Smart LED

Quantity	Description
1	ESP32
4	3D Printed Parts
2	$12\,\text{mm}$ Aluminium Pipe (ca. $15\,$cm and ca. $20\,$cm)
ca. $0.5\,$m	WS2812 LED Stripe
6	Wood Parts
1	USB-A cable with one open end
1	$11\,$mm Push Button
1	$5\,$mm Toggle Switch
ca. $2\,$m	Stranded Wire (different colors)
a bit	Wood Glue (Not included)
a bit	Glue (Not included)

Difficulty: ●●●●○   Build-Time: 60 – 90 Minutes

Safety Information

- ATTENTION: Not suitable for children under 3 years, choking hazard due to small parts that may be swallowed.

- We recommend: Supervision of the assembly and soldering process by an adult.

- Keep these operating instructions in a safe place for later use! It contains important information.

- If the battery is empty, replace it only with a new battery with the same values.

- When soldering, the soldering iron, the solder and also the components being soldered become very hot.

- Always wear safety glasses when soldering and assembling the kit.

- Always use a fire proof soldering pad when soldering! This prevents the components from slipping away.

- To keep the soldering iron safe during assembly, always use a suitable soldering stand.

- The kit is designed for battery operation only.

- CAUTION: Never connect the kit to 230 V mains voltage! There is an absolute danger to life!

- Please take the device to appropriately certified disposal companies at the end of its service life. This is good for the environment and ensures correct disposal.

- Subject to changes and errors.

Disposal

This appliance is labelled in accordance with the European Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). The directive provides the legal framework for the take-back and recycling of waste equipment throughout the EU.

- **packaging**: The packaging is made of environmentally friendly materials and is therefore recyclable. Dispose of packaging materials that are no longer needed accordingly.

- **waste equipment**: Old appliances often still contain valuable materials. Therefore, hand in your old appliance to your retailer or a recycling centre for reuse. Please ask your retailer or your local authority for the current disposal routes.
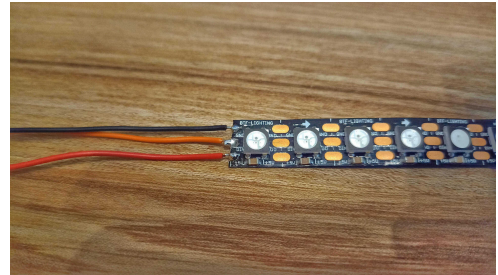
Step 1

a) Check, if all parts are present.

Step 2

a) Solder three wires to the LED strip. Look at the arrows on the LED strip. The wires must be soldered to the end of the strip, where the arrows do not point.

b) Pay attention to the colors of the wires. Black for GND, orange for data, and red for +5V.

Step 3

a) Take the aluminum rods and the 3D-printed parts.

b) Insert the short aluminum rod into the 3D-printed part on the side with the flat area.

c) Repeat this step with the longer rod on the opposite side.

Step 4

a) Run the wires from the top through the longer of the two rods.

b) Wrap the LED strip around the cylinder.

c) When you're satisfied, you can peel off the blue tape on the back and stick everything to the 3D-printed part.

Step 5

a) Take the wooden part with the two large holes.

b) Insert the longer end of the aluminum rod through the center hole.

c) Take the 3D-printed ring. Thread all wires through the hole in the ring.

d) Slide the ring onto the aluminum rod and push it up, until the rod is visible on the other side of the ring.
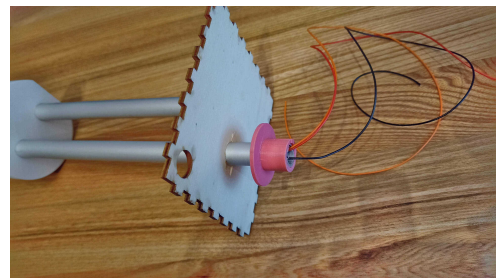
Step 6

a) Slide the wooden plate toward the ring, until it fits snugly.

b) Rotate the wooden plate, until the top part is centered above it.
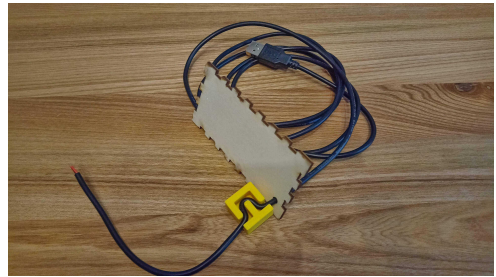
c) Glue the wooden plate to the ring.
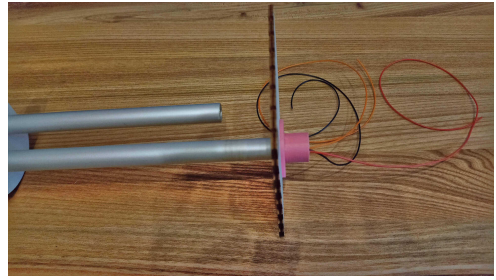
Step 7

a) Take the toggle switch and the wooden part with the small hole in the middle.

b) Unscrew the nut from the toggle switch.

c) Insert the switch through the hole in the wooden plate and screw the nut back onto the switch.
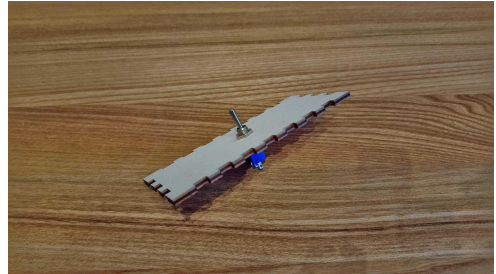
Step 8

a) Take the USB cable, the wooden plate with the hole, and the printed part with the U-shaped pattern.

b) Thread the USB cable through the hole in the wooden plate. It should extend about 10 cm.

c) Press the cable against the wall in the printed part with the U-shape, until it sits firmly.

Step 9

a) Take the assembled part with the aluminum rods.

b) Unscrew the nut from the push button and insert it into the hole on the edge of the wooden plate.

c) Screw the nut back onto the other side of the button, until everything is secure.
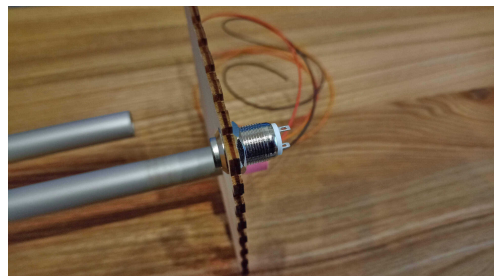
Step 10

a) Take the wooden part with the toggle switch and the wooden part with the USB cable.

b) Solder the red wire of the USB cable to the middle terminal of the toggle switch.

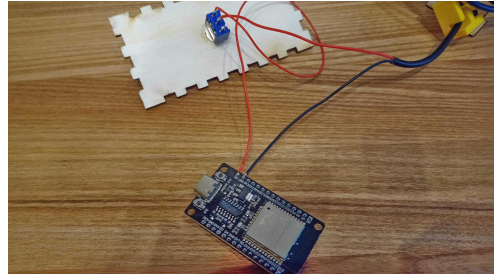c) Solder a piece of red wire to one of the outer terminals.
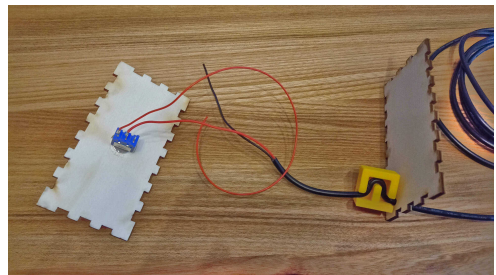
Step 11

a) Take the wooden part with the push button and solder a wire to each terminal. You can choose the color yourself.
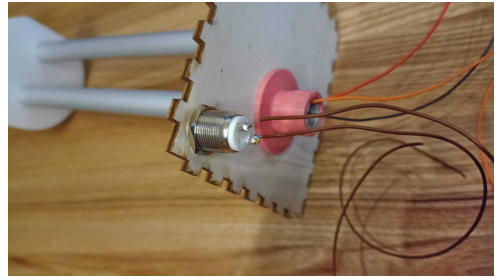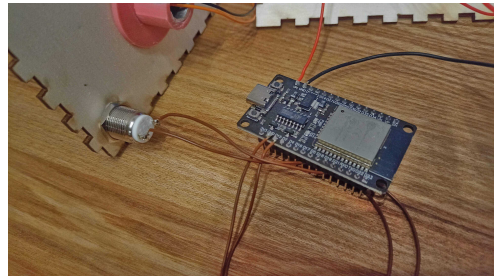

Step 12

a) Solder the black wire to GND and the red wire to VIN of the ESP.
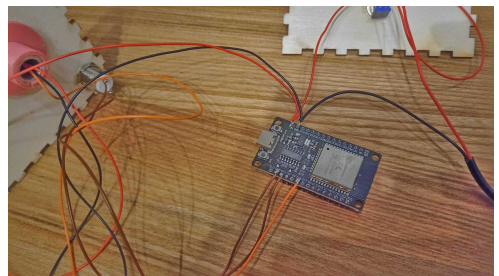

Step 13

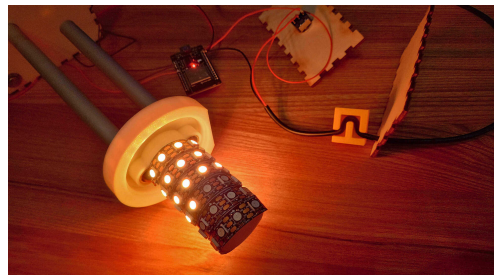a) Now solder the two wires from the push button to GND and D15. The order doesn't matter.

Step 14

a) Solder the wires from the LED strip to the ESP32.

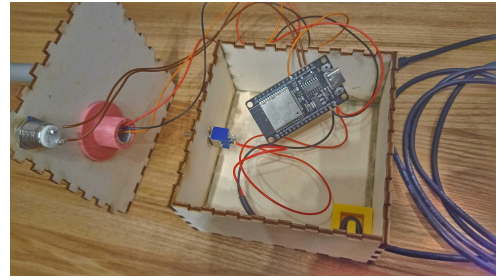b) The red wire goes to VIN, the black to GND, and the orange to D16.

Step 15

a) Plug the USB cable into a power adapter. If nothing lights up, check if the toggle switch is turned on.
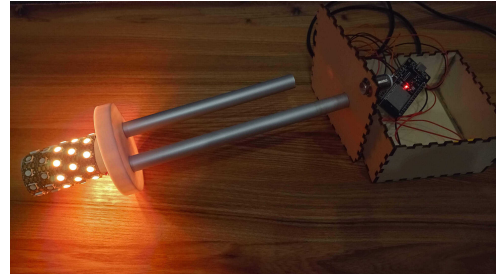
Step 16

a) Glue the lower half of the casing together. If you don't have glue, you can also use superglue.

Step 17

a) Check again, if everything works. Once the casing is glued, it cannot be disassembled anymore.

Step 18

a) If everything fits, glue the casing together. Make sure the wires are not pinched and are neatly tucked into the box.

b) As a final step, you can glue the printed top onto the tip.

Step 19

a) Take your phone and go to the Wi-Fi settings.

b) Connect to the Wi-Fi network WLED-AP. Let it redirect you to the login page.

c) When you click on WIFI SETTINGS, you can connect the lamp to your Wi-Fi and control it through the WLED app.
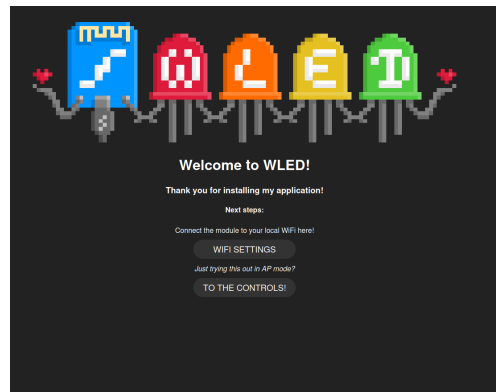
Step 20

a) Set the length of the LED strip. To do this, open the WLED app and select "Config."

Step 21

a) Now choose LED Preferences.

Back

WiFi Setup

LED Preferences

2D Configuration

User Interface

Sync Interfaces

Time & Macros

Usermods

Security & Updates

Step 22

a) Edit the option Length and set it to the length of your LED strip.
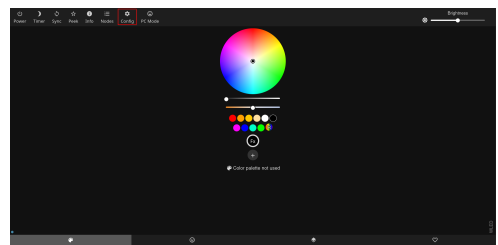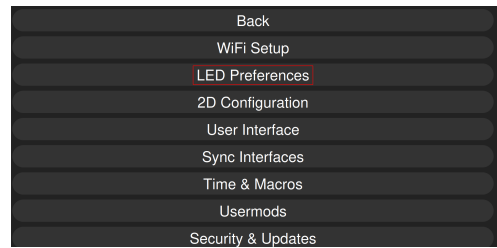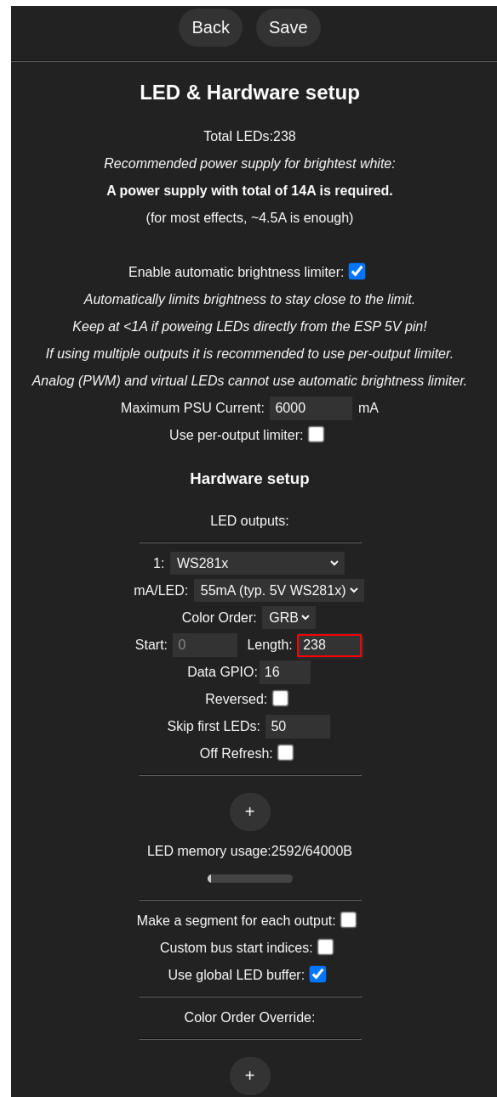
b) You can either count all the LEDs or increase the value, until the entire strip lights up.

Back   Save

LED & Hardware setup

Total LEDs:238

Recommended power supply for brightest white:

A power supply with total of 14A is required.

(for most effects, ~4.5A is enough)

Enable automatic brightness limiter: ☑

Automatically limits brightness to stay close to the limit.

Keep at <1A if poweing LEDs directly from the ESP 5V pin!

If using multiple outputs it is recommended to use per-output limiter.

Analog (PWM) and virtual LEDs cannot use automatic brightness limiter.

Maximum PSU Current: 6000   mA

Use per-output limiter: ▢

Hardware setup

LED outputs:

1: WS281x   ⌄

mA/LED: 55mA (typ. 5V WS281x) ⌄

Color Order: GRB ⌄

Start: 0   Length: 238

Data GPIO: 16

Reversed: ▢

Skip first LEDs: 50

Off Refresh: ▢

+

LED memory usage:2592/64000B

Make a segment for each output: ▢

Custom bus start indices: ▢

Use global LED buffer: ☑

Color Order Override:

+

Step 23

a) How to configure the push button, can be found here: https://kno.wled.ge/features/macros/

7

Step 24

a) Have fun with your new lamp!

b) Check out the WLED documentation for more features: https://kno.wled.ge.