

# PIXL

## MANUAL

PiXL

PiXL PRO and

PiXLine

English version

December 2020





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## Keep informed

Read all the instructions in this manual thoroughly.

Special attention must be given to the [General Safety Instructions](#) and [Limitations](#).

Follow the instructions in this manual and maintain a current version for future use.

The latest version can be obtained via the website [www.theaterpixels.com](http://www.theaterpixels.com).

Follow all cautions and warnings stated in this manual and indicated on the device.

Theaterpixels ApS does not bear the damage which may occur due to inobservance of the safety instructions.

## Support

### Online Manuals

A digital version of this manual is available online via the [Theaterpixels website](#).

### Local Support

Please contact your local sales support for assistance and technical support.

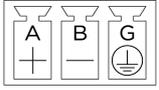
## Installation

### πXL controller

- Unpack the πXL.
- Connect main power **D** and network **A** to the relevant ports on the πXL.
- Set the switch **B** to **P** (Program).
- Set the IP on your computer to 2.0.0.# and the subnet to 255.255.255.0
- Browse to IP **2.0.0.10** for setup of the πXL (see the section [Setup](#)).
- Connect the πXL controller to the ArtNet-network.
- Set the switch **B** to **R** (Run).

**Note:** If the πXL controller has been set up earlier, the IP may be altered. To reset to the factory default, press the reset button **C**. This will only reset the IP and subnet - all other values are left unchanged.



INPUT		INFO
A		Ethernet CAT5 shielded or higher to the RJ45 connector Recommended maximum length is 75 m
B	P R	<b>P</b> (Program) <b>R</b> (run)
C		Push 2 sec. to reset IP to 2.0.0.10 (only when in program mode)
D		Power input. Connect IEC C13 with voltage as shown
OUTPUT		INFO
1 - 8		Controller data output 1 through 8 to πXLine. Recommended use of well shielded twisted pair cables.

## πXLine connector

- Unpack the πXLine.
- Connect data in from the πXL output terminals (**A**, **B** and **G**).
- Connect data out to the LED pixel input connectors.
- Supply suitable power to the πXLine and/or LED pixel.

SIGNAL IN		INFO
<b>A</b>		Signal +
<b>B</b>		Signal -
<b>G</b>		Ground
SIGNAL OUT		INFO
<b>G</b>		Ground
<b>DO</b>		Data out
<b>+5V</b>		Voltage input 5V
<b>Vin</b>		Variable voltage input 12/24V (6-30V)

## Program-mode

### Set controller to program mode

Set the mode select switch to program mode **P** (towards the ethernet socket).

Connect the controller to a network<sup>1</sup> via ethernet cable and connect power to the unit if not already connected.

### Accessing the unit configurator

On a device connected to the same network, use a web browser to access the default IP

*Default network address*

IP	Subnet
2.0.0.10	255.255.255.0

The configurator will look as shown to the right.

### Network

Change the IP and subnet to fit your future network configuration needs.

### Setup

Provide the Artnet starting universe number and input the number of LEDs used per pixel.

Default is 1, but for larger setups 2 or more LEDs may be preferred for each pixel to lower the resolution, maximise the controller output and minimize data load on the network.

Select the LED strip type from the dropdown list or choose the custom type, and input the LED data specified in the data sheet of your LED strip.

<sup>1</sup> The connected network must allow access to the default IP and subnet to enable contact to the unit. Only one default unit should be configured at any time to avoid IP-conflicts.

## Outputs

For each output port 1 to 8 you can input the pixel quantity corresponding to the total connected pixels on each output port.

## Mapping

The start universe is set to give the start address of the 1st pixel in the 1st output.

At **DMX wrap off**, the pixels are filled into the universe until there is no further space for a full pixel.

The next pixel will start in the next universe.

At **DMX wrap on**, the pixels use all 512 DMX-channels and may split a pixel between two universes. Some pixels and/or fixtures are not supporting wrapping.

At maximum pixels on all 8 outputs on the πXL PRO it uses a total of 29 universes.

## Custom chipset

If you set the LED type to Custom, you can input the data for a specific chipset.

You will need to input the **channels, T0H, T1H, frequency** and **reset time**.

If the data is not given by the chipset manufacturer, the values can be calculated:

$$bTime = \frac{1}{Frequency} = TH + TL \quad Frequency = \frac{1}{TH+TL} \quad T0H = \frac{T0H_{LED}}{bTime} \times 255 \quad T1H = \frac{T1H_{LED}}{bTime} \times 255$$

**Reset time** is measured in microseconds

### An example using WS2812B:

Data transfer time (TH+TL=1.25µs±600ns)

T0H	0 code, high voltage time	0.40us	±150ns
T1H	1 code, high voltage time	0.80us	±150ns
T0L	0 code, low voltage time	0.85us	±150ns
T1L	1 code, low voltage time	0.45us	±150ns
RES	low voltage time	> 50µs	

$$bTime = 0.4 + 0.85\mu s = 1.25\mu s \quad Frequency = \frac{1}{bTime} = 800000kbps$$

$$T0H = \frac{0.4\mu s}{1.25\mu s} \times 255 = 81.6 \approx 82 \quad T1H = \frac{0.8\mu s}{1.25\mu s} \times 255 = 163.2 \approx 164 \quad Reset\ time \geq 50$$

## Updating the configuration

When all values are set, click **UPDATE** below the configuration to upload the values to the unit. A confirmation is given when the update is completed.

It is now safe to change to run mode or to turn off the unit.

## Resetting to default IP-values

To reset the controller to the default IP-settings, the controller must be set in program mode **P**. When the reset button is pressed for 2 seconds the controller will reset the IP and Subnet address.

All other settings will NOT be reset - configuration of e.g. addresses will be kept.

# Run-mode

## Set controller to run mode

Set the mode select switch to run mode **R** (away from the the ethernet socket).

Connect the ethernet cable from the controller to a network and power on the unit.

The saved settings are loaded as the unit boots up in run mode.

## Connection problems

If the run mode does not respond to the given ArtNet or does not connect to the network correctly, reset the IP-values as instructed above and evaluate if the given network values are correct and unique in the network.

# Environment, rules and regulations

## Hazardous waste disposal



Dispose of as hazardous waste and follow all local applicable regulations. If the device is disposed of within the European Union, follow the directive WEEE 2012/19/EU (RoHS) and local regulation.

If the device is used outside the European Union, the corresponding country's waste disposal regulations apply.

## Declaration of conformity



For more information see the [Declaration of Conformity](#).

The conformity is only valid for professional installation in a commercial environment and installation that fully comply with this manual.

## Limitations

### Temperature and humidity

-10 to +50°C (20-80 %RH w/o condensation) during operation, storage and transport.

### Protection from the environment



- Follow all safety instructions.
- Only use the device within its operating limits (temp. and humidity).
- Only use the device indoors.
- Air must be free of dust and any hazardous or explosive substances.
- Avoid jolting and abruptly or roughly shaking.
- Do not use it near water or near splashing water - including rain and heavy moisture.
- Do not place the device where it can come in contact with corrosive gases or saline air as this can cause maloperation.
- The device may be sealed in a suitable environmental protection case when following all general safety instructions.

## Protection during transport

The πXL-series must be protected from environmental factors such as physical shocks (jolting) and vibration during transportation.

Remove all cables before transport as the connectors may take damage if connected cables are pulled, mangled or otherwise physical impacted.

The user is responsible for securely fastening the products for transport and for following the manufacturer's safety instructions when transporting the device.

Noncompliance of the safety instructions can result in injury or material damage.

Do not place any πXL product on unstable surfaces and do not place any objects on top of the products.

## Maintenance



- Disconnect the power supply before cleaning.
- Clean only the outside - do **not** open the device for internal cleaning.
- Clean the surface with dry cloth only.
- Do not use a liquid cleanser or compressed air.
- Do not use solvent.

# Declaration of Conformity

## Manufacturer

Theaterpixels ApS  
Bagsværd Møllevvej 3  
2800 Kgs. Lyngby, Denmark

declares that the

## Products

- PiXL
- PiXL Pro
- PiXLine

are conforming to the following

## Safety and regulations



The Conformité Européenne (CE) mark is used based on the conformity of the following directives:

2014/35/EU Low Voltage Directive of 26-FEB-2014

2014/30/EU EMC directive of 26-FEB-2014

## RoHS

2011/65/EU RoHS II directive of 08-JUN-2011

## WEEE

Theaterpixels ApS is registered at Dansk Producent Ansvar (DPA-System) under DK41257075. The WEEE marking on the products is based on this registration and the product MUST be disposed of in a controlled manner.

Please consult the section [Environment, rules and regulations](#) on how to dispose of the EEE after use.

## Additional information

All data lines and signal lines must be shielded and the shielding must be connected to the grounding or the housing of the connector. The device has to be grounded.

### Current version

The information contained in this document was correct at time of issue.

As printed data grows old, it may happen that information in this document is outdated, at the time you read it.

Please find an updated version on the website [theaterpixels.com](http://theaterpixels.com)

All technical specifications are subject to change without notification.

We do not assume liability for any incorrect information in this document.

## Data sheet

### πXL

Power in	100-240v AC via IEC C13	
Max. power	36W	
Data in	Ethernet RJ45	
Data output	8 X pluggable terminal block (3 pin)	
Output capacity	Basic	2.720 RGBs (340 pixels / output) 2.040 RGBW (255 pixels / output channel)
	Pro	4.800 RGBs (600 pixels / output channel) 3.600 RGBW (450 pixels / output channel)  LEDs linked 2 or more per pixel: Up to 8.000 RGBs (500 pixels / output channel) Up to 6.000 RGBWs (450 pixels / output channel)
Compatibility	All standard pixel strips using the single data line w/ or w/o redundancy (using πXLine). See <a href="http://theaterpixels.com">theaterpixels.com</a> for detailed compatibility.	
Cable length	Up to 1.200 meter depending on data transmission speed, cable type (twisted cable) and environment.	

### πXLine

Power in	5V (4,75-5,25V) or 12/24V (6-30V)
Max. power	Total consumption is subject to connected LEDs. Chip consumption is max. 2,5W
Data in	Pluggable terminal block (3 pin) Data incoming from πXL
Data output	Pluggable terminal block (4 pin) - 2 used for data
Output capacity	See πXL
Cable length	As short as possible as data output is prone for data disturbance. Keep cables shielded and away from electromagnetic emitting devices and/or cables.





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CVR: DK 41 25 70 75

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