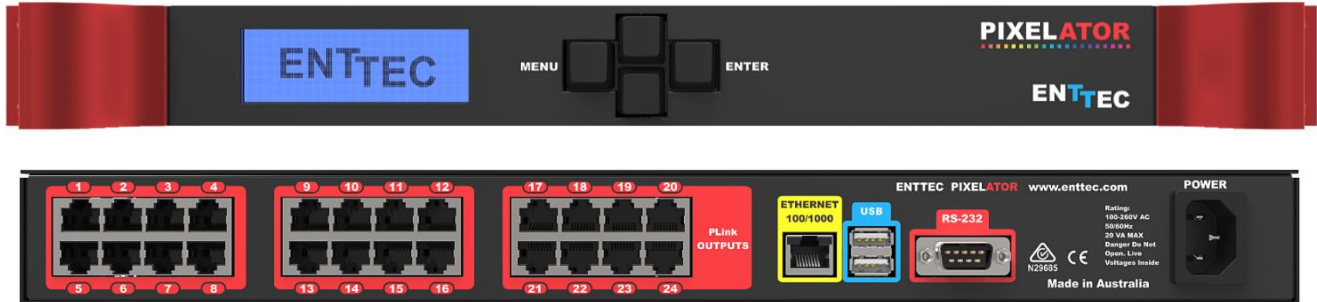# PIXELATOR

(PN 70060)

Box Contents

- Pixelator (Part #:70060)
- Straight connect Ethernet lead (Part #: 79102)
- IEC power cord (country dependent plug)
- User manual (Part #: 50657)

LED Protocols Supported

- 9PDOT-8bit and 9PDOT-16bit
- WS2811, WS2812, WS2813, WS2812B
- APA-104 LEDs
- SK6812 – use WS2812B
- TM1804 – use WS2812B
- TM1812 – use WS2812B

Notes:

- 9PDOT protocols are only supported by revB (units sold from 2017 onwards)

- We cannot claim to support other led protocols similar to the ones supported by Pixelator. If you happen to find one that works, and is not listed, please let us know, so we can update our documentation

Physical Dimensions
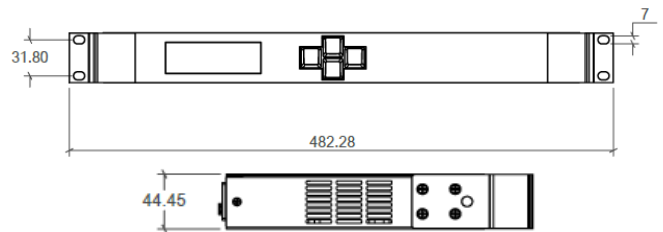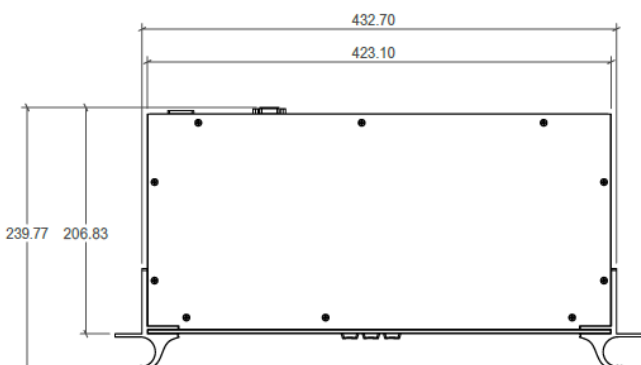
Note:

- All dimensions are in millimetres unless specified otherwise

Features

- 24 Pixel Link (RJ-45) ports (data output only)
- Superfast Gigabit ethernet connection – delivers best performance.
- Dual core CPU, with a clock speed 2GHz – provides efficient and reliable output
- 1GB DDR3 RAM – allows best utilization of the system.
- Pixel Protocol is configurable for each Pixel Link port
- Pixel Grouping is configurable for each Pixel Link port (up-to 340)
- Pixel Ordering is configurable for each Pixel Link port (RGB and RGBW modes)
- Each Pixel Link can be assigned up to 2 Ethernet Universes. (allows 340 individual LEDs to be assigned from each port in RGB modes)
- Each port outputs at least 40 frames per second
- Supports following DMX over Ethernet protocols:
  - ESP
  - Art-Net
  - StreamingACN (sACN)
  - KiNet

- ArtSync support to ensure all outputs are in synchronization with each other.

- All configurations are made through web browser.

- Graphical User Interface for creating and editing ports is flow-chart oriented and documents data flow as you configure it.

- Clock module to sync multiple universes output

- DMX Generator and Stream snapshot (web).

- LCD display to provide status information on system and data flow

- Recommended to be used with ELM (industry award winning LED Mapper software)

Safety

- Do not expose the unit to rain or moisture, doing this will void the warranty

- Do not remove the cover, there are no serviceable parts inside

- Since the Pixelator is designed to run 24/7, the fan will always remain on, however it can be disabled if needed.

Basic Setup

ENTTEC Pixelator is a standard Art-Net node. Because of this, you can use the device with applications, consoles, desks, or controllers that are compatible with Art-Net to distribute Art-Net data via Ethernet network.

With the default profile, each Pixel Link port is mapped to its respective Art-Net Universe, allowing you to directly plug-in your Pixelator without the need for configuration.

Pixel Tape needs to be connected to the Pixel Link port using a PLink Injector (sold separately). The injector takes external DC power and has appropriate terminals to connect the tape.

Getting Started

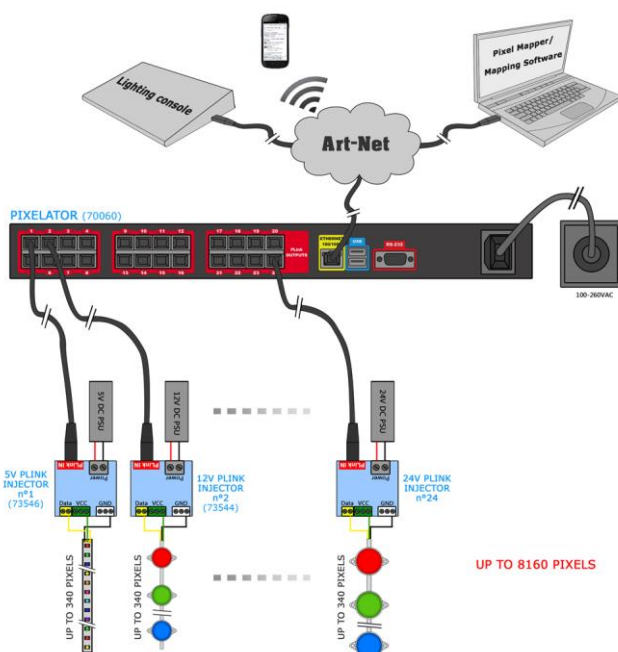To begin your installation please follow these steps.

1. Unpack the unit from the box. Inspect the Pixelator for any damage that might have occurred in shipping, and verify that it looks to be in good condition before plugging it in to power.

2. The Pixelator occupies a single unit (1U) in a 19 inch rack. You may attach it to the rack either at this time or later after configuring it, if desired.

3. Attach a power cord with mains voltage to the IEC input on the back.

4. Using an Ethernet Cat5, Cat5E or Cat6 cable, connect the Pixelator to an Ethernet Network.

5. When the unit turns on, you will be able to see its initial IP address on the LCD panel which looks like w.x.y.z, where each letter is a number between 0 and 255. Note that IP address down for later use.

6. The LCD displays the IP address of the unit at all times (except when it's booting), but if not possible to check the LCD, NMU App (available for Windows & Mac) can be used to detect the Pixelator on your network. NMU can be downloaded here: www.enttec.com/nmu

Profiles

Profiles are essential to the operational philosophy of the Pixelator. With a profile selected, the device knows how to utilize the many resources it can make use of to perform lighting control tasks.

Each Profile contains configuration information for some or all of the following:

Pixel Link (PLink)

These are the physical PIXEL Link ports (1-24)

Ethernet Streams

These are the DMX over Ethernet universes. (Art-Net, ESP, KiNET, ACN)

Routing Diagram

The routing diagram is the visual representation of the Profile itself and it tells the Pixelator how frames are moved or routed inside the routing engine, as well as what to do with multiple sources of data that need to be merged, when that option is engaged. Other special operations can be part of a diagram as well, such as Channel Shifter, Output Switch, etc.

Factory Profiles

The Pixelator has a set of factory profiles, to start you off. You're likely to see 2 or more of the following:

- Artnet24->Pixel24: This profile will take 24 Art-Net universes and convert them to 24 Pixel-Link signal on ports 1 to 24.

- Artnet48->Pixel24: This profile will take 48 Art-Net universes and convert them to 24 Pixel-Link signal on ports 1 to 24. (Each Port will be mapped to 2 Art-Net Universes consecutively)

These profiles are just an example of what can be done with the Pixelator, you can modify the factory profiles to accommodate your specific need, or create your own profile from scratch.

If you don't see any of the above, please contact support@enttec.com and we can send them to you. After that, you're on your own to make and edit profiles to suit your application!

You may select between existing profiles via the menu, but to edit them and make new ones, you'll need to access the Pixelator's web page. The sections that follow will provide more information about each of the ways to interact with the Pixelator.

Changing from one profile to another can be done in a web browser window, via RS232 command, or with the touch of a few buttons on the front panel (LCD menu).

LCD Menu

The LCD Menu is navigated through the four panel buttons on the front of the unit.

The Menu button acts as the "Back" button, which takes you to the previous Menu/screen.

The Enter button goes into the selected option on the screen, and activating the option.

The Top & Bottom button are used to navigate/scroll through the options on any screen. The currently selected option is highlighted with a white background on the screen.

Main Menu
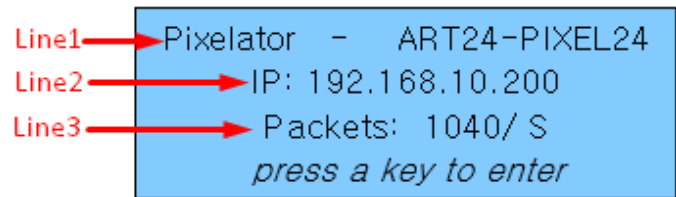
Line1: displays the System Name and currently Selected Profile.

Line2: displays either the current IP address / DHCP Failed / disconnected, highlighting the current status of the network interface. The IP address is where the web interface can be accessed.

Line3: displays the number of packets currently passing through the Pixelator. This number of packets per second, can be used as an indicator of the activity of DMX on your network.

Pressing any of the panel buttons/keys will activate the next screen on the LCD Menu.

Selection Menu
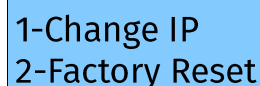

1-load profile
2-Setup
3-Status
4-Restart
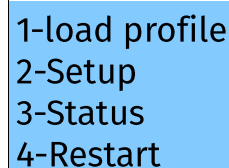
1-Load Profile

Lists all available profiles on the Pixelator, list can be scrolled using up & down keys. Scrolling indicator is visible when the list allows scrolling.
Pressing Enter at the selected profile will activate the profile (some profiles might need a license to activate)

2-Setup

1-Change IP
2-Factory Reset

Setup screen allows changing the IP address of the unit via "Change IP" or doing Factory Reset.

Change IP

This screen further gives two options DHCP or Static IP. When Static IP is selected, the screen allows you to change the IP address using the top and bottom button to scroll the digits and the menu & enter buttons to select the segment.

Once you are on the last segment of the IP address, pressing the Enter button, will activate the IP address. It will take a few seconds for the change to go through, please wait 30 seconds, before attempting to try again.

> **Change IP Address**
>
> **IP: 192.168.001.003**

Factory Reset

Activating Factory Reset, leads to a simple prompt confirming your action. Once confirmed, the Factory Reset will take a few seconds to run. It will end up deleting all your user created profiles, as well as any saved settings. Please use this only when needed, or as directed by ENTTEC support team.

> **F-Reset in progress**
> **please wait ...**

3-Status

Status Screen, allows the following two options:

> **1-System**
> **2-Network**

Both the Status screens are read-only and provide information about the system and Networking.
These require no user-input and serve as a way of checking the performance of the unit.

4-Restart

Restart Screen, when activated, prompts for the user to confirm the selection.

> **1-YES**
> **2-NO**

Once confirmed, Pixelator will stop the output engine and restart the system. While rebooting the LCD screen will change between a couple of screens, and the LCD Main Menu will only be visible, once the system is fully ready. (usually takes a minute)

> **System Restarting**
> **Please wait ...**

Web Interface

The Pixelator is configured, controlled and programmed through a web browser interface running on a computer system located on the same Local Area Network. Any modern web browser, such as Chrome, Firefox, Internet Explorer, Safari or Opera, running under any operating system, including Windows XP or Vista, Mac OS X or Linux can be used.

Type the IP address (shown on the LCD Menu) into your web browser to access the Pixelator Web Interface.

Throughout the Web Interface, helpful hints are displayed when a user hovers the mouse over the "Help" icon?

Web: Profiles

From this screen you can manage your profiles.

As you will notice in the "Remarks" column, the factory default profiles are read only. If you wish to modify one of them, you will first need to copy the profile to some other name. Once the profile has been copied you can modify it to fit your particular needs.

Clicking on the Profile name will launch the profile in the profile-editor window.

Web: Profile Editor

Create a new profile or edit an existing one using the profile-editor. Profile Editor opens in a new page in your web browser. Select a module on the left and the right panel will provide help about that panel. Connect a module to another using wires from one point to another.

The direction of the wire (arrow) is important, the arrow signifies output, and reflects the flow of data.

Web: Profile Modules

Each profile is made up of two or more connected Modules or Actions. The relationship between them forms the layout of the data flow within the profile.

The following modules are available:

The PLink 1U module represents one of the physical ports on the rear of this unit, and maps to 1 Universe.

- Protocol: select the led protocol that the pixel tape conforms to.
- Ordering: RGB or RGBW mapping that the pixel tape conforms to. RGB modes use 3 DMX slots per LED pixel, and RGBW modes use 4 DMX slots.
- Grouping: it allows one DMX pixel to drive multiple physical LED pixels
- Start-Ch: DMX Start Channel for the 1st pixel can be changed as needed.

Limitation: Same PLink port# cannot be re-used within the same profile
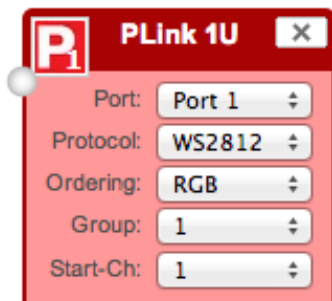

The PLink 2U module represents one of the physical ports on the rear of this unit, and maps to 2 Universe.

- Each PLink 2U module has 2 input nodes that can be connected to two Ethernet streams. Top one (U1) is mapped to the First universe and Bottom one (U2) is mapped to the Second universe relative to the pixel-tape.

- Protocol: select the led protocol that the pixel tape conforms to.
- Ordering: RGB or RGBW mapping that the pixel tape conforms to.

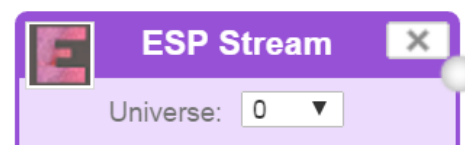Limitation: Same PLink port# cannot be re-used within the same profile
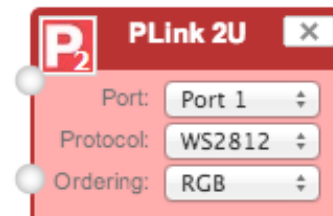
Art-Net Stream: "Send IP address": is the destination address used when the stream is sending data only.
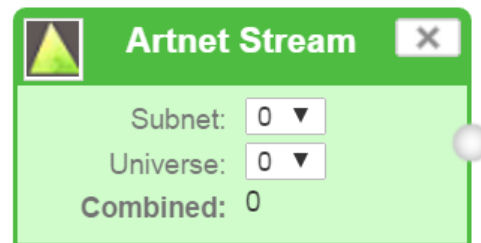
ESP Stream: ENTTEC Show protocol DMX over Ethernet stream (ESP).
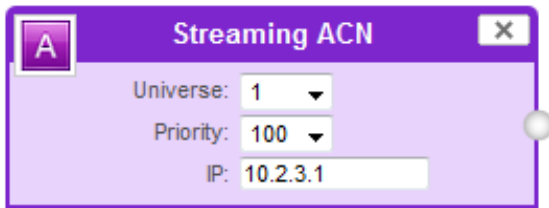IP address is the destination address used when the stream is sending data only.

Kinet Stream: For example: You can connect Kinet Stream to an Art-Net Stream to convert and output as Art-Net. (Kinet stream is supported as input only).

Streaming ACN: "IP address" is the destination address used when the stream is sending data only (default is disabled = 0.0.0.0)

DMX Generator: Define your own custom DMX Channel values and assign the selected ones.
Snapshot feature can be used to capture values from an input stream. All modifications can be done using the DMX Grid Page.
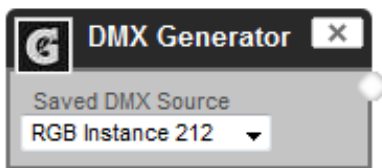
Clock: Allows you to synchronize ALL Pixel Link output only when the connected Input Stream is received.

- Auto-repeat allows user to repeat the output once every "number of seconds" regardless of Synced Stream

- Default behavior [Auto-repeat = Never]: Will only refresh Pixe Link when Synced Stream is received

The Clock module can be used to make sure the output is always synced to the "latest universe" - especially if the source adds a delay to each universe.
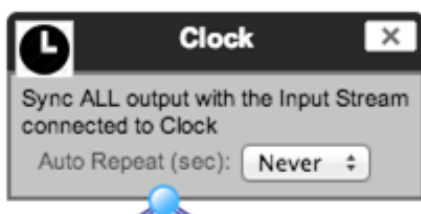

Firmware Update

You can update the firmware on the Pixelator, via the web browser. Get the new firmware files (they are available on website: www.enttec.com/Pixelator). Download them to your desktop and then follow instructions in the Pixelator's web browser page, under the Settings section.

Note: While the firmware is being updated, please do not power off the unit, please wait until the web-page is processing. (up-to 5 minutes).If the web-page does not refresh automatically, please open the home page on the browser manually, and verify that the update has succeeded.

NMU
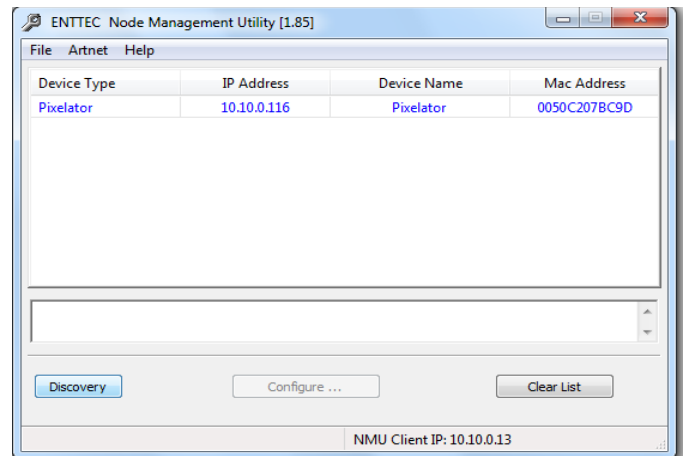
NMU (Node Management Utility) is a free Windows and Mac application that is used to manage compatible ENTTEC DMX over Ethernet nodes. NMU will not directly allow you to configure the Pixelator itself, but it can help you find your unit's IP address and then open a browser window to access Pixelator. Follow these steps:

1. Download NMU from www.enttec.com/nmu

2. Ensure that your Pixelator is hooked up physically by Ethernet cable to the same physical network as the computer on which you will run the NMU.

3. Press the Discovery button.

4. Once found, select Pixelator and use the IP address to access the web interface via your web browser.

Connector pin out

Pixel Link pinout (RJ-45):

Pin1: Data +

Pin2: Data –

Pin7: Ground

RS232:

Pin 2: TX

Pin 3: RX

Pin 5: Ground

PLink System

- Each PLink port can drive up to 340 RGB individual pixels (2 DMX universes) - PLink 2U module must be used in Pixelator Profile

- PLink Injector sold separately (73546 / 73544)

- 1 PLink Injector needs to be used per PLink port on the Pixelator

- External DC power supply

- Maximum distance between Plink Injector and Tape/dots should not exceed 3m

- Data extensions can be up to 300m over Cat6 cable

- Supports pixel tape and dots based on 9PDOT-8bit, 9PDOT-16bit, WS2811, WS2812, WS2812B and APA-104 LEDs.

- Small, light and easy to hide design

- High power screw terminal connectors

- Easy wiring using straight Cat5/Cat6 standard connections

	2 x USB Host Connectors (un-used)

Due to continuous improvements and innovation of all ENTTEC products, specifications and features are subject to change without notice.

Ordering Information

To order Pixelator and related products from our website or through an ENTTEC dealer using the following part numbers.

Part Number	Description
70060	Pixelator
70704	Stream Auditor Licence
73546	Plink Injector 5V
73544	Plink Injector 12-24V
73545	Plink Injector
73920	CVC3

Pixelator Specifications

Item		Value
Input Voltage		90-260V AC
Input Frequency		50/60Hz
Power Consumption		20W
Heat dissipation		65BTU/ Hour
Unit Weight		3kg/6.7lbs
Shipped Weight		3.6kg/8lbs
Length	With rack ears	483 mm/19.1 inches
	Without rack ears	424 mm/16.7 inches
Width	With rack ears	240 mm/9.5 inches
	Without rack ears	207 mm/8.2 inches
Height		32 mm/1.26 inches
Operating Environment Temperature		0 - 50° Celsius
Certification		CE, FCC certified
Connectors		24 x Plink Output Ports (RJ-45)
		1 x Ethernet Connector
		1 x RS232 Connector

Accessories and Recommended Products

Part Number	Description
70581-ARC	ENTTEC LED Mapper Software (ELM) Architectural (512 Universes)
70581-PRO	ENTTEC LED Mapper Software (ELM) Professional (96 Universes)
70581-STU	ENTTEC LED Mapper Software (ELM) Standard (16 Universes)
9PDOT (1-8)	HI-RES SMART RGB PIXEL DOTS
8PL60-F-12	RGB PIXEL TAPE 60 LEDS/METER 12V – 5M Roll
8PL30-F	RGB PIXEL TAPE 30 LEDS/METER 5V – 5M Roll
8PL60-F	RGB PIXEL TAPE 60 LEDS/METER 5V – 5M Roll
8PL144-2	RGB PIXEL TAPE 144 LEDS/METER 5V – 2M Roll
8PX60-4	RGBW PIXEL TAPE 60 LEDS/METER 5V – 4M Roll
8PXW60-4-B	RGBW PIXEL TAPE 60 LEDS/METER 5V – 4M Roll Black No Coating
8PX60-1	RGBW PIXEL TAPE 60 LEDS/METER 5V – 1M Roll
8PX30-F	RGBW PIXEL TAPE 30 LEDS/METER 5V – 5M Roll
8PX30-1	RGBW PIXEL TAPE 30 LEDS/METER 5V – 1M Roll
8PW60-F	WWA (CTA+AMBER) PIXEL TAPE 60 LEDS/METER 5V – 5M Roll
8PW30-F	WWA (CTA+AMBER) PIXEL TAPE 30 LEDS/METER 5V – 5M Roll
8P60-5-B	Pixel tape 60 LEDS/METER 5V – 5M Roll Black No Coating

Due to continuous improvements and innovations of all ENTTEC products, specifications and features are subject to change without notice.

Registration

Please register your ENTTEC product to get latest software updates and to validate your warranty. To register, please visit enttec.com/register

Email: sales@enttec.com
Website: www.enttec.com

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