

# **DIM 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 V6.81.03. The LED 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 LED Bulb is a security Z-Wave device(S0,S2), 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:

- Supporting Warm white(2700K).
- LED indicates the working status.
- Supporting repeater role.
- Supporting firmware OTA.

**1 Hardware Specifications**

Wireless Protocol	Z-Wave
Radio Frequency	908.42MHz(US) 868.42MHz(EU) 921.42MHz(AU) 922.5MHZ(JP)
Communication Distance	40m(LOS)
Modulation Mode	FSK(BFSK/GFSK)
Power(W)	9
Voltage(V)	90~110V
CCT(K)	2700
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 S0,S2 Z-Wave network, the node supports S0,S2 unauthenticated class and so do the supported CCs.
3. Commands List

	Included Non-Secure Network	Included Secure Network
<b>Node Info Frame</b>	COMMAND_CLASS_ZWAVEPLUS_INFO_V2 COMMAND_CLASS_SWITCH_MULTILEVEL_V2 COMMAND_CLASS_SCENE_ACTIVATION COMMAND_CLASS_SCENE_ACTUATOR_CONF COMMAND_CLASS_CONFIGURATION COMMAND_CLASS_ASSOCIATION_V2 COMMAND_CLASS_ASSOCIATION_GRP_INFO COMMAND_CLASS_TRANSPORT_SERVICE_V2 COMMAND_CLASS_VERSION_V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2 COMMAND_CLASS_DEVICE_RESET_LOCALLY COMMAND_CLASS_POWERLEVEL COMMAND_CLASS_SECURITY COMMAND_CLASS_SECURITY_2 COMMAND_CLASS_SUPERVISION COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4	COMMAND_CLASS_ZWAVEPLUS_INFO_V2 COMMAND_CLASS_TRANSPORT_SERVICE_V2 COMMAND_CLASS_SECURITY COMMAND_CLASS_SECURITY_2 COMMAND_CLASS_SUPERVISION
<b>Security Command Supported Report Frame</b>		COMMAND_CLASS_SWITCH_MULTILEVEL_V2 COMMAND_CLASS_SCENE_ACTIVATION COMMAND_CLASS_SCENE_ACTUATOR_CONF COMMAND_CLASS_CONFIGURATION COMMAND_CLASS_ASSOCIATION_V2 COMMAND_CLASS_ASSOCIATION_GRP_INFO COMMAND_CLASS_VERSION_V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2 COMMAND_CLASS_DEVICE_RESET_LOCALLY COMMAND_CLASS_POWERLEVEL COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4

### 3 All functions of each trigger

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

Trigger	Description
OFF→ON	<p><b>1.</b> The LED light will flash twice.</p> <p><b>2. Add for inclusion(SmartStart Inclusion):</b>            Add the led bulb DSK into the primary controller SmartStart Provisioning List            (If your controller does not support SmartStart inclusion, please refer to the manual for your controller for non-SmartStart inclusion.).</p> <ul style="list-style-type: none"> <li>a) Power cycle once for led bulb.</li> <li>b) The led bulb will send “Explorer Auto inclusion” frame to start SmartStart Inclusion.</li> <li>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.</li> </ul> <p>Note: The led bulb will Start SmartStart Inclusion when it is removed from a Z-Wave network.</p>
OFF→ON→ OFF→ON→ OFF→ON	<p><b>1.</b> The LED light will flash twice, and send node info frame.</p> <p><b>2. Add for inclusion(Normal Inclusion):</b></p> <ul style="list-style-type: none"> <li>a) Set the Z-Wave network main controller into inclusion mode.</li> <li>b) Power cycle once for led bulb.</li> <li>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.</li> </ul>

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

Trigger	Description
OFF→ON→ OFF→ON→ OFF→ON	<p><b>1.</b> LED Bulb will light up with previously saved state and send node info frame.</p> <p><b>2. Remove for exclusion:</b></p> <ul style="list-style-type: none"> <li>a) Assuming led bulb was added to controller and was power on.</li> <li>b) Set the Z-Wave network main controller into removing mode.</li> <li>c) Power cycle triple for led bulb (OFF-&gt;ON-&gt;OFF-&gt;ON-&gt;OFF-&gt;ON).</li> <li>d) Wait a moment, the led bulb should be removed from the controller.Then the led bulb will flash once and dim to 5%.</li> </ul>
OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON→ OFF→ON	<p><b>Reset the device :</b>            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. it will send “Device Reset Locally Command”.</p> <p>Please use this procedure only when the network primary controller is missing or otherwise inoperable.</p>



## 4 Special Rule of Each Command

### 4.1 Basic Command Class

Basic CC is maps to Multilevel CC

### 4.2 Association Command Class

LED Bulb supports 1 association group.

Grouping Identifier	Max Nodes	Send Commands
Group 1	0x05	1. When the state of the LED Bulb is changed: The Bulb will Send Switch Multilevel Report 2. Device Reset Locally.

### 4.3 Configuration Set Command Class

Parameter Number	Description Size	Default Value	Size
2 (0x02)	Enable/Disable save the lamp state. 0 = Enable save the lamp status 1 =The lamp's status is forced to open 2 = The lamp's status is forced to close	0x00	0x01
80 (0x50)	Enable to send notifications to associated devices (Group 1) when the state of LED Bulb is changed. 0 = Nothing. 1= Switch Multilevel Report.	0x01	0x01

#### Additional Features NOTE:

1. The Switch Multilevel Report is automatically sent to the gateway / controller after 3 seconds after the device is powered back on.

## 5 QR CODE

### 5.1 DSK

you scan the QR code with an android phone. For example, The QR returns this number:  
900112034129447151845706002418050469410587456993035100100435301536022000927015  
460003400518( The data for each light is different)

The DSK is: 44715-18457-06002-41805-04694-10587-45699-30351.

(If your controller does not support SmartStart inclusion, please refer to the manual for your controller for non-SmartStart inclusion.).

### 5.2 Quick Response Code (QR Code)

The first 16 bytes of the ECDH Public Key and sometimes additional information is encoded into a QR Code graphic.

When referred to in this document, "DSK" applies to the Full DSK, the combination of Full DSK and QR Code, or the combination of Pin Code and QR Code. Please refer to the below diagram. the QR code can be found on the side of the Bulb" or " The DSK may be located on the back of the packaging.

