



Home Energy Meter Gen5

(Z-Wave Home Energy Meter Gen5)



Change history

Revision	Date	Change Description
1	9/01/2016	Initial draft.
2	10/10/2016	Update
3	7/09/2017	Update
4	11/3/2017	Update
5		

Aeotec Home Energy Meter Gen5 Engineering Specifications and Advanced Functions for Developers

Aeotec Home Energy Meter is an energy meter for the entire home. It can wirelessly report instantaneous Power, KWH, Voltage and Amperage measurements to Z-Wave™ gateway/controller. It can send Z-Wave REPORTS at any time when it receives Z-Wave Get Commands.

The HEM can be setup to send automatic reports to any associated nodes in association group 1 at an interval time

It can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

It is a security enabled Z-Wave Plus™ device supports the Security Command Class and has the AES-128 bit security encryption built right in. While a Security enabled Controller is needed in order to fully use the security feature.

It also supports the Over The Air (OTA) feature for the product's firmware upgrade.

As soon as the HEM is removed from a Z-Wave network it will be reset to default factory settings.

1. Library and Command Classes

1.1 SDK: 6.51.10

1.2 Library

- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device class: GENERIC_TYPE_METER
- Specific Device Class: SPECIFIC_TYPE_SIMPLE_METER

1.3 Commands Class

	Non- Security Network	Security Network
Node Info Frame	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_METER V4 COMMAND_CLASS_CRC_16_ENCAP V1 COMMAND_CLASS_MULTI_CHANNEL V4 COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION V3 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_MARK V1

	COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_MARK V1	
Security Command Supported Report Frame	-	COMMAND_CLASS_METER V4 COMMAND_CLASS_CRC_16_ENCAP V1 COMMAND_CLASS_MULTI_CHANNEL V4 COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1

2. Technical specifications

Operating distance: Up to 492 feet/150 meters outdoors.

Input: 230V~, 50Hz, 10mA (EU/AU Version, 3P4)

380V~, 50Hz, 10mA (EU/AU Version, 3P3)

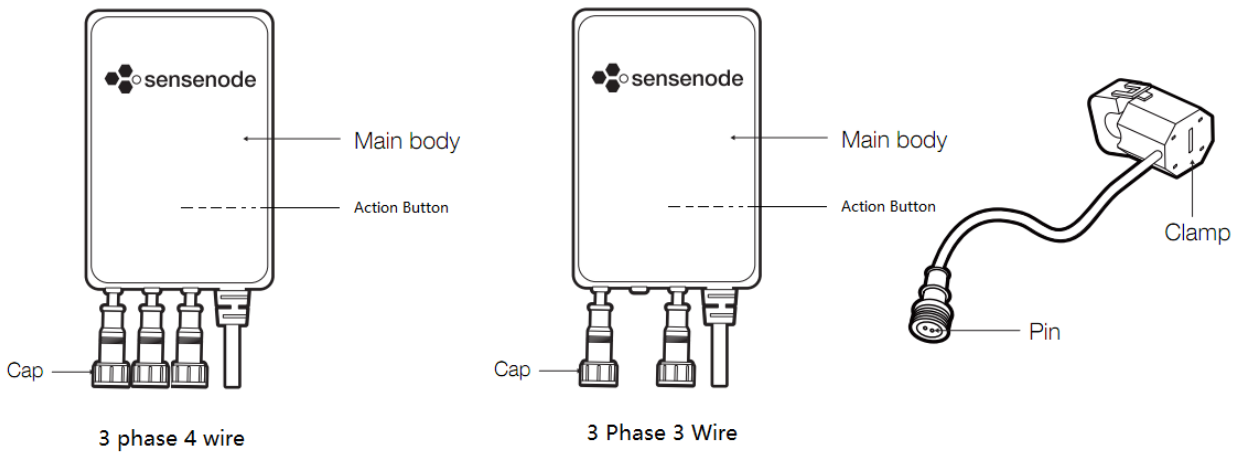
Measure range of current: 0A to 200A.

Operating temperature: 0°C to 40°C.

Relative humidity: 8% to 80%.

3. Familiarize yourself with your HEM

3.1 Interface



4. All functions of each trigger

4.1 Function of Z-Wave Button

Trigger	Description
Click one	Add HEM G5 into an existing Z-Wave Network(Non-security):

time	<ol style="list-style-type: none"> 1. Power on the HEM, the 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 Action Button. 4. If the inclusion is success, the LED will be solid. If the LED still blinks slowly, please repeat the process from step 2. <p>Remove HEM G5 from an existing Z-Wave Network:</p> <ol style="list-style-type: none"> 1. Power on the HEM, the LED will be solid. 2. Let the primary controller of existing Z-Wave network into remove mode (If you don't know how to do this, refer to its manual). 3. Press the Action Button. 4. If the removing is success, the LED will blink slowly. If the LED is still solid, please repeat the process from step 2.
Click 2 times	<p>Add HEM G5 into an existing Z-Wave Network(Security):</p> <ol style="list-style-type: none"> 1. Power on the HEM, the 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 Action Button. 4. If the inclusion is success, the LED will be solid. If the LED still blinks slowly, please repeat the process from step 2. <p>Remove HEM G5 from an existing Z-Wave Network:</p> <ol style="list-style-type: none"> 1. Power on the HEM, the LED will be solid. 2. Let the primary controller of existing Z-Wave network into remove mode (If you don't know how to do this, refer to its manual). 3. Press the Action Button. 4. If the removing is success, the LED will blink slowly. If the LED is still solid, please repeat the process from step 2.
Press and hold 10 seconds	<p>Reset HEM G5 to Factory Default:</p> <ol style="list-style-type: none"> 1. Make sure the HEM G5 has been connected to the power supply. 2. Press and hold the Action Button for 10 seconds. 3. If the LED starts slow blinking, which indicates the reset is success, otherwise please repeat the process from step 2. <p>Note:</p> <ol style="list-style-type: none"> 1. This procedure should only be used when the primary controller is missing or inoperable. 2. Reset HEM G5 to factory default settings will: <ol style="list-style-type: none"> a), exclude the HEM G5 from the Z-Wave network; b), delete the Association setting, power measure value;

5. Special rule of each command

5.1 Basic Command Class

No Basic mapping is defined for the Device Type. Any received Basic commands will be ignored.

5.2 Association Group Info Command Class

ID	Name	Node count	Profile	Function
1	Lifeline	5	General: Lifeline	Device Reset Locally Notification: Issued when Factory Reset is performed. Meter Report: Issued when Automatic reporting is set.

5.3 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	0x1000 (ICON_TYPE_GENERIC_SUB_ENERGY_METER)
User Icon Type	0x1000 (ICON_TYPE_GENERIC_SUB_ENERGY_METER)

5.4 Manufacturer Specific

Parameter	Value
Manufacturer ID 1	0x00
Manufacturer ID 2	0x86
Product Type ID 1	0x00(EU), 0x01(US), 0x02(AU), 0x1D(CN)
Product Type ID 2	0x02
Product ID 1	0x00
Product ID 2	0x5F

5.5 Multi Channel Command Class

1. For HEM 1 phase version, the Multi Channel Command supports 1 end point, which corresponding to clamp 1.
2. For HEM 2 phase version, the Multi Channel Command supports 2 end points, which corresponding to 2 clamps.
Clamp 1= Endpoint 1.
Clamp 2= Endpoint 2.

3. For HEM 3 phase version, the Multi Channel Command supports 3 end points, which corresponding to 3 clamps.

Clamp 1= Endpoint 1.

Clamp 2= Endpoint 2.

Clamp 3= Endpoint 3.

The Multi Channel CC encapsulates Meter Command Class, which can get the measurement of Watt, KWH, Voltage and Current from the clamps.