PRODUCT MANUAL

Z - Wave RGB LED Controller

Manual Content

- Product Information
- Product Installation
- Product Operation Guide
- Product Data

Product Description

Solid Apollo's RGB LED Controller is a Z-Wave device that is used to switch ON/OFF, adjust light intensity, controlling RGB LED lights and can be connected by other Z-Wave devices.

The Z- Wave RGB controller can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

The device cannot act as a Z-Wave network controller (primary or secondary), so a security enabled controller is needed to take full advantage of all functionality for the device. It also supports the Over The Air (OTA) feature for the product's firmware upgrade.

The encryption modes that the The Z- Wave RGB controller supports are S0, S2 Unauthenticated. When the The Z- Wave RGB controller is being included into a Z-Wave network, you can use your primary controller/gateway to enable one encryption mode or disable encryption (the primary gateway shall support encryption mode configuration).
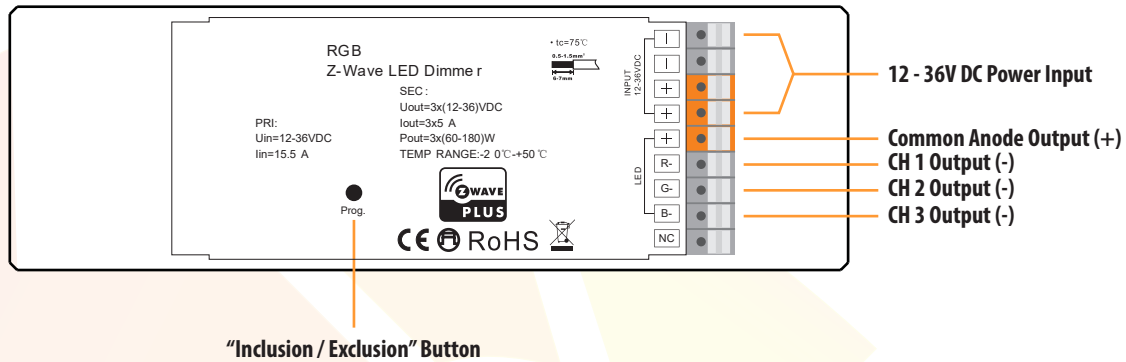

Product Features

- Easily integrates with any Z-Wave enabled network
- Easily control RGB color changing LED light Fixtures
- Control up to 360W of RGB LED lights at 24V DC
- Remotely control RGB LED lights via smart devices (PC, Tablet or Phone)
- Operates at 12-36V DC
- Multiple units can be used simultaneously

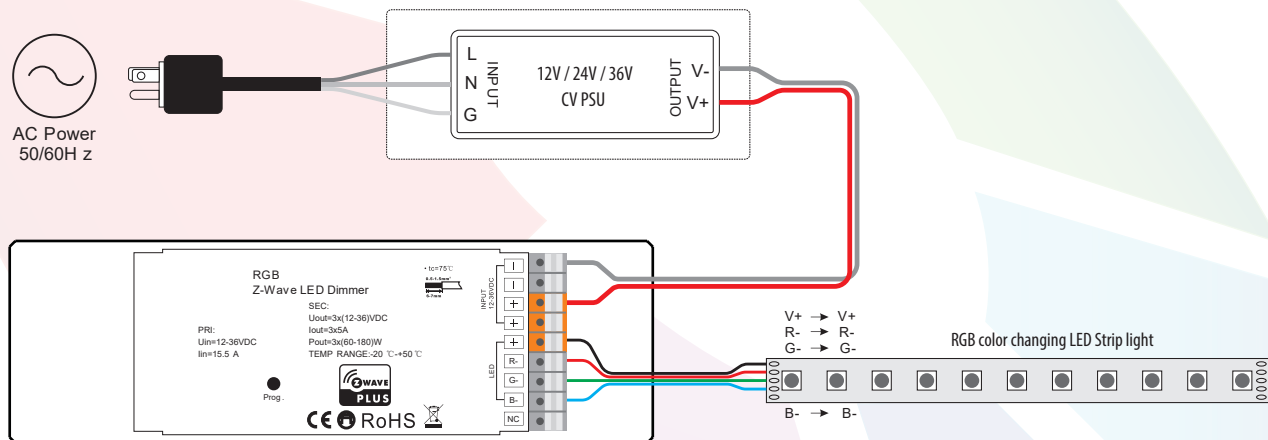## Product Specs

- Dimming :   Yes
- Input Voltage :   12V - 24V DC
- Max Power :   180W @12V - 360W @ 24V
- Warranty :   3 Years
- Weight :   0.45 lbs
- Dimension :   L: 6.7in x W: 5.4in x H: 1.1in
- IP Rating :   IP33
- Control System :   Z - Wave Network
- Product Color :   White Controller
- Working Temperature :   -20 - 140F
- Certificates :   CE, RoHS

PRODUCT MANUAL

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Solid Apollo™
Where light meets perfection

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Product Information

RGB
Z-Wave LED Dimmer

SEC :
Uout=3x(12-36)VDC
Iout=3x5 A
Pout=3x(60-180)W
TEMP RANGE:-2 0℃-+50 ℃

PRI:
Uin=12-36VDC
Iin=15.5 A

• tc=75℃
0.5-1.5mm²
6-7mm

INPUT 12-36VDC

LED

Prog.

CE ⊕ RoHS

12 - 36V DC Power Input

Common Anode Output (+)
CH 1 Output (-)
CH 2 Output (-)
CH 3 Output (-)

"Inclusion / Exclusion" Button

Wiring Diagram

AC Power
50/60H z

L
N
G
INPUT

12V / 24V / 36V
CV PSU

OUTPUT

V-
V+

RGB
Z-Wave LED Dimmer

SEC:
Uout=3x(12-36)VDC
Iout=3x5A
Pout=3x(60-180)W
TEMP RANGE:-20 ℃-+50 ℃

PRI:
Uin=12-36VDC
Iin=15.5 A

• tc=75℃

Prog.

CE ⊕ RoHS

V+ → V+
R- → R-
G- → G-
B- → B-

RGB color changing LED Strip light

Safety & Warnings

- DO NOT install with power applied to device.
- DO NOT expose the device to moisture.

Quick Start

How to install:

- **Step 1:** When the the Z-Wave RGB Controller is turned On the connected LED light will quickly flash for 6 seconds. Press the **"Inclusion/Exclusion"** button 3 times, then proceed to step 2. If it is not, then terminate the operation and please refer to the section **"Inclusion (page 3)"** of this manual to learn how to include the LED dimmer to a Z-Wave network.

- **Step 2:** Activate Inclusion mode on your Z-Wave controller.

- **Step 3:** The RGB Controller is waiting to be included to the Z-Wave network. Once it is connected the LED light will stay solid for 3 seconds to indicate successful inclusion.

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Product Operation Guide

Installation Guide

Please carefully read the enclosed user manual before installation of the Z-Wave RGB Controller in order to ensure an error-free function.

Attention: Prior to the assembly of the product, the voltage network has to be switched OFF and ensured against re-switching.

Inclusion (adding to a Z-Wave network)

1. Set primary controller/gateway into inclusion mode (Please refer to your primary controller's manual on how to turn your controller into inclusion).

2. Power on the RGB Controller, make sure the RGB Controller does not belong to any Z-Wave network (please refer to the part **"How to check whether the RGB Controller is included to a network"** located on page 4).

> **A:** When the connected LED light flashes quickly for 6 seconds, it means the RGB Controller does not belong to any network. Press the **"Inclusion/Exclusion"** button 3 times to set inclusion mode automatically. When done successfully, it'll wait to be included.

> **B:** When the connected LED light is under solid status, it means the RGB Controller has already been included into a network. First you have to set the RGB Controller into Exclusion mode, once excluded, it will be set into inclusion mode automatically, and waiting to be included.

Note: The connected LED light stays solid for 3 seconds to indicate successful inclusion.

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Exclusion (removing from a Z-Wave network)

There are two exclusion methods:

Method 1: Exclusion from the primary controller/gateway as follows:

1. Set primary controller/gateway into exclusion mode (Please refer to your primary controller's manual on how to turn your controller into exclusion).

2. Press the **"Inclusion/Exclusion"** button 3 times to set in exclusion mode. The connected LED light will flash quickly for 6 seconds and will wait to be excluded. When the LED light stays solid for 3 seconds, it indicates a successful exclusion.

> There are 3 indications the RGB Controller has quit **"Exclusion Mode"**.

> **Note:** Once the RGB Controller quits the "Exclusion Mode", the LED light will stop the fast flash status.

> **A:** It automatically quits after successful exclusion.

> **B:** Quits after 10 seconds timeout.

> **C:** Power OFF and power ON the LED dimmer.

(**Note:** When the RGB Controller is included to a network, press the "Inclusion/Exclusion" button 3 times - The RGB Controller will be set into exclusion mode and quit exclusion mode alternatively.)

Method 2: Factory resetting the RGB Controller will force the RGB Controller to be excluded from a network (please refer to the section **"Factory Reset"** of this manual located on page 4).

(**Note:** Factory Reset is _not recommended_ for exclusion, please use thise procedure only if the primary controller/gateway is missing or otherwise inoperable.)

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Product Operation Guide *(continued)*

How to check whether the RGB Controller is already included to a network

The method of checking whether the RGB Controller is already included to a network is by Powering OFF and Powering ON the RGB Controller. If the LED light lights flashes quickly for 6 seconds, it means the RGB Controller does not belong to a network. If the LED lights is under solid on status, it means the RGB Controller has already been included into a network.

Factory Reset

Press and hold down the "Inclusion/Exclusion" for 10 seconds. The LED lights will stay solid for 3 seconds indicating a successful factory reset. When done correctly all PWM outputs will restore to 50% brightness.

Association

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called association. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they are always related to certain events (e.g. button pressed). In case the event happens, all devices stored in the respective association group will receive a common wireless command.

Association Groups:

Group Identifier	Group Name	Max Nodes	Description
1	Lifeline	5	1. RGB Controller Factory Reset, send Command Class "Device Reset Locally Notification V1" to associated devices of this group to report factory reset information when factory reset the RGB Controller. 2. When RGB Controller ON/OFF or light intensity value changes, send Command Class "Basic Report" to associated devices of this group to report ON/OFF or light intensity value information.

Set and Unset Associations:

(Note: All association information will be cleared automatically once the RGB Controller is excluded from a network.)

Set association by operating primary controller/gateway to send packets to the RGB Controller:

The primary controller/gateway sends packet to the RGB Controller using "Command Class ASSOCIATION"

Operating the Device

1. Short Press external button on the RGB Controller to switch ON/OFF the connected LED light.

2. Press and hold down external button on the RGB Controller to adjust light intensity of the connected LED light.

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Product Operation Guide *(continued)*

Node Information Frame

The Node Information is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The inclusion and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this it may be needed for certain network operations to send out a Node Information Frame.

How to send out Node Information Frame:

When the RGB Controller is set to **Inclusion/Exclusion** mode again, it will send out Node Information Frame, there are 2 kinds of operation as follows:

1. When the connected LED lights is under solid status, triple press the **"Inclusion/Exclusion"** button. The RGB Controller will be set to *"Inclusion/Exclusion"* mode it will then send out the Node Information Frame.

2. When the connected LED light is under fast flashing status for 6 seconds, it means the RGB Controller is under inclusion mode. Therefore are two kinds of operation:

A: Triple press the Inclusion/Exclusion button to set in inclusion mode again and send out the Node Information Frame.

B: Power OFF and Power ON the RGB Controller to set it to inclusion mode automatically and send out the Node Information Frame.

Product Data

Technical Data

Wireless Range	up to 100m outside , on averag e up to 40m inside buildings
Radi o Frequency	868.42 MHz (EU)/908.4 2 MHZ (US)/921.42MH z (ANZ) /869.0 MHz (RU)
SDK	6.71.0 1
Explorer Frame Support	Yes
Device Type	Light Dimmer Switch
Generic Device Class	Switch Multilevel
Specific Device Class	Power Switch Multilevel
Routing	Yes
FLiRS	No

Manufacturer Specific

Parameter	Value (hex)
Manufacturer ID	0x0330
Product Type ID	0x0200(EU), 0x0201(US), 0x0202(ANZ) , 0x021A(RU)
Product ID	0xD002

Product Data *(Continued)*

Z-Wave Plus Info

Parameter	Value
Z-Wave Plus Version	1
Role Type	Slave Always On
Node Type	ZWAVEPLUS
Installer Icon Type	0x0600 (ICON_TYPE_GENERIC_LIGHT_DIMMER_SWITCH)
User Icon Type	0x0600 (ICON_TYPE_GENERIC_LIGHT_DIMMER_SWITCH)

Supported Command Class

Node Information		Supports 2
COMMAND_CLASS_ZWAVEPLUS_INFO	V2	
COMMAND_CLASS_SECURITY	V1	
COMMAND_CLASS_SECURITY_2	V1	
COMMAND_CLASS_TRANSPORT_SERVICE	V2	
COMMAND_CLASS_SUPERVISION	V1	
COMMAND_CLASS_MANUFACTURER_SPECIFIC	V2	YES
COMMAND_CLASS_VERSION	V2	YES
COMMAND_CLASS_SWITCH_MULTILEVEL	V4	YES
COMMAND_CLASS_SCENE_ACTIVATION	V1	YES
COMMAND_CLASS_SCENE_ACTUATOR_CONF	V1	YES
COMMAND_CLASS_NOTIFICATION	V8	YES
COMMAND_CLASS_CONFIGURATION	V2	YES
COMMAND_CLASS_ASSOCIATION	V2	YES
COMMAND_CLASS_ASSOCIATION_GRP_INFO	V3	YES
COMMAND_CLASS_POWERLEVEL	V1	YES
COMMAND_CLASS_DEVICE_RESET_LOCALLY	V1	YES
COMMAND_CLASS_FIRMWARE_UPDATE_MD	V4	YES

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Product Data *(continued)*

Notification Command Class

The dimmer supports Emergency shutoff when a loud malfunction is detected. The dimmer will send out Emergency shutoff status to Lifeline.

Notification Type	Notification
System (0x09)	Emergency shutoff status (0x07)

Configuration Command Class

Parameter Number	Size	Description	Default Value
2	1	Info : Saving load state before power failure 0-shutoff load 1-turn on load 2-save load state before power failure	0
3	1	Info : Enable/disable to send the basic report to the Lifeline when the load state changed (When value set as 1, re-power on the dimmer, it will send Basic report automatically) 0-Disable to send Basic report 1-Enable to send Basic report	1
5	1	Info : Choose a cool light stage mode Choose a cool light stage mode 0=inactive of light stage mode 1=fade in and fade out mode, colors set by parameter 8 2=flash mode, colors set by parameter 8	0x00
6	1	Info : Speed of stage mode 0~0xFF : 0 is the slowest , 255 is the fastest	0xF3
7	1	Info : Execution times of stage mode 0: unlimited times 1~0xFF: execution times 1~255	0x00
8	1	Info : The hue of stage mode The hue is only valid for fade in and fade out mode, flash mode 0~0xFF : hue	0x00
9	1	Enable/disable external switch to be added to and removed from a network (when enables this function, triple press the external switch within 1.5 seconds to be added to or removed from a network) 0 - disable 1 - enable	0

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Product Data *(continued)*

Product Data

Radio Frequency	868.42 MHz (EU)/908.42 MHz (US)/869. 0 MHz (RU)		
Input Voltage	DC12-36 V		
Output Current	4x5A	4x350mA	4x700m A
Output Power	4x(60-180) W	4x(4.2-12.6)W	4x(8.4-25.2) W
Output Type	Constant Voltage	Constant Current	Constant Current
Operating temperature	0 to 40°C		
Relative humidity	8% to 80%		
Dimensions	170x53.4x28mm		

Remarks: parameter number 5~8 are united parameters, it is recommended to use Configuration Bulk Set to configure synchronously .

Parameter Number Definitions

Parameter number 2 defines the load state after re-power on it:
Value 0 is OFF state.
Value 1 is ON state.
Value 2 is the state before re-power ON.

Parameter number 3 enables / disables to send Basic report to the Lifeline when load state changed:
Value 0 disables to send.
Value 1 enables to send.

Parameter number 5 defines light stage mode:
Value 0 inactivates ligth stage mode.
Value 1 is fade in and fade out mode with colors set by configuring parameter 8.
Value 2 is flash mode with colors set by configuration parameter 8.
Value 3 is rainbow mode with system fixed changing effect.
Value 4 is fade in and fade out mode with randomly changing colors.
Value 5 is flash mode with randomly changing colors.
Value 6 is rainbow mode with randomly changing colors.
Value 7 is random mode, colors switch randomly.

Parameter number 6 defines the speed of stage mode:
Value 0-0xFF configurable, 0 is the slowest, 255 is the fastest.

Parameter number 7 defines execution times of stage mode:
Value 0 is unlimited times.
Value 1~0xFF is 1-255 times.

Parameter number 8 defines the hue of stage mode:
Value 0~0xFF is hue 0~255.

Parameter number 9 enables/disables external switch to be added to and removed from a network:
Value 0 disables.
Value 1 enables.