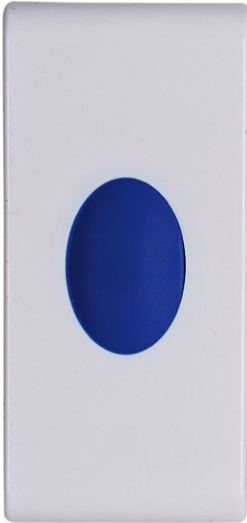




NESS Z-WAVE™ SINGLE BUTTON (ZWSB)



DRAFT 4

QR image

- Single Button Scene Controller.
- Control Z-Wave devices or scenes
- Compatible with other Z-Wave certified devices from other manufacturers.
- Supports Z-Wave network Security Mode S0, S2 Unauthenticated and S2 Authenticated.
- Completely wireless with Z-Wave communication.
- Supports SmartStart inclusion.
- Supports firmware Over The Air (OTA) updates.
- Battery powered device with low battery report and indication
- Easy to mounted on desired surface indoor

INSTALLATION & PROGRAMMING NOTES

Ness Corporation manufacturing processes are accredited to ISO9001 quality standards and all possible care and diligence has been applied during manufacture to ensure the reliable operation of this product. However there are various external factors that may impede or restrict the operation of this product in accordance with the product's specification.

These factors include, but are not limited to:

1. Erratic or reduced radio range. Ness radio products are sophisticated low power devices, however the presence of in-band radio signals, high power transmissions or interference caused by electrical appliances such as wireless routers, cordless phones, computers, TVs and other electronic devices may reduce the range performance. While such occurrences are unusual, they are possible. In this case it may be necessary to either increase the physical separation between the Ness receiver and other devices or if possible change the radio frequency or channel of the other devices.
2. Unauthorised tampering, physical damage, electrical interruptions such as mains failure, electrical spikes or lightning.



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For products:
ZA-116011 Ness Z-Wave Single Button (ANZ)
ZU-116011 Ness Z-Wave Single Button (US)

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Specifications may change without notice.



INTRODUCTION

The Ness Z-Wave Single Button (ZWSB) is a simple Z-Wave scene controller that allows you to control devices through the Z-Wave network and run various scenes defined in your Z-Wave gateways.

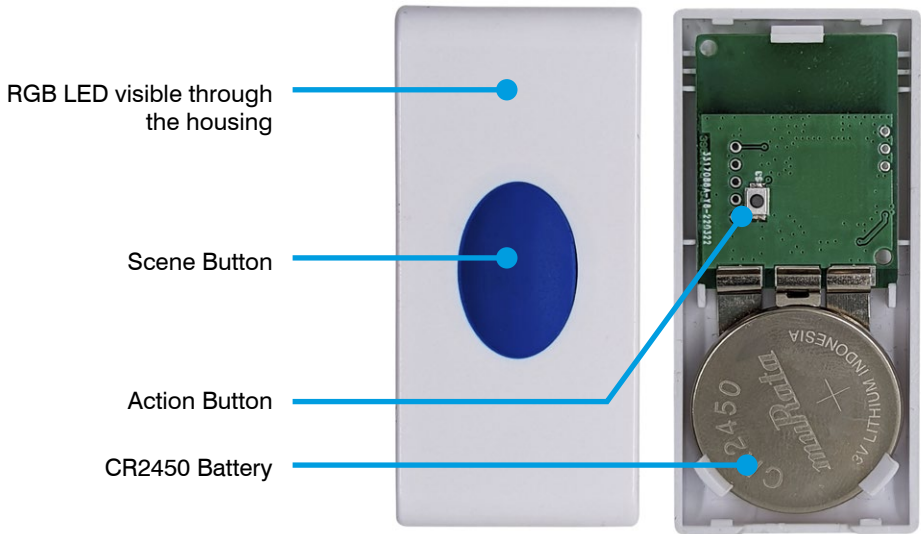
Three different scenes that can be triggered by click, held down and release the button. It also provide switch ON/OFF and dimming functions through the association groups.

The ZWSB equipped with Z-Wave 700 series chip and Z-Wave library SDK V7.16.3. It is a battery powered device which can be quickly and easily installed into Z-Wave network at any location within range.

All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

- Supports SmartStart inclusion
- Supports the Over the Air firmware upgrade (OTA).
- RGB LED status indication
- Low current draw - powered by a CR2450 battery.
- Low battery warning indication and report
- Z-Wave Plus™ V2 Certified Device

OVERVIEW



INSTALLATION

The ZWSB body should be affixed to the intended surface with the self adhesive pads provided.

Ensure that all surfaces are dust free and clean of oily residue.

Installation on metal surfaces can reduce radio range.

BATTERY

ZWSB is powered by a 3V CR2450 lithium battery.

A low battery warning message is sent when the battery voltage drops to the level set by Configuration Parameter #6.

Battery life is affected by the number of transmissions per day and will be shorter when used on high traffic doors or windows.

Slow Flashing Red LED indicates low battery condition.

SCENE BUTTON

SCENE BUTTON	LED	Central Scene notification to Association Group 1	Commands to Association Group 2 or 3
Press Once	Green LED ON for 1sec	Scene Number 0x01 Key Attributes 0x00	Send Basic Set command to Association Group 2 Configurable by CPN1
Press & Hold	Blue LED ON for 1sec	Scene Number 0x01 Key Attributes 0x02	Switch Multilevel Start Level Change command to Association Group 3. Configurable by CPN4
Release	Green LED & Blue LED ON for 1sec	Scene Number 0x01 Key Attributes 0x01	Switch Multilevel Stop Level Change command to Association Group 3 Configurable by CPN4

ACTION BUTTON

1. INCLUSION/EXCLUSION MODE

Press once to enter Inclusion/Exclusion mode.

Red LED will be flashing.

While in Inclusion/Exclusion mode pressing the Action Button once more will exit Inclusion/Exclusion mode (provided that the device is not actively in the Z-Wave inclusion process).

2. WAKE-UP

To manually wake up the ZWSB, press and hold the Action Button for 3 seconds until the Blue LED turns on, then release the button.

3. FACTORY DEFAULT

To reset Ness ZWSB to factory default settings, press and hold the Action Button for at least 20 seconds. Release the button when the Blue LED turns off (20 seconds). The Green LED will flash once to indicate successful reset.

Releasing the Action Button while the Blue LED is on cancels the reset process.

LED

LED	BEHAVIOUR	INDICATES
Green	Stay on for 2 seconds	The device is just powered on
	Stay on for 2 seconds	Device has just been completely added into a Z-Wave network
	Stay on for 2 seconds	Device has been manual reset to factory default
	Stay on for 1 seconds	Clicked the Scene Button and trigger the Key Pressed 1 time central scene event
Red	Blink fast (ON 100ms, OFF 100ms)	When the device is in inclusion/exclusion mode.
	Blink slow (ON 100ms, OFF 400ms)	When a low battery level has been detected.
	Device indicator	Control by Indicator Command Class The device's identifier is the Red Led light.
Blue	Stay on for 1 seconds	Held down the Scene Button and trigger the Key Held Down central scene event
	The Blue LED lit when the Action Button has been pressed and held over 3 seconds; and off when the Action Button has been released within 20 seconds.	Press and hold down the Action Button for over 3 seconds to wake up the device.
	The Blue LED lit when the Action Button has been pressed and held over 3 seconds. It will continue stay on as long as Action Button been pressed until 20 seconds.	Press and hold down the Action Button for more than 3 seconds and continue hold down for other 20 seconds until the Blue LED turn off, release the Action Button will set the device to factory default. The Green LED lit for 2 seconds when factory default completed, and report a DEVICE_RESET_LOCALLY command

ADDING THE DEVICE INTO A Z-WAVE NETWORK

INCLUSION

To add the device into the Z-Wave network:

- 1) Power on device and ensure it has been factory defaulted.
- 2) Set the primary controller into inclusion mode.
- 3) Click the Action Button once to enter inclusion mode. Red LED: fast flashing.
Inclusion mode can be cancelled by clicking the Action Button again before the controller starts inclusion mode. Red LED stops flashing.
- 4) If your Z-Wave controller supports S2 Access encryption and DSK, enter the first 5 digits of the DSK located at bottom of the QR image.
- 5) If Inclusion is successful:
Red LED stops fast flashing.
Green LED turns on for 2 seconds.

REMOVING THE DEVICE FROM A Z-WAVE NETWORK

The Exclusion process is the same as Inclusion however your Z-Wave controller must be in Exclusion mode.

You may need to refer to your Z-Wave gateway/controller's instructions for removing devices.

EXCLUSION

To remove the device from the Z-Wave network:

- 1) The device is powered
- 2) Set the primary controller into Exclusion mode.
- 3) Click the Action Button once.
- 4) If Exclusion is successful:
Red LED stops fast flashing.
Green LED turns on for 2 seconds.

ADDING WITH SmartStart*

Ness Z-Wave Single Button (ZWSB) is a SmartStart enabled device allowing it to be added into a Z-Wave network by scanning its Z-Wave QR Code 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.

**Requires a SmartStart compatible controller and app. Ness Z-Wave ZWSB must be within network range.*



Scan the QR code on the rear of the device

TO FACTORY DEFAULT

Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Reset the device to factory Default:

- 1) The device is powered
- 2) Press and hold the action button until the Blue LED turns on. Release the button when the LED turns off (at least 20 seconds). The Green LED will turn on for 2 second to indicate successful reset.

Device reset is cancelled if you release the action button while the Blue LED is on.

After the device been reset to factory default settings:

- If the device was included within a Z-Wave network, the device will send a Device Reset Locally message to the main controller.
- The device will be excluded from existing Z-Wave networks.
- Any configured Association setting, power measure value, Scene Configuration settings will be reset.
- Any Configured Parameter Number entries will be set to their default values.

Z-WAVE SETUP

DEVICE TYPE		
Basic Device Class:	BASIC_TYPE_ROUTING_SLAVE	0x04
Generic Device Class:	GENERIC_TYPE_WALL_CONTROLLER	0x18
Specific Device Class:	SPECIFIC_TYPE_NOT_USED	0x00

Z-WAVE PLUS 2 INFO			
Role Type	Node Type	Installer Icon Type	User Icon Type
0x06 Reporting Sleeping Slave (RSS)	0x00 Z-Wave Plus node	0x1600 ICON_TYPE_GENERIC_ WALL_CONTROLLER	0x1600 ICON_TYPE_GENERIC_ WALL_CONTROLLER

ASSOCIATION GROUP INFORMATION			
Group ID	Group Name	Max Nodes	Description
1	Lifeline	5	BATTERY_REPORT, CENTRAL_SCENE_NOTIFICATION, DEVICE_RESET_LOCALLY_NOTIFICATION, INDICATOR_REPORT The above commands will send to all nodes listed in this association group
2	On/Off	5	BASIC_SET (On/OFF in value 0xFF/0x00) Once the scene button has pressed, the above command will send to all nodes listed in this association group. It provide switch On/Off functions for the nodes listed in this association group.
3	Dimmer	5	Key Held Done: SWITCH_MULTILEVEL_START_LEVEL_CHANGE (increase/decrease alternately) Once the scene button has been held down, the above command will send to all nodes listed in this association group. Key Released: SWITCH_MULTILEVEL_STOP_LEVEL_CHANGE After button is released from held down, the above command will send to all nodes listed in this association group. It provide dimming functions for the nodes listed in this association group.

Z-WAVE SETUP

MANUFACTURER			
Model	Manufacturer ID	Product Type	Product ID
ZA-116011	0x0189 Ness	0x0204 0x02 – ANZ, 0x04 - Z-Wave plus 2	0x0601 0x06 – Wall Controller, 0x01 - Hardware V1
ZU-116011	0x0189 Ness	0x0104 0x01 – US, 0x04 - Z-Wave plus 2	0x0601 0x06 – Wall Controller, 0x01 - Hardware V1

VERSION				
Model	Protocol Library	Protocol	Firmware	Hardware
ZA-116011	0x03 Slave_Enhance_232_Library	0x0710 SDK V7.16	0x0101 V1.1	0x01 Hardware V1
ZU-116011	0x03 Slave_Enhance_232_Library	0x0710 SDK V7.16	0x0101 V1.1	0x01 Hardware V1

FIRMWARE ID	
Model	Firmware ID
ZA-116011	0x2461 2 – ANZ, 4 - Z-Wave plus 2, 0x06 – Wall Controller, 1 - Hardware V1
ZU-116011	1 – US, 4 - Z-Wave plus 2, 0x06 – Wall Controller, 1 - Hardware V1

CENTRAL SCENE NOTIFICATION		
Action Event	Key Attributes	Scene Number
Key Pressed 1 time	0x00	0x01
Key Held Down	0x02	0x01
Key Released	0x01	0x01

BASIC SET			
Event	Event Type	Value	CPN#
Switch On	Basic Set	0xFF	1
Switch Off Delay	Basic Set	0x00	1, 2

Z-WAVE SETUP

SWITCH MULTILEVEL START LEVEL CHANGE	
Parameter	Value
Primary Switch Up/Down	Increase/Decrease level alternately (0x00/0x01)
Ignore Start Level	True. Ignore Start Level 0x01. Not configurable.
Secondary Switch Inc/Dec	No Up/Down motion 0x03. Not configurable.
Primary Switch Start Level	Ignore Start Level. Not configurable.
Duration	Configurable by CPN1. Range: 0 ~ 120 seconds. Default: 2 seconds
Secondary Switch Step Size	To be ignored. Not configurable.

BATTERY LEVEL REPORTS				
Event	Command Class	Command	Value	CPN#
Battery Level	Battery	Battery Report	%	7
Low Battery	Battery	Battery Report	0xFF	6

INDICATOR COMMAND CLASS		
Command Class	Indicator ID	Property ID
Indicator	Node Identify 0x50	0x03 On/Off Periods
		0x04 On/Off Cycles
		0x05 On time within an On/Off period

DEVICE MANUAL FACTORY RESET	
Event	Command Class Command
Device defaulted manually	Device Reset Locally Notification

WAKE UP NOTIFICATION	
Event	Command Class Command
Device wake up	Wake up notification

CONFIGURATION PARAMETERS TABLE				
Parameter (Hex/ASCII)	Description	Default Value	Valid Values	Size (bytes)
0x01 / 1	<p>The Command to 2nd association group</p> <p>The Basic Set command to 2nd association group This parameter defines how the Basic Set commands send to the nodes listed in 2nd association group after a Key Pressed 1 time scene event has triggered. 0 - No Basic Set commands send; 1 - Basic Set ON/OFF alternately; 2 - Basic Set ON with delay off; 3 - Basic Set OFF.</p>	1	0~3	1
0x02 / 2	<p>BASIC_SET Off Delay</p> <p>The period of time in seconds to send Basic Set OFF command to Association Group 2 after BASIC Set ON command has reported. This parameter take affected only the option 2 has been selected in Configuration Parameter 1.</p> <ul style="list-style-type: none"> • 10 - disable BASIC Set OFF report; • Any other valid value - time in seconds to send BASIC Set OFF command. 	10	0 ~ 3600	2
0x03 / 3	<p>The Key Held Down Duration</p> <p>This parameter defines the duration that the key need to be pressed and held down to trigger the Key Held Down Scene event. The value is in seconds.</p>	2	2 - 10	1
0x04 / 4	<p>The Command to 3rd association group</p> <p>The Switch Multilevel commands send to 3rd association group This parameter defines how the Start Level Change and the Stop Level Change commands send to the nodes listed in 3rd association group.</p> <ul style="list-style-type: none"> • 0 - No any Start Level Change/Stop Level Change commands send; • 1 - Send the Start Level Change/the Stop Level Change commands when the Key Held Down/the Key Released scene event has triggered; • 2 – Send Start Level Change command when the Key Held Down. It does not sent the Stop Level Change command when the Key Released. 	1	0 ~ 2	1

CONFIGURATION PARAMETERS TABLE				
Parameter (Hex/ASCII)	Description	Default Value	Valid Values	Size (bytes)
0x05 / 5	<p>The duration of multilevel start level change</p> <p>Setting the duration value of the command switch multilevel This parameter defines the duration in Switch Multilevel Start Level Change command. The value is in second</p> <ul style="list-style-type: none"> • 0 - Instantly transition from the current value to the new target value; • 1 ~ 120 - The time transition should take from the current value to the new target value. 	2	0 ~ 120	1
0x06 / 6	<p>Low battery setting</p> <p>Report battery low warning message when battery level reaches this value in percentage. Range: = 10 ~ 50 (10% to 50%); The battery level range: 100% - 3V; 0% - 1.8V.</p>	10	10 ~ 50	1
0x07 / 7	<p>Battery Scheduled Report Interval</p> <p>The battery level scheduled report interval time is based on every 30 minutes per kick. The value N related to the time in minutes is N x 30 minutes. Range: 0~120. Default: 12 (12x30 =360 minutes). Value = 0 - Disable Battery level scheduled report.</p>	12	0 ~ 120	1

Z-WAVE SETUP

COMMAND CLASSES SUPPORTED			
Item	Command Class	Version	Required Security Class
1	Z-Wave Plus Info	2	None
2	Association	2	*
3	Multi-Channel Association	3	*
4	Association Group Information	3	*
5	Transport Service	2	None
6	Version	3	*
7	Manufacturer Specific	2	*
8	Device Reset Locally	1	*
9	Configuration	4	*
10	Indicator	3	*
11	Powerlevel	1	*
12	Battery	1	*
13	Security 0	1	None
14	Security 2	1	None
15	Central Scene	3	*
16	Wake Up	2	*
17	Supervision	1	None
18	Firmware Update Meta Data	5	*
19	Application Status	1	None

Controlled Command Classes:

- Switch Binary
- Switch Multilevel

* Supports Security S0, S2
Unauthenticated and S2 Authenticated

TERMINOLOGY

Inclusion - The process of adding a node to the Z-Wave network.

Exclusion - The process of removing a node from the Z-Wave network.

Association - is a control relationship between a controlling device and a controlled device.

OTA - Over The Air, used for wireless transfer of firmware images for updating a device.

QR Code - 2D barcode format that can contain large amounts of information in a small square of encoded blocks resembling a random checkerboard pattern. In Z-Wave, it is used to represent the S2 public part of the DSK on a device, as well as additional information needed for the inclusion process.

Security S2 - Z-Wave's unique security model ensuring secure inclusion and secure communication in the 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

DSK - This Device Specific Key can be compared against the Z-Wave UI, PC Controller dialog box, or other Controller UI. If needed, the first decimal group of the DSK can be typed in for S2 secure inclusion.

SPECIFICATIONS

Product Name	Ness Z-Wave Single Button ZWSB	
Frequency	ZA-116011 ZU-116011	921.4 MHz for ANZ Region 908.42 MHz for US Region
Firmware Version	ZA-116011 ZU-116011	V1.1.1 V1.1.1
Brand Name	Ness	
Product Line	On/Off Switches/Devices	
Product Description	Scene Controller	
Product Type	Wall Controller	
Role Type	Reporting Sleeping Slave (RSS)	
Z-Wave Plus V2 Certification No		
Z-Wave Compatibility	Z-Wave Plus V2 certified controllers	
Z-Wave Security Product	<p>This device is a security enabled Z-Wave product and is able to use encrypted Z-Wave messages to communicate to other security enabled Z-Wave products.</p> <p>The security versions supported:</p> <ul style="list-style-type: none"> • Security 0 • Security 2 Unauthenticated • Security 2 Authenticated <p>A Security Enabled Z-Wave Controller must be used in order to include the device in Security mode</p>	
Z-Wave Radio Range	40m	
Application	Indoors only	
Visual Indicator	RGB LED	
Battery	1 x CR2450 3V	
Current, Standby/Working	<4uA / <13mA	
Operating Temperature	-10°C to 50°C	
Dimensions	60(H) x 30(W) x 8(D) mm	

