Z-Wave Secondary Keypad Technical Manual

M/K: KP01

Revision 2

Product Overview

The wireless keypad is a secondary control device for users to arm and disarm their systems in a location other than their main screen or hub. The keypad is also used to signal our monitoring center in the case of an emergency, and it displays the current state of the system as well (disarmed, armed stay, or armed away).

Product Specification

- Indoor use only
- Operating Frequency: 908.42Mhz, 916Mhz
- Operating Temperature: 32°f to 120°f
- Battery Type: 4xAA
- Battery Life: 1 year (approximate based on usage)
- Z-Wave Plus V Certified
- S2 Encryption
- Smart Start Enabled

What is Z-Wave?

The Z-Wave protocol is an interoperable, wireless, RF-based communications technology designed specifically for control, monitoring and status reading applications in residential and light commercial environments. Mature, proven and broadly deployed (with over 35 million products sold worldwide), Z-Wave is by far the world market leader in wireless control, bringing affordable, reliable and easy-to-use 'smart' products to many millions of people in every aspect of daily life. Certified Z-Wave devices regardless of

manufacturer can work together to form a Z-Wave mesh network. Always on Z-Wave devices can act as repeaters in the mesh increasing range and redundancy.

For a more complete look at Z-Wave technology for non-technologists, and to learn more about Z-Wave's role as a key enabling technology for the Internet of Things and connected objects, please visit z-wave.com.

Definitions

- Panel or Controller are used interchangeably here and is what you are pairing the Keypad with.
- Device Specific Key (DSK) – PIN Code and QR-Code Used for inclusion and to setup encrypted S2 communication.
- S2 – Secure Communication Technology.
- Smart Start – New method for easy inclusion.
- Inclusion / Adding / Pairing – Adding to a device to a Z-Wave network.
- Exclusion / Removal / Unpairing – Removing a device from a Z-Wave network or at least unpairing a device from a network that it had been added to previously.
- Node Info Frame – Used for inclusion/Exclusion carrying information about the device.

Adding to or Removing From a Z-Wave Network

Adding:

Remove pull-tab from back of the keypad, and the device's downcast light should blink several times green every ten seconds while to indicate that the keypad is actively looking to be included into a network. The keypad must not already be added to a Z-Wave network. If the device is added to a Z-Wave network, follow instructions below on removing. There are a few methods to add a keypad to a Z-Wave network: Smart Start, Classic and Network Wide Inclusion.

For both methods, you may need to locate the keypad's Device Specific Key (DSK) which is on the device's box, on a card in the box, and on the device itself under the battery. Scan the DSK QR-Code with the panel's or controller's smartphone app or enter it in manually when prompted.

Smart Start:

1. When the keypad is powered up and not included in a network, it ready for Smart Start. You should see the downcast indicator blink green several times every ten seconds.
2. The device may take a few minutes to be added.
3. Once the inclusion process begins, you should see the downcast indicator blink green rapidly.

Classic / Network-Wide Inclusion

1. Follow the instructions of the controller to put the controller into manual or classic Z-Wave inclusion mode.
2. Locate the reset button which is under the back of the battery cover, to the left of the batteries, and below the tamper switch, in a hole big enough for a paperclip.

3. Insert a paperclip into the hole until you feel the button depress, and then remove the paperclip.
4. The device will attempt to include itself.
5. Be prepared to enter the DSK if asked.

This sensor also supports Network Wide Inclusion such that the Sensor can be included into the Z-Wave network over the mesh network and not directly near the main controller. This mode is automatically activated after regular inclusion was not successful.

Removal:

There are two methods to removing the Keypad from a Z-Wave network: exclusion and performing a factory reset (see section on Factory Reset).

1. Follow the controller's instructions on putting the controller into removal/exclusion mode.
2. Locate and press the reset button which is under the back of the battery cover, to the left of the batteries, and below the tamper switch, in a hole big enough for a paperclip.
3. Device's downcast indicator should blink red indicating removal success.

*In the diagram below, the **Reset Button** used for adding/removing and factory reset pointed at by the RED ARROW, and the **DSK** is pointed at by the YELLOW ARROW.*
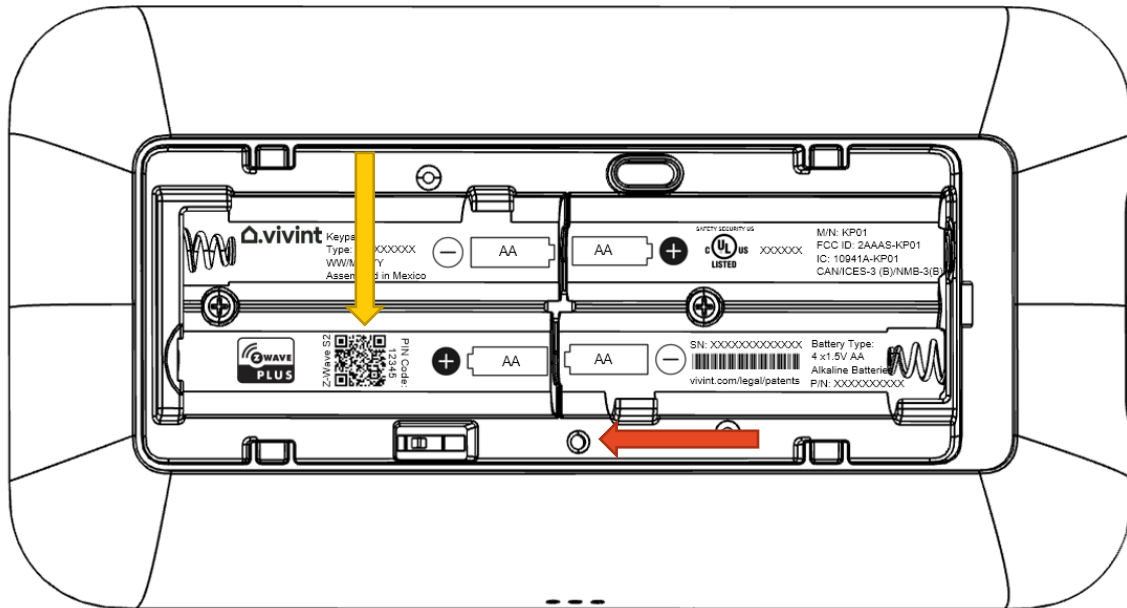
Factory Reset

To restore the keypad to factory settings which removes it from any network as well:

1. Locate the reset button which is under the back of the battery cover, to the left of the batteries, and below the tamper switch, in a hole big enough for a paperclip.
2. Insert a paperclip into the hole until you feel the button depress.
3. Hold the button down for ten seconds. The green downcast indicator will blink rapidly while the reset button is pressed and go out after ten seconds.
4. The device's downcast indicator will turn red when the reset operation is complete. The device is now ready to be added to a Z-Wave network.

Command Classes

Command Class	Version	Secured via S2
Z-Wave Plus Info	2	
Association	2	√
Association Group Info	3	√
Battery	1	√
Configuration	4	√
Device Reset Locally	1	√
Firmware Update Metadata	5	√
Indicator	3	√
Manufacturer Specific	2	√
Multichannel Association	3	√
Notification	8	√
Power Level	1	√
Security 2	1	
Security 0	1	
Supervision	1	√
Transport Service	2	
Version	3	√
Entry Control	1	√

Manufacturer Specific

- Manufacturer ID: 0x0156
- Product Type: 0x4B50
- Product ID: 0x0001

Association

The keypad supports one Association group which is the "Lifeline" group of able to have one node in the group. All unsolicited Z-Wave messages are transmitted to the node in the Lifeline group such as Entry Control, Notification, Battery, and Device Reset Locally notifications.

Configuration

The keypad supports five configuration parameters listed below.

1. Motion Detector

Description	Whether or not motion detector is enabled. 1: Enabled (default) / 0: Disabled.
Size	1
Format	Enumerated
Read only	No
Min Value	0
Max Value	1
Default Value	1

2. Sound

Description	Enable beeper feedback. 1: Enabled (default) / 0: Disabled.
Size	1
Format	Enumerated
Read only	No
Min Value	0
Max Value	1
Default Value	1

3. Down-Cast Light

Description	Enable the down-cast light. 1: Enabled (default) / 0: Disabled.
Size	1
Format	Enumerated
Read only	No
Min Value	0
Max Value	1
Default Value	1

4. Application-Level Retries

Description	Number of attempts on top of the stack-level retries to try to reach the controller/hub with Z-Wave messages.
Size	1
Format	Unsigned Integer
Read only	No
Min Value	0
Max Value	10
Default Value	3

5. Battery-Poll Timer

Description	Amount of time in minutes between timed battery checks.
Size	2
Format	Unsigned Integer
Read only	No
Min Value	5
Max Value	1440
Default Value	70

Indicator

Indicator ID	Name	Combinable with Buzzer Indicator	Supported Properties					
			Binary	Level	Time Out Seconds	On-Off Period	One Time On-Off Period	On-Off Cycles
			0x02	0x01	0x07	0x03	0x05	0x04
1	Armed	*	*					
2	Disarmed	*	*					
4	Fault		*					
9	Code Not Accepted	*	*			*	*	*
0x0A	Armed Stay	*	*					
0x0B	Armed Away	*	*					
0x0C	Alarming		*					
0x0D	Alarming Burglar		*					
0x0E	Alarming Smoke		*					
0x10	Bypass Challenge		*			*	*	*
0x11	Entry Delay		*		*			
0x12	Exit Delay			Target State 1: Away 2: Stay	*			
0x13	Alarming Medical		*					
0x14	Alarming Freeze		*					
0x15	Alarming Water Leak		*					
0x16	Alarming Panic		*					
0x50	Identify	*	*			*	*	*
0xF0	Buzzer			Frequency 1: Low 2: High		*	*	*

The indicators supporting properties On-Off Period, One Time On-Off Period, and On-Off Cycles can safely interrupt the other indicators, and the other indicators if active will resume.

The Armed Indicator is ignored if it has not previously received an Armed Away or Armed Stay Indicator.

The Identify indicator flashes the device's backlight keys.

Entry Control

The Keypad uses the Entry Control command class to communicate the button presses of keypad. The Away, Stay, and Panic buttons on the bottom require a hold of the key to transmit an event.

The following entry control events are supported.

Event ID	Name	Requires Hold
0x00	Caching Keys	No
0x01	Cached Keys	No
0x05	Arm Away	2 seconds
0x06	Arm Home	
0x10	Fire	3 seconds
0x11	Police	
0x13	Alert Medical	
0x19	Cancel	No

The Number keys are ASCII keys 0 through 9 communicated as parameters on the last Entry Control event.

Notification

The following Notifications are supported sent to the Lifeline Association Group.

Type	Event
Home Security (0x07)	Tampering Covering Removed (0x09)
	Motion Detected Unknown Location (0x08)
Power Management (0x08)	Replace Battery Soon (0x0A)
	Replace Battery Now (0x0B)

Supervision

When included with S2, all unsolicited Z-Wave messages from the Keypad to the controller are encapsulated in a Supervision Get command to ensure proper decoding, so the Keypad must see both an ACK and a corresponding Supervision Report to consider the message communicated successfully.

Declarations

CAUTION NOTICE

CAUTION RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. ONLY USE THE SUPPLIED BATTERIES OR MAKE SURE THEY ARE 100% COMPATIBLE. DISPOSE OF USED BATTERIES OBSERVING ENVIRONMENTAL PROTECTION RULES.

DECLARATION OF CONFORMITY

Hereby, Universal Electronics BV declares that the radio equipment type XXXXXXX is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: xxxxxxxxxxxxxxxx

RECYCLING / WEEE DIRECTIVE

This product bears the selective sorting symbol for waste electrical and electronic equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19 / EU in order to be recycled or dismantled to minimize its impact on the environment. User has the choice to give this product to a competent recycling organization or to the retailer when user buys a new electrical or electronic equipment.

Z-WAVE CERTIFICATION

This product is Z-Wave certified. The Z-Wave Certification # is ZCXX-XXXXXXX. For more information, please visit www.z-wave.com

This product is covered by one or more claims of patents found at: http://sipcollc.com/patent-list

REGULATORY

FCC Regulatory Compliance Statement

CAUTION: Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules and Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation of the device.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and the receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/television technician for help.

FCC ID: 2AAAS-KP01

IC: 10941A-KP01

*For complete regulatory compliance information, go to: vivint.com/fcc