



# Aeon Labs Micro Double SES

(Z-Wave Micro Double Smart Energy Switch)



# Aeon Labs Micro Double SES – Engineering Specifications and Advanced Functions for Developers (SW Version: V1.07)

The Aeon Labs Micro Double SES is a power binary switch device based on Z-wave routing slave library V5.02 Patch3. Micro Double SES application lists the following supported command classes in the Node Information Frame:

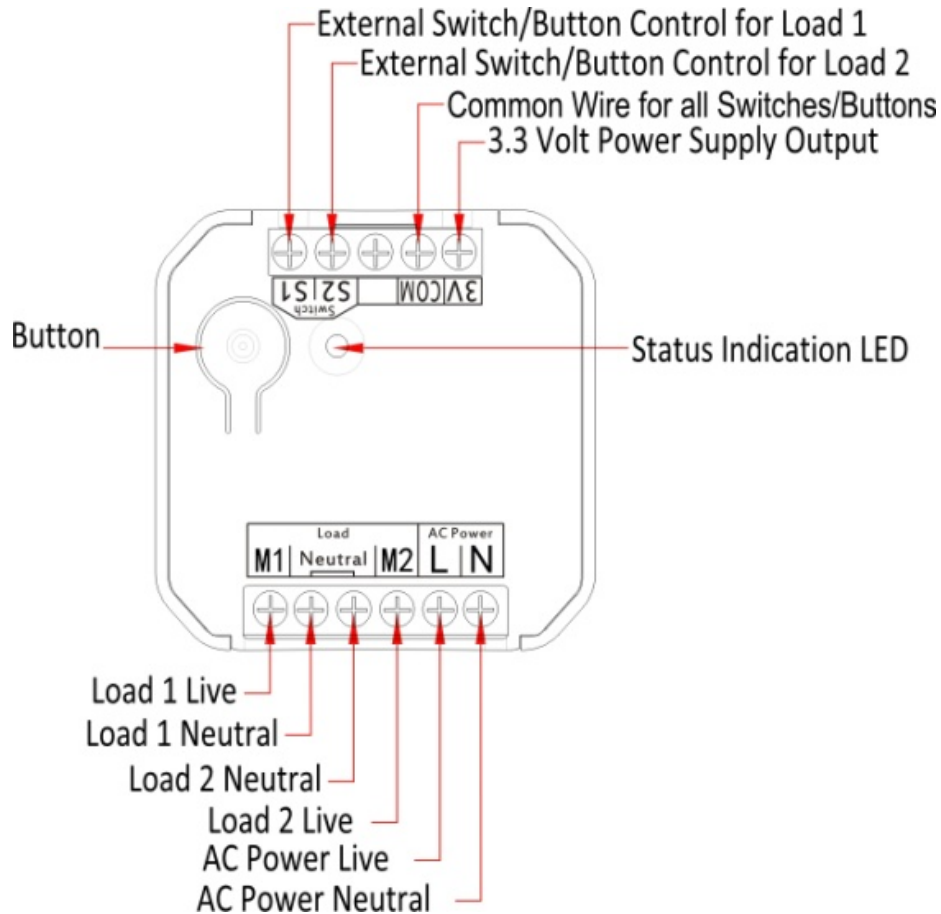
- COMMAND\_CLASS\_SWITCH\_BINARY
- COMMAND\_CLASS\_SENSOR\_MULTILEVEL
- COMMAND\_CLASS\_METER
- COMMAND\_CLASS\_SWITCH\_ALL
- COMMAND\_CLASS\_CONFIGURATION
- COMMAND\_CLASS\_ASSOCIATION
- COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC
- COMMAND\_CLASS\_VERSION
- COMMAND\_CLASS\_MULTI\_CHANNEL
- COMMAND\_CLASS\_MARK
- COMMAND\_CLASS\_HAIL

The Micro Double 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 Micro Double 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 Micro Double SES does not have its association setup, it will not send automatic reports (there is only 1 association group, group 1).

As soon as Micro Double SES is removed from a z-wave network it will restore itself into factory Settings.

### Interface:



### **Event And Response:**

Event	Response
Z-wave Button Clicked	Node Info Frame/Enter learn mode. Toggle on/off status.
Z-wave Button Held	<b>5 Seconds: Change the external switch modes of Micro Double SES:</b>  1. Make sure the Micro Double SES has been connected to the power supply.  2. Holding then releasing the button after 5

	<p>seconds will cycle the mode on the external wall switch. (the LED will be blinking slowly after holding the button for 5 seconds).</p> <p><b>15 Seconds: Reset the external switch mode to "unknown":</b></p> <ol style="list-style-type: none"> <li>1. Make sure the Micro Double SES has been connected to the power supply.</li> <li>2. Holding then releasing the button after 15 seconds will reset the external switch mode to "unknown" and allow for an auto-detect via toggling the external switch once (the LED will be blinking fast after holding the button for 15 seconds).</li> </ol> <p><b>30 Seconds: Reset Micro Double SES to factory Default:</b></p> <ol style="list-style-type: none"> <li>1. Make sure the Micro Double SES has been connected to the power supply.</li> <li>2. Holding the button for 30 seconds and releasing will reset the entire module including z-wave to factory default (the LED will stay solid after holding the button for 30 seconds).</li> </ol> <p>Note: The device Tag will not reset.</p>
Z-wave Button Released	<p>Node Info Frame/Enter learn mode.</p> <p>Toggle on/off status.</p>
External Switch/Button Clicked (momentary button mode )	<p>If not in z-wave network, Enter learn mode.</p> <p>Toggle on/off status.</p>
External Switch/Button Decuple Clicked (momentary button mode )	<p>Node Info Frame/Enter learn mode.</p>
External Switch/Button Open (2 state switch mode )	<p>If not in z-wave network, Enter learn mode.</p> <p>Toggle on/off status.</p>

External Switch/Button Close (2 state switch mode )	If not in z-wave network, Enter learn mode.  Toggle on/off status.
External Switch/Button Decuple Open/Close (2 state switch mode )	Node Info Frame/Enter learn mode.

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

### 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	Make Micro Double SES blink.
3	Current Overload Protection.(Load current $\geq$ 10.A,2 minutes later ,automatic turn off the load)
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 group 1.
102	Which reports need to send in Report group 2.
103	Which reports need to send in Report group 3.
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.
120	Set External Switch/Button Control mode
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 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
3	0

80	0
90	0
91	50
92	10
101	0
102	0
103	0
111	600
112	600
113	600
120	255
254	0

### 3. 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
2	2
3	1
80	1
90	1
91	2
92	1
101	4
102	4

103	4
111	4
112	4
113	4
120	1
254	2

#### 4. 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.



## 5.Other Configuration Values:

Parameter Number	Configuration Value	Size(byte)	Description
2	<b>Configuration Value 1:</b> 1-255  <b>Configuration Value 2:</b> 1-255	2	<b>Configuration Value 1</b> is to Specify the time that Micro Double SES need blink, The unit is Second;  <b>Configuration Value 2</b> is to Specify the Cycle of on/off, the unit of it is 0.1 second.  For example: if we set <b>Configuration Value 1</b> to '15', <b>Configuration Value 2</b> to '10',then Micro Double SES will open 0.5 second, close 0.5 second, and repeat for 14 times.
3	0x00	1	Disable Current Overload Protection
	0x01		Enable Current Overload Protection
80	0x00	1	nothing
	0x01		Send hail CC
	0x02		Send basic report CC
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

120	0x00	1	Momentary button mode
	0x01		2 state switch mode
	0xff		Unidentified mode
254	0x0000-0xffff	2	Tag

**Example:**

**a.** 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);
```

**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 Micro Double SES to the default Configuration, tag will reset to 0.

- If Report Group1 and Report Group2 are set sending same report. The latest 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.