RGBgenie

RGBgenie ZigBee 3.0 Dimming Controller with 4 Channels
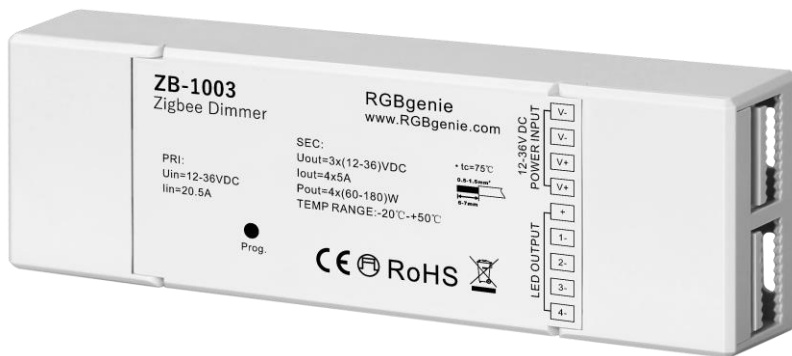
The ZB-1003 is a ZigBee enabled 4 channel LED Controller utilizing the latest ZigBee 3.0. With a 12 to 36 volt DC input, this robust unit provides up to 720 watts of constant voltage power up to 5 amps per channel for maximum lighting compatibility.

INTRODUCTION

Thank you for choosing RGBgenie as your lighting control provider. This device is compliant with the ZigBee 3.0 standard which is the unification of the HA (Home Automation) and LL (Light Link) profile. This is an End Point Device that can perform all available operations within the standard. This Controller is also a network repeater, which makes your mesh network stronger.

Using wireless signals at 2.4 GHz this product is also suitable for global operation. For optimal performance, consideration should be given to placement. ZigBee radio signals are affected by dense objects, such as brick walls, refrigerators, solid doors or the like.

1.   CONNECTING LIGHTING TO THE DEVICE

WARNING: DO NOT install lighting with power applied to the device or expose the Controller to moisture.

WARNING: DO NOT use an undersized (amps) or mismatched (volts) power supply. Risk of fire, injury or death could result. You must use a licensed electrician for installation if you are unsure how to proceed.

It is imperative that a correctly sized power supply be used. It is up to you to research your electrical needs and source the appropriate power supply. Always purchase a unit which is greater than your final amperage calculation. As a rule of thumb, best practice dictates that your power supply run at approximately 80% of maximum values. For example, if your electrical needs are 8 amps, purchase power supply rated for at least 10 amps.

HOW TO CHOOSE A POWER SUPPLY:

The first step is making sure your power supply and lighting voltage match. If you are using 12 volt LED strip lights, make sure you are using a 12-volt power supply for your input voltage. A voltage mismatch is dangerous will result in the power supply and/or lighting failure. As an example, connecting a 24-volt power supply to 12-volt lighting will cause them to overheat, burn out and worse, start a fire.

The Second step is to make sure your power supply has enough current to drive your lighting. This is a simple process. We describe how to calculate the total wattage for the lighting you plan to use below. Please contact your lighting manufacturer for their power specifications. Not all LED's are created equal.

In our example we will be installing three segments of single color LED strip lights under the kitchen cabinets. This will require three separate runs of 6 feet, 3 feet and 8 feet.

We will install the 6 foot run on the first channel and use 12 volt single color strip lights with wattage of 4 watts per foot. So to calculate total wattage simply multiply the watts per foot by the rung length. (6 feet x 4 watts/foot = 24 total watts)

We will install the 3 foot run on the second channel and use the same 12 volt single color strip lights rated at 4 watts per foot, so total watts on the second channel is 8 watts. (3 feet x 4 watts/foot = 12 total watts)

Lastly, we will install the 8 foot run on the third channel using a different 12 volt strip of higher density LED's that draws 6 watts per foot, so total watts on the third channel is 48 watts. (8 feet x 6 watts/foot = 48 total watts)

The next step is to divide the total watts for each channel by volts to get the necessary amps per channel. <u>This calculation cannot exceed 5 amps for each of the channels.</u>

In our example, for the first channel, we divide 24 watts by 12 volts which means channel one will draw 2 amps (Amps = Watts ÷ Volts).

For the second channel we divide 12 watts by 12 volts which means channel two will draw 1 amp.

For the third channel, we divide 48 watts by 12 volts getting a total of 4 amps.

Next we need to add the amperage of all three channels together and we come up with 7 amps. (2 amps + 1 amp + 4 amps = 7 amps)

A popular online calculator can be found here:

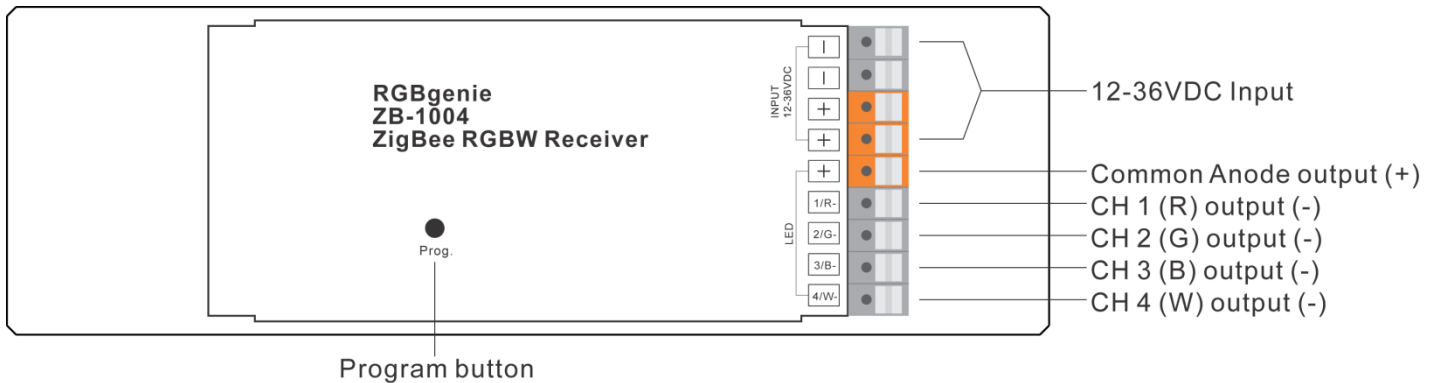https://www.rapidtables.com/calc/electric/watt-volt-amp-calculator.html

The last step is to add a 20% margin of safety and you have an idea of what size power supply is needed. So in our example, an 8.4 Amp or greater power supply will be necessary. (7 x 1.2 = 8.4)
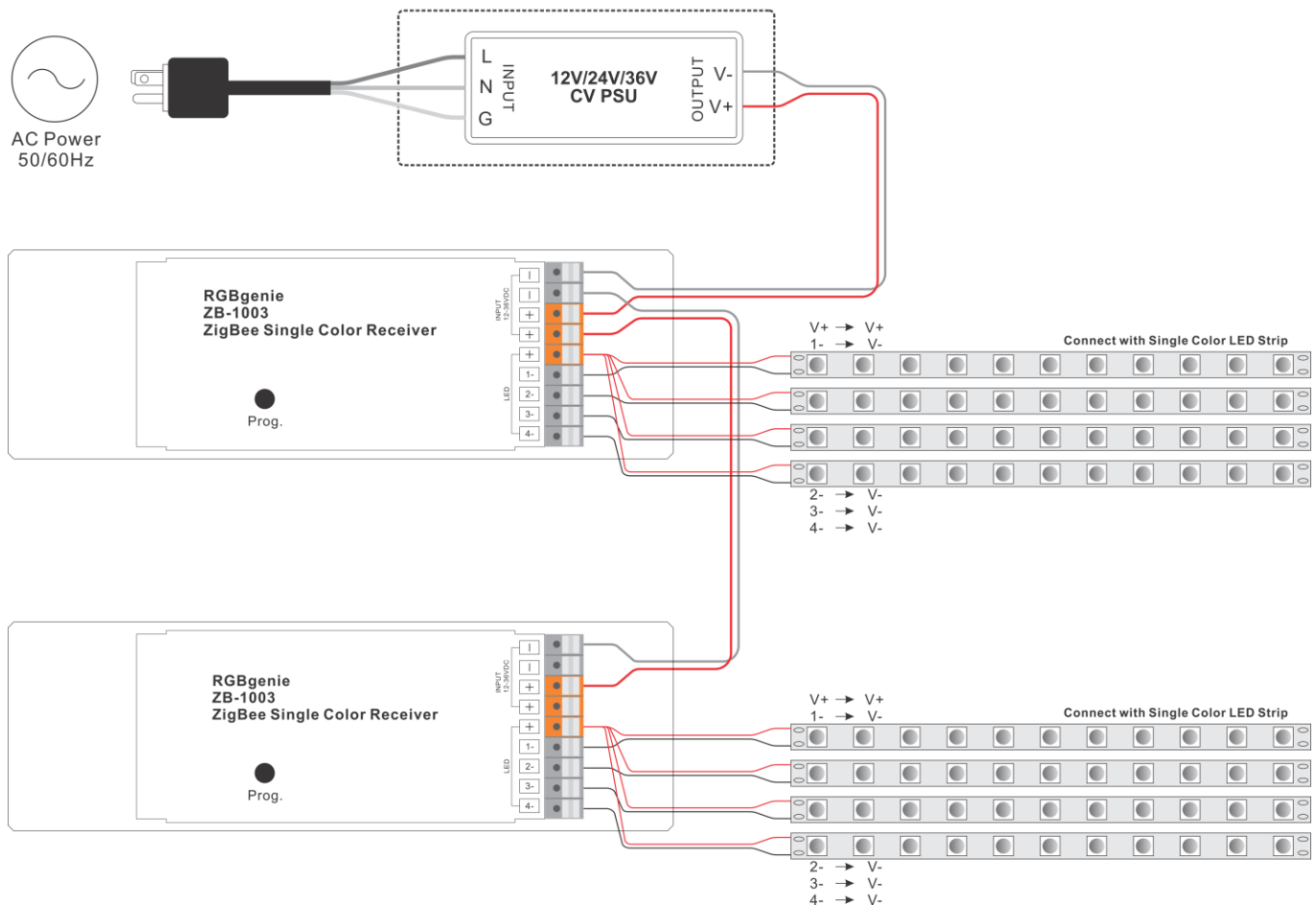
CONNECTING LIGHTING:

Do not remove more than a ¼ inch of shielding from the wire. It is highly recommended to add a small amount of solder to the wire ends to prevent stray strands from shorting out other channels or the device itself.

With a small jeweler's screwdriver, or something similar, depress the white pressure clip on the desired output channel and insert the appropriate wire. Releasing the white pressure clip will retain and hold the wire in place. Slightly tug on the wire to test for a secure connection. If the wire pulls out, repeat the process until a snug fit is achieved.

RGBgenie
ZB-1004
ZigBee RGBW Receiver

INPUT 12-36VDC

Prog.

LED

1/R-
2/G-
3/B-
4/W-

12-36VDC Input

Common Anode output (+)
CH 1 (R) output (-)
CH 2 (G) output (-)
CH 3 (B) output (-)
CH 4 (W) output (-)

Program button

Wiring Diagram

2. CHECKING FOR NETWORK INCLUSION

Before pairing to a ZigBee network, please make sure that the Controller does not belong to any prior network. When new, the Controller will be set to inclusion mode by default. The connected lights will slowly fade in and out to indicate they are ready to be discovered. If the lighting does not fade in and out but is constantly on, it has been previously added to another ZigBee network and will need to be reset. See section 9 for instructions to reset the Controller.

3. ADDING TO A ZIGBEE NETWORK

From your ZigBee coordinator (hub, bridge, gateway etc.) select the option to add a new lighting device. Please refer to the instruction manual that came with the coordinator for adding a device. Network pairing will begin

automatically.   Once discovered, the lighting will blink twice quickly when it has found your network and will no longer fade in and out. The Controller should now appear in your coordinator's menu.

If no network is available, or one is not found, repeat the inclusion operation from the beginning. Not all coordinators are the same, so please feel free to email us (support@rgbgenie.com) if you any questions.

4.   PAIRING LIGHTING WITH TOUCH-LINK

The Controller can pair with lighting devices that support Touch-Link commissioning. Touch-Link is a proximity base mechanism which makes it easy to associate the devices with each other.

Note: This Controller does not need to be added to a ZigBee coordinator to be bound to another remote device via Touch-Link. However, this Controller is limited to pairing with only a single device when it is not included in a ZigBee network. When added to a network, the Controller can be paired with up to 30 remote devices.

Note: For Philips Hue and Amazon Echo Plus, add the Controller and remote device prior to attempting Touch-Link pairing.

To start, the lighting device will need to be put into the Touch-Link mode by powering it on. There is a 5 minute time out period at which time the Controller will need to be re-powered on to restart Touch-Link discovery.

The Controller must be within 4 inches of the remote device that you desire to link. Please refer to the instruction manual of the remote device you are linking with the Controller for how to initiate Touch-Link from the remote device. In most cases, the lighting connected to the Controller should blink to indicate a connection but this may vary by remote manufacturer.

5.   FACTORY RESET THE CONTROLLER WITH A ZIGBEE REMOTE

If the Controller has been added to a coordinator (hub, bridge, gateway etc.) and the coordinator becomes inoperable, in additional to manually resetting

the controller you can also us a ZigBee remote to initiate a [ZIIResetToFactoryNewRequest] command. This is only recommended when a device reset is impossible with any other method. The ZigBee remote can either be part of the same ZigBee network or not added to any network at all. This command may not function if the remote is part of a different ZigBee network so the remote will need to be reset to factory defaults.

To start, the Controller will need to be put into the Touch-Link mode by powering on the device. There is a 5-minute timeout and the Controller will need to be re-powered on again to restart Touch-Link. Bring the remote to within 4 inches of the Controller and set the remote to send the [ZIIResetToFactoryNewRequest]. Please refer to the remotes user manual to learn how. The remote should indicate a successful reset.

6. PAIR A DEVICE THROUGH FIND AND BIND MODE

Finding and Binding a ZigBee device is different than Touch-Link in that it is not proximity based. Typically the association between devices with this method is done through a coordinator (hub, bridge, gateway etc.).

Power on and off the Controller (initiator node) to initiate the find and bind mode. There is a 25 second time out and if no target is found, repeat the operation.

Set the remote (target node) into find and bind mode in order to find and bind the initiator (Controller). Please refer to the user manual to learn how. There should be an indication on the remote that the binding was successful.

7. BINDING THE CONTROLLER WITH A REMOTE THROUGH A COORDINATOR (HUB)

Once the device and compatible remotes are paired to the same network, from your ZigBee coordinator interface, choose to bind the device to a remote as instructed by the coordinator. Then the Controller can be controlled by the remote.

Because the Controller is part of a network, it can bind with a maximum of 30 different remotes simultaneously. It can also bind with a maximum of 30 groups.

NOTE: Philips Hue and Amazon Echo Plus do not support this function, please use Touch-Link to bind.

8. UNBINDING THE CONTROLLER WITH A DEVICE IN A COORDINATOR (HUB)

To unbind the Controller, select the Controller in the ZigBee hub interface and choose to unbind the device from the Controller as instructed by the manufacturer.

9. FACTORY RESET THE CONTROLLER

If the Controller has been added to a ZigBee coordinator (hub, bridge, gateway etc.), it is always best to remove the device from within the coordinator interface. Please see the manufacturer's user manual for coordinator interface instructions. If that is not possible or is unsuccessful, the Controller can be manually reset. The LED will blink quickly and then stay in a slow rhythmic breathing pattern to indicate a successful reset.

MANUAL RESET: Quickly press the "Program" button 5 times continuously. Alternatively, if the unit is not accessible, power off and on the device quickly 5 times. The LED will blink quickly and then stay in a slow rhythmic breathing pattern to indicate a successful reset.

10. SUPPORTED ZIGBEE CLUSTERS

Input Clusters:
- 0x0000: Basic
- 0x0004: Groups
- 0x0006: On/off
- 0x0b05: Diagnostics
- 0x0003: Identify
- 0x0005: Scenes
- 0x0008: Level Control

Output Clusters:
- 0x0019: OTA

11. PRODUCT DATA

Operation Frequency	2.4GHz	Operating temperature	32-85°F
Input/Output Voltage	12 – 36V	Relative humidity	8% to 80%
Output Current	4CH, 5A/CH	Dimming Range	1%-100%
Output Power	240 – 720W	Dimensions	170x53.4x28mm
Output Type	Constant Voltage	Protection Type	IP20
Protocol	ZigBee 3.0		