Aeon Labs Smart Dimmer (2nd Edition)

(Z-Wave Smart Dimmer (2nd Edition))

Document No:						
Version:	1					
Description:	The purpose of this document is to provide guidelines for the user and application developer of Aeon Labs Z-Wave Smart Dimmer(2nd Edition).					
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Reviewed Date:	2013-07-04					
Restrictions:	Partners Only					
approved by:						
Date:						

REVISION RECORD

Revision	Date	BY	Brief description of changes
1	10/15/2012		Initial draft.
2	6/25/2013		Update Z-wave Library

Aeon Labs Smart Dimmer (2nd Edition)
Engineering Specifications and Advanced Functions for Developers
(V1.20)

The Smart Dimmer is a scene multilevel switch device based on Z-Wave enhanced routing slave library V4.55.00.

The Smart Dimmer has 3 report groups. The Report groups have nothing to do with ASSOCIATION GROUP. The Report group is a group of sending reports automatically at a certain time interval. All the reports of the same group will be sent at the same time. The time interval between the transmission of each report group can be configured by parameter 111-113. If the Smart Dimmer has no the association nodes, it will not send automatic reports (there is only 1 association group, group 1).

As soon as Smart Dimmer is removed from a z-wave network it will restore itself to the factory default Settings.

1. Library and Command Classes

1.1 SDK: 4.55.00

1.2 Library

- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device class: GENERIC_TYPE_SWITCH_MULTILEVEL
- Specific Device Class: SPECIFIC_TYPE_POWER_SWITCH_BINARY

1.3 Commands Class

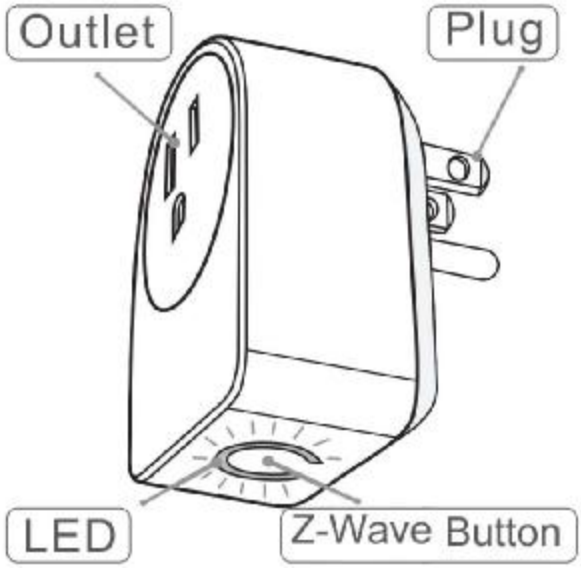
- COMMAND_CLASS_SWITCH_MULTILEVEL V2
- COMMAND_CLASS_METER V3
- COMMAND_CLASS_SWITCH_ALL V1
- COMMAND_CLASS_SCENE_ACTUATOR_CONF V1
- COMMAND_CLASS_SCENE_ACTIVATION V1
- COMMAND_CLASS_CONFIGURATION V1
- COMMAND_CLASS_ASSOCIATION V1
- COMMAND_CLASS_CRC_16_ENCAP V1
- COMMAND_CLASS_MANUFACTURER_SPECIFIC V2
- COMMAND_CLASS_VERSION V1
- COMMAND_CLASS_MARK V1
- COMMAND_CLASS_HAIL V1

2. Technical Specifications

Operating distance: Up to 100 ft / 30 meters indoors and 300 ft / 100 meters outdoors.
Input: 120V~, 60Hz. (USA Version)
230V~, 50Hz. (EU, AU, BR, CN, IN Version)
Output: 120V~, 60Hz, Max 2.5A Resistor load. (USA Version）
230V~, 50Hz, Max 2.5A Resistor load. (EU Version）
230V~, 50Hz, Max 2.5A Resistor load. (IN Version）
230V~, 50Hz, Max 2.5A Resistor load. (CN Version）
230V~, 50Hz, Max 2.5A Resistor load. (AU Version）
230V~, 50Hz, Max 2.5A Resistor load. (BR version)
Temperature range: -25℃ to 40℃.
Humidity: 8-80%

3. Familiarize yourself with your Smart Dimmer

3.1 Interface



4. Function description

4.1 Function of Z-Wave Button

Trigger	Description
Click one time	Include the Smart Dimmer into an existing z-wave network: 1. Switch on the power, The LED will blink slowly. 2. Let the primary controller of the existing Z-Wave network into the inclusion mode (If you don't know how to do this, refer to its manual). 3. Press the Z-Wave button. 4. If the learning successes, the LED will stop blinking slowly. If the LED is still blinking slowly, please repeat the process from step 2. Remove the Smart Dimmer from an existing z-wave network: 1. Switch on the power, the LED will follow the status (on/off) of the load. 2. Let the primary controller of the existing Z-Wave network into the exclusion mode (If you don't know how to do this, refer to its manual). 3. Press the Z-Wave button. 4. If the exclusion successes, the LED will blink slowly. If the LED still follows the status of the load, please repeat the process from step 2.
Press and hold 30 seconds	Reset the Smart Dimmer to factory default settings: 1. Make sure the Smart Dimmer has been connected to the power supply. 2. Press and hold the Learn button for 30 seconds. 3. The LED blinks slowly, it indicates resetting successful, otherwise please repeat step 2. Note: Resetting the Smart Dimmer to factory default Settings means: set the Smart Dimmer out of the Z-Wave network; clear the Association setting, power measure value, Scene Configuration Settings and restore the Configuration Settings to the default settings.

5. Special Usage instructions of the command

5.1 Association Command Class

The Smart Dimmer supports 2 Association groups: group 1, group 2.

a. The Node IDs in Group 1 will receive the Hail Command /Basic report (configurable) which is sent via multicast(if there are more than 2 Node IDs) or single cast (if there is only one Node ID) when the state of the smart dimmer's load has changed.
b. The Node IDs in Group 1 will receive the Meter REPORT (for watt/ KWH) (configurable) which is sent via multicast(if there are more than 2 Node IDs) or single cast (if there is only one Node ID) when the auto report is required.
c. When the Smart Dimmer receives the following commands, it will forward the commands to all node IDs which are in Group 2. The command will be sent via multicast (if there are more than 2 Node IDs) or single cast (if there is only one Node ID).
   The Commands include: Basic Set, Switch Binary Set, Switch Multilevel Start Level Change, Switch Multilevel Stop Level Change, Switch Multilevel Set, Scene Activation Set.

5.2 Scene Actuator Conf Command Class
The Smart Dimmer supports max 255 Scene ID.

The Scene Actuator Conf Set command is effective, only when 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 set, it will be ignored. If the scene ID setting Dimming Duration = 0xff then Dimming Duration=3 else Dimming Duration= settings value. If Scene ID =0, then the Smart Dimmer will report the currently activated scene settings. If the currently activated scene settings do not exist, the Smart Dimmer will report the Level, both currently load status and Dimming Duration equal to 3.

5.3 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.

5.4 Configuration Set Command Class

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	Description	Default Value	Size

2	Configure the correlated parameters of the blinking LED Configuration Value 1：1-255 Configuration Value 1 is to Specify the time that the LED blinks, The unit is second; Configuration Value 2：1-255 Configuration Value 2 is to Specify the Cycle of the on/off, the unit of it is 0.1 second. For example: if we set Configuration Value 1 to '15',Configuration Value 2 to '10',then Smart Dimmer will open 0.5 second, close 0.5 second, and repeat for 14 times.	0x0f0a	2
3	Enable the Current Overload Protection. the Load will be closed when the current is more than 2.6A(EU)/2.9A(US) and the time is more than 2 seconds (0 : disable, 1 :enable)	0	1
80	Determine which report will be sent to the associated devices (Group 1) when the state of the smart dimmer changes. (0=nothing, 1=hail CC, 2=basic CC report).	0	1
90	Enable send the automatic reporting when the change in power reaches a certain threshold or percentage which is set by the Parameter91-92 below. (0 : disable, 1 :enable)	1	1
91	The threshold value of Wattage Change (Smart Dimmer) (Valid value: 0-60000) (refer to Parameter 90)	25（W）	2
92	The threshold value of Wattage Percentage Change (Smart Dimmer) (Valid value: 0-100) (refer to Parameter 90)	5（%）	1
100	Set the parameter 101-103 to the default.	N/A	1
101	Which reports will be sent in Report group1 (refer to the flags in the table below)	0x00 00 00 04	4
102	Which reports will be sent in Report group2 (refer to the flags in the table below)	0x00 00 00 08	4
103	Which reports will be sent in Report group3 (refer to the flags in the table below)	0	4
110	Set parameter 111-113 to default.	N/A	1
111	The time interval of sending Report group 1 (Valid value:0x01-0xFFFFFFFF).	0x00 00 00 03	4
112	The time interval of sending Report group 2 (Valid value:0x01-0xFFFFFFFF).	0x00 00 02 58	4
113	The time interval of sending Report group 3 (Valid value: 0x01-0xFFFFFFFF).	0x00 00 02 58	4
200	Partner ID (0: Aeon Labs Standard Product, 1: T&T).	0	1
252	Enable the Configuration Locked (0:disable, 1: enable).	0	1

254	Device Tag.	0	2
255	Reset the configuration settings to factory default settings	N/A	1

Configuration Value for parameter 101-103：

	7	6	5	4	3	2	1	0
configuration Value 1(MSB)	Reserved							
configuration Value 2	Reserved							
configuration Value 3	Reserved							
configuration Value 4(LSB)	Reserved	Reserved	Reserved	Reserved	Auto send Meter REPORT (for kWh) at the group time interval	Auto send Meter REPORT (for watt) at the group time interval	Auto send Meter REPORT (for current) at the group time interval	Auto send Meter REPORT (for voltage at the group time interval

Example:

a. Rport atomatically the Meter CC (Watts) to node "1" every 12 minutes

1. Set report group 1 send Meter CC (Watts) automatically

ZW_SendData(0x70, 0x04, 0x65, 0x04, 0x00,0x00,0x00,0x04);

2. Set the interval of sending report group 1

ZW_SendData(0x70, 0x04, 0x6F, 0x04, 0x00,0x00,0x02,0xd0);

3. Associate to the node "1"

ZW_SendData(0x85, 0x01, 0x01, 0x01);

b. Set the default values

ZW_SendData(0x70, 0x04, 0x255,0x01,0x00);