Aeon Labs RGB Bulb Gen5

(Z-Wave RGB Bulb Gen5)

Change History

Revision	Date	Change Description
1	03/24/2015	Initial draft.
2		

Aeon Labs RGB Bulb Gen5
Engineering Specifications and Advanced Functions for Developers

Aeon Labs RGB Bulb is a switch multilevel device based on Z-wave enhanced 232 slave library of V6.51.01.

Its bulb has the Smart RGB LEDs in, which can be used for adding colour to your home, the bulb has 5 main colour channels available for you to adjust: Red, Green, Blue, Warm white and Cold white. You can configure its indication colour according to your favour.

RGB Bulb Gen5 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 RGB Bulb is also a security Z-Wave device and supports the Over The Air (OTA) feature for the product's firmware upgrade.

1. Library and Command Classes
1.1 SDK: 6.51.01
1.2 Library
- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device class: GENERIC_TYPE_SWITCH_MULTILEVEL
- Specific Device Class: SPECIFIC_TYPE_POWER_SWITCH_MULTILEVEL

1.3 Commands Class

	Included Non-Secure	Included Secure
Node Info Frame	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_SWITCH_MULTILEVEL V2 COMMAND_CLASS_SWITCH_COLOR V1 COMMAND_CLASS_SWITCH_ALL V1 COMMAND_CLASS_SCENE_ACTUATOR_CONF V1 COMMAND_CLASS_SCENE_ACTIVATION V1 COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1
Security Command Supported Report Frame	–	COMMAND_CLASS_SWITCH_MULTILEVEL V2 COMMAND_CLASS_SWITCH_COLOR V1 COMMAND_CLASS_SWITCH_ALL V1 COMMAND_CLASS_SCENE_ACTUATOR_CONF V1 COMMAND_CLASS_SCENE_ACTIVATION V1 COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1

2. Technical Specifications

Model number: ZW098.
Bulb holder type: E26 for USA version, E27 for EU/AU version.
Max power: 9W.
Max standby power: 1W.
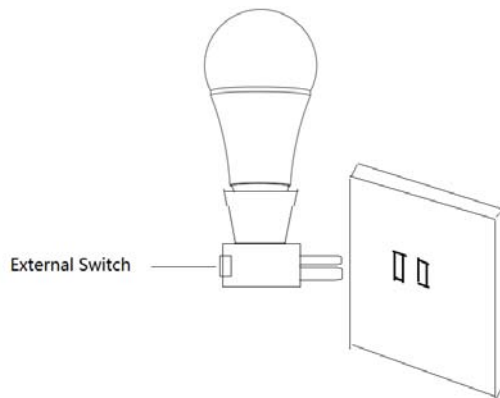Operating temperature: -10℃ to 45℃.
Relative humidity: 8% to 80%.
Operating distance: Up to 500 feet/150 metres outdoors.

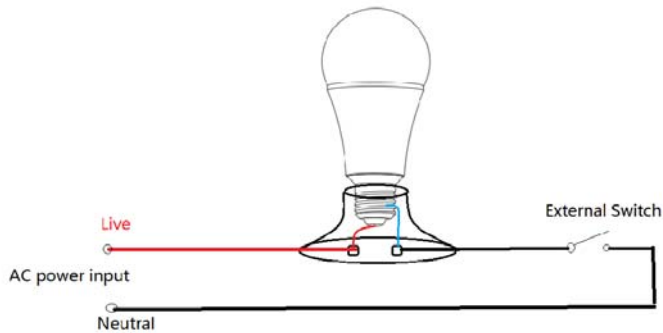## 3. Familiarize Yourself with Your RGB Bulb Gen5
3.1 Interface

4. Inclusion/Exclusion of RGB Bulb

External Switch

Or

Live

AC power input

Neutral

External Switch

Event	Operation Steps
Add RGB Bulb into Z-Wave Network:	1. Power on your RGB Bulb as above the wire diagrams. 2. Let the primary controller into inclusion mode (If you don't know how to do this, please refer to its manual). 3. Turn off the RGB Bulb and then turn on it via pressing the external switch. 4. If the inclusion is failed, please repeat the process from step 2. **Note:** If RGB Bulb has been successfully linked to your Z-Wave network, its warm white LED will be solid. If the linking was unsuccessful and the RGB Bulb continues to be active and colourful gradient.
Remove RGB Bulb from Z-Wave Network	1. Power on your RGB Bulb as above the wire diagrams. 2. Let the primary controller into inclusion mode (If you don't know how to do this, please refer to its manual). 3. Turn off the RGB Bulb and then turn on it, repeat the operation 3 times within 2 seconds via pressing the external switch. .4. If the inclusion is failed, please repeat the process from step 2. **Note:** If your RGB Bulb has been successfully removed from your network, Its RGB LED will be active and colourful gradient. If the removal was unsuccessful, the RGB LED will be solid.

5. Special Rule of Each Command

5.1 Z-Wave Plus Info Report

Parameter	Value
Z-Wave Plus Version	1
Role Type	5 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x0600 (ICON_TYPE_GENERIC_LIGHT_DIMMER_SWITCH)
User Icon Type	0x0600 (ICON_TYPE_GENERIC_LIGHT_DIMMER_SWITCH)

5.2 Manufacturer Specific Report

Parameter	Value (hex)
Manufacturer ID 1	0x01
Manufacturer ID 2	0x6A
Product Type ID 1	EU=0x00, US=0x01, AU=0x02,CN=0x1D
Product Type ID 2	0x03
Product ID 1	0x00
Product ID 2	0x62 /0x6b (CUBE version)

5.3 Association Command Class

The RGB Bulb supports 2 association groups and Max 5 nodes for each group.

Association Group	Nodes	Send Mode	Send commands
Group 1	0	N/A	N/A
	1	Single Cast	When the state of RGB Bulb (turn on/off the bulb) is changed: 1, Set Configuration parameter 80 to 0：Reserved (Default). 2, Set Configuration parameter 80 to 1：Send Hail CC. 3. Set Configuration parameter 80 to 2: Send the Basic Report.
	[2,5]		
Group 2	0	N/A	N/A
	[1,5]	Single Cast	Forward the Basic Set, Switch Binary Set, Switch Multilevel Start Level Change, Switch Multilevel Stop Level Change, Switch Multilevel Set, Scene Activation Set to associated nodes in Group 2 when the RGB Bulb receives the Basic Set, Switch Binary Set, Switch Multilevel Start Level Change, Switch Multilevel Stop Level Change, Switch Multilevel Set, Scene Activation Set commands from main controller.

5.4 Association Group Info Command Class

5.4.1 Association Group Info Report Command Class

Profile: General: NA (Profile MSB=0, Profile LSB=0)

5.4.2 Association Group Name Report Command Class

Group 1：Lifeline
Group 2：Retransmit

5.5 Scene Actuator Conf Command Class

The RGB Bulb supports max 255 Scene IDs.

The Scene Actuator Conf Set command is effective, when only Level>=0 and Level<0x64 or Level=0xff, otherwise, it will be ignored.

The Scene Actuator Configuration Get Command is used to request the settings for a given scene, if scene ID is not setting, it will be ignored. If Scene ID =0, then the RGB Bulb will report currently the activated scene settings. If the currently activated scene settings do not exist, the RGB Bulb will reports Level = currently load status and Dimming Duration=0

5.6 Scene Activation Set Command Class

The Scene Activation Set Command is effective, when only Level>=0 and Level<0x64 or Level=0xff, otherwise, it will be ignored. If the requested Scene ID is not configured, it will be ignored too.

5.7 Color Control State Set Command Class

Priority	Capability ID	color
1 (Highest)	0	Warm white
2	1	Cold white
3 (lowest)	2、3、4	R、G、B

Note: White LED and RGB LED will not light up at the same time, so the software makes the following processing. When you want to activate the current RGB color, the color value of higher priority should be set to 0.

For example: The warm white is the highest priority, when it is configured to 0, the Cold white or RGB color configuration values can be activated. Otherwise, the bulb is always be activated by warm white.

5.8 Configuration Set Command Class

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_SET							
Parameter Number							
Default	Reserved				Size		
Configuration Value 1(MSB)							
Configuration Value 2							
………							
Configuration Value n(LSB)							

Parameter Number Definitions (8 bit):

Parameter Number Hex / Decimal	Description	Default Value	Size

0x22 (34)	Enable/disable the function of using External Switch to turn on/off the bulb. 0=disable. 1=enable. Others=ignore.	0	1
0x23 (35)	Enable/disable the function of using External Switch to changes the bulb's color. 0=disable. 1=enable. Others=ignore.	1	1
0x50 (80)	Enable to send notifications to associated devices (Group 1) when the state of RGB Bulb changed (0=nothing, 1=hail CC, 2=basic CC report).	1 (US version) 2(other version)	1
0xC8 (200)	Partner ID (0= Aeon Labs Standard Product).	0	1
0xFC (252)	Enable/disable Lock Configuration (0 =disable, 1 = enable). Value=0, the setting of configuration parameters is allowed. Value=1, all configuration parameters cannot be set (Locked).	0	1
0xFF (255)	1, Value=0x55555555、Default=1、Size=4 Reset to factory default setting and removed from the z-wave network	N/A	4
	2, Value=0、Default=1、Size=1 Reset to factory default setting	N/A	1