WLED controller for setting up an LED light chain / lighting system controlled via WLAN

Type: WLED V43 / ESP32 (revision 03)

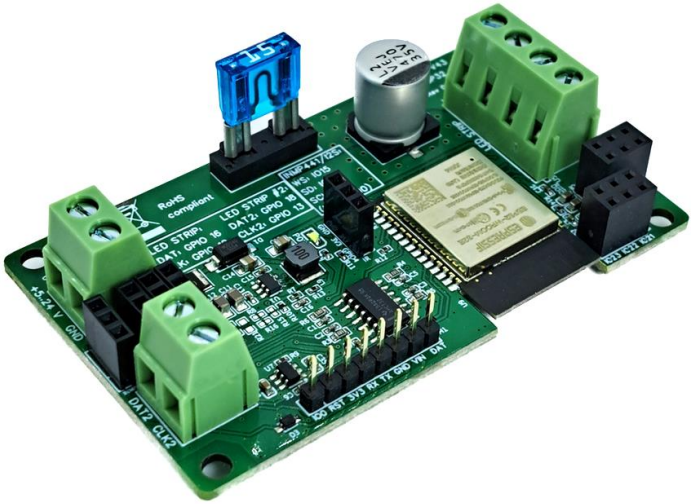
Manual

Content

Please read this usage information carefully!

1 General description and notes

This product can be used to set up a light chain or lighting system controlled via WiFi. It is based on an ESP32 microcontroller. To set up a chain of lights or lighting system, a power supply unit and one or more 5V/12V/24V LED strips are required in addition to this product. The following LED types are supported: WS2812B, WS2813, WS2815, SK6812(RGBW, RGBNW, RGBWW), APA102, WS2801, WS2811, LPD8806, WS2814 RGBW, COB-RGB WS28xx.



Symbols used in this document:

Attention!
Here is a hazard risk pointed out.

Notice.
Here an additional important information is included.

2 Hazard warnings

This product is intended for use by persons with relevant electrical engineering knowledge and experience. This means that the person must be able to correctly dimension the light chain or lighting system to be set up (including, for example, selection of the power supply, the strip, cable selection, any necessary safety measures) and to set it up using relevant electrical engineering standards. Incorrect or improper use can be dangerous. Please read these operating instructions completely before setting up your fairy lights or lighting system.

This product may only be operated with safety extra-low voltage (SELF) (protection class III).

This product is not a toy! It must be kept out of the reach of children and must not be used as a toy.

When connecting to the device terminals, pay attention to the permitted cables and their cross sections.

Please note the technical data, especially the maximum current carrying capacity of the power path. Overloading can lead to the destruction of this product and/or a fire and must be avoided by carefully designing the light chain or lighting system and, if necessary, by integrating the safety elements both in normal operation and in the event of a fault.

Only install and connect this product when there is no voltage applied! Make sure the correct polarity!

We assume no liability for property damage or personal injury caused by improper use or ignoring of the hazard warnings. In these cases, the warranty claim also expires! For further damages we do not accept liability.

Keep this usage information digitally or printed so you can always access it.

This product is only suitable for use in residential-like environments.

To avoid damage, protect this product from electrostatic discharge.

Any use other than that described in this usage information is not intended and leads to exclusion of warranty and liability.

3 Intended use and place of use

This product may only be used to set up a controllable light chain or lighting system. Installation must be in an enclosure and indoors where this product is protected from exposure to liquids including water or rain, direct sunlight, excessive humidity (>70%) and electrically conductive dust or particles. Free air convection around the product (except the mounting surface) must be ensured. The product must not be used in environments with corrosive or explosive atmospheres, near heat sources or for medical purposes. Installation must not be carried out on actively cooled surfaces in order to avoid condensation forming on or in this product. Installation must not be carried out in a place with easy access for children. Use may only occur in accordance with this usage information.

4 Setup

Follow these steps to setup:

1) Install the WLED controller in a housing and fasten it firmly.
2) Screw the LED strips to the corresponding screw terminals. Please consider the specifications in the technical data regarding cable cross-sections, current carrying capability and torque required.
3) Before connecting a power supply, make sure that it is de-energized and completely disconnected from the mains.
4) Connect the power supply to the corresponding screw terminals. Please consider the specifications in the technical data regarding cable cross-sections, current carrying capability and torque. Pay attention to correct polarity!
5) The connected cables must not exert any mechanical stress on this product. If necessary, provide suitable strain relief.

5 Start-up

Follow the following steps when starting up:

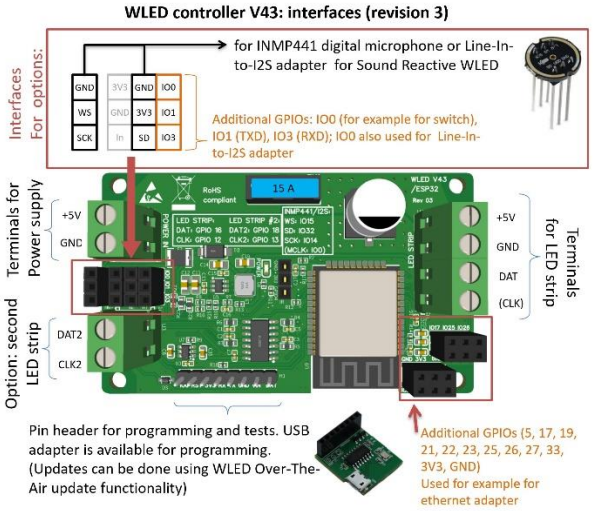
1) Supply WLED controller with power (switch on power supply)
2) WLED controller initially creates a WLAN access point with the name (SSID) ***WLED-AP*** and password ***wled1234***. Connect your WiFi-enabled device (laptop, smartphone, tablet, etc.) to this access point.
3) If it doesn't happen automatically, open an Internet browser and go to address http://4.3.2.1
4) Go to “Settings” and first set up the connection from your WLED controller to your WiFi network. With “Save&Connect” you save your settings and let the WLED controller connect to your WiFi.
5) Now you can reach WLED controller via an IP address assigned to it. You can find out this address is in your WiFi router.
6) Open an Internet browser again and go to this IP address. Now you can set up your LED strip under Config → LED Preferences. It is particularly important to specify the LED type, number of LEDs and GPIO setting according to the following table:

LED Strip #1	
DAT	GPIO 16
CLK	GPIO 12

LED Strip #2	
DAT	GPIO 18
CLK	GPIO 13

7) Click “Save” to save the settings. WLED controller is now ready for operation.

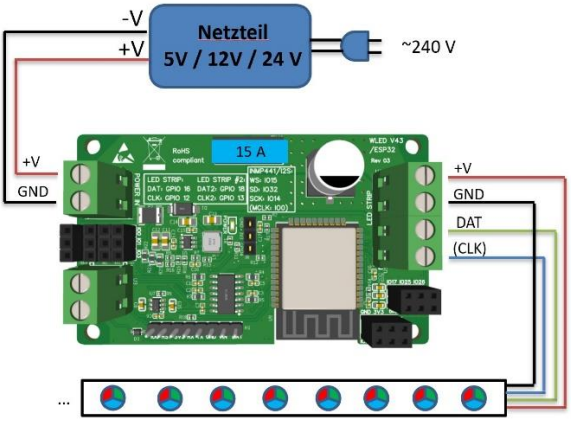
6 Terminals / Interfaces



7 Usage examples

The examples shown below only represent a basic possibility. Depending on the LED type, cable, cable cross-section, cable routing, power supply capability etc., additional safety measures may need to be integrated.

WLED controller V43: example LEDs connected (max. number of LEDs depends on LED type*)



LED strip for example WS2812B / SK6812 / APA102 / WS2811 / WS2814

(*) ATTENTION: The voltage of the power supply must be identical to the LED type voltage!

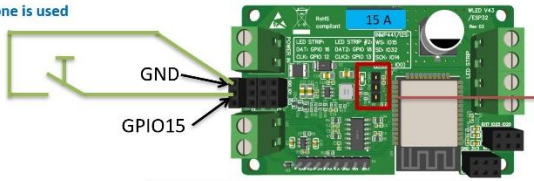
(*) ATTENTION: just a basic representation. Depending on the LED type, cable, cable cross-section, cable routing, power supply capacity, etc., additional safety components may need to be integrated.

8 Additional information

Example for button connection

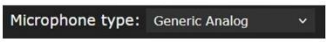
Option 1: if no digital microphone is used

Pins W/S (=GPIO15) or L/S (=GND) can be used for switch



Setup under „Config“ → „LED Preferences“:

Setup under „Config“ → „Sound Settings“:



Configure button for example to on/off LEDs:

1) Make Preset:

2) Configure under „Config“ → „Time & Macros“ → „Button actions“: for Button 1 preset with ID=1:

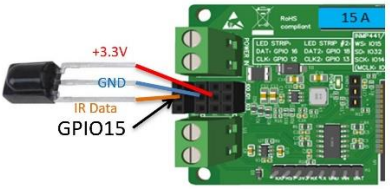
Option 2: if digital microphone is used

Instead of GPIO15 for example GPIO4 in the middle of PCB can be used. GND pin is also available.

Example how to configure IR receiver to be used for remote control

Option 1: if no digital microphone is used

IR receiver type TSOP38238

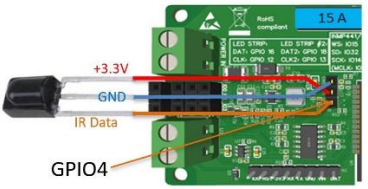


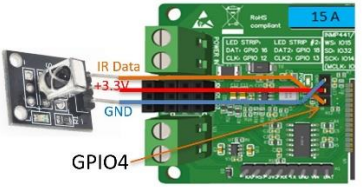
IR receiver type KY-022

Configure GPIO under „Config“ → „Sound Settings“:

Select remote control type according to your remote control

Option 2: if digital microphone is used





Sound Reactive WLED

Option 1: using digital microphone (separately available in our shop)

Option 2: using Line-In-to-I2S adapter (separately available in our shop)

Programming & enclosure

Programming: the best option is our USB adapter (separately available in our shop)

An enclosure is separately available in our shop

9 Delivery scope

Quantity	Description
1	WLED controller

10 Accessories available separately

- USB programming adapter
- Enclosure
- INMP441 digital microphone
- Line-In to I2S adapter
- Ethernet (LAN) adapter

11 Technical data

Type	WLED V43 / ESP32
Supply voltage	4.7V to 24.3 V
Operating temperature	+5° C … +35 °C
Storage and transport temperature	-20 °C … 60 °C
RoHS	yes
Dimensions	78 x.46.5 x 22 mm
Maximum permanent current carrying capability for power path (+5V, GND)	Up to 13 A (depending on cable cross section and environment, refer to separate table)
Mean power consumption Power On (without power path): Power Off (networked standby operation): AP mode (configuration mode):	 0.60 W 0.27 W 0.60 W
Current consumption, peak (without power path)	800 mA
Efficiency at full load	94 %
Power loss at full load	4 W
WiFi standard; frequency	IEEE 802.11 b/g/n; 2.4 GHz
Antenna	integrated PCB antenna, 3.7 dBi
Screw terminals: target torque **Cable cross section** **Stripping/sleeve length**	0.4 Nm 0.5…2.5 mm^2, rigid or flexible with wire end sleeve 6-7 mm / 8 mm
Weight	29.2 g

Maximum permanent current carrying capability of the power path of the device (power supply connection to the LED strip connection, each for +5V and GND)*:

Cable cross-section	Maximum permanent current
0.5 mm^2	3 A
0.75 mm^2	6 A
1 mm^2	9 A
1.5 mm2 – 2.5 mm^2	13 A

*This information alone may not be used to dimension the cables. To do this, other conditions such as cable type, type of installation, cable routing, cable length, etc. must be taken into account.

12 Disposal

Do not dispose of this product with household waste! Electronic devices must be disposed of at local collection points for waste electronic devices in accordance with the directive on waste electrical and electronic devices.

13 Manufacturer

MyHome-Control von Dr.-Ing. Wladislaw Waag
Address: Wladislaw Waag, Wasserburger Landstr. 29, 81825 München, Germany.
Contact: info@myhome-control.de; WEB: https://shop.myhome-control.de
German WEEE Reg.-Nr.: DE34359026