SwitchLinc™ 2-Way Relay Timer

Remote Control Switch with Independent Countdown Timer and built-in BoosterLinc Signal Booster

For models:

#23883TW  SwitchLinc 2-Way Relay Timer (White)

#23883TI  SwitchLinc 2-Way Relay Timer 2-Way (Ivory)
Congratulations!

You've just purchased the highest quality powerline-controllable wall switch available. SwitchLinc™ 2-Way Relay Timer is built upon the SwitchLinc Dimmer platform and features a hard-contact relay that's ideal for controlling non-dimmable loads like fluorescent lights and high amperage inductive loads.

Another Smarthome first: SwitchLinc 2-Way Relay Timer includes a built-in countdown timer that can automatically turn off the connected load after a user-defined period of time (up to 45 minutes). By pressing the ON portion of the paddle, you can easily set the SwitchLinc 2-Way Relay Timer's to turn on the load and begin counting down. The switch can also be remotely turned on with the timer mode started.

Smarthome has included BoosterLinc™ Signal Boosting technology in the SwitchLinc 2-Way Relay Timer. When enabled, the BoosterLinc feature acts like a real-time repeater of PLC (powerline carrier) signals. It will boost powerline signals to allow an unlimited expansion of your automation system. Once installed and enabled, PLC signals will be boosted to improve reliability to other receivers.

SwitchLinc 2-Way Relay Timer also includes features normally found in expensive hard-wired lighting systems. It can also be controlled remotely from a powerline transmitter (X10/PLC) and be a member of up to 64 lighting scenes, allowing one powerline signal to set elegant "mood lighting." It is a transmitter of powerline signals so it can be used to control other home automation devices.

SwitchLinc 2-Way Relay Timer is easily installed and programmed. The X10/PLC address is electronically set and it installs (connects to home wiring) just like a regular light switch.

Key Features
• Built-in Countdown Timer
• Built-in BoosterLinc PLC signal booster
• 2-Way communications
• Scene-ready
• Super quiet relay – no disturbing "clunk" sound when switched
• True rocker action (top = on, bottom = off)
• All settings are held in non-volatile memory (no code wheels to set)
• Load Status LED "Bar" shows if the load is on or off
• Status LED/Set Button shows powerline activity & facilitates programming
• Wires in just like a standard wall switch (Requires a neutral connection)

Other SwitchLinc Models
SwitchLinc 2-Way Dimmer #2380W/I and 2381W/I - (White or Ivory)
SwitchLinc Plus Dimmer #2386W/I - (White or Ivory)
SwitchLinc PLC Dimmer #2384W/I - (White or Ivory)
SwitchLinc Switch #2385W/I - (White or Ivory)
SwitchLinc Deluxe Dimmer #2387W/I - (White or Ivory)
SwitchLinc 2-Way Relay #23883W/I - (White or Ivory)
SwitchLinc PLC Relay #23885W/I - (White or Ivory)
SwitchLinc RX Plus #2386(W/I)2 - (White or Ivory)
SwitchLinc RX PLC #2384(W/I)2 - (White or Ivory)
SwitchLinc RX Deluxe Dimmer #2387(W/I)2 - (White or Ivory)
SwitchLinc Multi-Way Companion Switch for 3-Way, 4-Way, & Up circuits #2382W/I - (White/Ivory)
CAUTION!!

Read and understand these instructions before installing.

• This device 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.
• For indoor use only.
• Connect only copper or copper-clad wire to this device.
• Before installing, disconnect power at circuit breaker or remove fuse to avoid shock or damage to the control.
• It is recommended that a qualified electrician perform this installation.
• Retain these instructions for future reference.

SwitchLinc 2-Way Relay Timer is rated for loads up to 15 amps EXCEPT when incandescent and motor loads are connected. Due to the high “in-rush” current for these loads, the maximum load is 480-watts (4-Amps).

Gradateurs commandant une lampe a filament de tungstene - afin de reduire le risque de surchauffee et la possibilite d’endommagement a d’autres materiels, ne pas installer pour commander une prise, un appareil a moniteur, une lampe fluorescente ou un appareil alimente par un transformateur.

Quick Start Instructions

Setting the Primary Address, Booster Mode & Timer Interval

1. Press and hold in the Set Button for 4 seconds (the LED will begin blinking and the load will come on)
2. Send the desired address from any transmitter within 30 seconds
3. Send an “ON” to enable BoosterLinc Mode
   OR
   Send an “OFF” to disable BoosterLinc Mode
4. Send a unit code to represent the timer interval
   (see page 6 for more detailed instructions)

Factory Reset

1. Press and hold the off button for 4 to 5 seconds
2. Push and hold in the Set Button for 10 seconds, until the load turns on
3. Release the Set Button
   (see page 14 for more detailed instructions)

Programming a Scene

1. Transmit the “clear” sequence:

   O16 N16 M16 P16 M16

2. Send the Primary address + ON or PREDIM level (Predim represents the time it should stay on when the scene is activated)
3. Send the following command sequence:

   M16 N16 O16 P16

4. Transmit the desired scene address (house and unit code) to lock-in the new scene.
   (see pages 10 & 11 for more detailed instructions)
Preparing to Install SwitchLinc 2-Way Relay Timer

Before installing SwitchLinc 2-Way Relay Timer, please familiarize yourself with the following and take the necessary precautions listed here:

- Be sure that the fuse has been removed or the circuit breaker is turned off to the circuit being controlled. Installing SwitchLinc 2-Way Relay Timer with the power on will expose you to dangerous voltages.

- The SwitchLinc 2-Way Relay Timer Wiring Diagram on page 5 will help you to determine the wire colors of the connections to the SwitchLinc 2-Way Relay Timer and Multi-Way Companion Switch. Note: While the neutral connection is optional on the Multi-Way Companion Switch, the SwitchLinc 2-Way Relay Timer requires a neutral connection.

- Wiring for 3-way, 4-way, & up switch circuits follow conventional (standard, non-remote) wiring practice (plus the requirement for a neutral). Wiring the SwitchLinc Multi-Way Companion Switch requires the Line (Black) wire be accessible and be the same 110V leg of the house wiring. The white wire on the Multi-Way Companion Switch is to be connected to NEUTRAL ONLY. If neutral is not available, cap the white wire, which will simply cause the nightlight LED not to function.

- The SwitchLinc 2-Way Relay Timer may feel warm during operation. The amount of heat generated is within approved limits and poses no hazards. To minimize heat build-up, ensure that the area surrounding the rear of the SwitchLinc 2-Way Relay Timer has adequate ventilation (i.e., clear away excess insulation).

- Installation should be performed only by a qualified electrician, or by a homeowner who is familiar and comfortable with electrical circuitry. If there are any questions, consult an electrician or contact Smarthome’s Tech Support department for guidance.

Step-by-Step Installation Instructions

1. Disconnect the power for the existing switches at the circuit breaker or fuse panel. Verify that the power has been removed by trying to turn on the lights controlled by the switches.

2. Remove the trim plate from the existing switches.

3. Unscrew and pull the existing switches from the wall box.

4. Disconnect the wires from the existing switches.

5. If the SwitchLinc 2-Way Relay Timer is being installed into a 3/4/5-way circuit, the SwitchLinc Multi-way Companion Switch must be installed in the wall box where power comes into the circuit. Follow the instructions included with the Multi-way Companion Switch to identify the “Hot,” “Neutral,” “Ground,” and “Traveler” wires.

6. Orient SwitchLinc 2-Way Relay Timer so the LED is at the top and make connections according to the “SwitchLinc 2-Way Relay Timer Wiring Diagram”. Wire Multi-way Companion Switches (if used) according to the “SwitchLinc Timer Multi-Way Wiring Diagram”.

7. After all connections have been made, ensure that all wire connectors are firmly attached and that there is no exposed copper except for the Ground wire.

8. Gently place the wires and switch into the wall box (with LED at top) and screw into place.

9. Turn the circuit breaker back on. The SwitchLinc 2-Way Relay Timer will be operational when the green Status LED will come on.

10. After testing for proper operation, install the faceplate (sold separately).
SwitchLinc 2-Way Relay Timer Operations

<table>
<thead>
<tr>
<th>Input at Switch</th>
<th>Output at Load</th>
<th>Countdown Timer</th>
<th>PLC Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top rocker is tapped once (when light is off)</td>
<td>Load turns ON</td>
<td>Load will stay on for ONE User Interval</td>
<td>Housecode &amp; Unit Code Housecode &amp; ON</td>
</tr>
<tr>
<td>Top rocker is tapped twice (when light is off)</td>
<td>Load turns ON</td>
<td>Load will stay on for TWO User Intervals</td>
<td>Housecode &amp; Unit Code (once) Housecode &amp; ON (twice)</td>
</tr>
<tr>
<td>Top rocker is tapped three times (when light is off)</td>
<td>Load turns ON</td>
<td>Load will stay on for THREE User Intervals</td>
<td>Housecode &amp; Unit Code (twice) Housecode &amp; ON (3 times)</td>
</tr>
<tr>
<td>Top rocker is pressed and held for 2 seconds (when light is off)</td>
<td>Load turns ON</td>
<td>Timer Mode is disabled</td>
<td>Housecode &amp; Unit Code (once) Housecode &amp; ON (twice)</td>
</tr>
<tr>
<td>Bottom rocker is tapped once (when light is on)</td>
<td>Load turns OFF</td>
<td>Timer Mode (if running) is canceled</td>
<td>Housecode &amp; Unit Code Housecode &amp; OFF</td>
</tr>
<tr>
<td>Bottom rocker is double-tapped (when light is on)</td>
<td>Load turns OFF</td>
<td>Timer Mode (if running) is canceled</td>
<td>Housecode &amp; Unit Code (once) Housecode &amp; OFF (twice)</td>
</tr>
<tr>
<td>Bottom rocker is triple-tapped (when light is on)</td>
<td>Load turns OFF</td>
<td>Timer Mode (if running) is canceled</td>
<td>Housecode &amp; Unit Code (twice) Housecode &amp; OFF (3 times)</td>
</tr>
</tbody>
</table>

1 See page 8 for instructions on using the timer mode.
Setting the Primary Address, Timer, and BoosterLinc Features

The SwitchLinc 2-Way Relay Timer requires a primary address to operate. It ships from the factory with "A1" as the default address; it will also have this address after performing a factory reset. The TimerTap™ and BoosterLinc modes are also set during the programming of the primary address.

The SwitchLinc 2-Way Relay Timer does not use code wheels or dials to set its primary address. Instead, it will accept the first PLC address it finds on the powerline once the programming mode is started. Any PLC/X10 transmitter can be used to set the primary address. It can use any of the 256 different PLC/X10 addresses.

Activating the BoosterLinc Mode

The SwitchLinc 2-Way Relay Timer includes the programming and intelligence found in Smarthome's plug-in BoosterLinc signal booster. This feature allows the switch to boost PLC/X10 signals on the AC line and improve the overall reliability of the automation system in the home. The signal boosting can be disabled if desired or if there are other Smarthome BoosterLinc-enabled products on the same circuit breaker. For information, see page 14.

Activating TimerTap™ Feature and Setting the Interval Time

During the initial programming, you'll have an opportunity to set the TimerTap interval. The Interval Time is the minutes, between one and 15, in which the SwitchLinc 2-Way Relay Timer will stay on for when tapped. When the TimerTap feature is enabled and used, the switch will multiply the interval time by the number of taps. For example, for the interval time is five minutes and the switch's ON paddle is pressed twice, it will stay on for 10 minutes (five times two). Entering a value of "16" during the programming will disable the timer feature. For more information on the TimerTap feature, please see page 8.

Important: If you plan on sending status requests to the SwitchLinc 2-Way Relay Timer or any other 2-way enabled module, make sure that each one is programmed with a different primary address. Otherwise, their simultaneous responses to a status request may will collide with one another.

1. Using the tip of a small screwdriver, press and hold in the Status LED/ Set Button for approximately 4 seconds then release. The green Status LED/ Set Button will begin blinking and the load will come on.

2. Within 30 seconds, transmit the desired primary address (housecode and unit code) from any transmitter.

3. Set the BoosterLinc Feature
   a) Send an "ON" command immediately after the house and unit code to activate the BoosterLinc mode.
   OR
   b) Send an "OFF" command immediately after the house and unit code to disable the BoosterLinc mode.

4. Set the TimerTap Feature and Interval
   a) To enable and set the TimerTap feature, send unit code 1 for one minute, 2 for two minutes, 3 for three minutes and so on up to unit code 15.
   OR
   b) To disable TimerTap, send unit code 16.
   The setting of the TimerTap feature can include a command (A5-Aon)
   The Status LED/ Set Button will stop flashing and load will turn off.
A couple of programming examples:

To set the switch to F-4 with the BoosterLinc feature activated and the TimerTap interval at 10 minutes:
1. Press and hold the Set Button for approximately 4 seconds, the load will come on.
2. Send the primary address: F-4
3. Enable the BoosterLinc Feature: send “ON”
4. Set the TimerTap Interval Feature: F-10

To set the switch to K-1 with the BoosterLinc feature de-activated and the TimerTap interval at 2 minutes:
1. Press and hold the Set Button for approximately 4 seconds, the load comes on.
2. Send the primary address: K-1
3. Disable the BoosterLinc Feature: send “OFF”
4. Set the TimerTap Interval Feature: K-2

To set the switch to B-9 with the BoosterLinc feature activated and the TimerTap disabled:
1. Press and hold the Set Button for approximately 4 seconds, the load will come on.
2. Send the primary address: B-9
3. Enable the BoosterLinc Feature: send “ON”
4. Disable the TimerTap Feature: B-16

Tip:
If you have trouble communicating to the SwitchLinc 2-Way Relay Timer, there may be a lot of signal activity on the powerline. Unplug transmitters that send signals that might be intercepted by the switch during the programming sequences. RF transceivers, computer controllers, and X10 thermostats should be unplugged to avoid interference.
Using the TimerTap™ Feature

The TimerTap feature in SwitchLinc 2-Way Relay Timer allows it to automatically start an internal countdown timer that will turn off the load after a user definable period of time (up to 100 minutes).

The TimerTap countdown can be initiated in one of three ways:
- Pressing the top portion of the paddle switch once or repeatedly
- Sending a series of consecutive ON commands (i.e. A-6-Aon, Aon, Aon)
- Sending a Preset Dim command (i.e. A-6, Predim 9%)

When the SwitchLinc 2-Way Relay Timer is in the TimerTap mode and counting down, the Status LED/Set Button will blink every eight seconds to show the number of Interval Times remaining. When one minute remains, the LED will blink every half-second.

Manually activating TimerTap at the SwitchLinc

The TimerTap countdown feature can be activated at the SwitchLinc 2-Way Relay Timer by pressing the ON portion of the paddle multiple times. Typically, the paddle can be pressed reliability up to four times. (If pressed beyond four times, the unit may not go into the TimerTap mode.) Each time the ON button is pressed, SwitchLinc 2-Way Relay Timer will add one Interval Time to the total countdown time. The Interval Time is user programmable (during the setting of the primary address), between one and 15 minutes. See page 6 for more information on setting the Interval Time.

Two examples:
- If the Interval Time was set to 10 minutes and the ON portion of the paddle was pressed three times, the switch would stay on for 30 minutes (10 times three).
- If the Interval Time was set at two minutes and the ON paddle was pressed once, the switch would stay on for two minutes (two times one).

Please Note:
The TimerTap mode can be locally overridden at the switch by pressing and holding the ON portion of the paddle for two seconds. The load will come on and remain on until turned off (manually or by a remote control command).

Activating the TimerTap Mode Remotely with ON commands

PLC/X10 remote control commands can be used to set the TimerTap Mode. For each ON command received after the primary address, the SwitchLinc 2-Way Relay Timer will add one Interval Time to the countdown. The commands can be sent from a controller that sends the address with the command (A-6, A-On)

For example:
- If the Interval Time was set to 10 minutes and A-6, A-On, A-On, A-On was received; the switch would stay on for 30 minutes (10 times three).
- If the Interval Time was set to two minutes and A-6, A-On, A-On was received; the switch would stay on for four minutes (two times two).
- If the Interval Time was set to one minute and A-6 A-On was send 12 times; the switch would stay on for 12 minutes (12 times one).

Please Note:
The TimerTap mode can be remotely overridden by sending the primary address and command once (A-6, A-On). The load will come on and remain on until turned off (manually or by a remote control command).
Activating the TimerTap Mode Remotely with Preset Dim commands
SwitchLinc 2-Way Relay Timer can use any of the 32 preset dim commands to set the timer feature. Normally, these commands are used to set the brightness level of dimmer-enable modules. Since SwitchLinc 2-Way Relay Timer has a hard-contact relay, it can’t dim the load. However, by sending the address followed by a preset dim value, the TimerTap mode will be activated for the same number of minutes that Preset Dim percent command represents.

For example:
If the A-6 PreDim 19% were received, the switch would stay on for 19 minutes.
If the A-6 PreDim 87% were received, the switch would stay on for 87 minutes.

Canceling the TimerTap Mode
The TimerTap mode can be cancelled by any of these methods:
• Pressing the OFF portion of the paddle
• Sending an OFF command for the primary or a scene address
• Sending a scene address that the SwitchLinc belongs to

When the SwitchLinc 2-Way Relay Timer exits the TimerTap mode (turns off the load), it will send its primary address and an OFF command so that any other modules on the same address turn off simultaneously. If there is any signal activity or electrical noise on and AC line, it will still turn off the load on time, but will delay sending the OFF command until the line is clear of signals or noise.
Scene Address Programming

The SwitchLinc 2-Way Relay Timer can be a member of up to 64 scenes. A scene address is a single address (just like a primary address), and is set at the time scene membership is programmed. Using a single command to trigger a scene is much less complicated than using an intelligent computer controller to initiate a macro that in turn sends dozens of commands over the next few minutes to turn on multiple receivers and set brightness levels (for dimming-enabled modules).

When an ON signal is transmitted to scene-enabled modules, all members programmed to that address will turn on to their independent ON-levels and at their independent fade-on rates for that scene. Transmitting an OFF for a scene address will turn off all modules that are members of that scene. Modules will react to dim and bright commands after the scene address is sent, however, they will ignore All Light On and All Units Off commands for the scene address' house code. (The SwitchLinc 2-Way Relay Timer does not have dimming abilities, but some other Smarthome scene-enabled products do.)

Additionally, the SwitchLinc 2-Way Relay Timer is compatible with other scene-enabled Smarthome products:

- SwitchLinc 2-Way and Plus Dimmers
- LampLinc™ 2-Way & Plus Modules
- SwitchLinc Relay 2-Way
- ApplianceLinc™ 2-Way & Plus Modules
- ToggleLinc™ 2-Way and Plus Dimmers and Switches
- KeypadLinc™ Wall Mounted Controllers with Integrated Dimmer

The scenes for all these modules can be setup simultaneously using the same programming sequence. Signals sent by transmit-enabled Smarthome products, like those above, will be received and understood by the SwitchLinc 2-Way Relay Timer!

Transmitters that can set up scenes

Scenes can be programmed with a Maxi-Controller or any transmitter capable of sending Housecode and Unit Code address without an ON or OFF command. Transmitters in which one button is pressed to turn a load on or off WILL NOT WORK. When using a Maxi-Controller or an equivalent transmitter, be careful when pressing the buttons. Programming will be ignored if some commands are not sent in the proper sequence. "Fat-Fingering" or accidentally pressing the same button twice may prevent the programming from being accepted.

If KeypadLinc controllers are installed in the house and one of their buttons is programmed to transmit to SwitchLinc scene-enabled receivers, it can be used to quickly set up scenes (see the KeypadLinc manual for more information).

Smarthome TouchLinc Touchscreens have a built-in wizard to help automate the scene setting process.

Many computer programs like Smarthome Manager (pictured), Indigo for Macintosh, HCA, and HomeSeer have tools to aid in setting up scenes and many other features. Please check with your automation software supplier for availability.
Programming Scene Membership:
SwitchLinc 2-Way Relay Timer can behave in one of three ways when a scene address and an ON command are received:

- It can turn on and stay on
- It can turn off
- It can turn on and stay on for a pre-programmed length of time

If you are familiar with other Smarthome scene-enabled products, the first two modes operate like all our other products and are pretty straightforward.

A new feature for SwitchLinc 2-Way Relay Timer is the ability to program a scene address that when triggered will turn on and stay on for up to 100 minutes. To set the switch’s timer duration, a PREDIM command (between 3% and 100%) is sent during the enrollment of the scene. When the SwitchLinc 2-Way Relay Timer turns off (after being triggered by a scene address and turns off), it will send the primary address and an OFF command.

Follow these steps:
1. Transmit the “clear” sequence:
   - O16  N16  M16  P16  M16

2. Set what the SwitchLinc is to do when the scene address is received:
<table>
<thead>
<tr>
<th>Action</th>
<th>At the switch</th>
<th>Remotely with PLC commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turns On</td>
<td>Press and hold the ON paddle for two seconds</td>
<td>Send the Primary address and ON</td>
</tr>
<tr>
<td>Turns Off</td>
<td>Manually press the OFF paddle</td>
<td>Send the Primary address and OFF</td>
</tr>
<tr>
<td>Countdown Timer</td>
<td>N/A</td>
<td>Send the primary address and a PREDIM (between 3% and 100%) for the time</td>
</tr>
</tbody>
</table>

3. Send the following command sequence:
   - M16  N16  O16  P16

4. Transmit the desired scene address (house and unit code) to lock-in new scene. The SwitchLinc 2-Way Relay Timer will turn off the load (if it was on) to confirm it has been enrolled in the scene.

Removing the SwitchLinc 2-Way Relay Timer from a Scene:
1. Transmit the “clear” sequence:
   - O16  N16  M16  P16  M16

2. Using a PLC/X10 Controller, send the primary address of the SwitchLinc 2-Way Relay Timer and an ON or OFF or press either the ON or OFF button on the SwitchLinc 2-Way Relay Timer.

3. Send the following command sequence:
   - O16  P16  M16  N16

4. Transmit the scene address (house and unit code) that is to be removed. The SwitchLinc 2-Way Relay Timer will turn off the load (if it was on) to confirm it has been removed from the scene.

Tip: Whenever the CLEAR sequence is sent, you will have 4 minutes to make your adjustments.
Other Features

Disable PLC transmissions
The SwitchLinc 2-Way Relay Timer’s ability to transmit may be disabled if the feature is not needed, interferes with other home automation tasks, or just to cut down on the amount of PLC signals on the lines. It can be re-enabled later if necessary. Please note that the electronics that connect the SwitchLinc 2-Way Relay Timer’s transmitter circuitry to the AC line are still in place and, like all transmitters, will absorb some of the PLC signals from other transmitters. For more information, please see page 14, “How Powerline Signals Travel Around a Home and How to Improve Reliability”.

1. Transmit the “clear” sequence:
   
   \[ O16 \quad N16 \quad M16 \quad P16 \quad M16 \]

2. Activate all the switches for which you want to disable by sending the primary Housecode, Unit Code, and ON.

3. Send the following command sequence to disable the transmitter:

   \[ M16 \quad N16 \quad P16 \quad O16 \quad P16 \]

The SwitchLinc 2-Way Relay Timer’s transmitter is now disabled.

Enable PLC transmissions (default is enabled)

1. Transmit the “clear” sequence:
   
   \[ O16 \quad N16 \quad M16 \quad P16 \quad M16 \]

2. Activate all the switches for which you want to disable by sending the primary Housecode, Unit Code, and ON.

3. Send the following command sequence to enable the transmitter:

   \[ O16 \quad M16 \quad N16 \quad P16 \quad P16 \]

The SwitchLinc 2-Way Relay Timer’s transmitter is now enabled.

Disable PLC Reception
SwitchLinc 2-Way Relay Timer can be manually set at the switch to temporarily disable reception to all powerline signals. This may be helpful in troubleshooting signals or if maintenance is being performed on the load.

1. Press and hold the OFF portion of the paddle for 4 to 5 seconds.
2. When disabled, the Status LED blinks slowly.

During this time, the SwitchLinc will operate only manually. PLC signals will still be sent when manually controlled. If the BoosterLinc mode is set, it will be deactivated during this time.

Enable PLC Reception (default is enabled)

1. Press and hold the ON portion of the paddle for 4 to 5 seconds.
2. The load will come on and a few seconds later, the load status LED (on the left) will illuminate and the Status LED / Set Button will turn off.

Power Restore
In the event of a power loss, the SwitchLinc 2-Way Relay Timer will automatically return the load being controlled to its last power state before the interruption. If the load was on when the power was lost, the SwitchLinc 2-Way Relay Timer will turn back on when the power is restored.

Tip:
Be careful not to “fat-finger” the buttons as you send these sequences.
Disable Programming
Once the SwitchLinc 2-Way Relay Timer is set up, it can be programmed to lockout any changes. Any changes made at the unit or remotely will be ignored. Please note that all SwitchLincs, ToggleLincs, ApplianceLincs, LampLincs, and KeypadLincs that are plugged in or electrically active will receive these commands and also be locked out.

1. Send the following command sequence to disable the programming:

```
M16  O16  P16  N16  P16
```

The SwitchLinc 2-Way Relay Timer will now ignore changes to its programming.

Re-Enable Programming (default is enabled)
1. Send the following command sequence to enable programming:

```
N16  M16  O16  P16  P16
```

The SwitchLinc 2-Way Relay Timer will now accept changes to its programming.

Switching Between Appliance and Lamp Mode
SwitchLinc 2-Way Relay Timer can be configured to behave like either a lamp or appliance module. When in the Lamp Mode, the switch will respond to All Lights On, All Lights Off (a rarely used command), and All Units Off. If the switch is in the Appliance Mode, it will only respond to All Units Off. It comes default to the Appliance Mode.

To set the switch for the Lamp Mode:
1. Transmit the “clear” sequence:

```
O16  N16  M16  P16  M16
```

2. Activate the SwitchLinc 2-Way Relay Timer (manually or remotely) by turning it on.
3. Send the following command sequence:

```
P16  O16  M16  N16  O16
```

To set the switch for the Appliance Mode:
1. Transmit the “clear” sequence:

```
O16  N16  M16  P16  M16
```

2. Activate the SwitchLinc 2-Way Relay Timer (manually or remotely) by turning it on.
3. Send the following command sequence:

```
P16  N16  O16  M16  O16
```

Querying SwitchLinc
It is possible with some home automation interfaces and products to query the status of the SwitchLinc. It will respond to Status Request signals that are received for its base address. The sample session on the left is from Smarthome Manager with a PowerLinc Controller.

<table>
<thead>
<tr>
<th>Example: SwitchLinc is ON</th>
<th>Example: SwitchLinc is OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent by Interface</td>
<td>Sent by Interface</td>
</tr>
<tr>
<td>P1 Status Request</td>
<td>P1 Status Request</td>
</tr>
<tr>
<td>Received from SwitchLinc</td>
<td>Received from SwitchLinc</td>
</tr>
<tr>
<td>P Status=On</td>
<td>P Status=Off</td>
</tr>
<tr>
<td>P1 POn</td>
<td>P1 Poff</td>
</tr>
</tbody>
</table>

13
Factory Reset
If the SwitchLinc 2-Way Relay Timer begins to operate strangely, the reset procedure can be used to clear the EEPROM's memory and restore its factory default settings. Doing this procedure will clear the unit of all scene addresses.
1. Press and hold the OFF portion of the paddle for 4 to 5 seconds until the Status LED blinks slowly.
2. Push and hold in the Set Button for 10 seconds, until the load turns on.
3. Release the Set Button
4. The reset procedure is complete. The SwitchLinc 2-Way Relay Timer is ready for initial programming or use.

Hints for using the BoosterLinc Mode
• Unlike the Plug-in BoosterLinc (#4827), SwitchLinc 2-Way Relay Timer does not repeat signals from single-phase onto three-phase electricity.
• SwitchLinc 2-Way Relay Timer is able to boost signals that are weak, but not totally gone. If the receiver circuit can't detect the signal, it won't be boosted.
• While the BoosterLinc feature in SwitchLinc 2-Way Relay Timer works well in homes that don't have a phase coupler (sometimes called a signal bridge), it works better when a coupler is installed. We recommend a SignaLinc™ Plug-In Phase Coupler (#4816A2 or 4816B2) or Hardwired SignaLinc™ Phase Coupler (4816H). The BoosterLinc feature is compatible with traditional coupler-repeaters.
• Multi-gang wall boxes that contain multiple BoosterLinc-enable products, only one unit should have the BoosterLinc feature enabled. The other units should have their BoosterLinc feature disabled.
• It is unlikely that more than one BoosterLinc-equipped product will be required on a single line serviced by the same circuit breaker.
• Having too many BoosterLinc-enabled products installed (and the BoosterLinc feature turned on) may cause false-positive signals. If you notice strange happenings or unusual events with your automation system, disable the BoosterLinc mode.
• The BoosterLinc feature has been tested and found to be compatible with all current X10 powerline products. However, it may interfere with other current or future powerline carrier technologies. Disabling the BoosterLinc mode and observing the results from the other powerline carrier system may confirm interference.

How Powerline Signals Travel Around A Home and How To Improve Reliability
Most homes in North America have two lines of 120 volts coming into the home from the utility company. This split-single phase electricity is divided out at the home’s breaker box into the circuits that feed light switches, plug-in outlets, and appliances. Half of the electricity outlets and wall switches are fed by one of the 120-volt lines and the second 120-volt line feeds the other half. The intermittent operation of PLC/X10 modules usually happens when the transmitter is sending signals on one line and the receiver module is plugged into an outlet on the other line. For the signals to get to the receiver, it must leave the home, travel to the utility company transformer then come back in on the other AC line.
   By the time the signal gets back to the home, travels through the electrical meter and circuit breaker box, there may not be enough signal left to trigger the module.
The first order of business will be to install a coupler-repeater, also known as amplifier. A coupler-repeater will ‘see’ the incoming signal, re-generate it, and blast it out over both lines of the 120 volts. We recommend that any home larger than 3000 square feet install a coupler-repeater. In smaller homes, a passive phase coupler also known as a signal bridge may give satisfactory results.

Once the signal has been amplified, it’s time to preserve it. Since PLC signals go everywhere in the home, some electrical devices will have more of an effect on the signal strength than other devices. PLC signals are like water pressure in pipes, it actually goes everywhere it can, not just to the receiving module. In the last 20 years, an explosion of electrical devices has invaded our homes. Computers, video gear, and fancy high-end electronics are more present than in years past. The more complicated the electrical power supply is in a device, the more likely it is to absorb PLC signals. Engineers who design power supplies build in traps to filter out and kill electrical noise. Unfortunately, the PLC signals looks like electrical noise to these devices. The result is that a large percent of the transmitted signal is lost to these devices leaving less for the receivers. The most common sources of signal loss are:

- Televisions  
- Computer systems  
- Audio/Video gear  
- Computer UPS’s and power strips  
- Power supplies for laptops and cell phones

Testing for the problem is simple. If a device is suspected of causing signal absorption, unplug the device and then re-transmit the signal. It is very important that the device is unplugged and not just turned off! If the controlled product begins working after the appliance is unplugged, then a filter will be needed on that device to keep PLC signals from being absorbed and raise the signal strength of the entire home. Smarthome has many filters that will fix the problem. An average home will need between three and five filters. If you are in the business of installing automation systems and not in the ‘call-back’ business, include some of these in your bid as part of the standard package.

Smarthome’s BoosterLinc™ can solve localized problems

Smarthome’s BoosterLinc™ can solve localized problems by improving the home automation signal strength throughout all the outlets in a home. But, as the PLC signals travel down a circuit and away from the repeater, it will weaken by the same factors listed above. Additionally, the signal will get weaker as it passes installed PLC transmitters. Each PLC transmitter contains a tuned circuit that when it's not sending signals it's absorbing them! In addition to plug-in transmitters, LampLinc™ 2-Way, SwitchLincs™ 2-Ways, ToggleLinc™ 2-Ways, ApplianceLinc™ 2-Ways, KeypadLincs™, or any module with 2-way abilities will load down the available signal. With so many transmitters installed, the signal is loaded down to a point where some modules will be unable to receive a signal. Installing multiple 2-way devices on one branch circuit may necessitate the use of local amplifier like Smarthome’s BoosterLinc.
Helpful Hints for New Construction

By design, X10 (also known as PLC) equipment does not need much in the way of special wiring. The following are six items we recommend for all homes with PLC installations:

1. Ask the builder or electrician to run the neutral wire to each wall switch location. This wiring may be a code requirement or a regular practice in your area, but unless explicitly specified, it may get omitted. Most SwitchLincs and all KeypadLinc controllers require the neutral connection.

2. Specify the installation of deep J-boxes in all locations where PLC switches, receptacles, or transmitters will be used. While all PLC products fit in the spacing offered by all North American electrical boxes, the deep models have extra working space and make the installation go a little easier. Deep boxes only cost a few cents more than normal depth models. Look for single gang boxes that are 22cu or higher (cubic inches) and double gang boxes that are 36cu or higher.

3. If the automation switch is dimming-enabled and is going to be controlling 400 watts or more, do not place insulation around the wall box and consider using metal junction boxes. Dimmers that control high loads will dissipate heat, which may be felt through the switch faceplate. Metal boxes will more efficiently draw out the heat and spread it over all the surfaces of the box. By keeping wall insulation a few inches from the box, free air will help move the heat away.

4. Install a whole-house surge suppressor. Adding a good whole-house surge protector at the breaker will help protect against costly damage to the PLC components and other delicate electrical equipment.

5. Install a PLC phase coupler (signal bridge) or coupler-repeater (amplifier) at the incoming electrical service. A common problem with PLC signals is getting the signals between the two legs of electricity that service the home. A coupler-repeater is recommended for homes of 3,000 square feet or greater. Smaller homes will generally work well with a passive phase coupler.

6. Work with the electrician to isolate non-automation loads. Ask the electrician to place the non-PLC carrying lines on one of the two incoming lines. Having the kitchen and laundry appliances plus the heating systems on one phase will help keep potential noise off the signal-carrying lines. He probably won't be able to accommodate 100% of the loads on one phase or another, but an attempt should be made.
Glossary of Terms

**PLC- Power Line Control**
- A control signal that is embedded onto the electricity lines. X10 signals are a form of PLC signals.

**X10 Address**
- The Address part of an X10 signal contains the House and Unit code. An Address can be Unit codes 1 to 16 and House codes A - P. There are 256 total X10 addresses. Examples of X10 Addresses are A-1, B-5, P-15, O-9.

**X10 Command**
- The Command is action part of an X10 signal. It tells the module what to do when it sees its address. Examples of a command are ON, OFF, Bright, DIM, PREdim, All Light ON, and All Units OFF. There are other rarely used commands, but these are the most common ones.

**Status & Status Request**
- Some X10 receivers, like SwitchLinc 2-Way Relay Timer, have the ability to report their status when asked. These modules contain transmitters that can send X10 signals. When a transmitter sends a Status Request command, the module will reply with its status (On, Off, Predim at some %).

**Resume Dim Level**
- If set, the SwitchLinc can come on to the level it was at before it was turned off. (Not used in the non-dimmable SwitchLinc Switch or SwitchLinc Relay series)

**PreDim Level**
- One of 32 brightness levels the SwitchLinc can instantly (or slowly) change the light’s brightness to a predefined brightness level. (Not used in the non-dimmable SwitchLinc Switch or SwitchLinc Relay series)

**Scenes in SwitchLincs**
- SwitchLincs Wall Switches can be set up to respond to multiple X10 signals and when received come onto a predefined brightness level all with one signal. One scene signal from a KeypadLinc or any transmitter can instantly (within seconds) change the lighting mood in your home.

**Maxi Controller**
- An X10 transmitter that has separate buttons for the unit codes and the commands. In some of the advanced setup functions for the SwitchLinc, it is necessary for only a unit code to be sent. The X10 SC-503, Leviton 6320, Stanley 370-2549 are examples of Maxi-Controllers. We recommend having a Maxi Controller to set up the SwitchLinc 2-Way Relay Timer.

**X10 Keypress**
- This is an X10 signal that only contains the house and unit code WITHOUT a command. The Maxi-Controller, some TouchLinc LCD controllers, and home automation interfaces can produce a keypress command.

**Appliance Module**
- An X10 receiver device that can be used with any type of load, including lighting. It will never contain dimming control as it always has a hard contact relay. An Appliance Module will ignore the All Lights ON command.

**Lamp Module**
- An X10 receiver that is used to control only lighting devices. It may contain dimming control or it may have a hard contact relay. A Lamp Module will respond to the All Lights ON command. SwitchLinc Timer is defined as a lamp module so it will respond to the All Lights On for the primary address housecode.

**Hot or Line**
- The wire in the junction box that contains the incoming electricity from the electrical panel. It is usually black and may be tied with a wire nut to other black wires in the rear of the box.

**Load**
- The wire in the junction box that goes to the light(s). Usually, there is just one load wire in a junction box and it is black. It has no voltage when the switch is off.

**Neutral**
- While not used on a mechanical switch to control a load, SwitchLinc will need a neutral wire to operate. Generally, the neutral wires are white and located in the rear of the junction box. There may be two or more wires tied together by a wire nut.
### Troubleshooting & Technical Support

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light controlled by SwitchLinc turned itself ON.</td>
<td>SwitchLinc was triggered by a scene.</td>
<td>Check scene membership and remove unwanted scenes from SwitchLinc, or perform a Factory Reset to reset SwitchLinc to factory defaults. Install a Signal Blocker for the home.</td>
</tr>
<tr>
<td>The switch makes a click when turned on or off.</td>
<td>It is normal for a relay-based wall switch to make an audible click.</td>
<td>SwitchLinc 2-Way Relay Timer uses a hard contact relay that will produce a audible click when the switch is turning on or off.</td>
</tr>
<tr>
<td>SwitchLinc will not take programming of a scene or the primary address.</td>
<td>SwitchLinc may be in Program Disable mode.</td>
<td>Re-enable Program mode or perform a Factory Reset to reset SwitchLinc to factory defaults.</td>
</tr>
<tr>
<td></td>
<td>SwitchLinc may not be “activated” (has not been manipulated within the last 4 minutes).</td>
<td>Manually turn SwitchLinc ON or OFF or send its X10 address during Step 2 of programming.</td>
</tr>
<tr>
<td>SwitchLinc is not transmitting (will not control a scene).</td>
<td>SwitchLinc may be in Disable PLC Transmit mode.</td>
<td>Re-enable PLC Transmit Mode or perform a Factory Reset to reset SwitchLinc to defaults.</td>
</tr>
<tr>
<td></td>
<td>Other transmitters are loading down the circuit.</td>
<td>Install a coupler-repeater or BoosterLinc (see page 14 for more info).</td>
</tr>
<tr>
<td></td>
<td>Make sure the SwitchLinc can transmit.</td>
<td>The similar-looking SwitchLinc Relay PLC switch can’t transmit.</td>
</tr>
<tr>
<td>SwitchLinc is locked up.</td>
<td>Surge in power line.</td>
<td>Reset SwitchLinc by cycling the power at the circuit breaker that controls it.</td>
</tr>
<tr>
<td>LED is not visible and SwitchLinc is not controlling the light.</td>
<td>SwitchLinc does not have power.</td>
<td>Check that the circuit breaker is on.</td>
</tr>
<tr>
<td></td>
<td>Incomplete (open) wire connection in wall box.</td>
<td>Check wall box wires to ensure all connections are tight and no bare wires are exposed.</td>
</tr>
<tr>
<td></td>
<td>Incomplete (open) wire connection at fixture.</td>
<td>Check fixture to ensure all connections are tight and no bare wire is exposed.</td>
</tr>
<tr>
<td>SwitchLinc is unable to brighten or dim other modules.</td>
<td>The SwitchLinc 2-Way Relay Timer does not have the ability to dim or send dim signals.</td>
<td>If your load can be dimmed without damaging it, consider using the 2380 SwitchLinc 2-Way Dimmer.</td>
</tr>
<tr>
<td>Existing switch only has two wires.</td>
<td>SwitchLinc needs a neutral wire in order to operate.</td>
<td>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 the SwitchLinc’s white wire there.</td>
</tr>
<tr>
<td>Difficulty setting scenes with a maxi-controller.</td>
<td>The CLEAR or SET commands were not sent in the correct order.</td>
<td>Don’t hold down the buttons too long, it may send duplicate codes (i.e. two O16 codes).</td>
</tr>
<tr>
<td>SwitchLinc is not receiving signals.</td>
<td>Check the Status LED/Set Button.</td>
<td>It will blink when there is any PLC activity on the line.</td>
</tr>
<tr>
<td></td>
<td>Move the transmitter to another outlet.</td>
<td>SwitchLinc needs at least 10mV of signal strength for reliable operation, (50mV is better); an amplifier or a signal bridge may be needed (see pg.14).</td>
</tr>
<tr>
<td>The relay inside the SwitchLinc chatters when turned on.</td>
<td>The in-rush of current across the relay contacts is causing them to mechanically vibrate.</td>
<td>The electrical characteristics of the load are contributing to this problem. Installing a noise filter like Smarthome #4835 will help lessen the affect the load is having on the SwitchLinc.</td>
</tr>
<tr>
<td>SwitchLinc turns on, but not off by remote control.</td>
<td>The load is producing electrical noise and it is interfering with SwitchLinc’s reception of PLC signals.</td>
<td>Install a noise filter like Smarthome #4835 between the load and the SwitchLinc or increase the signal strength with a coupler-repeater to overcome the line noise.</td>
</tr>
</tbody>
</table>

If these solutions have been tried, the manual has been reviewed and you still cannot resolve an issue you’re having with the SwitchLinc 2-Way Relay Timer;

- Search our on-line knowledge base at: http://smarthome.custhelp.com
- E-mail tech@smarthome.com
- Call our Technical Support Dept. at 949-221-9200
Specifications

- **Load types:** Permanently installed incandescent, inductive, and fluorescent loads
- **Operation:** Relay (15-amp rated)
- **Maximum load:** 15 Amps for resistive loads, 480-watts for incandescent and inductive loads
- **Input power:** 120 VAC, 60 Hz
- **Connections (16 AWG):** Black (to line), Red (to load), White (to neutral, required) Yellow (to optional Multi-way Companion Switches, 2382)
- **Addresses:** 1 PLC (X-10) Base (Primary) Address of 256 possible Up to 64 PLC (X-10) Scene Addresses of 255 possible
- **Maximum SwitchLincs per gang box:** 4
- **Maximum number of SwitchLincs per circuit:** 10 (with more than 5, a BoosterLinc Amplifier (#4827) is highly recommended)
- **Minimum load:** No minimum load required
- **Operating temperature range:** 40°F to 104°F
- **Minimum PLC transmit level:** 2V
- **Minimum PLC receive level:** 10mV
- **Maximum PLC signal rejection:** 200mV
- **Mounting:** Mounts in single or multiple-ganged J-box
- **Status indicator:** Green LED
- **On indicator:** One Green LED on the side bar
- **Dimensions:**
  - Front Bracket: Width: 1.73” Height: 4.14” Depth: 1.73”
  - Main Body: Width: 1.74” Height: 2.71” Depth: 1.40”
- **Weight:** 4.0 oz
- **Safety tested for use in the U.S. and Canada**

Invest in better Home Automation Products

Unlike most electric items, many PLC-based products haven’t changed much over the years.

Our Marketing and Customer Service teams surveyed our customers, like you, and our engineers have invented new and better wall switches and plug-in modules. We include more features, higher load handling, and better signal sensitivity for a superior user experience. While in some cases, they cost more; we hope you’ll agree that not having to replace a dead module every couple years is worth the added expense and reduced aggravation. Please visit a retailer or distributor for the complete line of automation products from SmartHome Design. Check out our web site at:

http://www.smarthome.com/smarthomedesignstore.html
About SwitchLinc 2-Way Relay Timer’s Certification
SwitchLinc 2-Way Relay Timer has been thoroughly tested by ITS ETL SEMKO, a nationally recognized independent third-party testing laboratory. Products bearing 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.

Smarthome Limited Warranty
Smarthome 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, Smarthome 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 Smarthome’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
ATTN: Receiving Dept.
16542 Millikan Ave
Irvine, CA 92606-5027

Limitations:
THE ABOVE WARRANTY IS IN LIEU OF AND SMARTHOME DISCLAIMS ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF 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 SMARTHOME OR MODIFY THE TERMS OF THE ABOVE WARRANTY AND DISCLAIMER.

IN NO EVENT SHALL SMARTHOME 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 SMARTHOME 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, which may vary from state to state.

ControLinc, TesterLinc, SignaLinc, LampLinc, ToggleLinc, BoosterLinc, ApplianceLinc, KeypadLinc, FilterLinc, ProbeLinc, SwitchLinc, TempLinc, IR Linc & SmarthomeLive are trademarked by Smarthome, Inc.

© Copyright 20043 Smarthome, 16542 Millikan Ave., Irvine, CA 92606-5027
800.SMART.HOME - 949.221.9200- www.smarthome.com

rev 032204