



PIXELATOR MINI – User Manual

Compact and powerful DIN-Rail Ethernet to Pixel Link converter capable of controlling up to 16 universes (8,192 channels).



ENTTEC's PIXELATOR MINI is smaller 8-port half-width Ethernet pixel controller within the PIXELATOR family, perfectly suited to small and medium scale installations using ENTTEC's PLink protocol. Each PLink port provides data to ENTTEC's PLink Injectors which can control up to 2 Universes each, making the PIXELATOR MINI capable of controlling up to 8,192 channels (2,730 RGB Pixels) with perfect synchronization across all outputs.

The PIXELATOR MINI supports a wide range of pixel protocols, which can be controlled with sACN, Art-Net, ESP and Kling-Net through an intuitive web browser. Controlling LED pixels, dots and digital strips has never been easier.

Our PLINK protocol can transmit up to 1024 channels (2 Universes) over a 300m distance using Cat5e/Cat6 cable to each ENTTEC PLINK INJECTOR. This allows for control of up to 340 RGB or 256 RGBW pixel per output. This satellite system provides great flexibility, and since all data conversion is processed on the PIXELATOR device, the P-Link injector is kept as compact as possible.

Depending on the application, choose between the indoor or outdoor IP PLINK INJECTORS, ensuring the voltage is compatible with the pixels and power supply installed locally to the PLINK INJECTORS.

ENTTEC's PIXELATOR MINI is also available in a DIN-rail form factor!

Features

- **8x RJ-45 ports (each providing 2 Universes of PLink data output).**
- **16 Universe Ethernet to PLink data over Cat5e/Cat6 cable.**
- **1U Half Width form factor.**
- **Easy to setup & update through any web browser.**
- **Supports sACN, Art-Net, ESP and Kling-Net.**
- **RJ45 Ethercon connector (10/100 Mbps).**
- **Compatible with ENTTEC PLINK INJECTORS.**
- **Static or Dynamic (DHCP) IP configuration (DHCP by default).**
- **ArtSync support to ensure all outputs are in synchronization with each other.**
- **Pixel Grouping is configurable for each PLink port. (1 to 340) for RGB and (1 to 256) for RGBW.**
- **Each PLink output can be assigned up to 2 Ethernet Universes.**
- **Pixel Ordering is configurable for each PLink port.**

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Safety

 **Ensure you are familiarized with all key information within this guide and other relevant ENTTEC documentation before specifying, installing, or operating an ENTTEC device. If you are in any doubt about system safety, or you plan to install ENTTEC device in a configuration that is not covered within this guide, contact ENTTEC or your ENTTEC supplier for assistance.**

ENTTEC’s return to base warranty for this product does not cover damage caused by inappropriate use, application, or modification to the product.

Electrical safety



- This device must be operated in accordance with applicable national and local electrical and construction codes.
- This device can be damaged by excess voltage outside the operating range defined within this products datasheet.
- To reduce the risk of fire or electrical faults do not exceed the ratings and limitations defined in the product datasheet or this guide.
- Ensure there are no opportunities for cables to short circuit and cabling cannot be snagged or pulled.
- Do not over stretch cabling to the device's connectors and ensure that cabling does not exert force on the PCB.
- Isolate your installation from power immediately if accessories power cables or connectors is in any way damaged, defective, shows signs of overheating or are wet.
- Remove power from this product during cleaning or when it is not in use.
- Do not connect this device to a dimmer pack or mains electricity.
- Do not connect any of this device's V- or GND connectors to earth.
- Ensure your installation is protected from short circuits and overcurrent.
- Ensure all connections are complete and secure before providing power to the device.

System Planning and Specification



- To contribute to an optimal operating temperature, where possible keep this device out of direct sunlight.
- This unit has an IP20 rating and is not designed to be exposed to moisture or condensing humidity.
- Ensure this device is only operated within the specified ranges within the product datasheet.

Protection from Injury During Installation



- Always use suitable personal protective equipment when installing ENTTEC products.
- Once installation is completed, check that all hardware and components are securely in place and fastened to supporting structures if applicable.

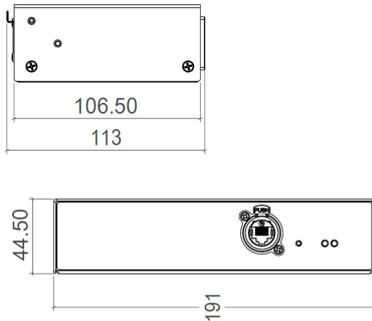
Installation Safety Guidelines



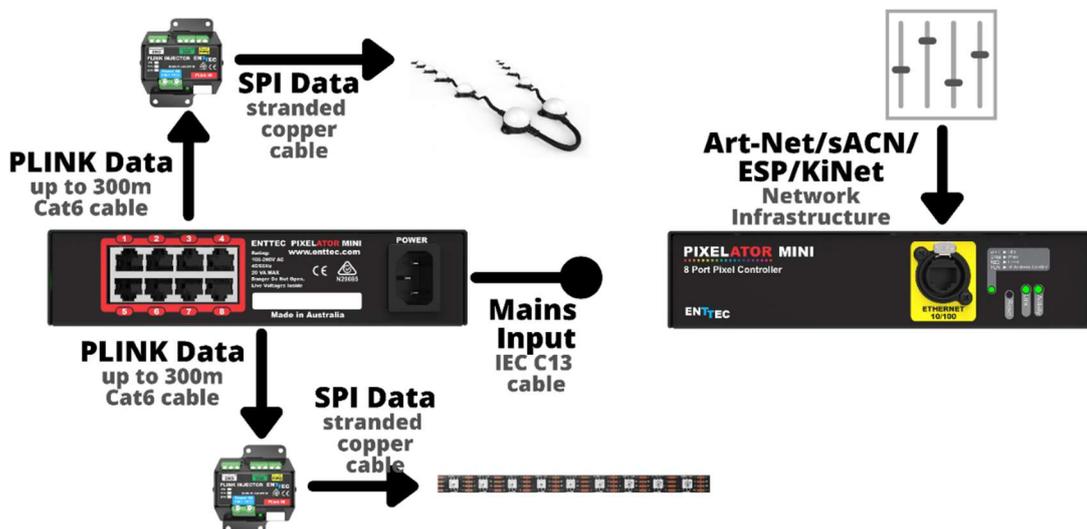
- The device is convection cooled, ensure it receives sufficient airflow so heat can be dissipated.
- Do not cover the device with insulating material of any kind.
- Do not operate the device if the ambient temperature exceeds that stated in the device specifications.
- Do not cover or enclose the device without a suitable and proven method of dissipating heat.
- Do not install the device in damp or wet environments.
- Do not modify the device hardware in any way.
- Do not use the device if you see any signs of damage.
- Do not handle the device in an energized state.
- Do not crush or clamp the device during installation.
- Do not sign off a system without ensuring all cabling to the device and accessories has been appropriately restrained, secured and is not under tension.

Physical Dimensions

All dimensions are in millimetres unless specified otherwise.



Wiring Diagrams



Functional features

PLINK INJECTORS

From one of the PIXELATOR MINI's PLINK Data outputs, you can run up to 300m of Cat6 cable to a single PLINK INJECTOR. Since all data conversion is processed on the PIXELATOR MINI, the PLINK INJECTOR is kept as compact as possible. At the PLINK INJECTOR, you can wire up an external DC power supply. The PLINK has the capability to handle 10amps through the device. It is important that your power supplies voltage matches the voltage of your Pixels, as well as having a PLINK which is compatible with the voltage range:

- SKU 73546 is designed for Pixels with a 5 volt input,
- SKU 73544 is designed for Pixels with a 12-24 volt input.

Each PLINK INJECTOR can then be wired up to 3m (total cable length) away from the first Pixel. The PLINK INJECTOR can drive up to 340 RGB individual pixels (2 DMX universes).

The PIXELATOR MINI can control a range of SPI (Pixel) protocols, a full list can be found on our website.

PLINK Data: The PIXELATOR MINI converts Art-Net, saCN, ESP and Kling-net into our own PLINK data, which over Cat6 cable can run up to 300m to a PLINK INJECTOR, where it is converted to the SPI (Pixel) protocol.

PLINK Data Pinout: PLINK Data is sent over Cat6 cable over 3 pins within a RJ45 connector. These pins are:

- Pin 1: Data +
- Pin 2: Data -
- Pin 7: Ground

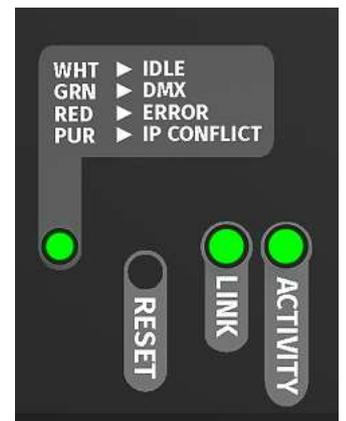
Hardware features

- 8* PLINK Output (RJ-45)
- 1* LAN port (RJ45)
- Status LEDs

LED status indicator

The PIXELATOR MINI comes with one RGB status LED and two green network LED indicators located on the right side of the front panel.

Colour	Status
White	Idle.
Green (blinking)	Pixel Link Data is being output. The led will fade from white to green.
Red (blinking)	Error State. Requires a firmware update or needs to be rebooted. A reset might be required if it stays in error-mode on reboot.
Purple (blinking)	IP Address Conflict. Please change the IP address manually or enable DHCP.



LINK: is ON when there is an active Ethernet Link @ 100 mbps. It will stay OFF @ 10 mbps.

ACTIVITY: This LED blinks when there is activity on the Ethernet network.

Out of the Box

As default, the PIXELATOR MINI will output the first 16 Universes of Art-Net starting at universe 0 (0x00), with two Universes per port.

The PIXELATOR MINI will be set to a DHCP IP address as default. If the DHCP server is slow to respond, or your network does not have a DHCP server, the PIXELATOR MINI will fall back to the default Static IP address which will be printed on the PIXELATOR MINI's packaging, but also can be calculated from the last three bytes (pairs) of the Serial Number, converting the Hex (bytes) into Decimal values. The IP address will read as 10.(byte1).(byte2).(byte3). For example, if your Serial Number is 0050C082356 the last three bytes (pairs) are FF, FF and 55, when converting these Hex values to Decimal Values the conversion makes default static IP: 10.8.17.38.

N/A	08	23	56
10	8	17	38

Networking

The PIXELATOR MINI can either be configured to be a DHCP or Static IP address.

DHCP: On power up and with DHCP enabled, if the PIXELATOR MINI is on a network with a device/router with a DHCP server, the PIXELATOR MINI will request an IP address from the server. If the DHCP server is slow to respond, or your network does not have a DHCP server, the PIXELATOR MINI will fall back to the Static IP address. If a DHCP address is provided, this can be used to communicate with the PIXELATOR MINI.

Static IP: By default (out of the box) the Static IP address will be unique based on the devices Serial Number (See out of the box section for details). If the PIXELATOR MINI has DHCP disabled or if the PIXELATOR MINI falls back to the Static IP address after being unable to find a DHCP server, the Static IP address given to the device will become the IP address to communicate with the PIXELATOR MINI. The fall-back address will change from the default once it is modified in the web interface.

Web Interface

Configuring the PIXELATOR MINI is done through a web interface which can be brought up on any modern web browser.

- A Chromium based browser (i.e. Google Chrome) is recommended for accessing the PIXELATOR MINI web interface.
- As the PIXELATOR MINI is hosting a web server on the local network and does not feature an SSL Certificate (used to secure online content), the web browser will display the 'Not secure' warning, this is to be expected.

Identified IP address: If you are aware of the PIXELATOR MINI's IP address (either DHCP or Static), then the address can be typed directly into the web browsers URL field. The PIXELATOR's IP address can be located on the LCD's Main Menu.

Unidentified IP address: If you are not aware of the PIXELATOR MINI's IP address (either DHCP or Static) the following discovery methods can be used on a local network to discover devices:

- An IP scanning software application (i.e. Angry IP Scanner) can be run on the local network to return a list of active devices on a local network.
- Devices can be discovered using Art Poll (i.e. DMX Workshop if set to use ArtNet).
- The device Default IP address will be printed on the physical label on the rear of the product.
- ENTTEC free NMU (Node Management Utility) software for Windows and MacOS (support up to Mac OSX 10.11), which will Discover ENTTEC devices on the Local Area Network, displaying their IP addresses before opting to Configure the device, opening the Web Interface.



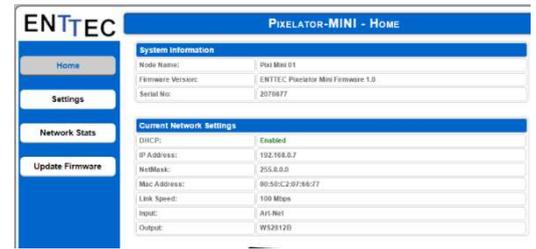
Note: The eDMX protocols, the controller and the device using to configure the PIXELATOR MINI must be on the same Local Area Network (LAN) and be within the same IP address range as the PIXELATOR MINI. For example, if your PIXELATOR MINI is on Static IP address 10.8.17.38, then your computer should be set to something such as 10.8.17.20. It is also recommended that all devices Subnet Mask are the same across your network.

Home

The landing page for the PIXELATOR MINI web interface is the Home tab. This tab is designed to give you a read-only device overview.

This will display:

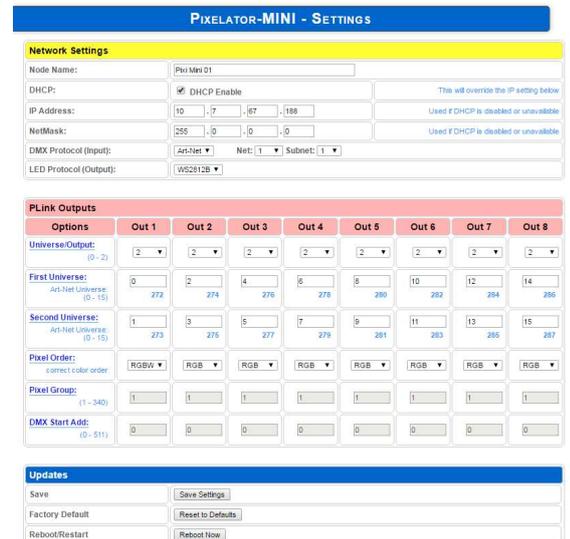
- Node Name
- Firmware Version
- Serial Number
- DHCP Status
- IP Address
- NetMask
- Mac Address
- Link Speed
- Input
- Output



Settings / Firmware Update

The PIXELATOR MINI's settings can be configured within the Settings tab.

- **Node Name:** The name the PIXELATOR MINI will be discoverable with in Poll replies.
- **DHCP:** Enabled by default. When enabled, the DHCP server on the network is expected to automatically provide the IP address to the PIXELATOR MINI. If no DHCP router/server is present or DHCP is disabled, the PIXELATOR MINI will fall back to the static IP address.
- **IP Address / NetMask / Gateway:** These are used if DHCP is disabled or unavailable. These options set the Static IP address. These settings should be set to be compatible with other devices on the network.
- **DMX Protocol Input:** Choose between Art-Net, sACN and ESP as the Protocol. For Art-Net, set the Net, Subnet.
- **LED Protocol Output:** Select the SPI protocol which matches the Pixels that the PIXELATOR MINI will control.
- **Universe/Output:** Select how many Universes each output should control (0-2 : 0 will display the output).
- **First Universe:** Set the Ethernet-DMX protocols Universe.
- **Second Universe:** Set the Ethernet-DMX protocols Universe.
- **Pixel Order:** The rate at which Storm 8 will output the Data from its DMX port (40 Frames per second is default). It will repeat the last received frame to comply with DMX standard.
- **Merge Type:** When enabled, this can allow the merging for two Ethernet-DMX sources from different IP address whilst sending on the same Universe in either a LTP (Latest Takes Precedence) or HTP (Highest Takes Precedence) merge. More information can be found in the Functional Features section of this document.
- **Save:** All changes must be saved to take effect the STORM 8 takes up-to 10 seconds to save.
- **Factory Default:** STORM 8 will be reset to Factory condition, including the DHCP being enabled, with the original fall-back static IP and with all setting reset (see the Out of the Box section).
- **Reboot/Restart:** Please allow up-to 10 seconds for the device to reboot. When the web interface page refreshes the STORM 8 is ready.



Network Stats

The Network Stats tab is designed to provide an overview of the network data. This is broken down into Ethernet-DMX protocols statistics which can be located within the tabs.

The Summary provides details regarding total packets sent /received, as well as Poll packets, last IP address and Port.

Art-Net Statistics also provide a breakdown of Art-Net DMX packets sent and received. As well as a breakdown of RDM over Art-Net packets including packet sent and received, Subdevice and TOD Control/Request packets.

Art-Net Statistics		ESP Statistics		sACN Statistics	
Art-Net Summary					
Poll Packets Received	0				
Last IP	0.0.0.0				
Last Port	0				
Art-Net DMX					
DMX Data Packets Received	0				
DMX Data Packets Sent	0				

Update Firmware

On selecting the Update Firmware tab, the PIXELATOR MINI normal operation will stop, and the web interface boot into the Update Firmware mode takes up-to 10 seconds.

This mode will display basic information regarding the device including current Firmware Version, Mac Address, Serial Number and IP address information.

Using the Choose File button, browser your local computer for the latest PIXELATOR MINI firmware file, this will have a .bin extension. The latest firmware can be downloaded from our website.

Next click on the Update Firmware button to begin updating.

After the update has completed, the web interface will load the Home tab, where you can check the update was successful under Firmware Version. Once the Home tab has loaded, the PIXELATOR MINI will resume operation.

PIXELATOR-MINI - UPDATE FIRMWARE	
Current System Information	
Boot Version:	ENTTEC Pixelator Mini Boot V1.1
Firmware Version:	ENTTEC Pixelator Mini Firmware V1.0
Mac Address:	22:33:44:55:66:77
Serial No:	44556677
Link Speed:	100 Mbps
Current Network Settings	
DHCP:	enabled
IP Address:	10.10.0.23
Update Firmware	
Select firmware file:	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Update Firmware"/>
Update progress:	Please do not interrupt while the firmware is being updated. Link will restart once firmware update is complete.
Update Firmware	
Select firmware file:	<input type="button" value="Choose File"/> firmware.bin <input type="button" value="Update Firmware"/>
Update progress:	<div style="width: 82%;"><div style="width: 82%;"></div></div> 82%

PLINK Ports

The PIXELATOR MINI features eight RJ45 connectors which output PLINK data.

Connectors

RJ45 PLINK OUT:

- Pin 1: Data +
- Pin 2: Data -
- Pin 7: Ground

Servicing, Inspection & Maintenance

-  ■ **The device has no user serviceable parts. If your installation has become damaged, parts should be replaced.**
-  ■ **Power down the device and ensure a method is in place to stop the system from becoming energized during servicing, inspection & maintenance.**

Key areas to examine during inspection:

- Ensure all connectors are mated securely and show no sign of damage or corrosion.
- Ensure all cabling has not obtained physical damage or been crushed.
- Check for dust or dirt build up on the device and schedule cleaning if necessary.
- Dirt or dust buildup can limit the ability for a device to dissipate heat and can lead to damage.

The replacement device should be installed in accordance with all steps within the installation guide.

To order replacement devices or accessories contact your reseller or message ENTTEC directly.

Cleaning

Dust and dirt build up can limit the ability for the device to dissipate heat resulting in damage. It's important that the device is cleaned in a schedule fit for the environment it is installed within to ensure maximum product longevity.

Cleaning schedules will vary greatly depending on the operating environment. Generally, the more extreme the environment, the shorter the interval between cleaning.

-  ■ **Before cleaning, power down your system and ensure a method is in place to stop the system from becoming energized until cleaning is complete.**
-  ■ **Do not use abrasive, corrosive, or solvent-based cleaning products on an device.**
-  ■ **Do not spray device or accessories. The device is an IP20 product.**

To clean an ENTTEC device, use low-pressure compressed air to remove dust, dirt and loose particles. If deemed necessary, wipe the device with a damp microfiber cloth.

A selection of environmental factors that may increase the need for frequent cleaning include:

- Use of stage fog, smoke or atmospheric devices.
- High airflow rates (i.e., in close proximity to air conditioning vents).
- High pollution levels or cigarette smoke.
- Airborne dust (from building work, the natural environment or pyrotechnic effects).

If any of these factors are present, inspect all elements of the system soon after installation to see whether cleaning is necessary, then check again at frequent intervals. This procedure will allow you to determine a reliable cleaning schedule for your installation.

Package Contents

- PIXEATOR MINI
- Ethernet Cable
- 1/2 Width 1RU Mounting Kit
- IEC Cable (Included separately)

Ordering Information

For further support and to browse ENTTEC's range of products visit the [ENTTEC website](#).

Item	Part No.
PIXELATOR MINI	70066
PLink 5v	73546
PLink 12v-24v	73544

enttec.com

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Due to constant innovation, information within this document is subject to change.