ArtNet PixxControl PX1

User Manual

For your own safety, please read this user manual and warnings carefully before installation.

Content

Decription

The **ArtNet PixxControl PX1** is a compact ArtNet (DMX over Ethernet) interface, which converts ArtNet directly in one independent control signal for several digital LEDs.

For the ArtNet network connection a standard RJ45 network connector is used.

Output with selectable pixel data protocol
The ArtNet PixxControl PX1 provides a configurable output where the pixel data protocol (control signal) can be selected for different LED pixel types and other parameters.

Selectable color sequence
The RGB color sequence is adjustable, which allows flexible use. It is also possible to control RGBW pixels. Furthermore, a SingleColor option can be selected, where each pixel needs only one channel.

Adjustable pixel group
The ArtNet PixxControl PX1 supports pixel groups with adjustable lengths. Each pixel group behaves like a single pixel that is controlled via 3 DMX channels (RGB) or 4 DMX channels (RGBW). This allows to reduce channels in installations with many pixels.

RGB-LED Display
The RGB-LED displays the current operation status of the ArtNet PixxControl PX1 clearly.

Switchable LED-Display
The LED displays on the ArtNet PixxControl PX1 can be switched off via ArtNet command (AcLedMute), RDM (DISPLAY_LEVEL) or time-controlled. This is especially helpful on stage to avoid disturbing "light spots".

RDM
Important parameters such as the pixel type, the pixel group size or the color sequence can be set individually via RDM.

Free RDM-Software
To set parameters via RDM our free software RDM-Configurator is available as download on our website www.dmx4all.de .

DMX4ALL Communication-Interface
The ArtNet PixxControl PX1 has another communication interface which uses the DMX4ALL commands via TCP or UDP.

Easy Configuration
A user-friendly configuration via a web browser allows quick and uncomplicated setting of all parameters. No special software is needed a normal web browser is enough. This means that the configuration is possible at any time from a PC, smartphone or tablet.

To set the IP address easily, the IP Configurator is offered as free download as a PC tool or Android app. This allows the network settings of the PC or Android device to remain unchanged in order to configure the IP of the ArtNet PixxControl PX1.

Combinable with WiFi components
The ArtNet PixxControl PX1 can be integrated into WLAN networks in combination with a WLAN bridge.

Firmware-Update function
To use future functions, the ArtNet PixxControl PX1 offers a firmware update function. The update can be started from a web browser, so no access to the device is necessary!

Top-hat rail housing available
The top-hat rail housing 350 or 350flat is available as accessory for the ArtNet PixxControl PX1.

Data sheet

Power supply:	8-24V DC (100mA @ 12V / 50mA @ 24V)
Connections:	RJ45 Ethernet 5pin screw terminal
Ethernet:	10 Mbit/s | 100 Mbit/s
Protocol:	ArtNet RDM
Output protocol:	APA-101, APA-104, APA-102, DycoLED PB3, DycoLED PB5, GS8208, INK1002, INK1003, LC8808, LPD1101, LPD8803, LPD6803, LPD8806, LPD1886 8Bit, LPD1886 12Bit (8Bit controlled), SK6812, SK6822, SK9822, SM16703, TM1804, TM1812, TM1814, TM1829, TM1934, UCS1903, UCS1912, UCS2903, UCS2912, WS2801, WS2811, WS2812, WS2812B, WS2813, WS2815, WS2818, WS2821 _{max. 1360 pixel} LPD1886 12Bit (12Bit controlled), UCS9812 (8Bit controlled), UCS9812 (16Bit controlled) _{max. 680 pixel}
Color sequence:	RGB settable / RGBW SingleColor white, red, green, blue
Pixel groups:	1 up to 127 Pixel / All
Gamma correction:	Settable _{for LPD1886 12Bit (8Bit controlled), UCS9812 (8Bit controlled)}
LED-Display:	RGB Status-LED Ethernet-Status-LEDs yellow and green
Dimension:	29,2mm x 82mm

Content

1x   ArtNet PixxControl PX1
1x   Quick guide german / english

Model Overview

The different models of the ArtNet PixxControl series provide a different range of functions and are available in different versions.

Model	ArtNet PixxControl **PX1**	ArtNet PixxControl **PX2**	ArtNet PixxControl **PX2+**
Version	Board	Board	Mounted Device
Data Output	1	2	2
Universes	up to 8	2x up to 8	2x up to 8
RDM	✓	✓	✓
Voltage Monitoring	✗	✓	✓
CTRL Output	✗	✓	✓
RGB-Status-LED	✓	✓	✓
PWR LEDs	✗	✗	✓
DATA LEDs	✗	✗	✓
Pixel-Types	APA-101, APA-102, APA-104 DycoLED PB3, DycoLED PC5 GS8208 INK1002, INK1003 LC8808(B), LPD1886 8Bit, LPD1886 12Bit, LPD1101, LPD6803, LPD8806 SK6812, SK6822, SK9822 SM16703 TM1804, TM1812, TM1814, TM1829, TM1934 UCS1903, UCS1912, UCS2903, UCS2912, UCS9812 WS2801, WS2811, WS2812(B), WS2813, WS2815, WS2818, WS2821		
Color sequence	RGB (sequence settable) SingleColor white SingleColor red SingleColor green SingleColor blue RGBW		
Configuration	Web-Interface / RDM / DMX4ALL Commands		

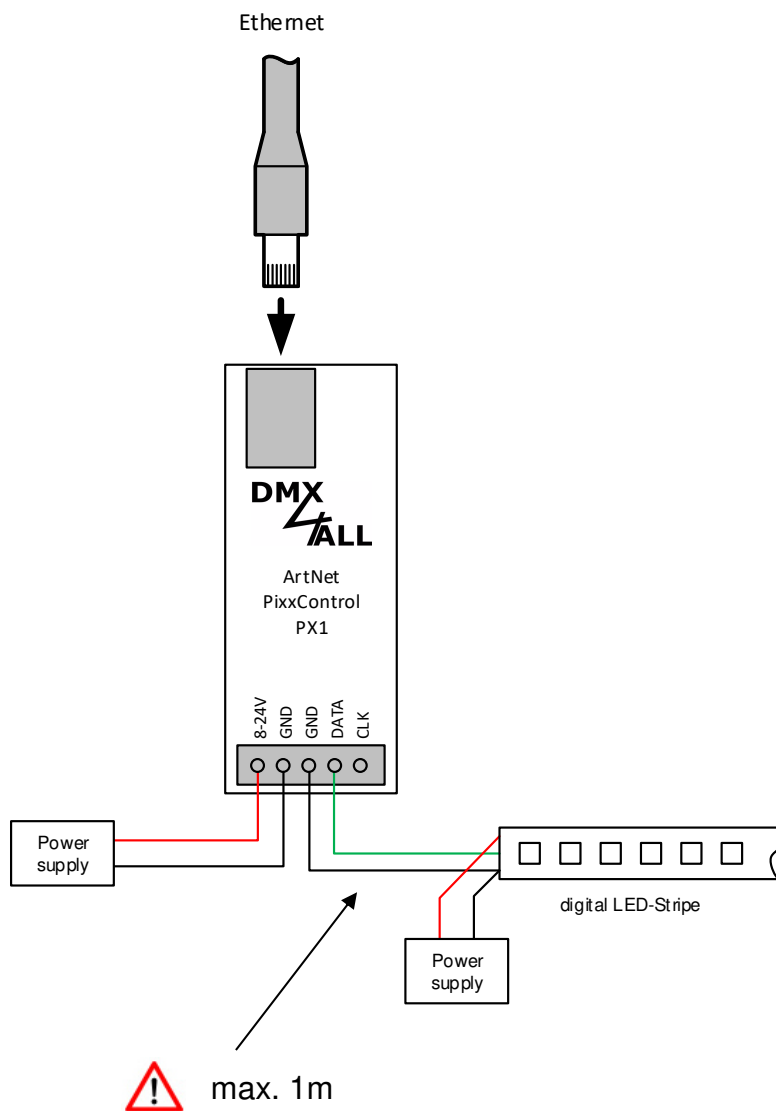✗   Not available in this version   ✓   Available in this version
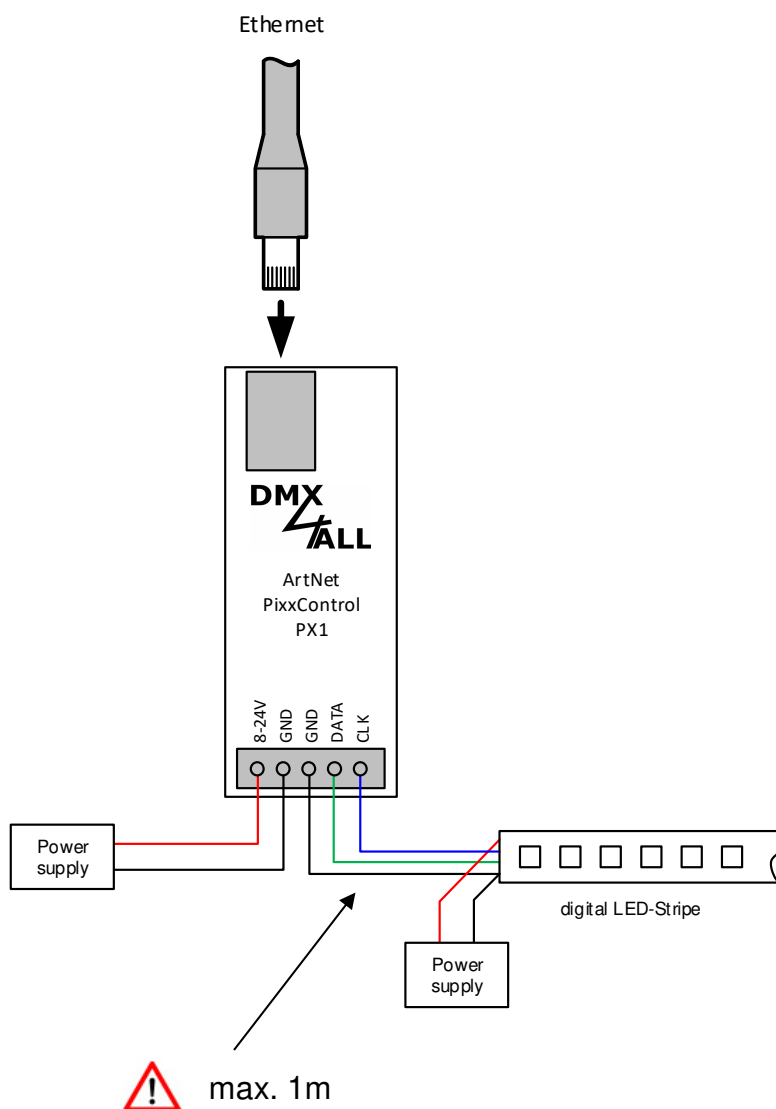
Connection

Connection of digital LEDs with one control signal (DATA)

For digital LEDs with **one** control signal only DATA and GND must be connected (e.g. WS2811 / SK6812 / APA-104 / TM1804).

## Connection of digital LEDs with two control signals (CLK+DATA)

For digital LEDs with **two** control signals DATA, CLK and GND must be connected
(e.g. WS2801 / APA-102 / SK9822).

Ethernet

DMX
4ALL

ArtNet
PixxControl
PX1

8-24V GND GND DATA CLK

Power
supply

Power
supply

digital LED-Stripe

⚠ max. 1m

Connection with long data lines

For longer data lines (more than 1m) and by using digital LED stripes, the use of a PixxRangeExtender is recommended to prepare the control signal and isolate the individual areas.

In this case, the PixxRangeExtender is connected directly in front of the signal input of the digital LED stripe.
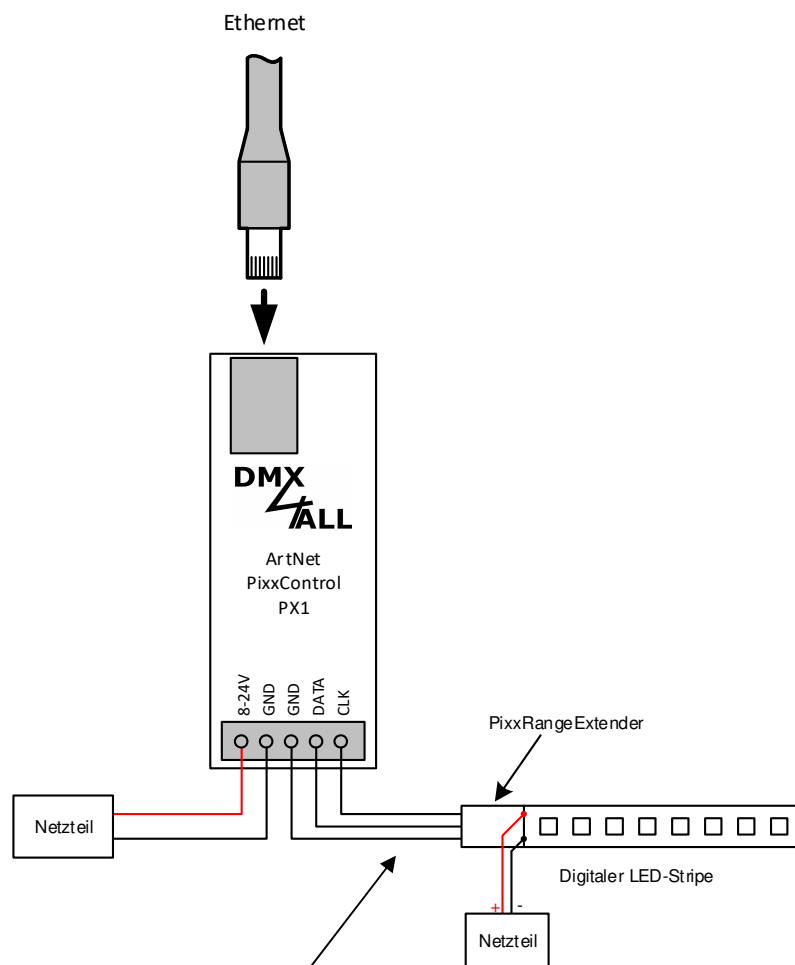
With PixxRangeExtender long data lines possible
(not more than 50m recommended).

Power supply digital LED-Stripes

Generally digital LED-Stripes are operated with a power supply of 5V.
Relatively high currents for the complete installation are the result.

A voltage drop occurs on the digital LED-Stripe itself, so little by little the brightness reduces. Furthermore, this is the reason for different color reproduction in case of using RGB/RGBW-Stripes. A steady supply of voltage is necessary.

Several decentral power supplies or one central power supply can be used for voltage/power supply. The cross-sections of the supply lines to the digital LED-Stripe must be sufficiently dimensioned !

Connecting LED-Stripes with several power supplies

If several power supplies are used, these can be installed decentral. The supply lines can be shorter in this case.
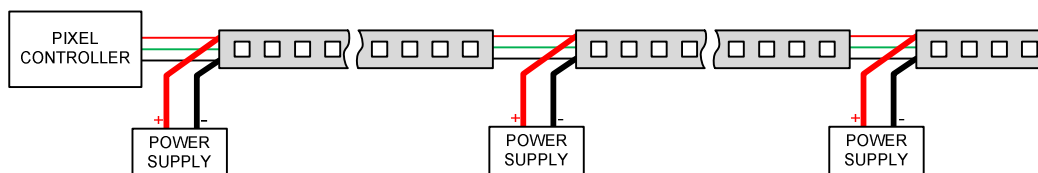

In case of long distances within the installation the PixxRangeExtender 5V can be used to purify the control signal and to isolate single areas.
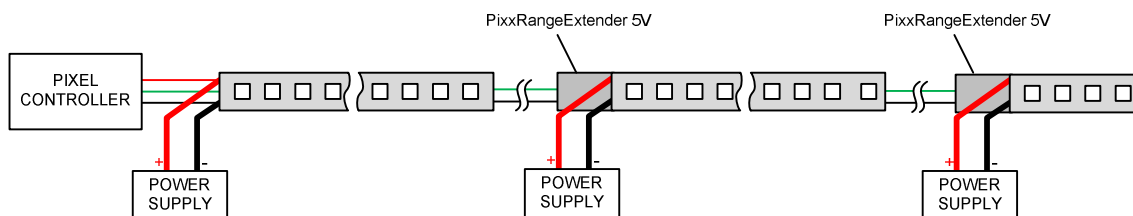
Connecting LED-Stripes with one power supply

The supplies must be calculated adequately in its dimension if only one power supply with the needed high power is provided. To ensure a low voltage drop on the cable route this is necessary.
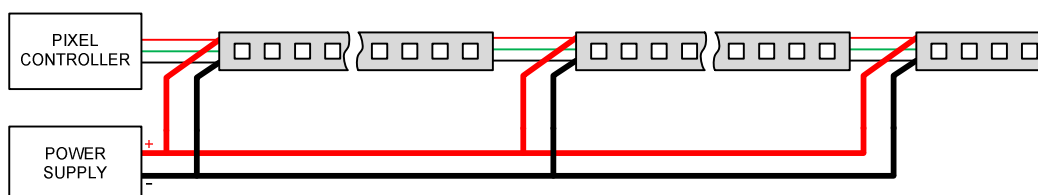
LED Display

The **ArtNet PixxControl PX1** has several display status LEDs.

A green and a yellow LED is on the Ethernet port, showing the network activity.

Furthermore, a RGB-LED signals the device status.

Green Ethernet-LED

Off	Power supply not connected / Display in MUTE mode
Flashes	No Ethernet connection available
Lights	Ethernet connection available

Yellow Ethernet-LED

Off	No data transfer / Display in MUTE mode
Flashes	Data transfer takes place

RGB Status-LED

Off	Power supply not connected / Display in MUTE mode
RED lights	No Ethernet connection
GREEN lights	Device works normally
BLUE lights	Device is ready to switch to update mode
BLUE flashes	Device is in update mode
GREEN / BLUE in rotation	Pixel data are received
RED / GREEN / BLUE in rotation	RDM Identify or Art-Net Locate is signaled

# Device Settings with Web-Interface

The device settings of the **ArtNet PixxControl PX1** occur via a web interface, which can be called up via any web browser.

Before calling the web page, the IP of the ArtNet PixxControl PX1 must match to the existing network. The IP can be set via the IP configurator or the PC must be set to the ArtNet network.

Set IP via IP-Configurator

The **IP Configurator** allows setting the IP address and the netmask even if the network setting of the PC is not in the IP range of the ArtNet PixxControl PX1.

- Install the IP-Configurator
- Connect the ArtNet PixxControl PX1 with the network
- Turn on ArtNet PixxControl PX1
- Start the software IP-Configurator
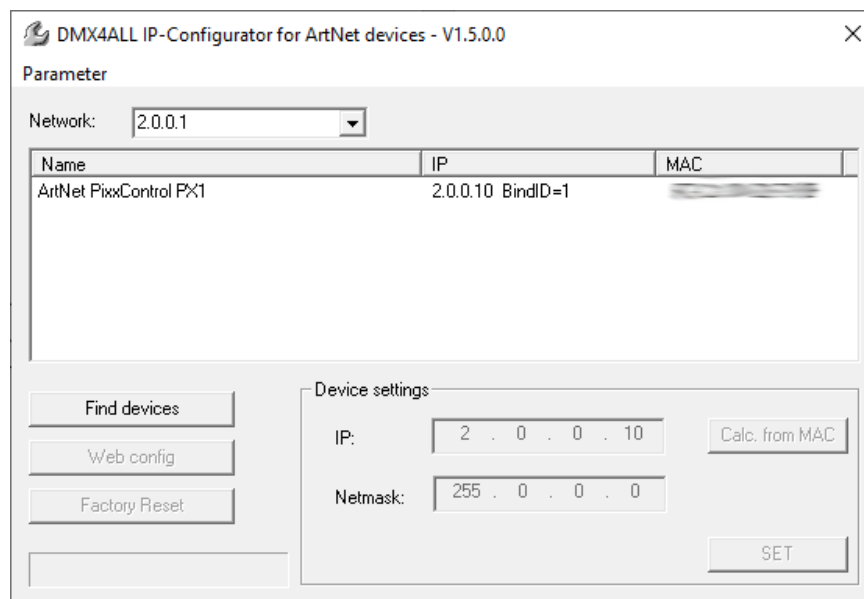
- The ArtNet PixxControl PX1 is shown in the list
- Select the device by clicking the entry
- Enter the new IP and Netmask
- Click SET

Set IP of the PC

Within the delivery state, the assigned **IP address** is **2.0.0.10** used for the web interface.

Set the computers network card to this IP range, to access the IP address 2.0.0.10 via a web browser.

⚠️ The network setting of the computer must be set to the **IP address 2.0.0.1** and the **subnet mask 255.0.0.0** .

For further details, please take a look to the Art-Net™ specification.
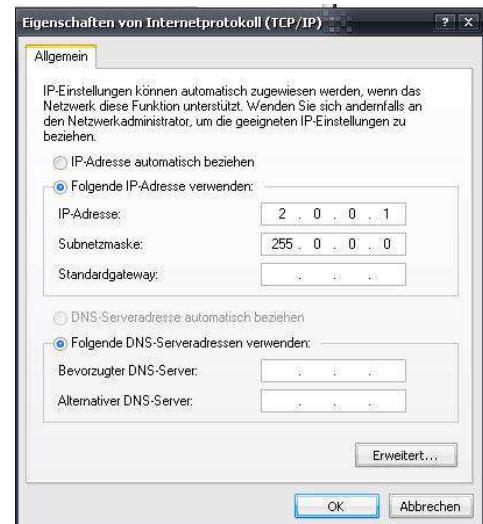
Device Settings

To get the following configuration page, the IP of the ArtNet PixxControl PX1 must be called up via a web browser in the address bar (delivery state: 2.0.0.10):

Network Settings

⚠️ Each device needs an own **IP-Address** that the assignment occurs clearly within the network. Please use in accordance to the ArtNet-Specification the IP-Address 2.x.x.x or 10.x.x.x with the **net mask** 255.0.0.0 .

Any other IP address can also be used, such as 192.168.1.10 .
In this case the netmask must be adjusted to 255.255.255.0 !

The ArtNet PixxControl PX1 can be named with any name for a better distinction.

The **short name** is limited to 18 characters and the **long name** to 64 characters.

DMX4ALL Command Options

The setting **Protocol** defines whether the DMX4ALL Commands are to be transmitted via UDP or TCP connection and the used port.

The DMX4ALL Command Options are described below under DMX4ALL Command Support.

Additional Settings

If the **LED indicator auto off** option is activated. The LEDs on the device are switched off after ca. 10 minutes of operation with a permanent network connection.

Output Settings

The **Output Settings** specify the settings for the output.

ArtNet Parameter

The parameter **Universe** specifies which ArtNet universe is accepted by the ArtNet PixxControl PX1.
This parameter is composed by the ArtNet parameters **Port**, **SubNet** and **Net**, which are automatically converted in the table.

The universe must be specified for all 8 universes, because for the output the individual universes are output one after the other.

Channels specifies up to which DMX channel the DMX universe is used, before the next one is attached.

1st Uni Start Ch. specifies the first DMX channel for the first DMX universe from which the DMX channels are used.

Output Parameter

LED Type defines which LED type is connected to the output.

Color sequence specifies the color settings. The RGB, RGBW color sequence or control of one color (SingleColor) is possible. In case of SingleColor only one channel per pixel is used for control. Corresponding to the color selection the single color control occurs (e.g. running light blue or white for all colors).

Pixel Group specifies the length of a pixel group. Each pixel group behaves like a single pixel, all pixel of one group are controlled in the same way.

Pixel count defines how many pixel **(RGB-, RGBW- or single color LEDs)** are controlled at the output.

Current FPS displays the current frame rate at the output. It will be continuously identified and updated by the ArtNet PixxControl PX1.

Speed Factor is a setting for the transfer speed in case of digital LEDs with separated clock- and data line.

Master-Brightness specifies the master brightness. This is 1/31 up to 31/31 settable or at channel 512 in the 1 resp. 9 universe (U1C512 resp. U9C512).
Available for APA-102, LPD8806, LPD1101, SK9822

Master-Brightness Red/Green/Blue/White indicates the master brightness separately for the colors red, green, blue and white.
Available for TM1814

Gamma defines the curvature of the output curve. The values are 1.0 / 1.2 / 1.4 / 1.8 / 2.0 / 2.2 . The higher the gamma value, the more the output characteristic curve is curved:

Gamma = 1.0   Gamma =2.0
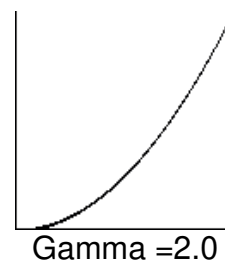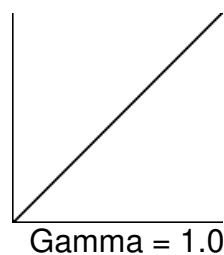
Available for LPD1886 12 Bit (8Bit controlled), UCS9812 (8Bit controlled), TLS3001 (8Bit controlled)

Additional Options

The Enable ArtSync option synchronizes the output of multiple ArtNet devices by using software with ArtSync support.

Login for Web-Interface

The **ArtNet PixxControl PX1** offers the option to create a login for the web interface.

A password can be named on the service site under login options.
An empty password allows the access without password request.

The **User Name** is fixed, can't be changed and is always „Admin".
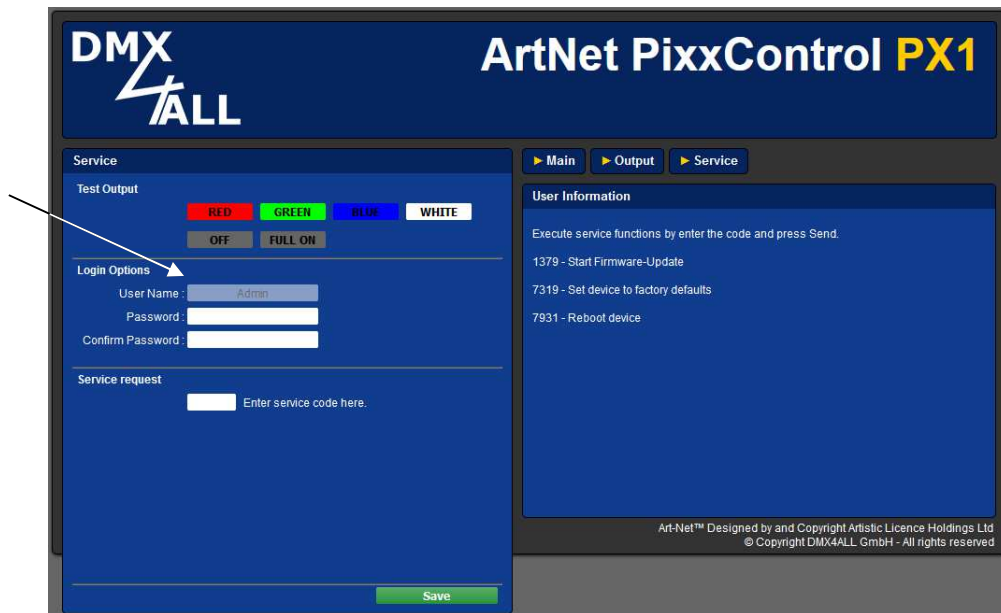
If a password is defined, it will be queried to get the web surface.
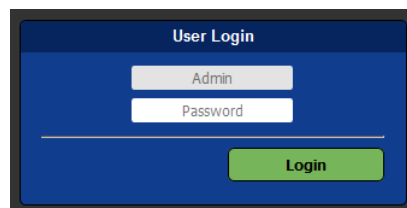
⚠️ If a password is assigned and is no longer known, a factory reset must be
executed to reset and renew the password. In this case, all settings are also
reset to the delivery state!!

Pixel Assignment

8-Bit Control

The **ArtNet PixxControl PX1** controls up to 130RGB pixel. For this up to 8 ArtNet universes are used. With 8-bit control, one channel is used for R, one channel for G and one channel for B, which results in a maximum of 170 RGB pixels per universe.

The single pixels are assigned to the universes as follows:
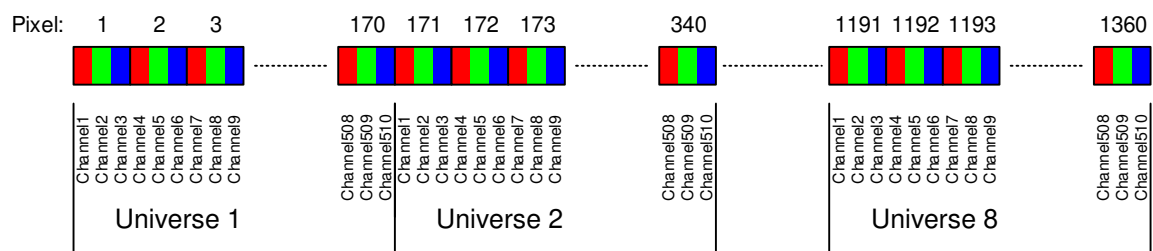
(Color sequence RGB | Channels = 510 | 1st Uni Start Ch. = 1)

Universe	Pixel
1	1-170
2	171-340
3	341-510
4	511-680
5	681-850
6	851-1020
7	1021-1190
8	1191-1360

16-Bit Control

The 16-bit control is available for LED types with more than 8 bits.
These are the LPD1886 with 12 bit and the UCS9812 with 16 bit.

In the 16-bit control always 2 DMX channels are used for one color control.
This means that up to 85 RGB pixels can be controlled per universe.

The single pixels are assigned to the universes as follows:

(Color sequence RGB | Channels = 510 | 1st Uni Start Ch. = 1)

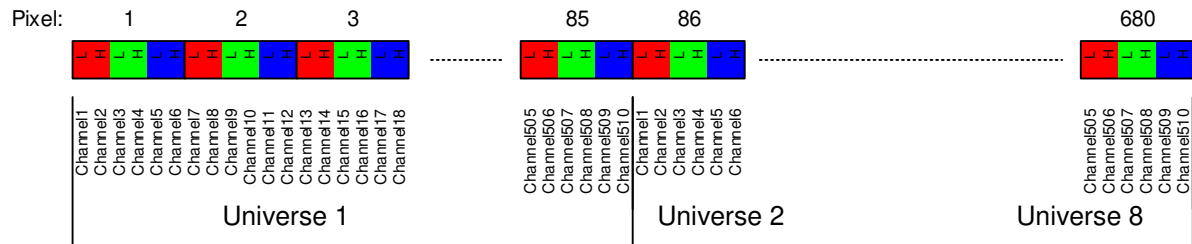| Universe	Pixel
1	1-85
2	86-170
3	171-255
4	256-340
5	341-425
6	426-510
7	511-595
8	596-680

Check connected LEDs

The **ArtNet PixxControl PX1** provides a test output function, to check the connected LEDs easily.

On the web-interface page under Service the function **Test Output** with RED, GREEN, BLUE, WHITE, OFF and FULL ON buttons is available.

By clicking the button, the LEDs on this output are controlled in the corresponding color.
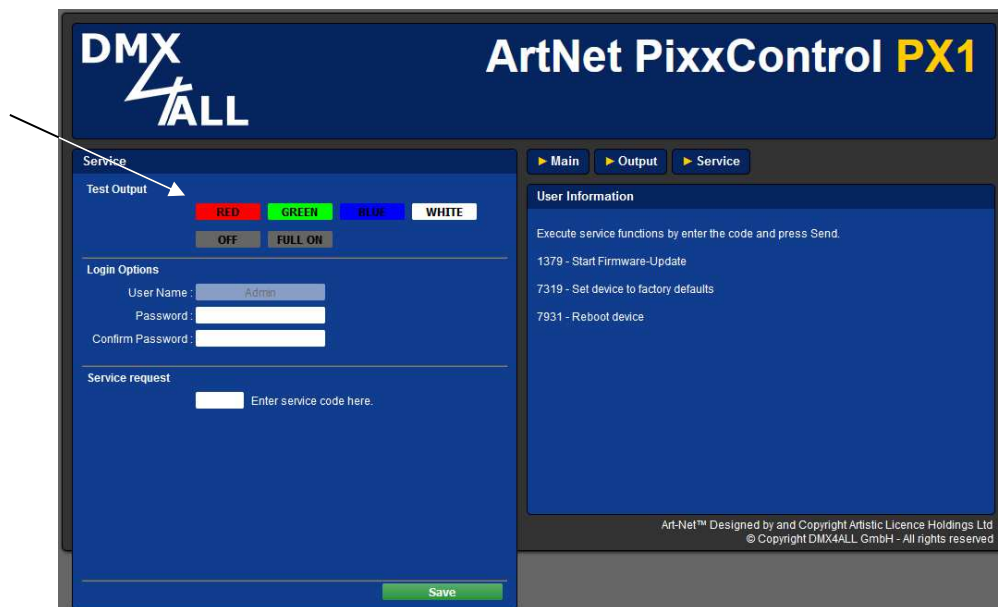
⚠ For the **Test Output** no control signal is to send to the ArtNet PixxControl PX1! An external control signal always has priority over a test output.

RDM

RDM is the short form for **R**emote **D**evice **M**anagement.

The ArtNet PixxControl PX1 provides the RDM functionality via the ArtNet interface.
Device information and settings can be read or set.
A direct access to the device is not necessary.

This device supports the following RDM commands:

Parameter ID	Discovery Command	SET Command	GET Command	ANSI/ PID
DISC_UNIQUE_BRANCH	✓			E1.20
DISC_MUTE	✓			E1.20
DISC_UN_MUTE	✓			E1.20
DEVICE_INFO			✓	E1.20
SUPPORTED_PARAMETERS			✓	E1.20
PARAMETER_DESCRIPTION			✓	E1.20
SOFTWARE_VERSION_LABEL			✓	E1.20
DMX_START_ADDRESS		✓	✓	E1.20
DEVICE_LABEL		✓	✓	E1.20
MANUFACTURER_LABEL			✓	E1.20
DEVICE_MODEL_DESCRIPTION			✓	E1.20
IDENTIFY_DEVICE		✓	✓	E1.20
FACTORY_DEFAULTS		✓	✓	E1.20
DMX_PERSONALITY		✓	✓	E1.20
DMX_PERSONALITY_DESCRIPTION			✓	E1.20
DISPLAY_LEVEL		✓	✓	E1.20

Parameter ID	Discovery Command	SET Command	GET Command	ANSI/ PID
SERIAL_NUMBER[1]			✓	PID: 0xD400
PIXEL_TYPE[1]		✓	✓	PID: 0xD410
GROUP_SIZE[1]		✓	✓	PID: 0xD412
COLOR_SEQUENCE[1]		✓	✓	PID: 0xD413

1) Manufacturer depending RDM control commands (MSC – Manufacturer Specific Type)

Manufacturer depending RDM control commands:

SERIAL_NUMBER
PID: 0xD400

Outputs a text description (ASCII-Text) of the device serial number.

GET   Send: PDL=0
       Receive: PDL=21   (21 Byte ASCII-Text)

PIXEL_TYPE
PID: 0xD410

Sets the used LED-Pixel-Type.

GET   Send: PDL=0
        Receive: PDL=1   (1 Byte PIXEL_TYPE_ID)

SET   Send: PDL=1   (1 Byte PIXEL_TYPE_ID)
        Receive: PDL=0

PIXEL_TYPE_ID	Function
2	DycoLED PB3
3	TM1804
4	WS2801
5	WS2811
6	LPD8806
7	UCS1903 / UCS1912
8	APA-102
9	TM1812
13	LPD1886 8Bit
14	LPD1886 12Bit (8bit controlled)
15	WS2812
17	TM1829 High Speed
18	UCS9812 (8bit controlled)
19	UCS9812 (16bit controlled)
20	LPD6803
21	INK1002
22	INK1003
23	UCS2903 / UCS2912
25	LPD1886 12Bit (12bit controlled)
26	SK6812
27	APA-104
29	DycoLED PC5
30	TM1829 Low Speed
31	TM1814
32	SK9822
33	APA-101
34	TLS3001 8Bit
37	SK6822
40	GS8208
41	WS2815
42	WS2818
43	LC8808(B)

GROUP_SIZE
PID: 0xD412

Sets the size of the pixel group.

GET   Send: PDL=0
        Receive: PDL=1   (1 Byte pixel group size)

SET   Send: PDL=1   (1 Byte pixel group size)
        Receive: PDL=0

Parameter	Function
1-127	pixel group size
254	All

COLOR_SEQUENCE
PID: 0xD413

Sets the used color sequence.

GET   Send: PDL=0
        Receive: PDL=1   (1 Byte COLOR_SEQUENCE_ID)

SET   Send: PDL=1   (1 Byte COLOR_SEQUENCE_ID)
        Receive: PDL=0

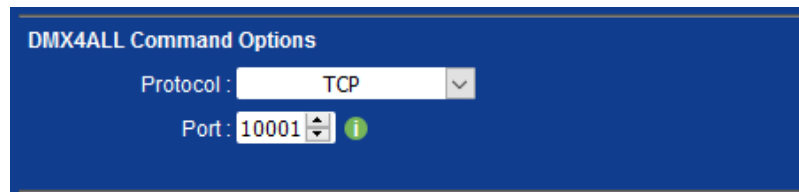| COLOR_SEQUENCE_ID	Function
0	R-G-B
1	R-B-G
2	G-R-B
3	G-B-R
4	B-R-G
5	B-G-R
6	WHITE Single color
7	RED Single color
8	GREEN Single color
9	BLUE Single color
10	RGBW
11	RGBRGBRGBWWW

DMX4ALL-Command Interface

The **ArtNet PixxControl** PX1 has a further communication interface, using DMX4ALL-Commands.

Please take a look in the separate DMX4ALL Command description for the possible DMX4ALL-Commands.

The settings are to be made in the Main Settings under DMX4ALL Command Options.

Under **Protocol** please select the **TCP** or **UDP**
Furthermore, the **Port** must be specified:

To control the interface directly via a UDP/TCP connection, use the IP address set in the web browser and use the port set (default setting 10001).
The sent and received data are RAW data packages.

Factory Reset

To reset the **ArtNet PixxControl PX1** to the delivery state, proceed as follows:

To get the delivery status via **web browser** please proceed as follows:

- Open service site in web browser
- Enter the service code „7319" into input field
- Click *Save*
- Wait at least 10 seconds

> ⚠ If a factory reset is performed via the web page, the IP address and subnet mask will be also reset.
> It is not always possible to return. The IP must be reset if necessary.

To get the delivery status via **DMX4ALL LAN-Updater**:

- Turn on the device
- Start software **DMX4ALL LAN-Updater**
- Click *FIND*
- Chose device **ArtNet PixxControl PX1** from list
- Click **FACTORY RESET**
- The reset is now executed

To get the delivery status via **DMX4ALL IP-Configurator**:

- Turn on the device
- Start software **DMX4ALL IP-Configurator**
- Click *FIND*
- Chose device **ArtNet PixxControl PX1** from list
- Click **FACTORY RESET**
- The reset is now executed

Firmware-Update

The **ArtNet PixxControl PX1** has an update function which allows to transfer further firmware versions.

Proceed as follows:

- Start the update software **DMX4ALL LAN-Updater**
- Click *FIND*, if device is not shown in the list
- Chose **ArtNet PixxControl PX1** from list
- Click *Firmware-Update*
- Chose and confirm firmware file (.bin)
- Wait, until the update is completed

⚠️ If an error occurs during the update, a firmware update can be started again after turning on (alternative 1).

Alternative 1: Firmware Update after power-on (in case of firmware):

- Turn off device
- Start update software **DMX4ALL LAN-Updater**
- Generate network connection
- Turn-on device
- The status LED lights for ca. 3 seconds blue
- During the status LED lights blue click *FIND*
- Chose **ArtNet PixxControl PX1** from list
- Click *Firmware-Update*
- Chose and confirm firmware file (.bin)
- Wait, until the update has finished

Alternative 2: Activate firmware update via web browser:

- Open service site on web browser
- Enter the service code „1379" into input field and
- Click *Save*
- Start the update software **DMX4ALL LAN-Updater**
- Chose **ArtNet PixxControl PX1** from list
- Click *Firmware-Update*
- Chose and confirm firmware file (.bin)
- Wait, until the update has finished
- Click *Back* in web browser

Dimension
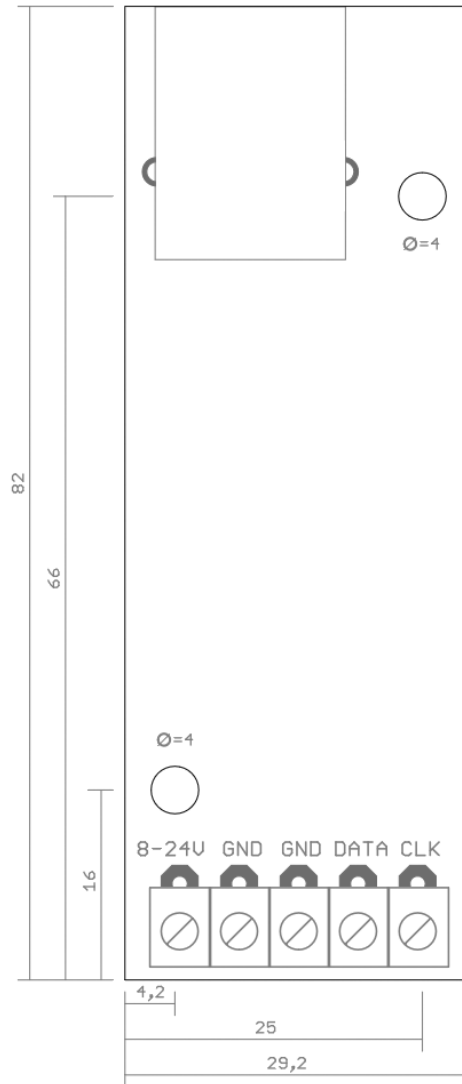
All Details in mm

Accessories

Top hat rail mounting 350

Top hat rail mounting 350flat

Wall bracket for top hat rail housing
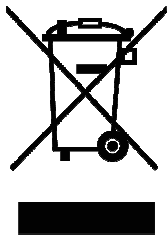
Power supply 12V

CE-Conformity

This assembly (board) is controlled by a microprocessor and uses high frequency. In order to maintain the properties of the module with regard to CE conformity, installation into a closed metal housing in accordance with the EMC directive 2014/30/EU is necessary.

Disposal

Electronical and electronic products must not be disposed in domestic waste. Dispose the product at the end of its service life in accordance with applicable legal regulations. Information on this can be obtained from your local waste disposal company.

Warning

This device is no toy. Keep out of the reach of children. Parents are liable for consequential damages caused by nonobservance for their children.

Risk-Notes

You purchased a technical product. Conformable to the best available technology the following risks should not excluded:

Failure risk:
The device can drop out partially or completely at any time without warning. To reduce the probability of a failure a redundant system structure is necessary.

Initiation risk:
For the installation of the board, the board must be connected and adjusted to foreign components according to the device paperwork. This work can only be done by qualified personnel, which read the full device paperwork and understand it.

Operating risk:
The Change or the operation under special conditions of the installed systems/components could as well as hidden defects cause to breakdown within the running time.

Misusage risk:
Any nonstandard use could cause incalculable risks and is not allowed.

Warning: It is not allowed to use the device in an operation, where the safety of persons depend on this device.

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