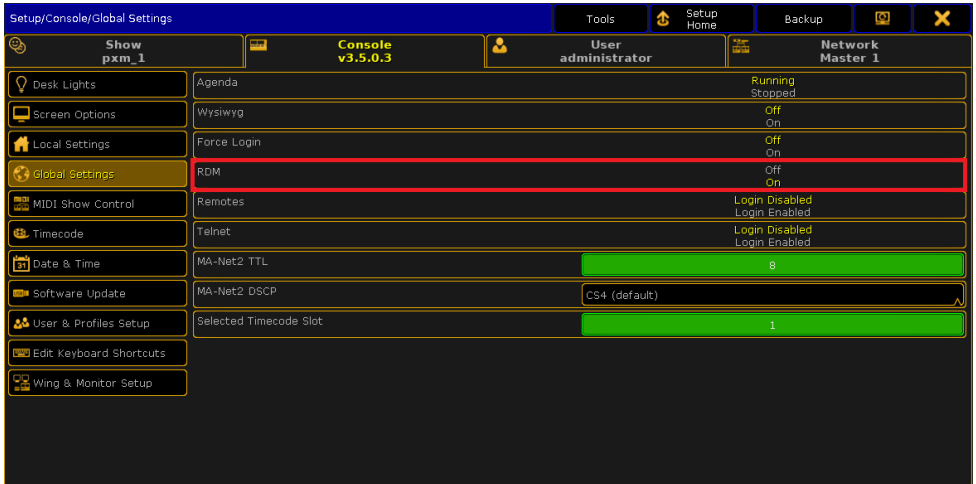
- **the yellow** means receiving / sending Art-Net network packet or sending sACN packet,
- **the green** one communicates the status of the Ethernet network, if the diodes emits continuous light, the network is connected, if the diode is not emitting light, there is no access to the network.

# 7 PX760 cooperation with the grandMA2 console

The PX760 gate can work with the grandMA2 console, however, support for devices supporting the RDM protocol requires changing the console settings.

To operate RDM devices, the settings must be changed in the gate **Auto discovery** on enabled, the gate will continuously search for RDM devices. The next step is to enable RDM support in the grandMA2 console.

To do this, go to **Setup → Console → Global Settings**. Select **RDM** option and switch to **On** mode, below is a screenshot of the console:



Next, the **Art-Net Output Active** option should be run in the console. To start it, go to **Setup → Network → Network Protocols** in the console menu and attach it – orange backlight (screen on the next page).

| Setup/Network/Network Protocols |           |            |                |          |        |         |        |          |           | Master 1 |  | Network DMX if Alone  |
|---------------------------------|-----------|------------|----------------|----------|--------|---------|--------|----------|-----------|----------|--|-----------------------|
| Art-Net                         |           | ETC Net2   |                | Pathport |        | sACN    |        | Shownet  |           | Kinet1   |  | Art-Net Output Active |
| Valid                           | Requested | Mode       | Destination IP | LocalSt  | Amount | Network | Subnet | Universe | Delay (m) | Info     |  |                       |
| Yes                             | Yes       | OutputAuto |                | 1        | 8      | 1       | 0      | 0        | 0.00      |          |  |                       |
| New                             |           |            |                |          |        |         |        |          |           |          |  |                       |

The PX760 gate should be connected to the console via an Ethernet cable to the **ETHERCON 2 (ETH1)** connector with the IP address set so that the console is in the same network as the gate. If Gate 2 DMX RDM is on the **2.x.x.x** network with the mask of **255.0.0.0**, then for the device to work together, the console must be on the same network. These settings can be changed in the console by going to the **Setup → Network → MA Network Configuration**.

| Setup/Network/MA Network Configuration |          |                  |          |       |       |       |       |       |       | Save to Default |        | Load from Default |  | Master 1       |  | X      |  |
|--|----------|------------------|----------|-------|-------|-------|-------|-------|-------|-----------------|--------|-------------------|--|----------------|--|--------|--|
| Console                                |          | onPC             |          | NPU   |       | 3D    |       | VPU   |       | NDP Dimmer      |        | DMX Node          |  | Network Switch |  | Bridge |  |
| IP                                     | DHCP     | IP               | Hostname | Type  | XLR A | XLR B | XLR C | XLR D | XLR E | XLR F           | XLR In | MIDI TC           |  |                |  |        |  |
| ETHERCON 1(ETH0)                       | ETHERCON | ETHERCON 2(ETH1) | RUJA2    | Light | Out 1 | Out 2 | Out 3 | Out 4 | Out 5 | Out 6           | Off    | TC Slot 1         |  |                |  |        |  |
| 192.168.0.2                            |          | 2.0.0.10         |          |       |       |       |       |       |       |                 |        |                   |  |                |  |        |  |
| New                                    |          |                  |          |       |       |       |       |       |       |                 |        |                   |  |                |  |        |  |

If everything is correctly configured, the gate continuously searches for the devices supporting the RDM protocol, the console is in the same network as the gate and has enabled RDM and Art-Net Output Active support. After adding the main RDM window to the main screen, you should see a list of all devices that supported the RDM protocol:

| RDM        |            |                  |          |           |                      |                          |              |  |  | All | Parameters and Sensors |
|------------|------------|------------------|----------|-----------|----------------------|--------------------------|--------------|--|--|-----|------------------------|
| ID Fixture | ID Channel | Name             | Universe | DMX START | MANUFACTURER LABEL   | DEVICE MODEL DESCRIPTION | DEVICE LABEL | DMX PERSONALITY                        |  |     |                        |
| Unmatched  | Unmatched  | 0000505806603E43 | 3        | 1         | PXM sp.k.            | PX713                    | PX713        | 1 DMX 1 / Serial Driver                |  |     |                        |
| Unmatched  | Unmatched  | 0000505857D0DFD3 | 2        | 1         | PXM sp.k.            | PX713                    | PX713        | 1 DMX 1 / Serial Driver                |  |     |                        |
| Unmatched  | Unmatched  | 0000525300600746 | 1        | 1         | Robe Lighting s.r.o. | Robin 800 LEDWash        | EVENTLIGHT   | 1 DMX 38 / DMX Preset 1 - footprint 38 |  |     |                        |
| Unmatched  | Unmatched  | 0000525300600790 | 1        | 1         | Robe Lighting s.r.o. | Robin 800 LEDWash        | EVENTLIGHT   | 1 DMX 38 / DMX Preset 1 - footprint 38 |  |     |                        |
| Unmatched  | Unmatched  | 00005253006014E2 | 1        | 1         | Robe Lighting s.r.o. | Robin 800 LEDWash        | EVENTLIGHT   | 1 DMX 38 / DMX Preset 1 - footprint 38 |  |     |                        |
| Unmatched  | Unmatched  | 0000525300601507 | 1        | 1         | Robe Lighting s.r.o. | Robin 800 LEDWash        | EVENTLIGHT   | 1 DMX 38 / DMX Preset 1 - footprint 38 |  |     |                        |

## 8 Art-Net commands

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List of Art-Net commands supported in PX760

| Name             | Value  |
|------------------|--------|
| OpPoll           | 0x2000 |
| OpPollReply      | 0x2100 |
| OpOutput / OpDmx | 0x5000 |
| OpSync           | 0x5200 |
| OpAddress        | 0x6000 |
| OpInput          | 0x7000 |
| OpTodRequest     | 0x8000 |
| OpTodData        | 0x8100 |
| OpTodControl     | 0x8200 |
| OpRdm            | 0x8300 |
| OpFirmwareMaster | 0xf200 |
| OpFirmwareReply  | 0xf300 |

## 9 Upgrade

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In order to update the gate firmware, use the program DMX-Workshop, which is available on the Artistic Licence website:

<http://www.artisticlicence.com>.

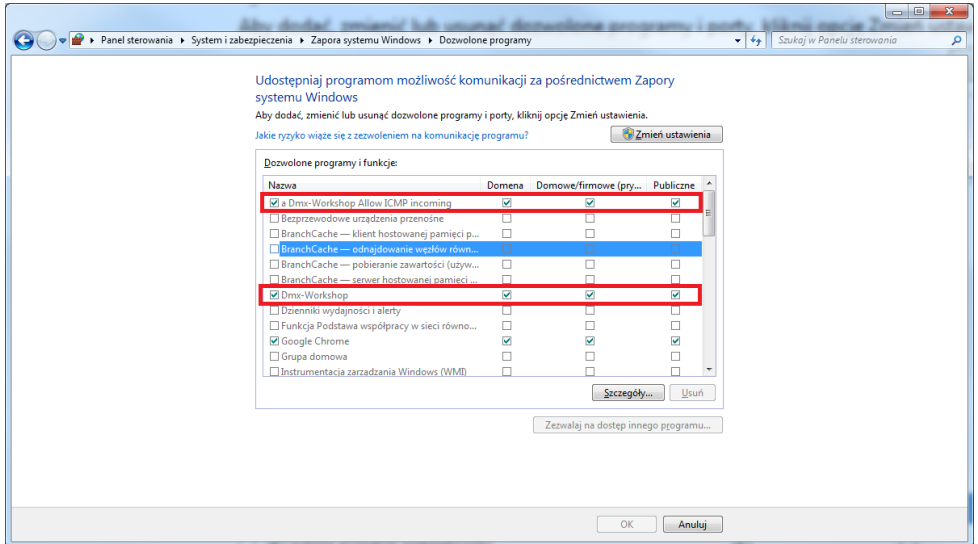
Firmware updates are available on the manufacturer's website.



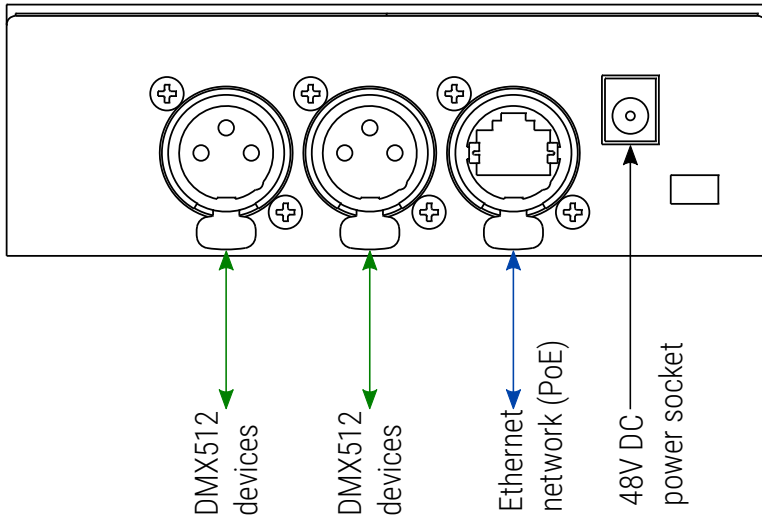
1. In the main menu field select the option **Node List**.
2. In the field **Active Art-Net Nodes** select the device to which you want to upload the update.
3. Right-click the device chosen, selecting in this sequence: **Advanced** → **Programme Upload** → **Firmware**.
4. Using the “magnifying glass” button located to the right of the update access path, download the file with \*.*alf* extension
5. In the **Compatible Devices** field select again the device to update.
6. In order to upload the update, press the button **Upload new Firmware**.

**NOTE!** The firmware update is only available via the Art-Net protocol. To do this, change the **Protocol** setting to **Art-Net**.

**NOTE!** When installing new software, problems may arise due to the Windows® firewall settings. One of the solutions is to completely disable the system firewall for the time of uploading the new firmware version. The second is to add the DMX-Workshop program to the exceptions in the firewall giving all permissions without having to completely disable the firewall.

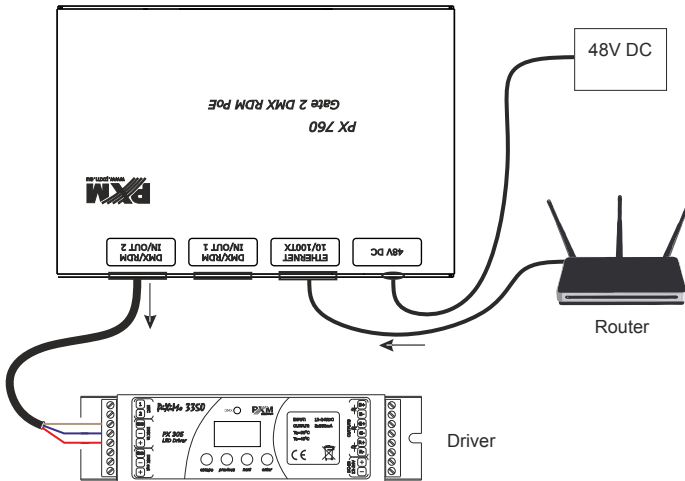


# 10 Connection scheme

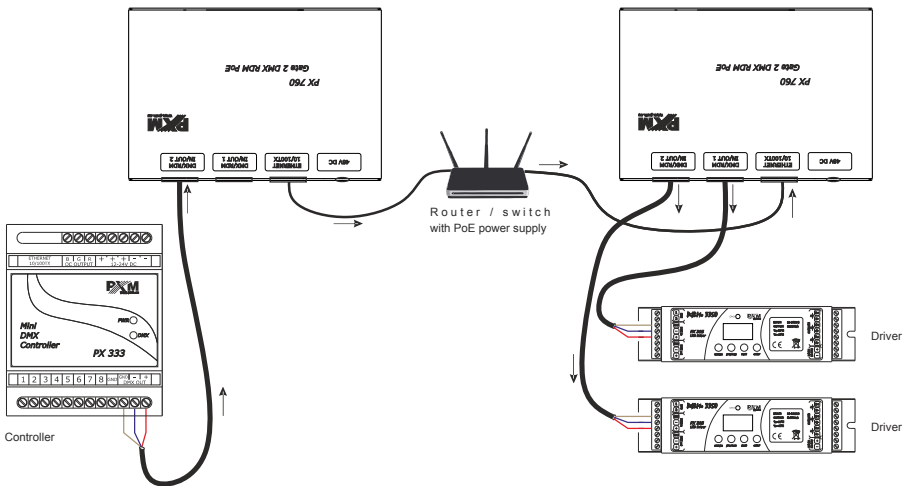




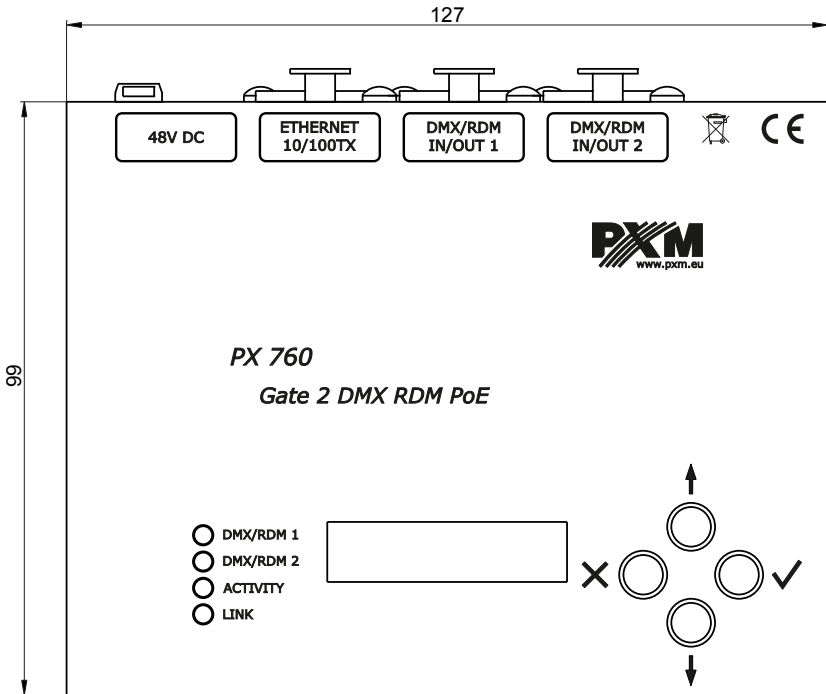
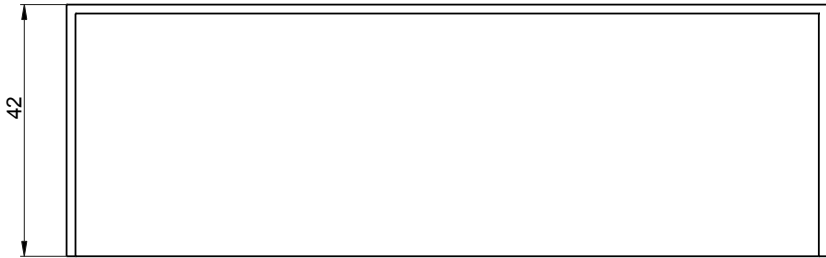
a) device operating in Art-Net / sACN → DMX mode with a 48V DC power supply connected



b) device operating in DMX → Art-Net / sACN mode using PoE power supply in the IEEE 802.3af standard



# 11 Dimensions



## 12 Technical data

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|                                   |   |
|-----------------------------------|---|
| type                              | PX760   |
| DMX/RDM lines                     | 2   |
| DMX/RDM input                     | socket 3-pin or 5-pin Neutrik XLR   |
| RDM protocol support              | yes   |
| bi-directional signal conversion  | yes   |
| optically isolated XLR connectors | yes   |
| galvanic isolated XLR connectors  | yes   |
| Ethernet connector type           | Neutrik etherCON  |
| DHCP protocol support             | yes   |
| Art-Net version                   | Art-Net 1, 2, 3, 4  |
| communication method              | Art-Net / sACN, display and buttons   |
| firmware update                   | through Art-Net 4 protocol  |
| users presets                     | 1   |
| default user presets              | 2 (2.x.x.x and 10.x.x.x)  |
| indications mode                  | Normal, Mute, Identify  |
| “No signal Art-Net” mode          | yes (holding last value)  |
| synchronous mode support          | yes   |
| dark mode (saver)                 | yes   |
| user interface                    | 2 x 16 LCD display, 4 x buttons, 2 bi-color diodes, 2 single-color diodes     |
| power supply                      | PoE (Power over Ethernet IEEE 802.3af) or 48V DC (power adapter not included) |
| power consumption                 | 3W  |
| weight                            | 0.3kg   |

width: 127mm  
height: 42mm  
depth: 99mm

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## DECLARATION OF CONFORMITY

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

we declare that our product:

*Product name:* Gate 2 DMX RDM PoE

*Product code:* PX760

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

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



mgr inż. Marek Żupnik.