# Aeotec   LED   Bulb

(Z-Wave LED Bulb)

# Engineering Specifications

The LED Bulb is a switch multilevel device based on Z-wave enhanced 232 slave library of

V6.71.01.

This bulb has 2 main color channels available for you to adjust: Warm white and Cold white. You

can configure its indication color temperature(2700K~6300K) according to your favour.LED Bulb

can be included and operated in any Z-Wave network with other Z-Wave certifieddevices 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 LED Bulb is a security Z-Wave device(S0 and S2 Unauthenticated), so a security enabled

controller is needed for take full advantage of all functionally for the LED Bulb. It also supports the

Over The Air (OTA) feature for the product's firmware upgrade.

## Features:

- Supporting Warm white and Cold white.

- LED indicates the working status.

- Supporting repeater role.

- Supporting firmware OTA.

# 1. Hardware Specifications

| | |
|---|---|
| Wireless Protocol | Z-Wave |
| Radio Frequency | 908.42MHz(US)<br>868.42MHz(EU)<br>921.42MHz(AU) |
| Communication Distance | 40m(LOS) |
| Modulation Mode | FSK(BFSK/GFSK) |
| Power(W) | 9 |
| Voltage(V) | 110~240 |
| CCT(K) | 2700~6500 |
| CRI | 80 |
| Beam Angle | 240 |
| Dimensions(mm) | 120*60/118*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.

2. When a node includes into a S2 Z-Wave network, the node supports S2 unauthenticated class and so do the supported CCs.

3. Commands List

| | Included Non-Secure Network | Included Secure Network |
|---|---|---|
| **Node Info Frame** | 5E - COMMAND_CLASS_ZWAVEPLUS_INFO<br>26 - COMMAND_CLASS_SWITCH_MULTILEVEL<br>33 - COMMAND_CLASS_SWITCH_COLOR<br>2B - COMMAND_CLASS_SCENE_ACTIVATION<br>2C - COMMAND_CLASS_SCENE_ACTUATOR_CONF<br>70 - COMMAND_CLASS_CONFIGURATION<br>85 - COMMAND_CLASS_ASSOCIATION<br>59 - COMMAND_CLASS_ASSOCIATION_GRP_INFO<br>55 - COMMAND_CLASS_TRANSPORT_SERVICE<br>86 - COMMAND_CLASS_VERSION<br>72 - COMMAND_CLASS_MANUFACTURER_SPECIFIC<br>5A - COMMAND_CLASS_DEVICE_RESET_LOCALLY<br>73 - COMMAND_CLASS_POWERLEVEL<br>9F - COMMAND_CLASS_SECURITY_2<br>98 - COMMAND_CLASS_SECURITY<br>6C - COMMAND_CLASS_SUPERVISION<br>7A - COMMAND_CLASS_FIRMWARE_UPDATE_MD | 5E - COMMAND_CLASS_ZWAVEPLUS_INFO<br>55 - COMMAND_CLASS_TRANSPORT_SERVICE<br>9F - COMMAND_CLASS_SECURITY_2<br>98 - COMMAND_CLASS_SECURITY<br>6C - COMMAND_CLASS_SUPERVISION |

| | | 86 - COMMAND_CLASS_VERSION |
|---|---|---|
| Security | | 72-COMMAND_CLASS_MANUFACTURER_SPECIFIC |
| Command | | 73 - COMMAND_CLASS_POWERLEVEL |
| Supported | | 5A-COMMAND_CLASS_DEVICE_RESET_LOCALLY |
| Report | | 26 - COMMAND_CLASS_SWITCH_MULTILEVEL |
| Frame | | 33 - COMMAND_CLASS_SWITCH_COLOR |
| | | 2B - COMMAND_CLASS_SCENE_ACTIVATION |
| | | 2C- COMMAND_CLASS_SCENE_ACTUATOR_CONF |
| | | 70 - COMMAND_CLASS_CONFIGURATION |
| | | 85 - COMMAND_CLASS_ASSOCIATION |
| | | 59 - COMMAND_CLASS_ASSOCIATION_GRP_INFO |
| | | 7A - COMMAND_CLASS_FIRMWARE_UPDATE_MD |

## 3. All functions of each trigger

**LED Bulb is not in the Z-Wave network:**

| Trigger | Description |
|---|---|
| OFF→ON | **1.** LED Bulb will flash twice, and send node info frame.<br>**2**. **Add for inclusion**(security):<br>  **a)** Set the Z-Wave network main controller into learning mode.<br>  **b)** Power cycle once for led bulb.<br>  **c)** Wait a moment, the led bulb should be added to the controller.Then the led bulb will flash once when it has been included into the network. |

**LED Bulb is in the Z-Wave network:**

| Trigger | Description |
|---|---|
| OFF→ON→<br>OFF→ON→<br>OFF→ON | **1.** LED Bulb will light up with previously saved state and send node info frame.<br>**2**. **Remove for exclusion**:<br>  **a)** Assuming led bulb was added to controller and was power on.<br>  **b)** Set the Z-Wave network main controller into removing mode.<br>  **c)** Led bulb re-power 3 times (between 0.5-2 seconds each time).<br>  **d)** Wait a moment, the led bulb should be removed from the controller.Then the led bulb will flash once, dim to 5% first, and then increased to 100% after 5 seconds. |
| OFF→ON→<br>OFF→ON→<br>OFF→ON→<br>OFF→ON→<br>OFF→ON→<br>OFF→ON | **Reset the device :**<br>Led bulb re-power 6 times (between 0.5-2 seconds each time); If the 6th power on, the led bulb flashes twice, which means that the resetting is successful. |

## 4. Special Rule of Each Command

**Basic Command Class**

Basic CC is maps to Multilevel CC

**Association Command Class**

LED Bulb supports 1 association group.

| Grouping Identifier | Max Nodes | Send Commands |
|---|---|---|
| Group 1 | 0x01 | 1. When the state of the LED Bulb is changed:<br>    1. Set Configuration parameter 50 to 0: Reserved<br>    2. Set Configuration parameter 50 to 1: Sending Basic Report<br>2. Device Reset Locally. |

**Switch Color Set Command Class**

| Capability ID | Color |
|---|---|
| 0 | Warm White |
| 1 | Cold White |

**Note:** The warm white is the highest priority, when it is configured to 0, the Cold

white configuration values can be activated.

**Configuration Set Command Class**

| Parameter Number | Description Size | Default Value | Size |
|---|---|---|---|
| 0x50 | Enable to send notifications to associated devices (Group 1) when the state of LED Bulb is changed.<br>0 = Nothing.<br>1= Basic CC report. | 0x01 | 0x01 |
| 0x51 | Adjusting the color temperature in warm white color component.<br>available value: 0x0A8C-1387<br>Warm White(0x0A8C(2700k) ~ 0x1387 (4999k)) | 0x0A8C | 0x02 |
| 0x52 | Adjusting the color temperature in cold white color component.<br>available value:0x1388-0x1964<br>Cold White (0x1388 (5000k) ~ 0x1964 (6500k)) | 0x1964 | 0x02 |