



Range Extender 7



Engineering Specification

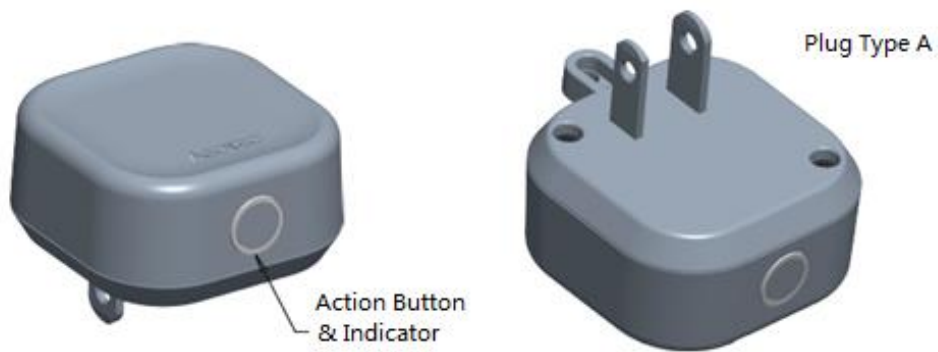
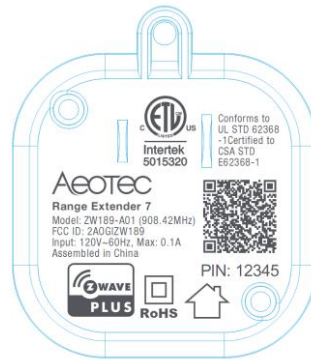
Range Extender 7

Document No.	SPEC-ZW187-A01
Description	This document mainly introduces the new generation AEOTEC Recessed Door Sensor. The content mainly includes its interfaces, accessories, features, specifications, quick start, and software function definition. Range Extender 7 is a Z-Wave Plus v2 Product with #700 development platform. ● Support Security 2 and SmartStart function. ● Support "Over the Air Firmware Updating" ● Determine the installation location and Range Extender 7 will automatically perform its signal repeating and application function.
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1 INTERFACES & ACCESSORIES



Terminology	Description
Action Button	Used for networking and resetting.
Indicator	Used for indicating the current state of the product.
Plug	Used for AC power input.
QR Code	Used for Z-Wave SmartStart Inclusion.

2 FEATURES & SPECIFICATIONS

2.1 Structural Characteristics

Parameter	Value
Product Identifier	ZW189-A01
Dimensions	53.2×46×40mm
Weight	34g
Color	White
Shell Surface Treatment	Frosted(upper shell), Bright fine lines(lower shell)
Shell Fire-proof Level	UL94 V-0
Waterproof and Dustproof	Rated IP20 under IEC 60529
Usage	For indoor use. Used for extender the communication range of Z-Wave Network
Operating Temperature	32~104°F (0~40°C)
Relative Humidity	8%~80%

2.2 Hardware Characteristics

Parameter	Value
Z-Wave Module	ZGM130S037HGN1
Z-Wave TX Power	Max: 13dBm
Effective Radiated Power	-0.315dBm
Plug and Socket Type	Plug Type A for USA
Indicator Light Color	White
Buttons and Connectors	Action Button (x1)
Input Voltage	120VAC, 60Hz
Battery Included	No
Working Current	MAX: 100mA@120VAC, 60Hz
Power Consumption	MAX: 0.6W
Over-Heat Protection	Support
Built-in Sensors	No
Safety Certifications	FCC/ETL

2.3 Software Characteristics

Parameter	Value
Wireless Technology	Z-Wave
Certification Type	Z-Wave Plus v2 Certification
Z-Wave SDK Version	7.11.0.GA (7.11)
Z-Wave Library Type	Enhanced 232 Slave
Z-Wave Role Type	ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON (0x05)
Generic Device Type	GENERIC_TYPE_REPEATER_SLAVE (0x0F)
Specific Device Type	SPECIFIC_TYPE_REPEATER_SLAVE (0x01)
Security Class	Non-Security, S2 Unauthenticated, and S2 Authenticated
SmartStart Compatible	Support
Over The Air (OTA)	Support
Multi Channel Device	No
Association	Support
Factory Reset	Support
Power-down Memory	Support

3 PRODUCT QUICK START

3.1 Important safety information

Please read this Engineering Specification carefully for correct and effective use.

Failure to follow the recommendations set forth by AEOTEC Limited may be dangerous or cause a violation of the law. The manufacturer, importer, distributor, and/or reseller will not be held responsible for any loss or damage resulting from not following any instruction in this guide or in other materials.

3.2 How to install the product

Getting your Range Extender up and running is as simple as plugging it into a wall outlet and adding it to your Z-Wave network.

3.3 How to add the product into Z-Wave network

This product supports Security 2 Command Class. While a Security S2 enabled Controller is needed in order to fully use the security feature. This product 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.

3.3.1 SmartStart Learn Mode

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes after this product being powered on in the network vicinity.

3.3.2 Classic Learn Mode

1. Set your Z-Wave Controller into its 'Add Device' mode in order to add the product into your Z-Wave system. Refer to the Controller's manual if you are unsure of how to perform this step.
2. Make sure the product is powered. If not, plug it into a wall socket and power on; its LED will be slow fade-in fade-out white color all the time.
3. Single-click Action Button; LED starts fast blinking white color for 30s, which indicates entering inclusion mode.
4. If your Z-Wave Controller supports S2 encryption, enter the first 5 digits of DSK into your Controller's interface if /when requested. The DSK can be found on the packaging.
5. If inclusion is successful, LED will become a solid white color for 2 seconds and stay on by default. Now, this product is a part of your Z-Wave home control system. You can configure it and its automations via your Z-Wave system; please refer to your software's user guide for precise instructions.
6. Should its LED go back to slow fade-in fade-out white color, it indicates inclusion is unsuccessful. Contact us for further support if needed.

Note:

If Action Button is clicked again during the Classic Learn Mode, the inclusion will exit. At the same time, LED will extinguish immediately, and then become slow fade-in fade-out white color. Device will auto activate SmartStart in 30s.

3.4 How to remove the product from Z-Wave network

1. Set your Z-Wave Controller into its 'Remove Device' mode in order to remove the product from your Z-Wave system. Refer to the Controller's manual if you are unsure of how to perform this step.

2. Make sure the product is powered. If not, plug it into a wall socket and power on.
3. Single-click Action Button; LED will become a flashing white color for 2 seconds, which indicates entering exclusion mode.
4. If the exclusion is successful, LED will change to the default unpaired state which is slow fade-in fade-out white color.
5. Should its LED stay ON or OFF (depending if LED is enabled or disabled), it indicates the exclusion is unsuccessful. Contact us for further support if needed.

3.5 How to factory reset

If the primary controller is missing or inoperable, you may need to reset the device to factory settings.

Make sure the product is powered. To complete the reset process manually, press and hold the Action Button for at least 20s, and Factory Reset is performed when released. The LED will become slow fade-in fade-out white color, which indicates the reset operation is successful. Otherwise, please try again. Contact us for further support if needed.

Note:

1. This procedure should only be used when the primary controller is missing or inoperable.
2. Factory Reset will:
 - (a) Remove the product from Z-Wave network;
 - (b) Delete the Association setting;

4 SOFTWARE FUNCTION DEFINITION

4.1 User Behavior Interaction

There is only white color for the indicator, and different action will cause Flash / ON / OFF mode.

LED Status includes ON (default) and OFF, and can be alternated when double-click Action Button. It will NOT modify when being included or excluded of a Z-Wave network, but will reset to default when Factory Reset is performed.

User behavior	Out of the Z-Wave network	In the Z-Wave network
Power OFF	Cut the power.	Cut the power.
Power ON	Send Inclusion Requests for SmartStart. LED starts fast blinking white light for 1s when device is powered on, and then become slow fade-in fade-out white color, which means it's out of the Z-Wave network. SmartStart inclusion starts after device is powered on, and LED changes to a fast white blink after controller beginning to response to its SmartStart inclusion request. If inclusion is successful, LED will become a solid white color for 2 seconds and stay on by default. Should its LED go back to slow fade-in fade-out white color, it indicates inclusion is unsuccessful.	Send Inclusion Requests for SmartStart. LED starts fast blinking white light for 1s when device is powered on, and then become LED Status, which means it's in the Z-Wave network.
Single-click Action Button	Send Node Info for Classic Learn Mode (Inclusion/Adding). When single-click Action Button, LED starts fast blinking white color for 30s, which indicates entering inclusion mode. If inclusion is successful, LED will become a solid white color for 2 seconds and stay on by default. Should its LED go back to slow fade-in fade-out white color, it indicates inclusion is unsuccessful. Exit Classic Learn Mode (Inclusion/Adding). If Action Button is clicked again during the Classic Learn Mode, the inclusion will exit. At the same time, LED will extinguish immediately, and then become slow fade-in fade-out white color. Device will auto activate SmartStart in 30s.	Send Node Info for Classic Learn Mode (Exclusion/Removing). When single-click Action Button, LED will become a flashing white color for 2 seconds, which indicates entering exclusion mode. If the exclusion is successful, LED will change to the default unpaired state which is slow fade-in fade-out white color. Should its LED stay ON or OFF (depending if LED is enabled or disabled), it indicates the exclusion is unsuccessful.
Double-click Action Button	Reserved.	Alternate the LED Status. - ON /LED enable (default) - OFF/LED disable
Press and hold Action Button for [1, 2s)	Reserved.	Reserved. LED is OFF when the Action Button is pressed, and goes back to LED Status when released.
Press and hold Action Button for [2, 5s)	Reserved.	Reserved. LED becomes slow pulsing white color when the Action Button is pressed, and goes back to LED Status when released.
Press and hold Action Button for [5, 10s)	Reserved.	Test communication quality. LED becomes faster pulsing white color when the Action Button is pressed, and quickly flash white color when released,

		indicating start to test communication quality between the product and Node 1. At the end of the test, product will send Powerlevel Test Node Report to Gateway according to the communication quality.
Press and hold Action Button for [10, 20s)	Reserved.	Reserved. LED flashes even faster pulsing white color when Action Button is pressed, and goes back to LED Status when released.
Press and hold Action Button for [20, ∞)	Reserved.	Factory Reset. LED will become solid white color when Action Button is pressed, and Factory Reset is performed when released. The device will issue a Device Reset Locally Command via its Lifeline to notify the Lifeline destination that the device has been reset to its factory default state. And it will perform the reset operation regardless of whether or not the delivery of the Device Reset Locally Notification is successful. LED will become slow fade-in fade-out white color, which indicates the reset operation is completed. Otherwise, please try again.

4.2 Supported Command Classes

In order to increase interoperability with legacy controlling nodes, this device can reply to Manufacturer Specific Get Commands received non-securely if it was granted the S0 network key as its highest Security Class.

Command Class	Version	Required Security Class
ZWAVEPLUS_INFO	2	None
ASSOCIATION	2	Highest granted Security Class
MULTI_CHANNEL_ASSOCIATION	3	Highest granted Security Class
ASSOCIATION_GRP_INFO	3	Highest granted Security Class
TRANSPORT_SERVICE	2	None
VERSION	3	Highest granted Security Class
MANUFACTURER_SPECIFIC	2	Highest granted Security Class
DEVICE_RESET_LOCALLY	1	Highest granted Security Class
INDICATOR	3	Highest granted Security Class
POWERLEVEL	1	Highest granted Security Class
SECURITY_2	1	None
SUPERVISION	1	None
FIRMWARE_UPDATE_MD	5	Highest granted Security Class

4.3 Z-Wave Plus Info

Parameter	Value
Z-Wave Plus Version	2
Role Type	5 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x1B00 (ICON_TYPE_GENERIC_REPEATER)
User Icon Type	0x1B00 (ICON_TYPE_GENERIC_REPEATER)

4.4 Manufacturer Specific

Parameter	Value
Manufacturer ID 1	0x03
Manufacturer ID 2	0x71
Product Type ID 1	0x01 (US)
Product Type ID 2	0x04
Product ID 1	0x00
Product ID 2	0xBD (189)

4.5 Version

Parameter	Value
Z-Wave Protocol Library Type	0x03
Z-Wave Protocol Version	0x07
Z-Wave Protocol Sub Version	0x0B
Firmware 0 Version	Z-Wave Chip Major Firmware Version
Firmware 0 Sub Version	Z-Wave Chip Minor Firmware Version
Hardware Version	0xBD (189)
Number of firmware targets	0x00

4.6 Indicator

Indicator ID		Property ID	
Node Identify	0x50	On Off Period	0x03
		On Off Cycles	0x04
		On time within an On/Off period	0x05

4.7 Association Group Info

Root device

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

Association Group Name Report

Group	Name	ASSIC Code
Group 1	Lifeline	01 08 4C 69 66 65 6C 69 6E 65

Association Group Info Report

Group	Profile	Vg1
Group 1	General: Lifeline	01 01 00 00 01 00 00 00

Association Group Command List Report

Group	Command Class	Command	Code
Group 1	COMMAND_CLASS_DEVICE_RESET_LOCALLY	DEVICE_RESET_LOCALLY_NOTIFICATION	5A 01

4.8 Basic Command Class mapping

Basic CC does not map to any Command Class.