

## ENTTEC PIXIE DRIVER



### Features

- Drives 2 DMX universes worth of 5 Volt Pixel Tape or 12/24V Pixel Dots (model dependent).
- In-Built 5V DC power supply with 55 and 110 watts output power units available (pn: 73540 and 73451)
- In-Built 12V DC power supply with 65 and 130 watts output power units available (pn: 73542 and 73453)
- 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 and pixel dots based on WS2811, WS2812 & WS2812B.
- 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 in to 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, paying 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.

## 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	73540(55W)	73541(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 WS2811, WS2812 and WS2812B protocol.

Regardless of the output power (65w or 130W) and output voltage (12V or 24V), any PIXIE drivers can process 1024 DMX channels. 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,

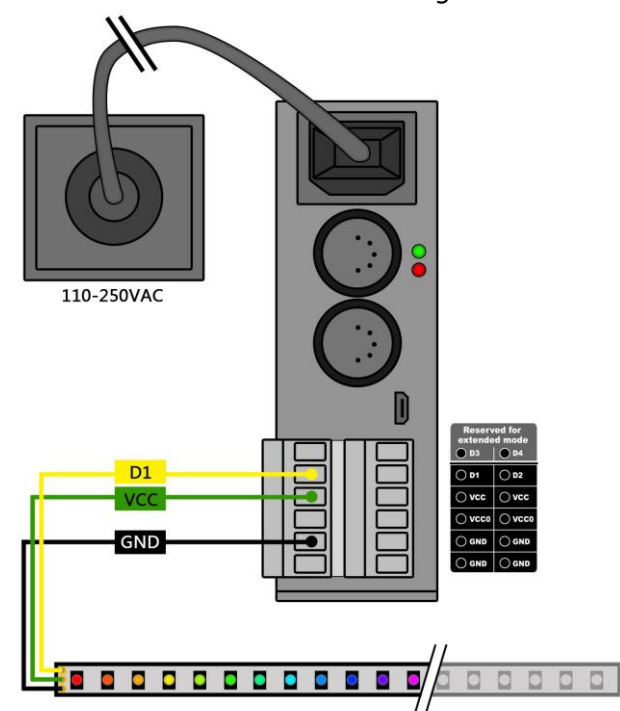
Item	Value
Pixel Dot	8PDOT1-CF rated at 0.6w/dot
PIXIE Driver	73453 12V 130w
Max quantity	$130w/0.6w = 216pcs$

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.



## 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.

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

## 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.

The full DMX LED strip update message format is shown below for RGB Pixel Tape. If the DMX message has less than 510 slots other than the start code, the data for missing slots will be zero.

Size In Bytes	RGB Tape DMX Description
1	Must be 0 or frame will be ignored since it is not DMX.
3	R1, G1, B1. 8 bit intensity of each color of first LED pixel.
3	R2, G2, B2. 8 bit intensity of each color of second LED pixel.
...	...
3	R170, G170, B170. 8 bit intensity of each color of last LED pixel.
2	Unused.

The full DMX LED strip update message format is shown below for RGBW Pixel Tape. Full 512 DMX slots are used when Pixie driver is in RGBW modes.

Size In Bytes	RGBW Tape DMX Description
1	Must be 0 or frame will be ignored since it is not DMX.
4	R1, G1, B1, W1. 8 bit intensity of each color of first LED pixel.
4	R2, G2, B2, W2 8 bit intensity of each color of second LED pixel.
...	...
4	R128, G128, B128, W128. 8 bit intensity of each color of last LED pixel.

### Playback mode

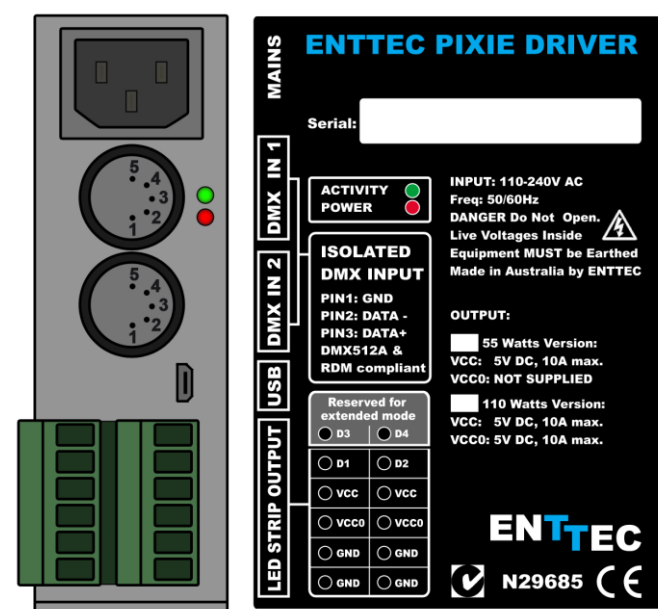
Trigger the stored show from the Pro Manager software or by configuring the PIXIE to start playing it on power up.

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.

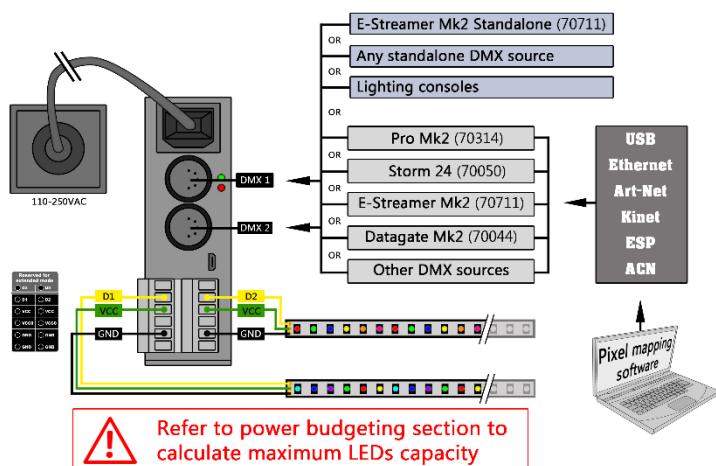
E.g. The shortest possible show with 510 channels at 40 frames per second, will be 25 seconds. If the show has a repetitive nature you could also get it to loop-back forever.

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

## Reference Design



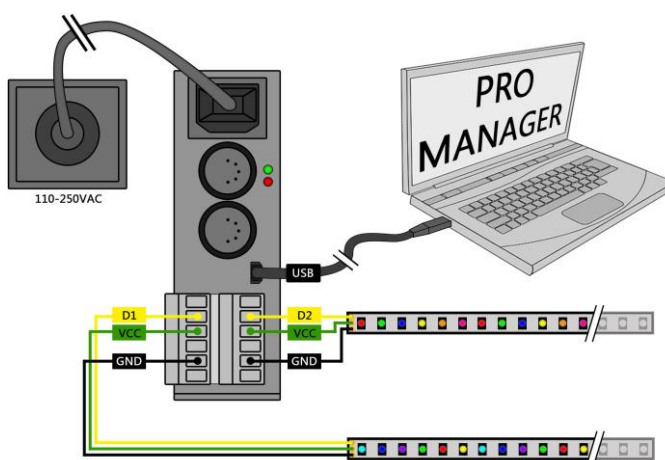
PIXIE driver supports any kind of DMX output device. Here is a reference diagram of connections.



## PRO-MANAGER

ENTTEC provides a free cross-platform (Windows & Mac only) application to configure, test and update the PIXIE. 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.

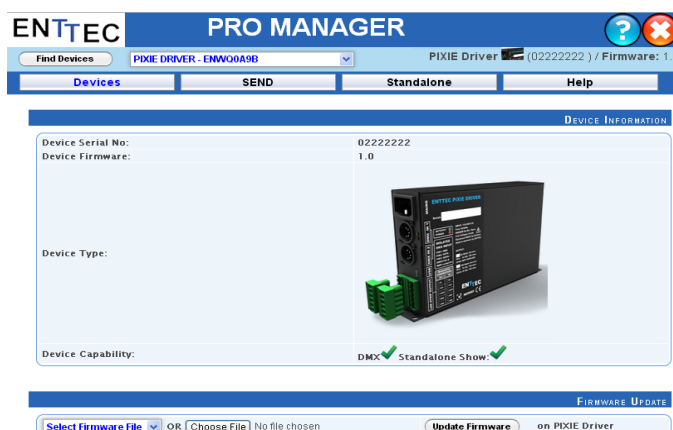
When connected by usb, it should be correctly identified as ENTTEC PIXIE Driver by your computer. Please install and run PRO-Manager with the Pixie driver connected.



### “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.



## Firmware Update

Use the latest firmware file meant for PIXIE driver available on the ENTTEC website ([www.enttec.com/pixie](http://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

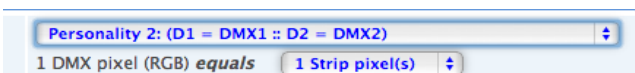


## DMX Personality

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.



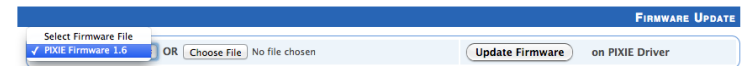
Additional setting for Personality2, allows the physical LED pixels to be grouped onto desired number of DMX pixels.

## LED Strip protocol

Allows compatibility amongst the supported protocols (WS2811, WS2812, and WS2812B). Please check your strip to see which protocol it supports.

## Run show on DMX loss

If 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 show replay.

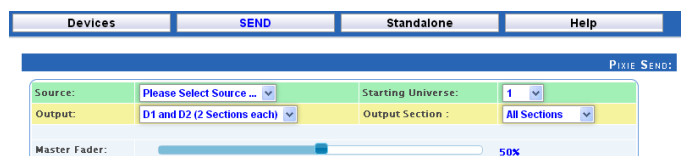
The default ordering assumes that both the DMX input and the led strip outputs are in RGB order.

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

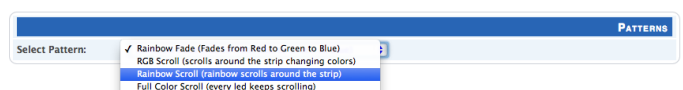
For example, to use ENTTEC RGBW Pixel Tape with your Pixie driver, you will set the ordering to GRBW.

## “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.



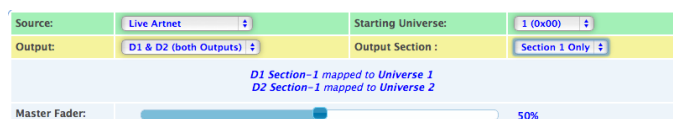
Select one out of the three available sources: "Test Patterns", "Live Art-net" or "From Faders". Then select the Output configuration depending on your particular wiring need.



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.

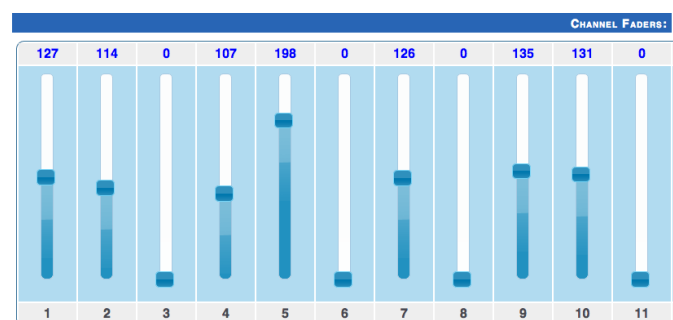


PRO-Manager will show the mapping from universe to sections on each output, based on your selections.

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

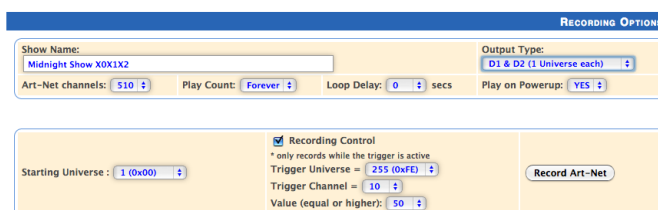


Finally, data can be sent to any particular pixel by using the channel faders which allow you to adjust the intensity of any desired LED on the strip.

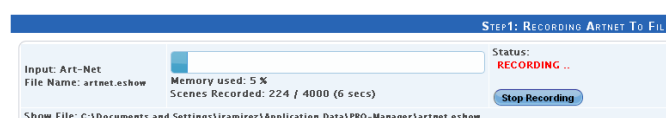


## “Standalone” Tab

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.

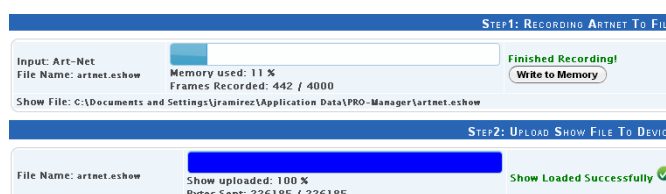


The recording trigger feature will let you select a channel in your show to start/stop the recording when it is greater than a selected value. Once the configuration is all set, you can click on “Record Art-Net” button to start recording the show.



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.



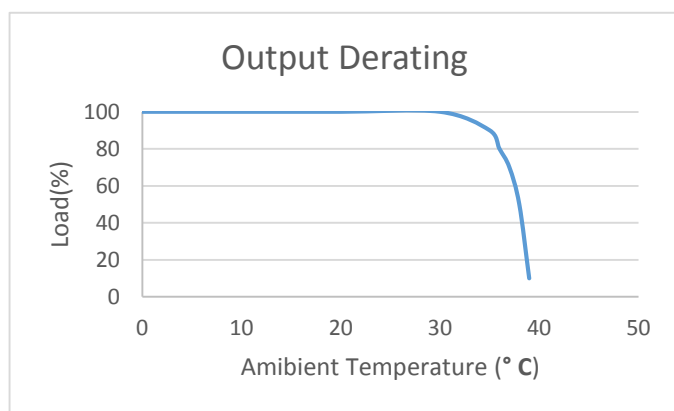
The show can now be played and stopped using the controls on this page. These controls will only be available, if there is a show stored in memory.

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 (as shown in the chart below), 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.



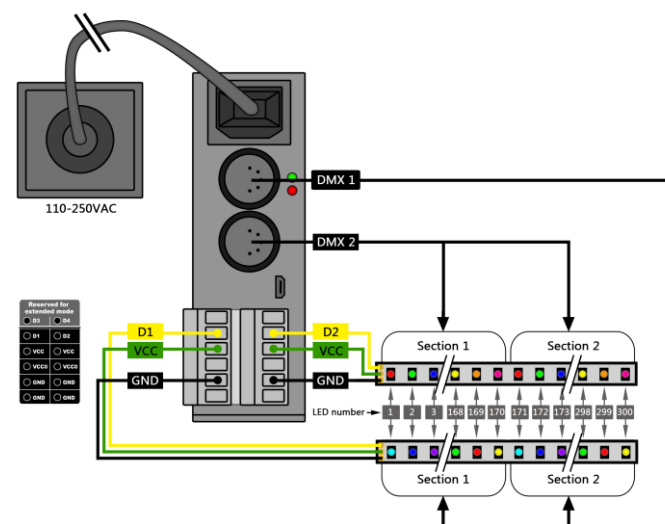
## Application Usage Examples

### 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)

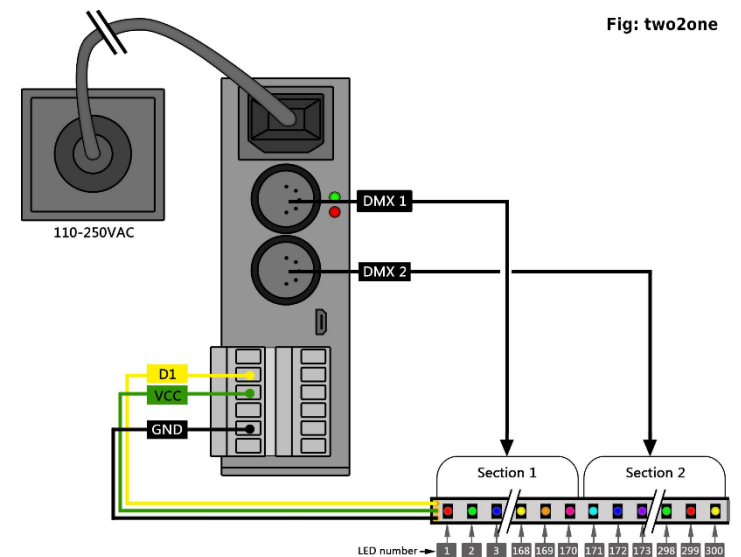


### Example2: Drive 300 leds from DMX1 & DMX2

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

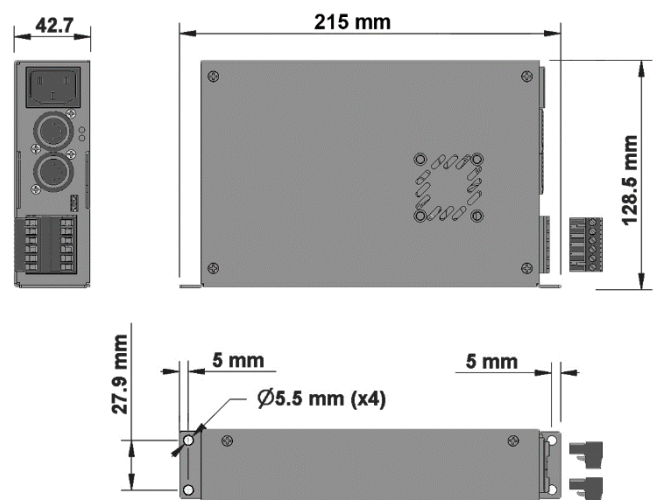
Pixie is setup to use **DMX Personality1**

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



## 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).



## Specifications

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

Item	Value
Input Voltage	110 – 240V 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	Serial WS2812 & WS2812B supported
Data Output Channels	4
Control Input	DMX512
Show Recording	From Art-Net using Pro Manager software
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

73548	PIXIE DRIVER 24V (130 WATTS)
73545	PIXIELINKER (5V)
73550	8 WAY PIXIE RACK
73527	STACKABLE RACK ADAPTER PLATE
8PL144-2	144 LEDS/M RGB Pixel tape – 2 Meter Roll
8PL30-F	30 LEDS/M RGB Pixel tape - 5 Meter Roll
8PL60-F	60 LEDS/M RGB Pixel tape - 5 Meter Roll
8PL144-1	144 LEDS/M RGB Pixel tape – 1 Meter
8PL30-1	30 LEDS/M RGB Pixel tape – 1 Meter
8PL60-1	60 LEDS/M RGB Pixel tape – 1 Meter
8PX60-4	RGBW TAPE 60 LEDS/M – 4 Meter Roll
8PX60-1	RGBW TAPE 60 LEDS/M- 1 Meter
8PDOT1-CF-10	30mm dia/3 RGB/125mm pitch/12V/Clear Flat
8PDOT1-FD-10	30mm Dia/125mm pitch/12V/Frosted Dome
8PDOT2-FD	50mm Dia/105mm pitch/12V/ Frosted Dome
8PDOT3-CD-10	120mm Dia /400mm pitch/12 RGB/24V/Clear Dome
8PDOT4-FD-10	100mm Dia/12 RGB /450mm pitch/24V/Frosted Dome
8PDOT5-CF-10	40mm dia/6 RGB/95mm pitch/12V/Clear Flat

## Stackable Modular Rack (Accessory)



The modular rack (PN: 73550 - sold separately) allows up to 8 Pixie units to be stacked up using only 3 standard rack units (3RU). The Rack also has an in-built fan at the rear side

## 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)

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