SAVANT

Savant Panelized Lighting
Deployment Guide

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This document guides the installer through the process of deployment, setup and configuration for the Savant Panelized Lighting system and supports the following products:

- Panel Bridge Controller (PBC-1000-xx)
- QO and Homeline style Dual 500W Adaptive Phase Companion Module Dimmer (SPM-Q2APD10, SPM-H2APD10)
- QO and Homeline style Dual 300W Forward Phase Companion Module Dimmer (SPM-Q2FPD10, SPM-H2FPD10)
- QO and Homeline style Dual 20 Amp Relay Companion Module (RPM-Q2R20120, RPM-H2R20120)
- QO and Homeline style 240V AC (2-pole) Relay Companion Module (RPM-Q2R40240, RPM-H140240)

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Important Safety Information - Read First

Before installing, configuring, or operating any equipment, Savant recommends that each dealer, integrator, installer, etc. access and read all the relevant technical documentation. Savant technical documentation can be located by visiting Savant.com.

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

Safety Classifications In this Document

NOTE:	Provides special information for installing, configuring, and operating the equipment.
⚠ IMPORTANT!	Provides special information that is critical to installing, configuring, and operating the equipment.
⚠ CAUTION!	Provides special information for avoiding situations that may cause damage to equipment.
⚠ WARNING!	Provides special information for avoiding situations that may cause physical danger to the installer, end user, etc.

Electric Shock Prevention

⚠ **ELECTRIC SHOCK!** The source power poses an electric shock hazard that has the potential to cause serious injury to installers and end users.

⚠ **ELECTRICAL DISCONNECT**: The 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 Savant equipment requires two installers to ensure safe handling. Failure to use two installers may result in injury.

Safety Statements

All safety instructions below should be read, understood, and applied under all relevant circumstances when working with this equipment.

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 attempt to bypass or defeat the design of electrical safety features such as polarized or grounding-type plugs and sockets. A polarized plug has two blades, one wider than the other. A grounding type plug has two blades and a third grounding prong. These features are designed for user/installer safety. If a provided plug does not fit available outlets or sockets, an electrician should be consulted for replacement of the obsolete outlet(s).
10. Protect any 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, following all relevant safety precautions for any such attachments/accessories.
12. Disconnect any outlet powered apparatus from its power source during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as a damaged power supply cord or plug, liquid being spilled or objects having fallen into the apparatus, the apparatus has been exposed to rain or moisture, apparatus having been dropped, or other failure to operate normally.
14. To completely disconnect this equipment from the AC mains, disconnect the power supply cord plug from the AC receptacle.
15. For applicable equipment, use the included power cord with the grounding prong intact to ensure proper grounding of the device.
16. For any hardwired or fixed in-wall apparatus, carefully follow all wiring diagrams and instructions. All electrical wiring and servicing should be performed by a properly licensed electrician.

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1. Introduction

This document will guide the installer/integrator through the process of installing, configuring, and adding the following devices to a Savant Pro System.

- Panel Bridge Controller (PBC-1000-10)
- QO and Homeline style Dual 500W Adaptive Phase Companion Module Dimmer (SPM-Q2APD10, SPM-H2APD10)
- QO and Homeline style Dual 300W Forward Phase Companion Module Dimmer (SPM-Q2FPD10, SPM-H2FPD10)
- QO and Homeline style Dual 20 Amp Relay Companion Module (RPM-Q2R20120, RPM-H2R20120)
- QO and Homeline style 240V AC (2-pole) Relay Companion Module (RPM-Q2R40240, RPM-H140240)

Before You Begin

Read through this document in its entirety and ensure that the following required items are available:

1. Savant Control System running da Vinci release version 9.0 or higher ☐
2. Savant Panel Bridge Controller (PBC-1000-xx) ☐
3. Unique ID (UID) of the Controller ☐
4. Dimmer and/or Relay Module(s) ☐
5. QO™ or Homeline™ compatible Home Load Center / Panel Board and compatible breakers ☐
6. Savant Development Environment (SDE/MacBook®) ☐
   RacePoint Blueprint da Vinci 9.0 or higher
7. Ethernet network meeting Savant requirements. See Appendix B: Network Requirements ☐

2. Deployment Steps

Follow these steps to successfully deploy the controller. This page can be used as a checklist to record the completed steps.

1. Review product specifications and related documentation for all components being installed.
   Product documents can be accessed via **Savant Customer Community** ☐
2. Wire the Panel Bridge Controller and Dimming/Relay Modules into a Savant Control System. See Connections ☐
3. Enable the Lighting and Keypad Manager in Blueprint. See Blueprint - Preliminary Setup ☐
4. Add controller to a Blueprint configuration. See Blueprint Configuration - Add Controller ☐
5. Device naming and addressing using the OLA Server. See OLA Server ☐
6. Using Controller, discover the lighting loads in the system. See Blueprint - Discover Lighting Loads and Test ☐
7. Create Smart Groups as required. See Blueprint - Smart Groups ☐
8. Update Lighting Data Table. See Blueprint Configuration - Update Data Table ☐
9. Upload the Blueprint configuration to the Savant System Host. See Blueprint Configuration - Upload Config ☐
10. Test system using Savant Pro App. See Savant Pro App ☐

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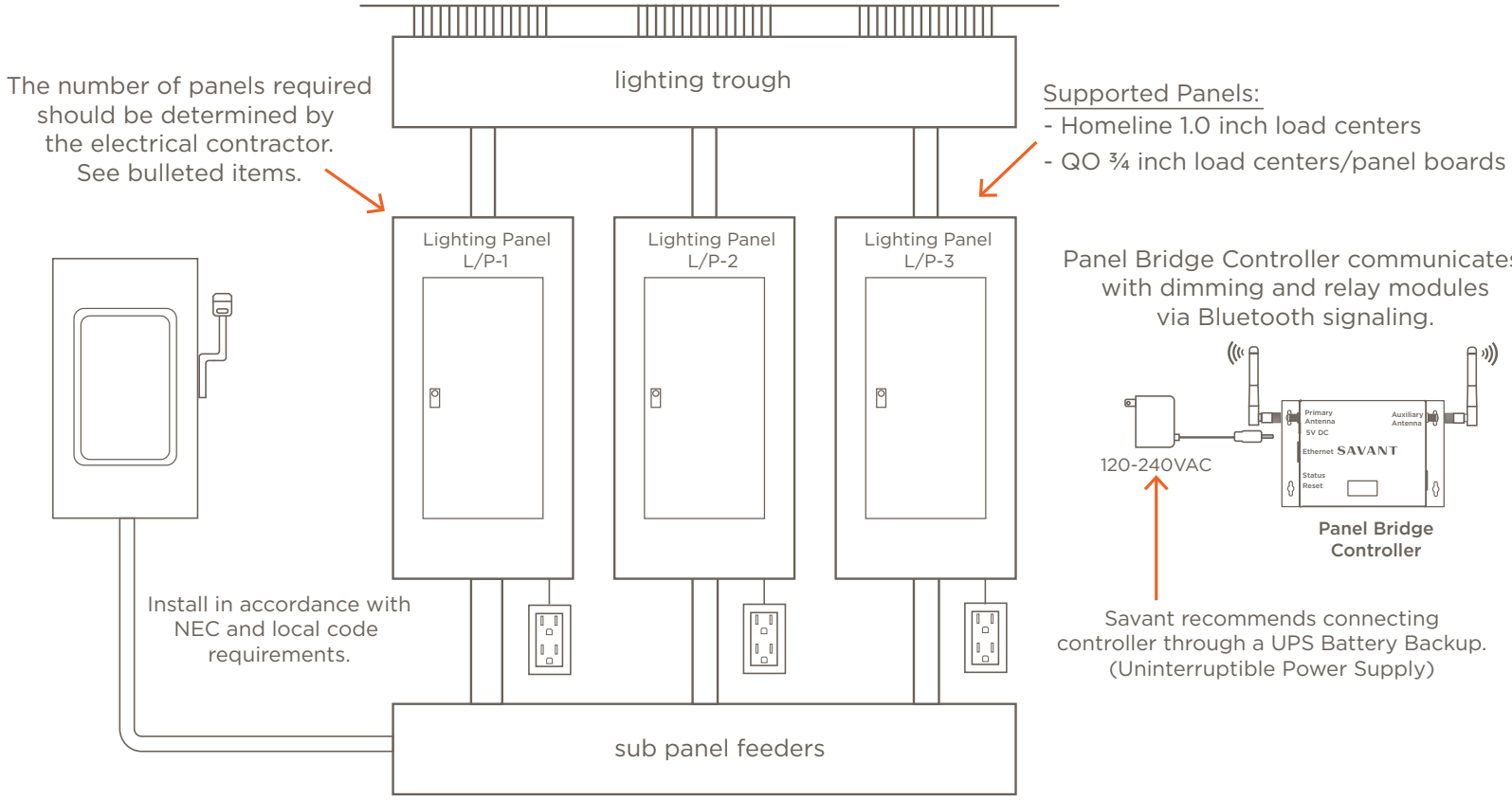
3. Overview

The diagram below displays one example of a complete Savant Panelized Lighting system. Refer to the bulleted items below for additional information.



IMPORTANT! A licensed electrician is recommended when determining the following:

- The type of module or modules required for installation (e.g. dimming or relay module). For detailed information and product specifications, refer to the installation manual for each type of module, available on the **Savant Customer Community**.

- The lighting panel model # and the number of panels needed. To do this,
  - Sum up the total power of all the lighting loads. This will determine the power requirements of each panel.
  - Sum up the number of spaces needed for the breaker(s), the dimming module(s), and/or the relay module(s). Each breaker requires one space and each module requires two spaces.

- Determine the size of the breaker needed for each set of modules. To do this,
  - Determine the wattage requirements of each load that is connected to a dimming or relay module.
  - Sum up the wattage requirements and divide the wattage requirements by the input voltage. The result gives you the size of the breaker required.

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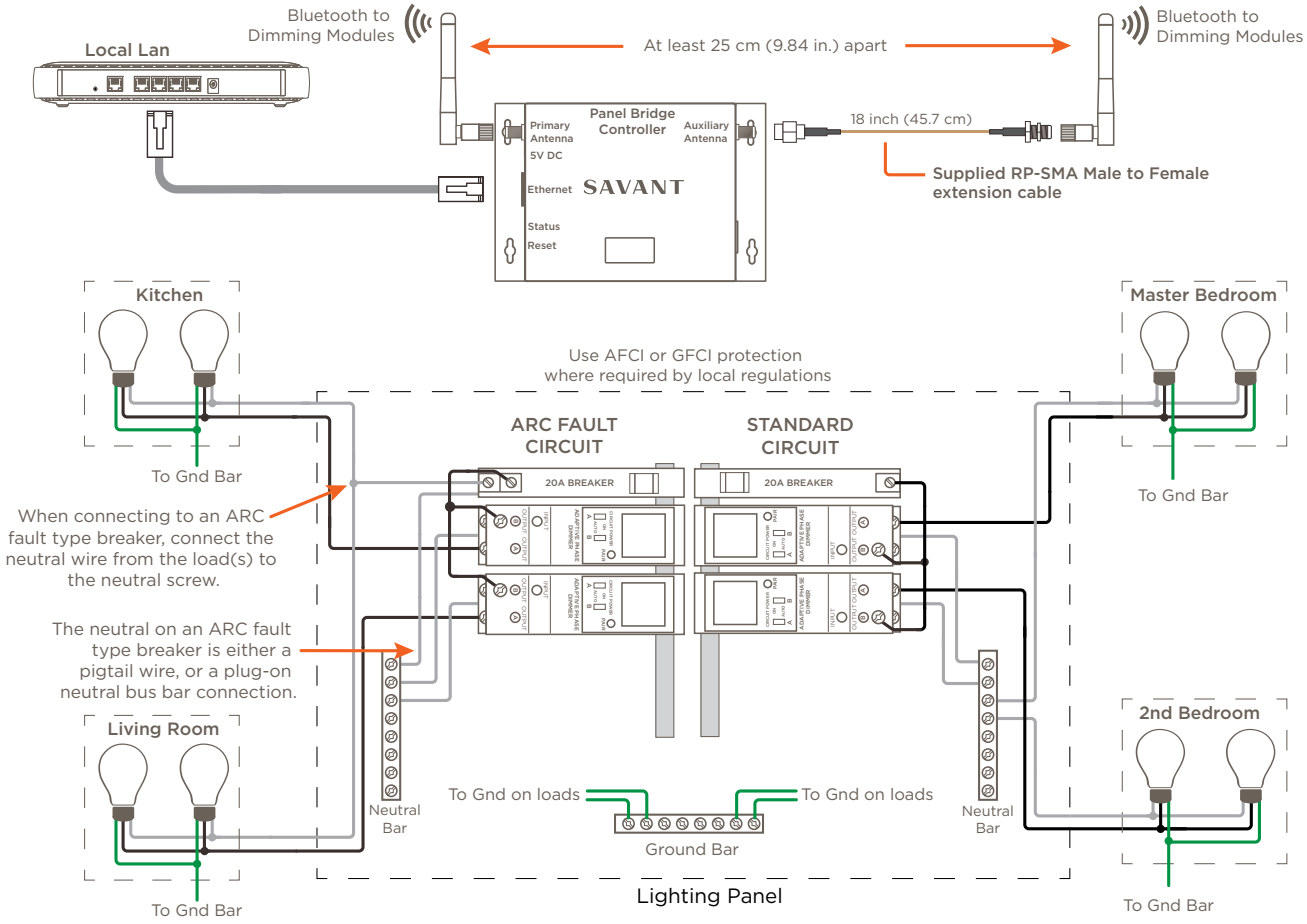
4. Connections

4.1. Panel Bridge Controller System - Standard 180° Split Panel

Refer to the diagram below when wiring the Adaptive Phase type dimming module. The diagram below shows four adaptive phase dimming modules controlling loads from four separate rooms. Wiring for both ARC fault and standard type breakers are shown.



- The PBC-1000-xx communicates with the Companion Module(s) using Bluetooth Low Energy signaling. Maximum number of modules = 40.
- The Primary and Auxiliary antennas must be separated by 25 cm (9.84 inch). Use the supplied RP-SMA male to female cable to separate.
- Each dimming module contains two output screws. The diagram above shows only one output on each module being used.
- The total current draw from the loads can't exceed 80% of the size of the breaker for that circuit. For example, with a 15 amp breaker, max would be 12 amps or 1440 watts. With a 20 amp breaker, max would be 16 amps or 1920 watts.
- Do not add MLV (Magnetic Low Voltage) and ELV (Electronic Low Voltage) type loads to the same breaker/Companion Module circuit. MLV and ELV type loads should be connected to separate breaker circuits.

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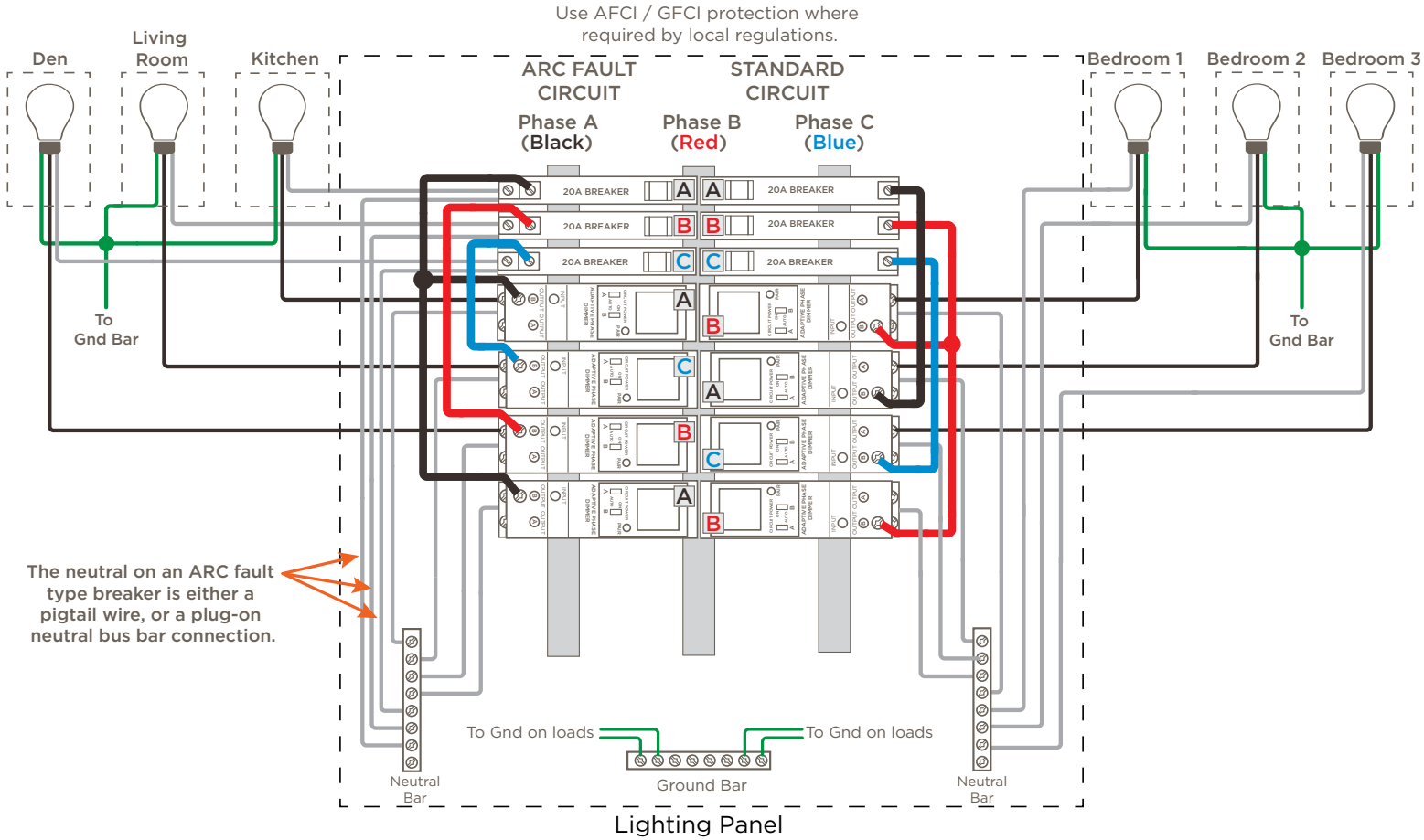
4.2. Panel Bridge Controller System - (3-Phase Panel)

The diagram below shows an example of how to wire dimmer type Companion Modules to a 3-phase panel. Wiring for both ARC fault and standard type breakers are shown. Note that the Panel Bridge Controller has been omitted from the diagram due to space constraints. Refer to the previous section for controller wiring information.



- In a 3-phase system, each breaker and its coresponding Companion Module must be installed on the same phase to avoid damage to the module.
- The text **A**, **B**, and **C** on each breaker represent a different phase.
- Do not add MLV (Magnetic Low Voltage) and ELV (Electronic Low Voltage) type loads to the same breaker/Companion Module circuit. MLV and ELV type loads should be connected to separate breaker circuits.
- The total current draw for all loads on a circuit shouldn't exceed 80% of the maximum supported by the circuits breaker. For example, with a 15 amp breaker max would be 12 amps or 1440 watts. With a 20 amp breaker, max would be 16 amps or 1920 watts.

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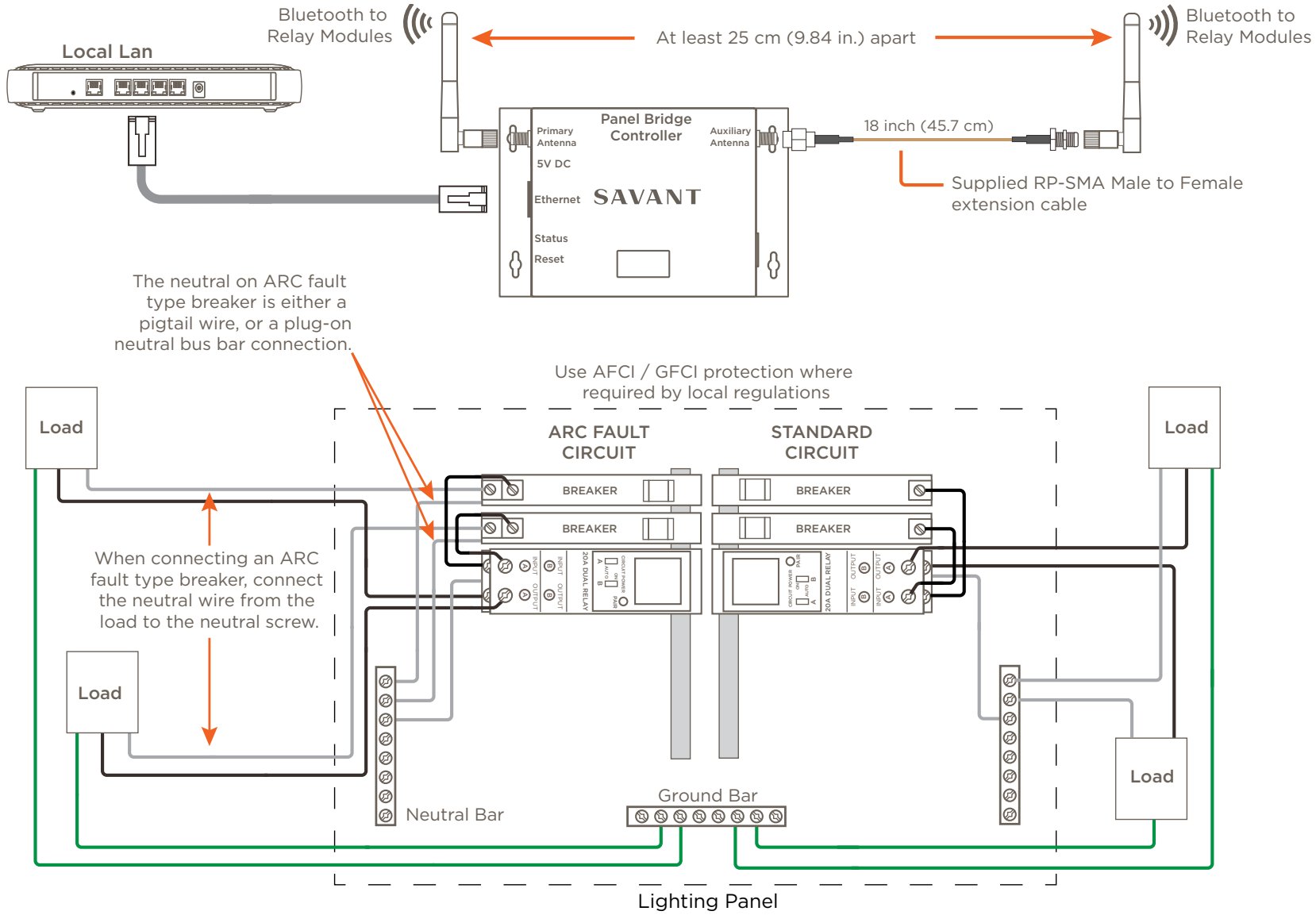
4.3. Panel Bridge Controller System - w/Dual Relay Module

The diagram below shows the connections for a Dual Relay module. Wiring for both ARC fault and standard type breakers are shown.



- A 15 or 20 amp breaker per input is used (this is determined by the load).
- The outputs of the relay module switch between 0 and 120V AC. These outputs do not support dimming.
- The Primary and Auxiliary antennas must be separated by 25 cm (9.84 inch). Use the supplied RP-SMA male to female cable to separate.

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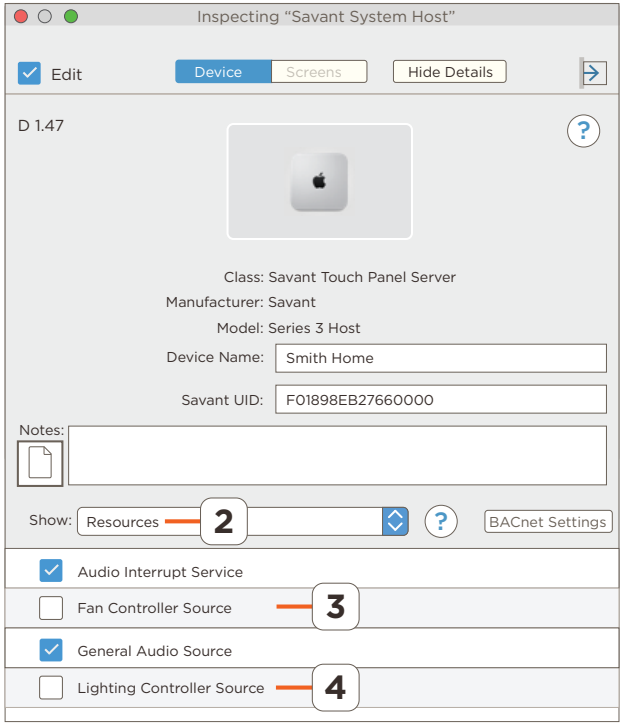
5. Blueprint - Preliminary Setup

By default, the lighting and fan controller resources for the Host are disabled. With these resources disabled, the Lighting and Keypad Manager can't be accessed. Follow the steps below to enable these resources.

IMPORTANT!

- Starting in release da Vinci 9.1, the Fan and Lighting Controller Resources in Blueprint are enabled (checked) by default. When working in da Vinci 9.1 or higher, skip section 5.1 and begin with section 5.2.
- For da Vinci releases lower than 9.1, The steps below assume that lighting is not already configured and this is the first time the Lighting/Keypad Manager is being worked with.



5.1. Enable the Lighting and Fan Resource

1. In Blueprint, double-click the Host to open the Host inspector (See image to the right).
2. Select **Resources** from the **Show:** drop-down menu.
3. Add a check to the **Fan Controller Source** field check box.
4. Add a check to the **Lighting Controller Source** field check box.
5. Close the Inspector.

5.2. Enable the Lighting/Keypad Manager

When the configuration being built consists of just lighting, or if the Lighting/Keypad Manager of an existing configuration is grayed out (not active), perform the steps below to activate the manager. If the Lighting/Keypad Manager is already active, skip this section.

1. Drag the Host into the Blueprint layout window (if not already in the layout window).
2. From the Blueprint toolbar, select **Show Library** to open the Component Library.
3. Locate and add a **Generic NetworkSwitch**.
4. Connect the **Ethernet** port from the Host to one of the Ethernet ports on the network switch.
5. Select the **Generate Services** icon from the Blueprint toolbar. The state icon will change from orange to either blue or green. At this point, the Lighting/Keypad Manager will become active.

HELPFUL! The STATE icon available on the Blueprint toolbar indicates if the Lighting/Keypad Manager is active. See information below.

	Lighting/Keypad Manager is active. **Skip this section**.
	Lighting/Keypad Manager is not active (grayed out). Currently, either there are no lighting services generated in Blueprint or a change to a service in Blueprint was made. Select the Generate Services icon on the Blueprint toolbar. This will change the State Icon to either Blue or Green and make the Lighting/Keypad Manager active.

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6. Blueprint - Add Controller to the Configuration

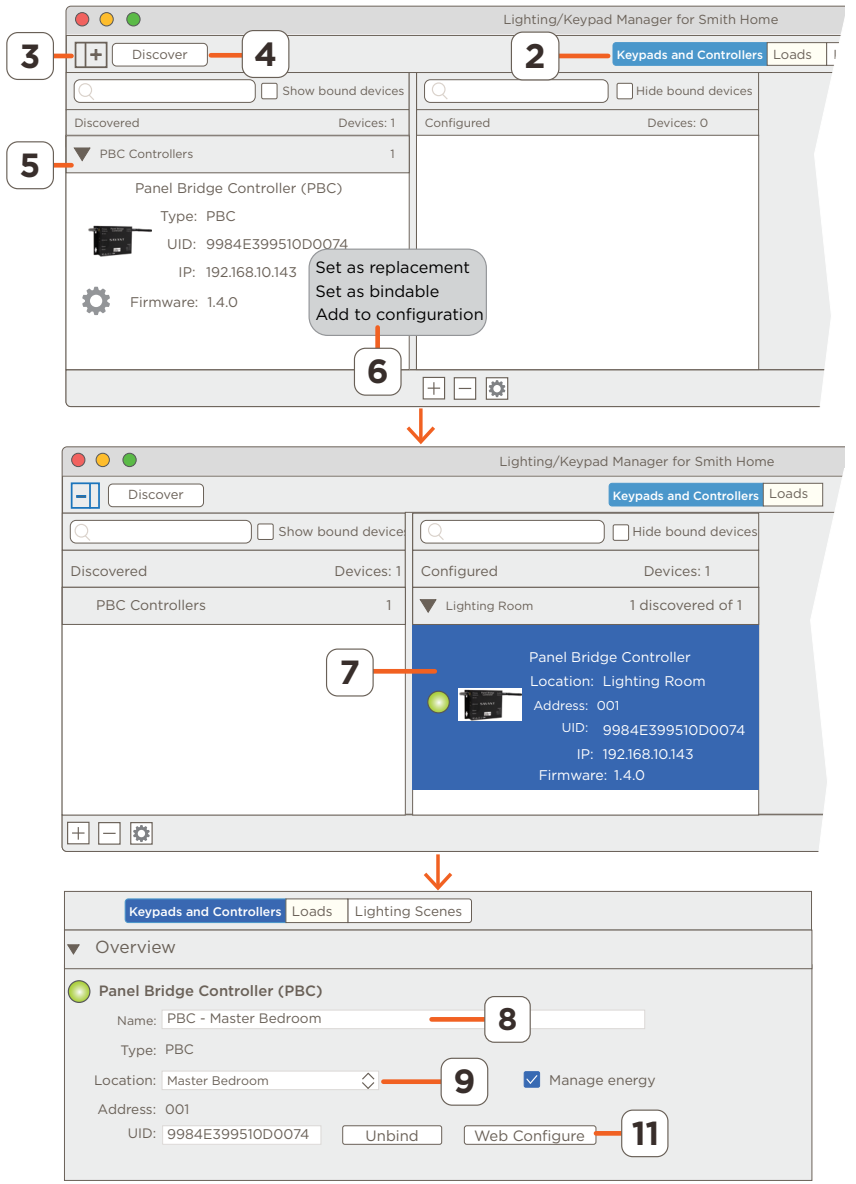
With the Panel Bridge Controller connected, power applied, and the Lighting/Keypad Manager active, the steps in this section describe how to add the Panel Bridge Controller to a Blueprint configuration.

1. Select **Tools > Savant Lighting and Keypads** from the Blueprint menu bar to open the Lighting/Keypad Manager.
2. Select the **Keypads and Controllers** tab.
3. Select the expand frame icon to open the Configured frame. There are two frames: Discovered and Configured

   Discovered - When Discover button is selected, all the lighting devices provisioned on the local network are located and populated to this window. Once discovered, the devices can then be added to a configuration.

   Configured - Displays all Savant Lighting devices which have been added to the configuration, either via Discovery or manually. Components shown in this frame can be programmed as decribed below (e.g. buttons, loads, LEDs, etc.).
4. Select the **Discover** button to scan for and discover all the lighting devices on the network. Select the **Stop Discover** button when the PBC Controllers communicating on the network are located.
5. Expand the PBC Controllers list.
6. Right click the controller and select **Add to configuration.** The controller is then automatically moved to the **Configured** frame and bound to the configuration (UID added).
7. Select to highlight the controller.
8. In the Overview frame that opens, enter a Name for the controller.
9. Select the location of the loads that the PBC will be controlling. A warning message will appear directing user to generate services. This is required whenever the Location field is modified.
10. Confirm the controller has been successfully discovered and bound by reviewing the LED icon state. Possible color/states are shown below.

    - **Green LED** - Device was discovered and is bound to the configuration loaded in Blueprint.
    - **Yellow LED** - The device was not discovered but is bound to the configuration loaded in Blueprint. Typically, the device was not discovered because the discovery process was never run.
    - **Red LED** - The device was not discovered and is not bound. The discovery process was run but device was not found.
11. Select the **Web Configure** button to open a window to the OLA server and make the necessary adjustments to the Universe the PBC will be communicating on. Continue to the next section.



HELPFUL! Now that the PBC has been added to a configuration, the PBC icon is now also be available in the component list in the Blueprint main window.

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7. OLA Server

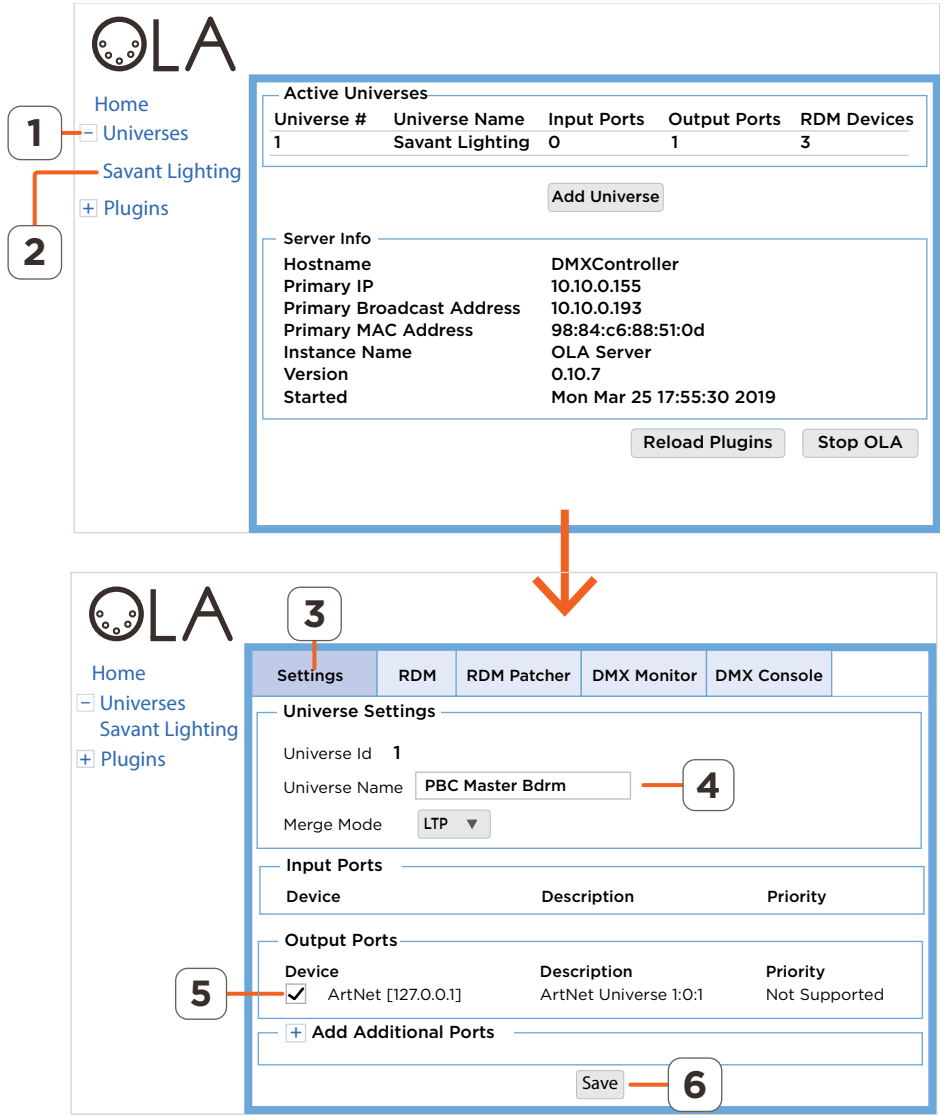
Required settings within the Panel Bridge Controller's embedded OLA server Web UI are described below. For additional details, as well as any field descriptions not covered as part of the basic setup workflow, refer to Appendix A: OLA Server - Additional Information.

HELPFUL! If the OLA server Web UI is not already open, refer to the previous section for information on accessing the server. If the Web UI is open, continue on to section 7.1.

7.1. Panel Bridge Controller - Universe Settings

Follow the steps outlined below to change or confirm required settings within the OLA server Web UI for the PBC.

1. Expand the Universes field (Select the + icon)
2. Select the Universe labeled **Savant Lighting**. The Savant Lighting Universe supports all Savant lighting controllers.
3. Select the **Settings** tab.
4. **Optional:** If desired, the Universe Name field can be changed to a job/site specific name. To modify, double click this field and rename. In this example, the name was changed to **PBC Master Bdrm** as shown in image.
5. Verify that the **Art-Net** network is checked.
6. Select **Save** when complete.



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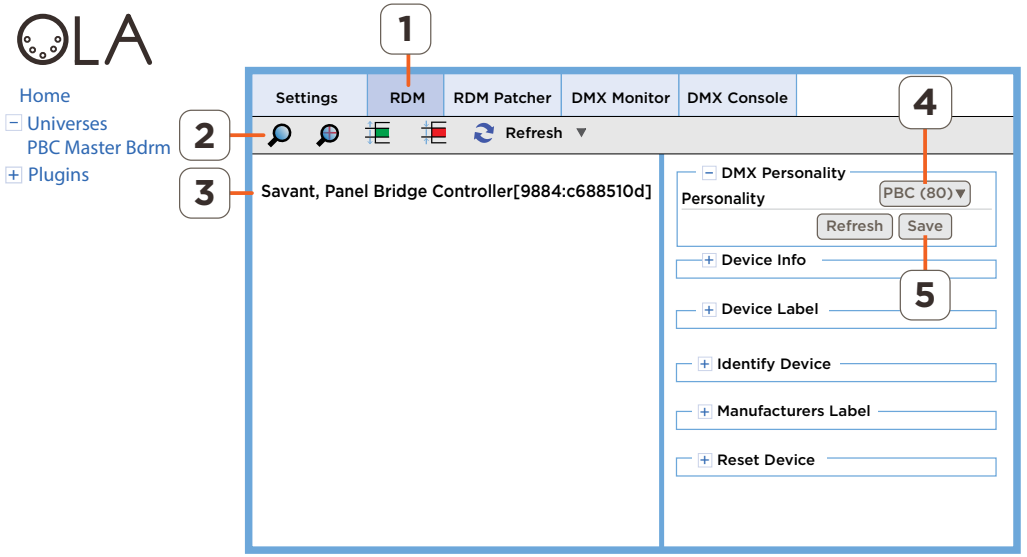
7.2. Panel Bridge Controller - RDM Tab

The RDM (Remote Device Management) tab for the Savant Lighting Universe contains a number of fields which are automatically pre-populated, similarly to the Settings tab fields described in the previous section. Follow the steps outlined below to discover the PBC and confirm or change its required settings. For details on fields not covered as part of the basic setup process below, refer to the Learn More section at the bottom of this page, and/or Appendix A: OLA Server - Additional Information.

1. With the Universe selected, select the **RDM** tab.
2. Select the search icon to start the discovery process. After a few seconds, any PBC Controllers on the local network will populate.
3. Select the **PBC Controller** from list of found controllers. In the panel to the right of the controller, a number of fields associated with the controller will populate.
4. Expand the DMX Personality field and verify **PBC** is selected in the drop-down menu.
5. Select **Save** to apply any changes made.



LEARN MORE

The remaining fields are largely informational and are not required for basic setup or functionality of the Savant Panelized Lighting system. The descriptions below simply detail each of the fields and their purpose.

- **Device Info** - Specifications such as protocol and software versions running on the controller are available.
- **Device Label** - Used to modify the name of the PBC Controller. To modify the name, expand the field, double-click the label field, and enter a label that identifies the controller. The label entered will replace the name displayed in the left side column in the OLA Server Web UI.
- **Identify Device** - Identify the controller by blinking the Status LED on the left side panel on the Panel Bridge Controller.
  - To identify, add a check to the **Identify Device** check-box and select **Save**. The Status LED will begin flashing once per second.
  - To stop the flashing, uncheck the same box and select **Save**.
- **Manufacturers Label** - This field defaults to Savant and can't be modified.
- **Reset Device** - To reset the controller, select from the drop-down menu which type of reset to initiate
  - **Warm Reset** - Clears the device configuration and resets all changes made back to factory defaults.
  - **Cold Reset** - Reboots the controller and keeps all changes made. Equivalent to removing power from the device (soft reboot).

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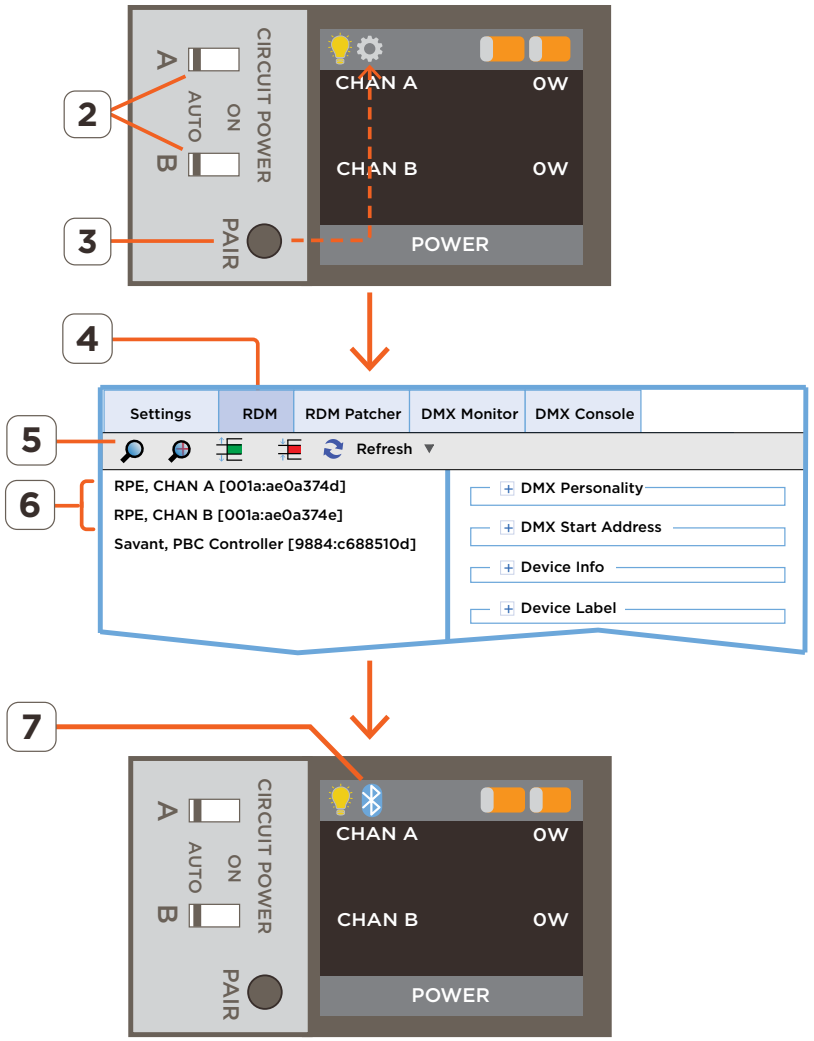
7.3. Companion Modules Pairing to PBC - RDM Tab

This section describes the process for pairing a Companion Modules with the associated Panel Bridge Controller (PBC). The process requires the following:

- A dimming or relay module installed and powered.
- Antennas must be installed in both the Primary and Auxiliary connections on the Panel Bridge Controller.
- User must have access to the companion module.

To PAIR a Companion Modules to the PBC Controller follow the steps below. Before starting the process, the modules must be installed and wired into a breaker panel.

1. Apply power by first switching on power to the breaker panel, and then toggling the breaker connected to the companion modules to the ON position.
2. **OPTIONAL STEP:** Verify all connections are correct by toggling the CIRCUIT POWER switches to the ON position. The loads connected to the modules should turn on. Switch back to AUTO position when satisfied wiring is correct.
3. Press and hold the **PAIR** button on the Companion Module until the gear icon appears; then release.
4. On the OLA Server, select RDM tab if not already open.
5. Select the Discover icon .
6. The two outputs to the Companion Module will appear in the OLA Server Web UI.
7. After approximately 5-10 seconds, the module will automatically connect to the Panel Bridge Controller. Verify the Bluetooth icon has replaced the gear icon on the module LED screen.
8. Repeat steps 3 - 7 to pair any remaining modules with the PBC Controller.



HELPFUL! For further information on the Companion Module LCD display and its associated indicators and functions, refer to Appendix C.

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9. Select one of the outputs to the module just discovered in step 5 above. This will populate the right side column with fields for load connected to that output.

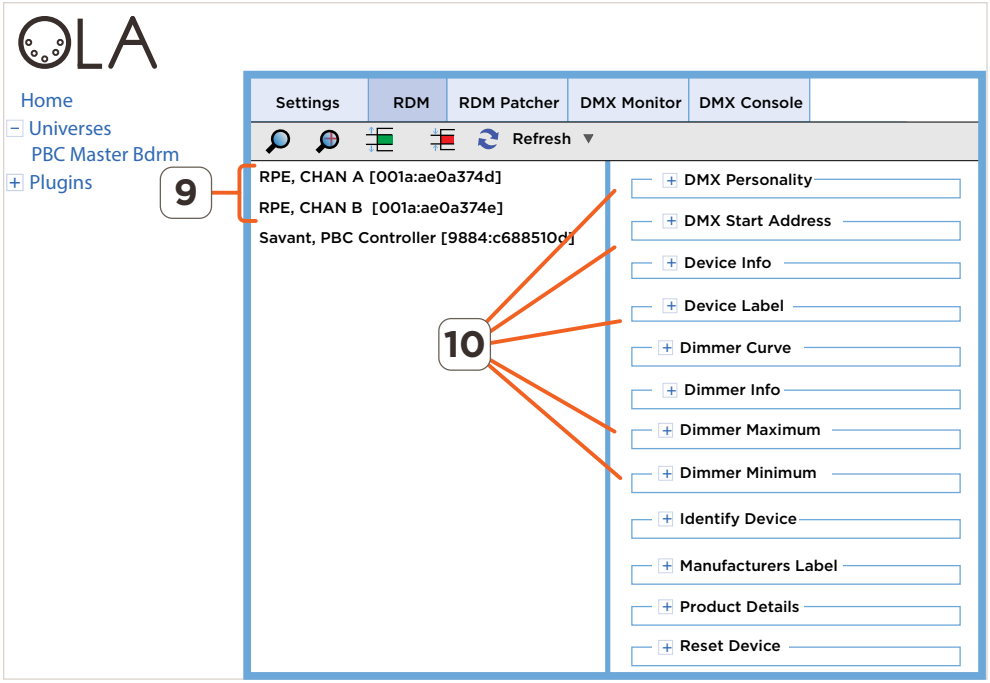
10. Expand and configure each of the fields described below. **Save** each field as changes are made.

    - **DMX Personality** - Set this field to the type of lighting load installed (Forward or Reverse Phase). Refer to manufacturer documentation for the lighting fixture if needed.

    - **Device Label** - Enter a name that identifies the load associated with the output of the module. The label entered will display on the module's LCD screen. There's a maximum of 8 characters.

    - **Dimmer Maximum** - Sets the minimum power required to bring the load to full intensity (Range = 0 - 255).

    - **Dimmer Minimum** - Sets the minimum power required to begin ramping the load. This is also referred to as the turn-on threshold. (Range = 0 - 255)



Unpairing Companion Module from Panel Bridge Controller

A Companion Module can also be unpaired so it can no longer communicate with the Panel Bridge Controller. This could be due to moving the module to a separate breaker panel that is controlled by a second PBC. To unpair the module from the PBC, follow the steps below (no images are available for the steps).

1. Open the **OLA** Server.
2. Select the **RDM** tab.
3. Select one of the outputs of a companion module.
4. Expand the **Reset Device** field associated with that module.
5. Select **Warm Reset** from drop-down menu.
6. Select the **Reset Device** button. At this point, the module will reset and revert back to its default settings.

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Not all fields in the OLA Server need to be set. Because of this, only the required fields are described above. For information on the additional fields as well as other basic OLA Server information, see Appendix A: OLA Server - Additional Information below.

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7.4. Addressing in the RDM Patcher Tab (OPTIONAL)

Each lighting load connected to an output of a dimming or relay Companion Module is assigned an address. If the address is acceptable, **SKIP THIS SECTION**. However, if the addresses need to be changed, the information in this section describes how to do this. Use one of the two methods described below. The first method uses the Magic Wand utility and is the preferred method.

Set Addresses using the Magic Wand (Preferred Method)

Lighting loads can, in some instances, be given same address by the manufacturer. When all the loads have the same address, they will all be stacked on top of each other in one cell of the RDM Patcher tab matrix. Loads with the same address are controlled together. This is not typically the desired configuration. To fix this and assign unique addresses to each load, the OLA Server Web UI offers a magic wand utility that automatically assigns unique addresses to each load so they no longer overlap. The steps below describe how to use the magic wand.

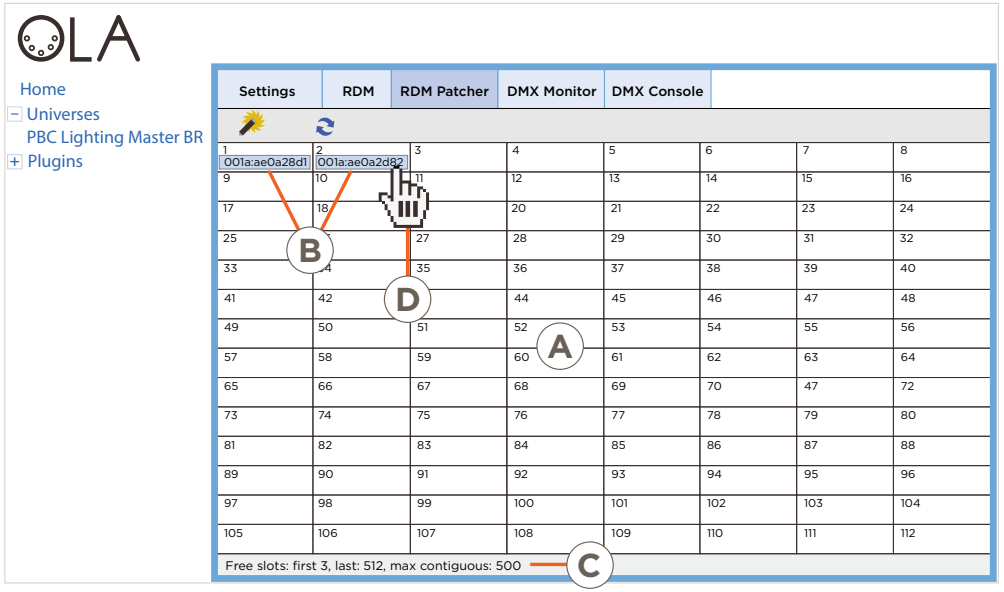
1. Select the **RDM Patcher** tab.
2. Select the magic wand icon . A pop-over appears warning the user that the start address of all devices will be changed.
3. Select **Yes** to proceed. The addresses for all fixture will be automatically updated and reordered in the matrix.

Set Addresses Manually

The magic wand described above assigns a unique address (footprint) to each lighting load. This is then displayed in the matrix of the **RDM Patcher** tab (see image below right). However, a user can also assign unique addresses manually. Use the descriptions below when changing the addresses manually. As shown in diagram to the right, each load (highlighted in blue) can be dragged and dropped into a new location

IMPORTANT! When setting addresses manually, it is important to avoid overlapping addresses.

A	Each cell is an address. A Universe contains 512 addresses. Each lighting fixture is assigned an address. A portion of that address is added to each packet to ensure the packet is sent to the correct device.
B	Each blue rectangle represents an address/lighting load.
C	The bottom row gives an indication of how the table is utilized: – **Free Slots: first 3** - Indicates that the first free address in the table is cell 3. – **last 512** - Indicates the last free address in the table is cell 512. – **max contiguous** - Indicates the largest number of addresses (cells) available that are next to each other in sequence.
D	To move a device to a different address, select, drag, and drop, the device to its new location.



4. Close the OLA Server once the Universe is configured.

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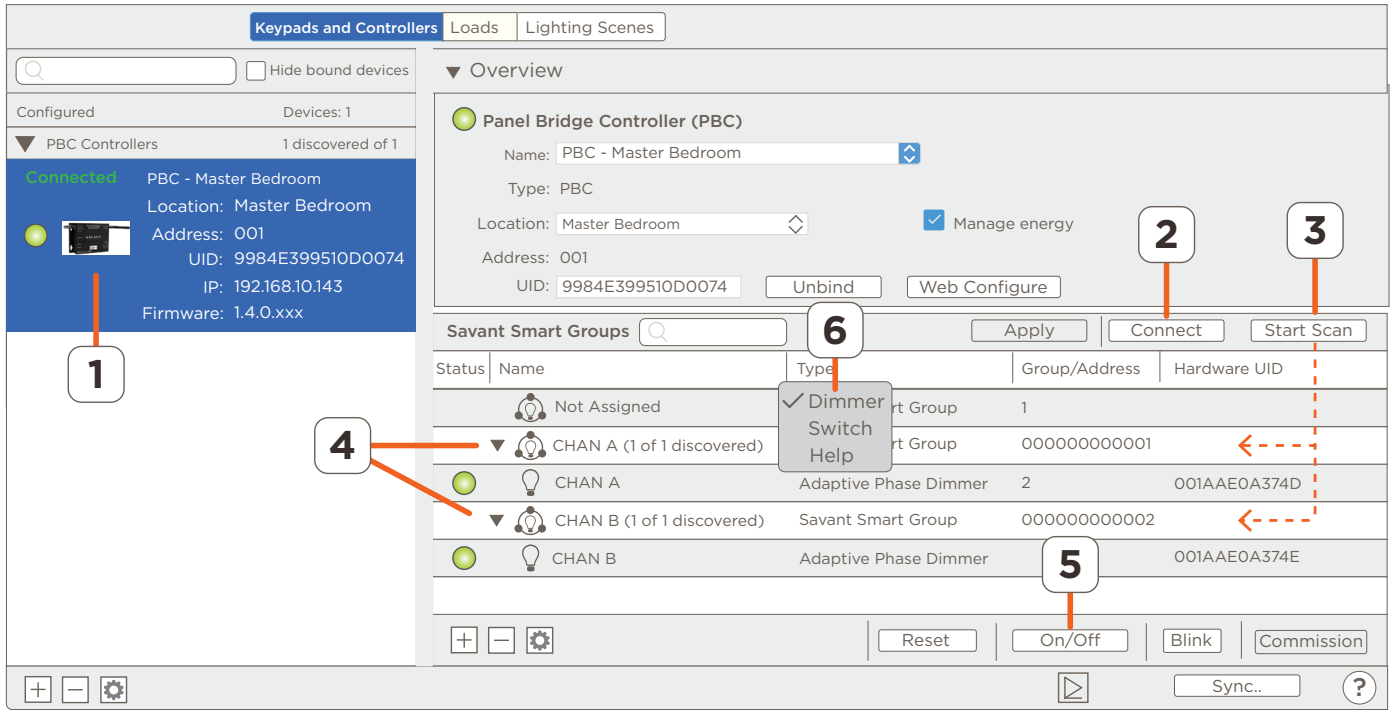
8. Blueprint - Discover Lighting Loads and Test

This section describes how to use the Blueprint Lighting and Keypad Manager to scan for and locate all lighting fixtures (loads) within the Panel Bridge Controllers network, and test communication with those loads.

1. Highlight the PBC that was added to the configuration.
2. Select the **Connect** button to connect the PBC to the lighting/keypad manager. **Connected** will appear beside the PBC when connected.
3. Select the **Start Scan** button to begin querying/scanning the previously configured OLA information about the companion module loads. After a few seconds, the loads will populate in the Savant Smart Groups section. Each load will populate in the Savant Smart Groups frame as a Smart Group. Select the disclosure arrow to expand each smart group
4. Select to highlight one of the loads.
5. Select the On/Off button and verify that the loads switch On and Off. Verify the loads are labeled correctly and installed in the correct location.
6. Right click each smart group field and select whether the entity being added to the Pro App will be a Dimmer or Switch. The icon associated with each load will change to reflect the selection made.



7. Repeat steps 4 - 6 for each lighting load and verify the PBC can communicate with all the loads.

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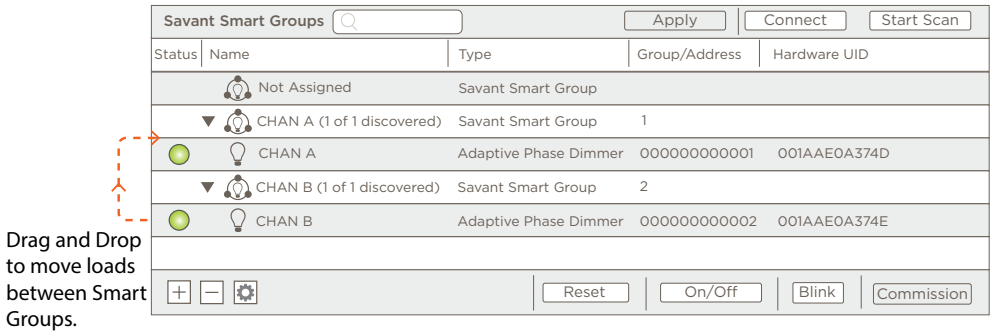
9. Blueprint - Smart Groups

A Smart Group is a group that contains one or more companion module loads. The Smart Group can be considered the equivalent to a base load for Savant lighting devices. Savant Lighting scenes contain both base loads and smart groups. During the scan process in the previous section, each companion module lighting load is automatically added to a smart group. Each smart group created will generate an entity such as a slider or button in the Pro App. If desired, loads can be moved between smart groups or new smart groups can be added to the configuration. The information below describes 1) How to move lighting loads between smart groups 2) How to create a new smart group and add loads to them. SKIP THIS SECTION if each lighting load will have a single slider or button to control it in the TrueControl II or Pro App.

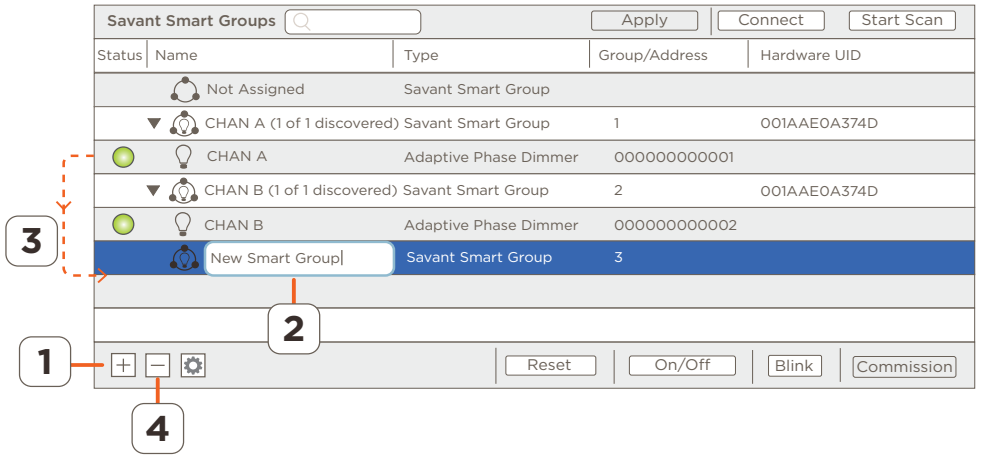
9.1. How to Move Loads between Smart Groups

- To move a load between smart groups, drag and drop the load into the desired group. In diagram to the right, a lighting load is dragged from the CHAN B smart group to the CHAN A smart group.
- Once moved, all loads in the group will be controlled by the same button or slider entity that gets added to the Savant UI.



9.2. Adding and Removing Smart Groups

1. Select the **Add** icon ⊞ to create and add a new smart group to the lighting/keypad manager.
2. Double-click the smart group and rename to a label that identifies the group. The name entered is what is populated in the Savant UI.
3. Drag and drop loads to assign them to the new group.
4. **HELPFUL INFO!** To remove a smart group, move any loads assigned to this group to other smart groups. Select the smart group to be removed then select the **delete** icon ⊟.



9.3. How to Test loads added to a Smart Group

It can be useful to re-test loads to confirm communication and functionality after re-organizing Smart Groups.

1. Select a load from within a Smart Group.
2. Select the **On/Off** button at bottom of lighting manager. This will switch the load in the smart group On and Off.
3. Repeat steps 1 and 2 with each load.

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10. Blueprint - Update Data Table

Once all configuration within the Lighting and Keypad Manager is complete, the Lighting Data Table must be updated to sync the changes made. The data tables are used to populate the Savant user interfaces for controlling lighting.

The changes made in the lighting/keypad manager need to be updated in the lighting data table (**Tools > Settings > Lighting**). Follow the steps below to do this.

1. Select the **Sync...** button at the bottom of the Lighting/Keypad Manager.
2. In the pop over menu that opens, check or uncheck the appropriate box or boxes. Refer to descriptions below.

Loads, Scenes, Load Scenes, Buttons boxes

Checked

- An entry for each box checked is added to the lighting data table (Tools > Settings > Lighting)
- If the lighting data table already contains an entry for the checked box, that entry is overwritten with the new information.

Unchecked

- If an entry for an unchecked box exists in the lighting data table (Tools > Settings > Lighting), that entry is removed.
- No new entries are added to the lighting data table.

Reset any user modifications box:

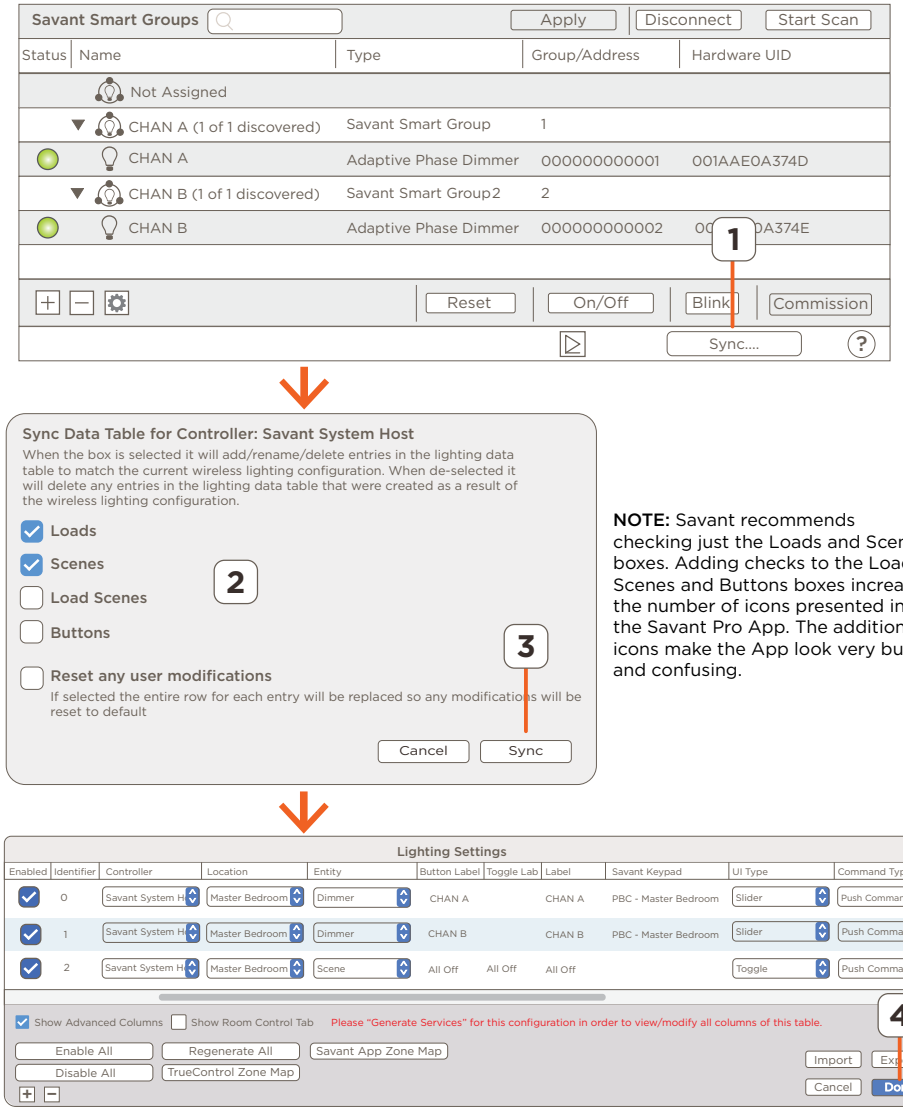
Checked:

- Changes made to entries in the lighting data table are returned to their default values.

Unchecked (Default)- For boxes that are checked (Loads, Scenes, Load Scenes, Buttons)

- Changes to entries in the lighting data table are left alone.
- Changes to entries through the Lighting/Keypad Manager are updated in the lighting data table.
- New entries made in the Lighting/Keypad Manager are added to the lighting data table.

3. Select **Sync** button in the drop-down screen when satisfied the correct boxes are checked.
4. In the lighting data table that appears, verify the entries shown were created or modified correctly. Select **Done** when complete.



NOTE: Savant recommends checking just the Loads and Scenes boxes. Adding checks to the Load Scenes and Buttons boxes increases the number of icons presented in the Savant Pro App. The additional icons make the App look very busy and confusing.

HELPFUL! In the lighting data table, the loads are automatically added to the same room/zone (Location Column) that the Panel Bridge Controller is configured. If desired, the zone where the loads got added to, can be changed using the drop-down menus in the table..

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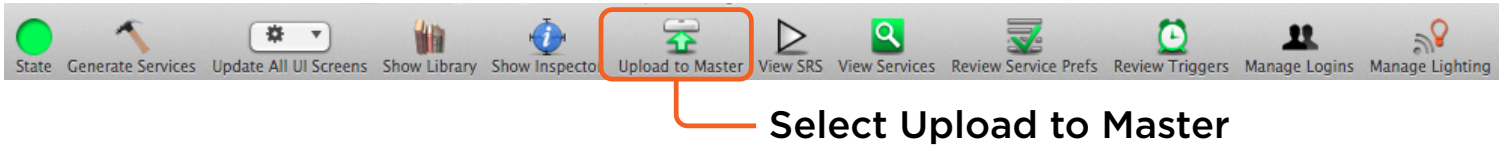
11. Blueprint - Upload Configuration

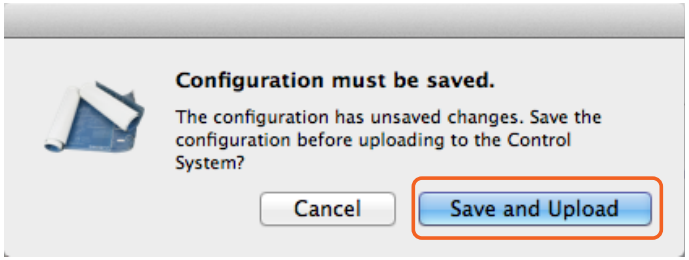
With the configuration complete, it can now saved and uploaded to the Savant System Host.

⚠ **IMPORTANT!** When connected to the OLA Server, all control to the Savant System is lost. Close the OLA Server window before uploading a configuration to the Host.

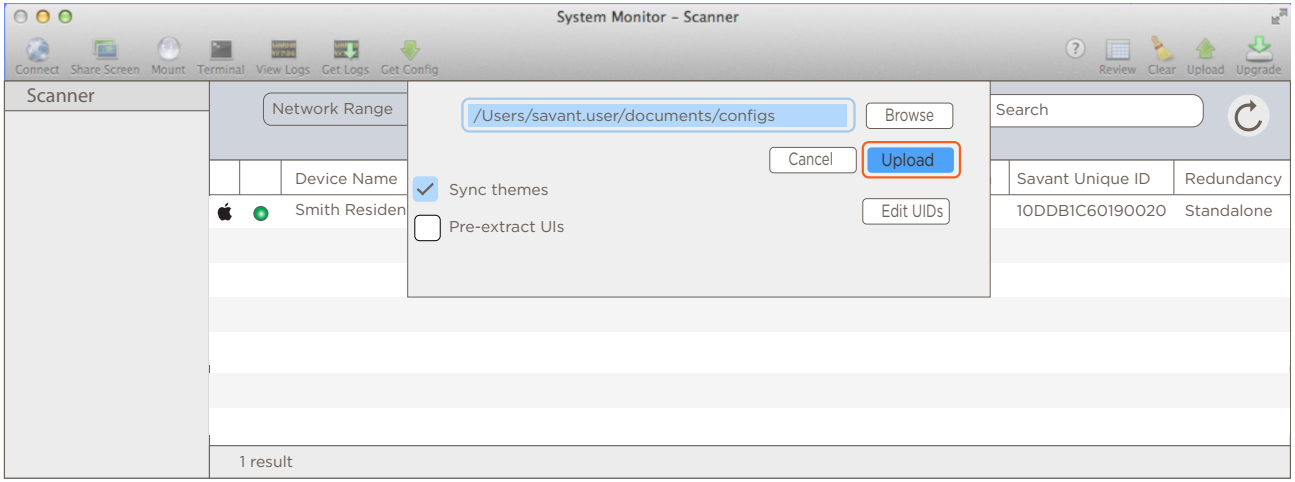
1. Select the **Generate Services** icon from the Blueprint tool bar. The State Icon will change to either blue or green indicating that all realized services are up to date with configuration changes.
2. Select Update **All UI Screens > Sync with Services** (only if necessary) to sync the user interfaces such as an iPad to the services created. The State Icon will switch to Green when complete.
3. To upload configuration to the Host, select the **Upload to Master** icon from the Blueprint tool bar. See image below.



4. In the **Configuration must be saved** dialog box that opens, read the dialog and select **Save and Upload**.



5. The System Monitor application will open as displayed below. Verify the path to the configuration file is correct. Select **Upload** when satisfied. Configuration will now upload to the Host.



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12. Savant Pro App

With the upload complete, the Panel Bridge Controller lighting network will be accessible and controllable via the Savant Pro App lighting service. For details on the lighting service and related control options within the Pro App UI, refer to the Pro App Lighting Service User Guide (009-1696-xx) available on the Savant Customer Community.

13. Troubleshooting Tips

Changing Load Types

After changing the type of load (e.g. LED to Halogen, LED to Incandescent) connected to an adaptive phase type dimmer module (e.g. SPM-Q2APD10-00), the module must be power cycled. Power cycling causes the module to recalibrate itself to the new type of load.

Panel Bridge Controller LED States

The status LED on the left side panel of the Panel Bridge Controller indicates the status of the controller.

- **Green Blinking** - Startup sequence is in progess; BLE connections between the Panel Bridge Controller and companion modules are being established.
- **Solid Green** - All BLE connections are completed and stable.
- **Red Blinking** - BLE communication bewteen the PBC and one or more Companion Modules has disconnected.

Load Flicker

Flickering of a load can typically be fixed by changing the point at which the load is turned on. Savant supplies both a forward phase and adaptive phase type dimmer companion module. Forward phase dimmers turn-on on the leading edge of an AC sine wave. The load connected to a forward phase dimmer should support forward phase. Adaptive phase dimmers allow the user to select either forward or reverse phase dimming. If the wrong mode is selected, the load may flicker or may not light at all. To fix this, follow the steps below to choose the correct dimming mode.

1. Refer to the specifications of the load and determine if the load is a forward or reverse phase type load.
2. Open the OLA Server User Interface and select the Companion Module. See the section on Panel Bridge Controller - RDM Tab.
3. Select the DMX Personality field.
4. In the drop-down menu, select either forward or reverse phase. The selection should match the load type.
5. Verify the load no longer flickers.

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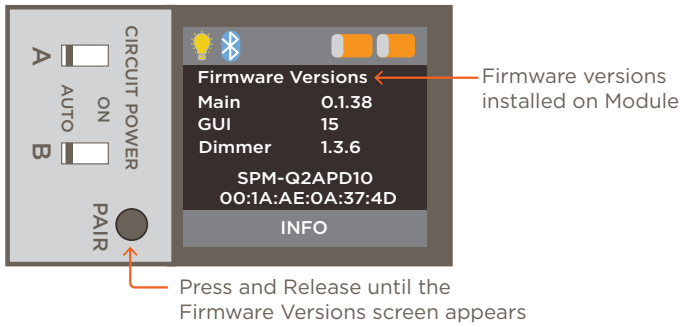
14. Firmware Upgrade

Follow the instructions below to update the firmware in the companion modules. The update requires the nRF Connect app. The instruction below describe how to download the file and use the app to update the module.

Before starting the update process, verify which version of firmware is running on the dimming/relay module and whether it needs to be updated. To do this, the module must be installed in a lighting panel and powered on. Press and release the PAIR button a few times until the Firmware Versions screen appears. The firmware version is printed on the first line labeled Main. See image to the right.



14.1. Download the Nordic nRF app

Apple iTunes Store

1. Open the Apple iTunes Store from any iOS device (e.g. iPad, iPhone).
2. Search for and locate the **Nordic nRF Connect** application .
3. Tap the or GET icon to download and install onto the iOS device.

Google Play Store

1. Open the Google Play Store from any Android device.
2. Search for and locate the **Nordic nRF Connect** application.
3. Tap the Install icon to download and install onto the Android device.

IMPORTANT! Savant does not have control over which version of nRF Connect is available since it is a third party app. The version used in this document is 2.0.1. If not using version 2.0.1, it is up to the user to work through any discrepancies between 2.0.1 and the version installed on your device.

14.2. Download the Companion Module Firmware Package.

The latest available firmware updates for all companion modules is available on the Savant Store. Follow the steps below to download the firmware and save it to a directory on a mobile device.

1. Open a web browser on the mobile device and navigate to the product page for any of the Next Gen Companion Modules. Firmware packages are located under the **Documents** heading. The firmware is labeled Companion-Bootloader-Package-V.01.xx.zip. The firmware is available on the store in any of the products shown below.
   - SPM-Q2APD10-xx / SPM-H2APD10-xx
   - SPM-Q2FPD10-xx / SPM-H2FPD10-xx
   - RPM-Q2R40240-xx / RPM-H1R40240-xx
   - RPM-Q2R20120-xx / RPM-H220120-xx
2. Select the **View** option for the firmware package to download and save the .zip file to a directory on your mobile device (iPhone, iPad, Android Phone) that can be accessed. The location within the mobile device filesystem where the package is saved will vary based on device type, browser, and user settings. The example below assumes the file is downloaded to the **Firefox > Downloads** folder located in the Files app of an iPhone/iPad. If using a different device such as an Android mobile phone, download file to the appropriate directory.

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14.3. Upload Firmware

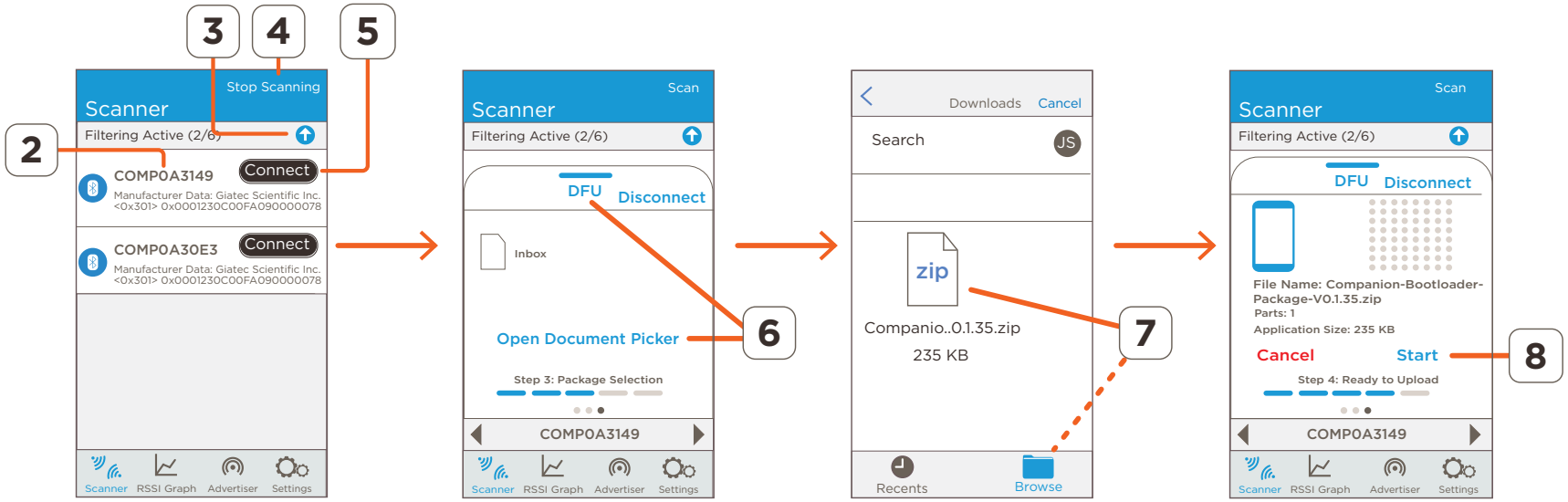
Follow the steps below to open the Nordic nRF Connect App, scan for and locate the companion module getting the firmware update, and then upload the file to that module.

1. Select the **nRF Connect** icon to open.
2. In the **Scanner** page, locate the module by its MAC Address. The companion modules are listed as:

   COMPXXXXXX - The XXXXXX are the last 6 digits of the Mac Address. See image below for example.

HELPFUL! The Mac Address for the companion module is available in the Firmware Versions screen of the modules LED display.

3. If necessary, use the **Filter** fields to narrow down the search parameters.
4. Select the **Scan** icon to initiate the scan after the filter drop-down is filled in. This will locate and display the correct companion module.
5. Select the **Connect** button and connect to the companion module.
6. In the page that opens, scroll left to the DFU page and select the **Open Document Picker** icon.
7. Browse, locate, and select the **Bootloader-Companion-Bootloader-Package-V[x.x.xx.zip** file.
8. Select **Start** from the page that opens. The firmware will begin uploading to the module. When the upload is complete, the companion module will reboot and automatically install the firmware.
9. When install is complete, verify the correct version of firmware is installed by pressing the **PAIR** button on the companion module until the Firmware Versions screen is displayed. The updated firmware will be displayed on this page.



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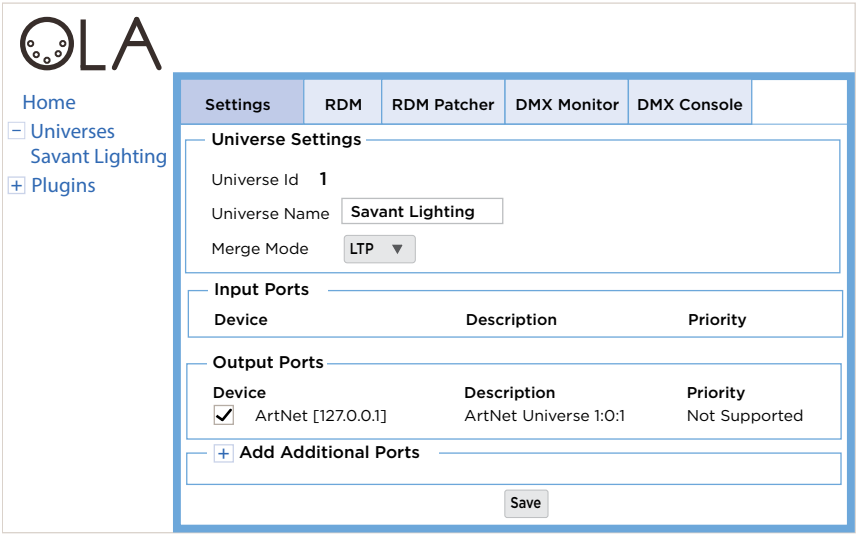
Appendix A: OLA Server - Additional Information

SETTINGS TAB

The section below details the fields and options available within the Settings tab of the Savant Lighting Universe.

- **Universe Id** - The Savant Lighting Universe ID is automatically populated with address = 1 and should not be changed.
- **Universe Name** - Set to Savant Lighting by default. To change the name, double-click the field to edit the name as desired..
- **Merge Mode** - Set to LTP (latest takes precedent) and should not be changed.
- **Output Ports** - ArtNet [127.0.0] is the data distribution protocol supported.



RDM TAB (Lighting Controllers)

The section below details the fields and options available within the RDM tab of the Savant Lighting Universe.

DMX Personality - Defaults to PBC(80) and should not be changed.

Device Info - Information regarding the lighting controller is available.

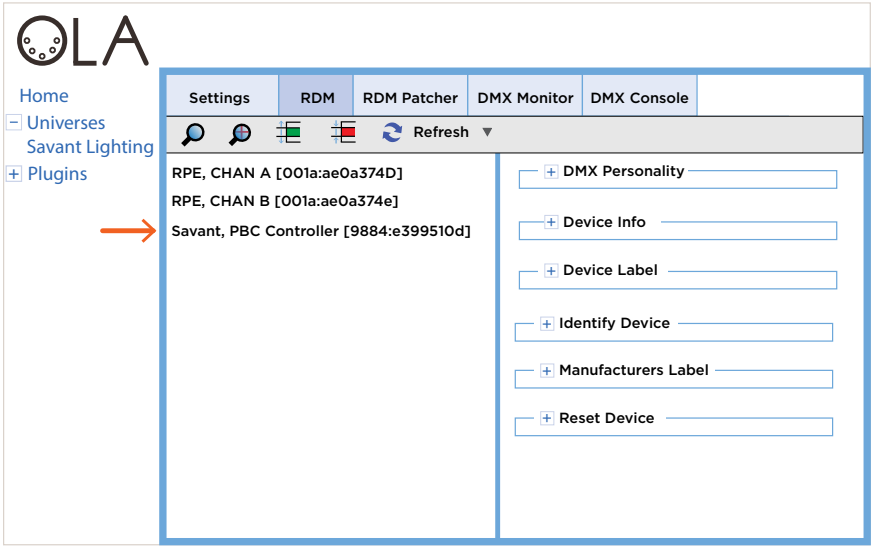
Device Label - Name given to the PBC. To modify, expand the field, double-click the **Device Label** field, and enter a label that identifies the controller. The label entered will replace the name displayed in the left side column in the OLA Server Web UI.

Identify Device - Sends a command to blink the Status LED on the left side panel on the Panel Bridge Controller.

Manufacturers Label - Displays the manufacturer (Savant) and can not be modified. The label set in this field also appears in the left panel in the OLA Server.

Reset Device - To reset the controller, select from the drop-down menu what type of reset to initiate:

- **Warm Reset** - Clears the device configuration and reverts all changes made back to their factory defaults.
- **Cold Reset** - Reboots the controller but keeps all changes made. Equivalent to power cycling the device (soft rebooting).



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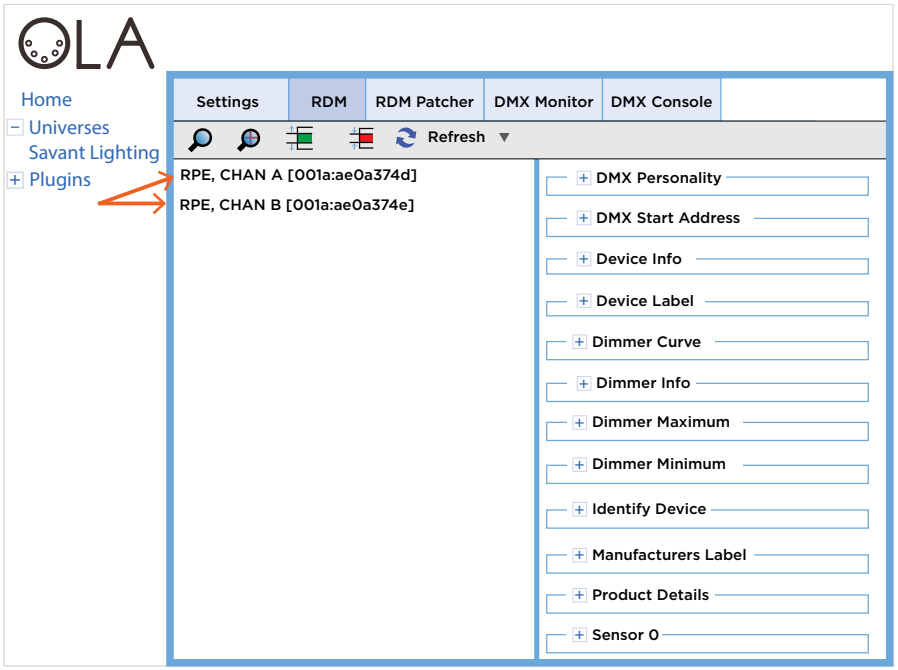
RDM TAB (Lighting Loads)

The section below details the fields and options available within the RDM tab of the Savant Lighting Universe for dimming and relay modules.



DMX Personality - Set for the dimming phase type for lighting load installed (forward or reverse phase). To determine which is best for the lighting device installed, refer to the manufacturers data sheet to that device.

DMX Start Address - The starting (first) address of the output port of the dimming/relay module is displayed and can be modified using this field. However, Savant recommends using the RDM Patcher tab and not the DMX Start address field to make the changes. This process is described in the Companion Module - RDM Tab section.

Device Info - Displays information regarding the output channel of the companion module.

Device Label - Name given to the output channel of a module. To modify, double click the field, enter a new label and select **Save**.

Dimming Curve - The Dimming Curve adjustment is handled in the Savant Pro App and not modified here. Configuring the correct dimming curve ensures smooth and linear dimming when moving the slider on the dimmer from low to high intensity.

Dimmer Info

- **Minimum Level Lower Limit** - Lowest value that Minimum Level can be set to. If device doesn't support this function, 0 is displayed.
- **Minimum Level Upper Limit** - Highest value that Minimum Level can be set to. If device doesn't support this function, 0 is displayed.
- **Maximum Level Lower Limit** - Lowest value that Maximum Level can be set to. If device doesn't support this function, 0 is displayed
- **Maximum Level Upper Limit** - Highest value that Maximum Level can be set to. If device doesn't support this function, 0 is displayed.
- **# of Supported Curves** - Number of dimming curves supported on the device.
- **Levels Resolution** - Number of bits used by the device to output the level of intensity. Savant uses an 8-bit system (0-255 levels).
- **Split Levels Supported** - Shows whether split levels are supported (Minimum / Maximum Level Increasing)? 00=No, 01=Yes

Dimmer Minimum

- **Minimum Level Increasing** - When increasing power this field sets the minimum level of power needed for the load to switch On. Setting this field correctly will reduce unintended behavior such as flickering. Values range from 0-255
- **Maximum Level Decreasing** - When decreasing power, this field sets the minimum level of power needed before the load switches Off. Setting this field correctly will reduce unintended behavior such as flickering. Values range from 0-255
- **On Below Minimum** - Add a check to this box to provide preheat functionality to bulbs (loads) with filaments. When selected, a small amount of power will always be present to prevent the bulb (load) from cooling down. **On Below Minimum** reduces the stress put on bulbs (loads) when they are first powered on.

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RDM TAB (Lighting Loads) - Continued from previous page

Identify Device - Use this field to locate a lighting load in the lighting network.

1. Expand the Identify Device field.
2. Add a check to the Identify Device check box.
3. Select **Save**.

The lighting load connected to the output of the module will begin flashing once per second and a light bulb icon on the module's LED screen will flash on and off. Uncheck the same box and select **Save** to stop the flashing.

Manufacturer Label - The manufacturer of the driver installed in the load is displayed.

Product Details - Information regarding the load is presented.

Reset Device - To reset the Companion Module, select from the drop-down menu what type of reset to initiate:

- **Warm Reset** - Clears the device configuration and reverts module back to factory defaults. A warm reset will disconnect the module from the PBC and the Bluetooth icon on the module will be removed from the module's LED screen.
- **Cold Reset** - Reserved for future use.

Sensor 0 - Displays information about the voltage at output A of the companion module.

Sensor 1 - Displays information about the current being drawn at output A of the companion module.

Sensor 2 - Displays information about the power being supplied at output A of the companion module.

Sensor 3-5 - Displays the same information as sensors 0-2 above but data is taken from output B on the companion module.

DMX Monitor/DMX Console Tabs

The DMX Monitor and DMX Console tabs are not applicable with the PBC Controller.

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Appendix B: Network Requirements

Savant requires the use of business class/commercial grade network equipment throughout the network to ensure the reliability of communication between devices. These higher quality components also allow for more accurate troubleshooting when needed.

Device Network Connections

Connect all Savant devices to the same local area network (LAN) or subnet as the Host. Savant recommends not implementing any type of traffic or packet shaping in your network topology for the Savant devices as this may interfere with performance.

Managing IP Addresses

To ensure that the IP address will not change due to a power outage, a static IP address or DHCP reservation should be configured. Savant recommends using DHCP reservation within the router. By using this method, static IP addresses for all devices can be managed from a single UI, avoiding the need to access devices individually. Setting DHCP reservation varies from router to router. Refer to the documentation for the router to configure DHCP reservation.

Network Changes

Savant recommends performing one of the following steps to refresh the IP connection after connecting to a new network, changing routers, or if the IP address range is changed in the current router. This will reset any IP connection and ensure that the Host is communicating with the network correctly.

To refresh the IP Connection to the Panel Bridge Controller, perform one of the following steps:

- **Unplug/Plug Ethernet Connection**
  1. Unplug Ethernet cable.
  2. Wait 15 seconds.
  3. Re-insert Ethernet cable back into Ethernet port.
- **Cycle Power**
  1. Disconnect the controller from the AC power source.
  2. Wait 15 seconds.
  3. Reconnect.
- **Reset Button**
  1. Press and release the reset button. The system will reset and IP Address settings will be cleared.

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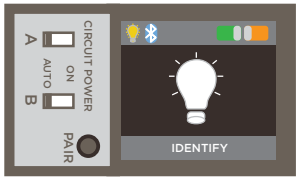
Appendix C: Companion Module LED Screen Icons

The companion module LED screen contains icons to indicate different states or events that are happening on the module in real time. These icons can be used as an indicator of the state of a function on the module or can be used for troubleshooting a possible problem.

ICON	DESCRIPTION
	Indicates the companion module is communicating with the Panel Bridge Controller. To set the module so it is communicating with the Panel Bridge Controller, do the following: 1. Press and hold the PAIR button until the gear icon appears on the LED screen. 2. Open the OLA server to the Panel Bridge Controller (**Web Configure** button in the Lighting/Keypad Manager). 3. Select the Discover icon . After a few seconds, the gear icon will change to a Bluetooth icon. At that point, the module is communicating with the PBC.
	Indicates the module installed is a dimmer type module.
	Indicates the module installed is a relay type module.
	Indicates the manual circuit power switches on the companion module are in the Off position. As power is applied to the loads, the gray bar in this icon tracks the intensity of the load. Output **A** = leftmost switch on LCD (position of module in panel doesn't matter). Output **B** = rightmost switch on LCD (position of module in panel doesn't matter)
	Indicates the manual circuit power switches on the companion module are in the On position.
	Indicates the module is in Bluetooth discovery mode and is waiting for a Bluetooth network to connect to. To set the module into Bluetooth Discovery mode, press and hold the PAIR button for 3 seconds until the gear icon appears; then release.
	Indicates the module is being located via the **Identify Device** feature When the identify feature is enabled, a light bulb icon on the LCD flashes once per second. See image to the left. The identify feature can be helpful when attempting to identify a particular module in a panel. 1. Open the Lighting and Keypad Manager and select the **Web Configure** button to open the OLA Server for the Panel Bridge Controller. 2. Select the **Universe**, then the RDM tab. 3. Select the companion module from the list of discovered modules and expand the **Identify Device** field. 4. Enter a check-mark to enable the Identify Device function and select **Save**. At this point, the IDENTIFY screen will appear on the module and a light bulb icon will blink. If there is a load connected to the module, that load will also blink.

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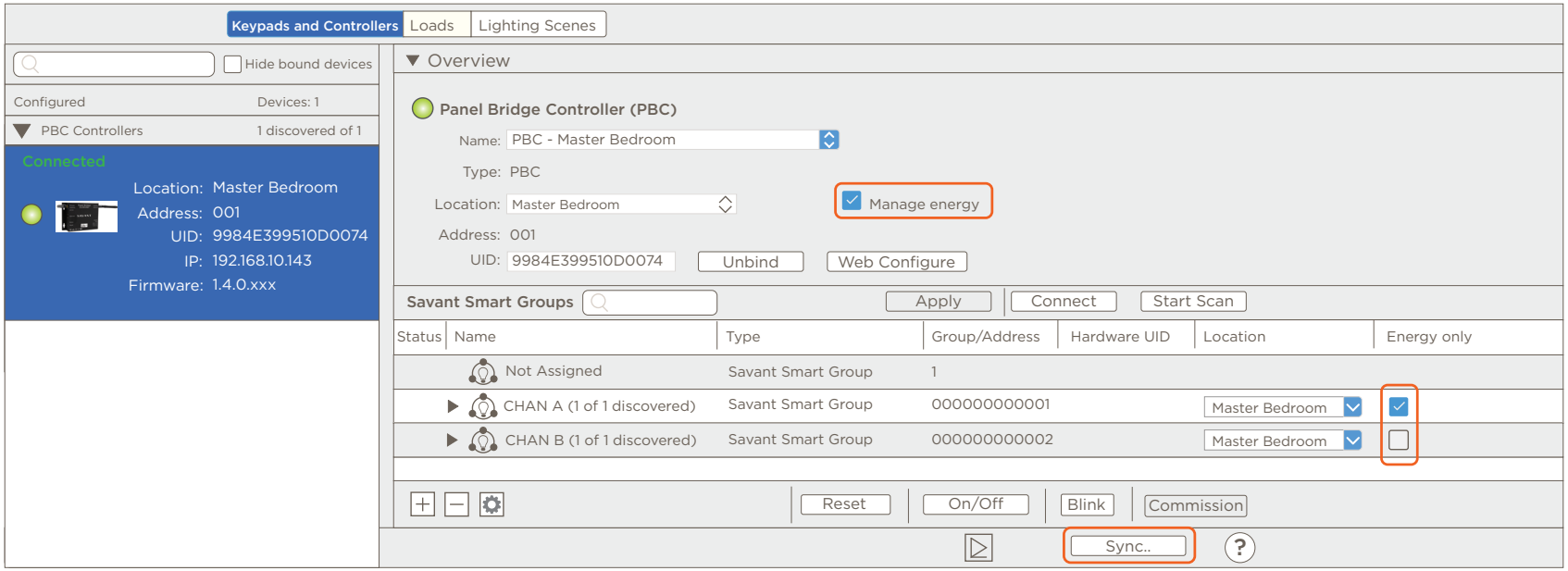
Appendix D: Energy Monitoring

The Panel Bridge Controller can monitor the energy used by each of the loads it is controlling and send that information to the Savant Pro App. The section below describes how to enable/disable energy monitoring. Open the Lighting and Keypad Manager, select the **Keypads and Controllers** tab, and highlight the PBC. See image below



The two boxes labeled Manage Energy and Energy Only enable and disable certain functions for the Energy service. Depending on which boxes are checked/unchecked determines the functions that are enabled and disabled in the Pro App. Refer to the table below when configuring the Energy service.

Manage Energy checked **Energy Only** unchecked	• An **Energy** service is created and added to the Pro App. • An entity (dimmer or switch) for each load in the Savant Smart Groups frame is added to the **Lighting** service in the Pro App. • The loads in each Smart Group are monitored in the Energy Service in the Pro App.
Manage Energy checked **Energy Only** checked	• An **Energy** service is created and added to the Pro App. • Loads that have the **Energy only** box checked, will be removed from the Lighting Data Table. Once removed, entities such as a dimmer or switch will also not get added to the Lighting Service in the Pro App. Not adding a dimmer or switch for a load stops a user from being able to shut off a load such as an refrigerator or pump that needs to be on at all times. • The loads in each Smart Group are still monitored in the Energy Service in the Pro App.
Manage Energy unchecked **Energy Only** N/A	• An Energy Service is NOT created in the Pro App and the **Energy only** option for each individual Smart Group will be automatically unchecked and gray-ed out/disabled.
Sync	• After making the changes, select the **Sync** button. Pressing the **Sync** button updates the appropriate data table.

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