Aeon Labs Heavy Duty Smart Switch Gen5

(Z-wave Heavy Duty Smart Switch Gen5)

Change history

Revision	Date	Change Description
1	4/28/2013	Initial draft.
2	4/05/2014	Update Z-wave library to 6.51.00
3	6/27/2014	Update Z-wave library to 6.51.01
4	7/11/2014	Add configuration parameter 20

Aeon Labs Heavy Duty Smart Switch Gen5
Engineering Specifications and Advanced Functions for Developers
(V3.26)

Heavy Duty Smart Switch Gen5 is a Z-Wave power binary switch device based on Z-Wave enhanced 232 slave library V6.51.01

Heavy Duty Smart Switch Gen5 has 3 Configuration Report groups. Configuration Report group is a group that you can set automatic reports to be sent at a certain interval time. All the reports will be sent at the same time in one Configuration Report group. The interval of transmission for each report group can be specified (configurable parameters 111-113). If Heavy Duty Smart Switch Gen5 does not set association nodes, it will not send automatic reports.

As soon as Heavy Duty Smart Switch Gen5 is removed from a z-wave network it will restore itself into factory settings.

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_BINARY
- Specific Device Class: SPECIFIC_TYPE_POWER_SWITCH_BINARY

1.3 Commands Class

	Included Non-Secure	Included Secure
Node Info Frame	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_SWITCH_BINARY V1 COMMAND_CLASS_SENSOR_MULTILEVEL V5 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_CRC_16_ENCAP 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_CRC_16_ENCAP V1 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1
Security Command Supported Report Frame	–	COMMAND_CLASS_SWITCH_BINARY V1 COMMAND_CLASS_METER V3 COMMAND_CLASS_SENSOR_MULTILEVEL V5 COMMAND_CLASS_SWITCH_ALL V1 COMMAND_CLASS_SCENE_ACTUATOR_CONF V1 COMMAND_CLASS_SCENE_ACTIVATION V1

		COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_CRC_16_ENCAP 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

Operating distance: Up to 492 feet/150 meters outdoors.
Input: 220V~240, 60Hz. (USA Version)
220V~240, 50Hz. (EU, AU Version)
Output: 220V~240, 60Hz, Max 40A Resistor load. (USA Version）
220V~240, 50Hz, Max 40A Resistor load. (EU Version）
220V~240, 50Hz, Max 40A Resistor load. (AU Version）
Operating temperature: 5℃ to 40℃.
Relative humidity: 8% to 80%.

3. Familiarize Yourself with Your Heavy Duty Smart Switch Gen5

3.1 Interface

4. All Functions of Each Trigger

4.1 Function of Z-Wave Button

Trigger	Description
Click one time	**Add Heavy Duty Smart Switch Gen5 into z-wave network:** 1. Insert the Heavy Duty Smart Switch Gen5 to power socket. The Heavy Duty Smart Switch Gen5's LED will blink slowly. 2. Let the primary controller into 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 success, Heavy Duty Smart Switch Gen5's LED will be kept turning on. If the LED is still in slow blink, in which you need to repeat the process from step 2. **Remove Heavy Duty Smart Switch Gen5 from Z-wave network:** 1. Insert the Heavy Duty Smart Switch Gen5 to power socket. The Heavy Duty Smart Switch Gen5's LED will follow the status (on/off) of its load. 2. Let the primary controller into remove mode (If you don't know how to do this, refer to its manual). 3. Press the Z-Wave button. 4. If the remove success, Heavy Duty Smart Switch Gen5's LED will blink slowly. If Heavy Duty Smart Switch Gen5's LED still follows the load status, in which you need to repeat the process from step 2.
Press and hold 20 seconds	**Reset Heavy Duty Smart Switch Gen5 to factory Default:** 1. Make sure the Heavy Duty Smart Switch Gen5 has been connected to the power supply. 2. Press and hold the Learn button for 20 seconds. 3. If holding time more than one second, the LED will blink faster and faster. If holding time more than 20seconds, the LED will be on for 2 seconds, it indicates reset is success, otherwise please repeat step 2. **Note:** **1,** This procedure can be used only if the primary controller is missing or inoperable. **2,** Reset Heavy Duty Smart Switch Gen5 to factory default settings, it will: a), let the Heavy Duty Smart Switch Gen5 to be excluded in Z-Wave network; b), delete the Association setting, power measure value, Scene Configuration settings; c), restore the Configuration settings to the default.

5. Special Rule of Each Command

5.1 Z-Wave Plus Info Report Command Class

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	0x0700 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)
User Icon Type	0x0700 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)

5.2 Association Command Class

Heavy Duty Smart Switch Gen5 supports 2 Association groups and can add max 5 nodes to each group. The Node IDs in Group 1 will receive Hail Command /Basic report (configurable) which is sent via single-cast (if there are more than 1 Node IDs) when Heavy Duty Smart Switch Gen5's level changed.
When the Heavy Duty Smart Switch Gen5 receives the following commands, it will forward the commands to all node IDs (in Association Group 2). The command will be sent via single-cast (if there are more than 1 Node IDs).
Commands: Basic Set, Switch Binary Set, Scene Activation Set.

5.3 Association Group Info Command Class

5.3.1 Association Group Info Report Command Class
Profile: General: NA (Profile MSB=0, Profile LSB=0)

5.3.2 Association Group Name Report Command Class
Group 1： Lifeline
Group 2： RetransmitSwitchCC

5.4 Scene Actuator Conf Command Class
The Heavy Duty Smart Switch Gen5 supports 255 Scene ID.

The Scene Actuator Conf Set Command is effective, when the Level>=0 and Level<0x64 or Level=0xff (Level 0x01 ~ 0x63 will be mapped to 0xFF), otherwise, it will be ignored.

The Scene Actuator Configuration Get Command is used to request the settings for a given scene identifier, if Scene ID is not configured, it will be ignored. If the Scene ID Setting Dimming Duration = 0xff then Dimming Duration=0 or Dimming Duration= the value that you set. If Scene ID =0, then the Heavy Duty Smart Switch Gen5 will report the currently active scene settings. If the currently active scene settings do not exist, the Heavy Duty Smart Switch Gen5 will report “Level =the value of currently load status” and “Dimming Duration=0”.

5.5 Scene Activation Set Command Class
The Scene Activation Set Command is effective, when only Level>=0 and Level<0x64 or Level=0xff (Level 0x01 ~ 0x63 will be mapped to 0xFF), otherwise, it will be ignored. If the requested Scene ID is not configured, it will be ignored too.

5.6 Multilevel Sensor Command Class
Multilevel Sensor supported Sensor=01 (temperature Sensor)
Supported scale: 0x00 (Celsius) and 0x01 (Fahrenheit)

Note: The temperature sensor only measures the internal temperature of product (Circuit board).

5.7 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 Hex / Decimal	Description	Default Value	Size

0x03 (3)	Current Overload Protection. Load will be closed when the Current more than 39.5A and the time more than 5 seconds (0=disabled, 1=enabled).	0	1
0x14(20)	LED status after power on: (0=last status, 1=always on, 2=always off)	0	1
0x50 (80)	Enable to send notifications to associated devices (Group 1) when the state of Heavy Duty Smart Switch Gen5's load changed (0=nothing, 1=hail CC, 2=basic CC report).	0	1
0x5A (90)	Enables/disables parameter 91 and 92 below (1=enabled, 0=Disabled).	1	1
0x5B (91)	The value here represents minimum change in wattage (in terms of wattage) for a REPORT to be sent (Valid values 0-60000).	50（W）	2
0x5C (92)	The value here represents minimum change in wattage percent (in terms of percentage) for a REPORT to be sent (Valid values 0-100).	10（%）	1
0x64 (100)	Set 101-103 to default.	N/A	1
0x65 (101)	Which reports need to send in Report group 1 (See flags in table below).	4	4
0x66 (102)	Which reports need to send in Report group 2 (See flags in table below).	8	4
0x67 (103)	Which reports need to send in Report group 3 (See flags in table below).	0	4
0x6E (110)	Set 111-113 to default.	N/A	1
0x6F (111)	The time interval of sending Report group 1 (Valid values 0x01-0x7FFFFFFF).	5	4
0x70 (112)	The time interval of sending Report group 2 (Valid values 0x01-0x7FFFFFFF).	120	4
0x71 (113)	The time interval of sending Report group 3 (Valid values 0x01-0x7FFFFFFF).	120	4
0xC8 (200)	Partner ID (0= Aeon Labs Standard Product, 1= Others).	0	1

0xFC (252)	Enable/Disable Lock Configuration (0 =disable, 1 = enable).	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.Reset to factory default setting	N/A	1

Configuration Values 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

- Reserved

Reserved bits or bytes must be set to zero.

Example:

Automatically report 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 node "1"

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