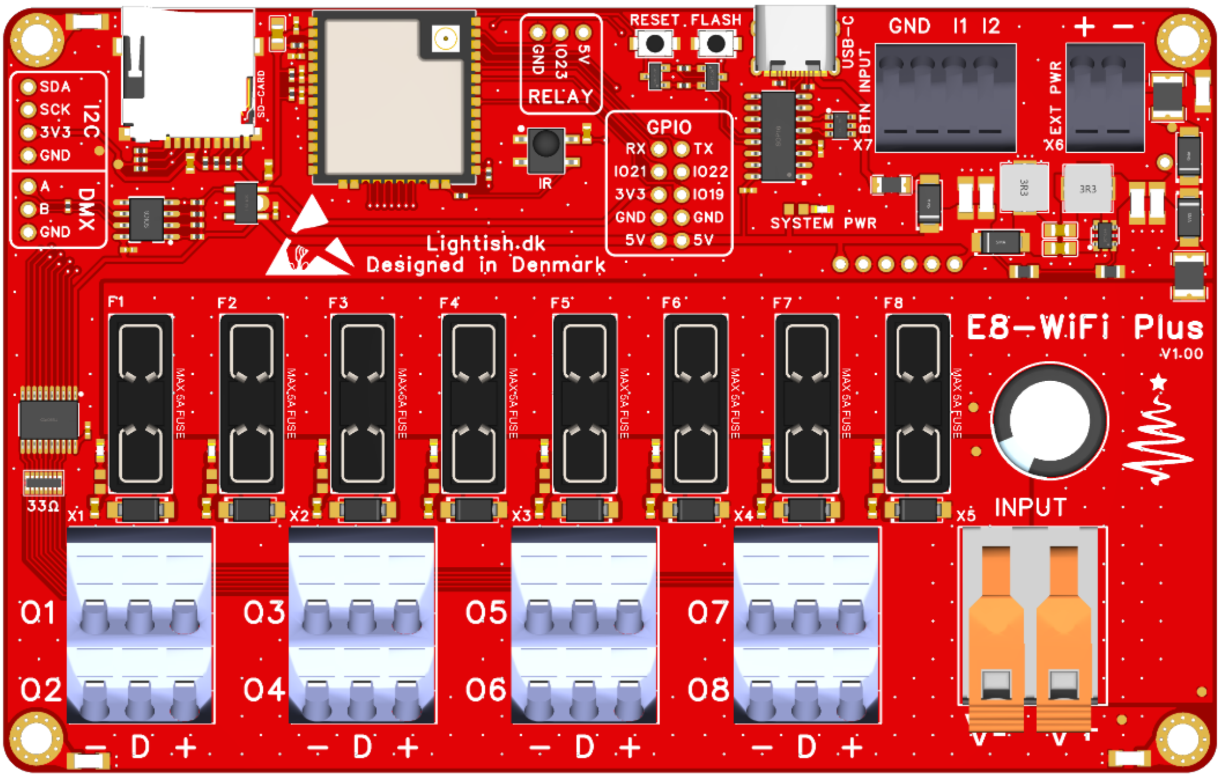
Datasheet

E8-WiFi Plus

8 Port Pixel Controller

Version 1.01

English



Control 8 strings of 3-wire smart pixels

Table of contents

Product Overview

Key Features

- **Open-Source Software:** The E8-WiFi Plus is powered by open-source software, allowing for flexibility, customization, and a wide community of support.
- **8 Pixel Ports:** Features eight ports with fuses, for controlling 3-wire smart addressable pixels.
- **Up to 4800 pixels:** The E8-WiFi Plus can control up to 4800 pixels spread across its 8 outputs.
- **Broad Voltage Support:** Can operate with a wide voltage range from 5V to 24V DC.
- **High Current Capacity:** Supports an output current up to 30A.
- **External Antenna**: The E8-WiFi Plus utilizes an external antenna to enhance WiFi signal strength and extend wireless coverage.
- **Dual Power Input:** Offers flexibility and redundancy with a secondary power input for the microprocessor.
- **Spring Terminals:** The E8-WiFi Plus features spring terminals, eliminating the need for screws and facilitating easy and quick wire connections.
- **SD Card Slot:** Built-in micro-SD card slot allows for standalone and remote playback.
- **DMX Support:** DMX output allows for integration with other stage and entertainment lighting systems.
- **IR Receiver:** Onboard infrared receiver enables local control of the device.
- **Programmable via USB-C:** Allows for easy programming of the ESP32 microprocessor using the onboard USB-C port.
- **Button Inputs:** Ability to add external triggers through two button inputs.
- **Extra Connectivity:** Provides additional GPIOs and an I2C bus for extended device interaction.

Specifications

General	
Product type	Pixel controller
Product name	E8-WiFi Plus
Version	1.01
Data outputs	8 TTL outputs for driving WS281X pixels
Supply voltage	5V - 24V DC
Continues output current	30 A
Power consumption	10 W

Broad Voltage Support

This device is engineered to handle a wide voltage range from 5V to 24V DC. This broad voltage support ensures compatibility with a wide array of power supplies, offering flexibility for various deployment scenarios. Whether you're installing a small indoor display or a large outdoor light show, you can power it appropriately.

High Current Capacity:

With its high current output capacity of up to 30A, the E8-WiFi Plus can power a substantial number of pixel lights, making it perfect for large installations. This high current capacity means you can power more lights from a single controller, simplifying your setup and potentially reducing your hardware costs.

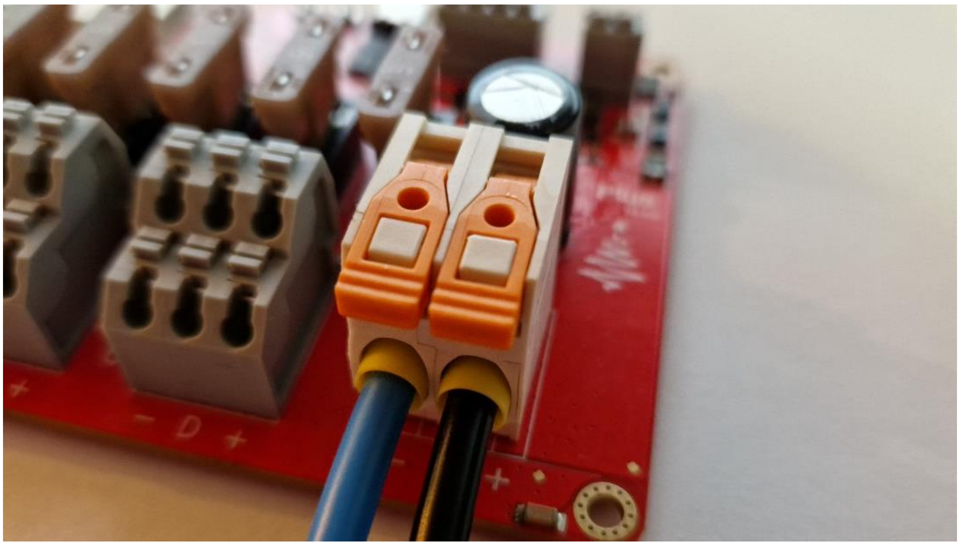
Open-Source Software

One of the key strengths of the E8-WiFi Plus is its use of open-source software. This means users have the flexibility to customize the controller's functions to their specific needs and requirements. It also means there is a vast community of developers and users who can provide support, share solutions, and continuously improve the software. The ability to tailor the software to your needs and the collective knowledge of a large community are invaluable assets.

Spring Terminals

The device is equipped with spring terminals, a feature that simplifies the installation and maintenance process. With this design, connecting or disconnecting wires becomes a tool-free process that's quicker and easier than using traditional screw terminals.

Power Input	
Description	Input for powering the 8 power outputs and control circuit
Input terminal reference	X5
Voltage	5V - 24V DC [1]
Tolerance	5 %
Minimum available current	10 A
Maximum load current	30 A
Terminal type	String terminal
Connection capacity	
Stranded with plastic sleave	0.5 - 6 mm²
Stranded without plastic sleave	0.5 - 6 mm²
Stranded with Twin ferule with plastic sleave	0.5 - 2.5 mm²
Stripping length	15 - 16 mm
Opening force	≥8 N



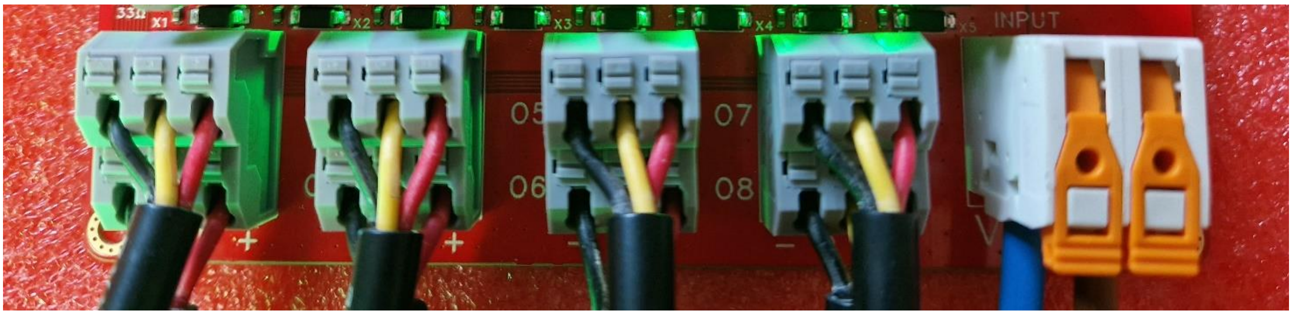
[1] Input voltage always must match with rated voltage for the connected pixels!

Outputs

The E8-WiFi Plus is designed with eight individually controlled ports, each one equipped with its own fuse for safety. This architecture allows the controller to operate 3-wire smart addressable pixels, offering a large degree of flexibility in creating intricate lighting displays. Whether you're creating a small display or a massive light show, the 8-Port Pixel Control has you covered. Each of the 8 outputs are buffered 5V TTL outputs. The maximum distance to maintain a stable signal are 10m between the controller and lights.

Pin	Symbol	Description
GPIO05	O1 - Data	Pixel output 1
GPIO 12	O2 - Data	Pixel output 2
GPIO 04	O3 - Data	Pixel output 3
GPIO27	O4 - Data	Pixel output 4
GPIO17	O5 - Data	Pixel output 5
GPIO26	O6 - Data	Pixel output 6
GPIO33	O7 - Data	Pixel output 7
GPIO25	O8 - Data	Pixel output 8

Power Output	
Description	8 Outputs with power and data for connecting pixels
Input terminal reference	X1…4
Voltage	Same as input
Maximum load current	5 A
Terminal type	Double-level string terminal
Connection capacity	
Stranded with plastic sleave	0.5 - 1 mm²
Stranded without plastic sleave	0.5 - 1.5 mm²
Stranded with Twin ferule with plastic sleave	NON
Stripping length	9 - 10 mm
Outputs per terminal block	2



Fuses

Each fuse has a green status LED. Fuse are blown if the according LED does not light up.

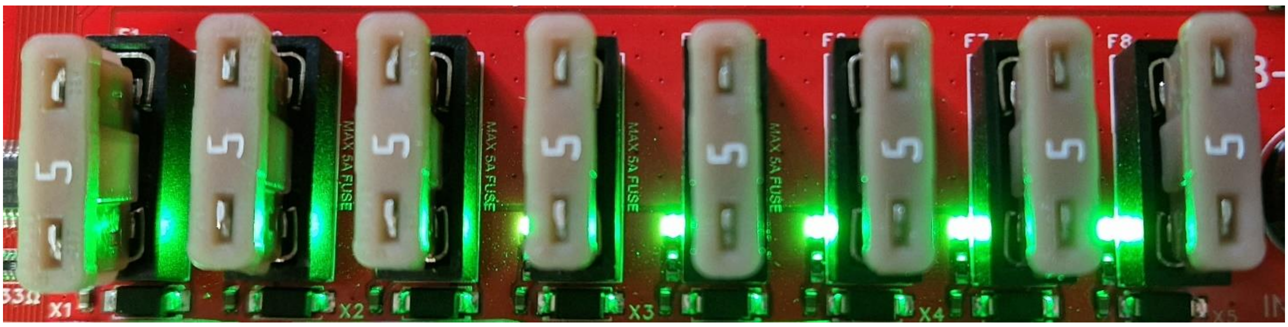
Output fuses

	F1	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**
Max fuse	5 A							
Type	Normal, Mini, and low-profile Auto fuse							
Block	X1		X2		X3		X4	
Supplying	O1	O2	O3	O4	O5	O6	O7	O8

Fuse status LED	
OFF	ON
The Fuse are blown, please replace	The fuse is intact and working

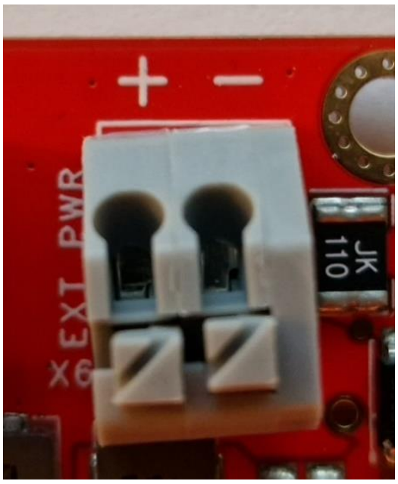
Fuse F1 - F8

Description	**Fuses for protecting the 8 power outputs**
Board reference	F1 - F8
Replacement fuse	
Type	Normal auto fuse Mini auto fuse Low-profile mini auto fuse
Voltage rating	32V
Max current rating	5A
Push in/out force	≥1 kg



Dual Power Input

The E8-WiFi Plus is designed with dual power inputs, providing an essential level of redundancy. This feature allows the device's microprocessor to continue functioning even if one power input fails, ensuring the reliability and continuity of your lighting display.



Input X6	
Description	**External Input for powering the control circuit when no power is applied on X5**
Board reference	EXT PWR - X6
Voltage	5V - 24V DC
Tolerance	5 %
Maximum load current	1.1 A
Terminal type	Spring terminal block
Connection capacity	
Stranded with plastic sleave	0.5 mm²
Stranded without plastic sleave	0.5 - 0.75 mm²
Stranded with Twin ferule with plastic sleave	NON
Stripping length	9 - 10 mm

PWR LED

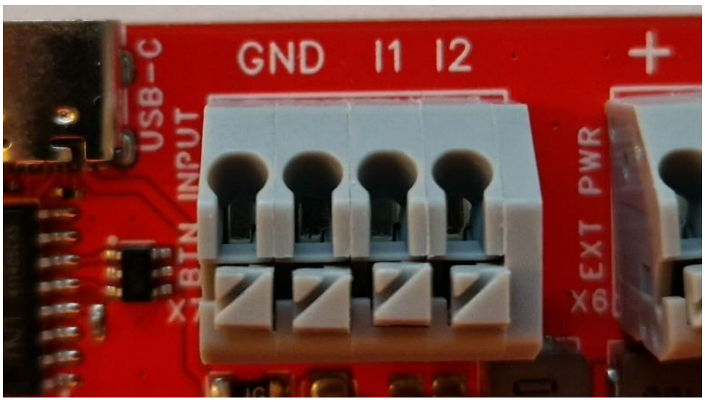
The system power LED light up when the control circuit are provided with power.

Button Inputs

The E8-WiFi Plus includes two button input connectors, providing the option for external triggers. These inputs can be utilized to initiate predetermined lighting sequences, adjust brightness, change color palettes, or any other programmable function based on your needs. This unique feature lends itself well to both pre-programmed displays and interactive installations, such as those found in theme parks, exhibitions, or public installations. Imagine, for example, a visitor pressing a button to initiate a light show or adjust the ambience of a room. By enabling physical interaction, these button inputs can significantly enhance the user experience, transforming static light displays into dynamic, user-centric installations. This additional layer of interaction opens a world of possibilities for innovative lighting design.

Pin	Symbol	Description
GPIO34	I1	External button input 1
GPIO35	I2	External button input 2

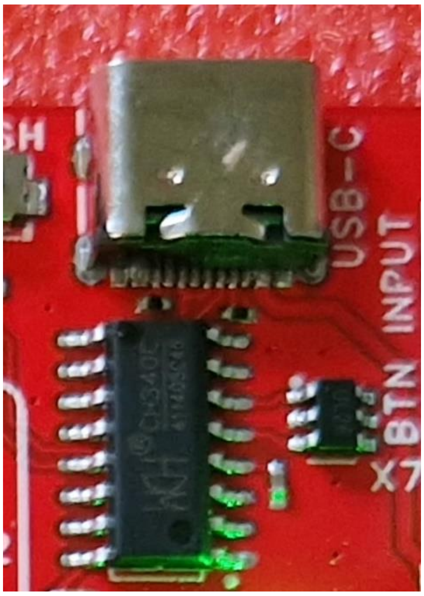
Input X7	
Description	**2X button inputs for external triggering**
Board reference	BTN INPUT - X7
Terminal type	Spring terminal block
Connection capacity	
Stranded with plastic sleave	0.5 mm²
Stranded without plastic sleave	0.5 - 0.75 mm²
Stranded with Twin ferule with plastic sleave	NON
Stripping length	9 - 10 mm



Programmable via USB-C

The onboard USB-C port provides a fast and reliable connection for programming the ESP32 microprocessor. This feature simplifies the software update process, ensuring your device can quickly benefit from the latest features and improvements from the open-source community.

Pin	Symbol	Description
GPIO01	TX	Send
GPIO03	RX	Receive



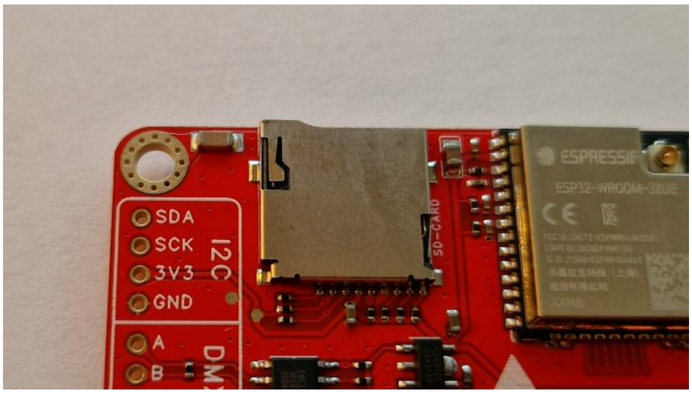
USB-C	
Description	**USB-C for programming the ESP32 and powering the control circuit when no power is applied on X5 or X6**
Board reference	USB-C
Connector type	USB type C
Voltage	5V DC
Maximum load current	500 mA

SD Card Slot

The built-in micro-SD card slot enables the E8-WiFi Plus to run standalone sequences and playback pre-programmed light shows, enhancing the flexibility of your light displays.

This feature currently requires modification to the WLED software to work.

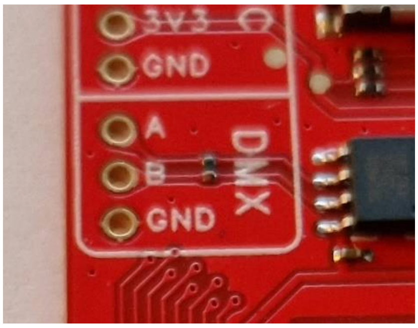
Pin	Symbol	Description
GPIO14	SD Card	CLK
GPIO15	SD Card	MOSI
GPIO16	SD Card	CS
GPIO36	SD Card	MISO



DMX Support

With its DMX output, the E8-WiFi Plus can be integrated seamlessly with other stage and entertainment lighting systems. This feature opens new possibilities for synchronized light shows across different types of lighting equipment, making the E8-WiFi Plus a valuable tool for event lighting professionals.

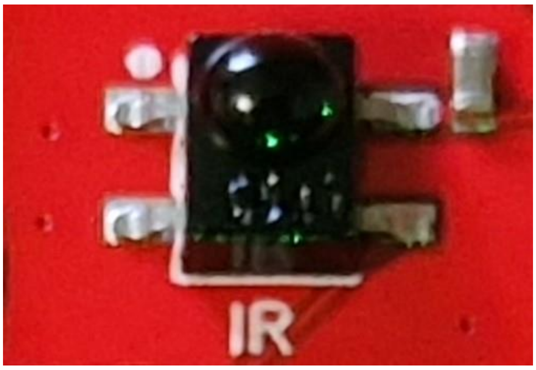
Pin	Symbol	Description
GPIO18	DMX	DMX output



IR Receiver

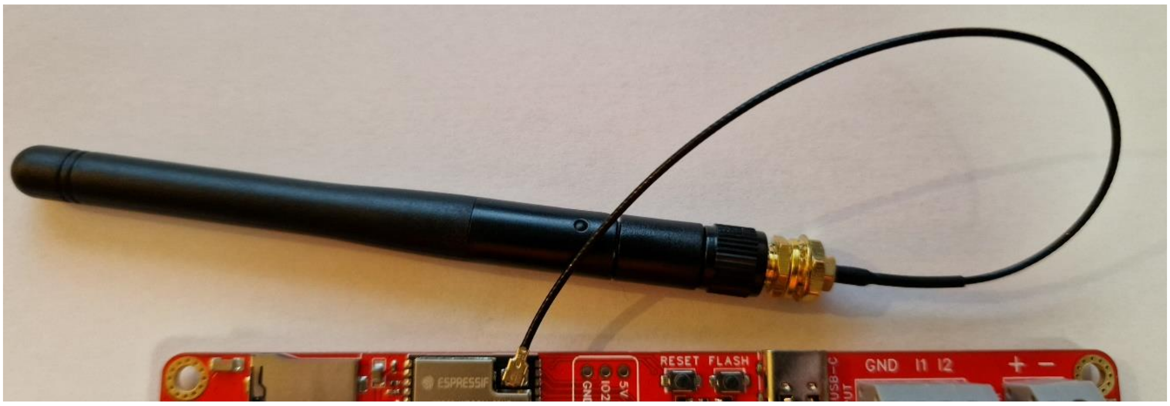
The inclusion of an onboard infrared receiver expands the control options for the device. This feature provides local control functionality, allowing you to make quick adjustments or change lighting patterns without needing to access the device's software interface.

Pin	Symbol	Description
GPIO02	IR	IR-receiver



External Antenna

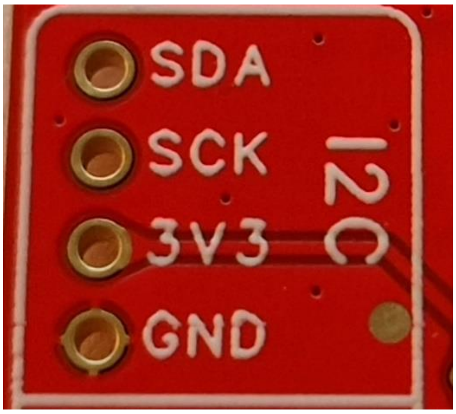
The E8-WiFi Plus incorporates an external antenna to improve WiFi signal strength and extend coverage. This means the device can operate reliably even in environments with weak WiFi signals or over larger distances, ensuring your lighting display continues to function smoothly and without interruption.



Extra Connectivity

With additional General-Purpose Input/Output (GPIO) headers and an Inter-Integrated Circuit (I2C) bus, the E8-WiFi Plus provides extensive opportunities for further device interaction and customization. These connectivity features allow the controller to interface with other hardware devices such as sensors, actuators, or even other microcontrollers, expanding its functionality beyond just controlling pixel lights. For instance, you can use the GPIOs to implement additional control mechanisms or use the I2C bus to connect multiple devices for data exchange, making your lighting setup more dynamic and interactive. Whether you're a hobbyist looking to experiment or a professional seeking to create an intricate light display, these features give you the tools to push the boundaries of what's possible with your lighting controller.

Pin	Symbol	Description
GPIO32	SDA	I2C - SDA
GPIO13	SCK	I2C - SCK
GPIO21	IO21	Spare pin
GPIO22	IO22	Spare pin



System properties

CPU	ESP32-WROOM-32UE Dual-core 32-bit microprocessor up to 240 MHz 8 MB SPI flash 448 KB ROM 520 KB SRAM
WiFi	
Antenna Type	External antenna via a connector
WiFi standard	WiFi 802.11b/g/n
Bit rate	802.11n up to 150 Mbps
Frequency Range	2412…2485 MHz
Bluetooth	yes

Physical

Width	135 mm
Depth	85 mm
Height	26 mm
Net Weight	0.11 kg

Environment

Operating Temperature	-20 - 50 °C
Relative Humidity	Non-condensing
IP Rating	IPXX
Operating Altitude	0 to 2000

Compliance

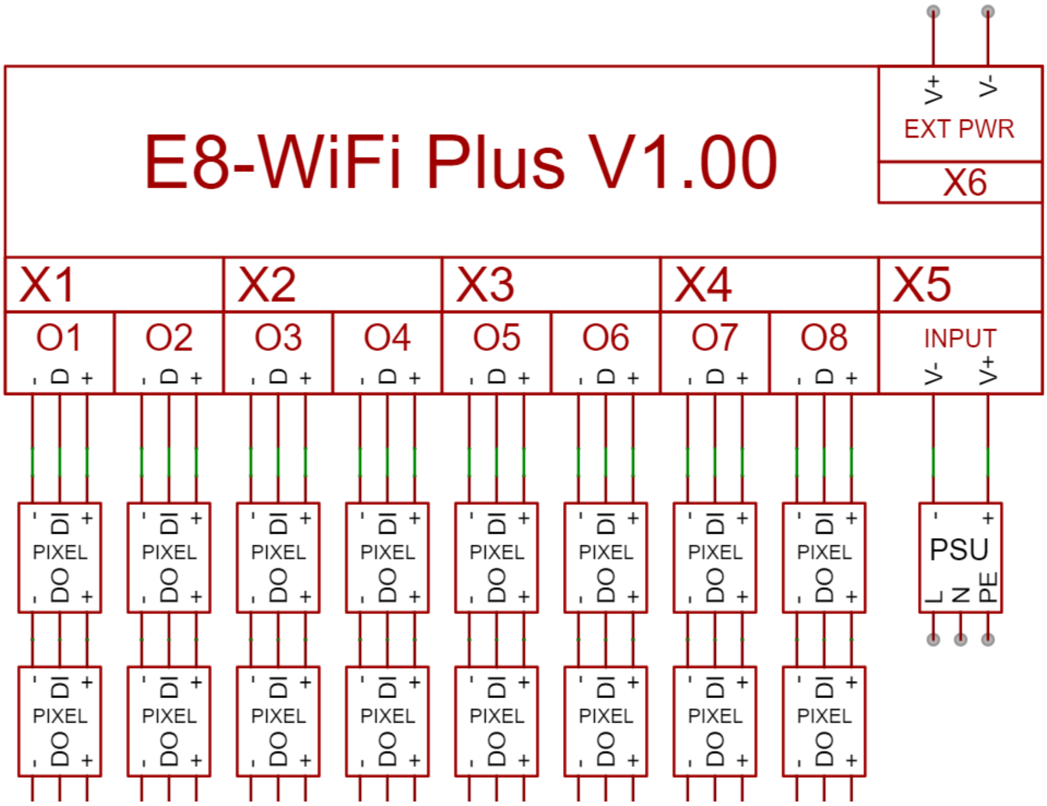
CE	Yes
RoHS	Yes
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

Application

Typical applications

Setup 1:

Typical setup with one PSU and pixels connected to the output terminals.



Compatibility

Software

The controller comes with WLED installed out of the box; this can be reprogrammed via the onboard USB-C port.

Supports WLED, ESPixelstick, ESPHome, and various Arduino libraries

Safety

WARNING
This product should be placed on a stable, flat, and non-conductive surface when in use.

Safety instructions
To avoid malfunction or damage to this product please observe the following:

- Do not expose to water, moisture, or place on a conductive surface.
- Do not expose to heat from any source, the product is designed for reliable operation at normal ambient room temperatures.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- When programming please disconnect any power souse other than the USB connection.
- Avoid handling the printed circuit board whilst it is powered and only handle by the edges to minimize the risk of electrostatic discharge damage.
- Do NOT touch any of the onboard components, to avoid damaging the components.
- When not in use, store in an antistatic bag for ESD protection.

Warranty and support

Warranty
The device comes with a two-year warranty that covers manufacturing defects. Warranty is not valid for products that have been modified, mishandled, or otherwise changed from their original form.

Return
To return the device it must still be sealed in its original packaging. Get more information about returns on our website.

Support
We are ready to help with general information, questions, and issues with the product. Please note that we can’t help with designing setups and configuring special installs of software.