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INSTEON™ LampLinc™ V2

INSTEON Lamp Dimmer

For models:

#2456D2 LampLinc V2 Dimmer two prong

#2456D3 LampLinc V2 Dimmer with ground pin



SMARTHOME™

MAKING LIFE MORE CONVENIENT, SAFE AND FUN

INSTEON LampLinc V2 Dimmer User's Guide



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ABOUT INSTEON LAMPLINC DIMMER

Congratulations on purchasing the INSTEON™ LampLinc™ V2 Lamp Dimmer. Your new LampLinc Dimmer allows you to dim and remotely control any lamp in your home at the touch of a button.



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 LampLinc Dimmer Features

- Setup is easy – LampLinc Dimmer installs in minutes
- Controls all standard incandescent lamps, up to 300 watts
- Dims lamps to 32 brightness levels
- Changes brightness at 32 ramp rates
- Responds to commands from X10 controllers
- Has a pass-through receptacle on the front so you don't lose an outlet
- Shows INSTEON activity with a white status LED
- Stores setup state in memory, even while unplugged
- Warranted for two years

HOW TO INSTALL LAMPLINC DIMMER

Caution

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

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

To reduce the risk of overheating and possible damage to other equipment, use LampLinc 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, DO NOT use LampLinc Dimmer's dimming capabilities or else use a non-dimming INSTEON module. 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.

LampLinc Dimmer Installation Tips

- Don't plug LampLinc Dimmer into an outlet controlled by a switch, because if the switch is inadvertently turned off, LampLinc Dimmer won't have power.
- Don't use LampLinc Dimmer to control low-voltage lighting, fluorescent lights, or motors. These are inductive loads, which LampLinc Dimmer is not designed to control. Use a Smarthome ApplianceLinc™ V2 instead.
- Don't plug LampLinc Dimmer into a filtered power strip or AC line filter.
- Be sure the lamp you want to control is working and that the manual switch on the lamp itself is in the ON position.
- If the lamp being controlled by LampLinc Dimmer already has its own built in dimmer, turn that dimmer to full on and allow LampLinc Dimmer to control the lamp's brightness.
- Don't stack LampLinc, ApplianceLinc, SignalLinc™ RF, or PowerLinc™ modules together by plugging them into each other. Stacked modules may overheat and stop functioning.

Installing LampLinc Dimmer

1. For best INSTEON Network performance, be sure you have properly installed at least two SignalLinc RF Signal Enhancers.
2. Plug LampLinc Dimmer into an unswitched wall receptacle. The white Status LED on the side will illuminate steadily.



3. Plug the lamp you want to control into the **controlled outlet on the bottom** of LampLinc Dimmer.



4. The lamp you plugged in will turn on. If the lamp does not turn on, turn it on manually using the switch on the lamp itself.



5. You can use the pass-through outlet on the *front* of LampLinc Dimmer as you would an ordinary uncontrolled wall outlet.

HOW TO SET UP LAMPLINC DIMMER

Linking LampLinc Dimmer to an INSTEON Controller

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



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



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



- C. **KeypadLinc™ V2** – Choose the ON Button you want to use for controlling LampLinc 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 black **SET Button** on LampLinc Dimmer for 3 seconds. Both the lamp you are controlling and LampLinc Dimmer's Status LED will blink to confirm linking. Depending on the INSTEON Controller, you have about 4 minutes to perform this step before Linking Mode times out automatically.



Unlinking LampLinc Dimmer from an INSTEON Controller

If you are no longer going to use a LampLinc Dimmer that has previously been linked to an INSTEON Controller, it is very important that you unlink it, because otherwise the controller will retry any commands intended for the unused module, 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. **SwitchLinc V2 Dimmer** – Press and hold SwitchLinc V2 Dimmer's **Paddle Top** for 10 seconds **TWICE**. To confirm that it is in Unlinking Mode, SwitchLinc V2 Dimmer will flash the light that it is wired to once for each paddle press and begin blinking the top LED in its LED Bar.



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



- C. **KeypadLinc™ V2** – Press and hold for 10 seconds the **ON Button** you used for controlling LampLinc 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 black **SET Button** on LampLinc Dimmer for 3 seconds. Both the lamp you are controlling and LampLinc Dimmer's Status LED will blink to confirm unlinking. 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 (Optional)

The On-Level is the brightness that the lamp you are controlling will go to when you turn it on using an INSTEON Controller. The On-Level is adjustable from OFF to 100% brightness. The default is 100%.

Skip this section if you will be setting the Ramp Rate.

1. Using the ON/OFF Button Pair that you already linked LampLinc Dimmer to, set the INSTEON Controller to Linking Mode by pressing and holding the **ON Button** of the pair for 10 seconds.
2. Using the BRIGHT or DIM Buttons on the INSTEON Controller, **adjust the brightness** of the lamp you are controlling to the desired On-Level and tap the **SET Button** on LampLinc Dimmer **ONCE**.
3. Press and hold the black **SET Button** on LampLinc Dimmer for 3 seconds. Both the lamp you are controlling and LampLinc Dimmer's Status LED will blink to confirm the On-Level setting.

Setting the Ramp Rate *and* the On-Level (Optional)

The Ramp Rate sets the time it will take for the lamp 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 0.5 second.

1. Using the ON/OFF Button Pair that you already linked LampLinc Dimmer to, set the INSTEON Controller to Linking Mode by pressing and holding the **ON Button** of the pair for 10 seconds.
2. Use the BRIGHT or DIM Buttons on the INSTEON Controller to **adjust the Ramp Rate** of the lamp

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
0%	9.0

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

you are controlling. Adjust the Ramp Rate to be faster by pressing the BRIGHT Button, or adjust it to be slower by pressing the DIM Button. The table below gives the approximate relationship between brightness and Ramp Rate.

3. Tap the **SET Button** on LampLinc Dimmer **TWICE**. Both the lamp you are controlling and LampLinc Dimmer's Status LED will blink to confirm the Ramp Rate setting.
4. Using the BRIGHT or DIM Buttons on the INSTEON Controller, **adjust the brightness** of the lamp you are controlling to the desired On-Level and tap the **SET Button** on LampLinc Dimmer **ONCE**.
5. Press and hold the black **SET Button** on LampLinc Dimmer for 3 Seconds. Both the lamp you are controlling and LampLinc Dimmer's Status LED will blink to confirm the On-Level setting.



Creating an INSTEON Scene

INSTEON Scenes let you activate dramatic lighting moods with the press of just one button. INSTEON Scenes are very easy to set up – just link more than one INSTEON module to an ON/OFF Button Pair on an INSTEON Controller. Then, when you press either the ON or the OFF Button on the INSTEON Controller, all of the INSTEON modules linked in the scene will respond as a group. You can link multiple LampLinc Dimmers or other INSTEON modules to multiple INSTEON Controllers.

To add an additional LampLinc Dimmer to a scene controlled by an ON/OFF Button Pair on an INSTEON Controller, simply follow the same procedure that you used for linking the first LampLinc Dimmer. See *Linking LampLinc Dimmer to an INSTEON Controller*, above. To adjust the On-Level by itself, see *Setting the On-Level (Optional)*, or to adjust both the Ramp Rate and the On-Level, see *Setting the Ramp Rate and the On-Level (Optional)*. To remove a LampLinc dimmer from a scene, see *Unlinking LampLinc Dimmer from an INSTEON Controller*.

TIP

With some INSTEON Controllers, you can avoid having to hold a button down for 10 seconds for each setup step by placing the Controller in **Scene Setup Mode**, also called **Multilink Mode**. Refer to your INSTEON Controller's User's Guide for detailed instructions on how to set it to Scene Setup Mode. The following will work for a Smarthome ControlLinc™ V2 Tabletop Controller.

1. Set the ControlLinc V2 to Scene Setup Mode for the ON/OFF Button Pair you want to use for controlling the scene by pressing and holding the **ON Button** of the pair for 10 seconds, *then tapping the same ON Button again*. ControlLinc V2's Status LED will blink slowly.
2. Press and hold the black **SET Button** on LampLinc Dimmer for 3 seconds. The lamp you are controlling will blink to confirm linking. ControlLinc V2 will beep to confirm linking, and its Status LED will continue to blink slowly.
3. If you want to adjust the **Ramp Rate** or the **On-Level**, you can do so by following the steps above in the sections *Setting the On-Level (Optional)*, or *Setting the Ramp Rate and the On-Level (Optional)*, but without pressing ControlLinc V2's ON Button for 10 seconds.
4. Continue Steps 2 and 3 for any additional INSTEON modules you want to link to the scene.
5. When you are finished linking INSTEON modules to the desired ON/OFF Button, complete Scene Setup by pressing the **ON Button**. ControlLinc V2's Status LED will stop blinking and remain steadily on. You have about 4 minutes of inactivity before Scene Setup Mode times out automatically.



ADVANCED FEATURES OF LAMPLINC DIMMER

Restoring Power to LampLinc Dimmer

LampLinc Dimmer stores all of its settings in memory, even when unplugged. In the event of a power loss, LampLinc Dimmer will automatically return the lamp being controlled to the brightness level it had before the power was interrupted. Similarly, if LampLinc Dimmer is plugged into an outlet controlled by a wall switch and you turn the switch off, LampLinc Dimmer will turn the lamp back on to its prior brightness when you turn the wall switch back on.

Resetting LampLinc Dimmer to Its Factory Default Settings

The factory reset procedure can be used to clear LampLinc 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 LampLinc Dimmer that has been linked to an INSTEON Controller, be sure to unlink it from the Controller first. See *Unlinking LampLinc Dimmer from an INSTEON Controller*, above.
2. Unplug LampLinc Dimmer for about 10 seconds.
3. While holding down the black **SET Button** on LampLinc Dimmer, plug LampLinc Dimmer back in.
4. After plugging LampLinc Dimmer back in, continue to hold down the black SET Button for 3 seconds.
5. Release the black SET Button.
6. After several seconds, LampLinc Dimmer's Status LED will turn on and the lamp you plugged in will come on to full brightness, indicating that the factory reset is complete. LampLinc Dimmer is now reset to all the default settings and ready for fresh programming and use.



X10 PROGRAMMING OPTIONS

LampLinc Dimmer is backward-compatible with X10, meaning that it can respond to X10 commands from an X10 Controller. However, **to operate LampLinc 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, LampLinc Dimmer will have no X10 Primary Address set up.

Setting the X10 Primary Address

You must do this before LampLinc 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 the black **SET Button** on LampLinc Dimmer for 3 seconds. The white Status LED will begin flashing and the lamp you are controlling will blink to confirm that you are setting up an X10 Primary Address.
2. Use an X10 Controller to send an **X10 ON** command **THREE TIMES** (e.g. A1 ON A1 ON A1 ON). You have about 30 seconds to perform this step before setup mode expires. (NOTE: If you send an **X10 OFF** command during this step, Local Control will be disabled. See the next section for an explanation.)
3. Once LampLinc Dimmer has received the X10 Address and X10 ON or X10 OFF **THREE TIMES**, the Status LED on LampLinc Dimmer will stop flashing and the X10 Primary Address will be set.

Removing the X10 Primary Address

1. Press and hold the black **SET Button** on LampLinc Dimmer for 3 seconds. The white Status LED will begin flashing and the lamp you are controlling will blink to confirm that you are setting up an X10 Primary Address.
2. Press and hold the black **SET Button** on LampLinc Dimmer for 3 seconds **again** and send any X10 address **THREE TIMES** (e.g. A1 ON A1 ON A1 ON). The white Status LED will stop flashing and the lamp you are controlling will blink again to confirm that you have removed the X10 Primary Address.

Enabling or Disabling Local Control

Local Control allows you to manually turn on the lamp you plugged into LampLinc Dimmer by using the switch on the lamp itself, without sending a command from an X10 or INSTEON Controller. By default, Local Control is enabled. You can disable Local Control by setting the X10 Primary Address using an X10 OFF command in Step 2 above. Remember that if the switch on the lamp itself is turned off, LampLinc Dimmer will not be able to control the lamp.

Setting the X10 On-Level for the X10 Primary Address

The X10 On-Level is the brightness that the lamp you are controlling will go to when you turn it on using an X10 Controller. The X10 On-Level can be adjusted from OFF to 100% brightness. The default is 100%

1. Using the BRIGHT, DIM, ON, or OFF Buttons on any Controller, **adjust the brightness** of the lamp you are controlling to the desired On-Level.
2. Tap the **SET Button** on LampLinc Dimmer **ONCE**. The lamp you are controlling will blink to confirm the X10 On-Level setting.



Enabling X10 Resume Dim

If X10 Resume Dim is enabled, LampLinc 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 lamp will go to the remembered brightness, rather than to the X10 On-Level.

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

See the section *Setting the X10 On-Level for the X10 Primary Address*, above, for instructions (briefly, set the brightness, then tap the SET Button).

Setting the X10 Ramp Rate for the X10 Primary Address

The X10 Ramp Rate sets the time it will take for the lamp you are controlling to go from OFF to the X10 On-Level brightness, or from the X10 On-Level brightness to OFF, when LampLinc Dimmer receives an X10 ON or X10 OFF command. This time is adjustable from 0.1 to 9 seconds to ramp between full-ON and full-OFF. The default is 0.5 second.

- Use the BRIGHT or DIM Buttons on any Controller to **adjust the X10 Ramp Rate** of the lamp you are controlling. Adjust the X10 Ramp Rate to be faster by pressing the BRIGHT Button, or adjust it to be slower by pressing the DIM Button. The table below gives the approximate relationship between brightness and Ramp Rate.

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
0%	9.0

NOTE

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

- Tap the **SET Button** on LampLinc Dimmer **TWICE**. The lamp you are controlling will blink to confirm

NOTE

When adjusting LampLinc Dimmer's Ramp Rate using an INSTEON Controller, the INSTEON setting will override any previous X10 Ramp Rate set up for the X10 Primary Address. If you need separate Ramp Rates for INSTEON and X10, simply set up an additional X10 address, known as an X10 Scene Address, then set the desired X10 Ramp Rate for that X10 Scene Address. Each X10 Address can have its own X10 On-Level and X10 Ramp Rate. For detailed instructions on programming these additional X10 Scene Addresses, please refer to the next section, *ADVANCED X10 PROGRAMMING OPTIONS*.

the X10 Ramp Rate setting.



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

The On-Level you set using this method will take effect immediately for the X10 Primary Address, but this On-Level will not take effect for INSTEON until you link (or re-link) LampLinc Dimmer with an INSTEON Controller. Setting the INSTEON On-Level using an INSTEON Controller will *not* affect this X10 Ramp Rate.

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 LampLinc Dimmer's brightness using any 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. LampLinc Dimmer will flash the lamp it is controlling 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*.

The Ramp Rate you set using this method will take effect immediately for the X10 Primary Address, but this Ramp Rate will not take effect for INSTEON until you link (or re-link) LampLinc Dimmer with an INSTEON Controller. If you also set the INSTEON Ramp Rate using an INSTEON Controller, that new INSTEON Ramp Rate will replace this one.

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 Controller to adjust LampLinc 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:

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

- LampLinc Dimmer will flash the lamp it is controlling and blink its Status LED, indicating that the Ramp Rate has been set for the X10 Primary Address.

About X10 Scene Address Programming

LampLinc 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:

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

- Set the On-Level for the X10 Scene Address by adjusting LampLinc Dimmer's brightness using any controller. If you skip this step, the current On-Level will be used. A scene can trigger LampLinc Dimmer to go off by setting the On-Level to 0%.
- Send the following X10 Address sequence:

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

- Send the desired X10 Scene Address (house code and unit code) to lock in the new On-Level and X10 Scene Address.
- LampLinc Dimmer will flash the lamp it is controlling 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:

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

- Send LampLinc Dimmer's X10 Primary Address (house code and unit code).

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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 (house code and unit code) that is to be removed.
6. LampLinc Dimmer will flash the lamp it is controlling 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, LampLinc Dimmer will use the Ramp Rate for its X10 Primary Address.

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

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

2. Send LampLinc Dimmer's X10 Primary Address (house code and unit code).
3. Use any controller to adjust LampLinc 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:

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

5. Send the X10 Scene Address (house code and unit code).
6. LampLinc Dimmer will flash the lamp it is controlling 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 Smarthome'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 Smarthome 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, Smarthome #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 800-SMARTHOME (800-762-7846) for help with replacing your older BoosterLinc X10 Signal Boosters with newer INSTEON-compatible ones.

The following pre-INSTEON SmartHome 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 800-SMARTHOME (800-762-7846) for help with turning it off. You may then wish to install newer INSTEON BoosterLinc X10 Signal Boosters, which Smarthome 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, Smarthome #4827, or a SignalLinc Plug-In Coupler-Repeater, #4826, can increase X10 signal levels.

Please call 800-SMARTHOME (800-762-7846) if you have any questions or would like more help.



TROUBLESHOOTING

Problem	Possible Cause	Solution
The Status LED on my LampLinc Dimmer is not turning on at all.	LampLinc Dimmer is not getting power.	Make sure LampLinc Dimmer is not plugged into a switched outlet that is turned off.
My lamp is not being controlled after I've linked LampLinc Dimmer to a Controller.	Your lamp is not getting power.	Make sure your lamp is plugged into the outlet labeled <i>Controlled</i> at the bottom of LampLinc Dimmer.
		Make sure the lamp's switch is in the ON position.
My LampLinc Dimmer is not receiving signals from INSTEON or X10 Controllers.	The LampLinc Dimmer and the Controller are on opposite powerline phases.	Make sure two SignalLinc RFs are properly installed to bridge the two powerline phases.
	LampLinc Dimmer is plugged into a power strip.	Powerline signals can't travel through power filters. Plugging LampLinc Dimmer directly into a wall outlet works best.
	Other modules are loading down the signal.	Move LampLinc Dimmer, the other modules, or the Controller to another outlet.
My LampLinc Dimmer is not linking or responding to an INSTEON Controller.	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.
		Try linking your LampLinc Dimmer to your INSTEON Controller with both of them plugged into the same outlet. Once linked, move them to the desired locations.
The lamp does not appear to turn on or off when a signal is sent.	The Ramp Rate may be set too slow.	Set a shorter Ramp Rate.
The lamp does not come on when I manually activate the lamp's switch.	The Local Control feature may be set to off (during X10 Primary Address setting).	Re-set the X10 Primary Address by sending the house and unit code followed by an X10 ON command.
The load is buzzing when on or dim.	The dimming component inside LampLinc 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 LampLinc dimmer in the "full-on" mode or switch to a non-dimming ApplianceLinc.
The lamp turned on by itself.	Another Controller, a timer, or stray X10 signals triggered LampLinc Dimmer.	Check scene membership and remove any unwanted links from LampLinc 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 LampLinc Dimmer in X10 mode.
		If the above doesn't work, perform a Factory Reset.
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.
My lamp only turns off even if I press the ON Button on my INSTEON Controller, but I can brighten and dim it.	The On-Level may be set to fully-off or very dim.	Re-link LampLinc Dimmer at a brighter On-Level.

INSTEON LampLinc V2 Dimmer User's Guide



Problem	Possible Cause	Solution
When I try to turn on my lamp, it turns on, then back off.	LampLinc 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 LampLinc Dimmer.
		Remove the X10 Address from the button on your INSTEON Controller so it doesn't send both INSTEON and X10 commands.
My lamp doesn't always respond to my INSTEON Controller.	The INSTEON Controller may have been reset without first unlinking LampLinc Dimmer from it.	Re-link LampLinc Dimmer to the INSTEON Controller.
When I press a button on my INSTEON Controller, it takes a long time for my LampLinc Dimmer to respond.	You may have removed an INSTEON Device that your INSTEON Controller is trying to operate. The INSTEON Controller is re-trying the missing INSTEON Device.	Unlink the missing INSTEON Device(s) by following the directions in your INSTEON Controller's User's Guide.
When I tap the SET Button on my LampLinc Dimmer, the lamp I am controlling flashes.	Tapping the SET Button sets the current brightness as the X10 Primary Address On-Level. The lamp flashes to acknowledge the X10 On-Level setting.	If you do this inadvertently, set the X10 Primary Address On-Level brightness to whatever you want using any Controller, then tap the SET Button again.
		If you are not using LampLinc Dimmer in X10 mode, this setting will be ignored.
My LampLinc Dimmer doesn't respond to X10 address A1 when I first set it up.	Unlike previous X10-only LampLincs, LampLinc 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>X10 PROGRAMMING OPTIONS</i> .
I can't get my LampLinc Dimmer to change its INSTEON Ramp Rate.	You didn't set the On-Level after setting the Ramp Rate.	Try again, following the instructions in the section <i>Setting the Ramp Rate and the On-Level (Optional)</i> .
	You double-pressed the SET Button too quickly or too slowly.	
LampLinc Dimmer is locked up.	A surge or excessive noise on the powerline may have glitched it.	Unplug LampLinc Dimmer for 10 seconds and reinstall.
		If the above doesn't work, perform a Factory Reset.
My two-prong LampLinc Dimmer does not fit in my wall outlet.	The polarized prongs are not compatible with older AC outlets.	LampLinc Dimmer's prongs are polarized so that it may only be inserted one way into a receptacle. If your home's outlets are over 40 years old, replacing the outlet with a modern one will allow LampLinc Dimmer and many other modern devices to be used safely. DO NOT defeat this safety feature.

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

- Search our online knowledge base at <http://smarthome.custhelp.com>.
- Call our Support Department at 800-SMARTHOME (800-762-7846).
- Email us at tech@smarthome.comT.



SPECIFICATIONS

LampLinc Dimmer Specifications

General	
Smarthome Product Number	2456D2, INSTEON LampLinc V2 Lamp Dimmer, 2-prong 2456D3, INSTEON LampLinc V2 Lamp Dimmer, 3-prong
Warranty	2 years
Operation	
Status LED	White
On-Levels	32
Ramp Rate (full-ON to full-OFF)	0.125 to 9 seconds if programmed locally, 0.125 seconds to 9 minutes if programmed remotely
Local Control	Load sensing (can be disabled)
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 _{pp} into 5 Ohms
INSTEON Minimum Receive Level	1 mV _{pp} 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 X10 Primary Address On-Level to zero)
X10 Powerline Frequency	120 KHz
X10 Minimum Transmit Level	3.2 V _{pp} into 5 Ohms
X10 Minimum Receive Level	10 mV _{pp} nominal
X10 Messages Repeated	No
Mechanical	
Operating Conditions	Indoors, 32 to 122°F, up to 85% relative humidity
Dimensions	4.0" H x 2.5" W x 1.5" D
Weight	5 oz
Electrical	
Supply Voltage	120 Volts AC +/- 10%, 60 Hertz, single phase
Surge Protection	MOV rated for 150 Volts
Power Plug	3-pin grounded (2456D3), 2-pin polarized (2456D2)
Pass-through Outlet	3-pin grounded (2456D3), 2-pin polarized (2456D2)
Controlled Outlet	3-pin grounded (2456D3), 2-pin polarized (2456D2)
Load Types	Plug-in incandescent lighting devices
Maximum Load	300 Watts
Minimum Load	25 watts (for Local Control load sensing)
Certification	Safety tested for use in USA and Canada (ETL #3017581)



Certification

LampLinc V2 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:

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

SMARTHOME™
MAKING LIFE MORE CONVENIENT, SAFE AND FUN

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, ControlLinc, TesterLinc, SignalLinc, LampLinc, ToggleLinc, BoosterLinc, ApplianceLinc, KeypadLinc, FilterLinc, ProbeLinc, SwitchLinc, TempLinc, IR Linc and SmarthomeLive are trademarks of Smarthome, Inc. INSTEON networking technology is covered by pending U.S. and foreign patents.

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