

Savant SmartLighting Control Conversion Application Note

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System Overview

The Savant Systems SmartLighting solution can be installed as part of a complete package with Savant's automation and control ecosystem or as a standalone lighting control system.

This application note contains instructions for converting a legacy LiteTouch system to the updated technology of a Savant SmartLighting system. This process requires replacement of currently installed products with new Savant products, rewiring, and the upload of a program (*.prg) file.

Legacy LiteTouch systems consist of at least three components:

- Central Control Unit (CCU)
- Module
- Keypad or control station.

Savant SmartLighting systems consist of at least four components:

- Controller
- Keypad link
- Module
- Keypad or control station.



Important:

Savant SmartLighting products have been redesigned to be more efficient and are automatically integrated. Some of the older/legacy/out of warranty products may no longer be compatible with this new design/vision.

When designing a new SavantLighting system or upgrading an existing one, go to the [Savant Portal](#) and submit a Pre-Sales and Design Assistance ticket. The response to this request will verify that your SmartLighting system is energy efficient, safe, and will automatically integrate all your lighting specifications.

Installer's Note



WARNING: A licensed electrician is required to remove the LiteTouch CCU and to install the SKL-4000. After removing the CCU, please dispose of the unit in a responsible manner. After removal of the keypad power modules from the module enclosure either safely remove or store the unused power cables.

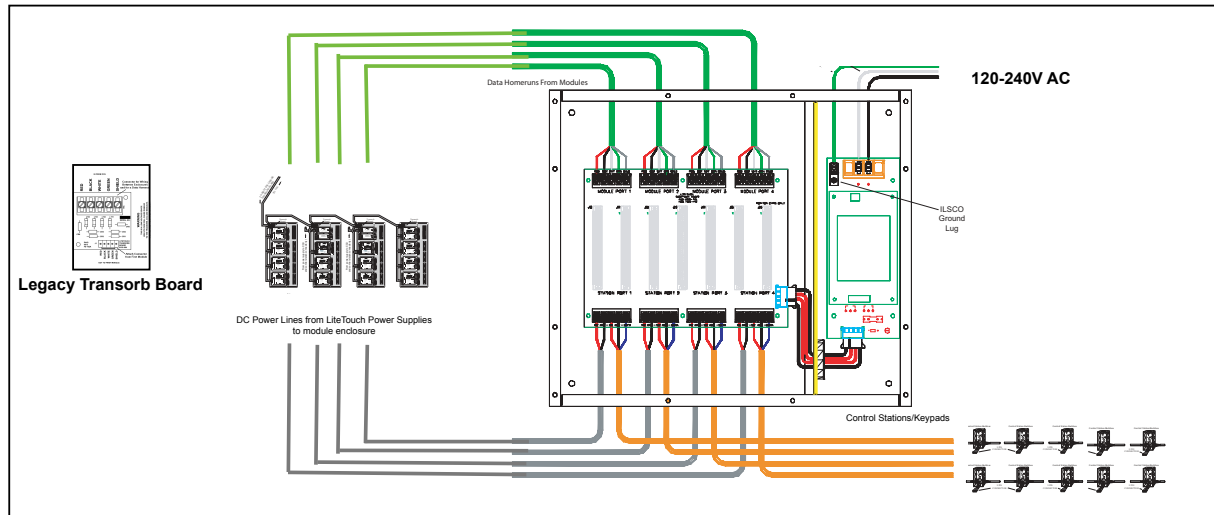
Summary of Conversion

The steps outlined in the next table should be performed in the sequence shown to complete a conversion of a LiteTouch system to a Savant SmartLighting system. Some of these steps have hyperlinks to more detailed procedures. Click the hyperlinks to see those procedures.

Step	Procedure	Details	✓
1	Access the LiteWare® *.prg file, which is required for upload to the Savant SmartLighting controller.	Ensure you have the correct files.	
2	Shut down all power to the legacy system from the CCU and main breaker panel.		
3	Remove power supply control modules from the module enclosures.		
4	Remove legacy transorb boards and replace with Savant transorb boards.		
5	Install SmartLighting controller.		
6	Install Savant Keypad Links.		
7	Confirm the rewiring as follows: <ul style="list-style-type: none"> • New transorb board connected to SmartLighting controller via Cat 5/5e/6 cable. • New transorb board connected to new transorb board in precise reflection of the legacy LiteTouch system. • First control module connected to the transorb board within each module enclosure. • Power to the SmartLighting controller connected via electrical outlet to SKL-1000 or breaker feed to SKL-4000. • Station ports from SmartLighting controller connected to Savant Keypad Link. • Savant keypad links to other Savant keypad links connected via Cat 5/5e/6 cable. • Keypad wire bus connected to Savant keypad links. 		
8	Turn on power to SmartLighting system.		
9	Export *.prg file to SmartLighting controller.		

Comparison of LiteTouch and Savant SmartLighting

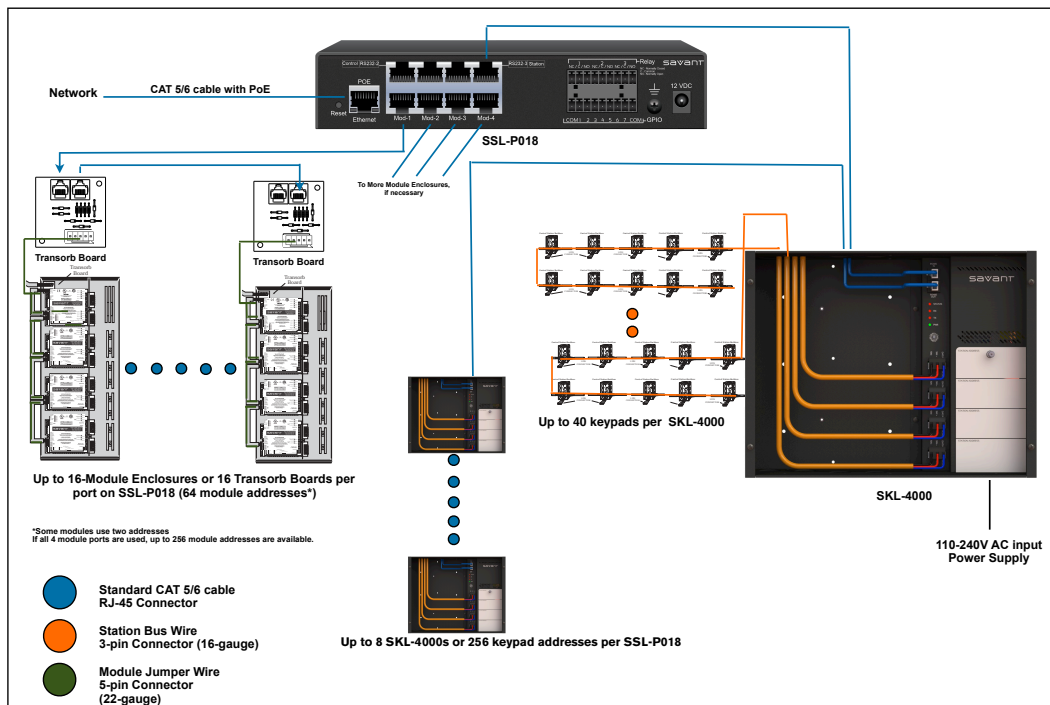
The next two figures show the key differences between the LiteTouch and Savant SmartLighting systems.



Legacy LiteTouch Configuration

An example Savant SmartLighting system is shown in the next figure with the SSL-P018 and the SKL-4000 components.

NOTE: If PoE is not present, installer may purchase a power supply: 12V DC, 120-240V AC, 50/60 Hz (PWR-12125).



Savant SmartLighting Configuration

Accessing a *.prg File from a Legacy Controller

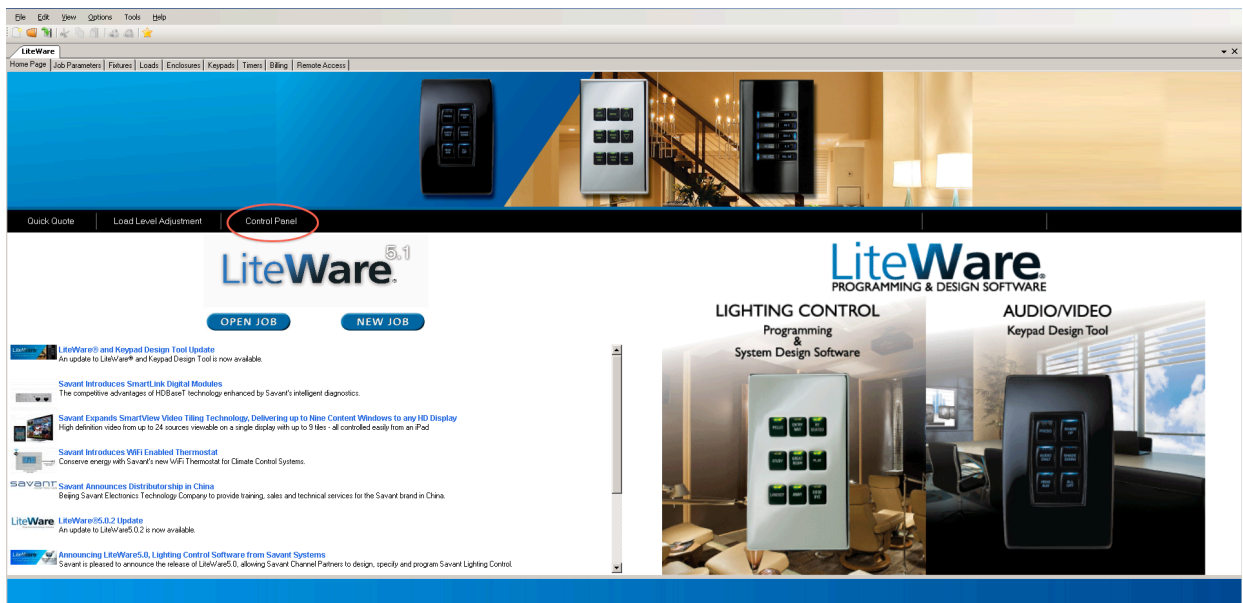
A LiteWare *.prg file is required for a SmartLighting system to function properly. This file type must be exported to the Savant SmartLighting controller after retrieving the file from a Central Control Unit (CCU). Before the *.prg file can be exported to a SmartLighting controller, the file must first be extracted from a CCU.

The *.prg file type is native to a FIVEk CCU (or 5000LC), but the standard and compact CCUs do not use *.prg files. The standard and compact CCU definition files—*.def and *.cdf (respectively)—must be converted to *.prg files.

Note that the CCU communicates with LiteWare using either an Ethernet or a serial connection.

To extract the LiteWare *.prg file from a FIVEk CCU (or 5000LC), do the following. The procedure for converting a *.def file or *.cdf file is at the end of this procedure. See [Converting non-*.prg Files](#).

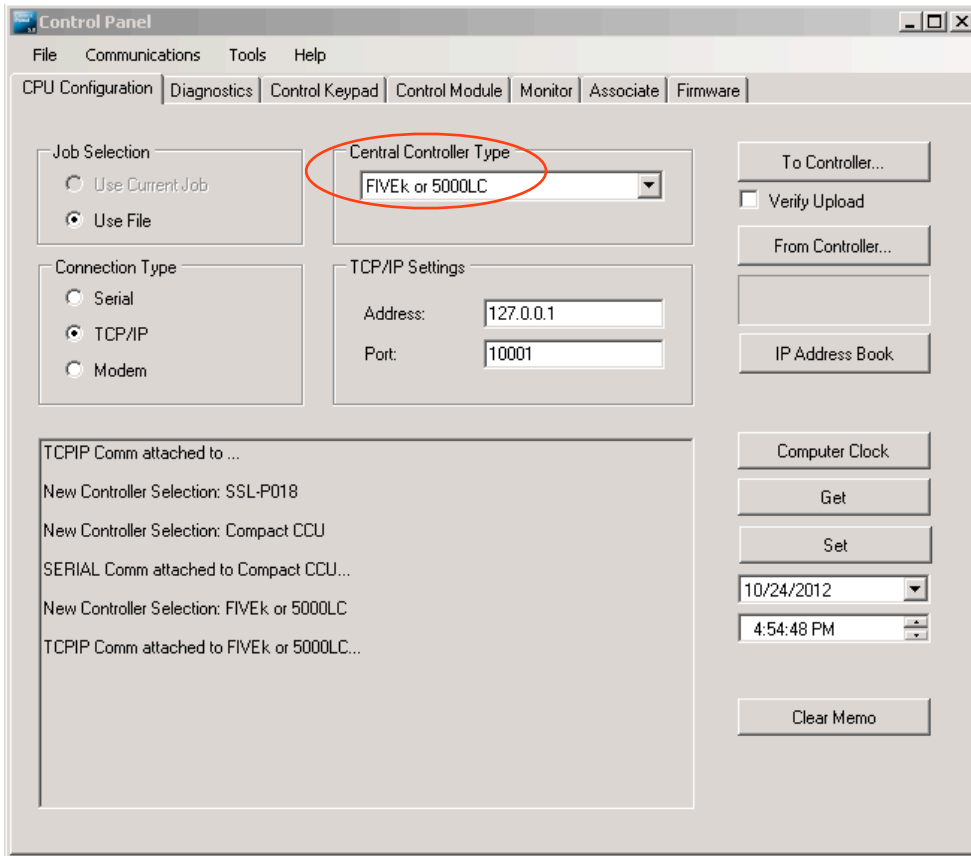
1. Open LiteWare 5.1 or higher.
2. Select **Control Panel** (shown circled in the next screenshot).



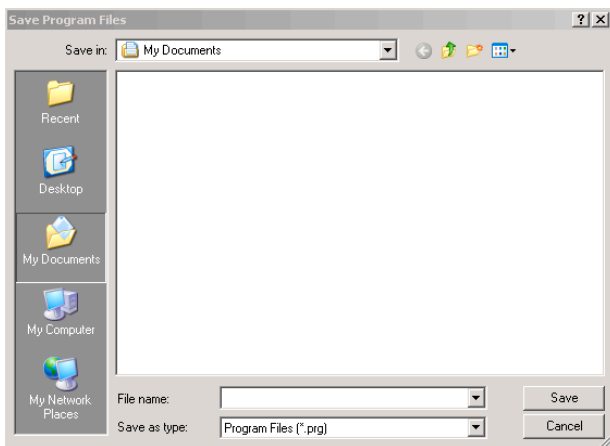
3. Click **No** on this dialog box:



- In the **Control Panel** window, for **Central Controller Type**, select the required controller FIVEk CCU (or 5000LC) from the drop-down list. See the next screenshot.



- For **Connection Type**, select the required option.
- Confirm the **TCP/IP Settings** or **Serial Settings** are correct for the Central Controller Type previously selected.
- Click **From Controller**.
- Browse to the location where you would like the extracted ***.prg** file stored and click **Save**.



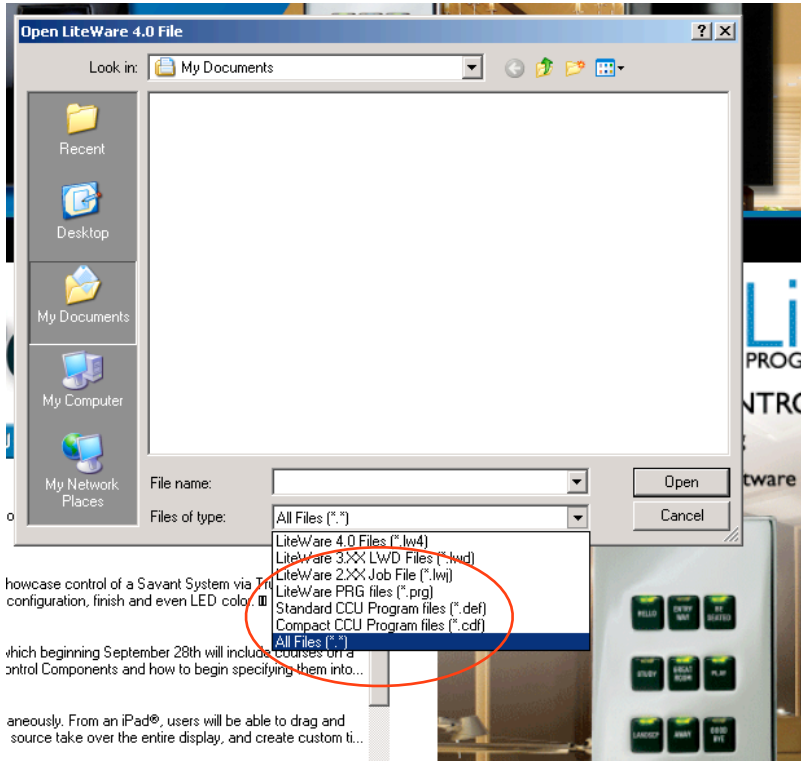
The status pane in the Control Panel will show the ***.prg** has been extracted from the CCU by displaying **Download Complete**.

- Keep a record of where this ***.prg** file is stored so that you can access it when you are ready to export the file to a SmartLighting controller.

Converting non-*.prg Files

To convert *.def or *.cdf files to *.prg files, do the following.

1. From the main menu in LiteWare, select **File > Open**.
2. For **Files of Type**, select either *.def or *.cdf as shown in the next screenshot.



3. Navigate to the appropriate file and click **Open**. The file will be imported into LiteWare as an LW4 file.
4. Click the **Job Parameters** tab.
5. Under **Controller Selection**, for **Type**, select either: **SSL-P018** or **SSL-P002** from the drop-down list.
6. From the main menu select **File > Save As** (select the folder where you want the LW4 file to be saved).
7. Click **File > Export > Export Program File**.
8. Choose the file and click **Save**.

Now perform the procedure, [Accessing the *.prg File from a Legacy Controller](#).

Removing and Replacing a Transorb Board

Transorb boards are used to connect modules in enclosures to SmartLighting controllers. A maximum of 4 transorb boards (64 addresses) are supported when using the SSL-P002 and a maximum of 16 transorb boards are supported when using the SSL-P018 (256 addresses). Up to 4 transorb boards can be installed in an ENC-4000 (4-module enclosure) and up to 2 transorb boards can be installed in an ENC-2000 (2-module enclosure).

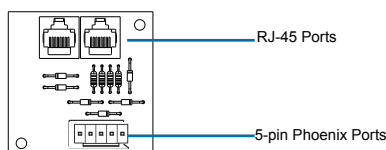
Two enclosure models are available to house either two-modules or four-modules. The enclosures can be recessed, flush-mounted or surface-mounted for both the models. The enclosures can be mounted two or more units high. Each enclosure contains a voltage divider/barrier to isolate high voltage from low voltage.



CAUTION: Keep these wires on their respective side of the enclosure. Do not cross over or under the voltage barrier with wires.

To replace legacy LiteTouch transorb boards with Savant SmartLighting transorb boards, do the following.

1. Locate and remove the legacy transorb board in the upper left corner of the module enclosure.
2. Add the Savant SmartLighting transorb board (ENC-TRANS-xx) to the enclosure where the legacy transorb board was removed.



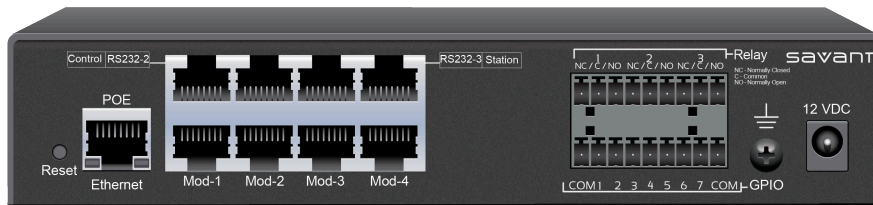
Savant Transorb Board

3. Locate and remove the legacy LiteTouch Power Supply modules in the enclosure. The power supplies are no longer necessary. The Savant SKL-1000 or SKL-4000 Keypad Link provide power to the keypads.
4. Install other lighting control modules where the power supply modules were removed, if required.
5. Locate the 5-pin port on the transorb board.
6. Plug in the Module Jumper Wire (ENC-MJ22) with the 5-pin connectors on both ends (22-gauge) to the Savant transorb board.
7. Connect the other end of the 5-pin connector on the Module Jumper Wire with a 5-pin connector from the Savant transorb board to the Data In port on the first module.
8. Connect the Data Out port on the first module to the second module using the Module Jumper Wire.
9. Repeat the previous steps in this procedure for all transorb boards on the SSL-P002 and the SSL-P018.

Installing a SmartLighting Controller

When installing the SSL-P018 or SSL-P002 controller, place the controller in the same location as the legacy CCU to support the module and the station/keypads. The Savant keypad links (SKL-1000 or SKL-4000) can be located up to 330 feet away using 18 AWG wire-from a Savant SmartLighting controller (SSL-P018 or SSL-P002).

NOTE: Cat 5/5e/6 cable with RJ-45s must replace existing module bus cable. If required, splice the module bus cable to Cat 5/5e/6 cable for RJ-45 termination at the SSL-P002 or SSL-P018 or new Savant transorb board.



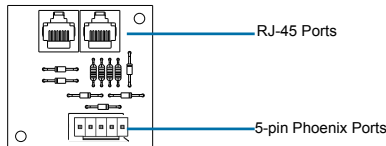
SSL-P018 Rear Panel

NOTE: All Cat 5/5e/6 cable connections use T568B termination.

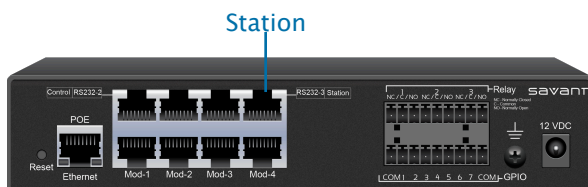
The SmartLighting controller is either the SSL-P018 with four module connectors or the SSL-P002 with one module connector for the Savant SmartLighting system. The controller provides control and communication to Savant Lighting components, including the station connector to the SKL-1000 or SKL-4000.

To connect the SSL-P018 or SSL-P002 to a module and a Savant keypad link, do the following.

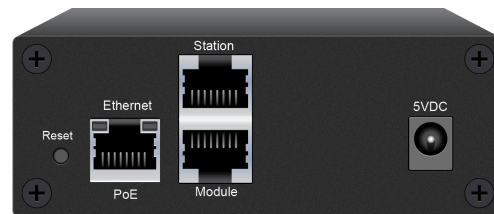
1. Locate the two RJ-45 (Data Out and Data In) ports on the top of the transorb board in the module enclosure.



2. Insert the RJ-45 connector of a Cat 5/5e/6 cable into the RJ-45 (Data Out) port on the left side in the transorb board.
3. On the back of the SSL-P018 or the SSL-P002, connect the other end of RJ-45 terminated Cat 5/5e/6 cable to the **Mod-1** port (SSL-P018) or the **Module** port on the SSL-P002. If other enclosures are required for use with the SSL-P018, they can be terminated to the other module ports: **Mod-2**, **Mod-3** and **Mod-4**.



Rear Panel of SSL-P018



Rear Panel of SSL-P002

4. For daisy-chaining modules, connect the RJ-45 Data Out connector on the left side in the transorb board of the first module with another Cat 5/5e/6 cable terminated on both ends with RJ-45 connectors to the next transorb board Data In port.
5. Connect the Station port (as shown in the previous figures) on the SSL-P018 or SSL-P002 to the SKL-1000 (RS232) or the SKL-4000 (RS-422 In).

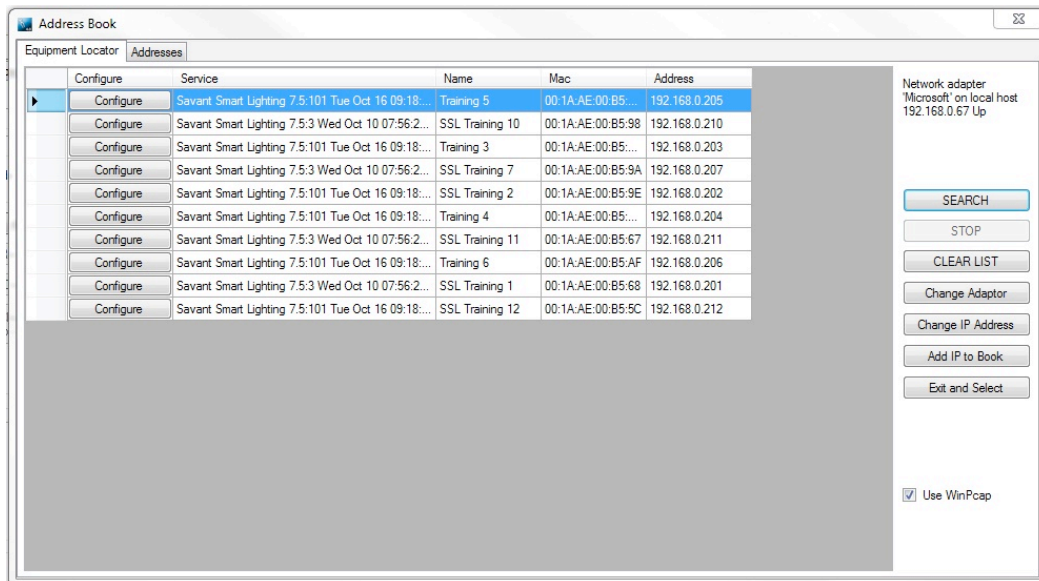
Connecting a Savant SmartLighting Controller to an SKL-1000

If an SKL-1000 is used in the SmartLighting system, you must configure the SSL-P002 or SSL-P018 to communicate using the same serial port standard. By default, the SKL-1000 uses RS-232. The SSL-P002 or SSL-P018 use RS-422.

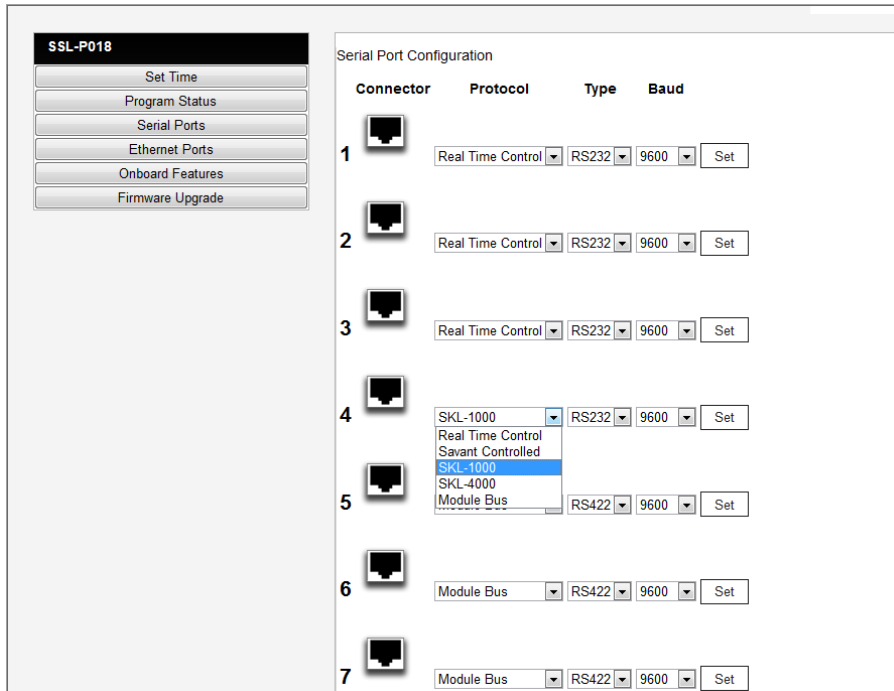
To set up the SSL-P002 or SSL-P018 to connect to an SKL-1000 do either of the following procedures.

Using Windows

1. Open LiteWare and go to the **Control Panel**.
2. Click the **IP Address Book** button.
3. Click the **SEARCH** button.



4. From the **Equipment Locator** tab, select a service for an **SSL-P018** or **SSL-P002**.
5. Click **Configure** beside the selected service. The **Serial Port Configuration** screen appears.



6. Select **Serial Ports** on the sidebar.
7. For **Connector 4** select **SKL-1000** (For the SSC-P002, select **Connect**) from the drop-down list.
8. Click the **Set** button.
9. Click the **Commit Changes** button.
10. Wait for the reboot of SSL-P018 or the SSL-P002 (about 90 seconds).

Using Mac OS

1. Open rpmEmbScanner.
2. Select the Unique ID (UID) that matches the UID on the sticker of the SSL-P018 or the SSL-P002.
3. Open a browser and enter the IP address of the SSL-P018 or the SSL-P002.
4. Select **Serial Ports** on the sidebar.
5. For **Connector 4** select **SKL-1000** (For the SSC-P002, select **Connect**) from the drop-down list.
6. Click the **Set** button.
7. Click the **Commit Changes** button.
8. Wait for reboot of SSL-P018 or the SSL-P002 (about 90 seconds).

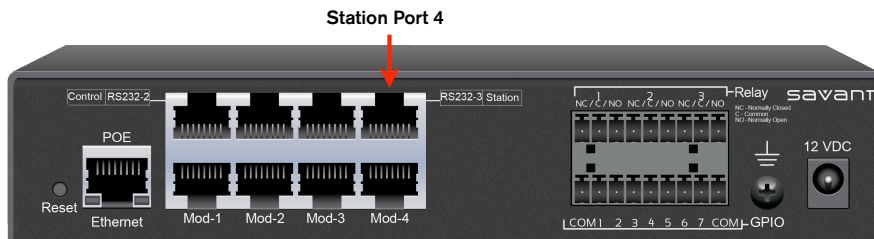
Installing a Savant Keypad Link

The SKL-1000 and the SKL-4000 connect the Savant keypads to the SSL-P002 or SSL-P018 controller. The SKL-1000 connects up to 12 keypads and the SKL-4000 connects up to 40 keypads. If multiple SKL-4000s are daisy-chained, up to eight units, a maximum of 256 keypads can be connected.

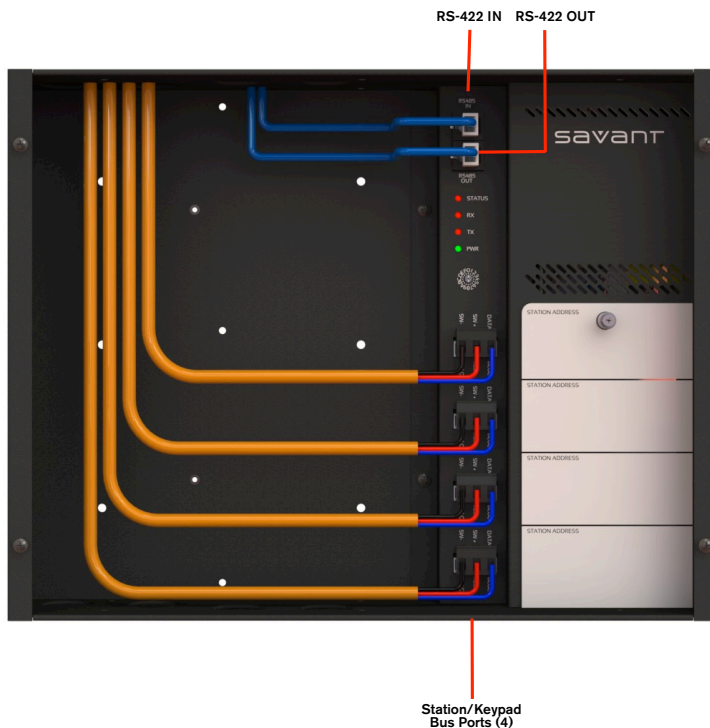
Savant recommends you locate the SKL-1000 or SKL-4000 close to the original placement of the station bus terminations. The installer must ensure that the original station bus wiring is compliant with the specifications of the Savant keypad link device being used. If the station bus wiring is not compliant with the new device, rewiring or other reconfiguration will be necessary.

To connect the SKL-4000 to a SmartLighting controller (SSL-P018 or SSL-P002), do the following.

1. Using Cat 5/5e/6 cable, plug the RJ-45 connector into the **Station** port (4) on the SSL-P018



2. Using the same Cat 5/5e/6 cable, plug the other RJ-45 connector in to the **RS-422 IN** port at the top of the SKL-4000.

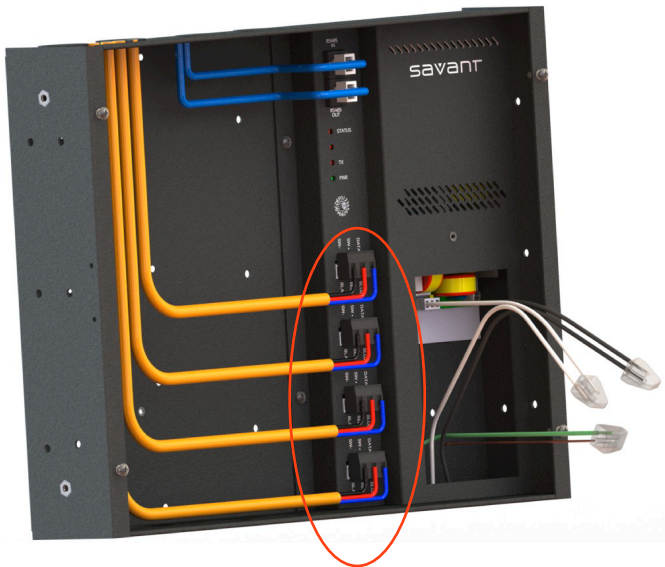


SKL-4000 Interior View

3. If adding more SKL-4000 keypad link devices, plug another Cat 5/5e/6 cable with an RJ-45 connector into the SKL-4000 **RS-422 OUT** port. Next, connect the other RJ-45 of the Cat 5/5e/6 cable to the the

RS-422 IN port of the second SKL-4000. This step can be repeated to daisy chain up to eight SKL-4000 units into a single keypad bus port on a Savant SmartLighting controller.

4. Locate the four keypad/station bus ports (circled in the next figure).



5. To use the bus ports for connecting to keypads, splice the 16 AWG or 18 AWG wiring and attach the wires to the three-pin connector based on the following positions (as labeled on the SKL-4000):
 - Data Blue wire
 - SW+ Red wire
 - SW- Black wire
6. Next, perform the procedure, [Connecting a Keypad](#).

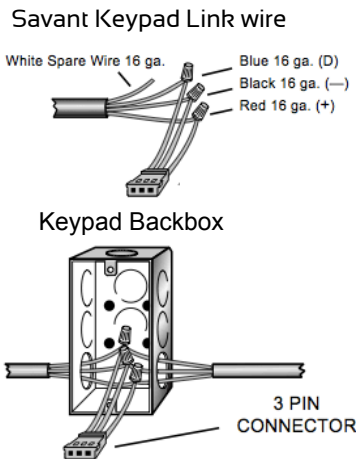
Connecting a Keypad

If adding more keypads to an installation, continue with this step.

The next figure shows the use of 16 gauge (AWG) wire, but in shorter installations (up to 330 feet) 18 gauge wire can be used.

1. Use crimp connectors or wire nuts to terminate the stranded wire.

NOTE: Savant recommends crimp connectors.



Backbox Size

Keypad backboxes should have a minimum inside dimension of 3 in. high x 1 $\frac{7}{8}$ in. wide x 1 $\frac{1}{2}$ in. deep. Use a square-cornered backbox to best accommodate these dimensions. Do not use plastic rings with rounded corners—keypads, especially multiple-gang keypads, will not fit. Single-gang, metal cut-in boxes, plaster, or tile rings are not acceptable.

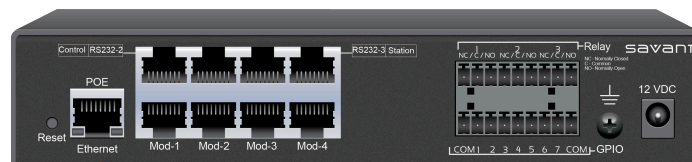
In new construction installations, for example, a single gang backbox, model P-241 (supplied by Allied Moulded Products) would accommodate a Savant keypad. An example of a double gang backbox is model P-442 (supplied by Allied Moulded Products).

2. The installation is complete.

Connecting to the Network

Using Cat 5/5e/6 cable terminated on both ends with RJ-45 connectors, plug one end of the cable in to an enterprise-grade switch and connect the other RJ-45 into the **PoE/Ethernet** port on the SSL-P018 or SSL-P002.

Power over Ethernet is based on the PoE IEEE 802.3af standard.



RJ-45 POE/Ethernet Port

NOTE: If PoE is not available, there is an optional power supply, 12V DC, 120-240V AC, 50/60 Hz (PWR-12125) that can be ordered separately.

Powering Up the SmartLighting System

Connect 120V AC to the SKL-4000.



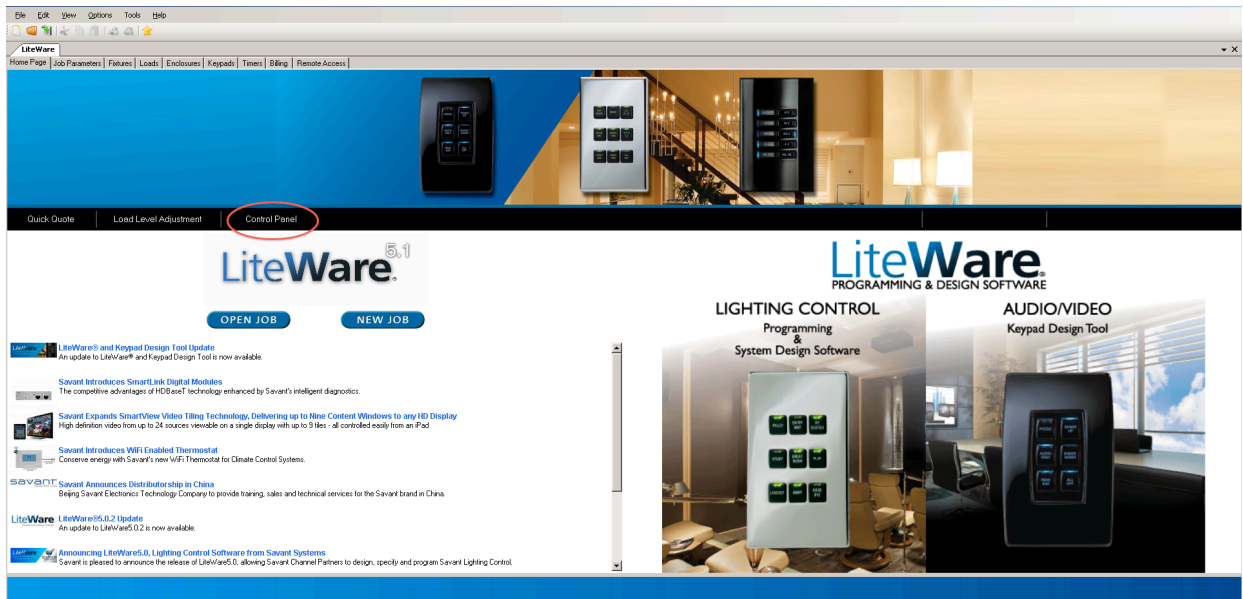
CAUTION: A licensed electrician is required to install the SKL-4000.

Exporting LiteWare *.prg File to a SmartLighting Controller

A LiteWare® *.prg file is required for a SmartLighting system to function properly. This file type must be exported to the Savant SmartLighting controller. The SmartLighting controller communicates with LiteWare using an Ethernet connection.

To export the LiteWare *.prg file to an SSL-P018 or SSL-P002, do the following.

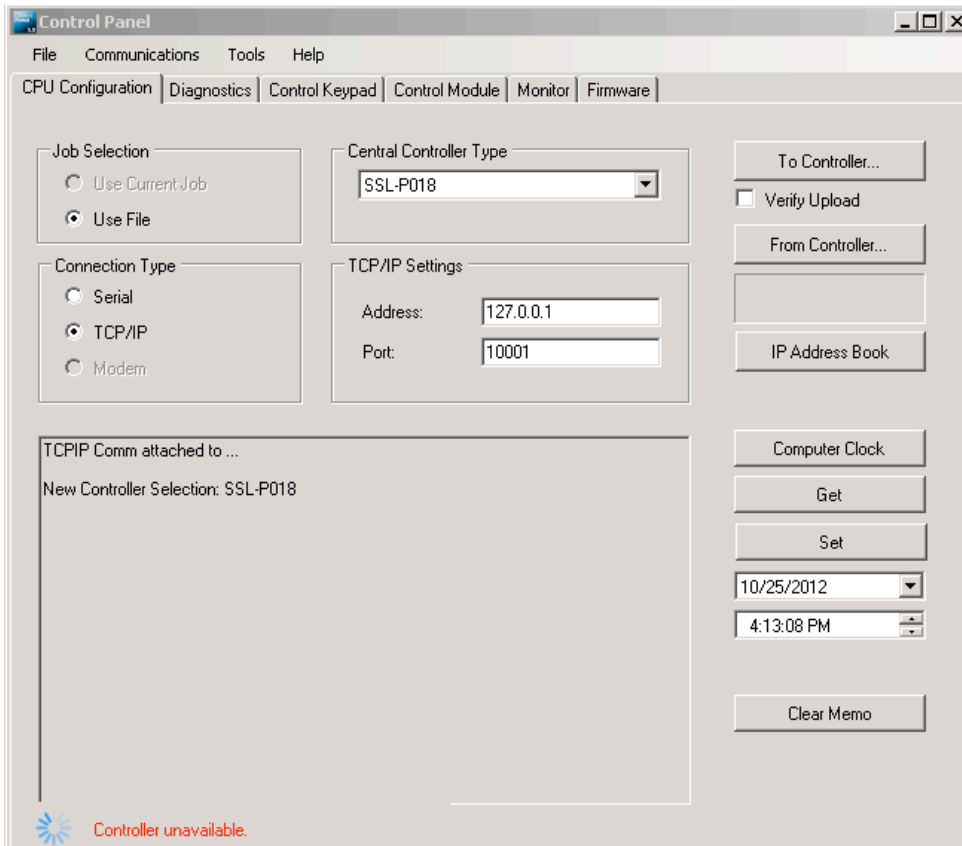
1. Open LiteWare 5.1 or higher.
2. Select **Control Panel** (shown circled in the next screenshot).



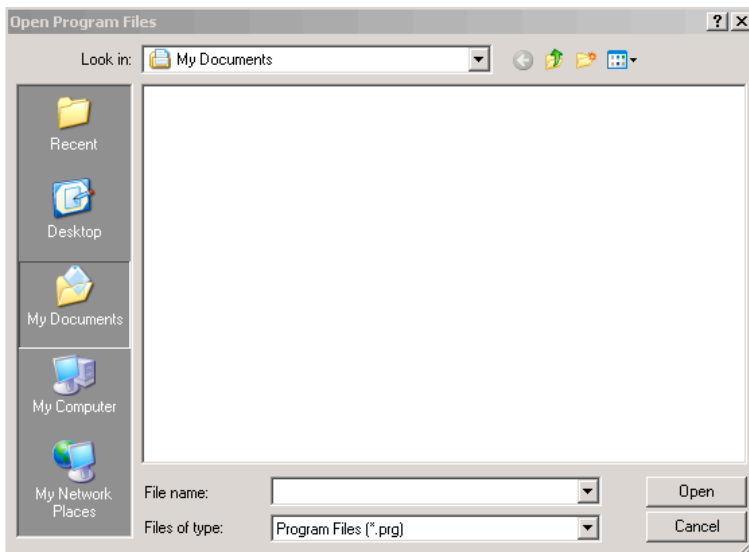
3. Click **No** on this dialog box:



The main window of the Control Panel opens.



4. For the **Central Controller Type**, select **SSL-P018** or **SSL-P002** from the drop-down list.
5. For the **Connection Type**, select **TCP/IP**.
6. Confirm the **TCP-IP Settings: IP Address** and **Port**.
7. Click **To Controller**.



8. Browse to the ***.prg** file that you previously extracted from the CCU, and click **Open**. The status pane in the **Control Panel** will show the ***.prg** has been exported to the SmartLighting controller by displaying **Upload Complete**.

Appendix

Product Conversions

This document is a chart used to upgrade legacy LiteTouch products to Savant SmartLighting products.

LiteTouch	Savant	Comments
Controllers		
FIVEk Standard CCU Compact CCU	SSL-P018 SSL-P002	All controllers are replaced with the SSLs. FIVEk must be replaced by an SSL and an SKL (to power keypads). Power supplies are not needed in the enclosures.
Keypads		
S H E Capri Coastal Hybrids Metropolitan G2 Circa Echo 1000/2600 Series	Metropolitan Circa Echo	As of January 1, 2013, we have three keypad models of various configurations.
Enclosures		
08-8024-21 4 Module Enclosure	ENC-4000-00	
08-8024-23 4 Module Enc. Surface Mount Lid	ENC-S4LID-00	
08-8024-24 4 Module Enc. Recess Mount Lid	ENC-R4LID-00	
08-8025-21 2 Module Enclosure	ENC-2000-00	
08-8025-23 2 Module Enc. Surface Mount Lid	ENC-S2LID-00	
08-8025-24 2 Module Enc. Recess Mount Lid	ENC-R2LID-00	

The Modules are listed below.

LiteTouch	Savant	Comments
Modules		
08-2108-01 8 Ch Dimmer 120V	LMD-8120-00	
08-2108-02 8 Ch Dimmer 240V 08-2108-02-CE 8 Ch Dimmer 240V	LMD-8240-00	
08-8125-01 Dual 20Amp Dimmer 120V	LMD-20A120-00	
08-2134-06 Quad II Dimmer 120V	LMD-4120-00	
08-2134-07 Quad II Dimmer 240V	LMD-4240-00	
08-2150-01 0-10VDC 120V	LMD-ELV120-00	
08-2210-01 High Power Relay 120V	LMR-8120-00	
08-2150-02 High Power Relay 240V	LMR-8240-00	
08-2118-01 Fan Speed Control 120V	LMC-FAN120-00	
DUAL 001 Dual Low Voltage Relay	LMI-REL2-00	
DUAL 002 Dual Momentary Contact Data Input	LMI-MOM2-00	
DUAL 003 Dual Maintained Contact Data Input	LMI-MAI2-00	
Power Supplies		
08-8610-05 Single Power Supply 08-8620-05 Dual Power Supply	SKL-1000 SKL-4000	SKLs do NOT go in the enclosures but are separate components.
Modules - Deprecated		
08-2108-02 8 Ch Dimmer 240V 08-2134-06 Quad II Dimmer 240V 08-2138-01 Fluorescent Dimmer 120V 08-2138-02 Fluorescent Dimmer 240V 08-2140-02 Inverse Phase 240V 08-2150-02 0-10VDC 240V 08-2108-02 8 Ch Dimmer 277V 08-2134-07 Quad II Dimmer 277V 08-2138-03 Fluorescent 277V 08-2210-03 High Power Relay 277V 08-2150-02 0-10 VDC 240V 08-2150-03 0-10 VDC 277V MIXED 007 PS and LV Relay MIXED 008 PS and Mom D/I Module MIXED 009 PS and Maint D/I Module MIXED 004 LV Relay and Mom. D/I Module MIXED 005 LV Relay and Maint. D/I Module MIXED 006 Mom. and Maint. D/I Module		

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Technical Support

Savant Systems LLC is dedicated to providing prompt and effective support.

To do this in a timely and efficient manner:

1. Access the [Savant Portal](#)
2. Enter your **E-mail Address** and **Password**.
3. Read the **Terms and Conditions** statement.
4. Select the check box to accept the **Terms and Conditions**.
5. Click **Login**.
6. The **Savant Portal and Support Center** Web page opens.
7. Select **Support Request** box.
8. The **Submit a Ticket** window opens.
9. Complete the information and click **Finish**.

Sales

Savant Systems LLC is dedicated to providing prompt and effective sales support.

Visit SavantSystems.com to locate a local sales representative in your area.

Safety

Read First

Before installing, configuring and operating SAVANT® equipment and other vendor equipment, SAVANT® recommends that each dealer, installer, etc. access and read all the required technical documentation. The SAVANT® technical documentation is located on the SAVANT® Dealer Portal. Vendor documentation is supplied with the equipment.

Read and understand all safety instructions, cautions and warnings in this document and the labels on the equipment.

About Note, Important, Caution and Warning Classifications

Note and Important: In this document, Note and Important provides special information for installing, configuring and operating the equipment.



Caution: In this document, Caution describes a situation that may cause damage to the equipment.



Warning: In this document, Warning describes a situation that may present a physical danger to the installer or end-user.

Electric Shock Prevention



ELECTRIC SHOCK: The 100-240V AC, 50-60 Hz source power poses an electric shock hazard that has the potential to cause serious injury to installers and end-users.



ELECTRICAL DISCONNECT: The 100-240V AC, 50-60 Hz source power outlet and power supply input power sockets should be easily accessible to disconnect power in the event of an electrical hazard or malfunction.

Weight Injury Prevention



WEIGHT INJURY: Installing some of the Savant controllers require two installers to ensure safe handling during installation. Failure to use two installers may result in injury.

Safety Statements

Follow all of the safety instructions listed below and apply where applicable. Additional safety information will be included where applicable and listed below.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.