Aeon Labs MultiSensor(SW Version:V1.18)

(Z-Wave MultiSensor)

Objective:

The Aeon Labs MultiSensor is a routing binary sensor device based on Zwave routing slave libruray V5.03. MultiSensor application lists the following supported command classes in the Node Information Frame:

• COMMAND_CLASS_SENSOR_BINARY   V1

• COMMAND_CLASS_SENSOR_MULTILEVEL   V5

• COMMAND_CLASS_BATTERY   V1

• COMMAND_CLASS_WAKE_UP   V2

• COMMAND_CLASS_CONFIGURATION   V1

• COMMAND_CLASS_ASSOCIATION   V1

• COMMAND_CLASS_MANUFACTURER_SPECIFIC V1

• COMMAND_CLASS_VERSION   V1

If the MultiSensor is included into a SIS or SUC z-wave network, it will be associated to SIS or SUC automatically.

As soon as the MultiSensor is removed from a z-wave network it will restore itself to factory settings.

If PIR motion sensor is triggered, the MultiSensor will send a Basic set (0xFF) to associated devices. The PIR motion sensor will then become inactive for 15 seconds. After this 15 seconds, the PIR motion sensor will wake up and can detect motion again. The Multisensor will send basic set(0x00) if the PIR motion sensor is not triggered for 4 minutes (configurable).

Interface:

Event And Response:

Event	Response
Button Clicked	Node Info Frame/Enter learn mode
Button Held	Wake up Notification
Press button 3 times	Start/Stop 10 minutes wake up state to receive any Z-Wave radio communication.
Knob	Adjust sensitivity of infrared sensor. "1" is Max sensitivity, "3" is Min sensitivity.
Infrared sensor Trigger	Send sensor Binary Report（**configurable**） Send Basic Set Command（**configurable**）
USB connector	External DC power and can update the MultiSensor with new software.
Power on (Battery)	Wake 10 minutes（**configurable**）

The destination nodes of **Basic set command, Sensor Binary Report** are all associated nodes. If the MultiSensor doesn't have associated nodes, basic set and sensor binary report command will not be sent.

The destination node of **Wake Up Notification** are listed in the following table.

Destination nodes	Priority
The Node configured by Wake up Interval set command	Highest
SIS or SUC Node	High
First Associated Node	Middle
Broadcast	Low

LED State Indications

Status	LED
Multisensor Awake	Warm up：Blink fast Out of network: Blinking slowly In network: ON (solid on)
Sleeping	OFF

Wake Up:

- Waking up the Multisensor for 10 minutes:

    1) MultiSensor will wake up 10 minutes after it is included into z-wave network. OR

    2) The button is pressed 3 times, then the MultiSensor will wake 10 minutes. OR

    3) If configured, the MultiSensor can wake 10 minutes when on power on.

- Putting the Multisensor to sleep:

    1) Pressing tamper switch 3 times, sleep right now;

    2) MultiSensor received "Wake up no more information CC", sleep right now;

- Wake up interval set command:

The minimum Wake Up interval time is 4 minutes (240 seconds) rounded up.   Thus if the interval time is set to 1 minute, then Wake Up Notifications will be send every 4 minutes. Likewise if the interval time is set to 7 minutes, Wake Up Notifications will be send at 8 minute intervals.   Default is 0.

- Manually sending Wake Up Notifications (Press and hold the Z-Wave button for 2 second):

The MultiSensor will stay awake for 8 seconds after it sends the wake up notification command. If it receives a command within 8 seconds, it will stay awake (8 second timeout).

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:

Parameter Number	Description
2	Wake for 10 minutes when battery is inserted
3	Timeout period of no-motion detected before the Multisensor sends the OFF state after being triggered.
4	Enable/Disable PIR motion sensor
5	Which commands to send when PIR motion sensor triggered
100	Set 101-103 to default.

101	Which reports to send automatically in timing intervals in group 1
102	Which reports to send automatically in timing intervals in group 2
103	Which reports to send automatically in timing intervals in group 3
110	Set 111-113 to default.
111	The interval time of sending Report for group 1
112	The interval time of sending Report for group 2
113	The interval time of sending Report for group 3
255	Reset to the default Configuration of all parameters

2.Default(1 bit)

If the default bit is set to 1 the device is set to default factory setting and the configuration values is ignored. 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
2	1
3	240
4	1
5	1
101	0
102	0
103	0
111	720
112	720

113	720
255	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
2	1
3	2
4	1
5	1
101	4
102	4
103	4
111	4
112	4
113	4
255	1

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)	**Luminance**	**Humidity**	**Temperature**	Rserved	Reserved	Reserved	Reserved	**Battery**

● Reserved

Reserved bits or bytes must be set to zero.

● **Luminance** (1 bit)

The **Luminance** flag signals that Multilevel_sensor report will send(1) or don't send(0) by automatically in group 1.

● **Humidity** (1 bit)

The **Humidity** flag signals that Multilevel_sensor report will send(1) or don't send(0) by automatically in group 1.

● **Temperature** (1 bit)

The **Temperature** flag signals that Multilevel_sensor report will send(1) or don't send(0) by automatically in group 1.

● **Battery** (1 bit)

The **Battery** flag signals that Battery report will send(1) or don't send(0) by automatically in group 1.

b. Parameter number equals 102,103 as same as parameter 101.

C. Other Parameter Numbers

Parameter Number	Configuration Value	Description
2	0(Default)	Disable
	1	Enable

3	1-15300 seconds (default:240)	When this value is not larger than 255s, the time will be the value that is set. When the value is set larger than 255s, the Multisensor will convert this value to minutes using the following function. If value mod 60 ==0, minute value will be value divide 60, else minute value will be value divide 60 +1.
4	0	Disable
	1(default)	Enable
5	00000001B(default)	Basic Set
	00000010B	Sensor Binary report
111	1-2678400	Interval (in seconds) to send out Report group 1
112	1-2678400	Interval (in seconds) to send out Report group 2
113	1-2678400	Interval (in seconds) to send out Report group 3
255	1	Set to factory default of all configuration parameters.