Electronics Bay Wiring

A KittieKatt Manual

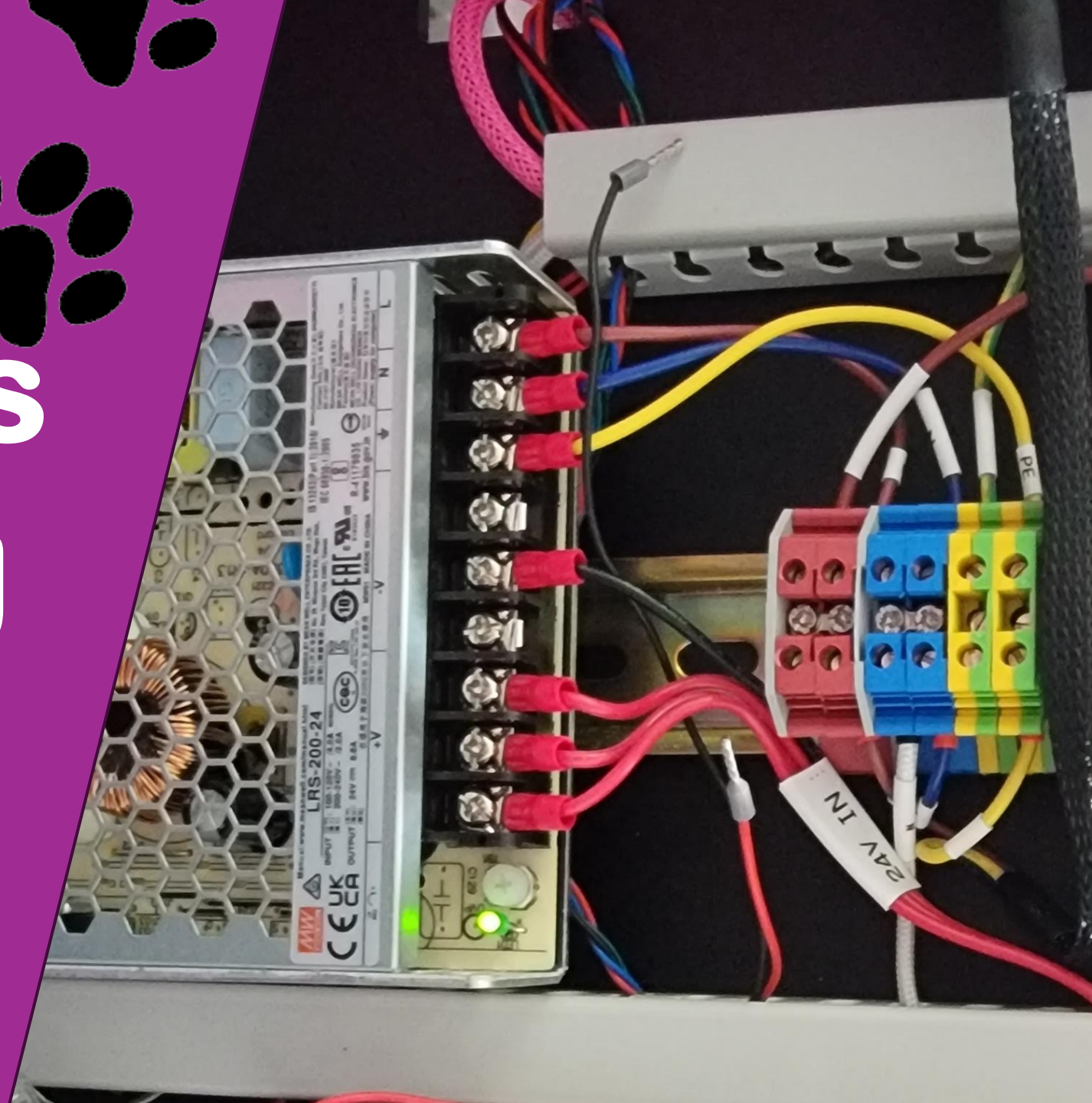


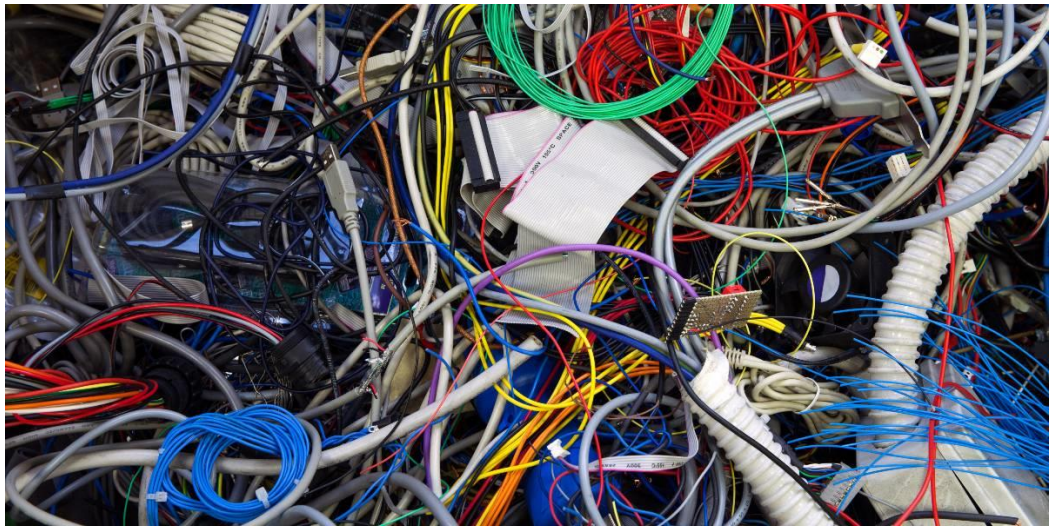
Table of Contents

Introduction

Wiring the power can seem complicated especially since it is mixing AC and DC power. You will want to be especially careful not to mix these and keep your wiring clean. This guide will help walk you through the basics of wiring power for your printer.

The layout is not going to match perfectly to your boards and such. Depending on the MCU and/or PSU you are using locations of ports may be different, but the wiring principals will be the same no matter the layout or electronics used.

Disclaimer
This is meant to help with doing wiring for your printer. I am not in any way responsible for anything that should happen from you trying to do your own wiring on your printer. If you have further questions I recommend reaching out to the manufacturer of your kit.



References

ATTENTION BUBBLE
This logo denotes steps that are common areas that mistakes can occur.

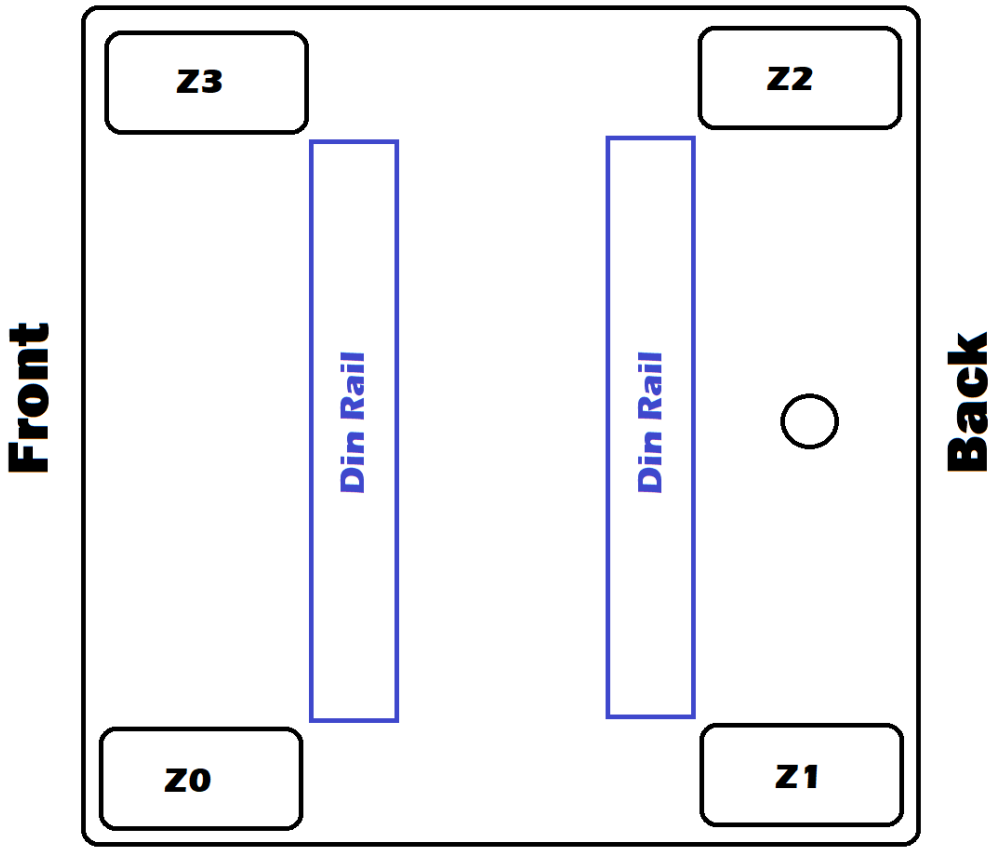
Kittie Paw Logo
Look for Kittie Paw Logo next to the printed part, this is a direct link to a file on the github repo or further information on something.

Suggested Layouts

There are two main ways to install your electronics, they will be based on which direction you face your DIN rails.

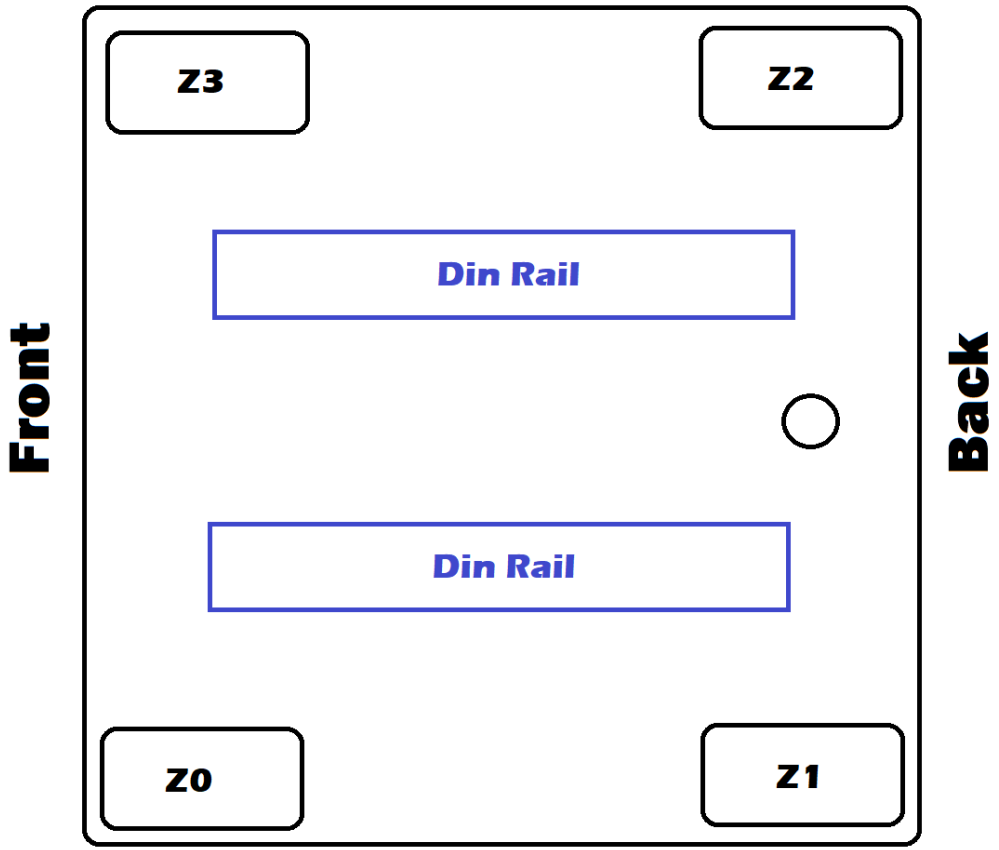
Version 1

This is a good version to use for larger printers, like 300+ Voron builds.



Version 2

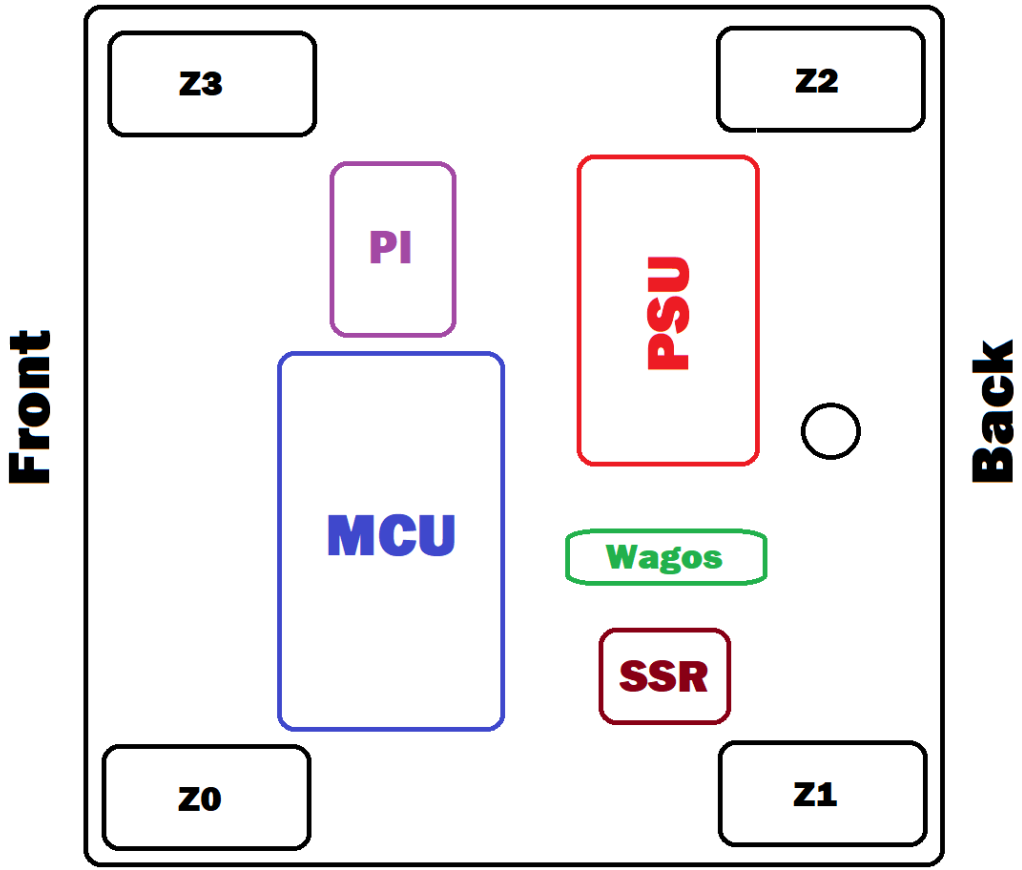
This version may fit a little better in smaller builds such as the Micron.



Suggested Layouts – Version 1

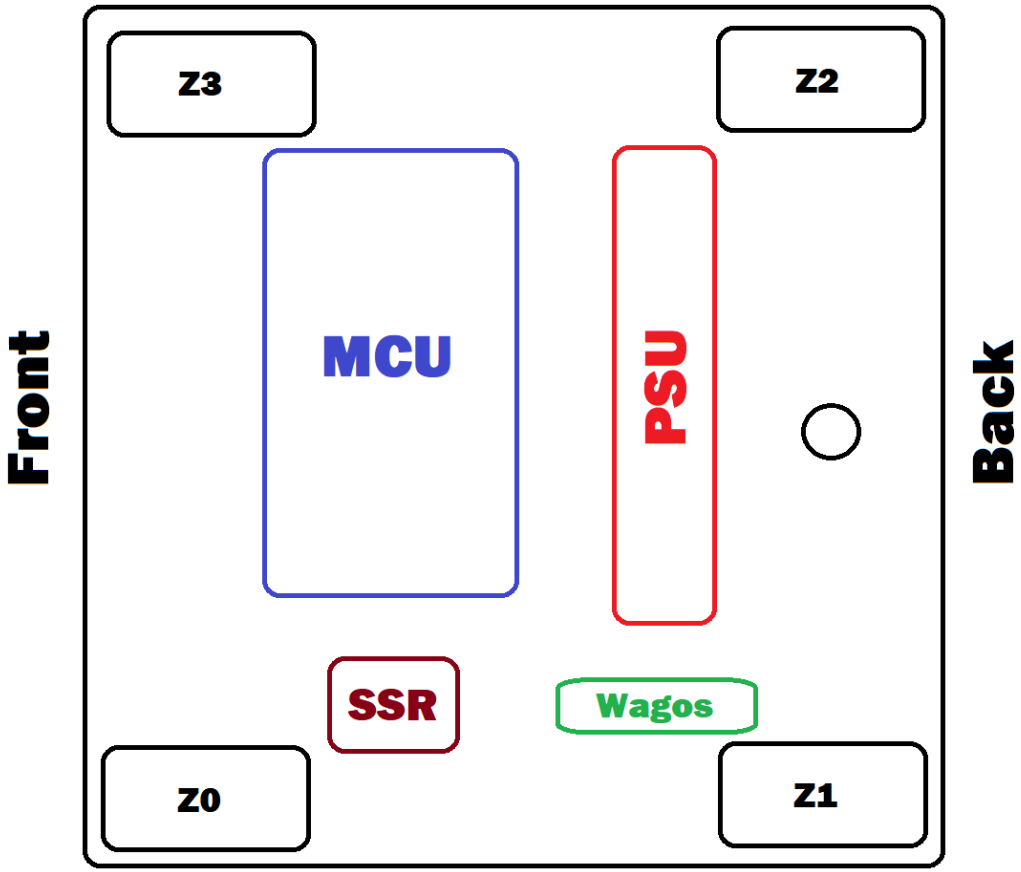
Full Size Builds

This set up has more space and allows you to separate the MCU from the Pi or CB1/CB2 controller. Rail space is can still be limited, but you should have more than enough space.



Small Builds

This set up needs a MCU such as a Leviathan that houses the Pi or CB1/CB2 controller mounted to the MCU. This is required for smaller builds such as the Micron.



Suggested Layouts – Version 2

Full Size Builds

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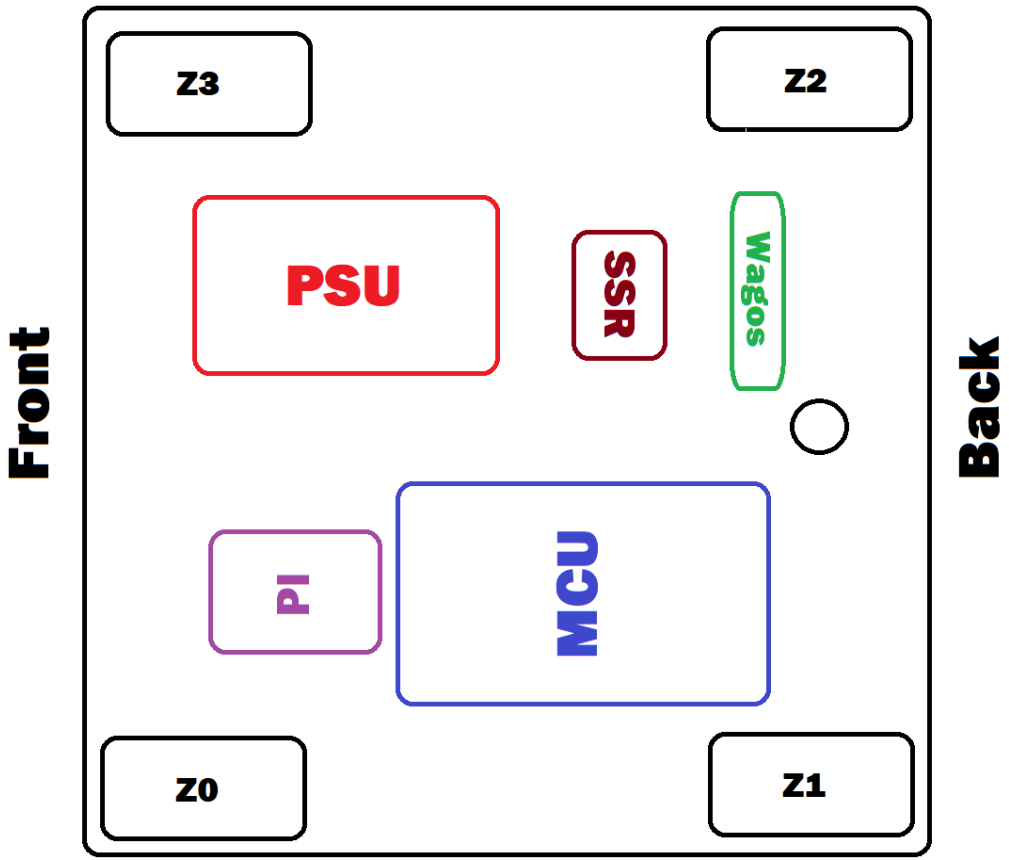

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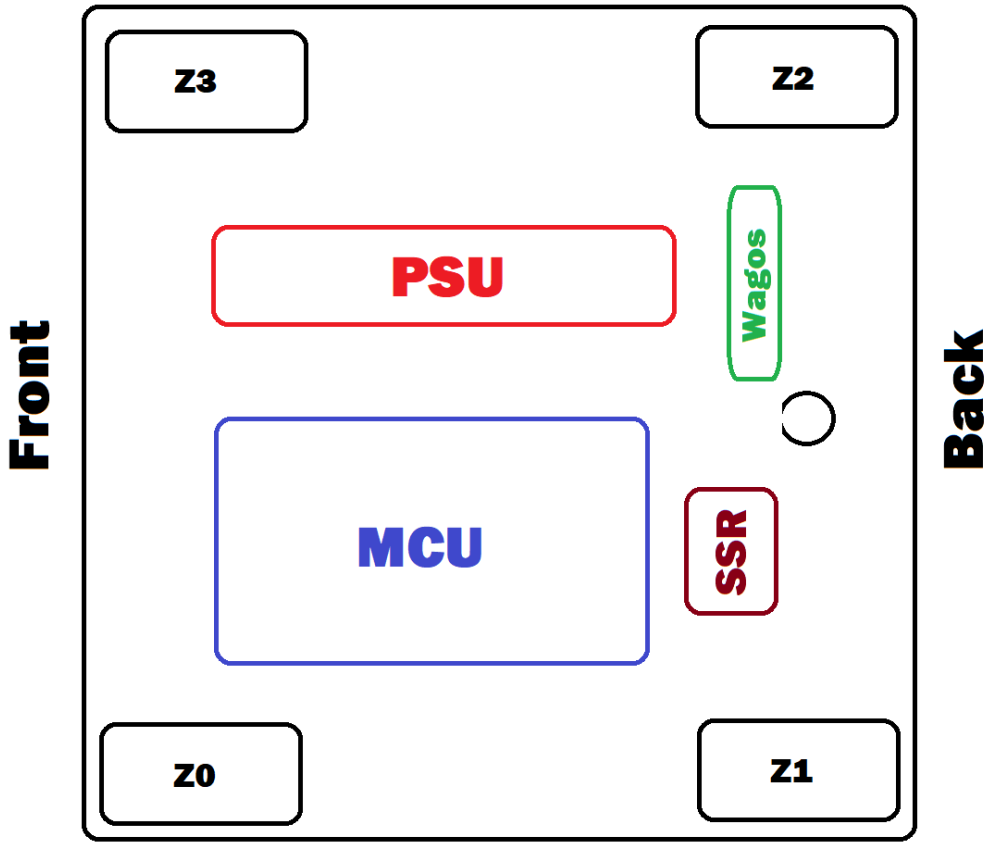
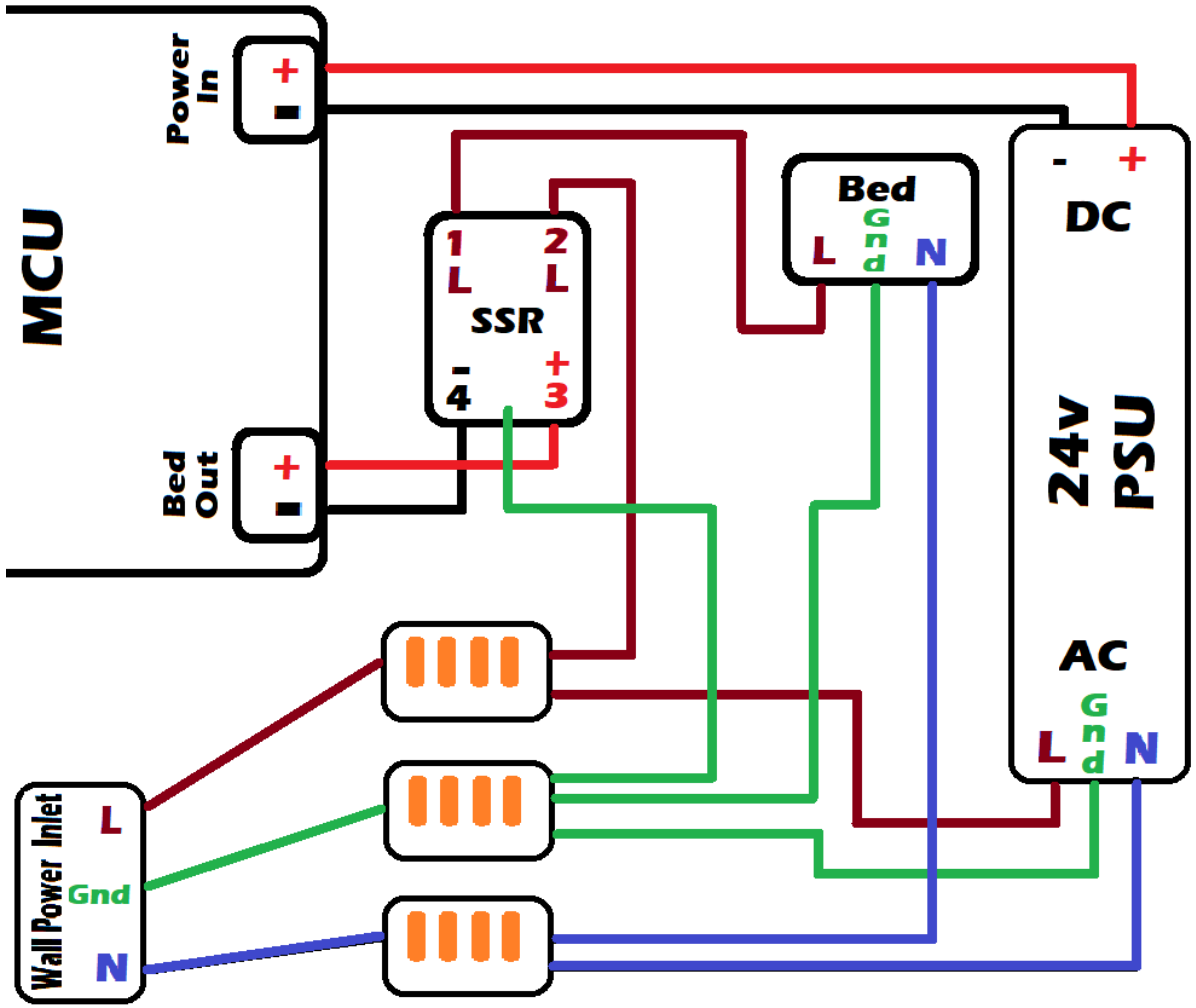


One Diagram to Rule Them All

Here is one diagram that shows everything that is spread out in pages 9-15.



Wiring
The manual will break down all the basic connections shown here. The wires are color coded in this manual as follows.

AC:
Load
Red/Brown

Ground
Green

Neutral
Blue

DC:
Positive (+)
Red

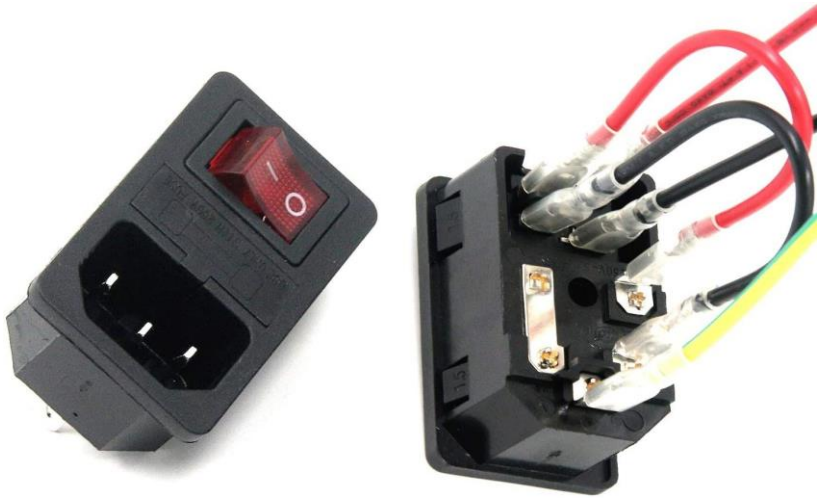
Negative (-)
Black

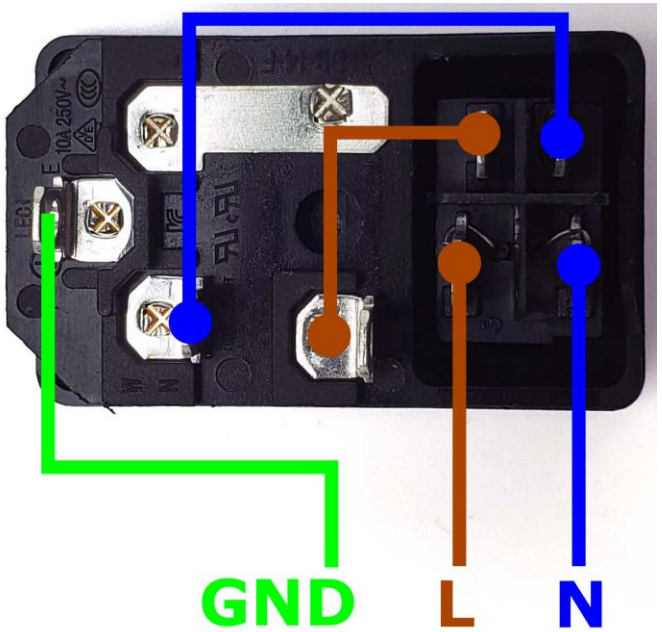
AC Power – Power Inlet

Wiring up the AC will start at the power inlet .

Power Inlet
Your power inlet should look something like this. (some models do not have the neutral and load switched, just load, this is ok as well)

Make sure your power inlet / switch has a built-in fuse, if not, you will need to manually add one!





Power Inlet Wiring
Make sure you are not crossing wires and that you do not have any exposed wiring when you are doing the switch.

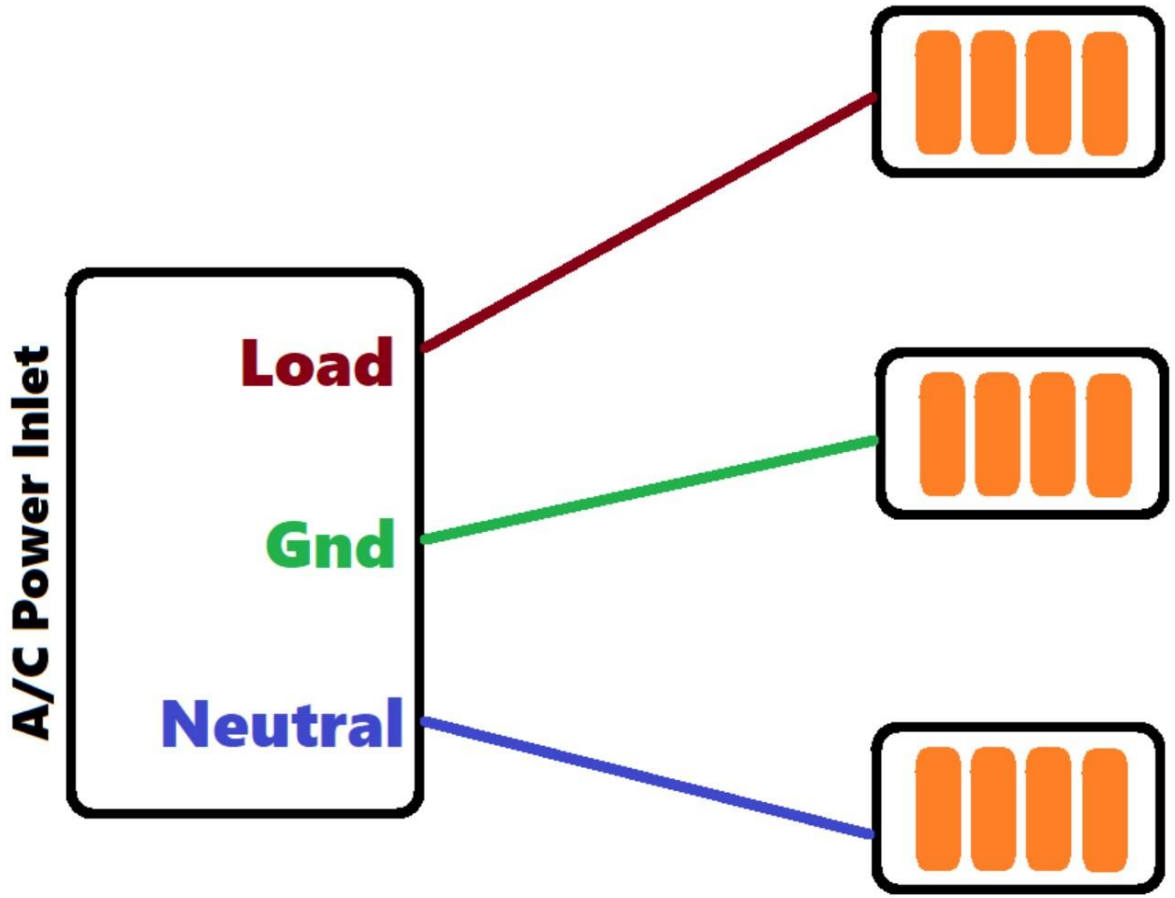
AC Power – Inlet to Distribution Blocks

For all diagrams, the black outlined rectangle with the 4 orange filled rectangles (Wago ish image) will act as a marker for the din rail terminal distribution blocks or your Wagos depending on which you are using . From here on out in the manual we will only be mentioning Wagos, but they are doing the same thing and are one in the same.

Ground Wire
This will go directly into your Wago.

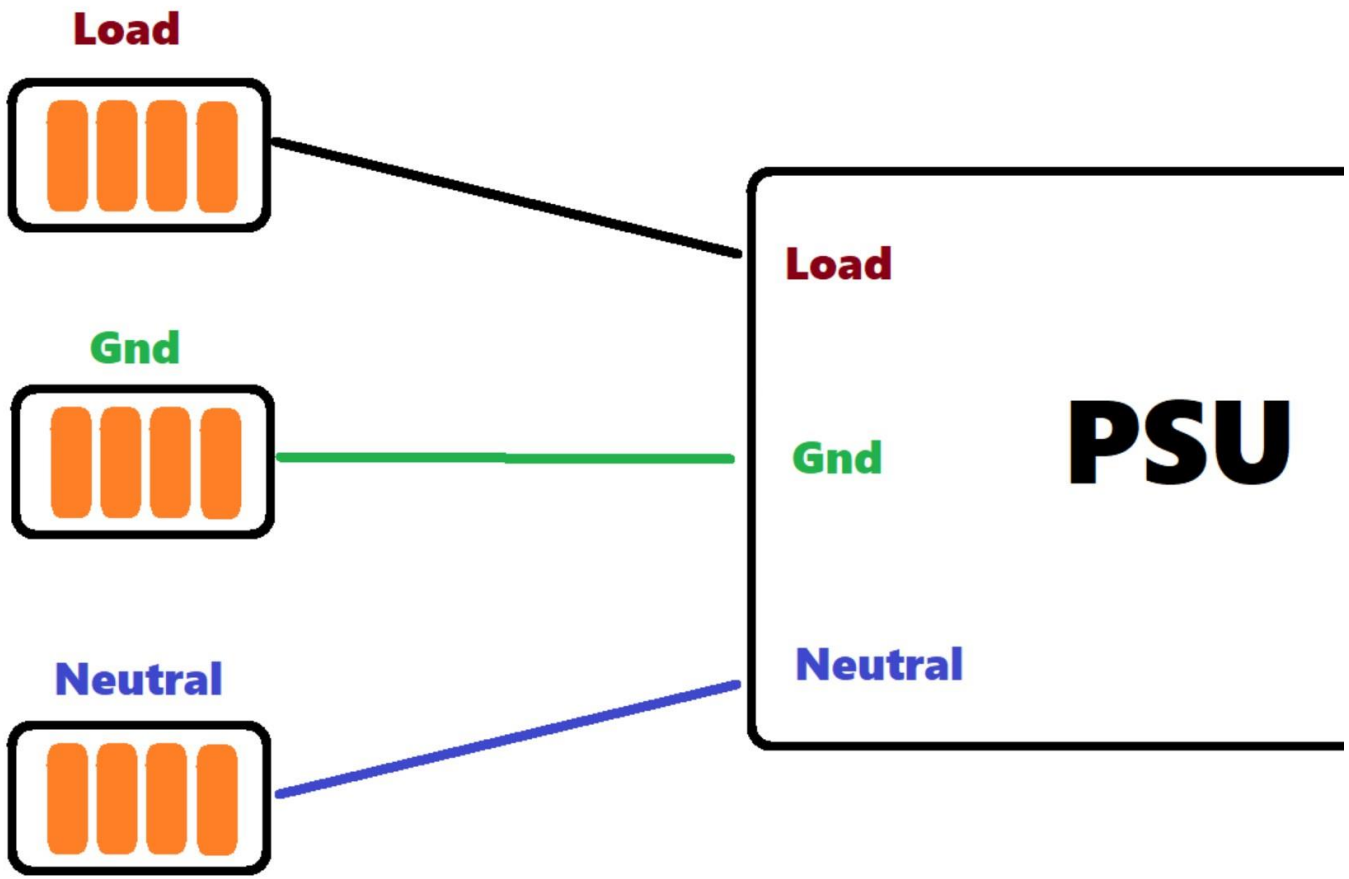
Load Wire
This will go directly into your Wago.

Neutral Wire
This will go directly into your Wago.



Wago Wiring
At this point you will pick one Wago to be used for each of the 3 wires. After this you will want to use the same Wago for the same wire type throughout. (i.e. always connect Load to Load, Neutral to Neutral, and Ground to Ground)

AC Power - PSU



Load Wire
This will go from one of the Load Wago ports to the Load terminal on your PSU.

Ground Wire
This will go from one of the Ground Wago ports to the Ground terminal on your PSU.

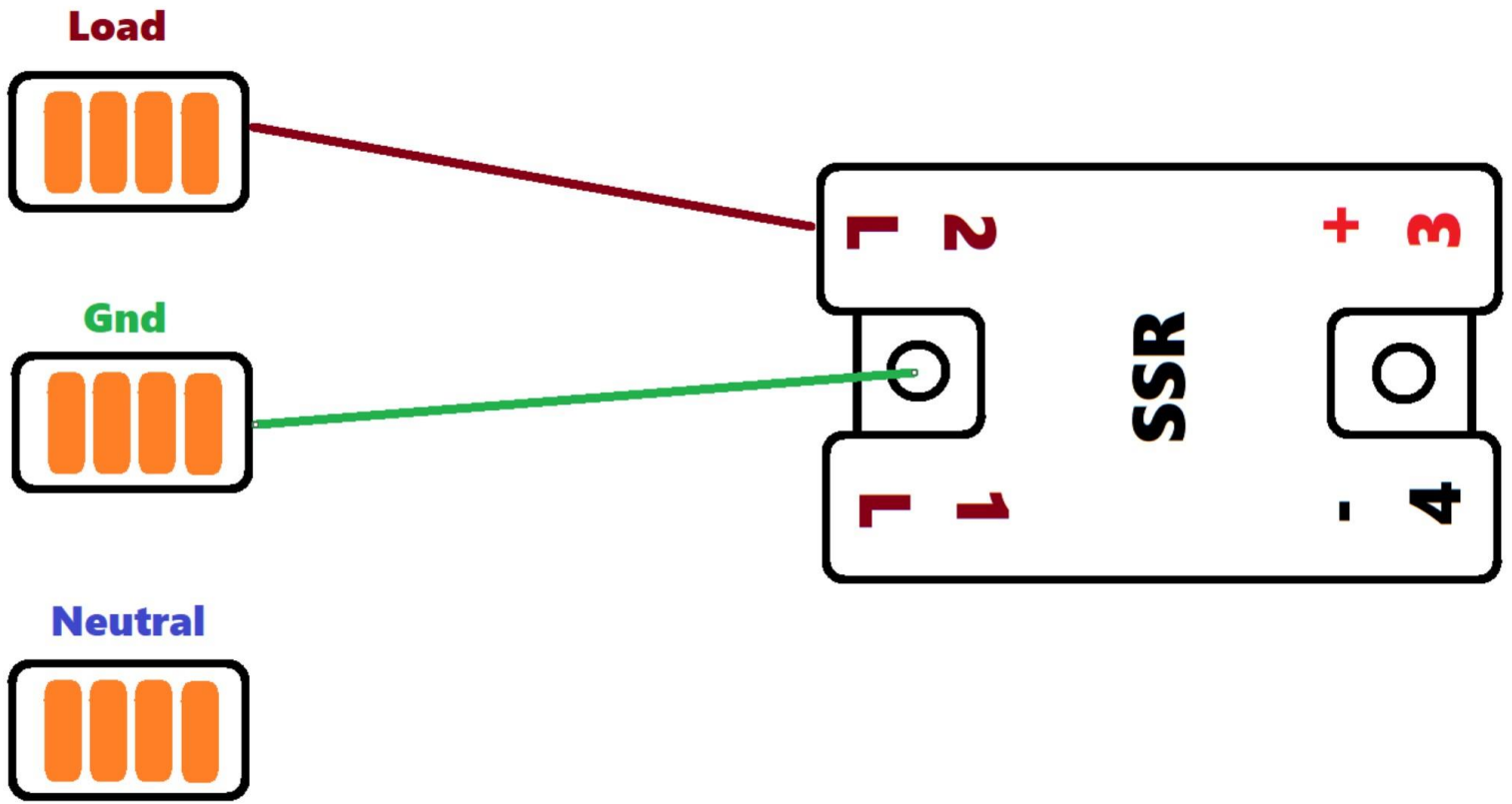
Neutral Wire
This will go from one of the Neutral Wago ports to the Neutral terminal on your PSU.

AC Power - SSR

Load Wire
This will go from one of the Load Wago ports to the #2 Load terminal on your SSR.

Ground Wire
This will go from one of the Ground Wago ports to the one of the mounting screws on your SSR. You will need to use a spade or ring connector that is crimped on the wire. (You want to do this because that screw is attached to the DIN rail and will ground the rail and should ground your frame as well)

Neutral Wire
There is no connection from Neutral to the SSR.



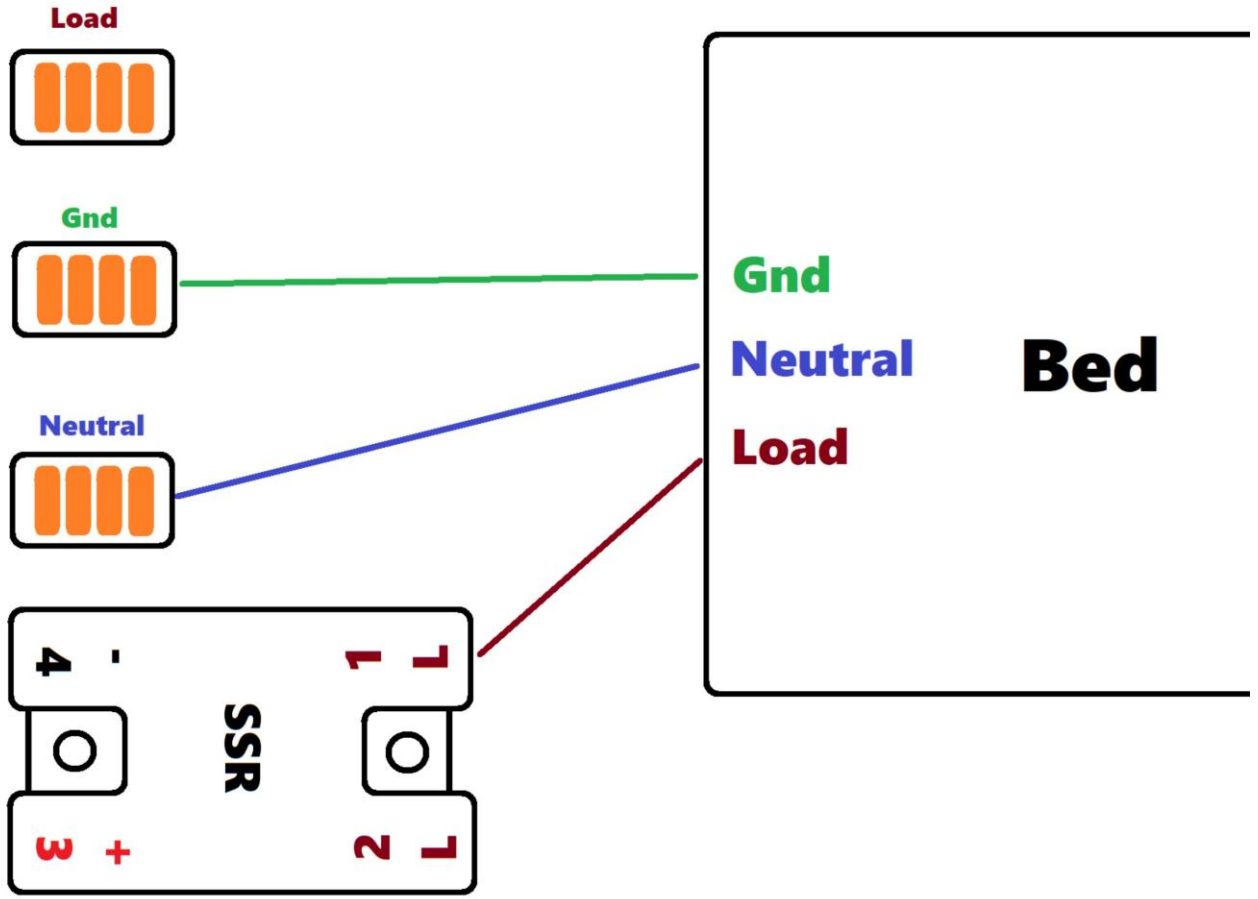
AC Power – A/C Bed

Load Wire
This will go from the #1 Load terminal on your SSR to the bed.

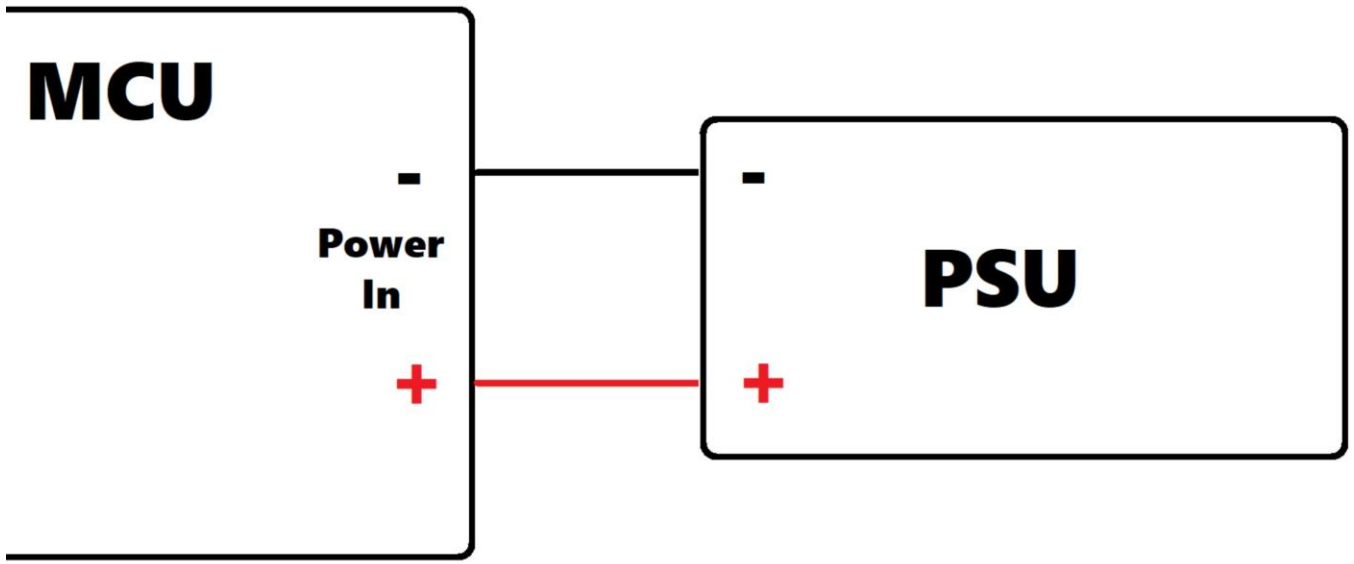
Ground Wire
This will go from one of the GroundWago ports to a ground screw on the bottom of the bed. (if you do not have enough ports in your wago you can run your ground off the other mounting screw on the opposite side of the SSR.)

Neutral Wire
This will go from one of the Neutral Wago ports to the bed.

Bed Thermal Fuse
Your bed heater needs to have a thermal fuse. Most reputable companies have already put one in the wiring for the bed from the factory. If your bed does not have one you will need to add one. I recommend you contact the manufacturer of your bed heater for the best way to add a thermal fuse to your bed heater.



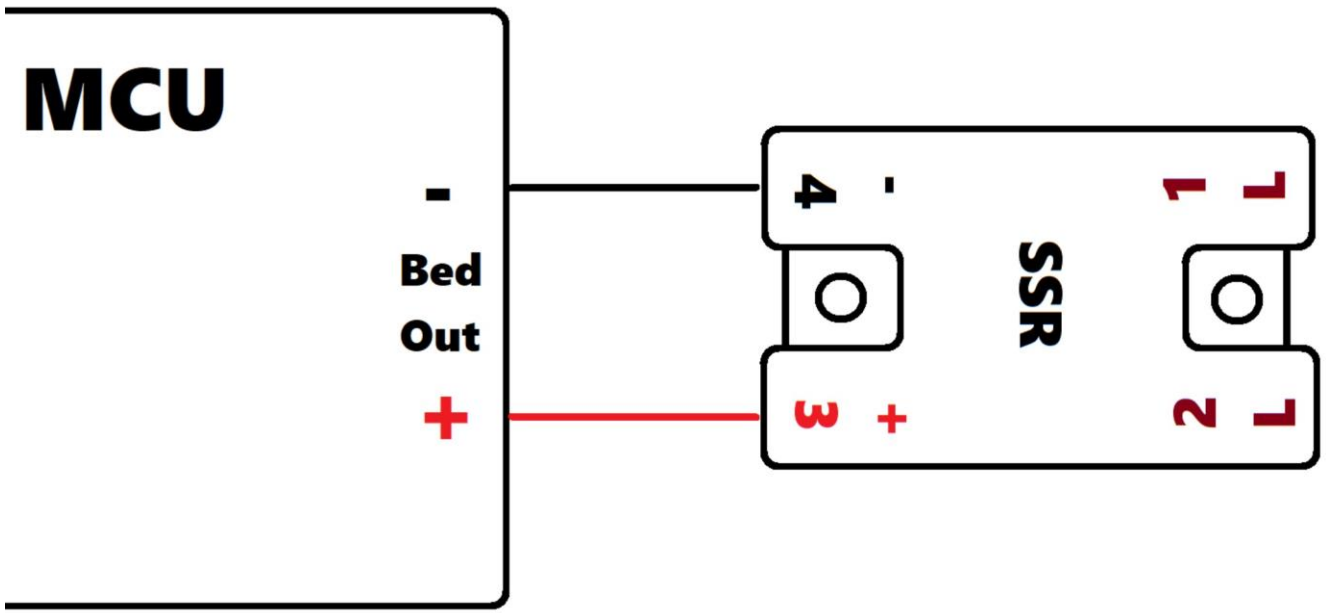
DC Power – PSU to MCU



Positive Wire
This will go from the Positive (+) terminal on your PSU to the Power Input on your MCU.

Negative Wire
This will go from the Negative (-) terminal on your PSU to the Power Input on your MCU.

DC Power – MCU to SSR



Positive Wire
This will go from the Positive (+) terminal on your MCU to the + Input on your SSR.

Negative Wire
This will go from the Negative (-) terminal on your MCU to the – Input on your SSR.

Dual PSU

Some Builds will have more than one PSU. This is usually the case with AWD (All Wheel Drive) 48v gantry builds, or ones that have a 5v PSU for your controller and/or to power stings of LEDs. There are some other cases as well where you would want to do this. So, this should help give guidelines on how to do wiring for multiple PSU.

Mounting
Mounting your PSU will be a little more complicated and it is suggested to use UHP low profile style power supplies as it will help with space management.

Wattage
You will want to be sure your power supplies have enough power for anything you are going to be running off them. Drawing more power from the power supply than it is meant to supply can lead to serious issues.

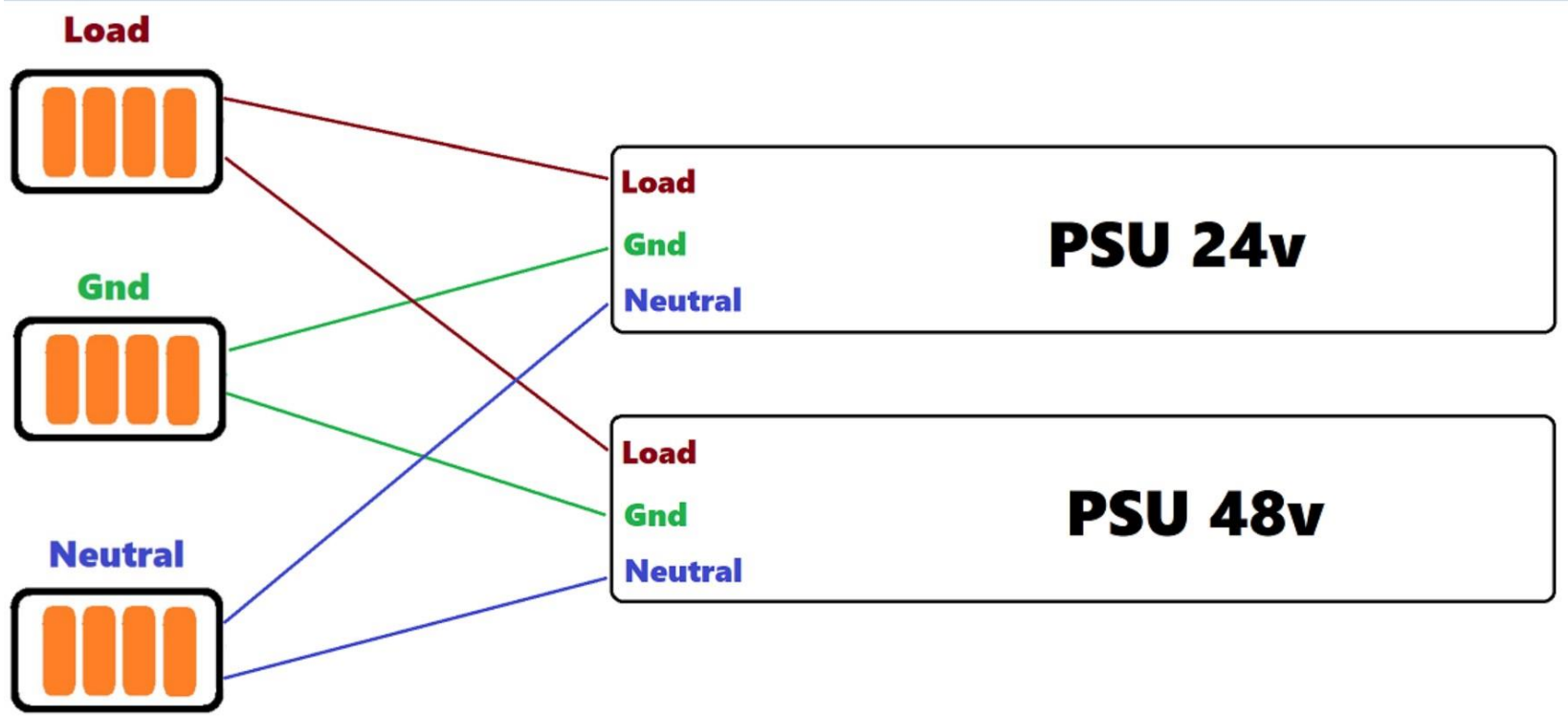
Dual PSU

When doing a dual power supply you're A/C wiring will match for both power supplies. You will run one wire from each dinrail block or Wago port to each power supply.

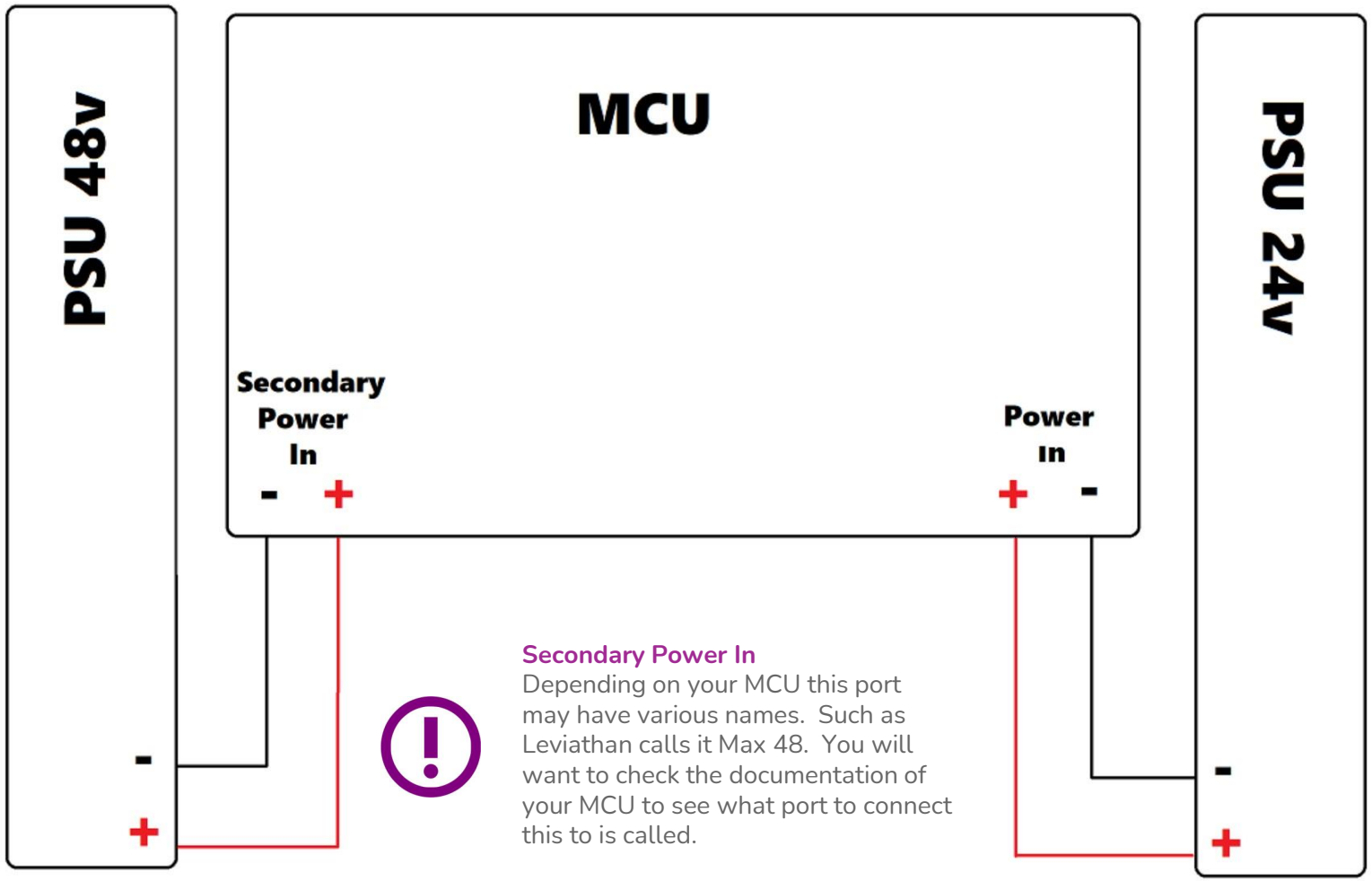
Load Wire
This will go from one of the Load Wago ports to the Load terminal on your PSU.

Ground Wire
This will go from one of the Ground Wago ports to the Ground terminal on your PSU.

Neutral Wire
This will go from one of the Neutral Wago ports to the Neutral terminal on your PSU.



Dual PSU



Secondary Power In
Depending on your MCU this port may have various names. Such as Leviathan calls it Max 48. You will want to check the documentation of your MCU to see what port to connect this to is called.

24v PSU

Positive Wire
This will go from the Positive (+) terminal on your PSU to the Power Input on your MCU.

Negative Wire
This will go from the Negative (-) terminal on your PSU to the Power Input on your MCU.

48v PSU

Positive Wire
This will go from the Positive (+) terminal on your PSU to the Secondary Power Input on your MCU.

Negative Wire
This will go from the Negative (-) terminal on your PSU to the Secondary Power Input on your MCU.