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Pixie User Manual
50478 (H)
For more information visit:
www.enttec.com/pixie

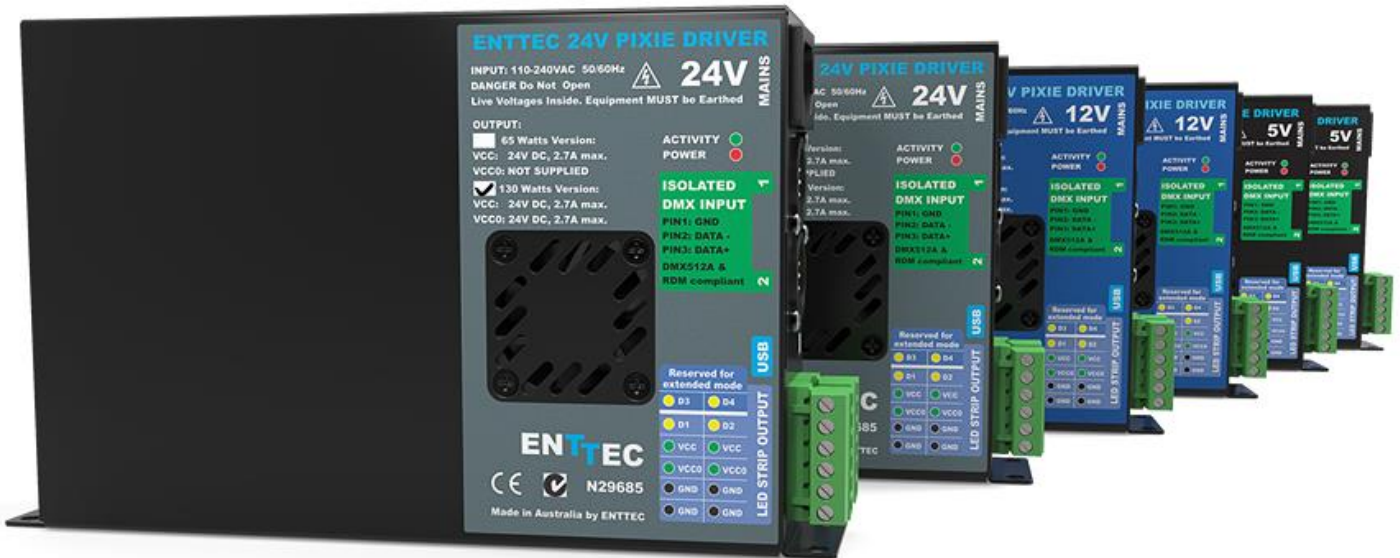# PIXIE DRIVER

Box Contents

- Pixie Driver
  (PN: 73540, 73541, 73542, 73543, 73547 or 73548)
- User manual (PN: 50478)

LED Protocols Supported

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

Note:

- If you happen to find led protocols that work, and which is not listed, please let us know, so we can update our documentation
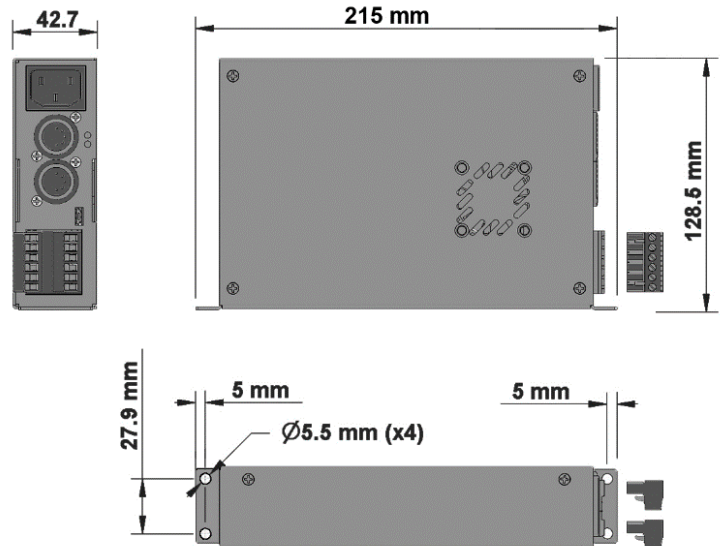
Physical Dimensions

The unit is designed to fit the modular rack accessory (sold separately) which allows stacking up to 8 units in a standard 19" rack using 3 standard rack mount units (3RU).

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Features

- Drives 2 DMX universes worth of 5 Volt Pixel Tape/Dots or 12/24V Pixel Tape/Dots (model dependent).
- In-Built 5V DC power supply with 55 and 110 watts output power units available (pn: 73541 and 73540)
- In-Built 12V DC power supply with 65 and 130 watts output power units available (pn: 73542 and 73543)
- In-Built 24V DC power supply with 65 and 130 watts output power units available (pn: 73547 and 73548)
- Enhanced data outputs with surge protections
- D3 is a duplicated output of D1 for backup
- D4 is a duplicated output of D2 for backup
- 55W and 65W drivers can individually control and power up to 300 RGB pixel LEDs
- 110W and 130W drivers can individually control and power up to 600 RGB pixel LEDs
- Smart thermal management
- DMX512 Controllable and USB configurable
- Supports RGB and RGBW pixel tape
- Quick 2 steps test installation: connect your pixel strips to the screw terminal output and plug mains cable to a wall outlet. It is that easy!
- Standalone test output sequences (no external data required)
- Show record and playback (Art-Net to USB using PRO-Manager App)
- Power and output status LED indicators
- High quality powder coated metal box
- Scalable design for large projects
- Up to 8 units stackable using standard 19" modular rack accessory (sold separately)
- Standard IEC mains and 5Pin-XLR DMX input connectors
- Plug-unplug screw terminal output connector
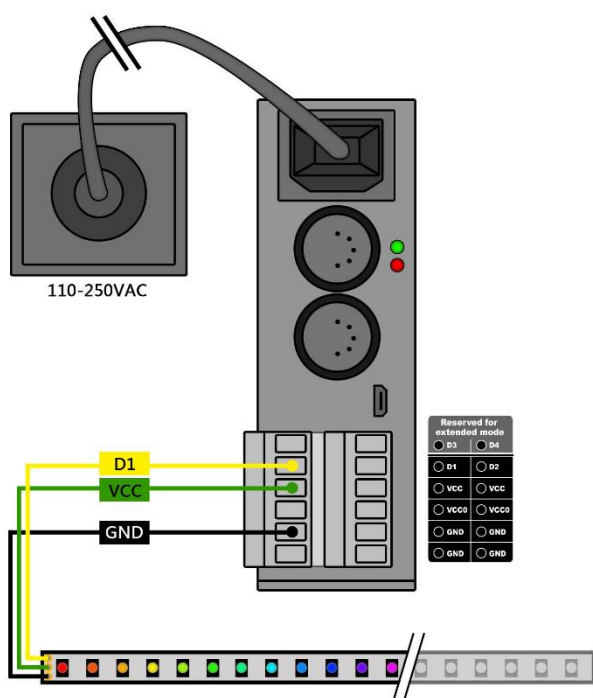- Automatic multi voltage mains input (110-250V AC)

Safety

- This unit is intended for indoor use only
- Do not expose the Pixie Driver to rain or moisture, doing this will void the warranty
- Make all the connections before you plug in the mains power
- Do not remove the cover, there are no serviceable parts inside
- Never plug this unit into a dimmer pack
- Always be sure to mount this unit in an area that will allow proper ventilation. Allow about 6" (20 cm) between this device and a wall
- Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, pay particular attention to the point they exit from the unit

Start-Up Demo Installation

The Pixie Driver comes loaded with a scrolling rainbow demo sequence which will run and loop every time you power the unit up so you can get your installation tested straight away once you connect your LED pixel strips.

When any valid data is fed through the DMX or USB ports it will override the demo playback sequence and keep listening to the data ports until you re-power the unit.

If you do not want the Pixie driver to generate any output when powered up, it can be done by erasing the pre-loaded show or overwriting it with your own as further described in the ENTTEC PRO Manager software section.

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110-250VAC

Power Budgeting

This section explains how many Dots or LEDs can be connected to the unit. Please note that the 55W and 65W models have only one power supply (VCC) and the VCC0 output will not be available.

Warning: (VCC and VCC0) **cannot** be connected in parallel.

Pixel Strips and Pixel Tile

The strips/tile supported by the Pixie driver are based on the WS2811, WS2812 and WS2812B protocol.

The following table shows the maximum number of LEDs that the driver can power when driven to the max. (RGB channels on 100% or white).

Power Source	73541(55W)	73540(110W)
VCC	300 RGB LEDs/2 Tiles	300 RGB LEDs/2 Tiles
VCC0	Unused	300 RGB LEDs/2 Tiles
TOTAL:	300 RGB LEDs/2 Tiles	600 RGB LEDs/4 Tiles

300 RGB LEDs can be substituted for 240 RGBW LEDs in the above table.

Pixel Dots

The dots supported by the Pixie driver are based on the 9PDOT-8bit protocol.

Any Pixie driver can process 1024 DMX channels, but the output will be limited by the Wattage. However, since

Pixel Dots have much higher light output compared to Pixel strip, this leads to the higher power consumption.

This limits the number of dots that a driver can control, and can be calculated by: dividing the total output of driver with the output of each dot. For example:

Item	Value
Pixel Dot	9PDOT5 rated at 0.72w/dot
Pixie Driver	73543 12V 130w
Max quantity	130w/0.72w= 180 dots

This calculation can also be used to calculate how many Pixie drivers will suit your application when one driver is not enough.

Warning: Overloading the outputs could cause the driver and the connected strips to malfunction or flicker.

Status LED

The Pixie driver comes with two LED indicators located in the front panel.

The orange LED indicates that the internal power supply is working properly and the unit is ready to operate and supply power to the strips. If the LED is OFF and you have already connected the mains cable to a working wall outlet, it means that there is a problem in the unit. In such case please contact ENTTEC support.

The green LED indicates the Pixie status and should be constantly flashing. Please refer to the following table for information about current operating status:

Flashing Frequency	Unit Status
Constant on	Overheating/Error
0.5 Hz	Unit is running normally
2 Hz	Show is playing
8 Hz	Receiving data from DMX
25 Hz	Receiving data from USB

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Operation Modes

The Pixie Driver can drive LED strips in three ways: **DMX mode, Playback** mode and additionally sequences can be sent through **USB**. It is only possible to use one mode at a time and the one with higher precedence will override the others. A general explanation of all the modes is made in this chapter and you can find further information on how to use and configure the settings in the ENTTEC Pro Manager software section.

	USB	**DMX**	**PLAYBACK**
Input Data Precedence	Highest	Middle	Lowest

USB

The USB 2.0 port is mainly used to configure the unit and download new shows. It also allows sequences to be run through the free application as described in the Pro Manager software section.

When running the sequences all other modes will be overridden by the USB port as it has the highest precedence.

DMX mode

When data is fed through the DMX ports and there is no active USB sequence, this will be reflected on the strips outputs D1 and D2.

By default the data coming from DMX1 connector will be sent to the beginning of the strips (section 1) through D1 and D2 outputs and the data coming from DMX2 will be sent to section 2 through both outputs.

Playback mode

Trigger the stored show from the Pro Manager software or by configuring the Pixie to start playing it on power up.

The Pixie driver comes with a pre-loaded scrolling rainbow sequence which will playback and loop forever on power up. More sequences can be recorded or loaded using PRO-Manager App. The maximum length of the sequence depends on the recording parameters.

E.g. The shortest possible show with 510 channels at 40 frames per second, will be 25 seconds. If the show has a repetitive nature you could also get it to loop-back forever.

Remember that any data coming from DMX or USB ports will override the playback mode.

Extended mode

Extended mode is only available for the 110W and 130W models (5V: 73540, 12V: 73543 and 24V: 73548).

If DMX input is being used, D3 and D4 are identical copies of D1 and D2.

However, if USB input is being used instead, you can control D3 and D4 independently. You can either use PRO-Manager or refer to the Pixie Driver API for details on how to drive Pixels from USB. Please note that

Extended mode is an advanced feature and requires programming knowledge.

PRO-Manager can be used to control all 4 outputs using Art-Net (4 Universes), but this feature is intended as a "proof of concept" and **we DO NOT recommend using PRO-Manager as a dedicated controller for your project.**

Reference Design
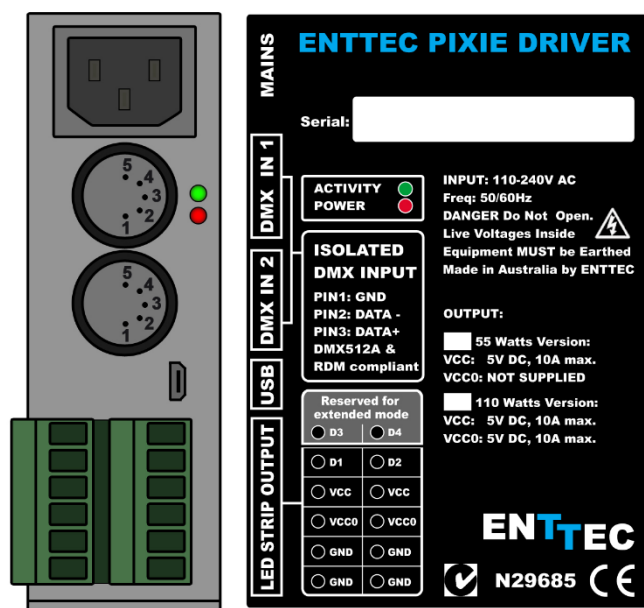
Pixie driver supports any kind of DMX output device. Here is a reference diagram of connections.

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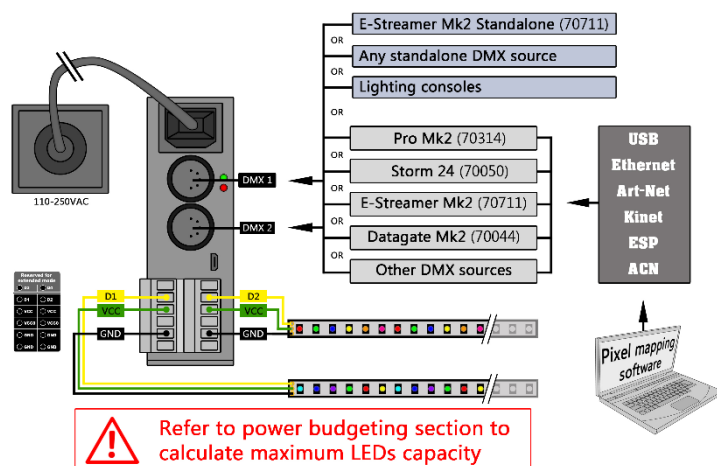
PRO-MANAGER

ENTTEC provides a free cross-platform (Windows & Mac only) application to configure, test and update the Pixie Driver. It also allows the user to record an Art-net show into the memory and set-up the standalone mode. The application is available for Windows or Mac from the ENTTEC website.

When connected by USB, it should be correctly identified as ENTTEC Pixie Driver by your computer. Please install and run PRO-Manager with the Pixie driver connected.
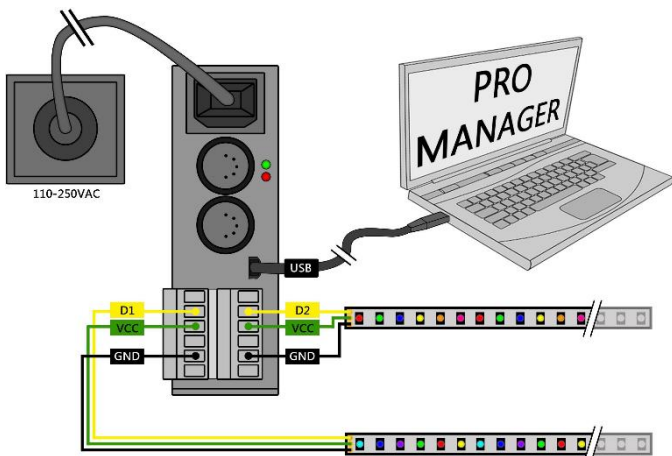
"Devices" Tab

From the PRO Manager Home page, you can click the "Find Devices" button to search for ENTTEC devices connected to your computer. Once it finds it, please select the Pixie from the selection box to start communication.
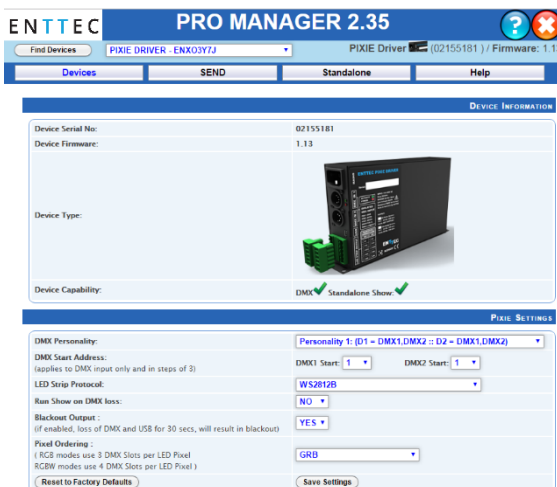

Once selected, you will see all the device information on the Home Page, from here you can configure Settings and update the firmware on the Pixie Driver

Firmware Update

Use the latest firmware file meant for Pixie driver available on the ENTTEC website (www.enttec.com/pixie) and upload it using the upload button ("Choose File" - as per Chrome browser).
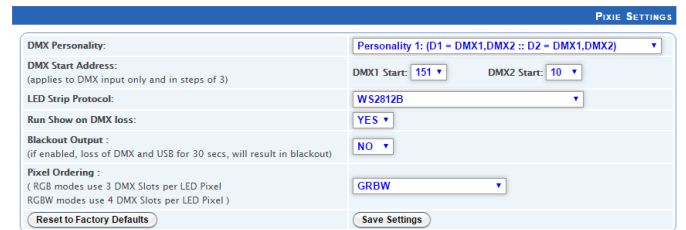

After selecting the correct file, click on the Update Firmware button and let the update proceed.
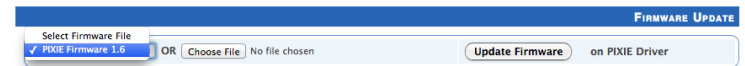
Once finished, the page will automatically refresh, and device information will be updated to reflect the updated firmware.

Pixie Settings

DMX Personality

Personality options decide the flow of DMX.

- Personality1: Both outputs (D1 & D2) are mapped together to both DMX inputs. DMX1 drives section1 and DMX2 drives section2 of both the outputs.

- Personality2: DMX1 is mapped to D1 only, and DMX2 is mapped to D2 only.

Additional setting for Personality2, allows the physical LED pixels to be grouped into the desired number of DMX pixels.
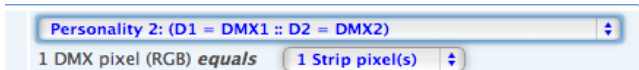
Run show on DMX loss
If the standalone show is programmed onto Pixie, and this option is set to Yes and, if no DMX input is received, the show will be played back. (3 seconds timeout for DMX input)

Pixel Ordering
Allows the order of Pixel mapping to be changed on the Pixie, usually to conform to the pixel ordering of the LED. This setting applies to all input data sources: DMX, USB, and playback mode.

The default ordering assumes that both the DMX input and the led strip outputs are in RGB order.

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RGB Ordering modes will map every Pixel to 3 DMX Slots. RGBW Ordering modes will map every Pixel to 4 DMX Slots.

For example, to use ENTTEC RGBW Pixel Tape with your Pixie driver, you will set the ordering to GRBW.

"SEND" Tab

It is possible to send pre-defined testing sequences, personalized data or Art-Net packets coming from any external source to your strips using the tools provided in this window.
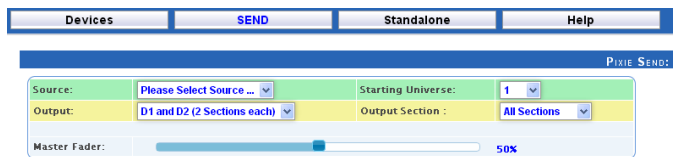

Select one out of the three available sources: "Test Patterns", "Live Art-net" or "From Faders". Then select the Output configuration depending on your particular wiring need.
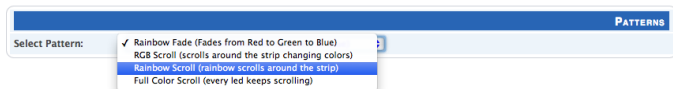

The Test Patterns mode will start sending predefined sequences to your strips once you select the desired one from the drop down.

The Live Art-Net section will allow the user to send any incoming valid Art-Net data straight to the pixel strips whilst the pro manager is running and a USB cable is connected. Please select the matching start universe and make sure the Art-net data is being sent to your computer IP address or broadcasted.
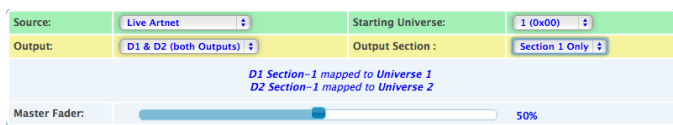

PRO-Manager will show the mapping from universe to sections on each output, based on your selections.

Closing or changing the Send window, will stop Art-Net to Pixie send, PRO-Manager only sends to Pixie Driver while on this page.
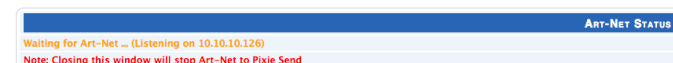

Finally, data can be sent to any particular pixel by using the channel faders which allow you to adjust the intensity of any desired LED on the strip.
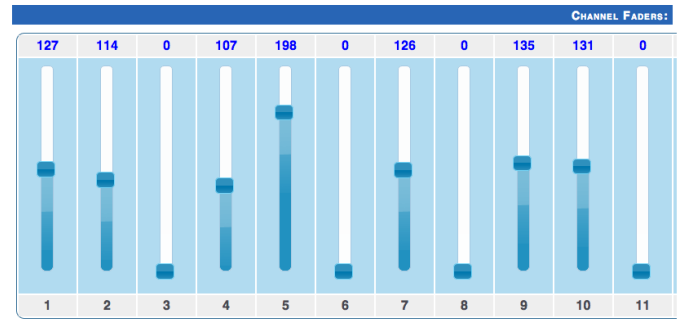

"Standalone" Tab

Standalone mode allows you to record (and playback) shows via Art-Net input to Pixie memory. The duration of the recording depends on the configuration selected before recording. The recorder is smart enough to only record
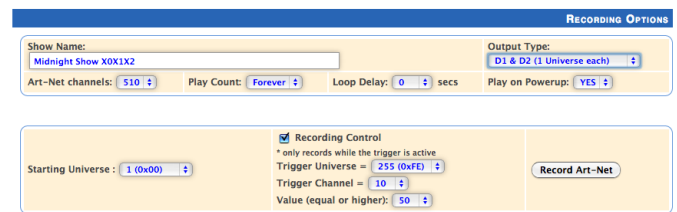

changes in the frames, so as to accommodate as many frames as possible.

The recording trigger feature will let you select a channel in your show to start/stop the recording when it is greater than a selected value. Once the configuration is all set, you can click on "Record Art-Net" button to start recording the show.
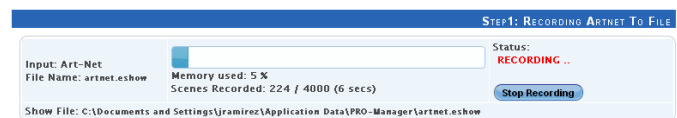
The recording is saved to a file, and is only transferred to the memory when recording is stopped by using the "Stop Recording" button or driving the trigger channel to the right value. Whilst recording, live data is sent to the strips, so you can decide when to stop.

The recording can now be transferred to memory using "Write to Memory" button and the upload to memory progress is shown as it happens.
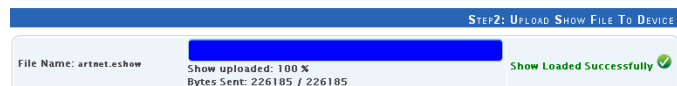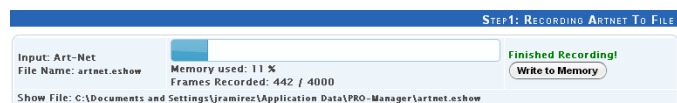
Once the show is uploaded to memory successfully, the page is automatically refreshed to allow show control on the recorded show.

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The show can now be played and stopped using the controls on this page. These controls will only be available, if there is a show stored in memory.

You can also export and import recorded shows using the "Export Show to File" or "Import Show to Pixie Driver" buttons.

Thermal Management

Pixie driver (revB onwards) has an in-built thermal control system. It constantly monitors the hardware's internal temperature and acts on the condition of overheating.
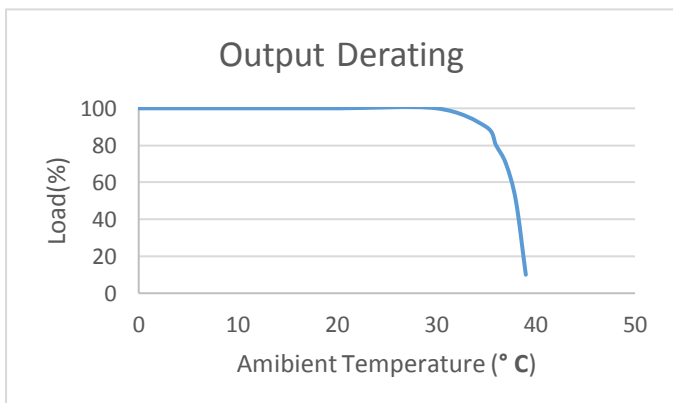
When internal temperature is higher than the limit, the thermal control system will gradually lower the intensity of the connected strips or dots to cool down the driver. Once the internal temperature is within the limit, the driver will resume its normal operation.

Stackable Modular Rack (Accessory)

The modular rack (sold separately) allows up to 8 **Pixie driver** units to be stacked up using only 3 standard rack

units (3RU). The Rack also has 3 in-built fans at the rear to ensure sufficient airflow
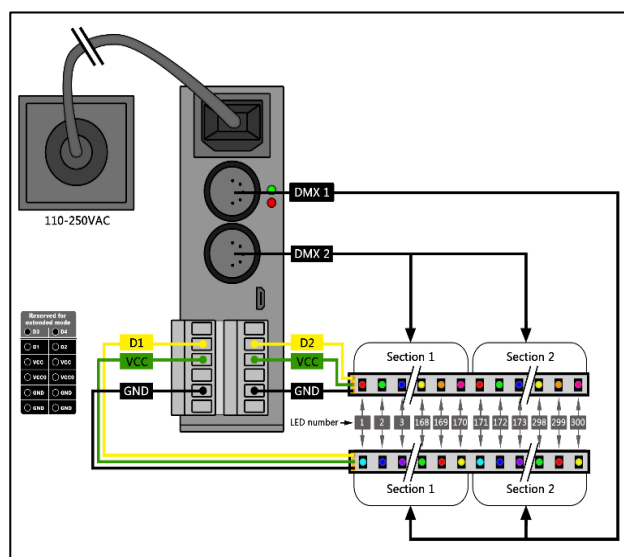
Application Usage Examples

Example1: Drive 300 LEDs from 1 DMX Universe

Strip used: 8PL-60-F (5M of Smart Pixel Tape)

Pixie is setup to use **DMX Personality2**, with pixel grouping set to 2.

This setup allows you to map 450 channels of DMX to 300 LEDs (each RGB DMX address is mapped to 2 pixel LEDs)

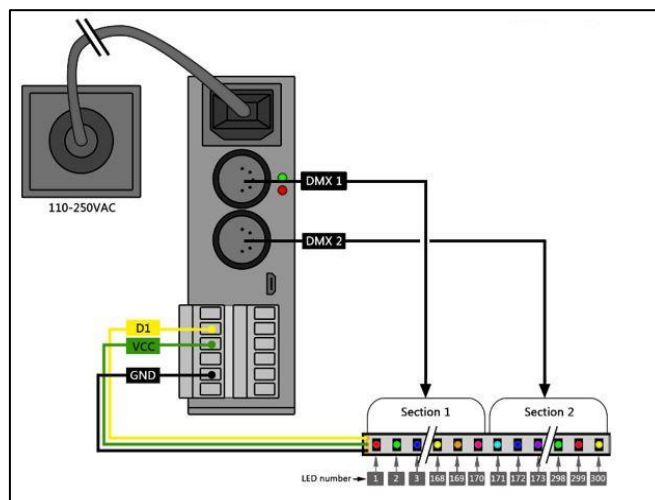**Drive 300 LEDs from 1 DMX Universe**

Example2: Drive 300 LEDs from DMX1 & DMX2

Strip used: 8PL-60-F (5M of Smart Pixel Tape)

Pixie is setup to use **DMX Personality1**

This setup allows you to map DMX1 to the first section (170 LEDs) and DMX2 to the second section (remaining 130 LEDs) – allowing up to 300 LEDs in total

Drive 300 LEDs from DMX1 & DMX2

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Specifications

Item	Value
Input Voltage	90 – 264V AC
Input Frequency	50/60Hz
Maximum Total Output Power	55W and 110W versions (5V) 65W and 130W versions (12/24V)
Maximum Current per source (VCC or VCC0)	11 Amps
Maximum Current per Pin (Screw Terminal)	10 Amps
Data Output Type	Multiple protocols supported
Control Input	DMX512
Show Recording	From Art-Net using Pro Manager software (usb connection required)
Show upload	Through USB port
Cooling Method	Smart Fan (revB onwards)
Operating Ambient Temperature	0 - 40° C
Connectors	2x 5-Pin Male XLR for DMX input 1x Double layer 6-Pin screw terminal 1x 3-Pin IEC C14 Male Socket 10Amps
IP Rating	IP20
Unit Weight	0.96 kg
Shipped Weight	1.389 kg

Ordering Information

Part Number	Description
73541	PIXIE DRIVER 5V (55 WATTS)
73540	PIXIE DRIVER 5V (110 WATTS)
73542	PIXIE DRIVER 12V (65 WATTS)
73543	PIXIE DRIVER 12V (130 WATTS)
73547	PIXIE DRIVER 24V (65 WATTS)
73548	PIXIE DRIVER 24V (130 WATTS)
73545	PIXIELINKER (5V)

Accessories

Part Number	Description
73550-115	8 WAY PIXIE DRIVER RACK (115V AC)
73550-230	8 WAY PIXIE DRIVER RACK (230V AC)
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
8PX30-F	RGBW PIXEL TAPE 30 LEDS/METER 5V - 5M 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

Registration

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

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