Aeon Labs SES

(Z-Wave Smart Energy Switch)

Aeon Labs SES – Engineering Specifications and Advanced Functions for Developers

The SES is able to send Meter Report Command and Multilevel Sensor Report Command to associated nodes automatically to make others know its power information.

The SES has 3 report groups. Report group have nothing to do with ASSOCIATION GROUP. Report group is a group of automatic reports sent at a certain time interval. All the reports in one group will send at the same time. The interval of transmission for each report group can be specified (config parameters 111-113). If the SES does not have its association setup, it will not send automatic reports (there is only 1 association group, group 1).

We can configure SES the following values by using configuration command class:

Using the Configuration Command Class:

Configuration Set Command

<table>
<tr><th>7</th><th>6</th><th>5</th><th>4</th><th>3</th><th>2</th><th>1</th><th>0</th></tr>
<tr><td colspan="8">Command Class = COMMAND_CLASS_CONFIGURATION</td></tr>
<tr><td colspan="8">Command = CONFIGURATION_SET</td></tr>
<tr><td colspan="8">Parameter Number</td></tr>
<tr><td>Default</td><td colspan="5">Reserved</td><td colspan="2">Size</td></tr>
<tr><td colspan="8">Configuration Value 1(MSB)</td></tr>
<tr><td colspan="8">Configuration Value 2</td></tr>
<tr><td colspan="8">……</td></tr>
<tr><td colspan="8">Configuration Value n(LSB)</td></tr>
</table>

1.Parameter Number(8 bit)

Currently the following parameter numbers are defined:

Parameter Number	Description
1	The content of "Multilevel Sensor Report Command" after SES receives "Multilevel Sensor Get Command".
2	Make SES blink
80	Enables automatic notifications to associated devices whenever there is a state change. (0=nothing, 1=hail CC, 2=basic CC report)
90	Enables/disables parameter 91 and 92 below (1=enabled, 0=disabled, default is 0)
91	The value here represents minimum change in wattage (in terms of wattage) for a REPORT to be sent (default 50W, size 2 bytes).
92	The value here represents minimum change in wattage percent (in terms of percentage) for a REPORT to be sent (default 10%, size 1 byte).
100	Set 101-103 to default.
101	Which reports need to send in Report group1
102	Which reports need to send in Report group2
103	Which reports need to send in Report group3
110	Set 111-113 to default.
111	The time interval of sending Report group 1
112	The time interval of sending Report group 2
113	The time interval of sending Report group 3
254	Device Tag
255	Reset to the default Configuration

Refer to the table below with respect to default value for the relevant parameter number.

Parameter Number	default factory setting
1	0
80	0
90	0
91	50
92	10
101	8
102	0
103	0
111	600
112	600
113	600
254	0

4.**Size(4 bit)**

The size field indicates the number of bytes that is used for the configuration value. Refer to the table below with respect to size for the relevant parameter number.

Parameter Number	Size
1	1
2	2
80	1
90	1
91	2

92	1
101	4
102	4
103	4
111	4
112	4
113	4
254	2

5. **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	MRC(KWH)	MRC(Watt)	MSRC	Reserved

- MRC(KWH) (1 bit)

The **MRC(KWH)** flag signals that Report Group 1 send(1) or don't send(0) Meter Report Command(KWh) automatically.

- MRC(Watt)(1 bit)

The **MRC(Watt)** flag signals that Report Group 1 send(1) or don't send(0) Meter Report Command(wattage) automatically.

- MSRC (1 bit)

The **MSRC** flag signals that Report Group 1 send(1) or don't send(0) Multilevel Sensor Report Command(wattage) automatically.

6. **Other Configuration Values:**

Parameter Number	Configuration Value	Size(byte)	Description
1	0x00	1	Power
	0x01		Voltage
2	**Configuration Value 1:** 1-255 **Configuration Value 2:** 1-255	2	**Configuration Value 1** is to Specify the time that SES need blink, The unit is Second; **Configuration Value 2** is to Specify the Cycle of 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 SES will open 0.5 second, close 0.5 second, and repeat for 14 times.
111	0x0001-0xffff	4	interval (in seconds) to send out Report group 1
112	0x0001-0xffff	4	interval (in seconds) to send out Report group 2
113	0x0001-0xffff	4	interval (in seconds) to send out Report group 3
254	0x0000-0xffff	2	Tag

Example:

a. Automatically report Meter CC (Watts) to node "1" every 12 minutes

1. Have 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);

b. Set default values

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

Note:

• The value of parameter "1" only affect "Multilevel Sensor Report Command" which as a reply for "Multilevel Sensor Get Command". Multilevel Sensor Report Command which is sent automatically is always Power(Watt).

• If we reset SES to the default Configuration, tag will reset to 0.

• If Report Group1 and Report Group2 are set sending same report. The lastest set will re-write the old set. For example:

set following command:

ZW_SendData(0x70, 0x04, 101, 4, 0,0,0,6);

ZW_SendData(0x70, 0x04, 102, 4, 0,0,0,6);

The Multilevel Sensor Report Command will be sent in Report group2. We need to use 112(parameter number) to set the Multilevel Sensor Report interval time.

Configuration Get Command

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_GET							
Parameter Number							

1. Parameter Number (8 bit)

Refer to description under the Configuration Set Command

Configuration Report Command

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_GET							
Parameter Number							
Reserved					size		

Refer to description under the Configuration Set Command.