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Contact Sensor 2nd Generation Z-Wave™ Technical Manual

Ring Contact Sensor

Introduction

Ring Alarm Contact Sensor is a wireless sensor for the Ring Alarm system which provides users the ability to know when a door or window is open or closed. After installing the sensor on a door or window and setting up the sensor in the Ring app, monitor and receive notifications when the door or window opens or closes. The Ring Alarm Base Station is required to enable Contact Sensor features and functions within the Ring app.

Notes:

1. This product can be operated in any Z-Wave™ network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

2 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.

Installation & Set Up

Ring Alarm Contact Sensor – Basic Setup & Installation

In-app Setup

1. Ensure your Ring Alarm system is disarmed.

2. In the Ring app, tap **Set Up a Device** and find the Contact Sensor in the **Security Devices** menu.

3. Follow the in-app instructions to complete setup.

    a. Pull the battery tab (or reinsert the batteries) to trigger setup mode.

    b. Tap the button on the front to retry setup mode.

Installation

1. Choose a door or window for installing your Contact Sensor and companion magnet.

2. Ensure the surfaces where you plan to install your sensor and magnet are clean and free from dust or dirt.

3. Using the provided double-sided tape, peel the backing and attach the sensor to the mounting location.

4. Follow the same steps for the companion magnet ensuring the magnet is aligned with the sensor and no more than 1 inch from sensor for the "closed" position.

Note

Leave ~ ½ in. of space on the side opposite the magnet to ensure you can slide open the case when it's time to change the batteries.

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

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 manufacturers.

Z-Wave Instructions

Z-Wave Device Type: Notification Sensor

Role Type: Reporting Sleeping Slave (RSS)

GENERIC_TYPE_SENSOR_NOTIFICATION (0x07)

SPECIFIC_TYPE_NOTIFICATION_SENSOR (0x01)

Let's get started.

Quick Start Guide

In-app Setup

1. Make sure your Ring Alarm is disarmed.
2. In the Ring app, tap **Set Up a Device** and find the **Contact Sensor** in the **Security Devices** menu.
3. Follow the in-app instructions to complete setup.

Installation

1. Install the sensor and magnet on a door or window and frame.
2. Clean the area before you peel the backing and stick on the sensor and magnet.
3. Make sure there is no more than 1 inch (25.4 mm) between the sensor and magnet when the door or window is closed.

If you're using the Contact Sensor on a door you use often, choose Main Door as the placement option. Main doors have Entry and Exit Delays to prevent you from accidentally triggering the alarm.

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For additional help, visit:
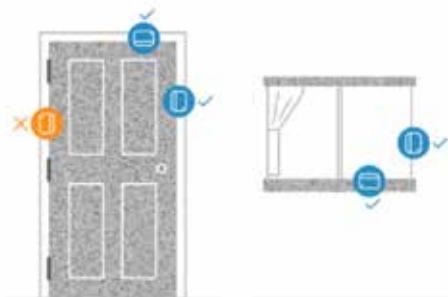ring.com/help

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Spacing

1" max

0.5"
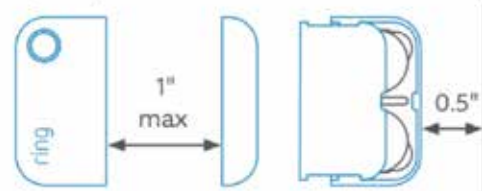
Ensure no more than 1 inch (25.4 mm) between sensor and magnet when the door or window is closed.

Leave at least a 1/2 inch (12.7 mm) space so you can open the battery compartment.

Placement

For Z-Wave technical information, visit ring.com/z-wave

Ring Alarm Contact Sensor – Inclusion

Adding Ring Alarm Contact Sensor to a Z-Wave Network

Ring Alarm Contact Sensor can be added via SmartStart or Classic inclusion mode.

Note

When prompted for the QR Code or PIN, you may find them on the device, on the box, or on a card inside the box. Keep the device nearby. You'll be prompted to pull the battery tab to power on the device and enter setup mode.

SmartStart Inclusion Steps:

1. Initiate the add flow for Security Devices in the Ring mobile application – Follow the guided add flow instructions provided in the Ring mobile application.

2. When prompted by the mobile application, scan the QR code found on the package of the Contact Sensor. The QR code can also be found on the device itself.

3. Pull the pull-tab or insert batteries, and the device will go into SmartStart inclusion mode. While in this mode, Contact Sensor can be added to a Z-Wave controller that supports SmartStart. When in SmartStart inclusion mode, SmartStart can be restarted by tapping the button on the front of the device.

Classic Inclusion Steps:
Classic Inclusion should be used if the controller does not support SmartStart.

1. Initiate add flow for Security Devices in the Ring mobile application – Follow the guided add flow instructions provided in theRing mobile application.

2. Select add manually and enter the 5-digit DSK PIN found on the package of the Ring Alarm Contact Sensor or the 5-digit DSK PIN found under the QR code on the device.

3. After powering on the device, press and hold the button on the front of the device for ~3 seconds. Release the button and the device will enter Classic inclusion mode which implements both classic inclusion with a **Node Information Frame**, and **Network Wide Inclusion**. During Classic Inclusion mode, the green LED will blink three times followed by a brief pause, repeatedly. When Classic inclusion times-out, the device will blink alternating red and green a few times.

LED Behabior for Inclusion	Blink Pattern
SmartStart Started	Green LED three times, repeated after a brief pause
Classic Inclusion Started	Green LED three times, repeated after a brief pause
Classic Inclusion Timed-Out	Alternate red and green a few times
Inclusion Successful (Authenticated S2)	Green LED on solid
Inclusion Not Successful (Self-Destruct)	Red LED on solid

Ring Alarm Contact Sensor – Exclusion

Removing Ring Alarm Contact Sensor from a Z-Wave Network

Ring Alarm Contact Sensor can be added via SmartStart or Classic inclusion mode.

Exclusion Instructions:

1. Initiate remove "Ring Alarm Contact Sensor" flow in the Ring Alarm mobile application – Select the settings icon from device details page and choose "Remove Device" to remove the device. This will place the controller into Remove or "Z-Wave Exclusion" mode.

2. With the controller in Remove (Z-Wave Exclusion) mode, use a paper clip or similar object and tap the pinhole button. The device's red LED turns on solid to indicate the device was removed from the network.

Ring Alarm Contact Sensor – Factory Reset

Factory Default Instructions

1. To restore Ring Alarm Contact Sensor to factory default settings, locate the pinhole reset button on the device. This is found inside the battery compartment on the back of the device after removing the back bracket.

2. Select add manually and enter the 5-digit DSK PIN found on the package of the Ring Alarm Contact Using a paperclip or similar object, insert it into the pinhole, press and hold the button down for 10 seconds.

3. The device will rapidly blink green continuously for 10 seconds. After about 10 seconds, when the green blinking stops, release the button. The red LED will turn on solid to indicate the device was removed from the network.

Note

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

Wake-Up Notification

The sensor will wake up every so often to send a Wake-Up Notification to allow the life line master node controller that the sensor is now available for any queued messages that the controller may have for the sensor. The time between Wake-Up Notifications can be configured with the Wake-Up Notification command class according to the following configurable values:

• Min Value 1 hr

• Max Value 24 hr

• Default Value 12 hours (12 * 60 * 60 seconds)

• Wake Up Interval Step Seconds 1 hour (3600 seconds)

Z-Wave Command Classes

Command Class	Version	Required Security Class
Association	2	Highest granted
Association Group Information	3	Highest granted
Device Reset Locally	1	Highest granted
Firmware Update Meta Data	5	Highest granted
Indicator	3	Highest granted
Manufacturer Specific	2	Highest granted
Multi-Channel Association	3	Highest granted
Powerlevel	1	Highest granted
Security 2	1	none
Supervision	1	none
Transport Service	2	none
Version	3	Highest granted
Z-Wave Plus™ Info	2	none
Notification	8	Highest granted
Wake Up	2	Highest granted
Configuration	4	Highest granted
Battery	2	Highest granted

Association Command Class

Group Identifier	Max Nodes	Description
1 (Lifeline)	0x05	1. Notification Report a. See notification CC section for notifications that are sent 2. Battery Report 3. Device Reset Locally Notification

Configuration Command Class

The sensor has the following supported configuration parameters.

Parameter Number	Description	Number of Bytes	Default	Min	Max	Format
1	Heartbeats: This parameter is the number minutes between heartbeats. Heartbeats are automatic battery reports on a timer after the last event.	1	70 (0x46)	1 (0x01)	70 (0x46)	0x01 Unsigned
2	Number of application level retries attempted for messages either not ACKed or messages encapsulated via supervision get that did not receive a report.	1	1 (0x01)	0 (0x00)	5 (0x05)	0x01 Unsigned
3	Application Level Retry Base Wait Time Period: The number base seconds used in the calculation for sleeping between retry messages.	1	5 (0x05)	1 (0x01)	60 (0x3C)	0x01 Unsigned
4	This parameter allows a user, via software, to configure the various LED indications on the device. 0 == Don't show green 1 == Show green after Supervision Report Intrusion (Fault) 2 == Show green after Supervision Report both Intrusion and Intrusion clear	1	1 (0x01)	0 (0x00)	2 (0x01)	enum
5	One shot timer: Writing to this parameter prompts the sensor to send a wakeup notification one time after this parameter's number of seconds. After which it is reset back to 0.	2	0 (0x00)	5 (0x05)	65535 (0xFFFF)	0x01 Unsigned
6	The number of milliseconds waiting for a Supervisory Report response to a Supervisory Get encapsulated command from the sensor before attempting a retry.	2	1500 (0x5DC)	500 (0x1F4)	5000 (0x1388)	0x01 Unsigned

Notification Command Class, V8

Sensor Condition	Command Class and Value	Association Group
Door/Window Open	Notification Report Type: Home Security 0x07 State: Intrusion 0x02	1 (Lifeline)
Door/Window Close	Notification Report Type: Home Security 0x07 State: Previous Events Cleared 0x00 Event parameter: 0x02	1 (Lifeline)
Sensor Case Removed	Notification Report Type: Home Security 0x07 State: Tampering Product Covering Removed 0x03	1 (Lifeline)
Sensor Case Fastened	Notification Report Type: Home Security 0x07 State: Previous Events Cleared 0x00 Event Parameter: 0x03	1 (Lifeline)
Comm Test Button Pressed	Notification Report Type: System 0x09 Event: Heartbeat 0x05	1 (Lifeline)
Watchdog Notification	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0x55	1 (Lifeline)
Magnetic Tamper	Notification Report Type: Home Security 0x07 State: 0x0B (Magnetic field interference detected)	1 (Lifeline)
Magnetic Tamper Clear	Notification Report Type: Home Security 0x07 State: Previous Events Cleared 0x00 Event Parameter: 0x0B	1 (Lifeline)
Software Fault (Ring)	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0xAA (Ring Value for Soft Fault)	1 (Lifeline)
Software Fault (SDK)	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0xA9 (SDK Value for Soft Fault)	1 (Lifeline)
Pin Reset (soft reset)	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0xAB	1 (Lifeline)
Software Reset (Not triggered by failure)	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0xAC	1 (Lifeline)
Power On Reset	Notification Report Type: 0x08 Power Management Event Parameter: 0x01 Power has been applied	1 (Lifeline)
Brownout	Notification Report Type: 0x08 Power Management Event: 0x05 Voltage Drop/Drift	1 (Lifeline)
Dropped Frame	Notification Report Type: System 0x09 State Value: 0x04 System Software Failure State Parameter Value = 0xAD	1 (Lifeline)

Supplier's Declaration of Conformity – Compliance Information Statement

Unique Identifier: Ring Contact Sensor

Responsible Party and Party issuing Supplier's Declaration of Conformity
Ring LLC dba Ring
1523 26th Street
Santa Monica, CA 90404 U.S.A.
www.ring.com / Legal@ring.com

FCC Compliance Statement (for products subject to Part 15)

This device complies with Part 15 of the FCC Rules. 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. 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 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/TV technician for help.

Innovation, Science and Economic Development Canada (ISED) Compliance

This device contains licence-exempt transmitter(s)/ receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.

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

Conformité Innovation Sciences et Développement Économique Canada (ISDE) L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.

2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)/NMB-3(B)

In accordance with FCC requirements of human exposure to radio frequency fields, the radiating element shall be installed such that a minimum separation distance of 20 cm is maintained from the general population.

Conformément aux exigences d'Industrie Canada
en matière d'exposition humaine aux champs de radiofréquences, l'élément rayonnant doit être installé de telle sorte qu'une distance minimale de 20 cm soit maintenue par rapport à la population générale.

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

AVERTISSEMENT : Tout changement ou modification à cet appareil qui n'a pas fait l'objet d'une autorisation expresse par la partie responsable de sa conformité pourrait annuler le droit pour l'utilisateur d'opérer l'équipement.

CAUTION: To reduce the risk of electrical shock, DO NOT open the unit. There are no user serviceable parts inside the unit. Refer to customer support for any repairs.

ATTENTION : Pour réduire le risque d'électrocution, NE PAS ouvrir l'appareil. Aucune pièce interne n'est réparable par l'utilisateur. Veuillez vous référer au service à la clientèle pour toute réparation.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of the used batteries according to the manufacturer's instructions.

ATTENTION : Danger d'explosion si la pile n'est pas remplacée correctement. Remplacez la pile uniquement par une pile identique ou par une pile du même type que celle recommandée par le fabricant. Suivez les instructions du fabricant pour jeter les piles usées.