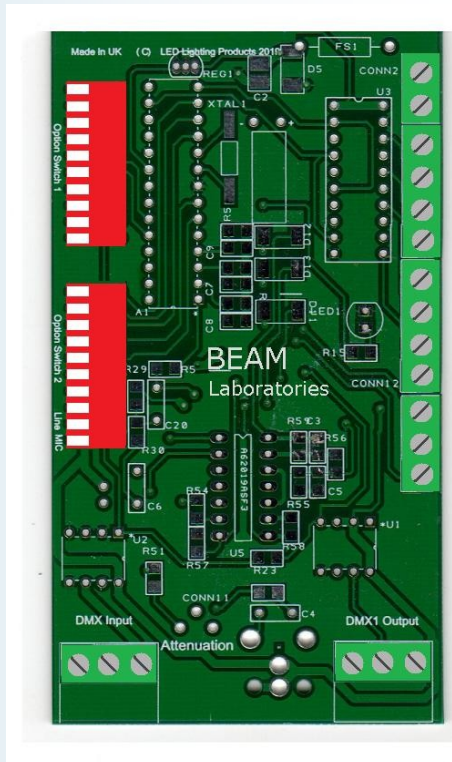


BEAM LABS


# Pixelator Plus

Multi-Mode Light Pattern Generator



Control Pixel LED strips or DMX lights standalone or from virtually **any** RGB / RGBW controller using a unique PWM input.

Optional DMX input allows full pixel controller for home automation systems.



## Introduction

DMX controlled lighting is perfect for homes, bars, clubs, homes, sensory rooms in that it is a high performance, high resolution, low cost control system with upto 512 channels. It is supported by most lighting manufacturers and is very stable.

A major advantage with DMX lighting is the ease that dynamic, flowing and chasing light effects can be created. A development of DMX is pixel lighting, where a large number of small lights are built into either striplights or panels.

The PixelatorPlus is designed to enable dynamic lighting effects from ANY lighting controller, even a simple retractive switch. It has DMX, PWM and switch inputs.

The 4 PWM inputs are for connection to any LED controller, meaning that virtually ANY RGB or RGBW controller can now run multi-channel DMX or pixel lights, including systems such as Philips HUE and OSRAM lightify.

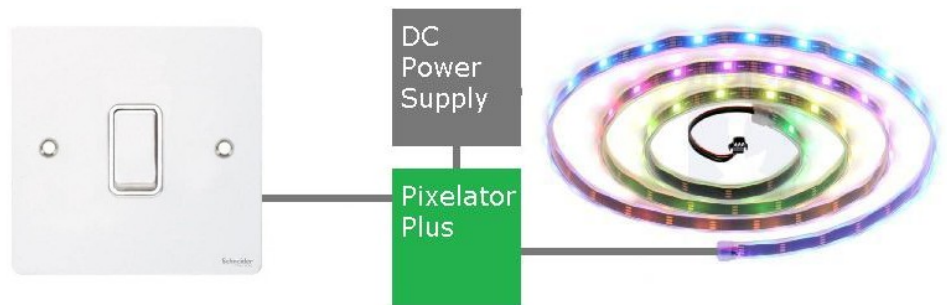
It controls WS2812 and SK6812 chips and automatically adjusts the output to suit RGB or RGBW operation.

## Key Features

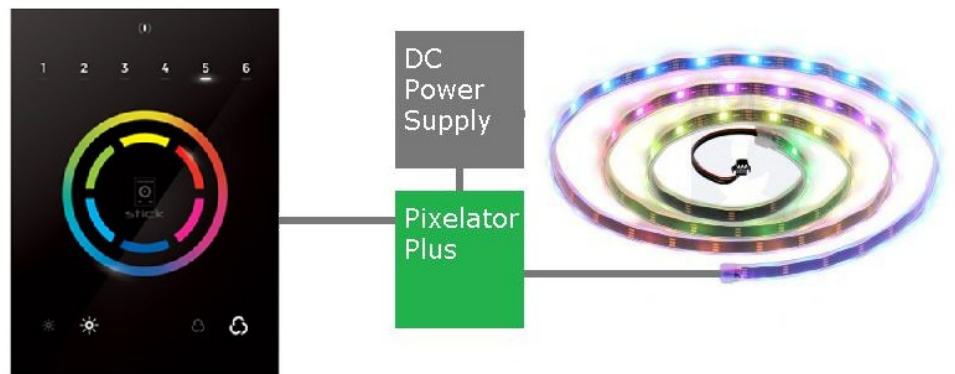
- Operates standalone, by simple switch inputs or by DMX or PWM input
- Controls 512 DMX channels, scalable upto 2048 (more with DMX control)
- Operates the WS2812 and SK6812 protocols, or outputs DMX
- Standalone modes indexed through a simple retractive switch.
- Automatically detects DMX input and reverts to DMX operation.
- PWM-DMX Mode converts 4 PWM inputs to DMX - add any LED controller to a DMX system
- DMX Chips are socketed for ease of replacement
- 5-12v DC Operation
- Scale-down DIP switch inputs give full effects to small DMX systems
- Optional PWM to DMX mode for integrating any LED controller to a DMX system.

## Typical Applications

### Simple Standalone Mode using retractive switch



### Wired DMX Controller

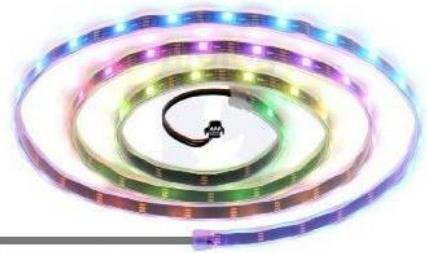


### Standard Wireless RGB/RGBW Con-



## Typical Applications (cont)

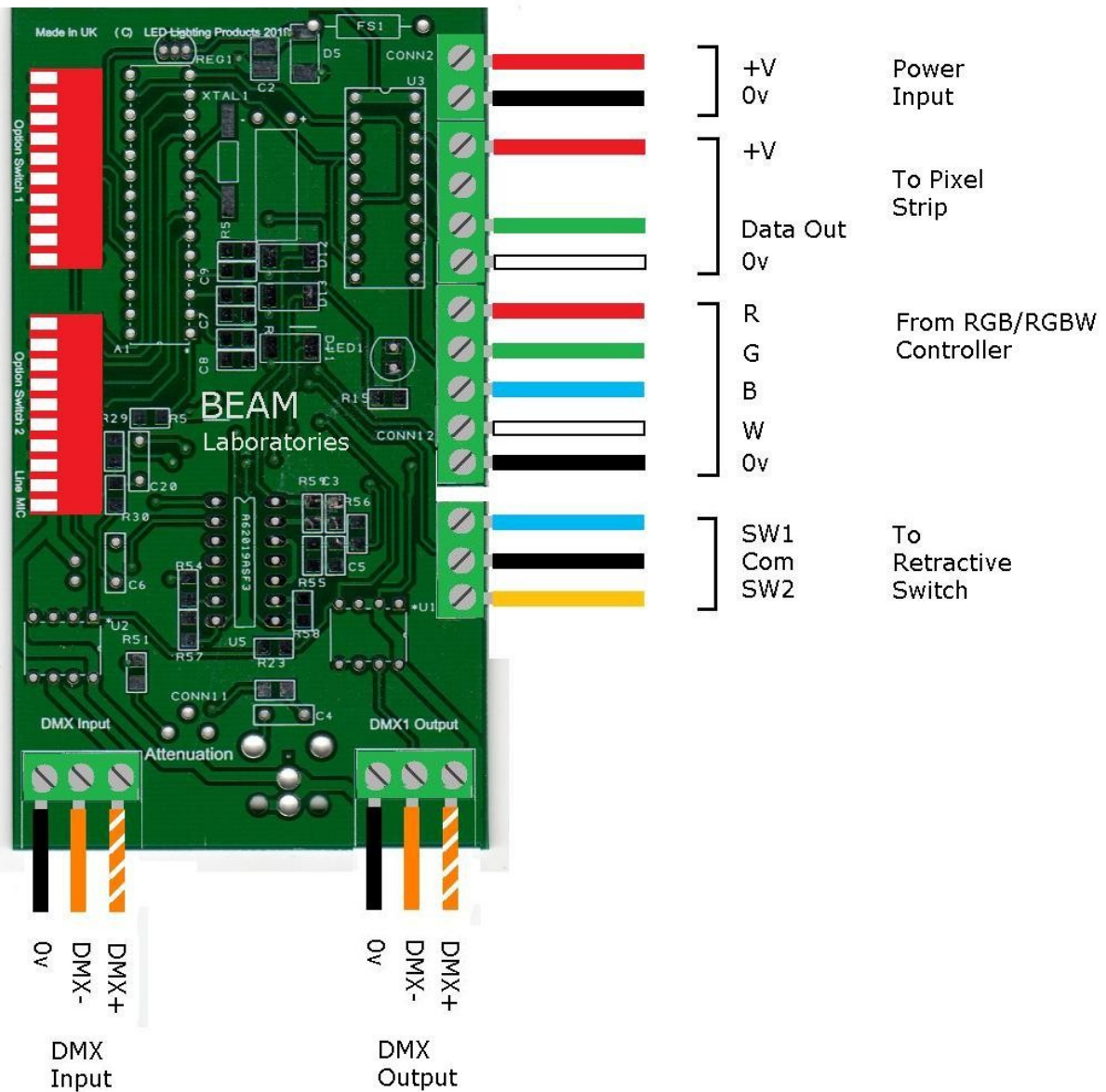
### Philips HUE Type System to Pixel Tape



### Any Colour Controller to DMX



## Wiring Up



Please note that the PixelatorPlus requires at least one control input to operate. However, the retractive switch can be used in conjunction with DMX or PWM inputs to offer a simple on/off wall switch override.



## Description of the Operating Modes

### **Mode 1: DMX, PWM or Switch Input, SPI Output**

This mode constantly monitors the retractive switch, PWM and DMX inputs. If there is no DMX or PWM present the PixelatorPlus assumes standalone mode. If DMX and PWM signals are present, DMX takes priority.

### **Mode 2: DMX, PWM or Switch Input, DMX Output**

This mode is exactly the same as mode 1 but outputs DMX, not SPI.

### **Mode 3: DMX, PWM or Switch Input, SPI Output**

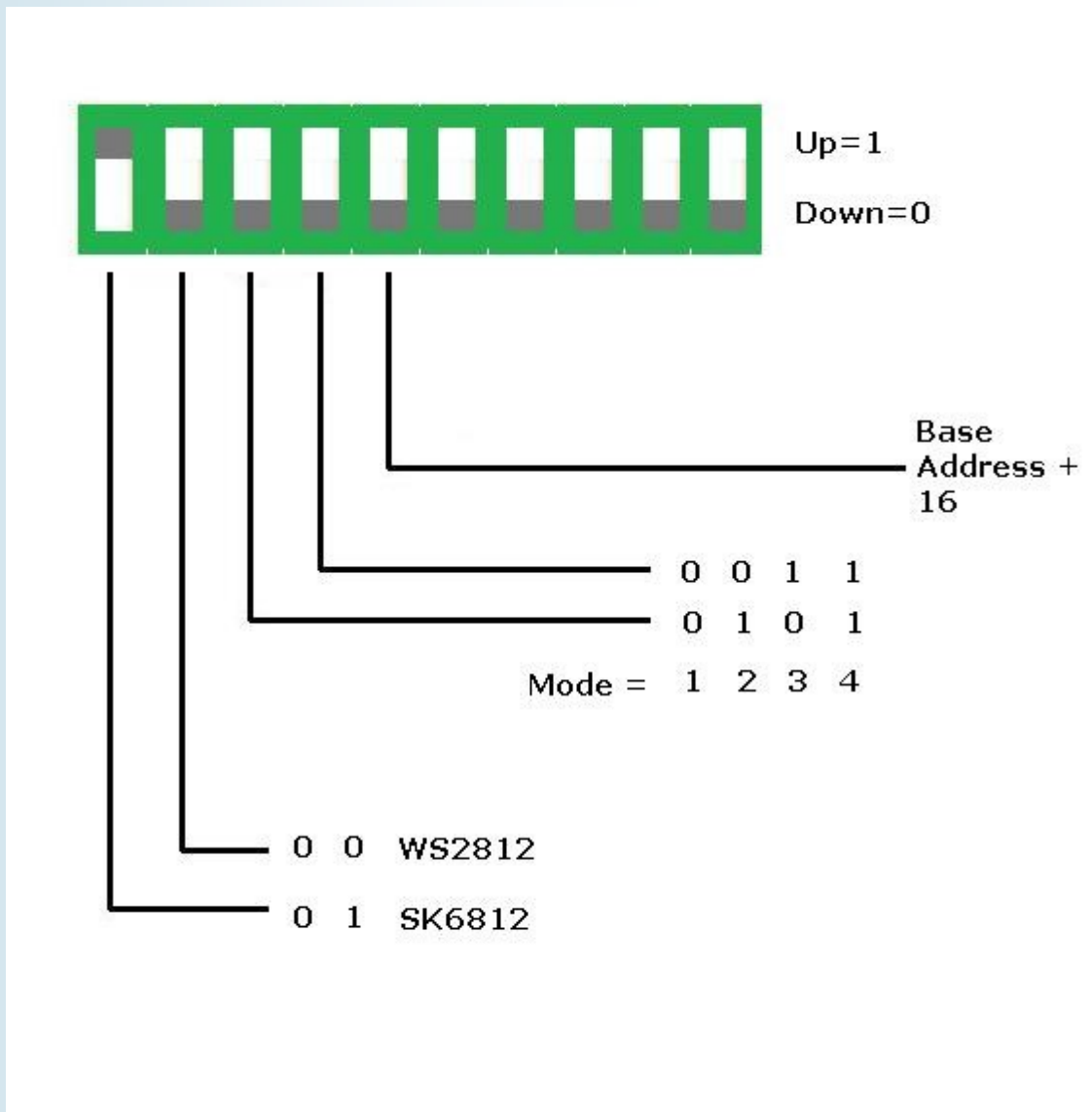
This mode reads 400 DMX channels and converts them to SPI. This mode is ideal for PC-based DMX apps to be interfaced to pixel strips

### **Mode 4: DMX, PWM or Switch Input, SPI Output**

This mode decodes the four PWM input channels and outputs them as DMX. This allows any LED controller to be interfaced to a DMX system.

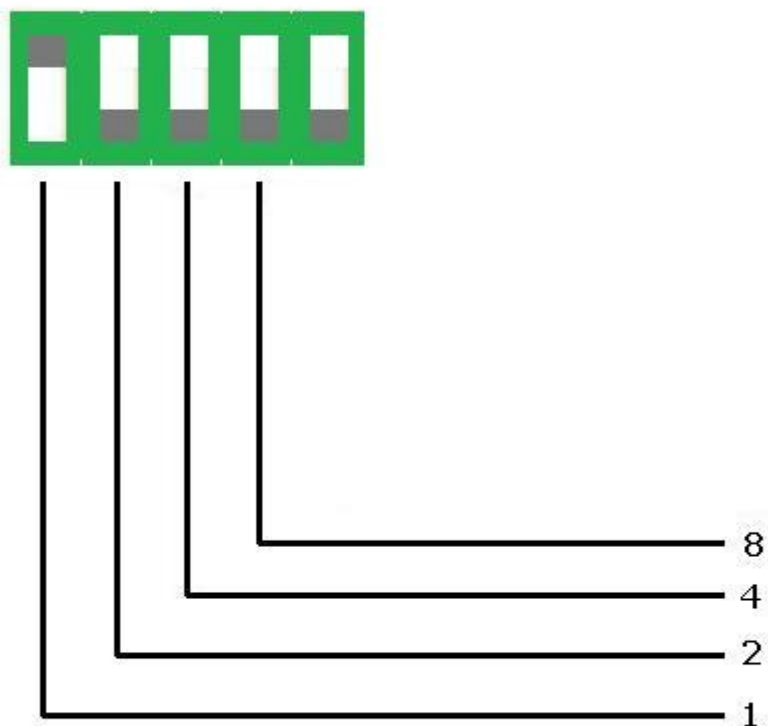
## Setting the Operating Mode and Pixel IC

The control channel is set by the 10 Way DIP switch marked as Option Switch 2 as follows:



## Setting DMX Base Address

The base address is set by the 5 way DIP switch (option switch 1).




Flipping the switch UP adds the number indicated to the base address. Thus, if the switches marked 1 and 8 were UP, the base address would be 9. The 16 switch is on option switch 2.

The control channel is selectable between 1 and 31

If no DIP switch is selected the DMX driver assumes the address 1.





For standalone mode the pixelator requires connection to a two or three position retractive switch. A two position switch connected between COM and SW1 will index through the different modes and off. A three position switch with an extra connection to SW2 will allow an extra 'off'. When the unit is switched back on it will remember its last mode.

The pixelator will automatically default to standalone mode if DMX/Standalone mode is set and there is no DMX signal present. Once DMX is connected the pixelator will assume DMX mode and the retractive switch becomes an on/off override.

The modes are:

Multicolour swirls rainbow colours

Multicolour swirls warm colours

Multicolour swirls warm colours

Rainbow colour change

Aurora with various background colours

Static primary colours

Static secondary colours



## DMX Operation

The pixelator automatically detects when DMX is present. Setting the channels is according to the following:

DMX Channel 1: Operating mode

DMX Channel 2: Scale

DMX Channel 3: Various

DMX Channel 4: Speed

DMX Channel 5: Length1 (number of LEDs on first run)

DMX Channel 6: Width1 (number of LEDs on second run)

DMX Channel 7: Length2 (number of LEDs on third run)

DMX Channel 8: Length2 (number of LEDs on fourth run)

DMX Channel 9: 0-255 Red (Certain modes only)

DMX Channel 10: 0-255 Green (Certain modes only)

DMX Channel 11: 0-255 Blue (Certain modes only)

DMX Channel 12: 0-255 White (Certain modes in RGBW only)



## Operating Modes

The full range of DMX modes are covered in application note ANBL007. Below is a small selection of the modes available.

DMX Channel 1	Mode
10	Rainbow
11	RGB Fill (channels 9-12)
30	Aurora (no background colour)
35	Aurora (background colour based on channels 9-12)
238	Swirl ( colour based on channels 9-12). Speed (DMX4) needs to be >230



## **PWM Mode (Connects to Standard RGB/RGBW Controller)**

This mode allows a standard three or four channel LED controller to control the many hundreds of channels required by dream pixel LEDs. It decodes the three or four PWM channels (red, green, blue, white) and applies a decoding algorithm. It then sends the appropriate data to the pixel LEDs.

### **PWM Mode Operating Algorithm**

If the controller's brightness is set to over 50% the pixel strips copy the exact colour that the controller is set to, ie the strips appear to be conventional LED strips.

If the controller is set to 50% or less the pixelator will apply as a minimum the following pixel effects:

<b>Controller Setting</b>	<b>Pixel Effect</b>
RED	Aurora Warm
ORANGE	Rainbow Colour Change
GREEN	Flowing Effect Warm
CYAN	Flowing Effect Cool
BLUE	Magic Rain
PURPLE	Aurora Cool

If the controller has fine resolution, such as a colour wheel there are interim effects.



## Contacting Technical Support

Technical support is available by emailing [info@ledlightingproducts.co.uk](mailto:info@ledlightingproducts.co.uk) or by calling 01543 481532. For customers outside the UK please dial +44 1543 481532.

The technical helpline is open Monday-Thursday 9:30am—4:30pm and Friday 9:30am—12:00 pm.

## Warranty

LED Lighting Products Ltd warrants that the product it manufactures and sells will be free from defects in materials and workmanship for a period of 1 year from the date of despatch. If the device proves defective within the respective period, LED Lighting will repair or replace the defective hardware at its sole discretion. If the failure is due to an operator error the user accepts to pay for any charge relating to the diagnosis of the hardware, faulty parts or shipping from our factory.

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