PCFdesigns
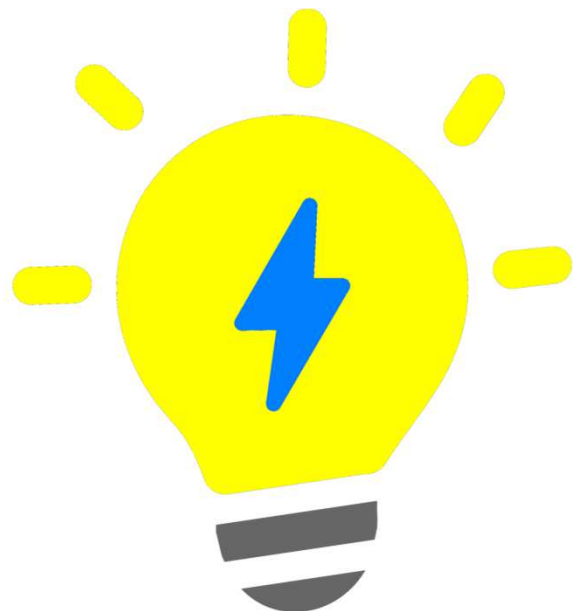
Smart LED Controller

PCFdesigns LED Pattern Controllers with Wireless Access

Powered by WLED software

USE AND CARE GUIDE

Controller version 1.0

WLED version 0.14.0

PCFdesigns

A Brighter Tomorrow

CONGRATULATIONS!

You are now the proud and happy owner(s) of a PCF Designs smart LED strip (also known as addressable or NeoPixel) controller

Your controller comes with one or more outputs for driving smart/addressable LED strips, and is fully user-configurable over wifi using the powerful WLED software. With hundreds of effects and dozens of color paletes, your controller provides a near infinite variety of visual entertainment for your enjoyment and illumination!

All those lumens require some care and feeding, so be sure to follow the use and care procedures, and especially the safety guidelines, described in the following pages!

Paul Frommeyer
President and CTO
PCFdesigns

Note: Your controller has been tested by the manufacturer with a 1-2 day "burn in" period prior to shipping to assure that all components are functioning correctly and there is no obvious risk of overheating with the default as-shipped power and brightness settings.

Overview
Types of Connections

Depending on the model of controller you have received, it will be capable of supporting one or possibly more of the following types of LED strips:

WS2812B/Neopixel "smart" or "addressable" LED strip

This is the preferred format for modern LED strips, as it allows each individual LED to be set to a different color. These strips are typically 5VDC powered, though they can also be found in 12V and 24V versions

RGB or RGBW or RGBWW

This older style of LED strip is still popular. In this configuration, there are 3, 4, or 5 "channels" that are used to set the color across the entire strip all at once. With this type of strip, it is not possible to set individual LEDs to different colors.

RGB – Mixes primary emissive colors Red, Green, and Blue to form different colors, including a very high-temperature (bluish) white.

RGBW – To overcome the white balance issues of pure RGB strips, a separate "warm white" LED is added to the strip on it's own channel. This LED may be a separate physical package on the strip, or it may be integrated into the existing pixels.

RGBWW – To provide for a broader temperature range of white, from warm white to cool white, a second high temperature (7000K) LED is added on a fifth channel

Overview
Power and Power Supplies

Smart LED pixels can draw up to 100 milliamperes *each* for 5VDC supplies and strips with both warm white *and* cool white supplemental LEDs. This leads to the need for *very* large amperage switching power supplies, especially for 5VDC strips. While the low voltage is not dangerous, that much current means a humongous amount of heat must be dissipated. Here are some tips for heat management

Never Obstruct Airways

Many PFCdesigns lamps rely on convection cooling for power supply, microcontroller, and LED pixels. Ensure that airways are kept clear at all times, and do not operate "stand up" or "stand alone" lamps on bare carpet. Always use a ceramic tile or other hard surface to place the lamp on to assure all openings have ready access to cooling air.
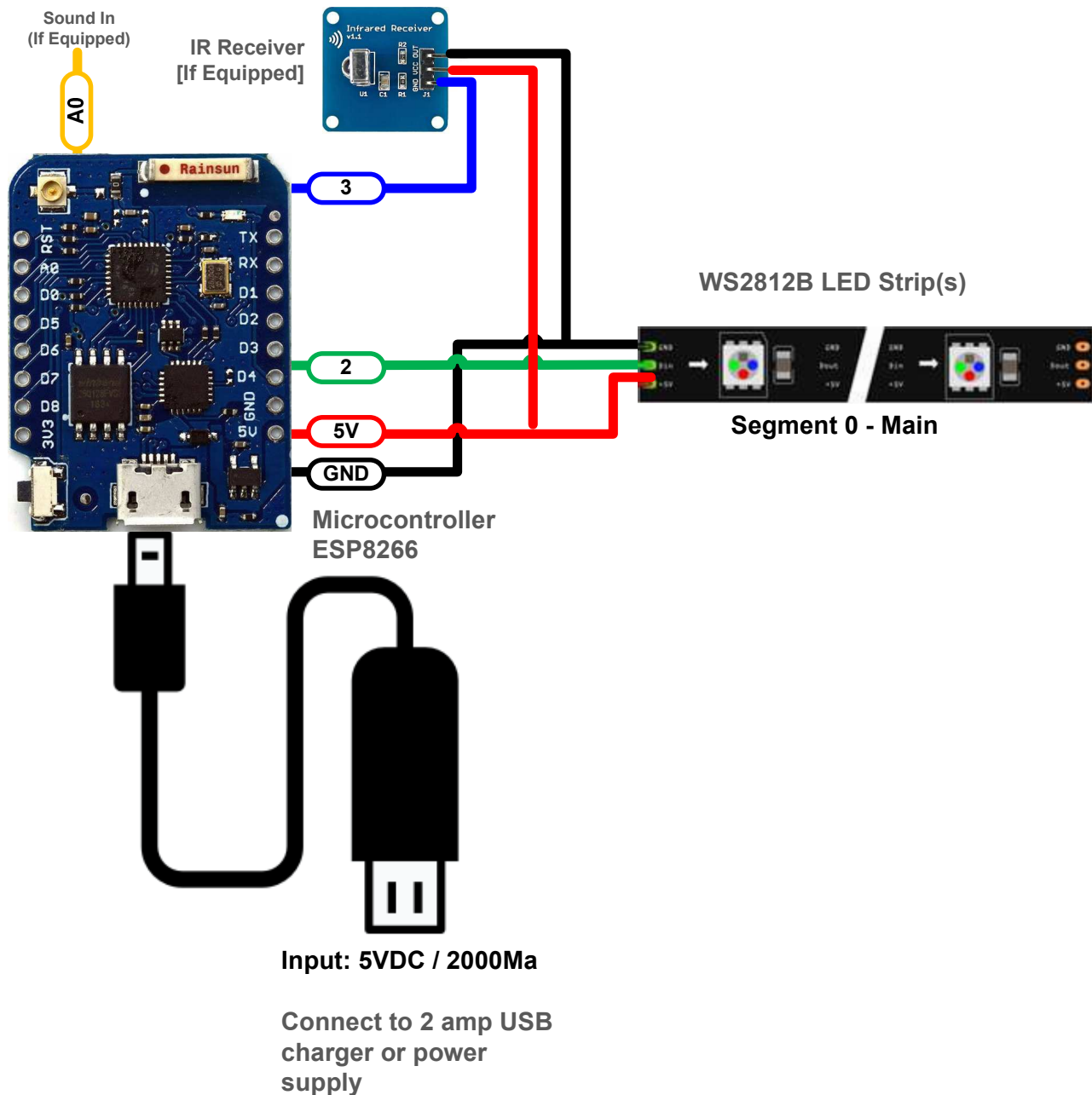
Outboard Power Supplies

These will be so-called "wall warts" or "bricks" which are separate from the lamp or controller and are connected via a small plug-in connector. These can get quite warm, so here again, assure that power supplies are kept clear and never smothered under discarded clothing, papers, or other debris that could cause heat to build and the debris to catch fire.
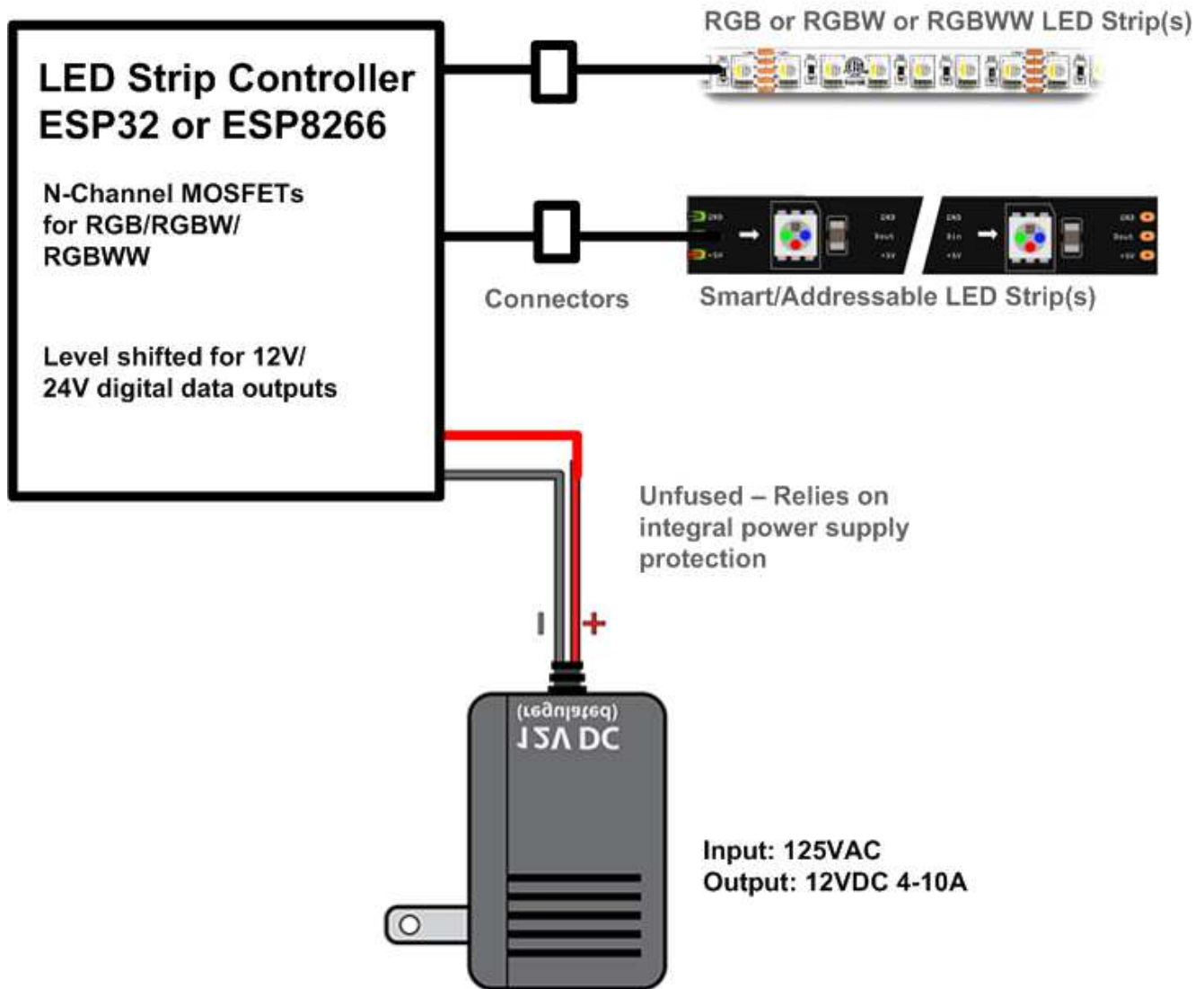
USB Power Supplies

Small lamps and controllers for short strips may have a USB-A connection. This type of controller relies on the on-board microcontroller voltage regulator, so never such a controller to a large number of pixels lest it damage the USB power supply or computer.
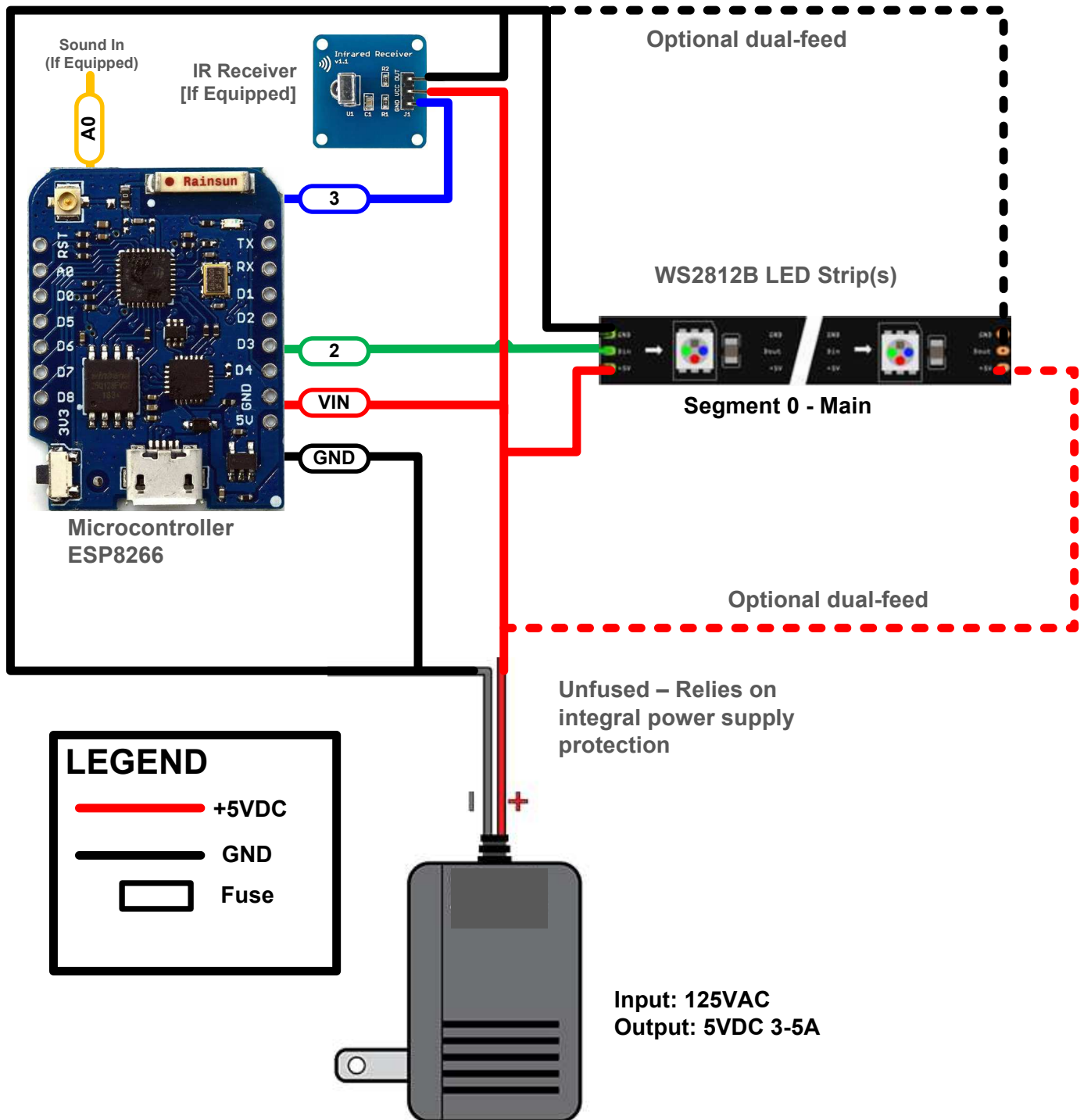
Wiring Diagram – ESP8266

**Sound In
(If Equipped)**

A0

**IR Receiver
[If Equipped]**

Infrared Receiver v1.1

Rainsun

3

WS2812B LED Strip(s)

TX
RX
D1
D2
D3
D4
GND
5V

RST
A0
D0
D5
D6
D7
D8
3V3

2

5V

GND

Segment 0 - Main

**Microcontroller
ESP8266**

Input: 5VDC / 2000Ma

**Connect to 2 amp USB
charger or power
supply**

USB Power Controller
Very Small Lamp or Small Strip

Wiring Diagram – ESP8266

RGB or RGBW or RGBWW LED Strip(s)

**LED Strip Controller
ESP32 or ESP8266**

**N-Channel MOSFETs
for RGB/RGBW/
RGBWW**

**Level shifted for 12V/
24V digital data outputs**

Connectors

Smart/Addressable LED Strip(s)

Unfused – Relies on
integral power supply
protection

12V DC
(regulated)

Input: 125VAC
Output: 12VDC 4-10A

Mixed Strip Controller
12 or 24 VDC Smart or RGB Strips

Wiring Diagram – ESP8266

Sound In
(If Equipped)

A0

**IR Receiver
[If Equipped]**

Infrared Receiver
v1.1

3

Rainsun

RST

A0

D0

D5

D6

D7

D8

3V3

TX

RX

D1

D2

D3

D4

GND

5V

2

VIN

GND

Optional dual-feed

WS2812B LED Strip(s)

Segment 0 - Main

Optional dual-feed

**Microcontroller
ESP8266**

Unfused – Relies on
integral power supply
protection

LEGEND

———	**+5VDC**
———	**GND**
▭	**Fuse**

+

**Input: 125VAC
Output: 5VDC 3-5A**

Low Power Controller

Small Lamp or Single Strip

Wiring Diagram – ESP8266

Sound In
(If Equipped)

A0

IR Receiver
[If Equipped]

Intrared Receiver

Rainsun

RST   TX
A0   RX
D0   D1
D5   D2
D6   D3
D7   D4
D8   GND
3V3   5V

Microcontroller
ESP8266

3

4

2

VIN

GND

WS2812B LED Strips

Segment 1 [If Equipped]

Segment 0 - Main

5A   Fuses (If Equipped)
      Fuse Type: Mini ATM Automotive   5A

Input: 125VAC
Output: 5VDC / Up to 10A

LEGEND

———— +5VDC

———— GND

□ Fuse
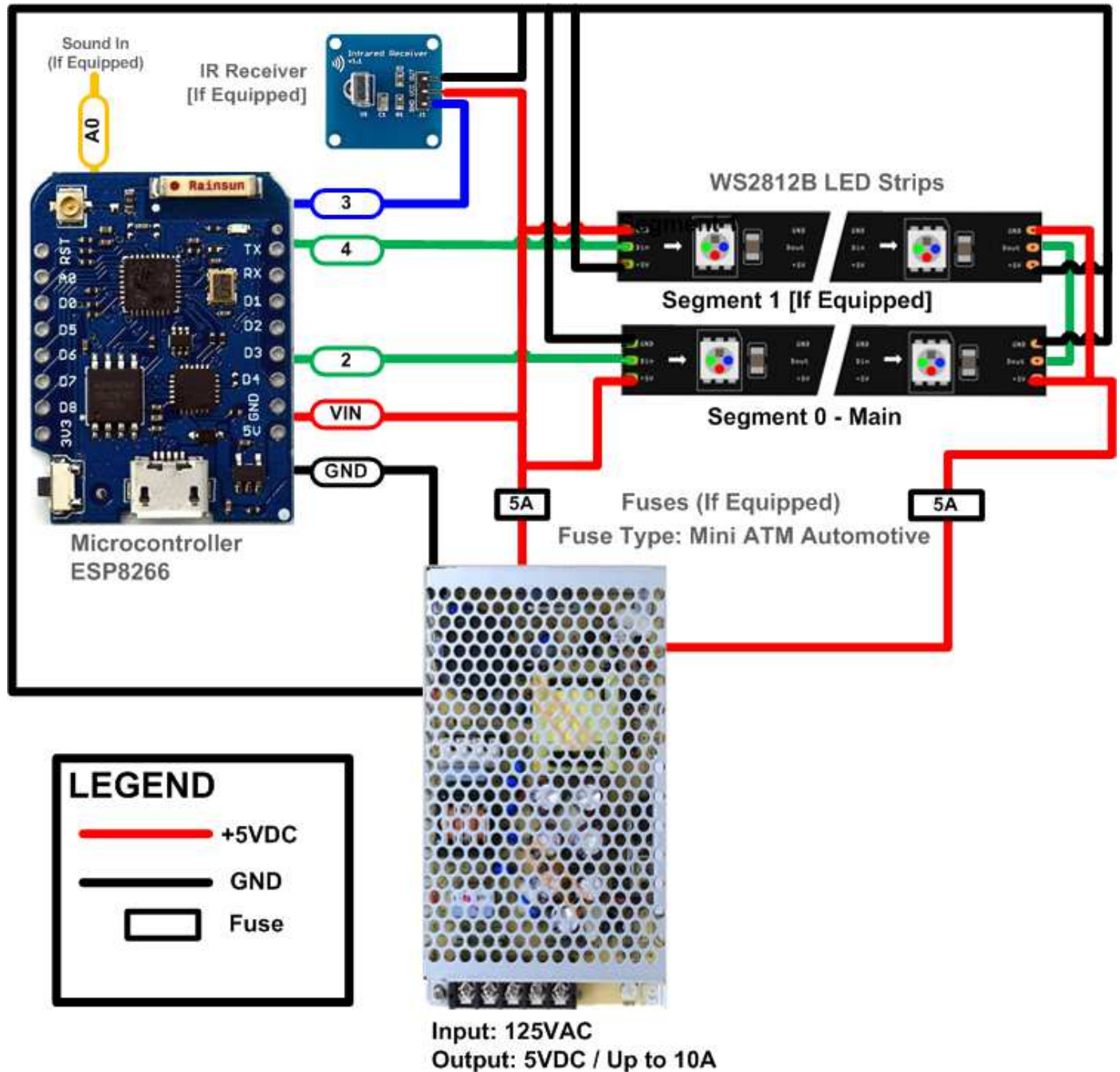
High Power Controller
Long or High Density Strips

Wiring Diagram – ESP32

IR Receiver
[If Equipped]

Infrared Receiver

19

17
Pin Number

16

VIN

GND

Microcontroller
ESP32

WS2812B LED Strips

Segment 1

Segment 0

5A Fuses   7.5A   7.5A   7.5A

Fuse Type: Mini ATM Automotive

LEGEND

———	+5VDC
———	GND
▭	Fuse

Input: 125VAC
Output: 5VDC 18A Out

If ever only some segment(s) illuminate, check the fuses.
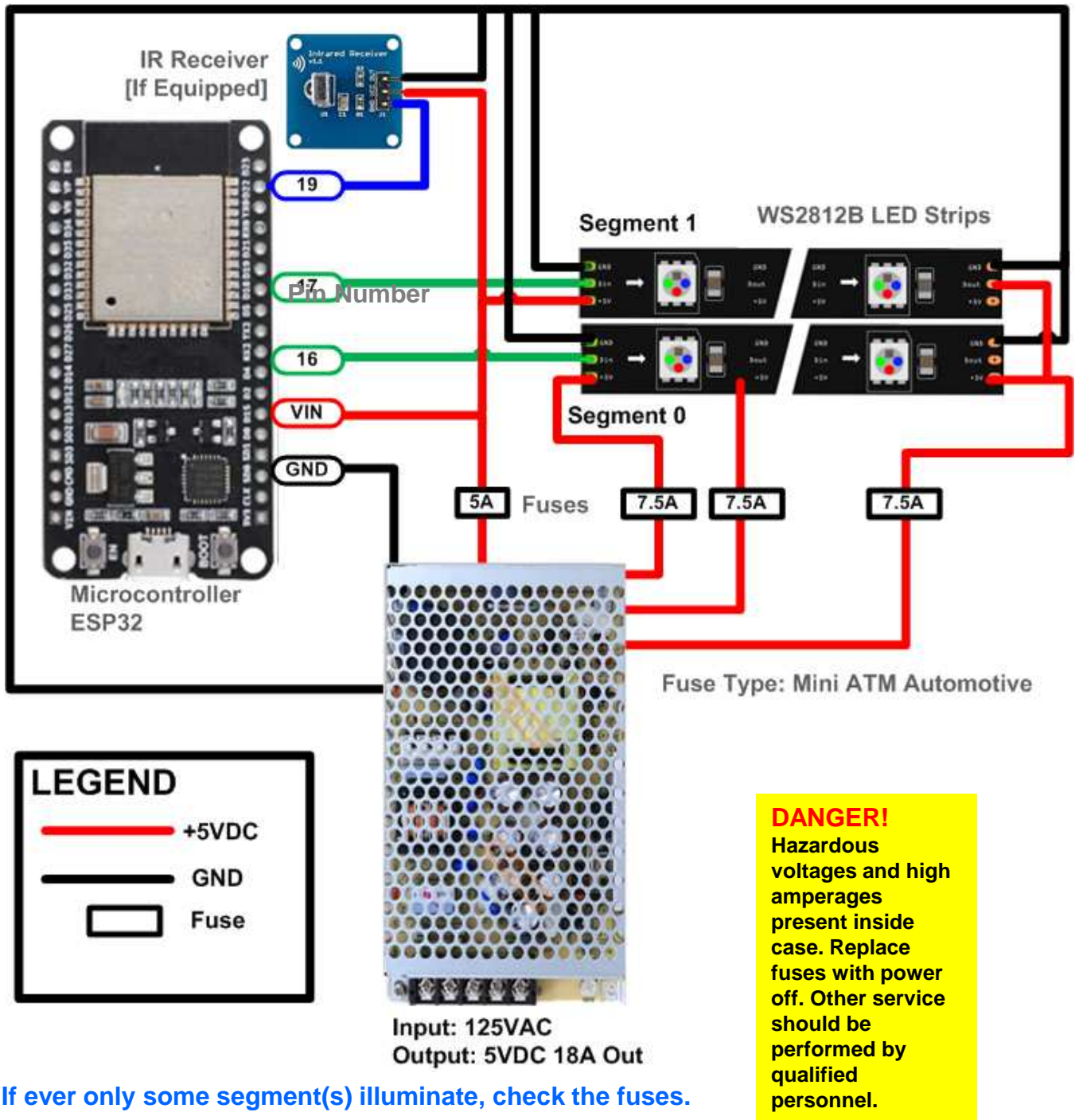
Disconnect (unplug) AC power before opening base! *Never operate lamp with base cover removed!*
High voltages and high amperage are present inside the case, with corresponding risk of potential severe burns and fatal shock.

Large High Power Lamps
Greater than 500 pixels, 18A or larger power supply(s)

WIFI ACCESS
Accessing your controller out-of-the-box

If you have not joined your controller to an existing wifi network, or the configured wifi network is not reachable, your controller defaults to generating its *own* wifi network (SSID) which you can then access from a phone, laptop, or other computing device which can connect to wifi networks and launch a web browser.

Controller default wifi SSID:

Controller default wifi password: 12345678

Controller default IP address: 4.3.2.1

Note: If your browser does not launch automatically (wifi captive portal) when you first connect to the controller wifi network, you'll need to manually launch a browser and enter the URL **https://4.3.2.1**. That url will take you the main WLED access page (see *Accessing WLED,* below).

Initial WiFi Configuration

The following examples are shown using iOS on an Apple iPhone. Procedures for joining a wifi network on Android or Windows will be similar.

Open the Settings app window on your device
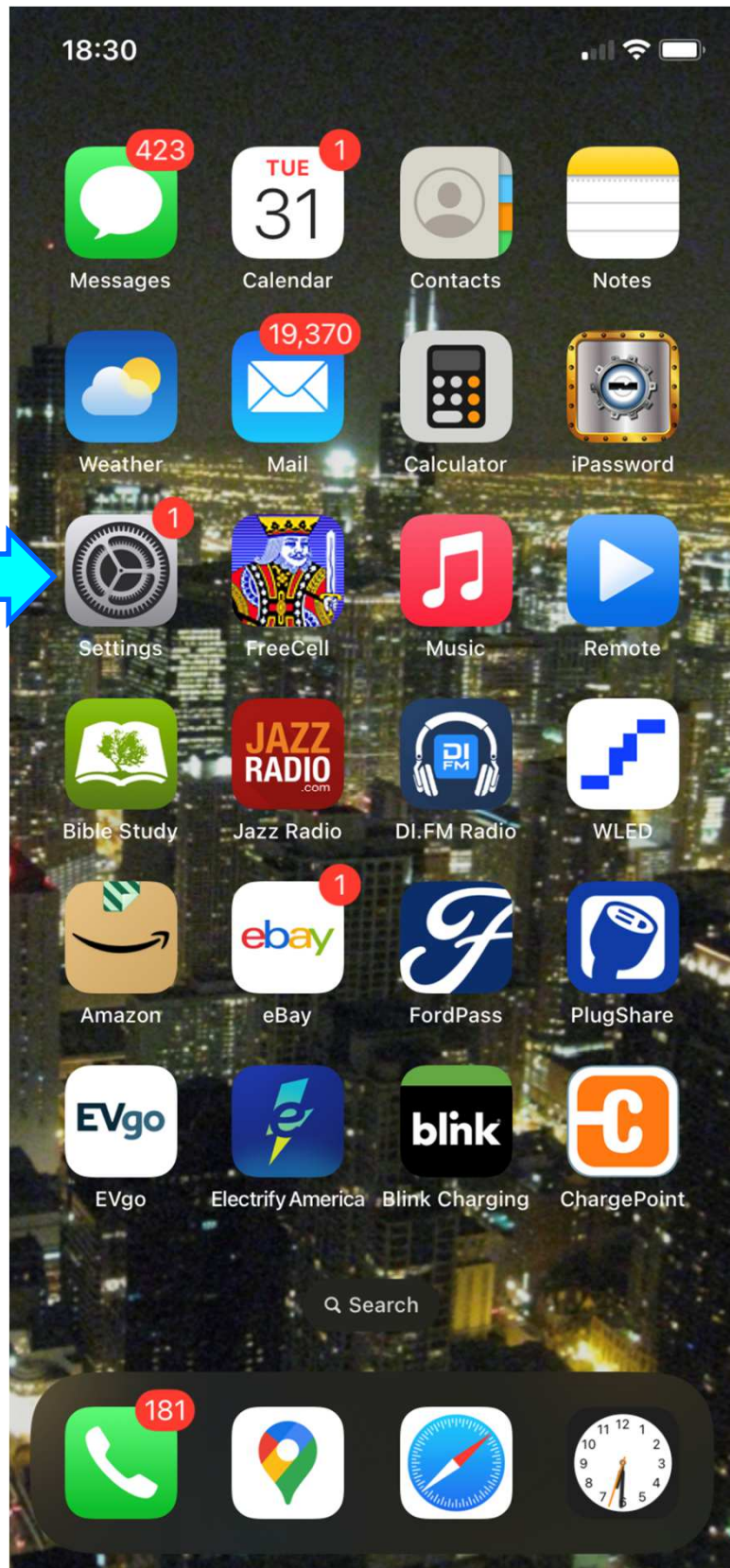
Connecting To Your Controller

Find the WiFi network SSID listed earlier in this guide, and click on it. Enter the credentials as listed on a previous page.
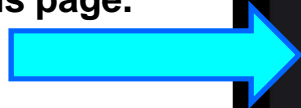
As soon as your device joins the controller wifi network, your browser should open and take you the main WLED access page for your controller. If for some reason it doesn't, you will need to manually open a browser, then enter the URL https://4.3.2.1
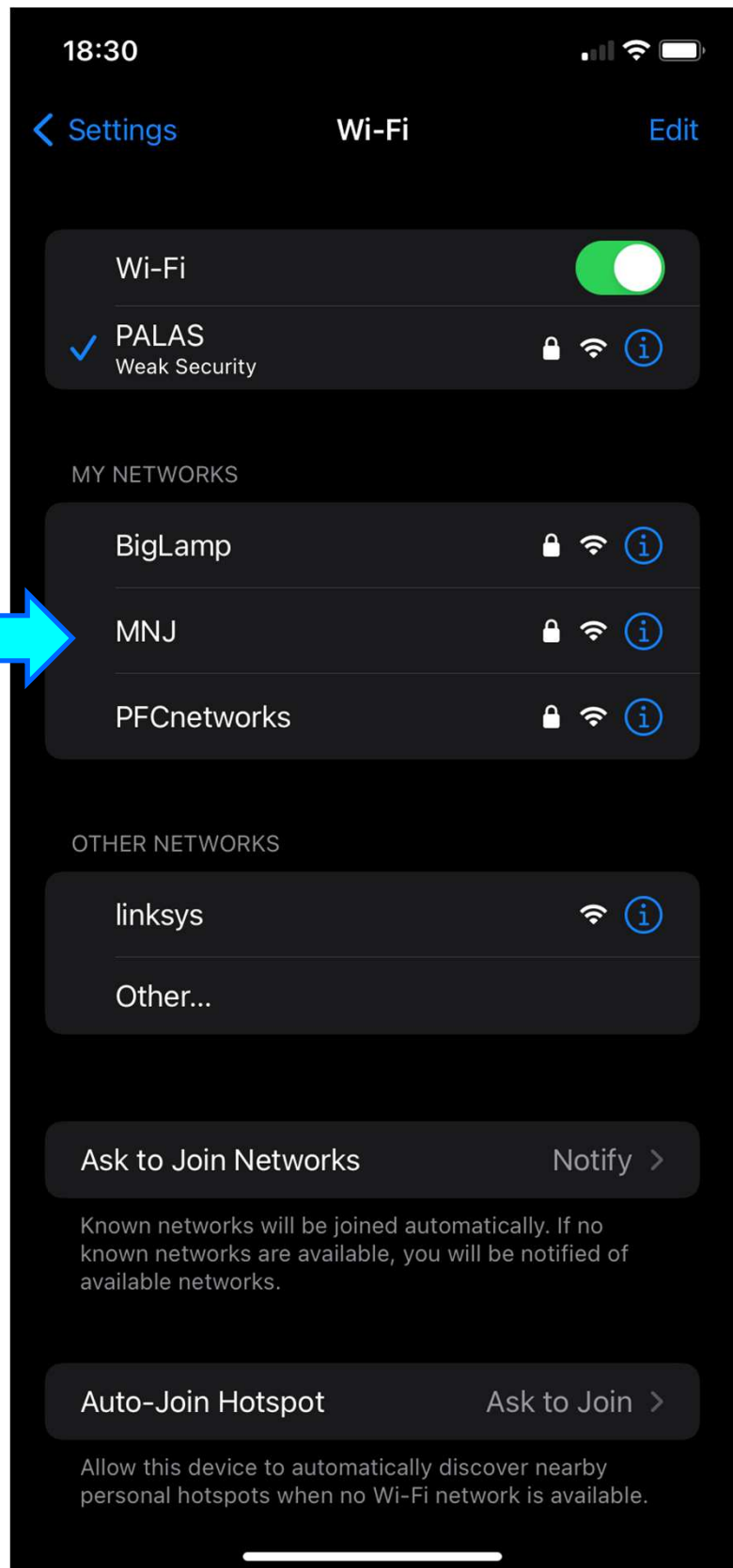
Accessing WLED

This is the main WLED access page presented by your controller. It provides two options:

1 – Go directly to WiFi Settings configuration to join your controller to an *existing* wifi network. *You should have the app installed <u>before</u> doing this!*

2 – Just configure the controller *without* modifying the wifi settings; this allows you to configure your controller without having to have a wifi network, making it transportable and accessible for friends or guests.

CAUTION!!

Once you join your controller to a wifi network, you ***must*** either install the WLED app on your device to access WLED, <u>or</u> *know the IP address assigned to it by the wifi network* in order to access it via web browser (URL will be **https:***//wifi_assigned_IP_address*)

If you join your controller to an existing network, it is *strongly* recommended to use the WLED phone app if at all possible. The app provides autodiscovery, as well as the ability to apply future software updates
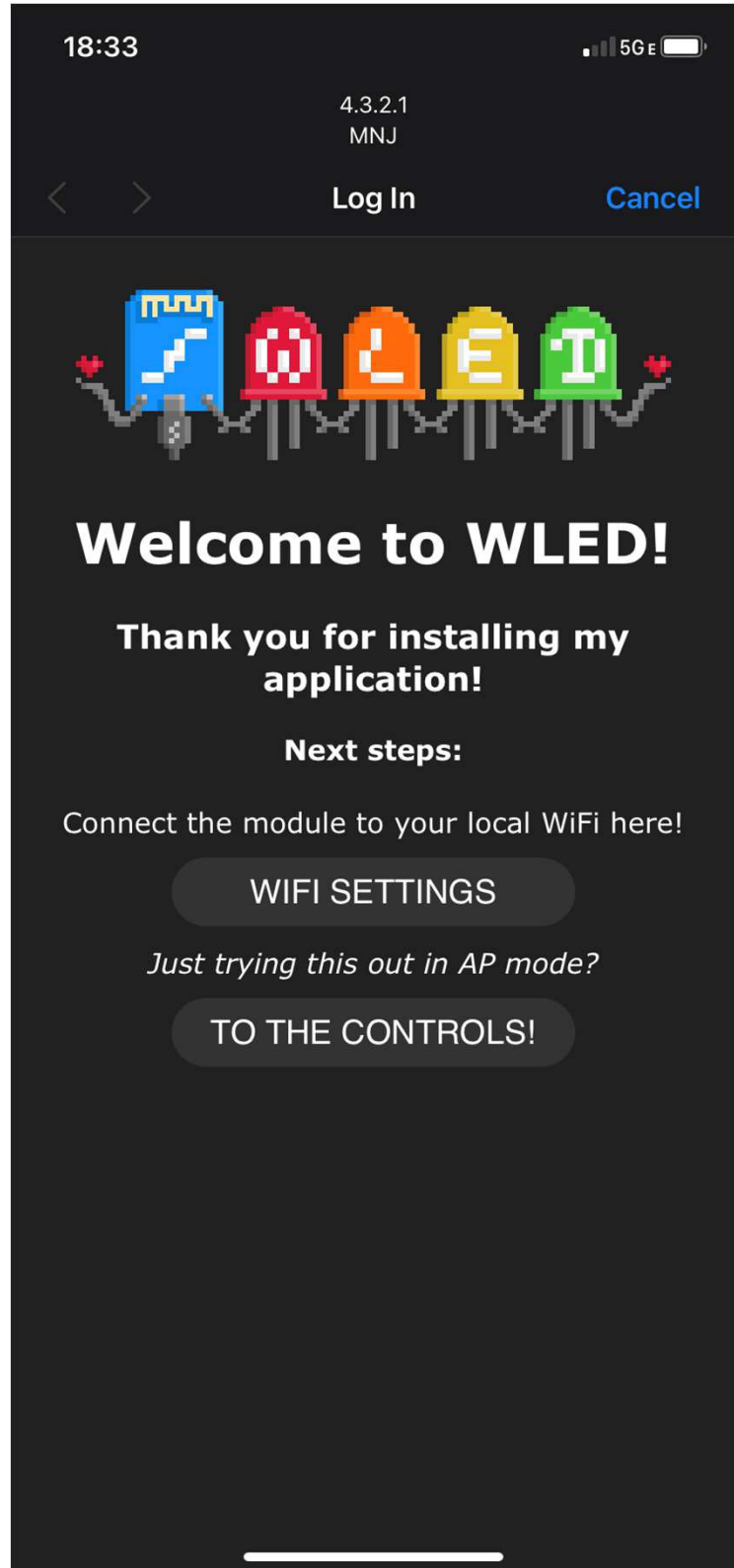
WLED WiFi Configuration
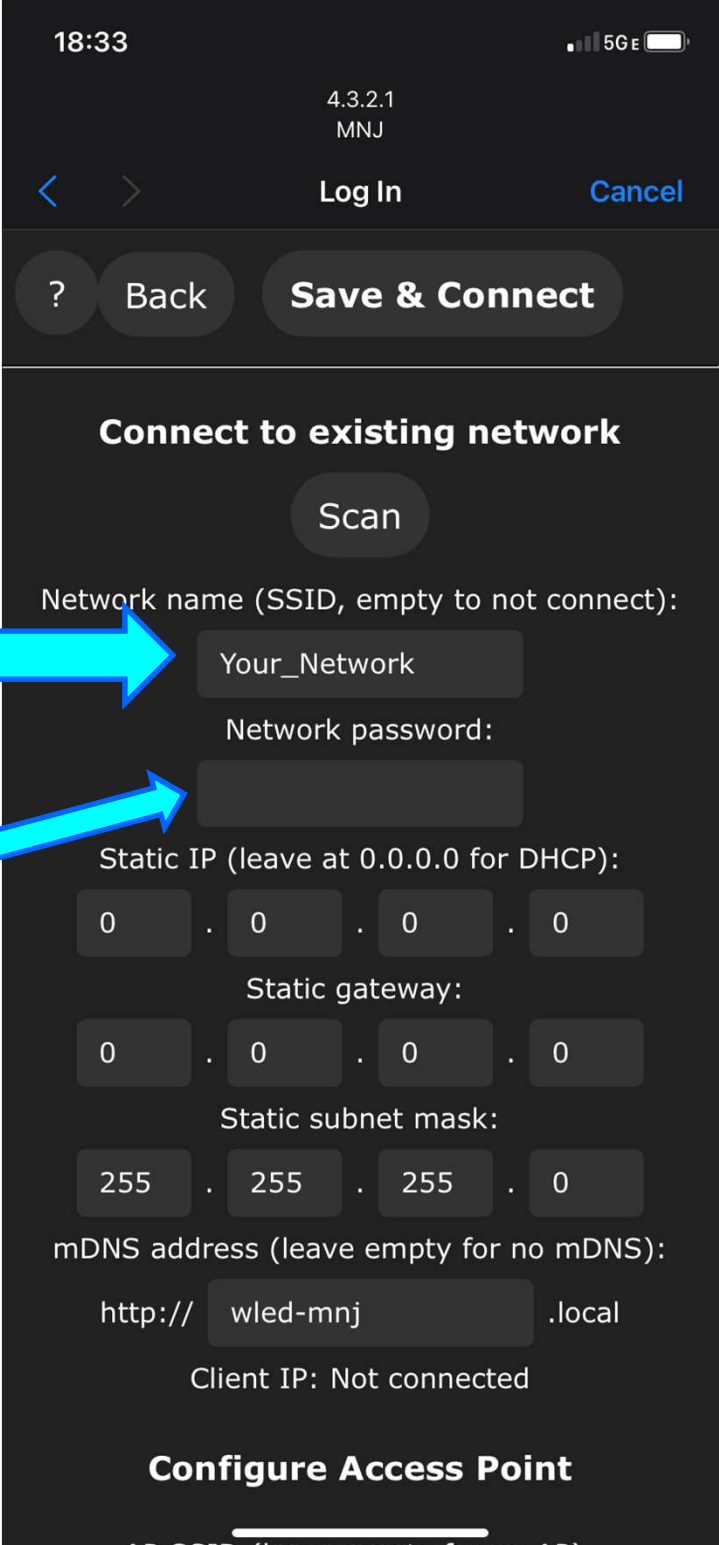
Assuming you have decided to use the WLED app on your phone/device, clicking on the WiFi Settings button will take you to the page at the right.

Clicking in the Network Name field should bring up a pop-up menu with a list of all wifi network names (SSID's) discoverable by the controller. Note that if your wifi signal is weak, the network may not show up. Select the SSID you want the the controller to use.

Next, enter the password *of your wifi network* (not the controller login!) as shown at right. When finished entering the information, click on the Save and Connect button to have your controller join your wifi network!

Important: Once it joins an existing network, the controller *will no longer generate it's own WiFi network* and will no longer be accessible via browser at 4.3.2.1!

Note: You *might* need to power cycle (unplug/plug) your controller if it doesn't automatically join your local wifi and/or the app can't find it.

18:33   5G E

4.3.2.1
MNJ

< >   Log In   Cancel

? Back   **Save & Connect**

Connect to existing network

Scan

Network name (SSID, empty to not connect):

Your_Network

Network password:

Static IP (leave at 0.0.0.0 for DHCP):

0 . 0 . 0 . 0

Static gateway:

0 . 0 . 0 . 0

Static subnet mask:

255 . 255 . 255 . 0

mDNS address (leave empty for no mDNS):

http:// wled-mnj .local

Client IP: Not connected

Configure Access Point

WLED Application

Once you have joined your controller to an existing WiFi network, you will need to install the WLED client application on your phone if you haven't already done so.

Click/tap on the WLED application to launch.

Without the client application, you will need to know the IP address assigned to the controller by the existing network you joined the lamp to.
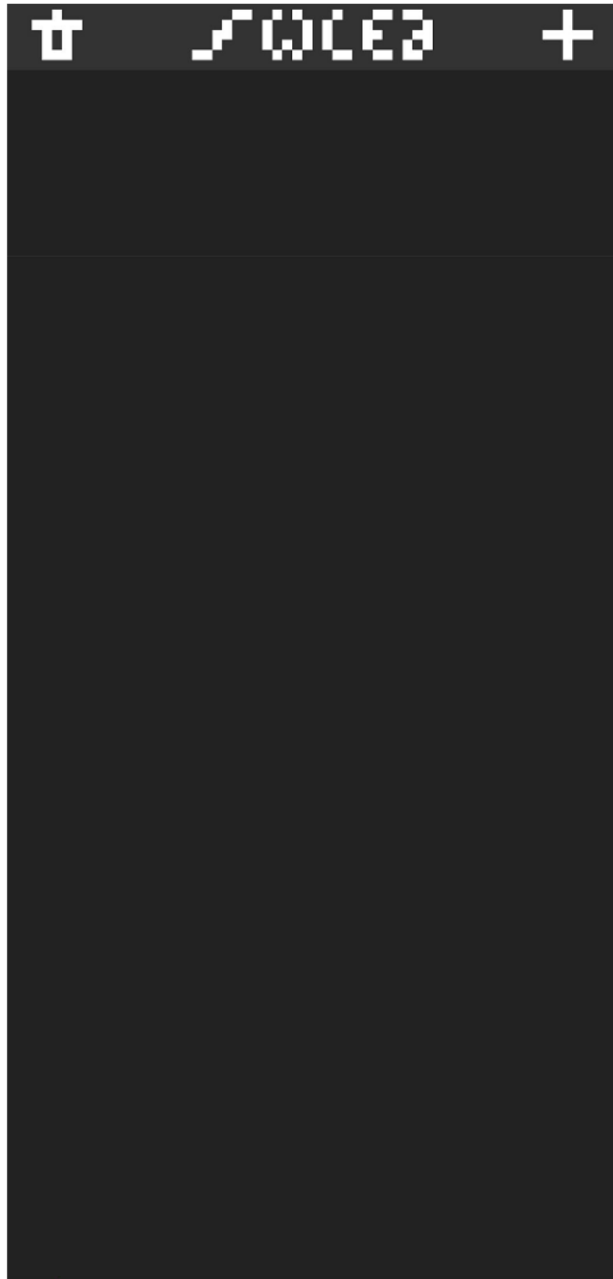
Obtaining this information can be difficult, thus the recommendation to use the app.

Once you have the IP address, you can access the controller at https://*assigned_IP_address*
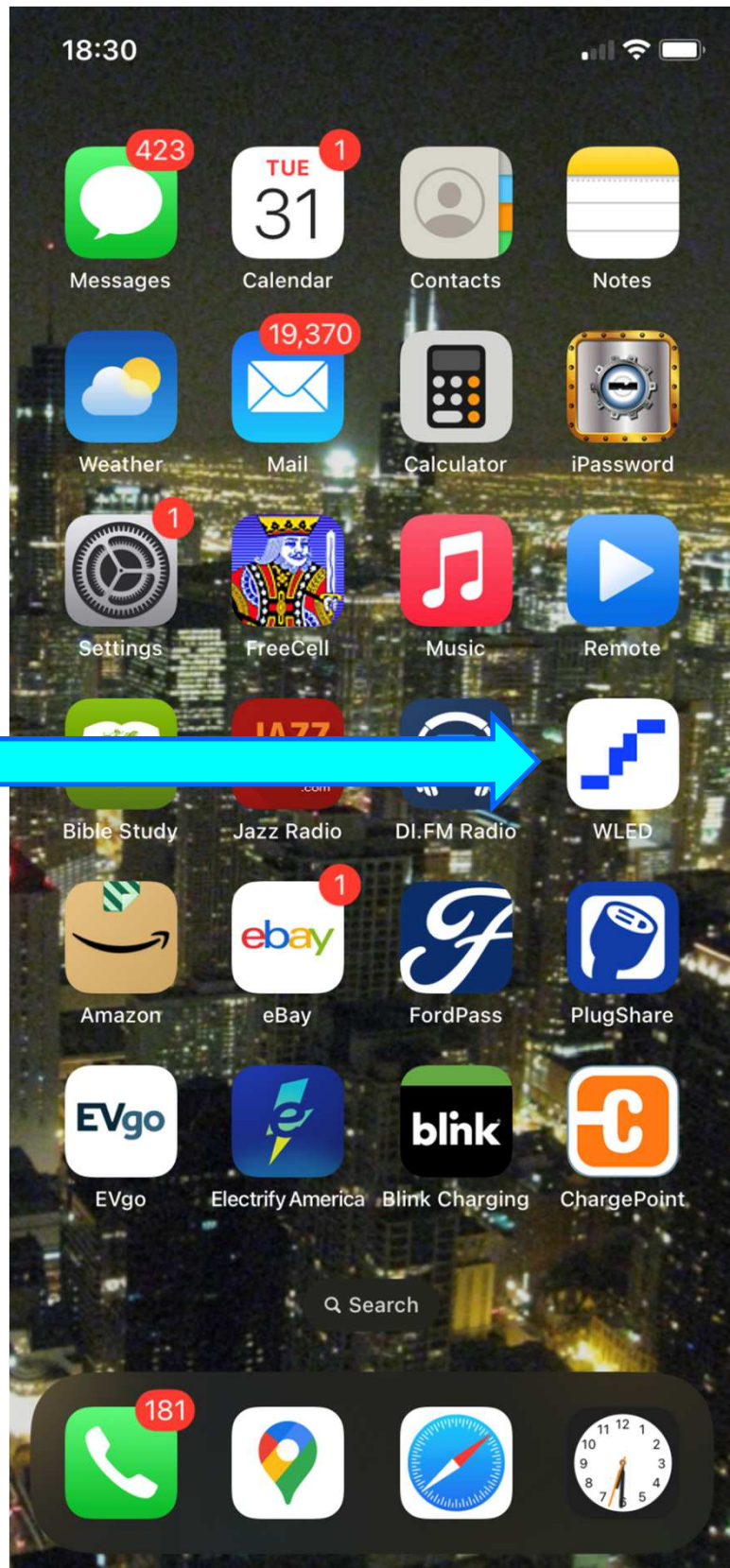
WLED Discovery

When you first launch the app, there won't be any lights listed. Click on the + sign at the upper right which will open the "add light" window.
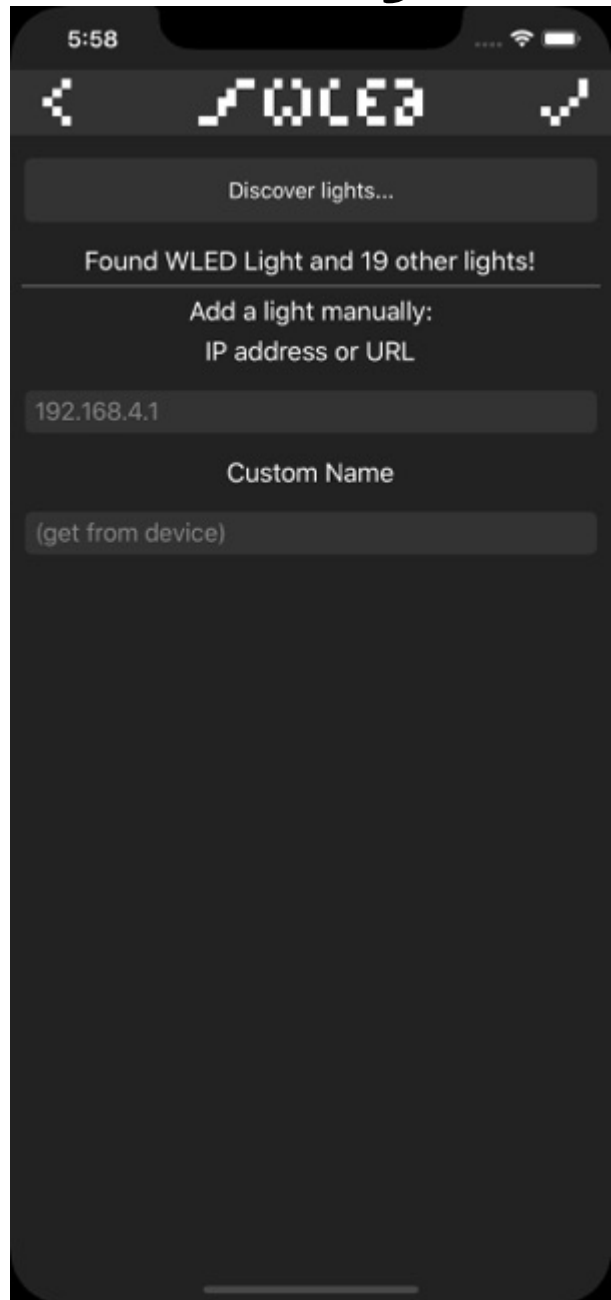
Click on the "Discover lights…" button. This will cause WLED to search your local wifi network and find the controller(s). Make sure the controller(s) are selected (once discovered) then click on the √ at the upper right.

IMPORTANT! For discovery to work, your phone must ALSO be connected _to the same wifi network_ as you have configured controller to join!

Basic Color Control

Once your controller has been added to the WLED application, you can simply click on its entry from the main screen. This will take you to the main WLED control interface window, seen at right.

IMPORTANT: Your controller may have *more than one* LED segment! *Which* segment is affected by the *current* color control settings (or potentially *all* segments) is configured under the <u>Segments</u> pane.

Global brightness

Global settings

IP Address
Lightname

4.3.2.1
MNJ

18:34

Log In   Cancel

Power	Timer	Sync	Peek	Info	Config

Manual Color Wheel Selector

Color Intensity ("Brightness")

Color/White Balance

Specific color selector buttons

Primary/Secondary/Tertiary Colors (availability depends on effect settings!)

1   2   3

🎨 Color palette

🔍 Search

MNJ-WLED

Control and configuration pane selector buttons (<u>Colors</u> currently selected)

| Colors | Effects | Segments | Presets |
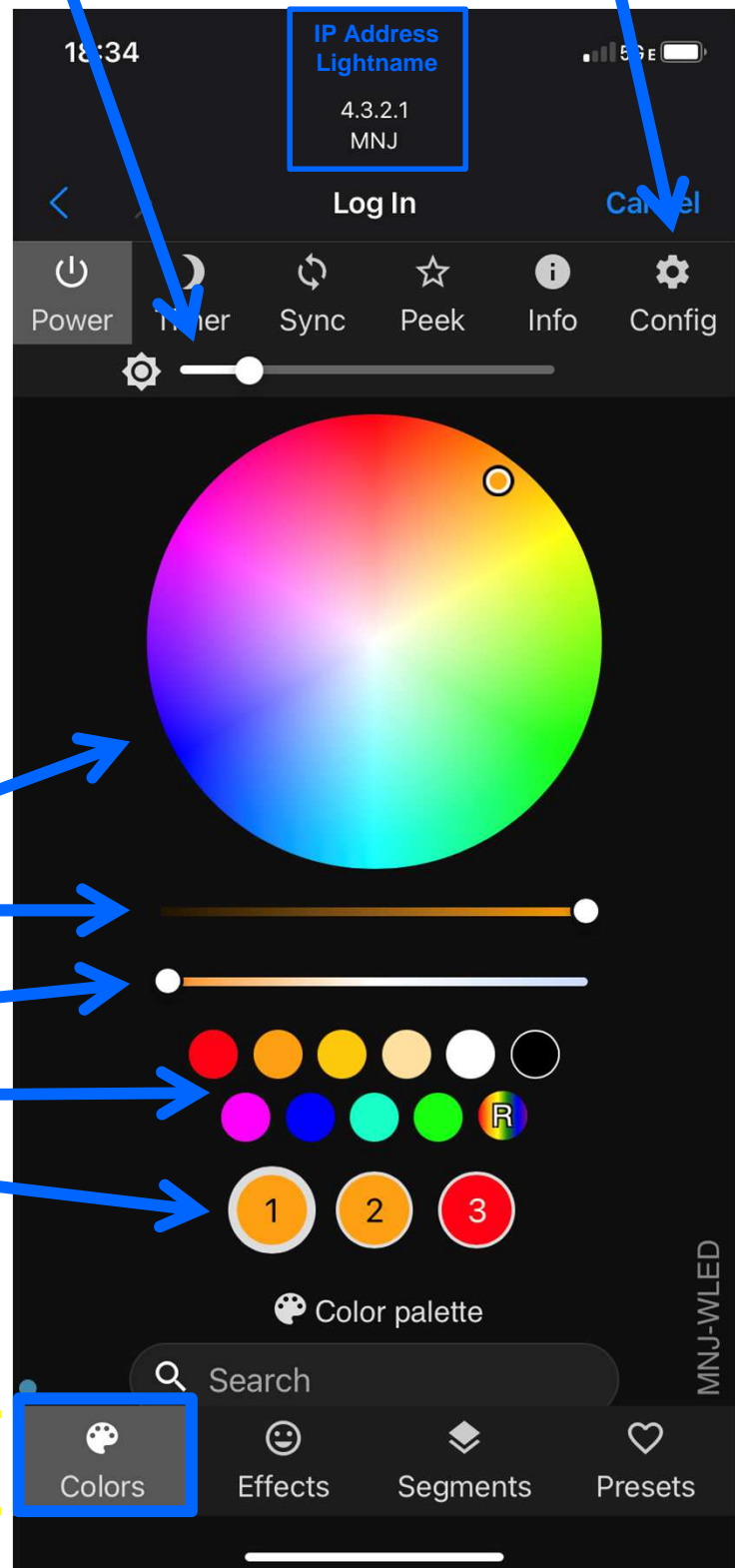
More Color Options

IMPORTANT NOTE
If an Effect (selected under the Effects button) can use only a single color, only one color, the Primary color, will be configurable with the wheel and color buttons. More colors, up to three, will be shown if effects can use them.

The Color Palette button opens the palette configuration menu. As with color selection, which segment(s) a given palette applies to is controlled under the Segments pane
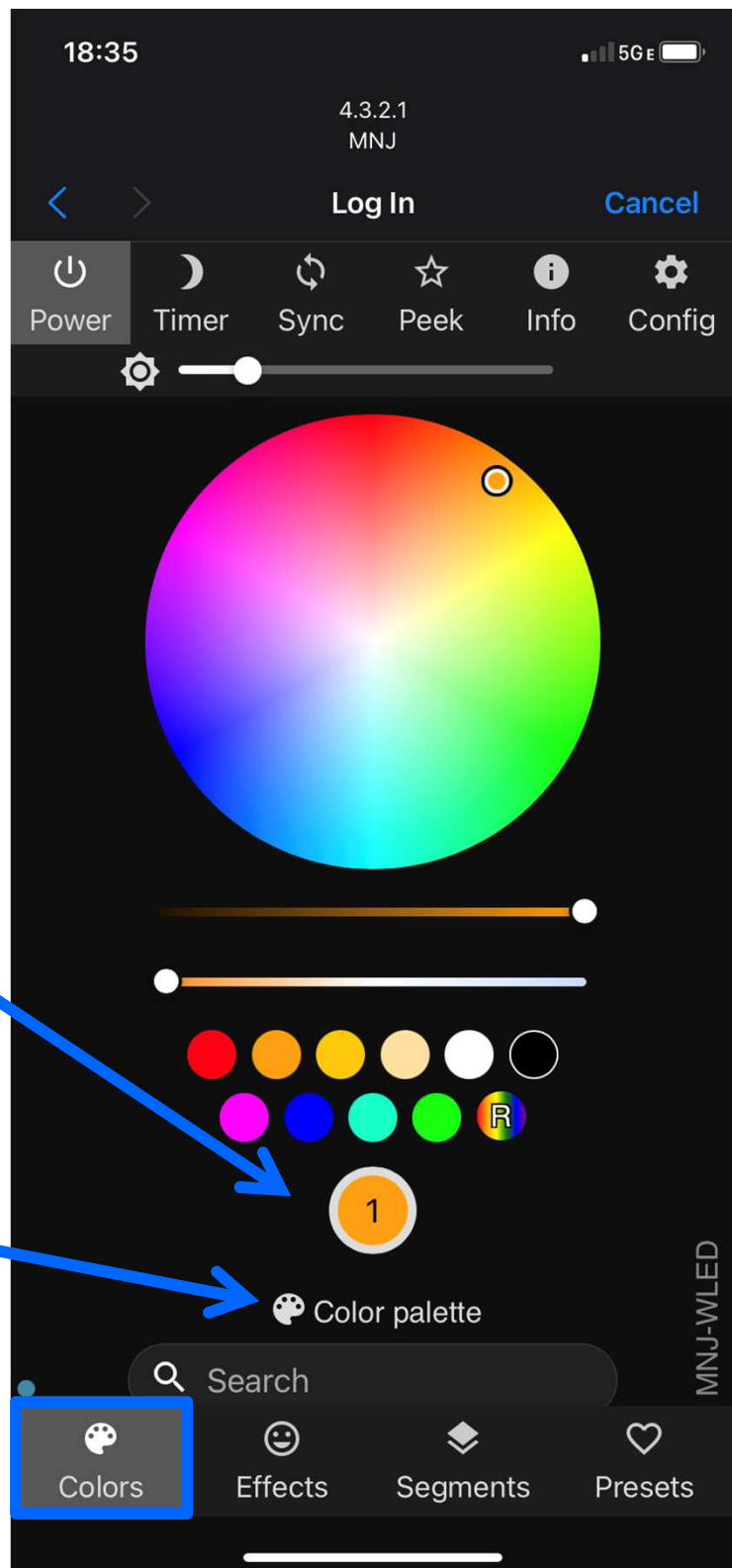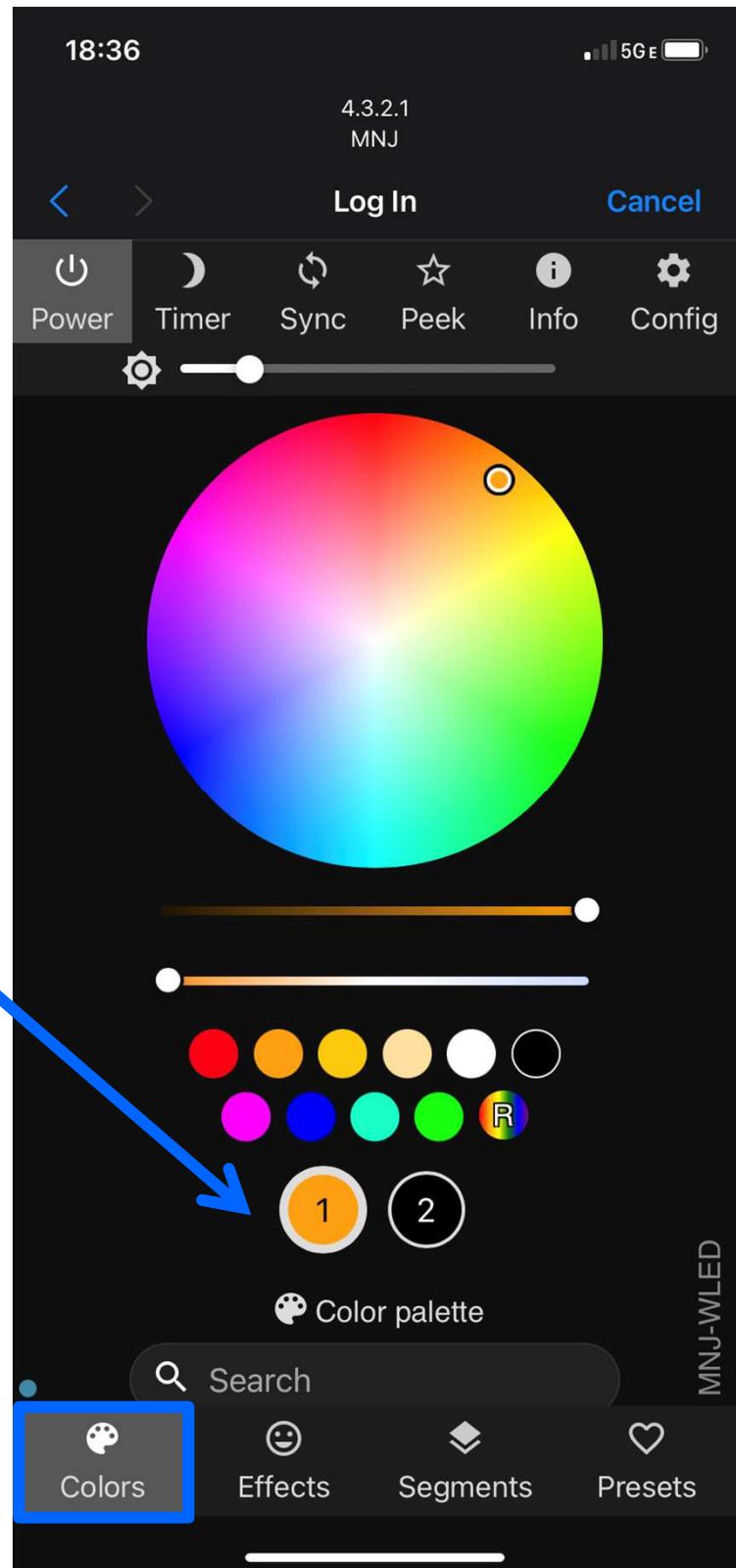
Primary and Secondary

The current effect selected (from the **Effects** pane) can utilize up to two colors, a Primary (foreground) and Secondary (background) color.

Thus, there are two color configuration buttons available. Which color is being modified by the interface is indicated by a white circle halo around the color.

In this example, the Primary color is ready for configuration.

If the secondary (or tertiary) color is set to black, nothing is displayed, so it is effectively disabled.

Setting the Primary color to black will cause it to act as "negative space" against the background.

Tri-Color Effects

And in this example, the current effect selected (from the <u>Effects</u> pane) can utilize up to *three* colors, a Primary (foreground) Secondary ("midground"), and Tertiary ("background") color.

Thus, there are *three* color configuration buttons available. Which color is being modified by the interface is indicated by a white circle halo around the color.

In this example, the Primary color is ready for configuration (white halo), the secondary color is not used (set to black), and the tertiary (background) color has already been set to red.
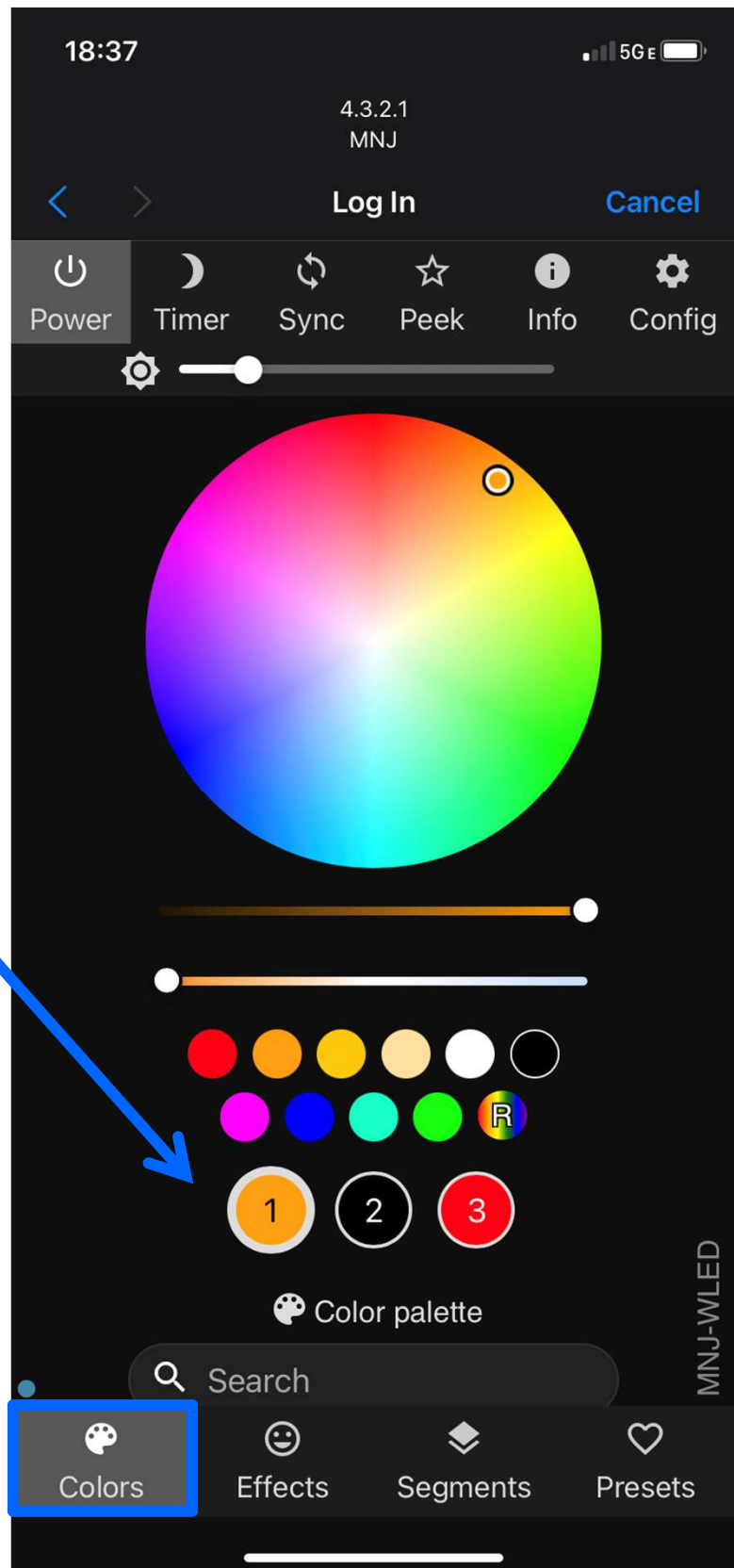
The Palette Menu

These are all preconfigured palettes. Note that even though some palettes *specify* more than one color, not all *effects* can *use* more than one color!

Click on a palette button to select it and make it the active palette.

Changing the palette can radically alter the behavior of an effect.

By mixing up different effects with different palettes, you have millions of possible luminary experiences at your fingertips!

NB – Yes, it is possible to create your own palettes

18:36

4.3.2.1
MNJ

Log In   Cancel

Power   Timer   Sync   Peek   Info   Config

Color palette

Search

Default

* Color 1

* Color Gradient

* Colors 1&2

* Colors Only

* Random Cycle

Analogous

April Night

Aqua Flash

MNJ-WLED

Colors   Effects   Segments   Presets
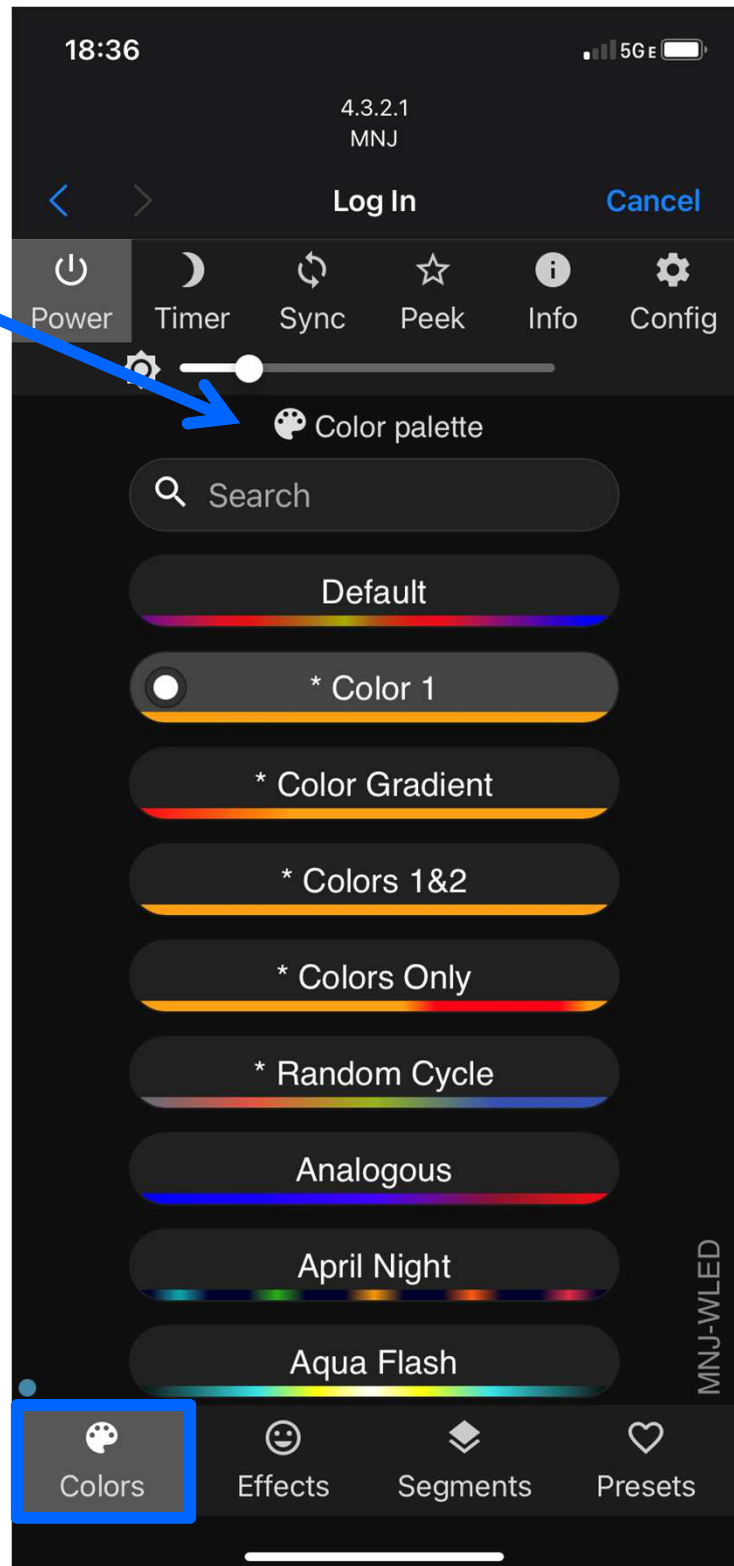
Effects!

At last, here is the Effects pane! This is where all the animation magic for your controller happens!

REMEMBER: *Which* **segment is affected by the current FX setting (or even** *both* **segments) is configured under the** <u>Segments</u> **pane.**

The palette icon means that particular effect makes use of palette settings, that is, it can utilize more than one color. To have an effect utilize *only* one color even if it *can* use more, just set Secondary and/or Tertiary colors to black.

See that musical note? It means that the effect in question is *sound reactive*. If your controller has been equipped with sound input (still in development at the time this Guide was published), the effect will respond to it.

These tickboxes enable the respective features for effects which make use of them.

The watch slider controls effect *speed*

The flame slider controls effect *intensity*
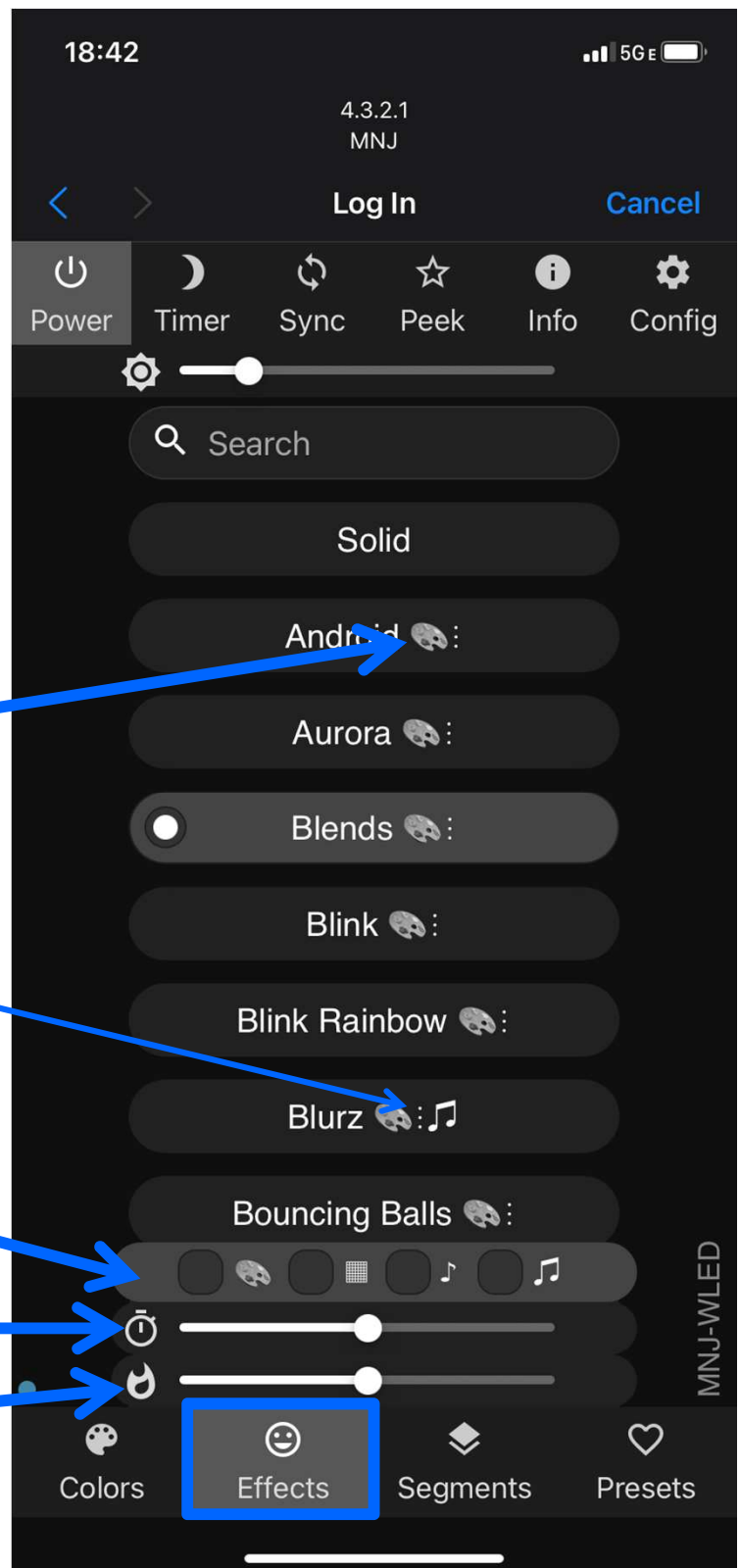
Segments

This pane controls both which segments are illuminated *and* which segments are configured by the <u>Colors</u> and <u>Effects</u> panes.

IMPORTANT: *All* segments are configured *simultaneously* with the *same* effect if all checkboxes are ticked. This is typically *not* what you want!

The *checkbox* makes a given segment accept configuration settings. Only Segment 0 is selected in this example.

The power buttons *independently* control whether a segment is *illuminated* or not.

You should not normally need to adjust your segment settings once you have them dialed in to a set of prefixes.

If you ever lose your factory segment hardware settings, the original values are available on the Functional Diagram for your lamp/controller.

18:45

4.3.2.1
MNJ

Log In   Cancel

Power   Timer   Sync   Peek   Info   Config

Segment 0

Segment 1

+ Add segment

Reset segments

Transition: 0.7 s

MNJ-WLED

Colors   Effects   Segments   Presets

Presets

This pane is where you select, create, and adjust *presets*.

Presets are buttons which recall all or some of the global lighting configuration of your lamp and/or strips.

To change settings at different times of day, you must first have a preset defined for each time.

These are "Quck Load" label buttons for instantly accessing frequently used presets.

This is a preset button:
- Number of that preset
- Name of the preset
- Details drop-down

Your controller is configured by default to load Preset#1 at startup/plugin.

This button allows you to assemble presets into a playlist. This is tricky, and not documented in this guide.

Creat/add new presets

IMPORTANT: All segments are configured *simultaneously* if *all* segment checkboxes have been ticked on the Segments pane. This is probably *not* what you want!

18:46   5G E

4.3.2.1
MNJ

‹   ›   Log In   Cancel

⏻   🌙   🔄   ☆   ⓘ   ⚙
Power   Timer   Sync   Peek   Info   Config

⚙ ━━━━━━●━━━━━━━━━━

MJ   NR   TF   RB   MB

TB   DR

🔍 Search

9   All Dk Red   ⌄

1   MNJ   ⌄

5   MNJ-Blue   ⌄

2   Night Mode Red   ⌄

4   Rainbow   ⌄

6   TwinkleBnW   ⌄

3   Twinklefire   ⌄

+ Preset   + Playlist

🎨   😊   ◆   ♡
Colors   Effects   Segments   Presets

MNJ-WLED
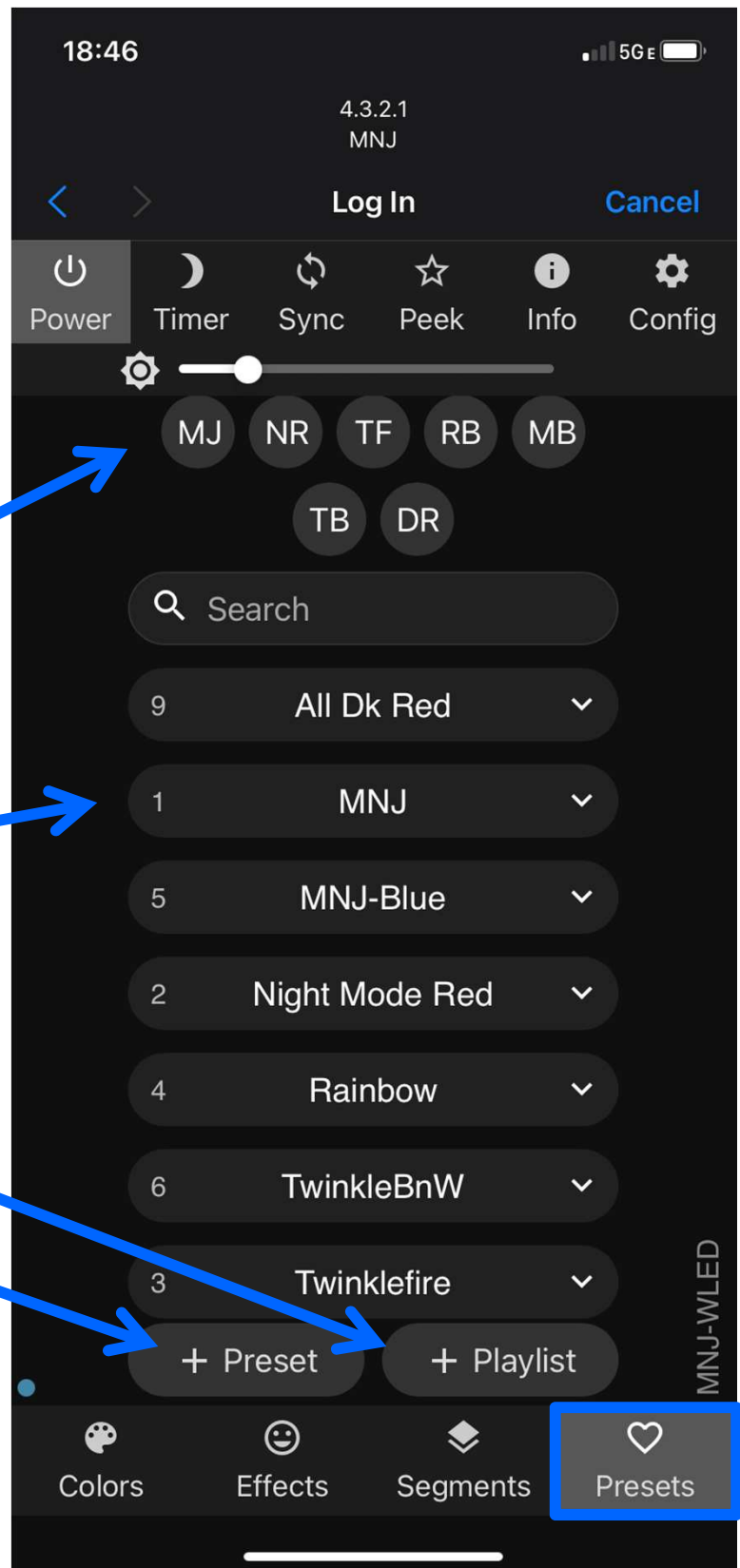
Creating Presets

This pane shows the settings for creating a preset *after* the "+ Preset" button has been clicked

By default, the new preset is labelled with the name of the effect currently running on the active, currently selected segment (see <u>Segments</u>). You should change this to something distinct . The editor automatically opens; later, clicking in the box will edit the name.

You can add a two character Quick Load label here

In most cases, you want to leave all three of these boxes checked; they will "do what you want to happen", that is, save the global state of the controller in the preset.

You should probably never check this. It causes the preset to apply to, *and recall*, only the currently active segment

WLED software automatically selects the next available free preset slot number. If you put an existing, occupied slot number here, *it will be overwritten*.

Single-click on Save to create your new preset

17:42   .ıll 5G_E 🔋

4.3.2.1
MNJ

‹ ›   Log In   Cancel

| ⏻ Power | ☾ Timer | ↻ Sync | ☆ Peek | ⓘ Info | ⚙ Config |

⚙ ●──────────●────────

2   Night Mode Red   ⌄

1   **MNJ**   ⌄

6   TwinkleBnW   ⌄

3   Twinklefire   ⌄

Breathe

Quick load label [ ]

(leave empty for no Quick load button)

☑ Use current state
☑ Include brightness
☑ Save segment bounds
☐ Checked segments only

Save in ID   [7]

[✓ Save]   [Cancel]

| ☺ Colors | 😊 Effects | ◆ Segments | ♡ Presets |

MNJ-WLED
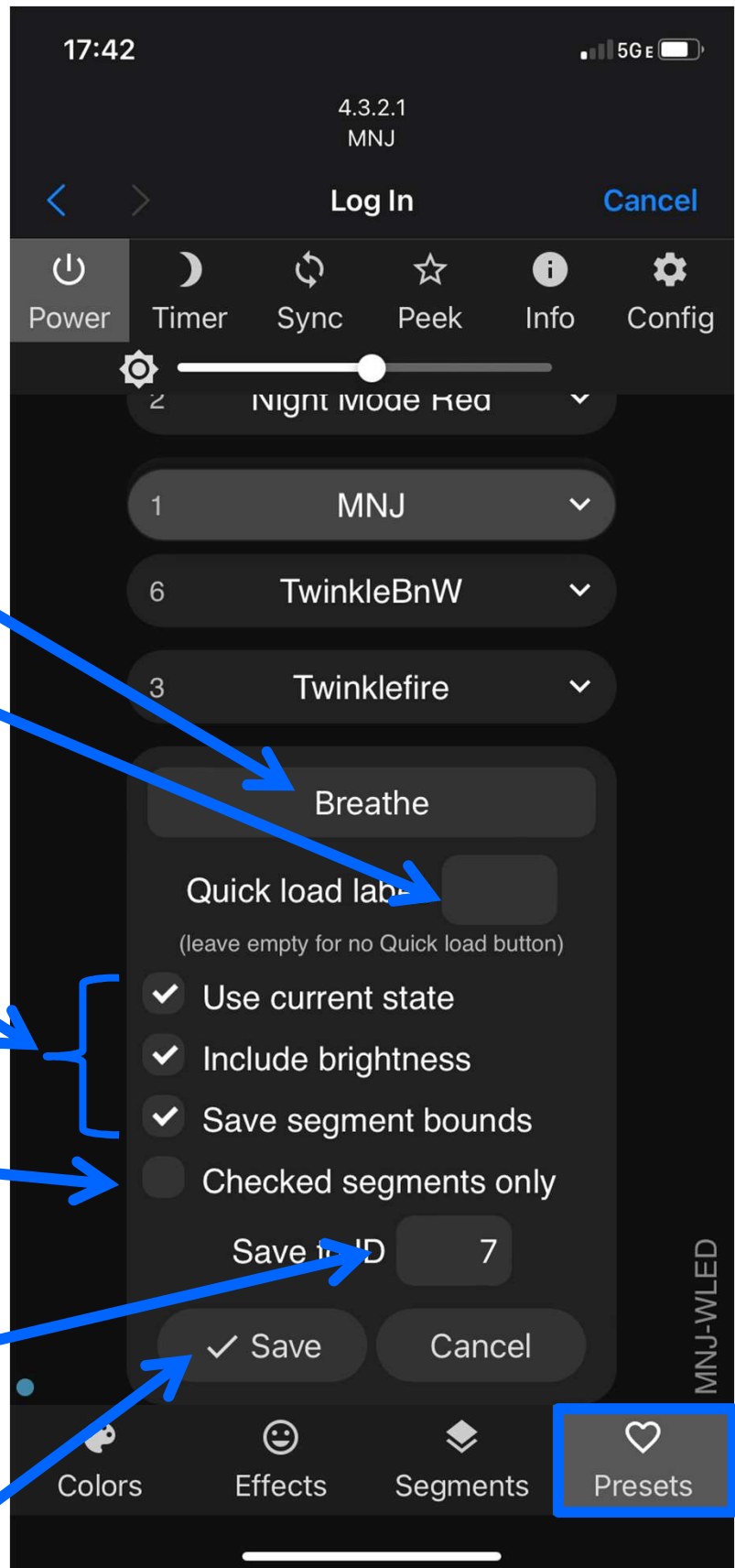
Updating Presets

This pane shows the settings for an individual, existing preset

Single-clicking the pencil icon will edit the preset; this preset is already in edit mode.

You will want to tick this checkbox if you are *updating* **a preset with the current controller and/or segment settings.**

You will probably never need this JSON command string

You can change the ID number to overwrite a different preset

Click on "Save" to update the preset, click on "Delete" to remove it

IMPORTANT: If you make no other changes and do not tick the "Overwrite with state" checkbox, nothing will happen when you click Save.

18:46

4.3.2.1
MNJ

Log In   Cancel

Power Timer Sync Peek Info Config

Search

1   MNJ   ✏ ^

Quick load label: MJ

(leave empty for no Quick load button)

◯ Overwrite with state

API command

{"on":true,"bri":133,"transition":7,"mainseg":0,"seg":[{"id":0,"start":0,"stop":659,"grp":1,"spc":0,"of":0,"on":true,"frz":false,"bri":255,"cct":127,"col":[[255,255,255],

Save to ID   1

✓ Save   🗑 Delete

ID 1

5   MNJ-Blue   ⌄

Colors   Effects   Segments   Presets
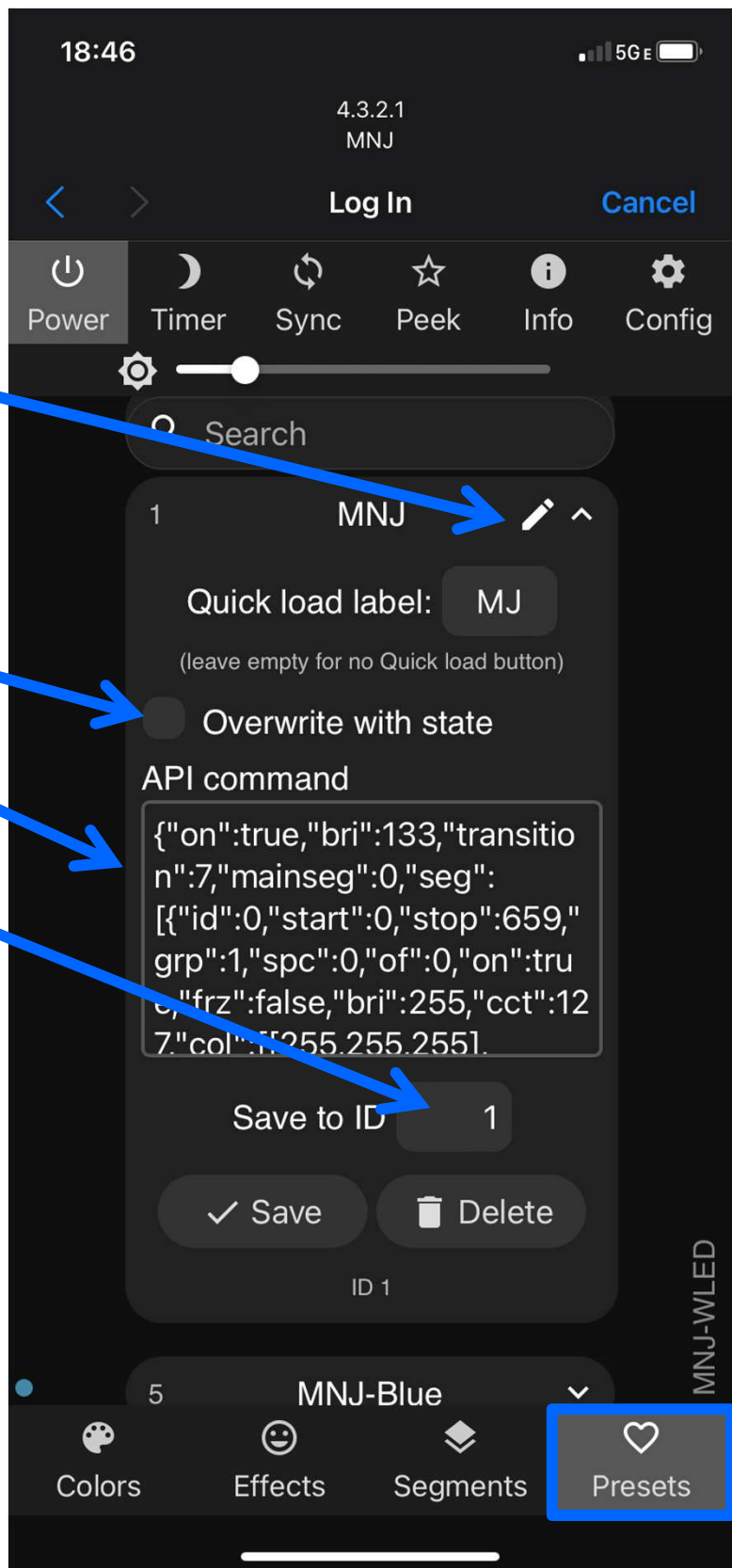
Global Configuration

This is the global config menu reached by clicking on the "gear" icon on any of the configuration panes

Return to WLED control panes

Access the WiFi setup screen

Configure LED preferences

Configure an LED matrix Requires physical grid arrangement)

Modify certain UI operations

Synchronization with other controllers or home automation

Configure timezone, macros, and preset invocation at specified times

Configure Usermods (Sound reactive configuration will be here)

Modify interface security and apply software updates

18:47

4.3.2.1
MNJ

< > Log In Cancel

Back

WiFi Setup

LED Preferences

2D Configuration

User Interface

Sync Interfaces

Time & Macros

Usermods

Security & Updates
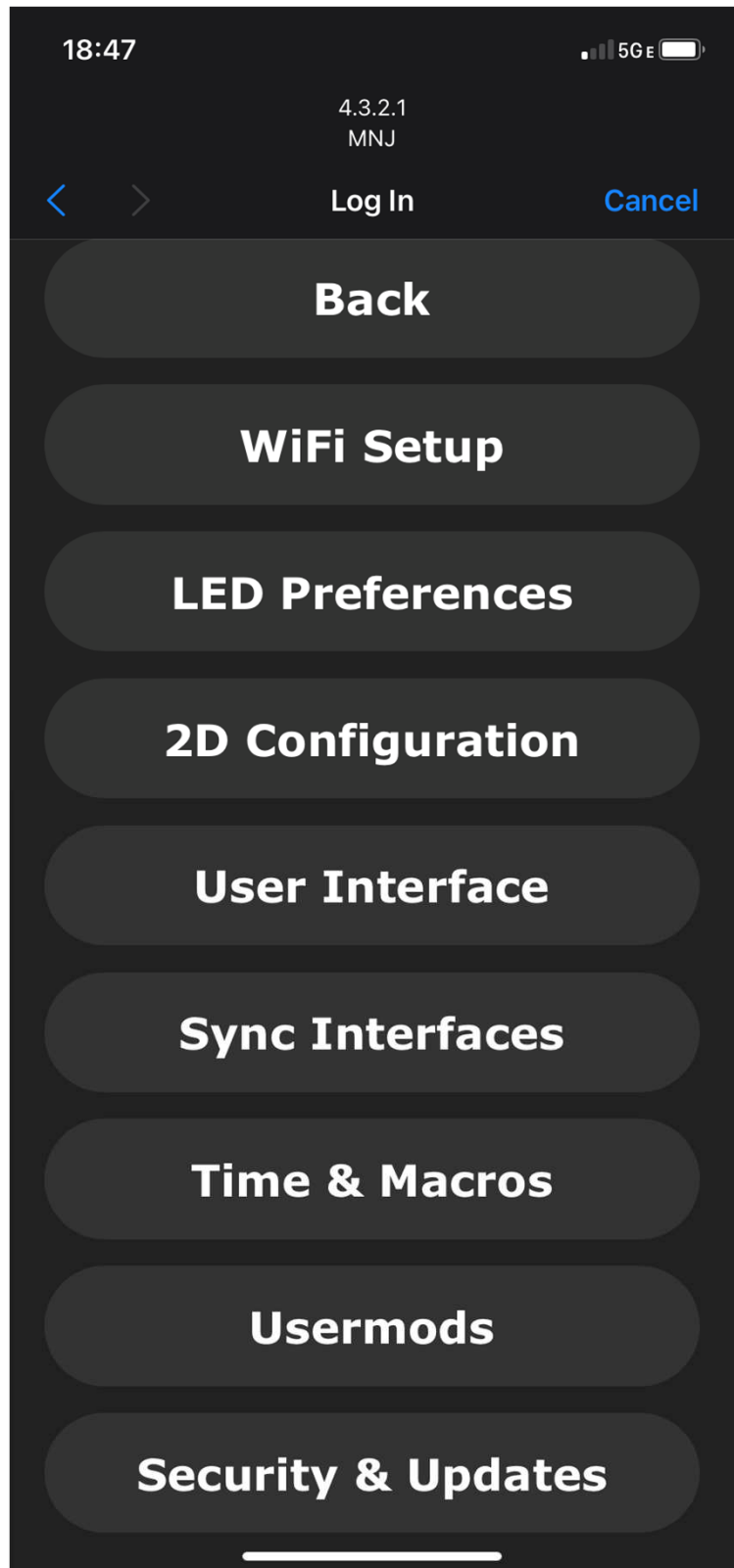
LED Preferences 1

Under normal circumstances, you should never need to access or modify anything on this screen

WARNING!
DO NOT MODIFY POWER SETTINGS!
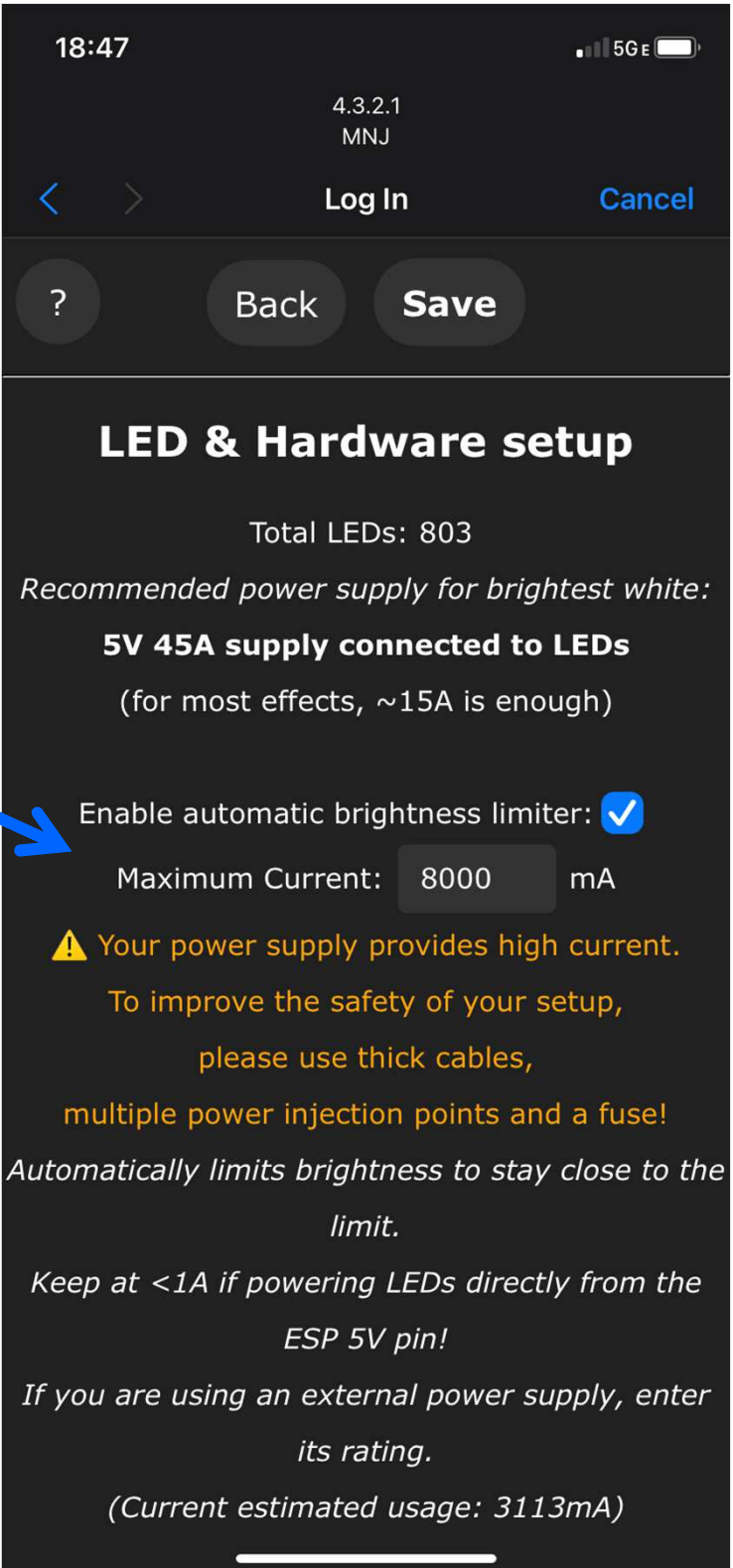
Your lamp/controller brightness has been factory set to prevent overloading and risk of fire.
Disabling the automatic brightness limiter or modifying the maximum current value could cause a power overload which will *likely* damage your LEDs or power supply and start a fire!

Contact manufacturer before changing these settings!

The rest of this screen controls the hardware configuration of the microcontroller. You should not normally need to ever change these settings.

If you ever need to re-enter them, the original GPIO pin configuration is listed on the Wiring Diagram.

Other settings on this screen require advanced knowledge of WLED software operation.

18:47   5G E

4.3.2.1
MNJ

Log In   Cancel

?   Back   **Save**

LED & Hardware setup

Total LEDs: 803

Recommended power supply for brightest white:

5V 45A supply connected to LEDs

(for most effects, ~15A is enough)

Enable automatic brightness limiter: ☑

Maximum Current: 8000 mA

⚠ Your power supply provides high current.
To improve the safety of your setup,
please use thick cables,
multiple power injection points and a fuse!
Automatically limits brightness to stay close to the limit.
Keep at <1A if powering LEDs directly from the ESP 5V pin!
If you are using an external power supply, enter its rating.
(Current estimated usage: 3113mA)

LED Preferences 2

The LED Preferences screen is extensive. Here is the next bit of it, which contains the microcontroller hardware configuration for the physical LED segments of your controller.

You should not normally ever need to modify these settings.

Note that while segments are listed as Segment 1 and Segment 2 here, in the <u>Segments</u> control pane they show up as Segment 0 and Segment 1, respectively

If you ever need to re-enter them, the original GPIO pin configuration is listed on the Wiring Diagram for your lamp or controller.

Remaining LED Preferences screen settings require advanced knowledge of WLED software operation and the hardware configuration of your controller.

LED Preferences 3

The LED Preferences screen is extensive. Here is the next bit of it, which contains the microcontroller hardware configuration for buttons and infrared sensors

You should not normally ever need to modify these settings.

Most of these remaining settings require advanced knowledge of WLED software operation. Contact the manufacturer for questions or before modifying any settings without explicit instructions.

By changing the type of remote from 44-key to JSON, you can fully customize all key operations. This is very advanced stuff, and is beyond the scope of this guide.

Default brightness the LEDs power up with; don't modify this, modify the settings in the startup preset instead.

This field determines what preset loads when the controller is first powered up. You may modify it to use a different preset number if you wish. (The preset *must* already exist!)

18:48   5G E

4.3.2.1
MNJ

<   >   **Log In**   Cancel

?   Back   **Save**

Button 0 GPIO: 0   Pushbutton ⌄ ✕

Button 1 GPIO: -1   Disabled ⌄ ✕

Button 2 GPIO: -1   Disabled ⌄ ✕

Button 3 GPIO: -1   Disabled ⌄ ✕

Disable internal pull-up/down: ☐

Touch threshold: 32

IR GPIO: 19   44-key RGB ⌄ ✕

Apply IR change to main segment only: ☑

IR info

Relay GPIO: -1   Invert ☑ ✕

Defaults

Turn LEDs on after power up/reset: ☑

Default brightness: 128   (0-255)

Apply preset 1 at boot (0 uses defaults)

Time and Macros 1
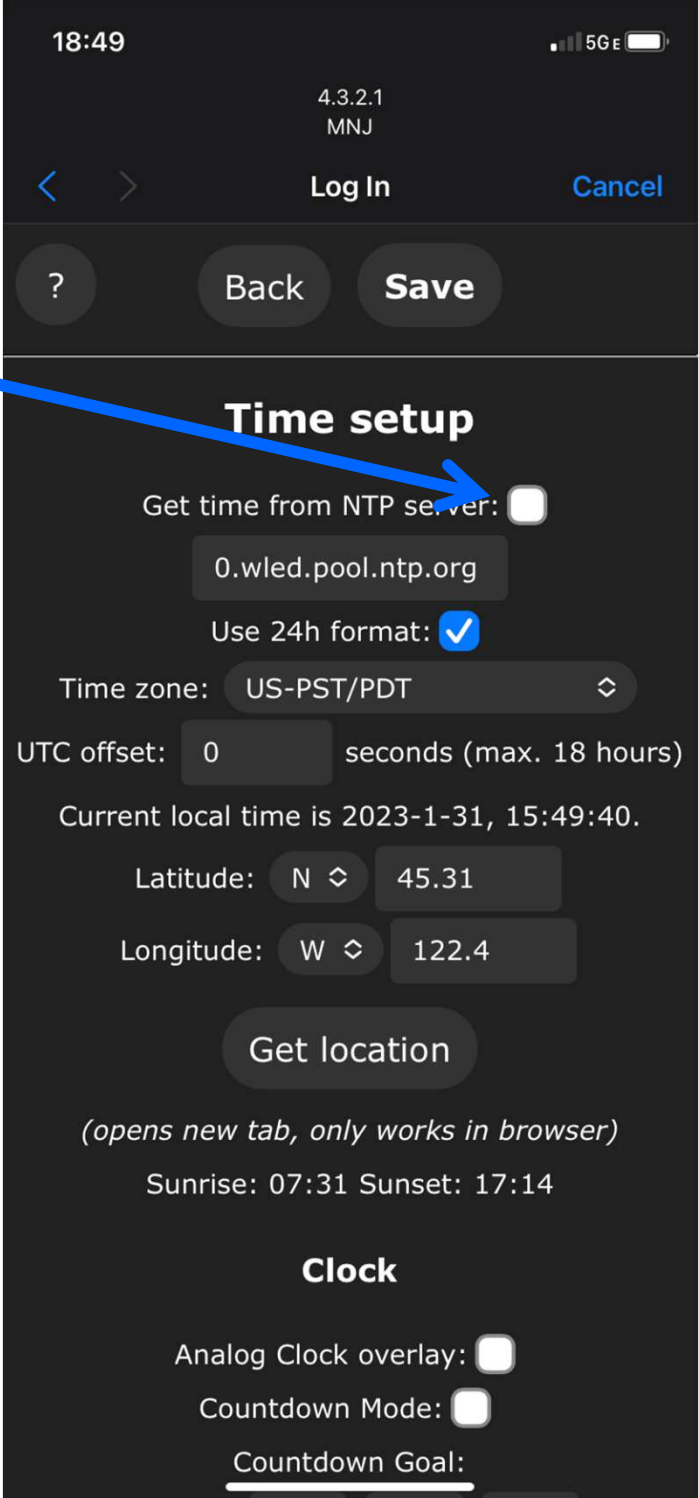
This screen is where time-of-day and time-of-day triggered actions are configured

IMPORTANT: Once you connect your controller to an existing WiFi network, be certain that this box is checked to have your controller automatically update its internal clock.

Leave it unchecked if your controller is not connected to an existing WiFi network. Instead, time will be updated whenever you open the browser interface. This is not terribly reliable though, so WiFi connection is strongly recommended.

Your controller *may* come preconfigured with the latitude and longitude of your home address, or the nearest major city (e.g. Portland, Austin)

Clock overlays are for circular LED layouts, and are known to still be somewhat buggy

Time and Macros 2

This section of the Time and Macros screen controls analog clock overlays (previously discussed) and preset invocations for Alexa, countdowns, and timer endings.

The next section (not shown) configures button actions for controllers which have native buttons or connections for same.

You will probably not need these any of these settings most of the time, if ever, so they are not covered in this guide.

Refer to the online WLED documentation at:
        https://wled.ge
or GitHub:
https://github.com/Aircoookie/WLED

Time and Macros 3

This section is the "meat" of the Time and Macros screen. These settings are where you can specify any preset you wish to take effect at any time of day, or any calendar day.

Note that the entries do not need to be in chronological order. Although since they will *execute* in chronological order, it is suggested that you arrange them that way for convenience in following the schedule of settings you have laid out for the controller to follow.

Note that hours and minutes are in 24-hour time format; e.g., 18:00 is 6:00PM.

Click on the calendar to access day-based settings for a given entry.

Column labels should make the use of the remaining fields intuitive, with no further explanation necessary.

Preconfigured Presets

Your lamp or controller may come with a number of a number of presets preconfigured and ready for use. All manufacturer created presets will apply settings to all elements of lamps or all strip outputs. Your controller may not contain all factory presets listed below.

1. **Rainbow – Generates a pleasing rainbow cascade on some or all lamp or strip outputs**
2. **Night Mode Red – Nighttime friendly dimmed red; "Blends" effect for main segment, "Breathe" effect for other segment(s)**
3. **Twinklefire – Simulates a fire effect in the main segment with "Twinklefox" effect, echoed in the other segment(s) with "Breathe" effect**
4. **Rainbow – A combination of "Pride 2015" effect for the main segment and "Random" color effect for the other segment(s)**
5. **TwinkleBnW – Coruscating blue and white; "Twinklefox" effect on the main segment with blue/white "Breathe" effect for other segment(s)**
6. **All Dark Red – Solid colors for all segments, dimmed very dark red for use at night**

Infrared Remote

Your controller may be wired with an infrared remote control; it will include a small IR remote control if this is the case. Unfortunately, this portion of the WLED software is still in the experimental phase, and the remote control only works reliably when:

- The main element is set to "Solid" color effect

- Or: *both* elements are set to "Solid" color effect and "Apply IR change to main segment only" on the <u>LED Preferences</u> page *unchecked*.

- Otherwise, using the remote control when the main element's segment is set to an animation effect will cause the color change to "queue" up, such that when the main segment effect is changed to "solid", all the commands previously sent from the remote will execute all at once (but in order in which they were received.)

- This is a *very* annoying bug, as it seriously detracts from the usability of the remote control, and the manufacturer is pursuing remediation measures, both with developer of the WLED software and internally with our own product engineering team.

- Until such time as updated software is available which corrects this bug, it is strongly advised to only use the remote control to adjust colors only *after* the main segment has first been set to "Solid" color effect using the app or web interface.
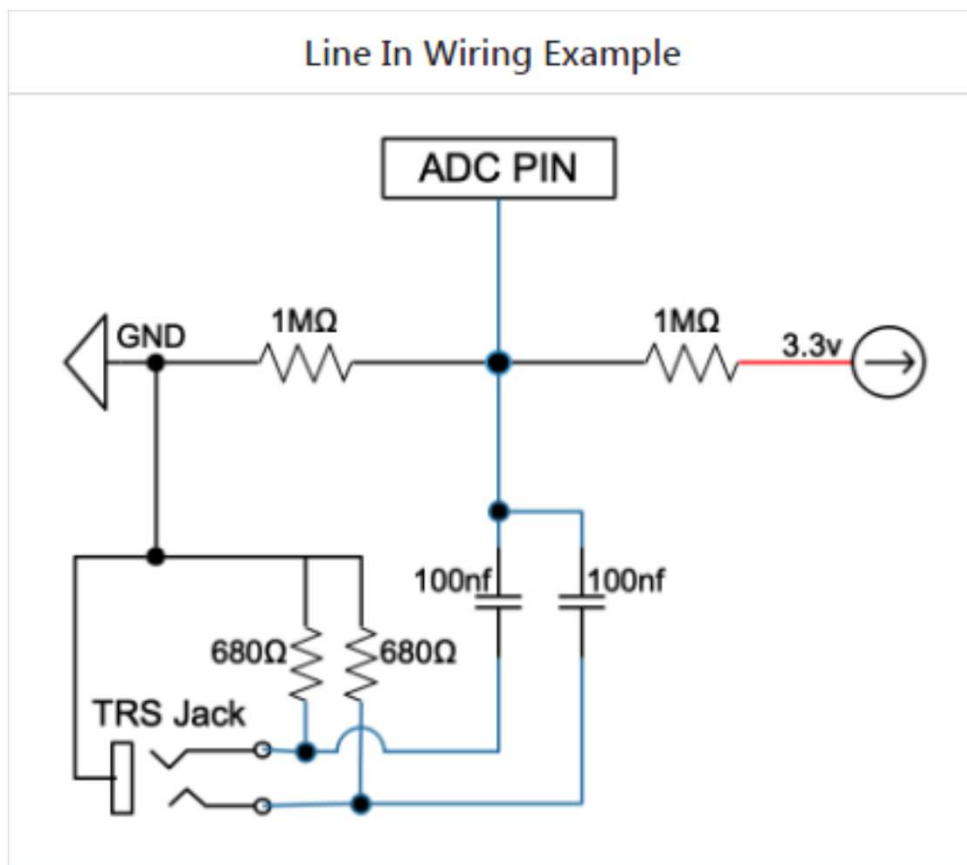
Sound Reactive (SR)

Your controller may have sound/audio reactivity included among it's capabilities. You can identify sound reactive controllers by the presence of a 1/8" TRS audio jack (aux jack).

Below is the schematic typically used to connect this jack to the microcontroller board.

A detailed discussion of sound reactive setup and troubleshooting is beyond the scope of this Guide; please refer to online documentation at **https://github.com/atuline/WLED/wiki/Analog-Audio-Input-Options** or **https://wled.ge**

Line In Wiring Example

Caveats

WLED is open source software, and the price of its awesomeness is that there are still odd behaviors and occasional bugs that you should be aware of

- Don't try to update the software yourself without first conferring with manufacturer technical support as to the best version to update to, and the best workflow to use for updating via the application

- Always run WLED behind a router or, preferably, firewall; WLED has not been hardened to maximize network security, so it is possible that a bug could be uncovered which allows the software to be leveraged in an attack. (Of course, this precaution is even *more* true for any Windows computers connecting to your wifi network.)

- The outer shade of main lamp elements can be removed for cleaning; use a microfiber cloth with soap and water.

- Do not immerse lamps or controllers in water, or get *any* water on a controller

- Only allow IP65 outdoor rated strips to contact water

- Keep lamps and controllers away from excessive heat; high heat can melt element shades and base window bezels, and permanently damage LEDs.

Indemnification

By using the provided PCFdesigns illumination product (hereinafter "the Controller"), end user recipient implicitly acknowledges and accepts the following:
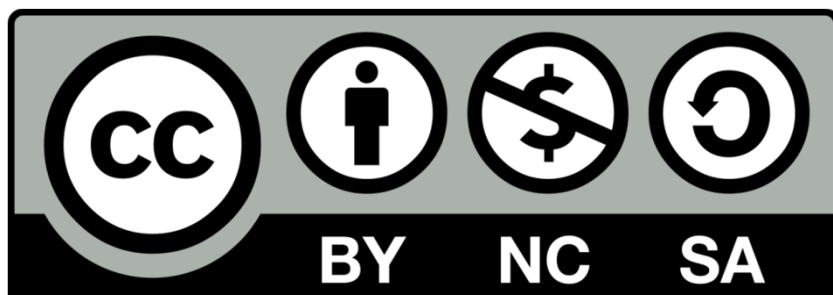
- The Controller is not double-insulated and should never be connected to other than a fully grounded NEMA L5-15 125 volt AC receptacle

- Configuration settings for the Controller have been adjusted at the factory to provide what is believed to be a safe operating temperature for extended run times; any alteration to amperage or other power settings, including maximum brightness, may result in an unsafe, overtemperature condition posing a risk of smoke or flame

- No warranties express or implied are made by the manufacturer regarding the use of the Controller for any purpose whatsoever, including basic warranties of merchantability and fitness.

- While the power supply of the Controller is Listed, other components may not be Listed, and the overall Controller and any LED segments are not Listed and have not been subjected to any fitness or safety testing beyond a brief 1-2 day test run period by the manufacturer to assure correct illumination behavior prior to delivery to the end user

- Any manufacturer support provided is on a best-effort basis and does not extend nor is transferrable beyond the original recipient of the Controller

Support

We hope your new PCFdesigns WLED controller will provide you with years of trouble-free operation. However, should you encounter difficulties, you can reach PCFdesigns via the following methods:

- E-mail: pcfdesigns@palas.com

- Cellular SMS: 812-662-5933