



Multi-Color Smart LED Bulb



RGBW Bulb Engineering Specifications

AIBASE RGBW Bulb is a switch multilevel device based on Z-Wave enhanced 232 slave library of V6.51.09.

RGBW Bulb has 5 main color channels available for you to adjust: Warm white, Cold white, Red, Green and Blue. RGBW Bulb 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 RGBW Bulb is a security Z-Wave device (S0), so a security enabled controller is needed for take full advantage of all functionality for the LED Bulb. It also supports the Over The Air (OTA) feature for the product's firmware upgrade.

Features:

- High performance RF design, visual communication distance up to 40m.
- Follow standard Z-Wave plus protocol.
- Supporting repeater role.
- Supporting firmware OTA.

1. Hardware specifications

Wireless Protocol	Z-Wave
Radio Frequency	908.42MHz(US)
Communication Distance	40m(LOS)
Modulation Mode	FSK(BFSK/GFSK)
Power(W)	9.5W
Voltage(V)	120V
CCT(K)	2700~6500K
CRI	80
Beam Angle	240
Dimensions(mm)	US:118*60

2. SECURITY AND NON-SECURITY FEATURES OF LED BULB

1. The function of the LED Bulb as a security and non-security device is identical.

	Included Non-Secure Network	Included Secure Network
Node Info Frame	COMMAND_CLASS_SWITCH_MULTILEVEL_V2 COMMAND_CLASS_SWITCH_COLOR_V1 COMMAND_CLASS_SWITCH_ALL_V1 COMMAND_CLASS_CONFIGURATION_V1 COMMAND_CLASS_ASSOCIATION_V2 COMMAND_CLASS_ASSOCIATION_GRP_INFO_V1 COMMAND_CLASS_VERSION_V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2 COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1 COMMAND_CLASS_POWERLEVEL_V1 COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2 COMMAND_CLASS_ZWAVEPLUS_INFO_V2 COMMAND_CLASS_SECURITY0_V1	COMMAND_CLASS_ZWAVEPLUS_INFO_V2 COMMAND_CLASS_SECURITY0_V1
Security Command Supported Report Frame		COMMAND_CLASS_SWITCH_MULTILEVEL_V2 COMMAND_CLASS_SWITCH_COLOR_V1 COMMAND_CLASS_SWITCH_ALL_V1 COMMAND_CLASS_CONFIGURATION_V1 COMMAND_CLASS_ASSOCIATION_V2 COMMAND_CLASS_ASSOCIATION_GRP_INFO_V1 COMMAND_CLASS_VERSION_V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2 COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1 COMMAND_CLASS_POWERLEVEL_V1 COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2

		V2
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3. All functions of each trigger

RGBW Bulb not in the Z-Wave network:

Trigger	Description
OFF→ON	<p>Add for inclusion:</p> <p>a) Set the Z-Wave network main controller into adding mode.</p> <p>b) Power cycle once for the led bulb(OFF->ON).The led bulb will flash once when it has been include into the network.</p>

RGBW Bulb in the Z-Wave network:

Trigger	Description
OFF→ON	<p>Remove for exclusion:</p> <p>a) Set the Z-Wave network main controller into removing mode.</p> <p>b) Power cycle once for the led bulb(OFF->ON).Then the led bulb will flash once then dim to 5%,when it has been excluded outside the network..</p>
OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON	<p>Reset the device :</p> <p>Led bulb re-power 6 times (between 0.5-2 seconds each time); If the 6th power on, the led bulb flashes twice (first time: red to green to blue gradient transition, second time: 2700K), which means that the resetting is successful.</p> <p>NOTE: Using this action in case of the primary controller is missing or inoperable.</p>

4. Special Rule of Each Command

4.1 Basic Command Class

Basic CC is map to Multilevel CC.

4.2 Manufacturer Specific Report Commands

Parameter	Value(hex)
Manufacturer ID 1	0x03
Manufacturer ID 2	0x84

Product Type ID 1	0x00
Product Type ID 2	0x03
Product ID 1	0x00
Product ID 2	0x03

4.3 Version Report Commands

Parameter	Value
Z-Wave Library Type	0x03
Z-Wave Protocol Version	0x04
Z-Wave Protocol Sub Version	0x26
Firmware 0 Version	0x02
Firmware 0 Sub Version	0x05
Hardware Version	0x01
Number of firmware targets	0x00

Association Command Class

Association Group	MAX Nodes	Send Commands
Group 1	0X01	1. When the state of the LED Bulb is changed, Sending Switch Multilevel Report. 2. Device Reset Locally.

4.4 Switch Color Set Command Class

Priority	Capability ID	Color
1	0	Warm White
	1	Cold White
2	2	Red
	3	Green
	4	Blue

Note: White color 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, colors value of higher priority (Warm White, Cold White) should be set to 0.

For example1 (set RGB color): The warm white and Cold white are high priority, when warm white and Cold white were configured to 0, the RGB color configuration values can be activated. Otherwise, the bulb is always be activated by warm white or Cold white.

For example2 (set color temperature):

1: when the value of warm white plus the value of Cold white greater than or equal to 255(0xff), the Brightness invariable to maximum brightness.

2: $\text{color temperature} = 2700\text{k} + (6500 - 2700) * (\text{Cold_white}) / (\text{Warm_white} + \text{Cold_white})$

Eg: Warm_white= 255, Cold_white =255, color temperature =

$2700 + (6500 - 2700) * (255 / (255 + 255)) = 4600$

4.5 Configuration Set Command Class

Parameter Number	Function Description	Default Value	Size
0x01 (This Parameter is not set and it can only be used for the Configuration Get command.)	It is used to get the internal temperature of the bulb	NA	1
0xFF (This Parameter is not readable and it can only be used for the Configuration Set command.)	Value=-2013265920- -2013265920, Default=1, Size=4 Reset to factory configuration and removed the Z-Wave network.	NA	4
	Value= -2004318072- -2004318072, Default=1, Size=4 Reset Configuration parameter to default value.		