Ring Alarm Extender Manual

Description and Features

The Ring Extender is a Z-Wave range extender with battery backup. It is a Security Enabled Z-Wave Plus Product, and requires a security-enabled Z-Wave Plus controller to make use all of its features. It will repeat Z-Wave commands from all nodes in the network, from any certified Z-Wave device manufacturer. Any non-battery powered Z-Wave device will also repeat signals in a Z-Wave network.

SmartStart

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 of being switched on in the network vicinity.

QR Code and DSK Label

The QR Code and DSK label is shown on the outside packaging of the box. The full DSK string is also located in the leaflet inside the packaging. The DSK is a unique identifier for the device used for SmartStart inclusion. The same DSK is printed in the form of a QR code on the back of the device as well.

Technical Specifications

Radio protocol	Z-Wave(500 series)
Z-Wave SDK	6.81
Encryption	S2 (using 64-character hex device-specific ID)
Power Supply	AC 110V 60 hz
Battery Specs	3.7V DC 1100mAh
Battery Life	22 Hours
Working current	Max: 20 mA
Operating temperature	14 - 122 °F (-10 - 50 °C)
Radio frequency	908.4 MHz US
Z-Wave Range	250' +
LED Color	Blue
Package Contents	Extender, Battery, Set-Up Guide
Certifications	FCC, IC, Z-Wave+, RoHS, WEEE, ETL based on UL60950
Certifications (future)	(tested by ETL) ○ UL 1023 Standard for Household Burglar-Alarm System Units ○ UL 985 Standard for Household Fire Warning System Units ○ UL 1635 Standard for Digital Alarm Communica- tor System Units ○ UL 94 Standard for Safety of Flammability of Plas- tic Materials for Parts in Devices and Appliances ○ ULC 1023 Preliminary Standard For Household Burglar Alarm System Units
Dimensions	Including notch excluding plug: 89.6X47X29.4mm Excluding notch and plug: 81X47X29.4mm
Button	Action button

Note:

This is a SmartStart enabled product which 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 of being switched on in the network vicinity. This product can also be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturer.

Extender LED Behavior

Color	Event	Behavior
Blue	In Pairing Mode	Long Blink pattern repeated indefinitely or until paired
	Paired successfully	LED Off
	Device powers on (and enters inclusion mode)	Long Blink pattern repeated indefinitely or until paired
	Factory Reset	Flash 250ms on / 250ms off repeat 10 times
	Enter Exclusion Mode	5 short blinks upon exclusion, then "Device is not yet paired" pattern resumes after exclusion

Short blink = 500ms on + 500ms off Long blink = 1s on + 1s off

Extender Behavior

Action	Condition	Result
Power On	Range Extender Not Yet Included in System, and Controller is in Inclusion Mode	Device enters smart start (inclusion) mode.
	Range Extender Already Included in System	Device powers on.

Push Button once (short press)	Range Extender Already Included in System	Device sends node info to Group 1
	Range Extender Already Included, and Controller is in Exclusion Mode	Device is excluded from the system and removes the Home ID from its memory
	Range Extender Not Yet Included in System	Device cancels Smart Start and enters regular (S2) inclusion mode indefinitely and includes into whichever network is also in inclusion mode.
Press and hold the button for TEN seconds	Range Extender Already Included in System	Device will be reset to factory settings, and a DEVICE_RESET_LOCALLY command will be sent to Group 1
	Any condition (as long as the device has power)	The device's memory will erase to factory default settings and any associations, configuration parameters, and other locally saved data will be lost

Inclusion & Exclusion

Inclusion (Add to System) - Smart Start

1. For proper inclusion, bring the Range Extender to the final location where it will be used*.

2. Follow the instructions for your Z-Wave controller to enter inclusion mode.

3. Supply power to the Range Extender to begin Smart Start (inclusion) mode.

4. The device will enter inclusion mode indefinitely and the LED Indicator will blink slowly (1 flash/2 sec) until it's included in a system.

Upon successful inclusion, the LED Indicator will stop blinking.

Inclusion (Add to System) - S2

1. For proper inclusion, bring the Range Extender to the final location where it will be used*.
2. Follow the instructions for your Z-Wave controller to enter inclusion mode.
3. Supply power to the Range Extender and then press the button once to begin inclusion mode using S2 encryption.
4. The device will enter inclusion mode indefinitely and the LED Indicator will blink slowly (1 flash/2 sec) until it's included in a system.

Upon successful inclusion, the LED Indicator will stop blinking.

Exclusion (Remove from System)

Follow the instructions for your Z-Wave Certified Controller to enter exclusion mode. When prompted by the controller:

1. Make sure the Range Extender is powered on.
2. Press the Button once.

Upon successful exclusion, the LED Indicator blink quickly five times and then blink five times quickly every minute.

*For non Z-Wave Plus networks, please consult the owner's manual for your primary controller to determine the best method and location for adding the Range Extender to your Z-Wave network.

Resetting the Extender

If needed, the Range Extender can be reset locally by following these steps. Only do this if your Z-Wave controller is missing or otherwise unreachable. Beware that resetting your device will disconnect it from the system:
1. Make sure that your Range Extender is powered on.
2. Press and hold the Button for 10 seconds.
The Range Extender's memory will be erased to factory settings and the LED Indicator will blink very quickly six times and then blink once every half second until it is included in a system.

Note: Use this procedure only in the event that the network primary controller is missing or otherwise inoperable.

Physical Installation

The Range Extender can be plugged directly into a standard power outlet. Include the Range Extender into your Z-Wave network and make sure it can communicate from the installation location before continuing further.

- Installation On the Power Outlet (Secured with Screw)
  1. Unscrew the wall plate screw adjacent to the outlet the Range Extender will be plugged into.
  2. Plug in the Range Extender, making sure the Screw Flange is directly over the wall plate's screw hole.
  3. Secure the Range Extender in place by replacing the wall plate screw.

- Installation On the Power Outlet (Unsecured)
  1. Plug in the Range Extender.

Command Class - (Security Level)	Notes
Device Reset Locally V1 (5A) - (S2)	-
Node Information Frame (NIF) - (None)	The node Information Frame (NIF) advertises the device's Generic Device Type, Specific Device Type, and Role Type. Generic Device Type: GENERIC_TYPE_REPEATER_SLAVE Specific Device Type: SPECIFIC_TYPE_REPEATER_SLAVE Role Type: ROLE_TYPE_SLAVE_ALWAYS_ON
Security Class (9F) - (None)	WILL NOT request the S2 Access Control Security Class WILL request the S2 Authenticated Security Class WILL request the S2 Unauthenticated Security Class A security-enabled Z-Wave Plus controller is required to fully utilize device features.
Powerlevel V1 (73) - (S2)	-
Battery V1(80) - (S2)	The Battery Report interval will be 70 minutes by default and is configurable using a configuration parameter.
Association Group Information V1 (59) - (S2)	
Firmware Update Meta Data (7A) - (S2)	
Version V2 (86) - (S2)	Returned Value: 03 04 21 01 11 1E 00 Z-Wave Library Type: 03 (Enhanced Slave) Protocol Version: 04 21 Protocol Sub-Version: 01 11 Application Version: 1E Application Sub-Version: 00

Manufacturer Specific V2 (72) - (S2)	Returned Value: 03 46 04 01 01 01 Manufacturer ID: 03 46 Product Type: 04 01 Product ID: 01 01 Device specific get has serial number, of the following format: Serial Number Format: BHRP V YY WW DM XXXXXX V: Ring hub Version (right now it's 1, we will let you know if/when it chang- es) YY: Year of manufacture WW: week number of manufacture XXXXXX: incremented serial number Example: 3,245th Dome first version extender built in the 36th week of 2017 = BHRP11736DM003245

Compatible Command Classes

Command Class	Notes
Z-Wave Plus Info V2 (5E) - (S2)	Returned Value: 01 05 00 1B 00 1B 00 Z-Wave Plus Version: 01 Role Type: 05 (Always On Slave) Node Type: 00 (Z-Wave Plus Node) Installer Icon Type: 1B 00 (Repeater) User Icon Type: 1B 00 (Repeater)
Association V2 (85) - (S2)	Group 1 Group 1 is the "Lifeline" group, which can hold five devices. The Range Extender repeats all signals it receives to this group. The Range Extender also sends this group Battery Reports, Power Manage- ment notifications, and a Device Reset Locally notification to remove itself from the Z-Wave network.

Command Class	Notes

Notification V4 (71) – (S2)	The Range Extender sends Notification Reports to update the Primary Controller of changes in power status (e.g. battery is charging, AC power is disconnected, etc.)
	
	Returned Value: 00 00 00 FF 07 XX YY ZZ
	
	V1 Alarm Type: 00 (Unsupported)
	V1 Alarm Level: 00 (Unsupported)
	Reserved: 00 (Reserved)
	Notification Status: FF (Unsolicited Reporting is Enabled)
	Notification Type: 08 (Power Management)
	Event:
	  AC Power Disconnected—02 (AC mains disconnected)
	  AC Power Connected—03 (AC mains re-connected)
	  Battery is Charging—0C (Battery is Charging)
	  Battery is not Charging—00 (Event Inactive)
	Sequence/Reserved/Event Parameters Length: 00
	Notification Event Parameters: 00 (No Event Parameters)

Configuration V1 (70) – (S2)	See ""Configuration" Command Class Parameters" on page 16.

"Configuration" Command Class Parameters

Configuration parameters are sent using a standard syntax to ensure interoperability between all manufacturers' products. All values are represented using the hexadecimal number system.

Typical syntax is as shown below. Note that the value sent must be the exact size, in bytes, as accepted by the setting. The "extra" spaces should be filled with zeros (see the "value" column below.)

Example Configuration Parameter: 02 02 00 0A

Param #	Size	Value
02 (Param #2)	02 (2 Bytes)	00 0A (10)

Param #	Size	Name	Available Values (In HEX)	Default Value	Description
01	01	Battery Report Interval	04 ~ 46	46	This parameter is the number of minutes between heartbeats. Heartbeats are automatic battery reports on a timer after the last event.
02	01	Supervision Timeout	05 ~ 32	0F	The number of seconds waiting for a supervision report in response to a supervision get from the sensor.
03	01	Supervision Retry	00 ~ 05	01	Number of application level retries attempted for messages either not ACKed or messages encapsulated via supervision get that did not receive a report.
04	01	Supervision Back Off	01 ~ 3C	05	The number base seconds used in the calculation for sleeping between retry messages.
05	01	Supervision Battery Report (one in N)	00 ~ 1F	05	The number of battery report messages sent before being encapsulated in supervision.
06	04	Build Number	N/A	Build number	The Jenkins build number for this FW