



# Open/Close Sensor

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INSTEON® Wireless Sensor

Model : 2843-222/2421

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Open/Close Sensor Owner's Manual

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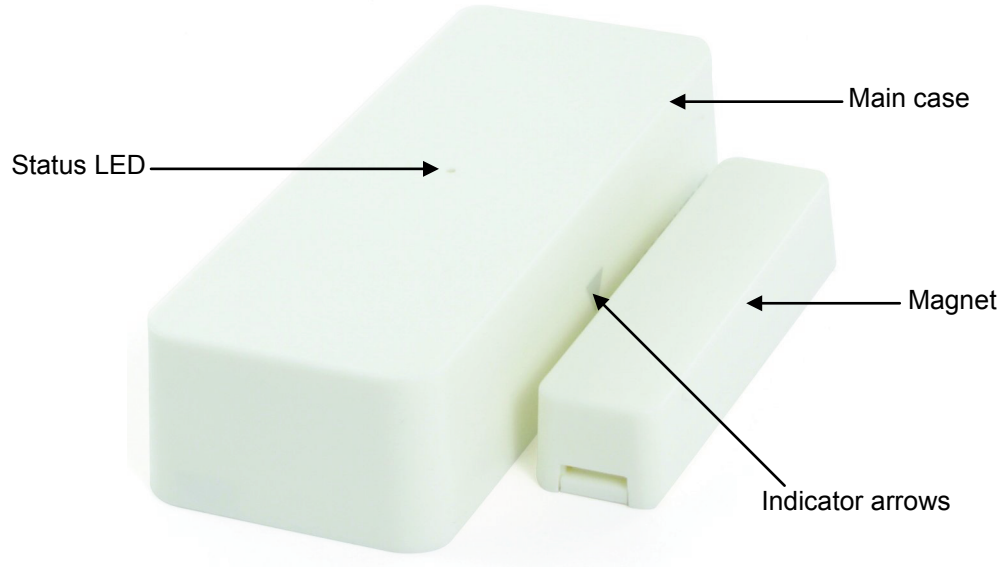
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## Open/Close Sensor Owner's Manual

### About Open/Close Sensor

Open/Close Sensor can wirelessly control lights or appliances throughout your home. Program any INSTEON device to react when the magnetic contact is broken and re-established on Open/Close Sensor: doors, windows, drawers, cabinets or anything else that opens. You can optionally connect an external contact closure sensor of any type (e.g., hidden contacts or doorbell button).



### Key Open/Close Sensor Features

- Installs and links to other INSTEON devices in minutes
- Operates via radio frequency (RF) to eliminate unsightly and inconvenient wiring
- Battery-operated for easy installation
- Wires standard security sensors to Open/Close Sensor to monitor several doors or windows
- Excellent range – up to 150' from the nearest access point
- Indicates INSTEON setup mode activity and operational states with a status LED
- Stores setup state in memory so settings aren't lost when batteries are removed
- Two-year warranty

### What's in the Box?

- Open/Close Sensor – INSTEON Wireless Door Window Sensor (Open/Close)
- Magnet
- One (1) AA battery
- Quick Start Guide

### What is INSTEON?

Since its inception in 2005, INSTEON has become a best-selling home-control networking technology, offering more reliability and flexibility than any other home management system on the market. INSTEON systems are simple, reliable, and affordable. Simple, because each device takes mere minutes to install. Reliable, because every INSTEON device works as a network repeater, ensuring your commands will not be lost. Affordable, because INSTEON can be integrated into any number of devices easily and at a very low cost. An INSTEON home grows in value with each added INSTEON device, making life more convenient, safe, and fun.

### How Does INSTEON Work?

What makes INSTEON the most reliable home automation network is its dual-mesh network. INSTEON devices use both radio frequency (RF) signals and the home's existing wiring to talk to each other. In an INSTEON network, every INSTEON device also acts as a repeater, receiving and sending every message to all other devices in the network. So by integrating more INSTEON devices you will strengthen the network and ensure no commands will be lost.

No central controller or networking setup is required with an INSTEON network. Simply install your devices and then use a series of button presses or taps to Link your devices together. Throughout this Owner's Manual, you may see the terms "Controller" or "Responder". These generic INSTEON terms refer to the components of an INSTEON scene, and are used on a scene-by-scene basis.

- **Controller** – sends INSTEON commands to other devices
- **Responder** – reacts to commands sent out by another INSTEON device

An INSTEON device may act as a Controller, Responder, or sometimes both.

INSTEON networks are also extremely secure. Each INSTEON device is assigned a unique INSTEON ID, so unless neighbors or would-be hackers have access to your particular device's INSTEON ID, they won't be able to control your home, even if they are using similar products.

## Installation

### Open/Close Sensor Hardware

#### Reed Switch

Used by Open/Close Sensor to detect whether the included magnet is within ½" of the main case:

- Reed switch is in the closed state when the magnet is inside ½"
- Reed switch is in the opened state when the magnet is further than ½"

#### Jumper

When the jumper is installed (default), Open/Close Sensor will send an INSTEON ON command when it opens and an OFF command when it closes. When the jumper is uninstalled (as in Multi-Scene Mode), Open/Close Sensor will activate scene 1 when it opens and activate scene 2 when it closes.

NOTE: When installing or uninstalling the jumper, the battery will need to be removed and then reinstalled for the new jumper setting to take effect.

#### Set Button

Used to:

- Link to other INSTEON devices (responders)
- Control linked responders (scene 1): tap to toggle between on and off

#### External Sensor Terminals

When using an external sensor, Open/Close Sensor is in the closed state when **either** the external sensor terminals or the reed switch are closed. In other words, Open/Close Sensor opens when **both** the external sensor terminals and reed switch are open. See *Advanced External Sensor Use* for more information.

#### status LED

Indicates:

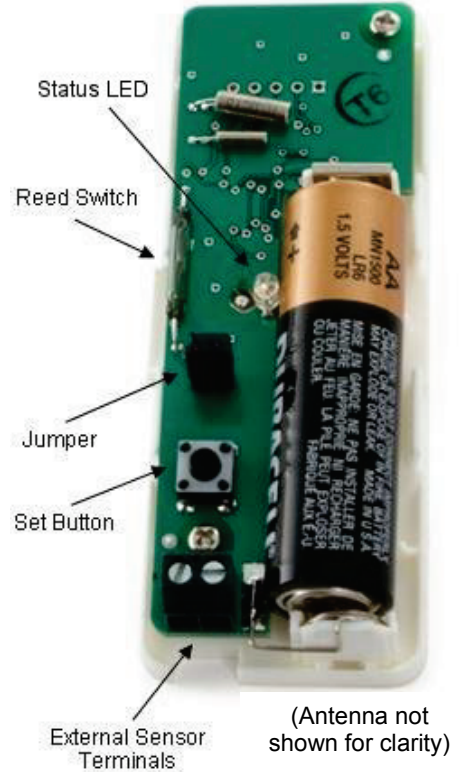
- Change in state (opens or closes)
- Open/Close Sensor is in linking/unlinking Mode (status LED is blinking)

#### Arrows

Arrows indicate the location of the reed switch inside the main case, so the magnet should be installed as close as to them as possible.

#### Magnet

Included magnet is installed on opposing plane than Open/Close Sensor main case. It should be less than ½" away from the main case when the door/window, etc. is closed and further than ½" when open.



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### Install Open/Close Sensor

- 1) RF-only devices require at least one dual-band INSTEON device, such as an Access Point (#2443), for communication. For the best INSTEON network performance, be sure you have properly installed at least two dual-band INSTEON devices.
- 2) Use a screwdriver to remove the cover of the Open/Close Sensor main case and install one AA battery (included)
- 3) Unless the location where you plan to mount Open/Close Sensor is in direct view of the status LED on a dual-band INSTEON device, have someone watch the status LED on the nearest dual-band device. Then, hold Open/Close Sensor in the location where you intend to mount it and tap its Set button.

*Open/Close Sensor status LED will flash once*

*The dual-band device status LED will also flash once or twice to confirm Open/Close Sensor is within range*

- If the Open/Close Sensor status LED doesn't flash, replace the battery
  - If the Open/Close Sensor status LED flashes, but the dual-band device's status LED doesn't flash, Open/Close Sensor might be out of range. Try moving the dual-band device to other locations or add additional dual-band devices.
- 4) When mounting Open/Close Sensor, ensure the main case and magnet are as close to each other as possible. The magnet must be within ½" of the case to work properly. The arrows on the side of the case and the magnet must also align and face each other.

Screws or double-stick tape can be used for mounting. Depending on the style of your door or window frame, you might need to use some double-stick tape beneath one of the pieces to ensure they are at the same relative height.

*NOTE: The included double-stick tape is very strong; you may wish to reduce its adhesion by first pressing it lightly against a piece of fabric or carpet.*

- 5) Mount the Open/Close Sensor magnet to the door/window as close to the edge as possible
- 6) Mount the Open/Close Sensor case to the door/window trim. If you plan to mount the unit with screws, remove the battery to mount and then reinstall the battery.
- 7) If you plan to link responders, follow the steps in *Make Open/Close Sensor a Controller* before replacing the battery cover.

### Connecting an External Sensor to Open/Close Sensor

NOTE: For the basic use of Open/Close Sensor's external sensor terminals, it is not recommended to also use Open/Close Sensor's internal reed switch to help ensure the desired behavior. If connecting multiple sensors to Open/Close Sensor's external sensor terminals and/or using Open/Close Sensor's reed switch in addition to an external sensor, see *Advanced External Sensor Use*.

- 1) Use a small screwdriver to remove the cover of the Open/Close Sensor main case
- 2) Strip the sensor wire about ¼"
- 3) Unscrew the external sensor terminals, connect the sensor wire, and then screw in terminals
- 4) Test by opening and closing the sensor

*Open/Close Sensor status LED will flash once when the sensor opens or closes*

- 5) If you haven't already done so, link the desired responders before replacing the cover. See *Make Open/Close Sensor a Controller*.
- 6) Replace the Open/Close Sensor main case cover

### Using Open/Close Sensor as an INSTEON Controller

#### Make Open/Close Sensor a Controller

In default mode, Open/Close Sensor will:

- Turn on responders when it opens
- Turn off responders when it closes

This mode is ideal for garage doors, closets, sheds, etc., where you want the lights on when door/windows are opened and off when they are closed. If you require more flexible functionality, see *Using Open/Close Sensor's Multi-Scene Mode*.

To use Open/Close Sensor as an INSTEON controller, follow these steps to link Open/Close Sensor and an INSTEON responder (the device you wish to control with Open/Close Sensor) together. Refer to the responder's Owner's Manual for detailed instructions on how to properly install and Link it to Open/Close Sensor.

The following will work for the most common INSTEON devices:

- 1) If using the default mode, ensure the Open/Close Sensor jumper is installed. If using multi-scene mode, the jumper should be uninstalled (or removed).  
NOTE: When changing the jumper setting, the battery will need to be removed and then reinstalled for the new jumper setting to take effect.
- 2) At the Responder, set it to the state you wish to activate from Open/Close Sensor (turn it on if you wish it to be on or off if you wish it to be off when Open/Close Sensor activates the scene)
- 3) Set Open/Close Sensor to linking mode by pressing and holding Set button for 3 seconds  
*Open/Close Sensor status LED will begin blinking*  
*You will have 4 minutes to complete the next step before linking mode automatically times out*
- 4) Press and hold the responder Set button for 3 seconds  
*Open/Close Sensor status LED will stop blinking and turn on solid*
- 5) Confirm that linking was successful by opening and closing the magnet/sensor  
*The Responder will respond appropriately*
- 6) If you wish to link multiple responders to the same Open/Close Sensor, repeat steps 2-4 with each responder

#### Remove Open/Close Sensor as a Controller

If you are no longer going to use an INSTEON Responder that has been Linked to Open/Close Sensor, it is very important that you Unlink it. Otherwise, Open/Close Sensor will retry any commands repetitively, thus slowing down the system.

The following will work for the most common INSTEON devices:

- 1) If the responder is a multi-scene device, tap linked scene button until its LED illuminates
- 2) Set Open/Close Sensor to linking mode by pressing and holding Set button for 3 seconds  
*Open/Close Sensor status LED will begin blinking*
- 3) Set Open/Close Sensor to unlinking mode by pressing and holding Set button for 3 seconds again  
*Open/Close Sensor status LED will continue blinking*  
*You will have 4 minutes to complete the next step before Unlinking Mode automatically times out*
- 4) Press and hold the responder Set button for 3 seconds  
*Open/Close Sensor status LED will stop blinking and turn on solid*
- 5) Confirm that unlinking was successful by opening and closing the magnet/sensor  
*Responder will no longer respond*

NOTE: If you are using multi-scene mode, devices linked to scene 2 will not respond when Open/Close Sensor Set button is tapped

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### Using Open/Close Sensor's Multi-Scene Mode

In multi-scene mode, Open/Close Sensor will:

- Activate scene 1 when it opens
- Activate scene 2 when it closes

This mode is ideal when you need more flexibility:

- For rooms where you want the lights left on after the door is closed – simply don't Link any Responders to scene 2 in this case
- Turning lights on at full-bright when a door is opened and dim when the door is closed
- Activating two independent scenes when a door/window is opened as opposed to closed

### Linking in Multi-Scene Mode

1) Open the Open/Close Sensor cover and ensure the jumper is uninstalled (or removed). When uninstalling the jumper, the battery will need to be removed and then reinstalled for the new jumper setting to take effect

2) Move the Open/Close Sensor magnet away from the main case, putting it in the open state

*If Open/Close Sensor was closed, its status LED will flash once*

3) Link the desired responders for when Open/Close Sensor opens (scene 1). See *Make Open/Close Sensor a Controller*.

*Scene 1 will activate whenever Open/Close Sensor is opened and will toggle on and off when Set button is tapped (while Open/Close Sensor is opened)*

4) Move the Open/Close Sensor magnet close to the main case, putting it in the closed state

*Open/Close Sensor status LED will flash once*

5) Link the desired responders for when Open/Close Sensor opens (scene 2)

*Scene 2 will activate whenever Open/Close Sensor is closed and will toggle on and off when Set button is tapped (while Open/Close Sensor is closed)*

6) Test that the responders are working as expected by opening and closing your door or window

*Scene 1 will activate when the door or window is opened and scene 2 will activate when closed*

### Unlinking in Multi-Scene Mode

1) Open the Open/Close Sensor cover and ensure the jumper is uninstalled (or removed)

2) Move the Open/Close Sensor magnet away from the main case, putting it in the open state

*If Open/Close Sensor was closed, its status LED will flash once*

3) Unlink the desired responders from scene 1. See *Unlinking an INSTEON Responder from Open/Close Sensor*.

*Responders will no longer respond when Open/Close Sensor is opened or Set button is tapped*

4) Move the Open/Close Sensor magnet close to the main case, putting it in the closed state

*Open/Close Sensor status LED will flash once*

5) Unlink the desired responders from scene 2

*Responders will no longer respond when Open/Close Sensor is closed or Set button is tapped*

6) Test by opening and closing your door or window

*Responders will no longer respond when Open/Close Sensor is opened or closed*



### Scenes

INSTEON scenes let you activate dramatic lighting moods with the tap of just one button. For example, you can set all the lights in a scene to dim to 50% or turn certain lights on while turning others off, all with the tap of a button on a controller.

INSTEON scenes are very easy to set up – just link more than one responder to the same on/off or scene button on a controller. Then, when you tap any of the linked buttons on the controller, all of the INSTEON devices linked in the scene will respond as a group.

### Advanced Features

#### Advanced External Sensor Use

For advanced users, a single Open/Close Sensor can be used to:

- Monitor several doors/windows
- Monitor several different types of sensors
- Monitor external sensors in addition to its internal reed switch

To achieve the desired behavior when using Open/Close Sensor for any of the above, please observe the following tips:

#### Using Several Sensors

When several sensors (even of different types) are connected to the Open/Close Sensor external sensor terminals, keep in mind that Open/Close Sensor only has two states: opened and closed. So if you have several sensors connected in the following configurations, note the Open/Close Sensor behavior (it is assumed in this example that the Open/Close Sensor internal reed switch is not being used).

- Several sensors connected in **series** – Open/Close Sensor will show open if *any* of the sensors are open and closed when *all* sensors are closed
- Several sensors connected in **parallel** – Open/Close Sensor will show open when *all* sensors are open and closed if *any* sensors are closed

NOTE: If magnetic door/window contacts are used, there are two types:

- Normally open – when the door/window is closed, the sensor will show *open*. When the door/window is open, the sensor will show *closed*
- Normally closed – when the door/window is closed, the sensor will show *closed*. When the door/window is open, the sensor will show *open*

#### Using the Internal Reed Switch and External Sensors

When the Open/Close Sensor external sensors input is used in conjunction with its internal reed switch, Open/Close Sensor behaves much like several sensors connected in parallel (above), meaning:

- Open/Close Sensor will be open when *both* the internal reed switch and external reed switch sensor terminals show open
- Open/Close Sensor will be closed when *either* the internal reed switch or external sensor terminals show closed

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### Restoring Power to Open/Close Sensor

Open/Close Sensor stores all of its settings, such as Links to other INSTEON devices, with non-volatile memory. Because settings are saved in this non-volatile memory, they will not be lost when the battery is removed.

### Resetting Open/Close Sensor to its Factory Default Settings

The factory reset procedure can be used to clear the Open/Close Sensor memory of all INSTEON Links, etc.

- 1) If you are using Open/Close Sensor to control any responders, unlink them from Open/Close Sensor. See *Remove Open/Close Sensor as a Controller*.
- 2) Use a small screwdriver to gently remove the Open/Close Sensor main case
- 3) Remove the battery and wait at least 15 seconds
- 4) Press and hold Set button on Open/Close Sensor while reinstalling the battery
- 5) Release Set button when the status LED turns on

*Open/Close Sensor status LED will stay on for about 4 seconds and then turn off*

## ABOUT INSTEON

### Using Dual-Band INSTEON Devices to Upgrade Your Network

#### What are phases?

The majority of single-family homes in North America have two phases (or “legs”) of 110 Volts coming into their electricity panels. From the panel, they are distributed throughout the home, providing power to outlets and wall switches. These phases come together in some parts of the home to provide 220 Volts of power to large appliances, such as an electric oven or pool pump.

#### Why do I need to bridge these phases?

Single-band power line devices send commands via the home's electricity, but only on a single phase. If the command is intended for a device on the opposite phase, there is a good chance the command will go unnoticed. Installing dual-band INSTEON devices, such as Access Points (#2443), on each phase will allow for devices to communicate between the two phases via RF.

Dual-band INSTEON devices embody the full potential of a true INSTEON mesh network. Taking the power line band signal and working in conjunction with the RF band signal, its dual-band function plays out in two ways:

- Phase bridger – a receiver of commands, reacting to and translating signals sent from one power phase to the opposite via RF
- Signal repeater – a participant in an INSTEON network, repeating commands intended for other devices whether those commands are generated from RF or power line-only devices. To ensure reliability, every INSTEON device confirms that it has received a command. If a Controller does not receive this confirmation, it will automatically retransmit the command up to five times.

While using at least one dual-band device is required when using an RF-only device, at least two dual-band devices are recommended in any INSTEON network to ensure reliable communication across two-phase home wiring systems. For larger applications, it is recommended to install at least one dual-band device for every 750 – 1,000 square feet.

Search for dual-band INSTEON devices at: [www.smarthome.com/dualband](http://www.smarthome.com/dualband)

## Open/Close Sensor Owner's Manual

### **Important Note about INSTEON Networks; Split Single-Phase vs. 3-Phase Installation**

For the best INSTEON network performance, be sure you have properly installed at least two dual-band INSTEON devices. INSTEON has only been officially tested in a split single-phase residential environment but has been known to work in many 3-phase systems, where three dual-band devices are used (one on each phase). However, due to the potential complexity of its troubleshooting, the INSTEON Gold Support Line is unable to support INSTEON in 3-phase environments.

### **Further Enhancing Reliability**

As signals travel via the power line or RF throughout the home, they naturally become weaker the farther they travel. The best way to overcome weakened signals is to increase the coverage of the mesh network by introducing more INSTEON devices.

It is possible that some audio-video devices, computers, power strips, or other electrical equipment may attenuate INSTEON signals on the power line. You can temporarily unplug suspected devices to test whether the INSTEON signal improves. If it does, then you can plug in filters that will permanently fix the problem.

## **Specifications, Certification and Warranty**

### **Specifications**

View specifications for Open/Close Sensor at <http://www.insteon.com>.

### **FCC and Industry Canada Compliance Statement**

This device complies with FCC Rules Part 15 and Industry Canada RSS-210 (Rev. 7). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie 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, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The digital circuitry of this device 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 residential installations. 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 and television reception. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause such interference, which can be verified by turning the device off and on, the user is encouraged to eliminate the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna of the device experiencing the interference
- Increase the distance between this device and the receiver
- Connect the device to an AC outlet on a circuit different from the one that supplies power to the receiver
- Consult the dealer or an experienced radio/TV technician

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

## Open/Close Sensor Owner's Manual

### Limited Warranty

Seller warrants to the original consumer purchaser of this product that, for a period of two years from the date of purchase, this product will be free from defects in material and workmanship and will perform in substantial conformity to the description of the product in this Owner's Manual. This warranty shall not apply to defects or errors caused by misuse or neglect. If the product is found to be defective in material or workmanship, or if the product does not perform as warranted above during the warranty period, Seller will either repair it, replace it, or refund the purchase price, at its option, upon receipt of the product at the address below, postage prepaid, with proof of the date of purchase and an explanation of the defect or error. The repair, replacement, or refund that is provided for above shall be the full extent of Seller's liability with respect to this product. For repair or replacement during the warranty period, call the INSTEON Support Line at 800-762-7845 with the Model # and Revision # of the device to receive an RMA# and send the product, along with all other required materials to:

#### **INSTEON**

**ATTN: Receiving Dept.**

**16542 Millikan Ave.**

**Irvine, CA 92606-5027**

#### **Limitations**

The above warranty is in lieu of and Seller disclaims all other warranties, whether oral or written, express or implied, including any warranty or merchantability or fitness for a particular purpose. Any implied warranty, including any warranty of merchantability or fitness for a particular purpose, which may not be disclaimed or supplanted as provided above shall be limited to the two-year of the express warranty above. No other representation or claim of any nature by any person shall be binding upon Seller or modify the terms of the above warranty and disclaimer.

Home automation devices have the risk of failure to operate, incorrect operation, or electrical or mechanical tampering. For optimal use, manually verify the device state. Any home automation device should be viewed as a convenience, but not as a sole method for controlling your home.

In no event shall Seller be liable for special, incidental, consequential, or other damages resulting from possession or use of this device, including without limitation damage to property and, to the extent permitted by law, personal injury, even if Seller knew or should have known of the possibility of such damages. Some states do not allow limitations on how long an implied warranty lasts and/or the exclusion or limitation of damages, in which case the above limitations and/or exclusions may not apply to you. You may also have other legal rights that may vary from state to state.

Protected under U.S. and foreign patents (see [www.insteon.com](http://www.insteon.com))

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