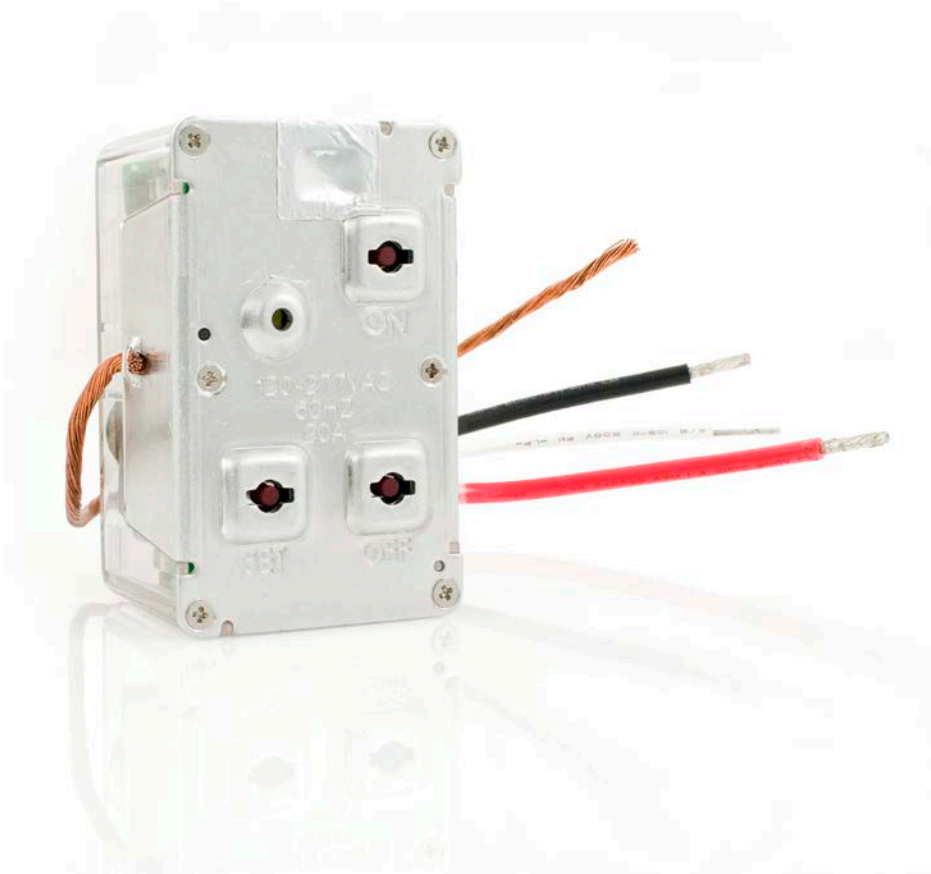# In-LineLinc™ Relay

Owners Manual
INSTEON® In-LineLinc On/Off, Dual-Band (#**2475SDB**)
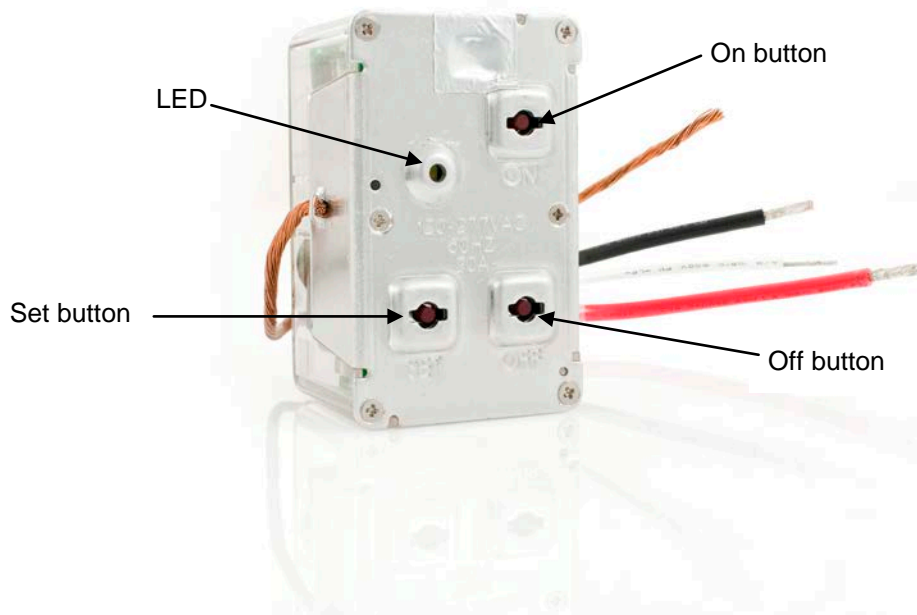
INSTEON

SMARTHOME®

About In-LineLinc Relay

In-LineLinc can be installed in-line for lighting fixtures, providing INSTEON control to individual fixtures. Additionally, In-LineLinc eliminates the need for a conventional light switch – reducing "switch sprawl" common to automation projects. You can also use In-LineLinc as an INSTEON signal repeater and phase bridger (like an Access Point, #2443). In-LineLinc Relay Dual-Band supports voltages from 120 to 277V, and loads up to 20 Amps, making it the perfect energy saving, wireless controller for commercial building automation systems.

Features & Benefits

- Once installed, setup is easy – links to other INSTEON devices in minutes

- Controls resistive and inductive loads up to 20 Amps or incandescent loads up to 1800 Watts

- Status LED and beeper shows INSTEON setup mode activity

- Communicates simultaneously over both radio frequency (RF) and the power line

- Acts as an access point for RF-only INSTEON devices

- Stores setup state in memory so settings aren't lost during power outages

- Wires into standard J-boxes (requires a NEUTRAL connection)

- Two-year warranty

What's in the Box?

In-LineLinc

Four (4) wire nuts

Quick-Start Guide

Installation

CAUTIONS AND WARNINGS

Read and understand these instructions before installing and retain them for future reference.

In-LineLinc is intended for installation in accordance with the National Electric Code and local regulations in the United States or the Canadian Electrical Code and local regulations in Canada. Use indoors only. In-LineLinc is not designed nor approved for use on power lines other than 120VAC-277VAC 60Hz. Attempting to use In-LineLinc on non-approved power lines may have hazardous consequences.

- Use only indoors or in outdoor rated box

- Be sure that you have turned off the circuit breaker or removed the fuse for the circuit you are installing In-LineLinc in. Installing In-LineLinc with the power on will expose you to dangerous voltages.

- Connect only copper or copper-clad wire to In-LineLinc

- In-LineLinc may feel warm during operation. The amount of heat generated is within approved limits and poses no hazards. To minimize heat buildup, ensure that the area surrounding the rear of In-LineLinc is as clear of clutter as possible.

- Each In-LineLinc is assigned a unique INSTEON ID, which is printed on the device's label.

- To reduce the risk of overheating and possible damage to other equipment, use In-LineLinc to control no more than 20 Amps (1800 Watts of incandescent) at 110VAC-277VAC.

- You will need a flathead screwdriver, a philips head screwdriver and a voltage meter to install In-LineLinc

Identifying the Electrical Wires in your Home

To install In-LineLinc, you will need to identify the following four wires:

- LINE - usually black, may also be called HOT or LIVE, carries 110-277VAC electricity to the load

- NEUTRAL - usually white

- GROUND - bare copper wire or metal fixture (if grounded)

If you are having difficulties identifying wires, consult an electrician to help you.

IMPORTANT!

If you are not knowledgeable about, and comfortable with, electrical circuitry, you should have a qualified electrician install In-LineLinc for you. If you have any questions, please consult an electrician or call: 800-762-7845

Tools You Will Need

- Screwdrivers (both Flathead and Phillips)

- Voltage tester

- Wire cutter / stripper

- Probe that is non-conductive to press the Set button

Installing In-LineLinc

1) Be sure to write down the INSTEON ID and location of the fixture you'll be controlling (e.g., 01.F7.G5, Mike's bedroom light)

2) At the circuit breaker or fuse panel, disable the circuit supplying power to the fixture, and then verify the power is off

3) Remove the wallplate from the fixture you'll be replacing. Then, unscrew the fixture itself and pull it out from the junction box.

4) Disconnect the wires from the fixture you will be controlling and ensure that you have ½ inch of bare wire on the ends.

5) See the diagram below to identify and connect the LINE, LOAD, NEUTRAL, and GROUND wires on In-LineLinc. Be sure you have correctly identified the wires in the junction box before connecting them.

Wiring Diagram
NOTE: Home's wire color and wire location may vary
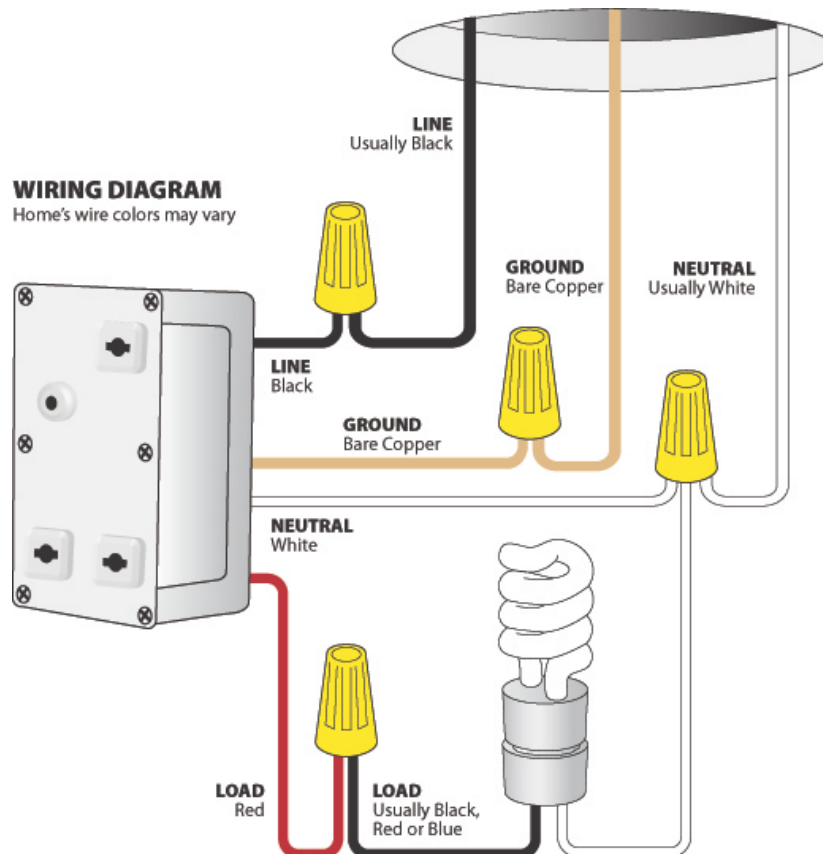
6) After you have connected all the wires, ensure that the wire connectors are firmly attached and that there is no exposed copper except for the GROUND wire

7) Prior to reinstalling the fixture, turn on circuit breaker supplying power to the fixture

8) Use the On and Off buttons on In-LineLinc to test that it is controlling the load

9) Link In-LineLinc to the desired INSTEON devices. See *Adding In-LineLinc to a Scene as a Responder*.

10) Gently place In-LineLinc into the junction box, making sure nothing could accidentally press any of the buttons on its face

11) Reinstall the fixture

INSTEON Scenes

Scene Definition: One or more INSTEON devices that respond to an INSTEON controller. When the scene is activated (turned "on"), all devices return to the states they were at when the scene was programmed.

Adding In-LineLinc to a Scene as a <u>Responder</u>

1) Use the On and Off button on In-LineLinc to set the load to the state you wish to activate from the controller (turn it on if you wish it to be on when the controller activates the scene, etc.)

2) Press & hold the scene controller button until it beeps[1]

3) Press & hold the Set button on In-LineLinc until it double-beeps

   In-LineLinc's Status LED will flash once and then turn on steady

   *Controller will **(Beep)-(Beep)**[2] and its LED will stop blinking*

4) Confirm that scene addition was successful by tapping On then Off on the controller's scene button

   The In-LineLinc will respond appropriately

Removing In-LineLinc from a Scene as a <u>Responder</u>

If you are going to discontinue using In-LineLinc, it is very important that you remove it from all of its scene controllers. Otherwise, the controllers will retry commands repetitively, creating network delays.

1) Press & hold the controller's scene button until controller beeps[3]

2) Press & hold the controller's scene button until controller beeps again[3]

3) Press & hold the Set button on In-LineLinc until it double-beeps

   The In-LineLinc Status LED will flash once and then turn on bright if the load if off or dim if the load is on

4) Confirm that Unlinking was successful by tapping the button you just Unlinked from on the controller

   In-LineLinc will no longer respond

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[1] If the controller does not have a beeper, wait until its LED begins blinking
[2] Most models
[3] For devices without beepers hold until its LED begins blinking (this may take 10+ seconds)

Advanced Features

Using In-LineLinc as a Phase Bridge (Phase Bridging Detection Mode)

In-LineLinc automatically bridges the electrical phases in your home (via communications with dual-band devices on the "other phase"). Use the following procedure to confirm that phases are bridged via In-LineLinc:

1) Start Phase Bridging Detection Mode by tapping the Set button on In-LineLinc four times quickly

   In-LineLinc will begin (Beeping)

   Other dual-band devices' LEDs will illuminate at 100% brightness

2) Check the LED behavior of the "other" dual-band devices

   - If the "other" dual-band device is blinking green [4]

     i. it is within range and not on the same phase, proceed to next Step

   - If they are not blinking green [5]

     i. Try moving the "other" device, check other dual-band devices or begin test from a different initiator

3) Tap In-LineLinc's Set Button

   In-LineLinc will stop beeping and LED returns to previous state

   Other devices' LEDs will stop blinking

Restoring Power to In-LineLinc

In-LineLinc 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 in the event of a power failure.

In the event of a power loss In-LineLinc will automatically return the load to the state it had before power was interrupted.

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[4] Or is simply blinking for single colored LEDs. If the "other" dual-band device is a KeypadLinc Dual-Band, the 4 middle LEDs will blink.
[5] Or are not blinking at all for single colored LEDs. If the "other" dual-band device is a KeypadLinc, any LEDs that are on will go to full bright.

Resetting In-LineLinc to its Factory Default Settings

The factory reset procedure clears all settings from In-LineLinc, including INSTEON links, X10 addresses, etc.

Option 1

1) If possible, remove all scene memberships prior to performing the factory reset.

2) Press & hold the Set button on In-LineLinc until it beeps

   LED will blink

3) Press & hold the In-LineLinc's Set button until it beeps again

   In-LineLinc's LED will blink

4) Double-tap the Set button, then immediately press & hold it until the long beep stops

   In-LineLinc's LED will turn off

   In-LineLinc will emit a long ((((((Beep))))))

Option 2 – two people required

1) If possible, remove all scene memberships prior to performing the factory reset.

2) Turn circuit breaker off

3) While Pressing & holding In-LineLinc's Set button, have a friend turn the circuit breaker back on

   As you continue to press & hold, In-LineLinc will (Beep)

4) Continue to press & hold the Set button for 3 seconds, then release

   As soon as you release the Set button, the In-LineLinc LED will turn on solid white and then dim. After a few seconds, In-LineLinc will (Beep)-(Beep).

X10 Programming

Instructions on setting X10 primary address and scene addresses can be found online:

http://www.smarthome.com/insteon-x10-programming.html

Specifications

General	
Product Name	In-LineLinc Relay – INSTEON Remote Control In-Line On/Off Switch (Dual-Band)
Brand	Smarthome
Manufacturer Product Number	2475SDB
UPC	813922011425
FCC ID	SBP4773
Patent Number	7,345,998 US, International Patents Pending
Warranty	2 Years, Limited
INSTEON		
INSTEON ID	1	
INSTEON	256 responder groups & 1 controller group	
Maximum Scene Links	417	
Scene Commands Supported as Responder	On	Off
Software Configurable	Yes, Always	
RF Range	150' Open air	
X10 Support	Yes	
X10 Addresses	1 max, unassigned by default	
INSTEON Device Category	0x02	
INSTEON Device Subcategory	0x1F	
INSTEON Product Key (IPK)	0x000085	
Mechanical	
Mounting	Mounts inside lighting ballast box in the ceiling or in the wall

Wires	Colors:
	  White – Neutral 18 gauge
	  Black – Hot 12 gauge
	  Red – Load 12 gauge
	  Copper – Earth Ground 12 gauge

Set Button	1
Beeper	Yes
LED	White
Dimensions	2.77" H x 1.75" W x 1.47" D
Weight	120 grams / 0.26 pounds
Operating Environment	Indoors
Operating Temperature Range	32-104 F

Operating Humidity Range	0-85% Relative Humidity
Electrical	
Voltage	120VAC +/- 10%, Split, Single Phase
	240VAC +/- 10%, Single Phase
	277VAC +/- 10% Three Phase
Frequency	60Hz
Maximum Load	20 Amps;1800 Watts (for incandescent loads)
Load Type(s)	Wired-in incandescent lighting and inductive loads
Retains all settings without power	Yes, all saved in Non-volatile EEPROM
Standby power consumption	< 1 watt
Safety Approved	ETL (Intertek Testing Services)
Certifications	FCC, IC Canada
X10 Features (applies to power line only)	
X10 Primary Address	1
X10 Status Response	Supported
X10 Powerline Frequency	120 KHz
X10 Messages Repeated	No

Troubleshooting

Problem	Possible Cause	Solution
The Status LED on In-LineLinc is not turning on and won't control the load.	In-LineLinc may not be getting power.	Make sure the circuit breaker is turned on.
		Check the junction box wires to ensure all connections are tight and no bare wires are exposed.
In-LineLinc won't link or work with a controller.	The controller might have been reset without Unlinking In-LineLinc from it.	Re-Link In-LineLinc to the controller.
	The INSTEON signal may be too weak.	Add additional INSTEON devices or move around existing INSTEON devices. All INSTEON devices act as INSTEON network repeaters.
	Large appliances, such as refrigerators or air conditioners, may be producing electrical noise on the power line.	Install a power line noise filter (#1626-10) to filter electrical noise and minimize signal attenuation.

Problem	Possible Cause	Solution
	Other electrical devices, such as computers, televisions, or power strips, may be absorbing the INSTEON signal.	
In-LineLinc is taking a long time to respond to a controller.	The controller may be sending commands to a responder that is no longer in use. Commands for the unused responder are being resent and loading down the signal.	Unlink any unused responders from the controller. HINT: If you are using home automation software, you can easily check scene membership and eliminate unnecessary links.
		If the above doesn't work, perform a factory reset on the controller.
The load turned on by itself.	Another controller or timer could have triggered In-LineLinc.	Perform a factory reset. See *Resetting In-LineLinc to its Factory Default Settings.*
The controller can turn off In-LineLinc but In-LineLinc does not turn on when I send an ON command from the controller.	In-LineLinc may be linked at its off state.	Re-link In-LineLinc to the controller, while the load is on. See *Linking an INSTEON Controller to In-LineLinc.*
In-LineLinc is locked up.	A surge or excessive noise on the power line may have glitched it.	Temporarily remove power from In-LineLinc, usually by opening the breaker feeding it.
		If the above doesn't work, perform a factory reset. See *Resetting In-LineLinc to its Factory Default Settings.*

If you have tried these solutions, reviewed this Installation and Programming Guide, and still cannot resolve an issue you are having with In-LineLinc, please call:

The INSTEON Gold Support Line
800-762-7845

Certification and Warranty

Certification
This product has been thoroughly tested by ITS ETL SEMKO, a nationally recognized independent third-party testing laboratory. The North American ETL Listed mark signifies that the device has been tested to and has met the requirements of a widely recognized consensus of U.S. and Canadian device safety standards, that the manufacturing site has been audited, and that the manufacturer has agreed to a program of quarterly factory follow-up inspections to verify continued conformance.

FCC & Industry Canada Compliance Statement
This device complies with FCC Rules Part 15 and Industry Canada RSS-210 (Rev. 8). 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 present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorise aux deux conditions suivantes:

> (1) l'appareil ne doit pas produire de brouillage, et

> (2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, mme 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 15.107 and 15.109 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.

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 Gold 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:

Smarthome
ATTN: Receiving
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.

U.S Patent No. 7,345,998, International patents pending