Aeon Labs SEI

(Z-Wave Smart Energy Illuminator)

Aeon Labs SEI– Advanced Functions for Developers （software version 1.10）

Objective:

The Aeon Labs Smart Energy Illuminator is is a multilevel switch that supports the multilevel switch command class and other command classes described in the device class specification.It is a routing slave device based on the routing slave library.

SEI application lists the following supported command classes in the Node Information Frame:

• COMMAND_CLASS_SWITCH_MULTILEVEL

• COMMAND_CLASS_SENSOR_MULTILEVEL

• COMMAND_CLASS_METER

• COMMAND_CLASS_SWITCH_ALL

• COMMAND_CLASS_CONFIGURATION

• COMMAND_CLASS_ASSOCIATION

• COMMAND_CLASS_HAIL

• COMMAND_CLASS_MANUFACTURER_SPECIFIC

• COMMAND_CLASS_VERSION

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

The SEI prepared 3 report groups.Report group have nothing to do with ASSOCIATION GROUP.Report group is a group that we can put automatic report in it.All the reports in one group will send at the same time. We can Specify the interval of sending for every report group.If the SEI don't have associated nodes, it don't send report automatically.

We can configure SEI the following values by using configuration

command class:

- Which reports need to send automatically in every report group?

- The interval of sending every report group?

- What content of "Multilevel Sensor Report Command" dose the SEI should report when it receives "Multilevel Sensor Get Command"? Voltage(v) or power(w)?

- Tag the SEI.We can identify by tag.

We can also make SEI blink by using configuration command class.

Interface:

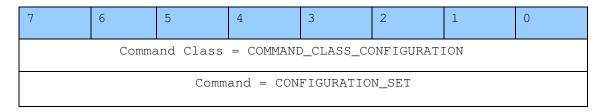| Button Clicked |
| --- |
| Node Info Frame/Enter learn mode |
| Toggle on/off status |
| Send Hail Command |

 If the SEI have associated nodes,It will send hail command to all theassociated nodes, Else it will send Hail command in the form of broadcasting.

Note:

In some countries,hail command will be replaced by basic report command.

Using the Configuration Command Class:

Configuration Set Command

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)		

1.Parameter Number(8 bit)

Currently the following parameter numbers are defined:

Description	Parameter Number
1	The content of "Multilevel Sensor Report Command" after SEI receives "Multilevel Sensor Get Command".
2	Make SEI blink
100	Which report need to send of all report groups set 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	The interval time of all report groups set default
111	The interval of sending Report group 1
112	The interval of sending Report group 2
113	The interval of sending Report group 3
254	Device Tag
255	Reset to the default Configuration

2.Default(1 bit)

If the default bit is set to 1 the device is set to default factory

setting and the configuration values isignored. If the default bit is set to 0 then the configuration values is used. Refer to the table below with respect to default value for the relevant parameter number.

Parameter Number	default factory setting
1	0
101	10
102	0
103	0
111	600
112	600
113	600
254	0

3.Reserved(4 bit)

Reserved bits must be set to zero.

4.Size(4 bit)

The size field indicates the number of bytes that is used for the configration value.It's depended on the parameter Number.Refer to the table below with respect to size for the relevant parameter number.

Parameter Number	Size
1	1
2	2
254	2
101	4
102	4
103	4
111	4
112	4

113	4

5. **Configuration Value**(**(variable)**)：

a. Parameter number equals 101

	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

- Reserved

Reserved bits or bytes must be set to zero.

- 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.

b. Parameter number equals 102 or 103

Refer to description under the "Parameter equals 101"

c. Other Parameter Numbers

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 SEI 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 SEI 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 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 SEI to the default Configuration,tag will reset to 0.

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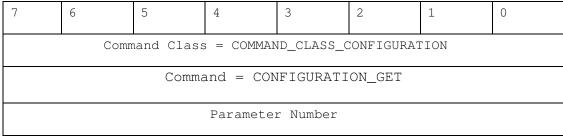
set following command:

```
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.