



INSTEON

# INSTEON™ In-LineLinc™ Dimmer

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INSTEON Inline Dimmer Module

For models:  
#2475D In-LineLinc Dimmer 300W



smartlabs  
design

# INSTEON In-LineLinc Dimmer User's Guide

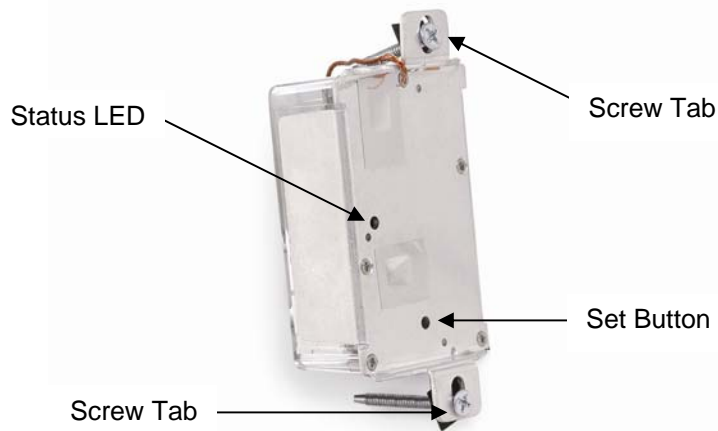


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## ABOUT INSTEON IN-LINELINC DIMMER

Congratulations on purchasing the INSTEON™ In-LineLinc™ Dimmer. For the ultimate in custom automation installations, In-LineLinc Dimmer can be installed inline for lighting fixtures, providing automated INSTEON and X10 control to individual fixtures. Additionally, inline installation eliminates the need for a conventional light switch- reducing “switch sprawl” common to automation projects.



### What is INSTEON?

INSTEON is a simple, reliable, and affordable breakthrough in home control. Simple, because Plug-n-Tap™ setup is a breeze, and there are no wires to add – INSTEON uses existing powerline wiring as well as radio-frequency for communication. Reliable, because every INSTEON device is a two-way repeater. And affordable, not just because of low cost, but because INSTEON also works with legacy X10 devices. An INSTEON home grows in value with every INSTEON device you add, making life more convenient, safe and fun.

### Key In-LineLinc Dimmer Features

- After installation, setup is easy – links to controlled devices and other controllers in minutes
- Controls all standard incandescent lamps, up to 300 watts
- Also compatible with low voltage lighting with magnetic or dimmable electronic transformers
- Dims lights to 32 brightness levels
- Changes brightness at 32 ramp rates
- Responds to commands from X10 controllers
- Includes probe for use with recessed set button
- Wires in to standard J-boxes (requires a NEUTRAL connection)
- Warranted for two years

## HOW TO INSTALL IN-LINELINC DIMMER

### Caution

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

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

Do not install In-LineLinc Dimmer to control a receptacle or fluorescent lighting fixture. Connect only copper or copper-clad wire to In-LineLinc Dimmer. Before installing, disconnect power at the circuit breaker or remove the circuit's fuse to avoid shock or possible damage to In-LineLinc Dimmer. It is recommended that a qualified electrician perform this installation.

To reduce the risk of overheating and possible damage to other equipment, use In-LineLinc Dimmer to control 110V incandescent lamps only. Dimming an inductive load, such as a fan or transformer, could cause damage to the dimmer, the load device, or both. If the manufacturer of the load device does not recommend dimming, use a non-dimming INSTEON switch such as In-LineLinc Relay. **USER ASSUMES ALL RISKS ASSOCIATED WITH DIMMING AN INDUCTIVE LOAD.**



**Proper installation of at least two SignalLinc™ RF Signal Enhancers is required prior to installing and using other INSTEON devices.**

### Tools You Will Need

- A flat screwdriver to remove the faceplate from the switch junction box.
- A Phillips screwdriver for the screws that hold In-LineLinc Dimmer in the junction box.
- A wire cutter and stripper if the switch you are replacing requires you to cut the wires to remove them.
- The included probe, for use with the recessed set button. If unavailable, use a blunt non-conductive tool.

### IMPORTANT!

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

**SmartLabs Tech Support  
866-243-8018**



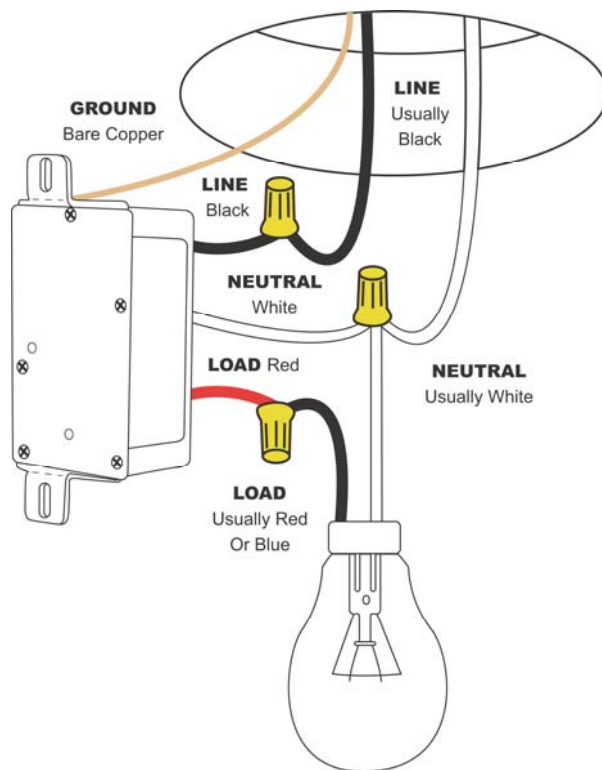
### Preparing to Install In-LineLinc Dimmer

Before installing In-LineLinc Dimmer, please familiarize yourself with the following and take the necessary precautions listed here:

- Be sure that you have turned off the circuit breaker or removed the fuse for the circuit you are installing In-LineLinc Dimmer in. Installing In-LineLinc Dimmer with the power on will expose you to dangerous voltages.
- In-LineLinc Dimmer requires a small amount of power to operate, which it receives from a connection to the NEUTRAL electrical wire (usually white). If you are replacing a standard mechanical switch with In-LineLinc Dimmer, the switch you are replacing will normally *not* have a connection to the neutral wire. However, most junction boxes will contain a NEUTRAL wire that you can connect In-LineLinc Dimmer to. If your junction box does not contain a neutral wire, please call SmartLabs Tech Support at 866-243-8018, or consult an electrician.
- Don't use In-LineLinc Dimmer to control an electrical outlet, because non-dimmable or inductive loads may be plugged into it.
- In-LineLinc Dimmer 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 Dimmer has adequate ventilation by clearing away excess insulation.
- Each In-LineLinc Dimmer is assigned a unique INSTEON ID, which is printed on a label on the front of the module. Prepare a list of all the INSTEON modules you are installing, which includes their unique ID and their location (e.g. 01.F7.G5, Mike's Bedroom light). While knowing this ID is only necessary if using automation software (such as SmartLabs HouseLinc Desktop) to program and control the module, and use of this software is optional, it's best to document all INSTEON module IDs and keep the information in a safe place. This step saves a lot of labor if you decide sometime in the future to use one of these software programs, so you don't need to re-open all the junction boxes and fixtures throughout your home where INSTEON modules are installed to learn these IDs.

## Installing In-LineLinc Dimmer

1. For best INSTEON Network performance, be sure you have properly installed at least two SignalLinc RF Signal Enhancers.
2. At the circuit breaker or fuse panel, disconnect the power for *all* of the circuits in the switch junction box. Verify that power is off by trying to turn on the lights controlled by the switches.
3. Remove the faceplate from the switch junction box, then unscrew the switch you are replacing and pull it out from the junction box.
4. Disconnect the wires from the switch you are replacing. If the wires cannot be detached by unscrewing them, cut the wires where they enter the switch, then strip ½" of insulation off the ends.
5. Follow the diagram below to identify and connect the LINE, LOAD, NEUTRAL, and GROUND wires. If the colors of the wires do not match the diagram, be sure you have identified the wires correctly before connecting them.



### NOTE

The NEUTRAL wire will not normally be connected to the switch you are replacing. If there is no NEUTRAL wire in the junction box, please consult an electrician or call

**SmartLabs Tech Support**  
**866-243-8018**

6. After you have connected all of the wires, ensure that all of the wire connectors are firmly attached and that there is no exposed copper except for the GROUND wire.
7. Turn the circuit breaker back on or re-install the fuse.

## HOW TO SET UP IN-LINELINC DIMMER TO BE REMOTELY CONTROLLED BY AN INSTEON CONTROLLER

### Linking an INSTEON Controller to In-LineLinc Dimmer

To remotely control In-LineLinc Dimmer using another INSTEON Controller, follow these steps to link In-LineLinc Dimmer and the INSTEON Controller together. Refer to your INSTEON Controller's User's Guide for detailed instructions on how to properly install it and link it to In-LineLinc Dimmer. The following will work for the most common INSTEON Controllers.

1. Select your INSTEON Controller from the list below and follow the method shown to put it into **Linking Mode**.



- A. **A SwitchLinc V2 Dimmer** – Press and hold the SwitchLinc Dimmer's **Paddle Top** for 10 seconds, then release. To confirm that it is in Linking Mode, the SwitchLinc Dimmer will flash the light that it is wired to once and begin blinking the top LED in its LED Bar.



- B. **ControlLinc™ V2 Tabletop Controller** – Choose the ON/OFF Button Pair you want to use for controlling In-LineLinc Dimmer. Press and hold the **ON Button** of the pair for 10 seconds. To confirm that it is in Linking Mode, ControlLinc V2's Status LED will begin blinking.



- C. **KeypadLinc™ V2** – Choose the ON Button you want to use for controlling In-LineLinc Dimmer. Press and hold the **ON Button** for 10 seconds. To confirm that it is in Linking Mode, KeypadLinc V2 will flash the light that it is wired to once and begin blinking the ON Button that you pushed.



- D. **Other INSTEON Controllers** – See the INSTEON Controller's User's Guide.

2. Press and hold the **set button** for 10 seconds on the In-LineLinc Dimmer that is being controlled. To confirm linking, the In-LineLinc Dimmer will blink its status LED and flash the light that it is wired to. Depending on the INSTEON Controller, you have about 4 minutes to perform this step before Linking Mode times out automatically.

#### HELPFUL TIP

While In-LineLinc Dimmer (and other INSTEON modules) can be fully configured and controlled using nothing more than the modules themselves and compatible, linked INSTEON controllers, you may find that configuring the devices is significantly easier and faster when using a compatible software program, such as SmartLabs HouseLinc Desktop.

## Unlinking In-LineLinc Dimmer from an INSTEON Controller

If you are no longer going to control an In-LineLinc Dimmer with an INSTEON Controller, it is very important that you unlink it, because otherwise the controller will retry any commands intended for the unused In-LineLinc Dimmer, thus slowing down your system.

1. Select your INSTEON Controller from the list below and follow the method shown to put it into **Unlinking Mode**.



- A. **A SwitchLinc V2 Dimmer** – Press and hold the SwitchLinc Dimmer's **Paddle Top** for 10 seconds, release, then press the Paddle Top a second time for 10 seconds.



- B. **ControlLinc™ V2 Tabletop Controller** – Press and hold the **OFF Button** of the ON/OFF Button Pair you used for controlling In-LineLinc Dimmer for 10 seconds. To confirm that it is in Unlinking Mode, ControlLinc V2's Status LED will begin blinking.



- C. **KeypadLinc™ V2** – Press and hold for 10 seconds the **ON Button** you used for controlling In-LineLinc Dimmer, then press and hold the same **ON Button** for 10 seconds **again**. To confirm that it is in Unlinking Mode, KeypadLinc V2 will flash the light that it is wired to once and begin blinking the ON Button that you pushed.



- D. **Other INSTEON Controllers** – See the INSTEON Controller's User's Guide.

2. Press and hold the **set button** for 10 seconds on the In-LineLinc Dimmer that is being controlled. To confirm unlinking, the In-LineLinc Dimmer will blink its status LED and also the light that it is wired to. Depending on the INSTEON Controller, you have about 4 minutes to perform this step before Unlinking Mode times out automatically.



## HOW TO SET UP ON-LEVELS AND RAMP RATES

### Setting the On-Level and Ramp Rates (Optional)

The **On-Level** is the brightness that the light you are controlling will go to when you turn it on. The On-Level is adjustable from OFF to 100% brightness. The default is 100%.

The **Ramp Rate** sets the time it will take for the light you are controlling to go from OFF to the On-Level brightness, or from the On-Level brightness to OFF. This time is adjustable from 0.1 to 9 seconds to ramp between full-ON and full-OFF. The default is 0.1 second.

In-LineLinc Dimmer can store many On-Levels and Ramp Rates in its memory.

In-LineLinc Dimmer stores *separate* On-Levels and Ramp Rates for each button on each Controller that it is linked to. These On-Levels and Ramp Rates can all be the same, or they can be different.

You establish an On-Level and Ramp Rate by first setting them up and then locking them in. Setting an On-Level and setting a Ramp Rate are always done the same way, but locking them in is different, depending on what you want the On-Level and Ramp Rates to apply to.

You can set up an On-Level or Ramp Rate in any order. When you do the lock-in, the currently-set On-Level and Ramp Rate are locked in together.

### Setting the On-Level

1. After linking In-LineLinc Dimmer to the desired INSTEON controller, use that controller to set the load to the desired brightness level.
2. Press In-LineLinc's **SET Button** once.
3. In-LineLinc Dimmer will flash the controlled light once to confirm the On-Level setting.

#### **BE CAREFUL**

If In-LineLinc Dimmer is flashing its status LED, you held the SET Button down too long. Holding down the SET Button for 3 seconds is an alternate way to place In-LineLinc Dimmer into Linking Mode. Linking mode will time out after 4 minutes of inactivity.



## Setting the Ramp Rate

The Ramp Rate sets the time it will take for the light you are controlling to go from OFF to the On-Level brightness, or from the On-Level brightness to OFF. This time is adjustable from 0.1 to 9 seconds to ramp between full-ON and full-OFF. The default is 0.1 second.

1. Use the linked INSTEON controller to **adjust the Ramp Rate** of the controlled light. Adjust the Ramp Rate to be faster by brightening the light, or adjust it to be slower by dimming the light. The table below gives the approximate relationship between the brightness you set and the Ramp Rate you get.

Approximate Brightness Level	Ramp Rate in Seconds
90-100%	0.1
77-87%	0.2
65-74%	0.3
52-61%	0.5
39-48%	2.0
26-35%	4.5
13-23%	6.5
1-10%	8.5
1%	9.0

### NOTE

If the light is ramping to less than full brightness, then the time it will take will be proportionately less. For instance, if the light is going to half brightness, the time it will take for a given Ramp Rate will be halved.

2. **Double-press** In-LineLinc's **SET Button**.
3. In-LineLinc Dimmer will flash the controlled light once to confirm the Ramp Rate setting.

### BE CAREFUL

If the controlled load flashes twice, you didn't double-press the SET Button fast enough, and In-LineLinc Dimmer incorrectly thought you set up the On-Level twice. Re-set the correct On-Level and try the Ramp Rate setting again.

## Locking In a Remote-Controlled On-Level and Ramp Rate

Whenever you link an INSTEON Controller to In-LineLinc Dimmer, the current On-Level and Ramp Rate values are stored in In-LineLinc Dimmer's memory. So, locking in a remote-controlled On-Level and Ramp Rate is really just the same as linking. Just follow the instructions in the section *Linking an INSTEON Controller to In-LineLinc Dimmer*, above.



## ADVANCED FEATURES OF IN-LINELINC DIMMER

### Restoring Power to In-LineLinc Dimmer

In-LineLinc Dimmer stores all of its settings in non-volatile memory, so they are not lost even when power is removed. In the event of a power loss, In-LineLinc Dimmer will automatically return the light being controlled to the brightness level it had before the power was interrupted.

### Resetting In-LineLinc Dimmer to Its Factory Default Settings

The factory reset procedure can be used to clear In-LineLinc Dimmer's memory and restore its factory default settings. This procedure will clear the unit of all INSTEON Links, and any programmed On-Levels, Ramp Rates, X10 Primary Address, or X10 Scene Addresses.

1. Before resetting a In-LineLinc Dimmer that has been linked to an INSTEON Controller, be sure to unlink it from the Controller first. See *Unlinking In-LineLinc Dimmer from an INSTEON Controller*, above.
2. Turn off the power source to In-LineLinc Dimmer (usually by opening the breaker feeding it).
3. After 10 seconds without power, push and hold In-LineLinc's **SET Button**, restore the power, then release the set button 3 seconds after power was restored.
4. A few seconds after you release the SET button, In-LineLinc Dimmer's status LED will turn ON, indicating that the factory reset is complete. In-LineLinc Dimmer is now reset to all the default settings and ready for fresh programming and use.



## X10 PROGRAMMING OPTIONS

In-LineLinc Dimmer is X10 ready, meaning that it can respond to X10 commands from an X10 Controller. However, **to operate In-LineLinc Dimmer in X10 mode, you must first set up an X10 Primary Address.** As it ships from the factory, or after a factory reset procedure, In-LineLinc Dimmer will have no X10 Primary Address set up.

### Setting the X10 Primary Address

**You must do this before In-LineLinc Dimmer will respond to X10 commands.** You can use any of the 256 possible X10 addresses for the X10 Primary Address.

1. Press and hold In-LineLinc's **set button** for 10 seconds. Once the attached load flashes 3 times, release the set button.
2. Using an X10 Controller, send the **X10 Primary Address** you want to set up **three times**. You have about 4 minutes to perform this step before In-LineLinc Dimmer times out.
3. Once In-LineLinc Dimmer has received the X10 Address three times, In-LineLinc Dimmer will confirm that it has set its Primary X10 Address by flashing the attached load again.

#### NOTE

An X10 Address consists of a House Code followed by a Unit Code. An X10 command, such as X10 ON or X10 OFF, may optionally follow the X10 Address.

### Removing the X10 Primary Address

1. Press and hold In-LineLinc's **set button** for 10 seconds. Once the attached load flashes 3 times, release the set button.
2. Press and hold In-LineLinc's **set button again** for 10 seconds. Once the attached load flashes 3 times, release the set button.
3. Using an X10 Controller, send **any X10 Address three times**. It does not matter what the X10 Address is as long as it is the same one each time. You have about 4 minutes to perform this step before In-LineLinc Dimmer times out.
4. Once In-LineLinc Dimmer has received the X10 Address three times, In-LineLinc Dimmer will confirm that it has removed its Primary X10 Address by blinking flashing the attached load again.



### **Setting the X10 On-Level and X10 Ramp Rate for the X10 Primary Address**

When an X10 Controller sends an X10 ON or X10 OFF command to In-LineLinc Dimmer's Primary X10 Address, the Local On-Level and Local Ramp Rate apply. In other words, SwitchLinc Dimmer acts the same way as it would if you manually tapped its Paddle Top or Paddle Bottom.

See the section *HOW TO SET UP ON-LEVELS AND RAMP RATES*, above, for instructions on setting up the Local On-Level and Local Ramp Rate.

#### **NOTE**

If you want an X10 On-Level and Ramp Rate other than the Local values, you can set up one or more X10 Scene Addresses as described in the sections *Remotely Setting an X10 Scene Address and On-Level* and *Remotely Setting the Ramp Rate for an X10 Scene Address* below.

### **Enabling and Disabling X10 Resume Dim**

If X10 Resume Dim is enabled, In-LineLinc Dimmer will remember the last brightness level to which it was set. Then, when an X10 ON command is received from an X10 Controller, the light will go to the remembered brightness, rather than to the X10 On-Level.

To enable X10 Resume Dim, set up a Local On-Level of OFF (or zero). To disable X10 Resume Dim, set up a Local On-Level of anything but OFF.

See the section *HOW TO SET UP ON-LEVELS AND RAMP RATES*, above, for instructions on setting up the Local On-Level.



## ADVANCED X10 PROGRAMMING OPTIONS

You can remotely set up X10 Scene Addresses as well as On-Levels and Ramp Rates using an X10 Controller capable of sending an X10 address (house code and unit code) *without* sending X10 ON or OFF commands. The following procedures will not work with a transmitter that sends the X10 address and an X10 command together. X10 Controllers in which one button is pressed to turn an X10 device on or off WILL NOT WORK.

These procedures all begin by sending the same sequence of five X10 addresses, called the CLEAR Sequence. After you send the CLEAR Sequence, you have about 4 minutes to finish the procedure before automatic timeout.

### Remotely Setting the On-Level for the X10 Primary Address

This method of setting the On-Level has exactly the same effect as manually setting the Local On-Level as explained in the section *HOW TO SET UP ON-LEVELS AND RAMP RATES*, above.

1. Using an X10 Controller, send the CLEAR Sequence:

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

2. Send the X10 Primary Address (house code and unit code).
3. Set the On-Level for the X10 Primary Address by adjusting In-LineLinc Dimmer's brightness using any linked Controller. If you skip this step, the current On-Level will be used.
4. Send the following X10 Address sequence to lock in the new On-Level:

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

5. In-LineLinc Dimmer will flash the light it is wired to and blink its status LED, indicating that the On-Level has been set for the X10 Primary Address.

### Remotely Setting the Ramp Rate for the X10 Primary Address

If you use this method for setting the Ramp Rate, you can achieve Ramp Rates ranging from 0.1 second to 9 *minutes*. If you use the manual method in the section *HOW TO SET UP ON-LEVELS AND RAMP RATES* above, you can only achieve Ramp Rates ranging from 0.1 second to 9 *seconds*.

This method of setting the Ramp Rate has exactly the same effect as manually setting the Local Ramp Rate as explained in the section *HOW TO SET UP ON-LEVELS AND RAMP RATES*, above.

1. Using an X10 Controller, send the CLEAR Sequence:

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

2. Send the X10 Primary Address (house code and unit code).
3. Use any linked Controller to adjust In-LineLinc Dimmer's brightness so it corresponds to the Ramp Rate you want in the table below. Brighter is faster.



Bright-ness Level	Ramp Rate in Seconds	Bright-ness Level	Ramp Rate in Seconds	Bright-ness Level	Ramp Rate in Minutes
100%	0.1	65%	26	29%	2.5
97%	0.2	61%	28	26%	3.0
94%	0.3	58%	30	23%	3.5
90%	0.5	55%	32	19%	4.0
87%	2.0	52%	34	16%	4.5
84%	4.5	48%	38	13%	5
81%	6.5	45%	43	10%	6
77%	8.5	42%	47	6%	7
74%	19.0	39%	60	3%	8
71%	21.5	35%	90	0%	9
68%	23.5	32%	120		

- Send the following X10 Address sequence to lock in the new Ramp Rate:

<b>O16</b>	<b>P16</b>	<b>N16</b>	<b>M16</b>	<b>O16</b>
------------	------------	------------	------------	------------

- In-LineLinc Dimmer will flash the light it is wired to and blink its status LED, indicating that the Ramp Rate has been set for the X10 Primary Address.

## About X10 Scene Address Programming

In-LineLinc Dimmer 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 Scene-enabled module with that X10 Scene Address will turn on to its independent On-Level at its independent Ramp Rate. Sending an X10 OFF command to an X10 Scene Address will turn off all modules that are members of that X10 Scene, each at its independent Ramp Rate. X10 Scene-enabled modules 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 and On-Level

- Using an X10 Controller, send the CLEAR Sequence:

<b>O16</b>	<b>N16</b>	<b>M16</b>	<b>P16</b>	<b>M16</b>
------------	------------	------------	------------	------------

- Send In-LineLinc Dimmer's X10 Primary Address (house code and unit code).
- Set the On-Level for the X10 Scene Address by adjusting In-LineLinc Dimmer's brightness using any linked Controller. If you skip this step, the current On-Level will be used. A scene can trigger In-LineLinc Dimmer to go off by setting the On-Level to 0%.
- Send the following X10 Address sequence:

<b>M16</b>	<b>N16</b>	<b>O16</b>	<b>P16</b>
------------	------------	------------	------------

- Send the desired X10 Scene Address (house code and unit code) to lock in the new On-Level and X10 Scene Address.
- In-LineLinc Dimmer will flash the light it is wired to and blink its status LED, indicating that the X10 Scene Address and On-Level have been set up.

## Remotely Removing an X10 Scene Address

- Using an X10 Controller, send the CLEAR Sequence:

<b>O16</b>	<b>N16</b>	<b>M16</b>	<b>P16</b>	<b>M16</b>
------------	------------	------------	------------	------------

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

<b>O16</b>	<b>P16</b>	<b>M16</b>	<b>N16</b>
------------	------------	------------	------------

5. Send the X10 Scene Address (house code and unit code) that is to be removed.
6. In-LineLinc Dimmer will flash the light it is wired to and blink its status LED, indicating that the X10 Scene Address has been removed.

### Remotely Setting the Ramp Rate for an X10 Scene Address

The Ramp Rate of each module in each X10 Scene is adjustable. If this setting is not adjusted, In-LineLinc Dimmer will use the Ramp Rate for its X10 Primary Address.

1. Using an X10 Controller, send the CLEAR Sequence:

<b>O16</b>	<b>N16</b>	<b>M16</b>	<b>P16</b>	<b>M16</b>
------------	------------	------------	------------	------------

2. Send In-LineLinc Dimmer's X10 Primary Address (house code and unit code).
3. Use any controller to adjust In-LineLinc Dimmer's brightness so it corresponds to the Ramp Rate you want in the table below. Brighter is faster.

Bright-ness Level	Ramp Rate in Seconds	Bright-ness Level	Ramp Rate in Seconds	Bright-ness Level	Ramp Rate in Minutes
100%	0.1	65%	26	29%	2.5
97%	0.2	61%	28	26%	3.0
94%	0.3	58%	30	23%	3.5
90%	0.5	55%	32	19%	4.0
87%	2.0	52%	34	16%	4.5
84%	4.5	48%	38	13%	5
81%	6.5	45%	43	10%	6
77%	8.5	42%	47	6%	7
74%	19.0	39%	60	3%	8
71%	21.5	35%	90	0%	9
68%	23.5	32%	120		

4. Send the following X10 Address sequence:

<b>N16</b>	<b>O16</b>	<b>P16</b>	<b>M16</b>
------------	------------	------------	------------

5. Send the X10 Scene Address (house code and unit code).
6. In-LineLinc Dimmer will flash the light it is wired to and blink its status LED, indicating that the new Ramp Rate has been set for the X10 Scene Address.

## ABOUT INSTEON

### Understanding Why an INSTEON Network Is Reliable

INSTEON messages travel throughout the home via Powerline Carrier (PLC) signals on the existing house wiring, and also via wireless Radio Frequency (RF). As the messages make their way to INSTEON devices being controlled, they are picked up and retransmitted by all other INSTEON devices along the way. This method of communicating, called a *mesh network*, is very reliable because each additional INSTEON device helps to support the overall network.

To further ensure reliability, every INSTEON device confirms that it has received a command. If an INSTEON Controller does not receive this confirmation, it will automatically retransmit the command up to five times.

### Further Enhancing Reliability

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

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



### Using SmartLabs's SignalLinc RF to Upgrade Your INSTEON Network

SignalLinc™ RF Signal Enhancers are ideal for improving signal strength and network coverage throughout your home. SignalLinc RF acts like another member of the dual-band mesh network, tying it together by simultaneously retransmitting INSTEON signals across both radio-frequency and the powerline. It also provides an access point for RF-only INSTEON devices, such as handheld controllers.

In addition, two SignalLinc RFs provide a wireless path for INSTEON signals to travel between the two separate electrical circuits, called *powerline phases*, found in most homes. Without a reliable method for coupling opposite powerline phases, some parts of your home may receive INSTEON signals intermittently. With at least one SignalLinc RF plugged into one of the powerline phases, and at least one more plugged into the opposite powerline phase, INSTEON powerline signals will be strong everywhere in your home.



## About INSTEON and X10

### Possible BoosterLinc Interference with INSTEON

If you have installed older SmartLabs Plug-In BoosterLinc™ X10 Signal Boosters or certain other BoosterLinc-enabled products, the older BoosterLinc technology may interfere with INSTEON communications.

Plug-In BoosterLinc X10 Signal Boosters, SmartLabs #4827, shipped after February 1, 2005, with V3.0 or later firmware, are fully compatible with INSTEON.

The following Plug-In BoosterLinc X10 Signal Boosters use older firmware that may cause interference with INSTEON:

- White BoosterLinc X10 Signal Boosters, #4827, shipped before February 1, 2005, with V2.5 or earlier firmware
- All Gray BoosterLinc X10 Signal Boosters, #4827

Try unplugging the older BoosterLinc X10 Signal Boosters to see if this helps with INSTEON interference. If it does, please call SmartLabs Tech Support at 866-243-8018 for help with replacing your older BoosterLinc X10 Signal Boosters with newer INSTEON-compatible ones.

The following pre-INSTEON SmartLabs products have BoosterLinc technology that you can turn on or turn off when you set the X10 Address for the product. If turned on, the BoosterLinc technology may interfere with INSTEON.



- KeypadLinc™ 6 with Integrated Dimmer, #12073W, #12073WB and #12073WW



- SwitchLinc™ Relay 2-Way, #23883 and #23883T



- ToggleLinc™ 2-Way Dimmer, #23890, and Switch, #23893

#### NOTE

To disable BoosterLinc X10 Signal Amplification on these products:

1. Press and hold the SET Button.
2. Send the X10 Primary Address.
3. Send an X10 OFF command.

You can send an X10 ON command in Step 3 to re-enable the BoosterLinc feature.

If you have any of these products and the BoosterLinc feature is turned on, please consult your User's Guide or call 866-243-8018 for help with turning it off. You may then wish to install newer INSTEON BoosterLinc X10 Signal Boosters, which SmartLabs can help you with.

### INSTEON's Effect on X10

If your existing X10 devices seem to be working less reliably after installing INSTEON devices, remember that INSTEON devices can absorb X10 signals just as X10 devices do, and that INSTEON devices do not repeat X10 signals. Installing INSTEON-compatible BoosterLinc X10 Signal Boosters, SmartLabs #4827, or a SignalLinc Plug-In Coupler-Repeater, #4826, can increase X10 signal levels.

Please call 866-243-8018 if you have any questions or would like more help.



## TROUBLESHOOTING

Problem	Possible Cause	Solution
The status LED on my In-LineLinc Dimmer is not turning on at all and it won't control my light.	In-LineLinc Dimmer is not getting power.	Make sure the circuit breaker is turned on.
		Check junction box wires to ensure all connections are tight and no bare wires are exposed.
		Check the light fixture to ensure all connections are tight and no bare wires are exposed.
The switch I'm replacing only has two wires.	In-LineLinc Dimmer needs a NEUTRAL wire in order to operate.	Look in the rear of the junction box for a group of white wires all tied together with a wire nut. Those are the NEUTRAL wires. Connect In-LineLinc Dimmer's white wire there.
My In-LineLinc Dimmer is not receiving signals from INSTEON or X10 Controllers.	The In-LineLinc Dimmer and the Controller are on opposite powerline phases.	Make sure two SignalLinc RF Signal Enhancers are properly installed to bridge the two powerline phases.
My In-LineLinc Dimmer is not linking to or working with an INSTEON Controller or Device.	The INSTEON signal may be too weak.	Add new INSTEON devices or move around existing INSTEON devices. All INSTEON devices act as INSTEON Network repeaters.
		Make sure you are not experiencing interference with older X10 BoosterLinc technology. Upgrade to INSTEON BoosterLincs.
My In-LineLinc Dimmer doesn't always respond to an INSTEON Controller.	The INSTEON Controller may have been reset without first unlinking In-LineLinc Dimmer from it.	Re-link In-LineLinc Dimmer to the INSTEON Controller.
The light turned on by itself.	Another Controller, a timer, or stray X10 signals triggered In-LineLinc Dimmer.	Check scene membership and remove any unwanted links from In-LineLinc Dimmer, or perform a Factory Reset to clear it.
		Install a powerline signal blocker in your home to keep X10 signals from neighboring homes from interfering. Consider not using In-LineLinc Dimmer in X10 mode.
		If the above doesn't work, perform a Factory Reset.
The controlled light does not appear to turn on or off right away.	The Ramp Rate may be set too slow.	Set a shorter Ramp Rate.
In-LineLinc Dimmer turns on, but not off, using another Controller.	The load is producing electrical noise that is interfering with In-LineLinc Dimmer's reception of powerline signal.	Install a powerline noise filter like Smarthome's #4835 between the load and In-LineLinc Dimmer.
		Install additional INSTEON Devices to boost the INSTEON signal.
		Increase the X10 signal strength with an INSTEON-compatible X10 booster to overcome the powerline noise.
When I try to turn on my light with a linked Controller, the light turns on, then back off.	In-LineLinc Dimmer may be set up with an INSTEON On-Level at a high brightness and an X10 Primary or Scene Address On-Level at a low brightness.	Remove the X10 Primary Address or X10 Scene Address from In-LineLinc Dimmer.
		Remove the X10 Address from the button on your INSTEON Controller so it doesn't send both INSTEON and X10 commands.
My In-LineLinc Dimmer doesn't respond to X10 address A1 when I first set it up.	Unlike previous X10-only products, In-LineLinc Dimmer does not have an X10 Primary Address set up at the factory.	Set up an X10 Primary Address by following the instructions in the section <i>Setting the X10 Primary Address</i> .

## INSTEON In-LineLinc Dimmer User's Guide



Problem	Possible Cause	Solution
I'm having difficulty performing advanced X10 programming	The X10 "MNOP" house and unit codes were sent in the wrong order.	Don't hold down the buttons on your X10 controller too long, to avoid duplicate codes being sent.
The load is buzzing when on or dim.	The dimming component inside In-LineLinc Dimmer "chops" the powerline sine wave to reduce the power.	The bulb filaments are vibrating. Use rough-service, 130-volt, or appliance grade bulbs to reduce the noise.
		Run In-LineLinc dimmer in the "full-on" mode or switch to a non-dimming In-LineLinc Relay.
In-LineLinc Dimmer is locked up.	A surge or excessive noise on the powerline may have glitched it.	Remove power from In-LineLinc, usually by opening the breaker feeding it.
		If the above doesn't work, see <i>Resetting In-LineLinc Dimmer to Its Factory Default Settings</i> , above.
In-LineLinc Dimmer is getting warm to the touch.	It is normal for electronic dimmers to get warm (but not hot).	In-LineLinc Dimmer will dissipate about 1 Watt per 100 Watts controlled. Using metal junction boxes, removing insulation around the outside of the box, or controlling a smaller load can help lessen the heat.

If you have tried these solutions, reviewed this User's Guide, and still cannot resolve an issue you're having with In-LineLinc Dimmer, please:

- Search our online knowledge base at <http://smarthome.custhelp.com>.
- Call our Support Department at 866-243-8018.
- Email us at [tech@smarthome.com](mailto:tech@smarthome.com).



## SPECIFICATIONS

### In-LineLinc Dimmer Specifications

General	
Smarthome Product Number	2475D, INSTEON In-LineLinc Dimmer Module
Warranty	2 years
Operation	
On-Levels	32 via linked controller, 100 via software
Ramp Rates (full-ON to full-OFF)	0.125 to 9 seconds if programmed locally, 0.125 seconds to 9 minutes if programmed remotely
LED Indicator	Single segment white LED
Manual Operation Modes	INSTEON only, X10 only, INSTEON and X10 Combo Mode
Combo Mode Message Order	INSTEON, X10, INSTEON cleanup
Setup Memory	Non-volatile EEPROM
INSTEON Features	
INSTEON Addresses	1 hard-coded out of 16,777,216 possible
INSTEON Links	417 out of 16,777,216 possible
INSTEON Powerline Frequency	131.65 KHz
INSTEON Minimum Transmit Level	3.2 V <sub>pp</sub> into 5 Ohms
INSTEON Minimum Receive Level	1 mV <sub>pp</sub> nominal
INSTEON Messages Repeated	Yes
X10 Features	
X10 Primary Address	1 optional (comes unassigned)
X10 Scene Addresses	255 possible
X10 Status Response	Supported
X10 Resume Dim	Supported (by setting Local On-Level to zero)
X10 Powerline Frequency	120 KHz
X10 Minimum Transmit Level	3.2 V <sub>pp</sub> into 5 Ohms
X10 Minimum Receive Level	10 mV <sub>pp</sub> nominal
X10 Messages Repeated	No

# INSTEON In-LineLinc Dimmer User's Guide



<b>Mechanical</b>	
Wire Nuts	3 included
Buttons	One recessed set button, requires included probe (or other non-conductive blunt instrument)
Mounting	Mounts in single or multiple-ganged junction box. Control 150 W less load for each immediately adjacent electronic dimmer installed. For example, 300 W load control is reduced to 150 W when another electronic dimmer is installed to the immediate right or left. Use a triple-gang box with a mechanical switch in the center to avoid de-rating.
Operating Conditions	Indoors, 40 to 104°F, up to 85% relative humidity
Dimensions	3.75" H x 1.8" W x 1.2" D (2.75" H without screw tabs)
Weight	3.6 oz
<b>Electrical</b>	
Supply Voltage	120 Volts AC +/- 10%, 60 Hertz, single phase
Surge Protection	MOV rated for 150 Volts
Power Wire Leads	6", 16 AWG, stranded, 600V, 105°C insulation, ends stripped and tinned, LINE (black), LOAD (red), NEUTRAL (white)
Ground Lead	6", 18 AWG, stranded, bare copper
Load Types	Wired-in incandescent lighting devices
Maximum Load	300 Watts (uses 12-Amp triac dimmer)
Minimum Load	No minimum load required
Certification	Safety tested (ETL) for use in USA and Canada



## Certification

In-LineLinc Dimmer 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 product has been tested to and has met the requirements of a widely recognized consensus of U.S and Canadian product 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 User's Guide. 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 Smarthome customer service to receive an RA# (return authorization number), properly package the product (with the RA# clearly printed on the outside of the package) and send the product, along with all other required materials, to:

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

smartlabs  
design

## Limitations

The above warranty is in lieu of and seller disclaims all other warranties, whether oral or written, express or implied, including and 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 one-year period 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. In no event shall seller be liable for special, incidental, consequential, or other damages resulting from the possession or use of this product, 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, Plug-n-Tap, In-LineLinc, ControlLinc, TesterLinc, SignalLinc, Lamplinc, ToggleLinc, BoosterLinc, ApplianceLinc, KeypadLinc, FilterLinc, ProbeLinc, SwitchLinc, Templinc, IR Linc and SmarthomeLive are trademarks of SmartLabs, Inc. INSTEON networking technology is covered by pending U.S. and foreign patents.

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