



# ApplianceLinc™

INSTEON® Plug-In Appliance On/Off Module, 3-Pin

Model : 2456S



# SMARTHOME™

INSTEON

# ApplianceLinc Owner's Manual



## TABLE OF CONTENTS

<b>ABOUT APPLIANCELINC .....</b>	<b>3</b>
Key ApplianceLinc Features.....	3
What is Included with ApplianceLinc .....	3
<b>WHAT IS INSTEON?.....</b>	<b>4</b>
<b>INSTALLATION .....</b>	<b>4</b>
Preparing to Install ApplianceLinc .....	4
Installing ApplianceLinc .....	5
<b>CONTROLLING APPLIANCELINC FROM AN INSTEON CONTROLLER .....</b>	<b>6</b>
Linking an INSTEON Controller to ApplianceLinc.....	6
Unlinking ApplianceLinc from an INSTEON Controller .....	6
<b>CREATING INSTEON SCENES .....</b>	<b>6</b>
<b>ADVANCED FEATURES .....</b>	<b>7</b>
Enabling/Disabling Load Sensing.....	7
Restoring Power to ApplianceLinc .....	7
Resetting ApplianceLinc to its Factory Default Settings.....	7
<b>X10 PROGRAMMING OPTIONS .....</b>	<b>8</b>
Setting the X10 Primary Address .....	8
Removing the X10 Primary Address .....	8
<b>ADVANCED X10 PROGRAMMING OPTIONS.....</b>	<b>9</b>
Remotely Setting an X10 Scene Address .....	9
Remotely Removing an X10 Scene Address .....	9
<b>ABOUT INSTEON .....</b>	<b>10</b>
Using Dual-Band INSTEON Devices to Upgrade Your Network.....	10
Important Note about INSTEON Networks; Split Single-Phase vs. 3-Phase Installation .....	10
Further Enhancing Reliability .....	10
<b>ADDITIONAL RESOURCES .....</b>	<b>10</b>
<b>TROUBLESHOOTING.....</b>	<b>11</b>
<b>SPECIFICATIONS, CERTIFICATION, AND WARRANTY .....</b>	<b>12</b>
Specifications .....	12
Certification.....	12
Limited Warranty .....	12

## ABOUT APPLIANCELINC

ApplianceLinc presents you with an elegant and stylish way to remotely control any plug-in device in your home at the touch of a button. Send commands to ApplianceLinc from any INSTEON Controller.



### Key ApplianceLinc Features

- Installs and Links to other INSTEON devices in minutes
- Controls standard incandescent loads up to 480 Watts and inductive loads up to 15 Amps
- Indicates INSTEON setup mode activity and operational states with a Status LED
- Load Sensing easily disabled and re-enabled
- Pass-through outlet so you won't lose an outlet
- Responds to commands from X10 controllers
- Stores setup state in memory so settings aren't lost during power outages
- Two-year warranty

### What is Included with ApplianceLinc

- ApplianceLinc – INSTEON Plug-In Appliance On/Off Module
- 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

### Preparing to Install ApplianceLinc

#### CAUTION

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

ApplianceLinc 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. ApplianceLinc is not designed nor approved for use on power lines other than 120V 60Hz, single phase. Attempting to use ApplianceLinc on non-approved power lines may have hazardous consequences.

Prior to installing ApplianceLinc, please review the entire installation procedure and take the following precautions:

- Use indoors or in a properly insulated and weatherproof electrical box only
- Don't plug ApplianceLinc into an outlet controlled by a switch because if the switch is inadvertently turned off, ApplianceLinc won't have power
- Don't plug ApplianceLinc into a filtered power strip or AC line filter
- Be sure the device you want to control is working and that the device's built-in switch is in the on position

- Don't stack INSTEON home automation devices together by plugging them into one another. Stacked modules may overheat and stop functioning.
- Don't use ApplianceLinc to control devices that preserve, maintain, or contribute to human or animal safety or life support

If you have any questions, please call:

**INSTEON Gold Support Line**  
800-762-7845

### Installing ApplianceLinc

- 1) Plug the lamp/device (also called the load) you want to control into the outlet on the *bottom* of ApplianceLinc



- 2) Plug ApplianceLinc into an unswitched wall outlet

*The ApplianceLinc Status LED and the load will turn on*

- 3) If the load does not turn on, turn it on manually using the switch on the load itself
- 4) OPTIONAL: You can use the pass-through outlet on the *front* of ApplianceLinc as you would an ordinary uncontrolled wall outlet. However, do not plug another home automation product into this outlet.
- 5) Tap the Set button on ApplianceLinc to toggle the load on and off



NOTE: After completing installation, you will not be able to use the load's built-in switch to control the device, unless you have enabled the Load Sensing feature. See *Enabling/Disabling Load Sensing*.



# CONTROLLING APPLIANCELINC FROM AN INSTEON CONTROLLER

## Linking an INSTEON Controller to ApplianceLinc

To use ApplianceLinc as an INSTEON Responder, follow these steps to Link ApplianceLinc and a Controller together. Refer to the Controller's Owner's Manual for detailed instructions on how to properly install and Link it to ApplianceLinc.

The following will work for the most common INSTEON devices:

- 1) Use the Set button to set ApplianceLinc to the state you wish to activate from the Controller (on or off)
- 2) Set the Controller to Linking Mode. (For most Controllers, press & hold an On or Scene button for 10 seconds or the Set button for 3 seconds.)

You will have 4 minutes to complete the next step before Linking Mode automatically times out.

- 3) Press & hold the Set button on ApplianceLinc for 3 seconds

*The ApplianceLinc Status LED will flash twice and then turn on solid*

- 4) Confirm that Linking was successful by tapping the button you just Linked to on the Controller

*ApplianceLinc will respond appropriately*

## Unlinking ApplianceLinc from an INSTEON Controller

If you are going to discontinue using ApplianceLinc, it is very important that you Unlink it from any Linked Controllers. Otherwise, the Controllers will retry any commands repetitively, thus slowing down the system.

The following will work for the most common INSTEON devices:

- 1) Set the Controller to Unlinking Mode. (For most Controllers, press & hold an On or Scene button for 10 seconds **twice** or the Set button for 3 seconds **twice**.)

You will have 4 minutes to complete the next step before Unlinking Mode automatically times out.

- 2) Press & hold the Set button on ApplianceLinc for 3 seconds

*The ApplianceLinc Status LED will flash twice and then turn on solid*

- 3) Confirm that Unlinking was successful by tapping the button you just Unlinked from on the Controller

*ApplianceLinc will no longer respond*

## CREATING INSTEON 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

### Enabling/Disabling Load Sensing

Load Sensing allows you to manually turn on the load plugged into ApplianceLinc by using the switch on the load itself, without sending a command from an INSTEON or X10 controller. When the load is in the off state (with Load Sensing enabled), ApplianceLinc will “sense” that you are trying to turn it on with its built-in switch. When ApplianceLinc senses this, it will turn on the load automatically.

**CAUTION:** With Load Sensing, some lamps have been known to turn on ApplianceLinc after you have turned it off. Please use this feature with caution.

By default, Load Sensing is **disabled** on product versions 2.0 or higher and **enabled** on product versions 1.4 or higher.

#### Enable Load Sensing

- 1) Press & hold the Set button on ApplianceLinc for 3 seconds  
*The ApplianceLinc Status LED will begin blinking*
- 2) Triple-tap the Set button on ApplianceLinc  
*The ApplianceLinc Status LED will stop blinking and turn on solid*
- 3) Test that Load Sensing has been enabled by turning the load on and off from its built-in switch  
*The load will turn on and off*

#### Disable Load Sensing

- 1) Press & hold the Set button on ApplianceLinc for 3 seconds  
*The ApplianceLinc Status LED will begin blinking*
- 2) Double-tap the Set button on ApplianceLinc  
*The ApplianceLinc Status LED will stop blinking and turn on solid*
- 3) Test that Load Sensing has been disabled by turning the load on and off from its built-in switch  
*The load will not respond*

### Restoring Power to ApplianceLinc

ApplianceLinc 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 ApplianceLinc will automatically default the load to off when power is restored.

### Resetting ApplianceLinc to its Factory Default Settings

The factory reset procedure can be used to clear the ApplianceLinc memory of all INSTEON Links and X10 addresses

- 1) If you are using a Controller to control ApplianceLinc, be sure to Unlink it from the Controller. See *Unlinking ApplianceLinc from an INSTEON Controller*.
- 2) Unplug ApplianceLinc for about 10 seconds
- 3) While holding down the Set button on ApplianceLinc, plug it back in, making sure not to let go of the Set button
- 4) Continue to hold down the Set button for 3 seconds and then release  
*The ApplianceLinc Status LED will flash once and then turn off*  
*After a few seconds, the Status LED and the load will turn on*

## X10 PROGRAMMING OPTIONS

ApplianceLinc is X10 ready, meaning that it can respond to X10 commands from X10 controllers. However, to operate ApplianceLinc in X10 mode, you must first set up an X10 Primary Address. As it ships from the factory or after a factory reset procedure, ApplianceLinc will not have an X10 Primary Address set up.

### Setting the X10 Primary Address

- 1) Set ApplianceLinc to Linking Mode by pressing & holding the Set button for 3 seconds

*The ApplianceLinc Status LED will begin blinking*

You will have 4 minutes to complete the next step before Linking Mode automatically times out.

- 2) Using an X10 controller, send the X10 address you want to assign and the ON command **three times**

For example, to assign the address A1, you would send "A1 ON A1 ON A1 ON."

- 3) Once ApplianceLinc has received the sequence, it will exit Linking Mode

*The ApplianceLinc Status LED will flash twice and then turn on solid*

### Removing the X10 Primary Address

If you are no longer going to control ApplianceLinc with an X10 Primary address, it is very important that you Unlink it. Otherwise, ApplianceLinc will still respond to X10 commands and may cause ApplianceLinc to turn on by itself.

- 1) Set ApplianceLinc to Linking Mode by pressing & holding the Set button for 3 seconds

*The ApplianceLinc Status LED will begin blinking*

- 2) Set ApplianceLinc to Unlinking Mode by pressing & holding the Set button for 3 seconds

*The ApplianceLinc Status LED will continue blinking*

You will have 4 minutes to complete the next step before Unlinking Mode automatically times out.

- 3) Using an X10 controller, send the X10 address you wish to remove and the ON command **three times**

For example, to remove the address A1, you would send "A1 ON A1 ON A1 ON".

- 4) Once ApplianceLinc has received the sequence, it will exit Linking Mode

*The ApplianceLinc Status LED will flash twice and then turn on solid*



## ADVANCED X10 PROGRAMMING OPTIONS

ApplianceLinc can be a member of up to 255 X10 scenes. An X10 scene address is just another X10 address like the X10 Primary Address. When an X10 ON command is sent to an X10 scene address, every X10 device with that address will turn on to its independent On-Level at its independent Ramp Rate (if a dimmable device). Sending an X10 OFF command to an X10 scene address will turn off all devices that are members of that X10 scene, each at its independent Ramp Rate. Dimmable X10 devices will react to DIM and BRIGHT commands after the X10 scene address is sent. However, they will ignore ALL ON and ALL OFF commands for the X10 scene address.

### Remotely Setting an X10 Scene Address

- 1) Using an X10 controller, send the CLEAR sequence:

O16	N16	M16	P16	M16
-----	-----	-----	-----	-----

- 2) Use the Set button on ApplianceLinc to set the load to the desired state (on or off)
- 3) Send the following X10 address sequence:

M16	N16	O16	P16
-----	-----	-----	-----

- 4) Send the desired X10 scene address (house code and unit code)

### Remotely Removing an X10 Scene Address

- 1) Using an X10 controller, send the CLEAR sequence:

O16	N16	M16	P16	M16
-----	-----	-----	-----	-----

- 2) Send the ApplianceLinc's X10 Primary Address (house code and unit code)
- 3) Send an X10 ON or OFF command
- 4) Send the following X10 address sequence:

O16	P16	M16	N16
-----	-----	-----	-----

- 5) Send the X10 scene address you wish to remove (house code and unit code)



## 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)

### 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.

## ADDITIONAL RESOURCES

Find home automation solutions, helpful tips, interactive demos, videos, user forums, and more at the Smarthome Learning Center: [www.smarthome.com/learningcenter.html](http://www.smarthome.com/learningcenter.html)

## TROUBLESHOOTING

Problem	Possible Cause	Solution
The Status LED on ApplianceLinc is not turning on and won't control the load.	ApplianceLinc may not be getting power.	Make sure ApplianceLinc is not plugged into a switched outlet that is turned off.
ApplianceLinc won't Link or work with a Controller.	The Controller might have been reset without Unlinking ApplianceLinc from it.	Re-Link ApplianceLinc to the Controller.
	The Controller and ApplianceLinc may be on opposite power line phases.	Make sure two dual-band INSTEON devices are properly installed to bridge the two power line phases.
	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.
	Other electrical devices, such as computers, televisions, or power strips, may be absorbing the INSTEON signal.	
ApplianceLinc 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, a timer, or stray X10 signals could have triggered ApplianceLinc.	Perform a factory reset. See <i>Resetting ApplianceLinc to its Factory Default Settings</i> .
The Controller can turn off ApplianceLinc but ApplianceLinc does not turn on when I send an ON command from the Controller.	ApplianceLinc may be Linked at its off state.	Re-Link ApplianceLinc to the Controller, while the load is on. See <i>Linking an INSTEON Controller to ApplianceLinc</i> .
ApplianceLinc is locked up.	A surge or excessive noise on the power line may have glitched it.	Unplug ApplianceLinc for 10 seconds and then reinstall.
		If the above doesn't work, perform a factory reset. See <i>Resetting ApplianceLinc to its Factory Default Settings</i> .
The load is not being controlled by ApplianceLinc.	The load may not be getting power.	Make sure the load's built-in switch is in the on position.
The LEDs controlled by ApplianceLinc do not turn off completely when I send an OFF command.	You might be using a low-wattage LED. Since LEDs don't take a lot of power, the trickle-charge that runs through ApplianceLinc may be enough to power the bulb.	Add to the load with more LEDs or higher wattage bulbs – generally higher than a 5 Watt load.

If you have tried these solutions, reviewed this Owner's Manual, and still cannot resolve an issue you are having with ApplianceLinc, please call:

**INSTEON Gold Support Line**  
800-762-7845



## SPECIFICATIONS, CERTIFICATION, AND WARRANTY

### Specifications

View specifications for ApplianceLinc at: [www.smarthome.com/2456S3.html](http://www.smarthome.com/2456S3.html)

### 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.

### 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, Inc.**  
**ATTN: Receiving Dept.**  
**16542 Millikan Ave.**  
**Irvine, CA 92606-5027**

The logo for SMARTHOME™, featuring the word 'SMARTHOME' in a bold, blue, sans-serif font with a trademark symbol.

### 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.

### INSTEON Technology Patent

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

© Copyright 2011

Smarthome, 16542 Millikan Ave., Irvine, CA 92606, 800-762-7845, [www.smarthome.com](http://www.smarthome.com)

Rev 04-28-2011