Crestron IPAC-GL1
Integrated Professional Automation Computer
Setup Guide (Default Program v1.2.1)

This document was prepared and written by the Technical Documentation department at:

Crestron Electronics, Inc.
15 Volvo Drive
Rockleigh, NJ 07647
1-888-CRESTRON

Industry Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

(E174344)

As of the date of manufacture, the IPAC-GL1 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:
(1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Contents

Integrated Professional Automation Computer: IPAC-GL1

Introduction

This document provides instructions for commissioning a Crestron Green Light™ lighting system using an IPAC-GL1.

The IPAC-GL1 (IPAC) is a lighting control system that can switch up to 210 lighting loads, monitor 81 occupancy sensors (or on/off photocells), and can be controlled by up to 16 external keypads.

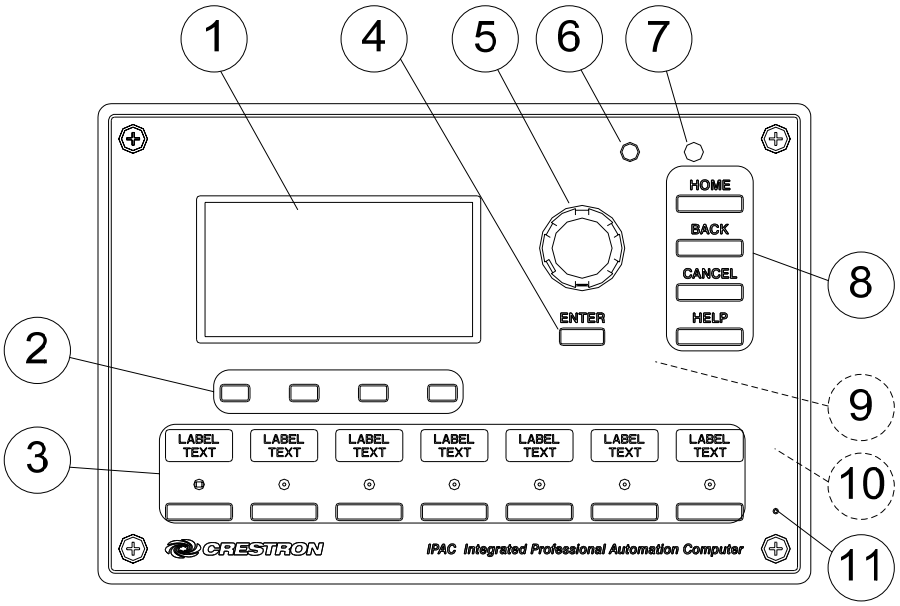
NOTE: This guide describes the functionality of the IPAC as shipped from the factory using the default program. Extensive customization is possible using Crestron programming tools. For more information, refer to "Appendix A: Programming Software" on page 55 or contact Crestron at 1-888-CRESTRON [1-888-273-7876] for more information.

Physical Description

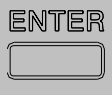
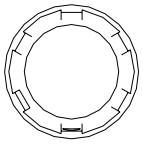
This section provides information on the connections, controls, and indicators available on your IPAC.

IPAC-GL1 Physical View (shown in black)

IPAC-GL1 Buttons & Ports

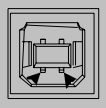


Connectors, Controls & Indicators

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
1	LIQUID CRYSTAL DISPLAY	The Liquid Crystal Display (LCD) shows system information such as lighting controls and system status.
2	SOFT BUTTONS 	The functions of the soft buttons are dependent on which "page" the display is currently showing. Labels will appear above each button indicating their current function.
3	FUNCTION BUTTONS 	(7) Programmable pushbuttons with backlit labeling and LED feedback. Referred to as the front panel keypad.
4	ENTER BUTTON 	**ENTER** button performs the "default" action for the current page.
5	SELECTION KNOB 	(1) Continuous turn rotary encoder, used for on-screen navigation.
6	LIGHT SENSOR 	Photosensor, used for auto-adjustment of function label backlight.
7	INFRARED (IR) RECEIVER 	Not used in the default program but can be used in a custom program. Refer to "Appendix A: Programming Software" on page 55 for more information.

(Continued on following page)

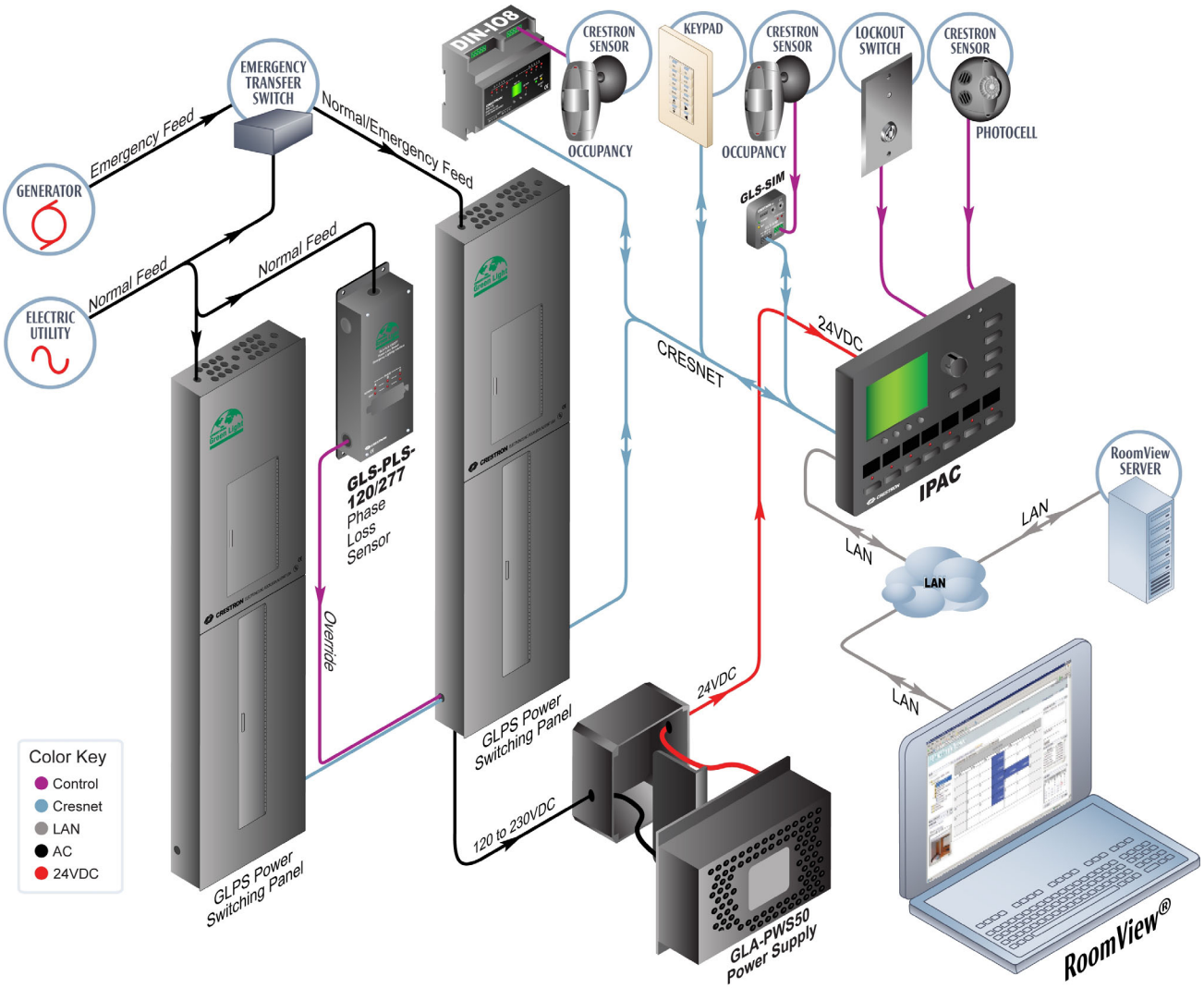
Connectors, Controls & Indicators (Continued)

#	CONNECTORS, CONTROLS & INDICATORS	DESCRIPTION
8	NAVIGATION BUTTONS HOME BACK CANCEL HELP	(4) Pushbuttons for navigating the IPAC configuration menus. **HOME**: Returns the display to the IPAC home page. **BACK**: Returns to the previously displayed page. **CANCEL**: Cancels certain operations without committing them permanently. **HELP**: Opens a context-sensitive help screen. Pressing **HELP** again will return to the previously displayed page.
9	USB PORT 	(1) USB Type B female; USB 1.1 computer console port (cable not included); Hidden behind removable faceplate. Used for uploading and upgrading. For more information, refer to "Appendix B: Uploading and Upgrading" on page 58.
10	SOFTWARE RESET BUTTON (SW-R) (Hidden behind removable faceplate)	Pressing this button momentarily restarts the program. Pressing this in combination with **HW-R** button performs a system restart without loading the default program.
11	HARDWARE RESET BUTTON (HW-R)	Pressing this button momentarily initiates a system hardware reset. Pressing this in combination with **SW-R** button performs a system restart without loading the default program.

Applications

The following diagram shows an IPAC used to manage lighting controls in a facility.

IPAC in a Lighting Control Application



NOTE: For information on integration with Crestron RoomView® software, please contact Crestron.

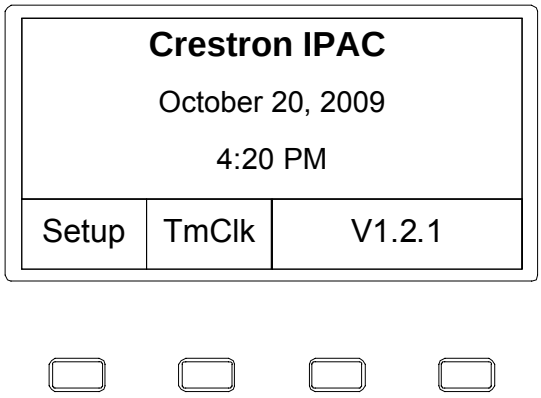
Setup

Installation

For installation instructions, refer to the latest version of the IPAC Installation Guide (Doc. 6696) which shipped with your IPAC and is also available for download from the Crestron website (www.crestron.com/manuals).

After power is applied to the IPAC, the IPAC home page is displayed as shown in the following illustration.

IPAC Home Page



To return to the home page at any time, press the **HOME** button.

Configuration

The instructions contained in this document are written for version 1.2.1 of the IPAC-GL1 Default Program. To verify your version, press the HOME button. The version number is displayed in the lower-right part of the display.

If the default program is not to be used, refer to "Appendix A: Programming Software" on page 55 for information on programming the IPAC with Crestron programming tools.

The following table lists the specifications for the IPAC-GL1 Default Program. Refer to "Appendix C: Specifications" on page 60 for additional specifications.

Specifications for the IPAC-GL1 Default Program

SPECIFICATION	DETAILS
Maximum number of supported panels	9 GLEP enclosures with GLXP Power Switching Modules
Maximum number of controlled loads	210 switched loads

(Continued on following page)

Specifications for the IPAC-GL1 Default Program (Continued)

SPECIFICATION	DETAILS
Keypads	16 external (max.) using any of the following keypads: • CNX-B2, -B4, B6, B8, B12 • C2N-DB6, DB-8, DB-12 • C2N-CBF-*-T, -*-S 1 Internal Keypad
Timeclock	100 events
Sensors	Up to 40 sensors supported via GLS-SIM Sensor Integration Modules. GLS-O* sensors recommended. Up to 40 sensors supported via DIN-IO8 DIN Rail Versiport Module. GLS-O* sensors recommended. 1 sensor via local input on the IPAC's **INPUTS** port.

For additional information, refer to the latest version of the IPAC Installation Guide (Doc. 6696) which shipped with your IPAC and is also available for download from the Crestron website.

Prior to operation, the IPAC must be configured for use. When configuring the system, it is important to have the following information:

- The total number of switching panels in the system and how many loads are wired to each panel. For a description of a panel, refer to "Panels" on page 12.
- The lighting load schedule (i.e. which lighting loads are wired to which panels, and which outputs within each panel).
- The total number and location of all external keypads in the system.
- The desired function for all keypad buttons, including the local buttons on the IPAC itself.
- The total number and location of all occupancy sensors (or on/off photocells).
- The desired timeclock functionality.

Worksheets for specifying switching panels, timeclock events, keypad locations, button functions, and sensor locations are provided in the latest version of the IPAC-GL1 System Planning Worksheets (Doc. 6784) which can be downloaded from the Crestron website. Make copies as required and leave for the customer after system installation has been completed.

Automated Functions

The IPAC will automatically perform specific functions when devices connected to the **INPUTS** port are activated. The following table illustrates the input number and its associated function.

INPUTS Port and Associate Functions

INPUT #	FUNCTION	DESCRIPTION
1	Sensor Input	Associated function is configured as described in "Sensors" on page 39.

(Continued on following page)

INPUTS Port and Associate Functions (Continued)

INPUT #	FUNCTION	DESCRIPTION
2	Enter *Override* mode	The system will enter the *Override* mode when a device connected to this port provides a dry contact closure to ground.
3	Lock IPAC	The front panel of the IPAC will be locked when a device connected to this port provides a dry contact closure to ground.
4	Lock Keypads	External keypads will be locked when a device connected to this port provides a dry contact closure to ground.

For information on wiring the **INPUTS** port, refer to the latest version of the IPAC Installation Guide (Doc. 6696) which shipped with your IPAC and is also available for download from the Crestron website.

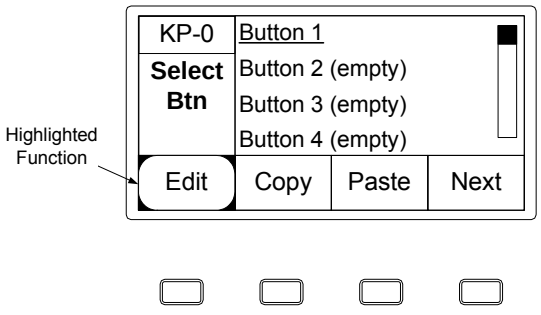
Introduction

Use the front panel controls and display to configure the IPAC. The following controls are used to navigate the front panel display:

- Selection Knob – Turn the selection knob to select the desired option. The selected option is underlined.
- **ENTER** Button – Press the **ENTER** button to select an underlined item or to store a setting. The **ENTER** button can also be used to activate a highlighted soft button function.
- Soft Buttons – Soft buttons perform functions that are listed above them on the front panel display.
- **HOME** Button – Press the **HOME** button to return to the IPAC home page. If changes were made to the configuration, you will be asked to save changes.
- **BACK** Button – Press the **BACK** button to return to the previous screen.
- **CANCEL** Button – Press the **CANCEL** button to cancel the current action.
- **HELP** Button – Press the **HELP** button at any time to open the online help feature. Press again to close the online help.

The display is used to show available options and a variety of information during the configuration process. Title screens are shown at the top or side of the display. Configuration options and data are displayed in the center of the display, and available functions for the soft buttons are located along the bottom of the display. Soft button functions that are highlighted can be activated by pressing the associated soft button or the **ENTER** button.

Display



Setup Menu

For Unconfigured Systems (First time use only)

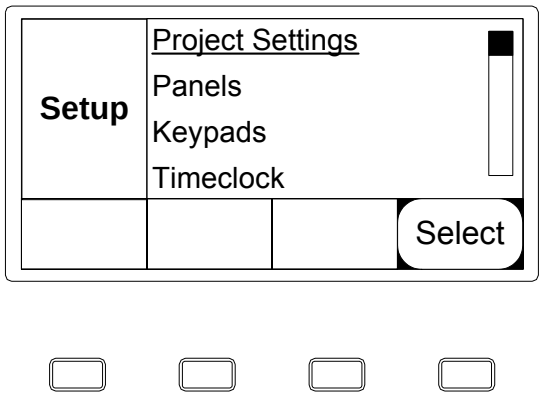
If the system has not been configured, the IPAC will display the Setup Menu.

For Configured Systems

If a system has already been configured, the Setup Menu can be opened from the IPAC home page. To open the Setup Menu:

- Press the **HOME** button.
- Press the soft button labeled **Setup**.

Setup Menu



The Setup Menu is broken down into eight sections:

- **Project Settings** – Sets the geographical location of the IPAC installation as well as the time, date, and *Daylight Savings Time* mode.
- **Panels** – Configures lighting loads controlled by the IPAC.
- **Keypads** – Configures the front panel function buttons and all external keypads installed in the IPAC system.
- **Timeclock** – Configures the IPAC's timeclock.
- **Sensors** – Configures operation of sensors connected to the IPAC.
- **Password** – Sets the front panel password.
- **Ethernet Settings** – Configures the IPAC's Ethernet settings.
- **About** – Displays information about the IPAC.

To select an item to configure, turn the selection knob to highlight the desired section and press the **ENTER** button or the soft button labeled **Select**.

Project Settings

The IPAC uses state and city location information to determine latitude and longitude for its astronomical clock. Refer to the completed "Project Settings Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets when entering settings.

Open Project Settings

To open the Project Settings section of the Setup Menu:

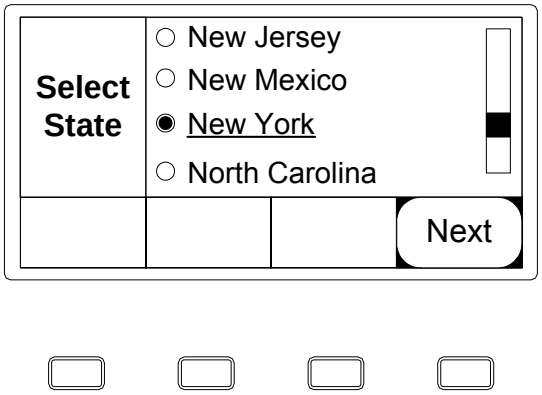
1. Turn the selection knob to highlight **Project Settings**.
2. Press **ENTER** or the soft button labeled **Select** to open the Project Settings section of the Setup Menu.

Select the State

To identify the local time zone, select the state where the IPAC is installed. To select the state:

1. Turn the selection knob to highlight the state where the IPAC is installed.
2. Press **ENTER** or the soft button labeled **Next** to select the highlighted state.

Select the State

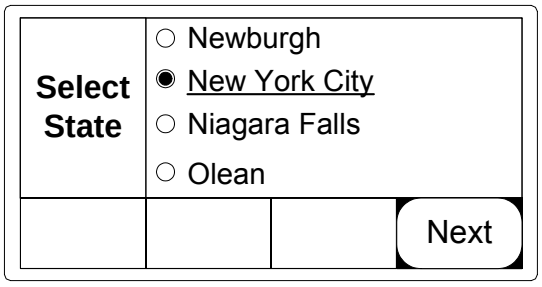


Select the City

To further identify the locality, select the city nearest the IPAC installation. To select a city:

1. Turn the selection knob to highlight a city near the IPAC installation.
2. Press **ENTER** or the soft button labeled **Next** to select the highlighted city.

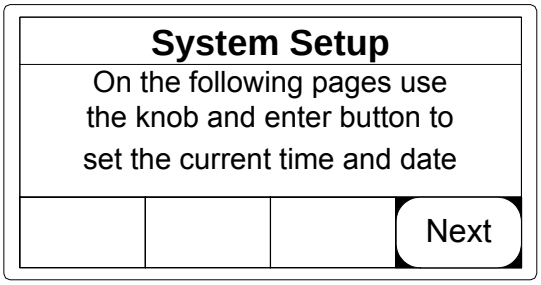
Select the City



System Setup

The System Setup section of Project Settings is used to set the IPAC's time, date, and Daylight Savings Time (DST) settings.

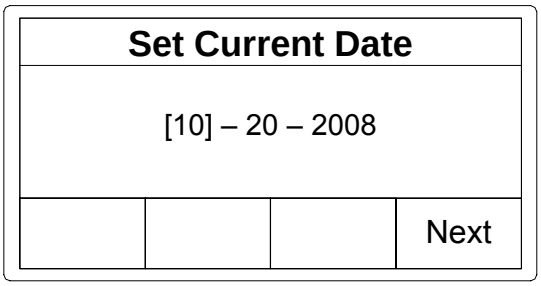
System Setup



Press the soft button labeled **Next** to set the current date.

Set the Current Date

Set the Date

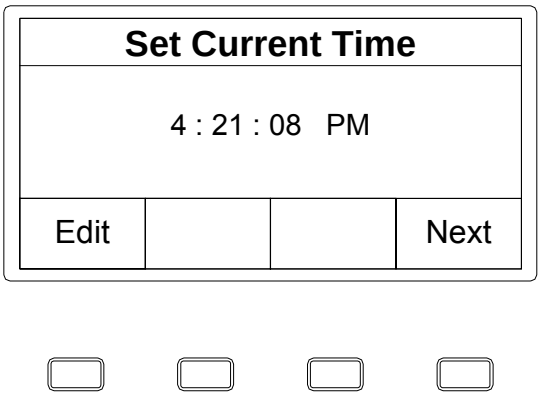


The field to be changed is in brackets. To set the date:

1. Press the **ENTER** button to move the cursor between the month, date and year.
2. Turn the selection knob to display the current month, day, or year.
3. When the correct date is displayed, press the soft button labeled **Next** to set the current time.

Set the Current Time

Set the Time



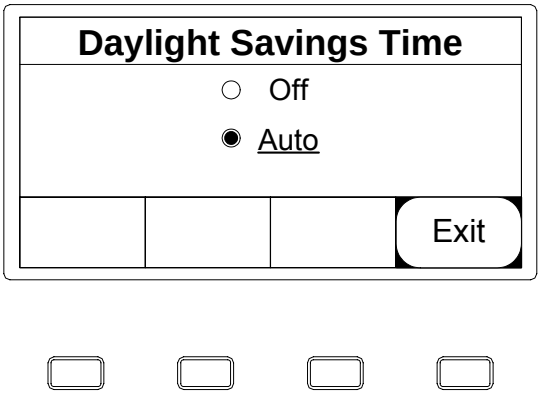
To set the time:

1. Press the soft button labeled **Edit**. Brackets will appear around the hour digit.
2. Turn the selection knob to display the current hour.
3. Press the **ENTER** button to move the cursor between the hour, minute, seconds, and AM/PM.
4. Use the selection knob and the **ENTER** button to display the current time.
5. When the correct time is displayed, press the soft button labeled **Set**.
6. Press the soft button labeled **Next** to set the *Daylight Savings Time* mode.

Set the Daylight Savings Time Mode

The IPAC has the ability to automatically adjust the system clock for daylight savings time. This feature can also be disabled. To set the *Daylight Savings Time* mode:

Set the Daylight Savings Time Mode



1. Turn the selection knob to highlight the desired mode.
   - ⇒ **Off** – The system clock needs to be manually adjusted for Daylight Savings Time.
   - ⇒ **Auto** – The system clock will automatically adjust for Daylight Savings Time.
2. When the correct mode is highlighted, press **ENTER** or the soft button labeled **Exit** to save the settings and return to the Setup Menu.

Panels

The term panel is used to describe a physical enclosure which is capable of switching lighting loads on and off. The IPAC supports nine panels, each with a maximum of up to 42 loads. The entire system can contain up to 210 loads.

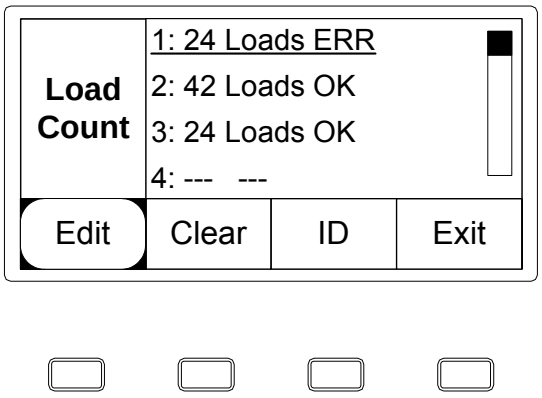
Use the "Panel Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets to map out the location of each load in a panel, their associated "warn" functions, and associated sensors. After all of the loads have been identified, use this section of the Setup Menu to configure the switching panels and associated loads that will be controlled by the IPAC system.

Open Panels

To open the Panels section of the Setup Menu:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Panels**.
3. Press **ENTER** or the soft button labeled **Select** to open the Panels section of the Setup Menu.

Load Count



A list of nine panels is displayed on the LCD. Turn the selection knob to scroll through the list of panels. Each line lists the panel number, the number of loads in the panel, and a status label:

- **OK:** Indicates that the modules inside the panel have been found on the network.
- **ERR:** One or more required modules in the panel have not been found on the network.

Panels labeled **ERR** must have their modules identified. Refer to "Identify Modules" on page 13 for information on identifying panels.

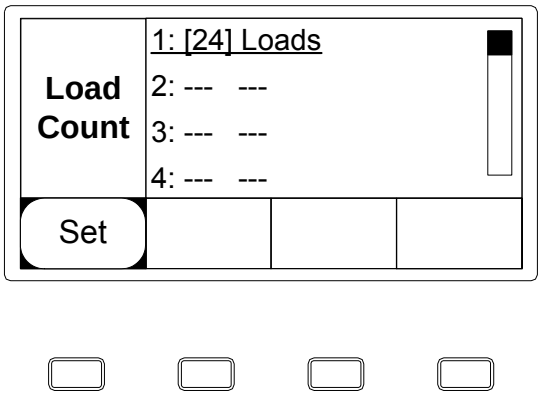
Specify Load Count

You must tell the IPAC how many loads are terminated in each physical panel installed in your system. To set the number of loads:

1. Open the Panels section of the Setup Menu as described above.

2. Turn the selection knob to the desired panel and press the **ENTER** button or the soft button labeled **Edit**.

Set the Number of Loads



3. Turn the selection knob until the desired load count is displayed.
4. Press the **ENTER** button or the soft button labeled **Set**.
5. Repeat for every panel in the system.

Clear a Panel

To remove a panel from the system:

1. Open the Panels section of the Setup Menu as described on page 12.
2. Turn the selection knob to highlight the panel to be cleared and press the soft button labeled **Clear**. Alternately, you can manually adjust the load count of a panel to 0 (zero). This will have the same effect as pressing **Clear**.

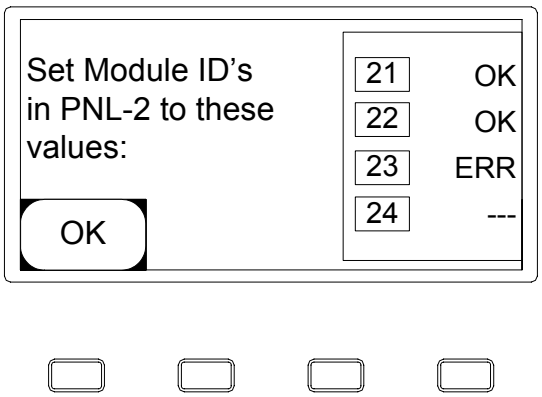
NOTE: If only one panel is listed, it cannot be cleared.

Identify Modules

Each load in a panel is switched on and off by a lighting module installed in the panel. To properly control the loads in a system, the modules to which they are connected must be identified to the IPAC. To identify modules:

1. Open the Panels section of the Setup Menu as described on page 12.
2. Turn the selection knob to highlight the panel to be identified.
3. Press the soft button labeled **ID**.

Identify Modules



The IPAC will show a graphic which represents a panel and four modules installed within it, ranging from top to bottom. Note that many panels will have less than four modules installed, but none will have more than four.

Inside the boxes representing the modules will be 2-digit ID codes. These indicate the Module ID that each module must be set to in order to work properly.

Next to each module in the display is a label: **OK** (a module at this ID has been found on the network), **ERR** (no module at this ID has been found), or **---** (this panel already has enough modules defined to satisfy the load count).

4. Set the Module ID of each module in a panel to the number specified on the display. For information on setting Module IDs, refer to the latest version of the CRESTRON GREEN LIGHT™ Power Switching Installation Guide (Doc. 6672) which was shipped with the panel, and is available for download from the Crestron website.

NOTE: Care must be taken to ensure that no two modules in the system share the same Module ID. This situation will cause unpredictable behavior. Additionally, a module with a Module ID outside of the specified value may conflict with other devices in the system.

After the Module ID is set correctly, the module label will change from **ERR** to **OK**.

5. After all of the modules in a panel have been identified, press the soft button labeled **OK** or press the **ENTER** button to return to the panel list.
6. Repeat the identification process for each panel in the system.
7. After all of the panels have been configured and identified, press the soft button labeled **EXIT** to save the settings and return to the Setup Menu.

Keypads

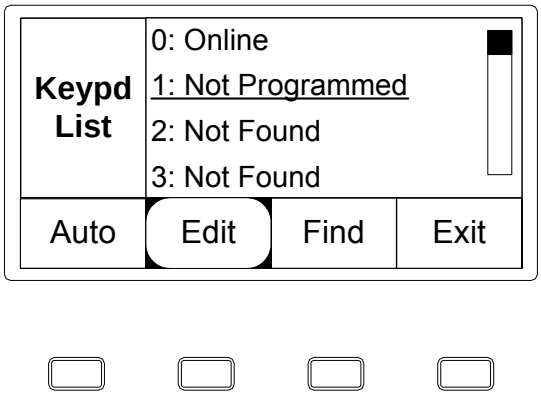
Use the "Keypad Location Worksheet" and the "Button Function Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets to map out locations of keypads in the system and the function(s) of each button in the system. After specifying the location and function of each keypad and button, use this section of the Setup Menu to configure the front panel keypad and up to 16 external keypads that can control the IPAC system.

Open Keypads

To open the Keypads section of the Setup Menu:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Keypads**.
3. Press **ENTER** or the soft button labeled **Select** to open the Keypads section of the Setup Menu.

Keypad List



A list of keypads is displayed on the LCD. Turn the selection knob to scroll through the list of keypads. Each line lists the keypad number and its status.

Keypad **0** represents the front panel keypad on the IPAC while keypads **1** through **16** are external keypads.

If an external keypad has not been found on the network, it is listed as **Not Found**. If a keypad has been identified, but no buttons on the keypad have been programmed, it is listed as **Not Programmed**. If a keypad has been found on the network and contains at least one programmed button, it is listed as **Online**.

NOTE: If a keypad is attached to the network, but is still listed as **Not Found** even after attempts to identify it, detach it from the network temporarily to allow the rest of the keypads to work properly.

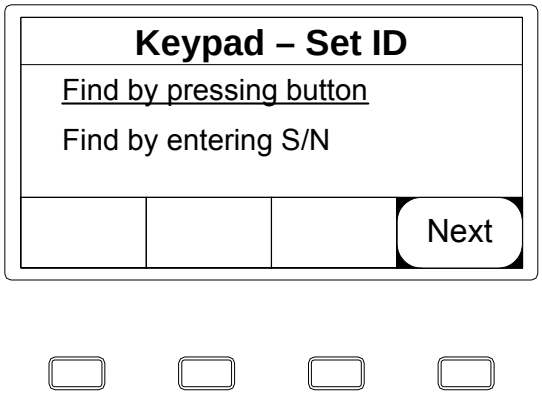
Find External Keypads

Each external keypad connected to the IPAC must be identified to the system before it will be recognized. Keypads can be identified by button press or by serial number. To identify a keypad:

- **By button press:**
  1. Open the Keypads section of the Setup Menu as described above.
  2. Turn the selection knob to highlight a keypad.

3. Press the soft button labeled **Find** to begin the identification process.

Select Identification Method



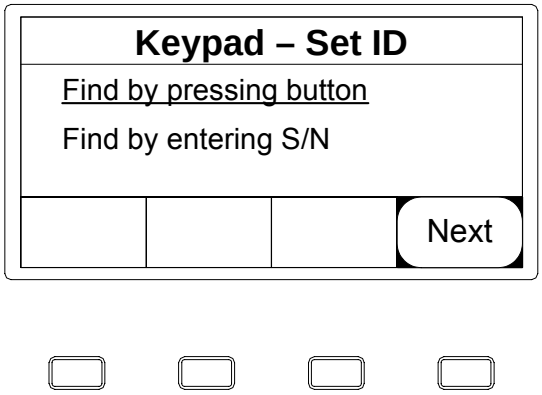
4. Turn the selection knob to highlight **Find by pressing button** and press the soft button labeled **Next**.
5. Every connected keypad will flash. The display will prompt you to press a button on the keypad to be identified.

NOTE: If a keypad does not flash, verify that it is properly connected to the network. Refer to "Check Network Wiring" on page 53 for more information.

6. Press a button on the keypad to be identified. The display will show programming information for the identified keypad. For information on keypad programming, refer to "Program/Edit a Keypad Button Manually" on page 20.

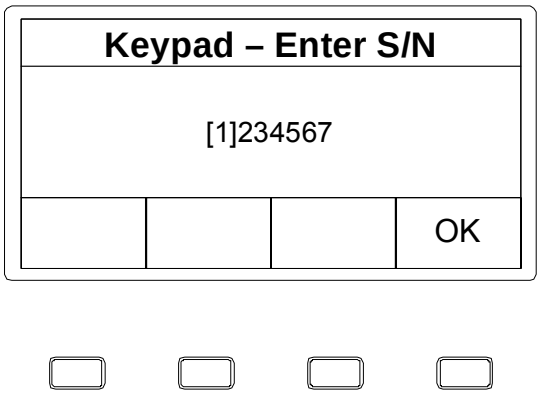
- **By Serial Number:**
  1. Open the Keypads section of the Setup Menu as described on page 15.
  2. Turn the selection knob to highlight a keypad.
  3. Press the soft button labeled **Find** to begin the identification process.

Select Identification Method



4. Turn the selection knob to highlight **Find by entering S/N** and press the soft button labeled **Next**. The display will show a serial number with the first digit enclosed in brackets.

Enter Serial Number

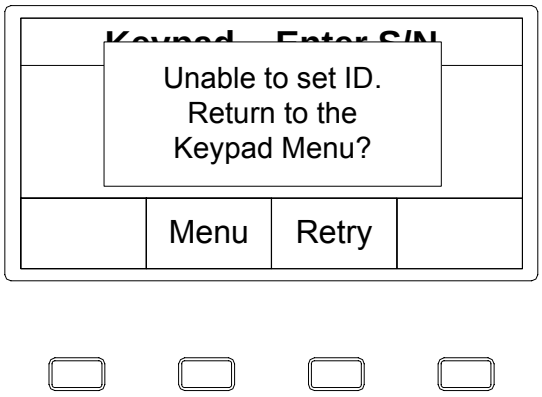


5. Turn the selection knob clockwise or counter-clockwise to display the first digit of the serial number. When the correct value (letter or number) is displayed, press the **ENTER** button to move the brackets to the next digit.
6. Repeat for each digit in the serial number. When the correct serial number is displayed, press the soft button labeled **OK**.

   If the correct serial number is entered, the display will indicate that the keypad was found and then show programming information for the identified keypad. For information on keypad programming, refer to "Program/Edit a Keypad Button Manually" on page 20.

   If the incorrect serial number is entered, a message will be displayed as shown in the following diagram.

Unable to Set ID



   Press the soft button labeled **Retry** to re-enter the serial number or press the soft button labeled **Menu** to return to the list of keypads.

   Repeat for each external keypad in the system.

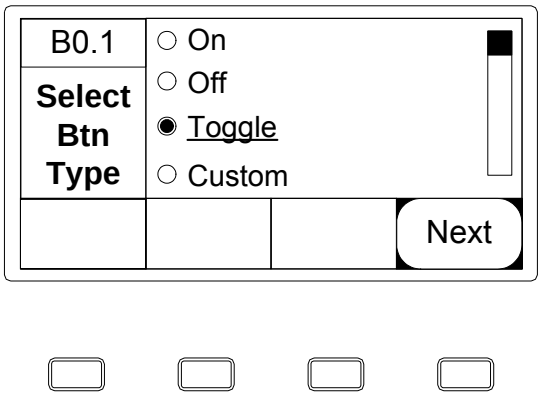
Automatically Program a Button

Any keypad button in the IPAC system (front panel keypad or identified external keypad) can be quickly programmed using the soft button labeled **Auto**. To automatically program a button:

1. Open the Keypads section of the Setup Menu as described on page 15.

2. Press the soft button labeled **Auto**.
3. Press any button on an external keypad, or any IPAC function button to program.

Select Button Type



Each button on a given keypad has an associated number. For information on button assignments, refer to "Button Function Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets.

4. Turn the selection knob to highlight a function from the list of available functions and press the **ENTER** button or the soft button labeled **Next** to configure the button's function. Buttons can be programmed with the following functions:

   ⇒ **On** – Turns one or more loads on.

   ⇒ **Off** – Turns one or more loads off.

   ⇒ **Toggle** – Toggles one or more loads on and off.

   ⇒ **Custom** – Allows individual loads to be turned on or off as desired.

   ⇒ **Enter Override** (IPAC function buttons only) – Places the system into the *Manual Override* mode.

   ⇒ **Exit Override** (IPAC function buttons only) – Takes the system out of *Manual Override* mode.

   ⇒ **Enter/Exit Override** (IPAC function buttons only) – Toggles *Manual Override* mode on and off.

   ⇒ **Lock Keypads** (IPAC function buttons only) – Locks external keypads.

   ⇒ **Unlock Keypads** (IPAC function buttons only) – Unlocks external keypads.

   ⇒ **Lock/Unlock Keypads** (IPAC function buttons only) – Toggles between external keypads unlocked/locked.

   ⇒ **Disable Timeclock** (IPAC function buttons only) – Disables the timeclock.

   ⇒ **Enable Timeclock** (IPAC function buttons only) – Enables the timeclock.

   ⇒ **Disable/Enable Timeclock** (IPAC function buttons only) – Toggles the timeclock on and off.

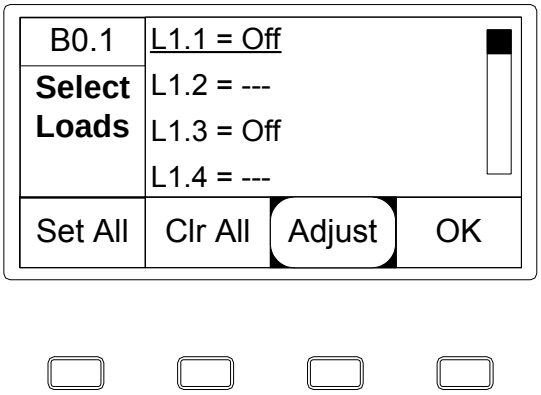
⇒ **Lock** (IPAC function buttons only) – Locks front panel keypad. Can only be opened with a password. Refer to "Password" on page 47 for more information.

⇒ **Unlock** (IPAC function buttons only) – Unlocks front panel keypad.

⇒ **Lock/Unlock** (IPAC function buttons only) – Toggles between front panel keypad unlocked/locked.

5. If a button is set to **On**, **Off**, **Toggle**, or **Custom**, the loads that will be affected by the button press must be selected.

Select Loads for Button



a. A list of loads will be displayed. Each load is assigned a Load ID. For example:

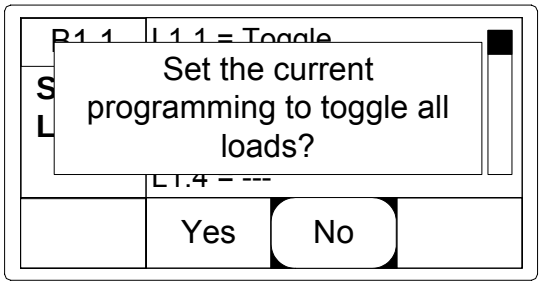
- Load **L1.1** represents circuit number 1 in panel 1.
- Load **L3.16** represents circuit number 16 in panel 3.

Affected loads will have the function listed next to their Load ID. Loads that will not be affected will have **---** next to their Load ID.

b. To select a load to be controlled, turn the selection knob to the desired load and press the **ENTER** button. The assigned function will be displayed. To deselect a load, press the **ENTER** button again to display ---.

c. To select all of the loads, press the soft button labeled **Set All**.

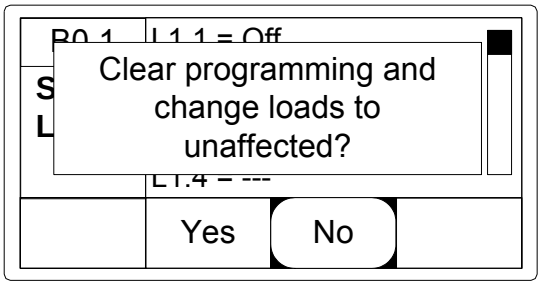
Set All



d. Press the soft button labeled **Yes** to set the all loads to perform the programmed function or press the soft button labeled **No** to cancel.

e. To clear the function from all of the loads and set the loads to be unaffected by the button press, press the soft button labeled **Clr All**.

Clear All



f. Press the soft button labeled **Yes** to clear programming and set the loads to be unaffected by the button press or press the soft button labeled **No** to cancel.

6. Press the soft button labeled **OK** to save the settings and return to the list of keypads.

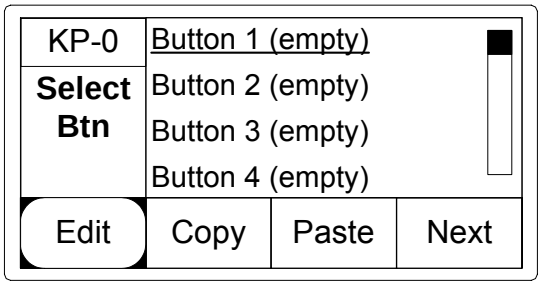
7. After all of the buttons have been configured, press the soft button labeled **Exit**.

Program/Edit a Keypad Button Manually

Keypad buttons can be configured to operate the IPAC for a variety of functions. To program a button:

1. Open the Keypads section of the Setup Menu as described on page 15.
2. Turn the selection knob to highlight a keypad to program.
3. Press **ENTER** or the soft button labeled **Edit** to display the configuration information for the selected keypad.

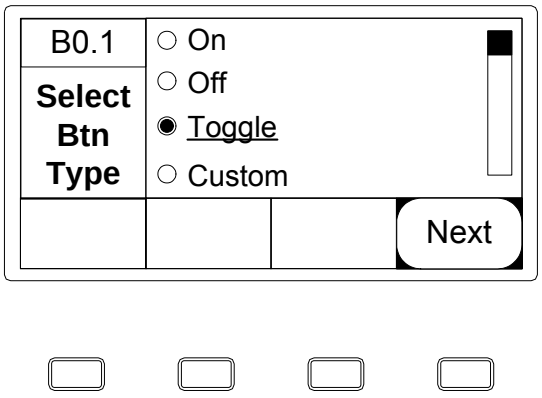
Configuration Information for Keypad (Keypad 0, Front Panel Keypad Shown)



Button functionality from the selected keypad can be copied to other buttons in the network. Additionally, functions from a button on another keypad in the network can be copied to a button on the selected keypad. For more information, refer to "Copy/Paste" on page 23.

4. Turn the selection knob to highlight a button to program and press the **ENTER** button or the soft button labeled **Edit**.

   Select Button Type (Button 1 on the Front Panel Keypad Shown)



   Each button is assigned an ID number. For information on button assignments, refer to "Button Function Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets.

   If viewing/editing a button that has been previously programmed, the selected function will be highlighted.

5. Turn the selection knob to highlight a function from the list of available functions and press the **ENTER** button or the soft button labeled **Next** to configure the button's function. Buttons can be programmed with the following functions:

   ⇒ **On** – Turns one or more loads on.

   ⇒ **Off** – Turns one or more loads off.

   ⇒ **Toggle** – Toggles one or more loads on and off.

   ⇒ **Custom** – Allows individual loads to be turned on or off as desired.

   ⇒ **Enter Override** (IPAC function buttons only) – Places the system into the *Manual Override* mode.

   ⇒ **Exit Override** (IPAC function buttons only) – Takes the system out of *Manual Override* mode.

   ⇒ **Enter/Exit Override** (IPAC function buttons only) – Toggles *Manual Override* mode on and off.

   ⇒ **Lock Keypads** (IPAC function buttons only) – Locks external keypads.

   ⇒ **Unlock Keypads** (IPAC function buttons only) – Unlocks external keypads.

   ⇒ **Lock/Unlock Keypads** (IPAC function buttons only) – Toggles between external keypads unlocked/locked.

   ⇒ **Disable Timeclock** (IPAC function buttons only) – Disables the timeclock.

   ⇒ **Enable Timeclock** (IPAC function buttons only) – Enables the timeclock.

⇒ **Disable/Enable Timeclock** (IPAC function buttons only) – Toggles the timeclock on and off.

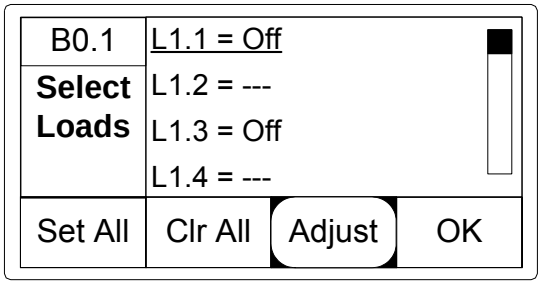
⇒ **Lock** (IPAC function buttons only) – Locks front panel keypad.

⇒ **Unlock** (IPAC function buttons only) – Unlocks front panel keypad.

⇒ **Lock/Unlock** (IPAC function buttons only) – Toggles between front panel keypad unlocked/locked.

6. If a button is set to **On**, **Off**, **Toggle**, or **Custom**, the loads that will be affected by the button press must be selected.

Select Loads

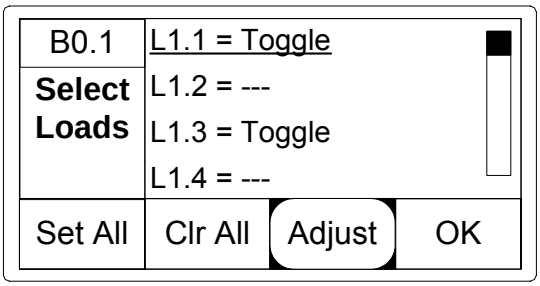


a. A list of loads will be displayed. Each load is assigned a Load ID. For example:

- Load **L1.1** represents circuit number 1 in panel 1.
- Load **L3.16** represents circuit number 16 in panel 3.

Affected loads will have the function listed next to their Load ID. Loads that will not be affected will have **---** next to their Load ID.

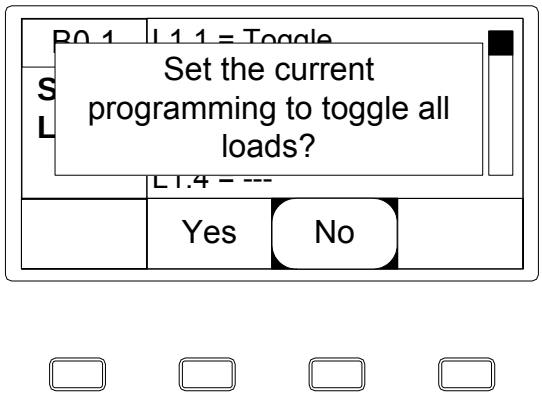
Select Loads



b. To select a load to be controlled, turn the selection knob to the desired load and press the **ENTER** button. The controlled function will be displayed. To deselect a load (to make it unaffected by the button press), press the **ENTER** button again. The load will be listed with **---.**

c. To select all of the loads, press the soft button labeled **Set All**.

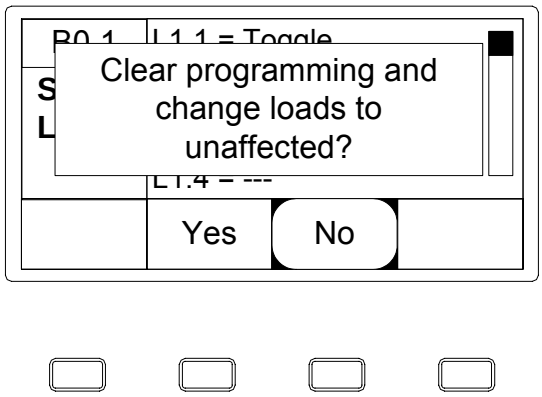
Set All



d. Press the soft button labeled **Yes** to set the all loads to perform the programmed function or press the soft button labeled **No** to cancel.

e. To clear the function from all of the loads and set the loads to be unaffected by the button press, press the soft button labeled **Clr All**.

Clear All



f. Press the soft button labeled **Yes** to clear programming and set the loads to be unaffected by the button press or press the soft button labeled **No** to cancel.

7. Press the soft button labeled **OK** to return to the list of buttons.
8. Repeat this procedure for each button on the keypad to be programmed. After all of the buttons have been programmed, press the soft button labeled **Next** to return to the list of keypads.
9. After all of the keypads have been configured, press the soft button labeled **Exit**.

Copy/Paste

A button's functionality can be copied to a button on another keypad using the soft buttons labeled **Copy** and **Paste**.

NOTE: Functions that are exclusive to the IPAC function buttons (enter override, exit override, enter/exit override, lock keypads, unlock keypads, unlock/lock keypads, disable timeclock, enable timeclock, disable/enable timeclock, unlock front panel, lock front panel, and unlock/lock front panel) cannot be copied to external keypads.

- To copy a button's functionality:
  1. Open the Keypads section of the Setup Menu as described on page 15.
  2. Turn the selection knob to highlight a keypad and press **ENTER** or the soft button labeled **Edit** to display the configuration information for the highlighted keypad.
  3. Highlight the button containing the functionality to be copied and press the soft button labeled **Copy**. The button's functionality is now in memory and is ready to be pasted.
- To paste a button's functionality:
  1. Open the Keypads section of the Setup Menu as described on page 15.
  2. Turn the selection knob to highlight a keypad and press **ENTER** or the soft button labeled **Edit** to display the configuration information for the highlighted keypad.
  3. Highlight the button to contain the copied functionality and press the soft button labeled **Paste**.

Timeclock

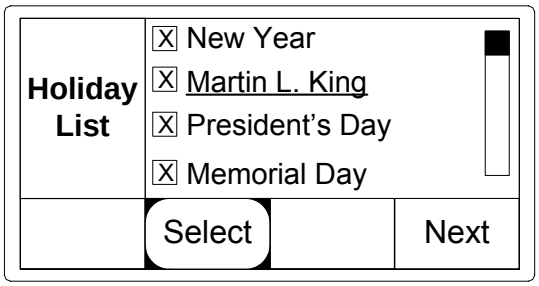
Use the "Observed Holiday Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets to list observed holidays and the "Timeclock Event Worksheet" to list timeclock events that need to be programmed into the system. After all timeclock events have been identified, use this section of the Setup Menu to configure the timeclock functionality of the IPAC system.

Open Timeclock

To open the Timeclock section of the Setup Menu:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Timeclock**.
3. Press **ENTER** or the soft button labeled **Select** to open the Timeclock section of the Setup Menu.

Holiday List



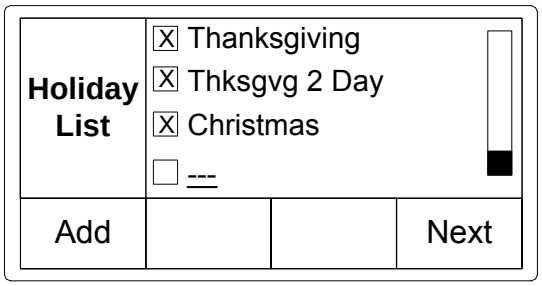
The IPAC will list all of the holidays that can be selected for observance. Turn the selection knob to scroll through the list of holidays. Observed holidays are marked with an **X**. Holidays that are not observed are not marked. If a holiday is not listed, it can be added.

Add Custom Holidays

If a holiday that your institution observes is not listed, it can be added. To add a holiday:

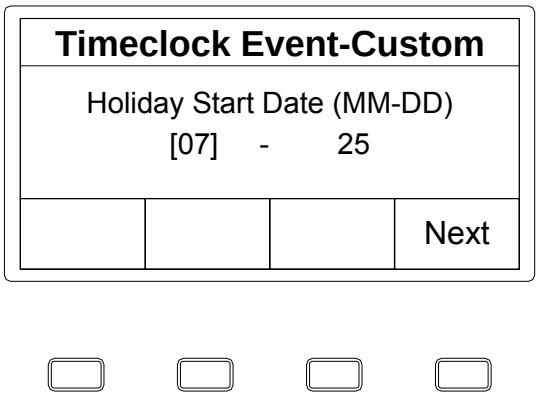
1. Open the Timeclock section of the Setup Menu as described above.
2. Turn the selection knob to highlight the last item in the list of holidays (---).

Bottom of Holiday List



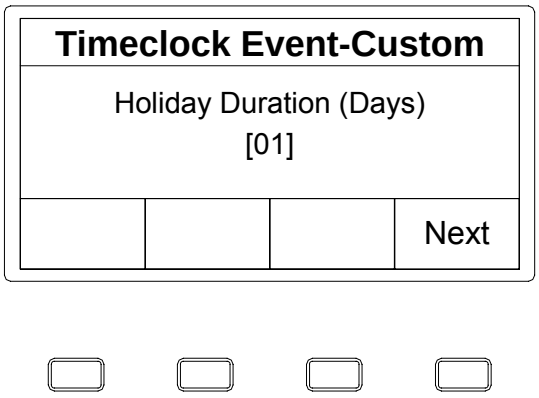
3. Press the soft button labeled **Add**.

Custom Timeclock Event—Start Date



4. Turn the selection knob to display the start date of the custom holiday. To switch between the month and date fields, press the **ENTER** button.
5. Press the soft button labeled **Next** to continue defining the custom holiday.

Custom Timeclock Event—Duration



6. Turn the selection knob to display the duration of the custom holiday.
7. Press the soft button labeled **Next** to add the custom holiday to the holiday list.

Delete Custom Holidays

Custom holidays can be deleted from the holiday list. To delete a custom holiday:

1. Open the Timeclock section of the Setup Menu as described on page 25.
2. Turn the selection knob to highlight the custom holiday to be deleted. The soft button **Delete** will be displayed.
3. Press the soft button labeled **Delete** to remove the highlighted custom holiday from the holiday list.

Enable/Disable Holiday Observance

Individual holiday observances can be enabled or disabled. To change the status of a holiday:

1. Open the Timeclock section of the Setup Menu as described on page 25.
2. Turn the selection knob to highlight the desired holiday.
3. Press the soft button labeled **Select** or press **ENTER** to enable or disable a holiday. Enabled holidays are marked with an **X**. Disabled holidays are not marked.

4. After all holidays are marked and/or unmarked, press the soft button labeled **Next** to specify how the IPAC will warn of an impending holiday observance.

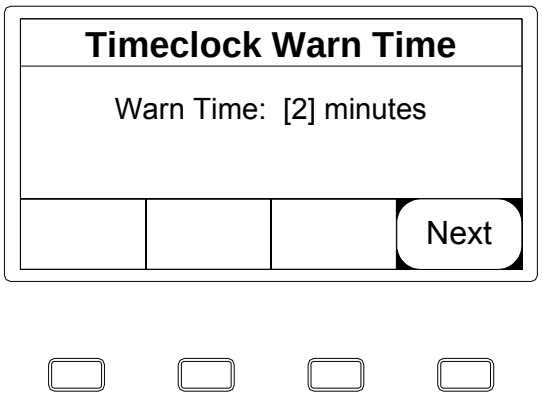
Set Timeclock Warn Time

You may find it desirable to provide a warning to occupants prior to lights turning off due to a timeclock event. This can be accomplished through the use of "warn loads", described below. Prior to defining these warn loads, you must specify how long prior to the timeclock event the warning will occur.

A warning time of 1 to 30 minutes (in one minute increments) can be specified. To specify a warn time:

1. Enable or disable observed holidays as described on page 26.

Set Timeclock Warn Time



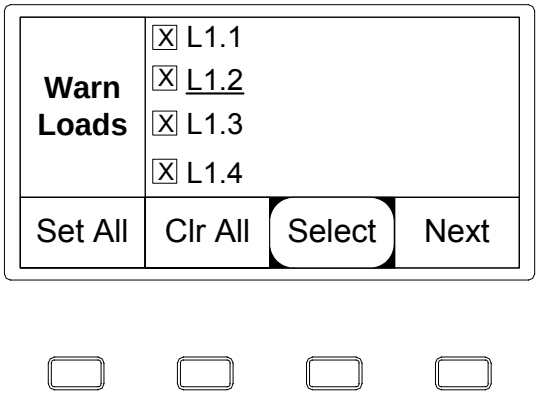
2. Turn the selection knob to display the desired warn time (1 to 30 minutes) and press the soft button labeled **Next** to designate loads to warn of an impending timeclock event.

Set Timeclock Warn Loads

Specific loads can be selected to flash off briefly prior to being shut off due to a timeclock event (refer to "Set Timeclock Warn Time", above,). Refer to the "Panel Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets when selecting warn loads. To select warn loads:

1. Set the timeclock warn time as described above.

Set Timeclock Warn Loads



2. Turn the selection knob to highlight the desired load.

3. Press **ENTER** to toggle the load state. Warn loads are marked with an **X**. To select all of the loads, press the soft button labeled **Set All**. To clear all of the loads, press the soft button labeled **Clr All**.
4. After all desired warn loads have been marked, press the soft button labeled **Next**.

NOTE: Prior to a load being turned off due to a timeclock event, "warn loads" will turn off briefly and then turn back on. The defined Warn Time (refer to "Set Timeclock Warn Time" on page 27) determines how long before the event these lights will flash. After the warn flash occurs, pressing any keypad button which affects any of the lights in that timeclock event will postpone the event for one hour.

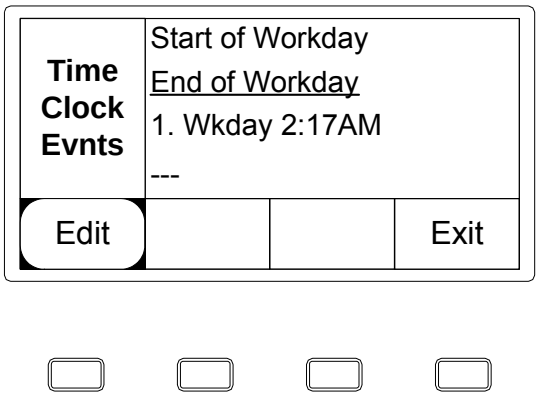
Add/Edit Timeclock Events

Up to 100 timeclock events can be defined. To add/edit an event:

1. Press **HOME** to navigate to the home page.
2. From the home page, press the soft button labeled **TmClk** or set the timeclock warn loads as described on page 27. A list of fixed ("Start of Workday" and "End of Workday") and custom events will be displayed.

NOTE: Events with a "+H" or the word "Holiday" are on the holiday schedule.

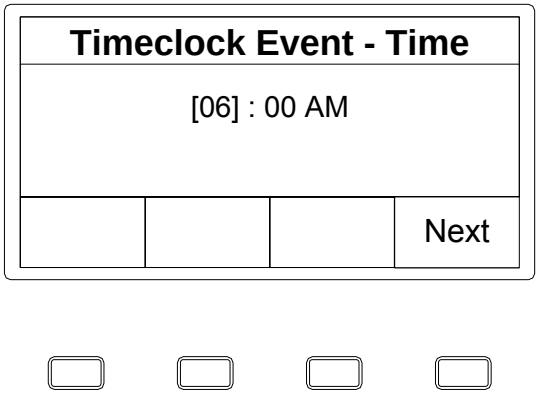
Time Clock Events List



- **Start of Workday**
  Using the "Start of Workday" parameter will cause lights that are turned on before the "Start of Workday" time to automatically turn off after one hour with a flashing warning as specified on page 27. To set the time when a workday starts:

  1. Turn the selection knob to highlight **Start of Workday** and press the soft button labeled **Edit**. Brackets will appear around the hour digit.

     Set Start of Workday Time

  2. Turn the selection knob to display the desired hour.
  3. Press the **ENTER** button to move the cursor between the hour, minute, and AM/PM.
  4. Use the selection knob and the **ENTER** button to display the "Start of Day" time.
  5. When the correct time is displayed, press the soft button labeled **Next** to set the "Start of Workday" time.

- **End of Workday**
  Using the "End of Workday" parameter will cause lights that are turned on after the "End of Workday" time to automatically turn off after one hour with a flashing warning as specified on page 27.

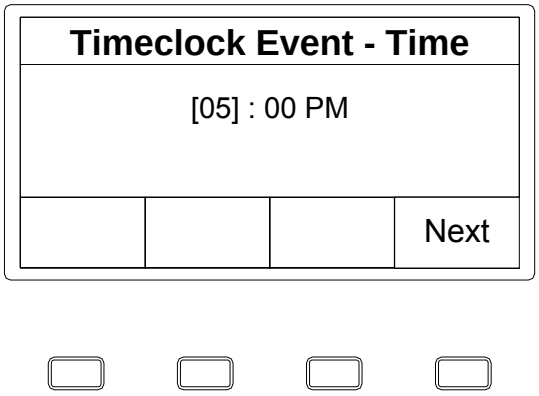
NOTE: If a light is on when the time passes the "End of Workday" time, the light will turn off one hour after the "End of Workday" time. For example, if the "End of Workday" time is 8:00 PM and a light is on at 8:00 PM, the lights will turn off at 9:00 PM.

NOTE: Lights that are turned on from a keypad or the IPAC front panel after the "End of Workday" time will turn off automatically. Lights that are turned on by sensor/timeclock events will not turn off automatically.

To set the time when a workday ends:

1. Turn the selection knob to highlight **End of Workday** and press the soft button labeled **Edit**. Brackets will appear around the hour digit.

Set End of Workday Time

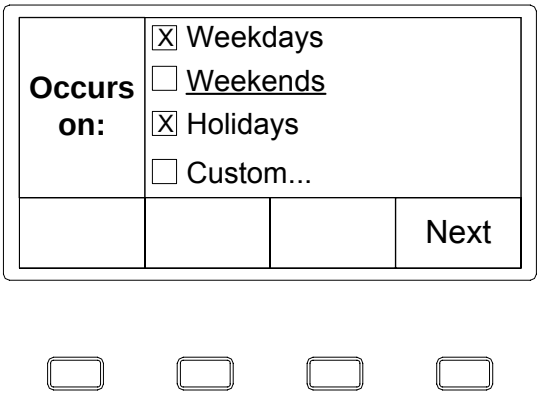


2. Turn the selection knob to display the desired hour.
3. Press the **ENTER** button to move the cursor between the hour, minute, and AM/PM.
4. Use the selection knob and the **ENTER** button to display the "End of Workday" time.
5. When the correct time is displayed, press the soft button labeled **Next** to set the "End of Workday" time.

- **Custom Timeclock Event**
  To add a timeclock event, turn the selection knob to the first empty event (listed as **---**) and press the soft button labeled **Add**.

  To edit a timeclock event turn the selection knob to the event to be edited and press the soft button labeled **Edit**.

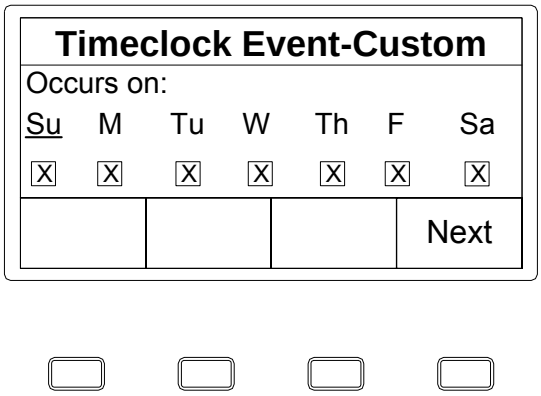
Event Occurrence



1. Select the day(s) when the timeclock event will occur. Use the selection knob to highlight an item and press the **ENTER** button to mark it (noted with an "X"). To unmark a day, press the **ENTER** button again.

If **Custom…** is selected, specific days of the week can be chosen. For example, if lights are needed for a later hour on one day of the week.

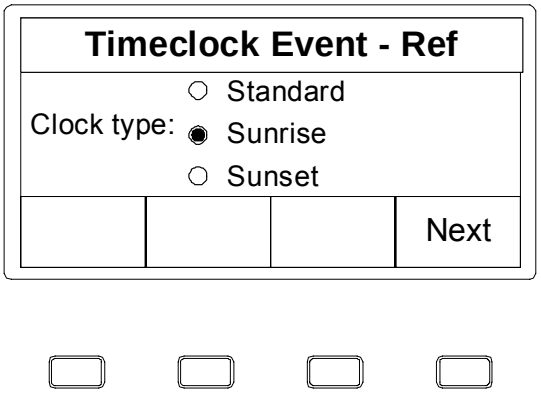
Custom Days



Turn the selection knob to highlight a day to be marked and press the **ENTER** button to mark it (noted with an "X"). To unmark a day, press the **ENTER** button again.

2. After all the days for an event have been marked, press the soft button labeled **Next** to choose the clock to be referenced.

Select Reference Clock



Events can reference three different clocks:

⇒ **Standard** – Uses a specific time of day to activate the timeclock event.

⇒ **Sunrise** – Activates the timeclock event with reference to sunrise (up to two hours before or after sunrise).

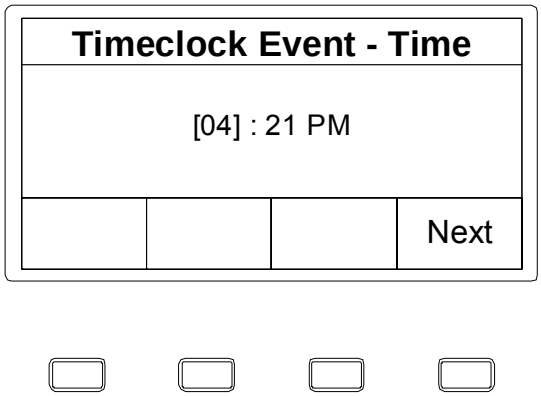
⇒ **Sunset** – Activates the timeclock event with reference to sunset (up to two hours before or after sunset).

NOTE: Sunrise and sunset times are governed by the date as well as the location of the project as set by the city and state chosen earlier. Refer to "Project Settings" on page 9 for details.

3. Turn the selection knob to highlight a clock type and press the soft button labeled **Next**.

   ⇒ If using the **Standard** setting:

   Set Time for Timeclock Event

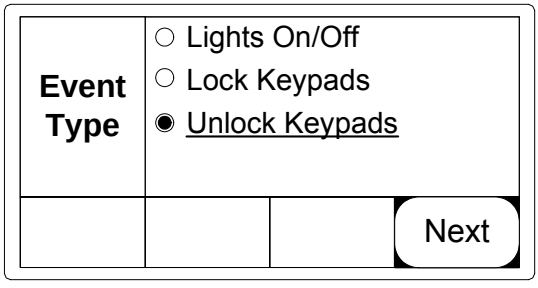


   a. Press the **ENTER** button to move the cursor (brackets) between the hour, minute, and AM/PM.

   b. Turn the selection knob to display the hour, minute and AM/PM.

   c. When the desired time is displayed, press the soft button labeled **Next** to select the event type associated with the timeclock event.

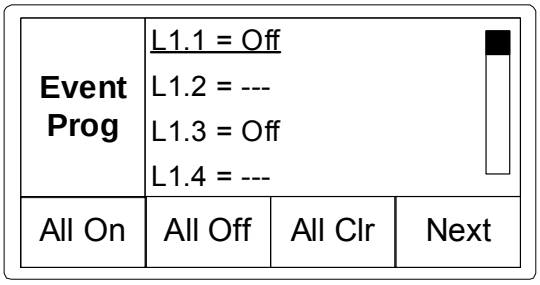
   Select Event Type for Timeclock Event



d. Turn the selection knob to the desired event type and press **ENTER** or the soft button labeled **Next**.

- **Lights On/Off**
  Select Lights On/Off to activate/deactivate lighting loads when a timeclock event occurs.

  Set Load Functions for Timeclock Event



1) To select a load to be controlled, turn the selection knob to the desired load and press the **ENTER** button repeatedly to cycle between **Off**, **On**, and **---** (unaffected).

NOTE: Loads that are listed with "Warn" are set as warn loads.

2) To select all of the loads to turn on, press the soft button labeled **All On**. Press the soft button labeled **Yes** to set the all loads to turn on for the timeclock event or press the soft button labeled **No** to cancel.

3) To select all of the loads to turn off, press the soft button labeled **All Off**. Press the soft button labeled **Yes** to set the all loads to turn off for the timeclock event or press the soft button labeled **No** to cancel.

4) To clear the function from all of the loads and set the loads to be unaffected by the timeclock event, press the soft button labeled **All Clr**.

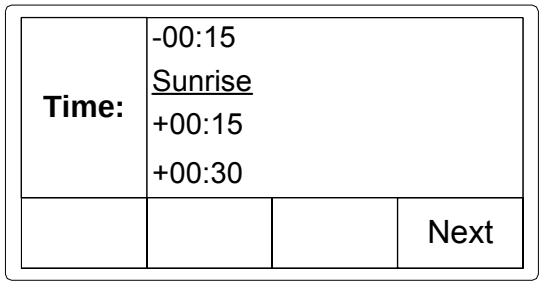
5) Press the soft button labeled **Next** to save the timeclock event. The timeclock event will be added to the event list.

- **Lock Keypads**
  Select **Lock Keypads** to lock all keypads when a timeclock event occurs.

- **Unlock Keypads**
  Select **Unlock Keypads** to unlock all keypads when a timeclock event occurs.

⇒ If using the **Sunrise** setting:

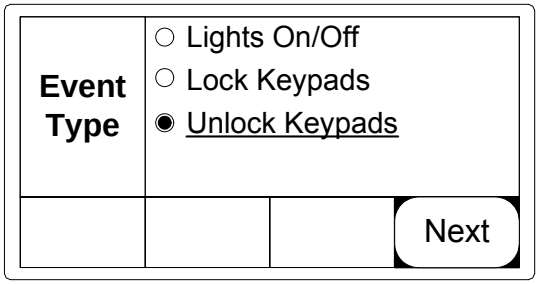
Set Timeclock Event for Sunrise Reference



a. Turn the selection knob to highlight the time relative to sunrise.

b. When the desired time is displayed, press the soft button labeled **Next** to select the event type associated with the timeclock event.

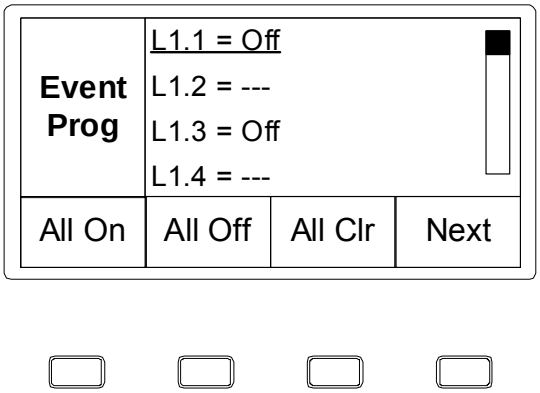
Select Event Type for Timeclock Event



c. Turn the selection knob to the desired event type and press **ENTER** or the soft button labeled **Next**.

- **Lights On/Off**
  Select Lights On/Off to activate/deactivate lighting loads when a timeclock event occurs.

  Set Load Functions for Timeclock Event



  1) To select a load to be controlled, turn the selection knob to the desired load and press the **ENTER** button repeatedly to cycle between **Off**, **On**, and **---** (unaffected).

  NOTE: Loads that are listed with "Warn" are set as warn loads.

  2) To select all of the loads to turn on, press the soft button labeled **All On**. Press the soft button labeled **Yes** to set the all loads to turn on for the timeclock event or press the soft button labeled **No** to cancel.

  3) To select all of the loads to turn off, press the soft button labeled **All Off**. Press the soft button labeled **Yes** to set the all loads to turn off for the timeclock event or press the soft button labeled **No** to cancel.

  4) To clear the function from all of the loads and set the loads to be unaffected by the timeclock event, press the soft button labeled **All Clr**.

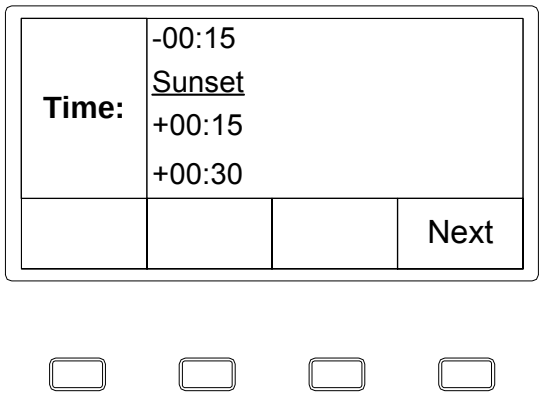
  5) Press the soft button labeled **Next** to save the timeclock event. The timeclock event will be added to the event list.

- **Lock Keypads**
  Select **Lock Keypads** to lock all keypads when a timeclock event occurs.

- **Unlock Keypads**
  Select **Unlock Keypads** to unlock all keypads when a timeclock event occurs.

⇒ If using the **Sunset** setting:

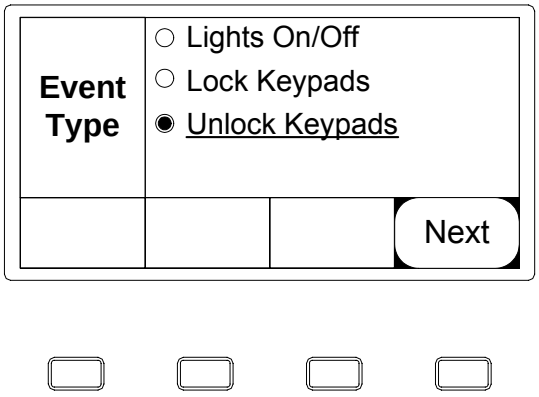
Set Timeclock Event for Sunset Reference



a. Turn the selection knob to highlight the time relative to sunset.

b. When the desired time is displayed, press the soft button labeled **Next** to select the event type associated with the timeclock event.

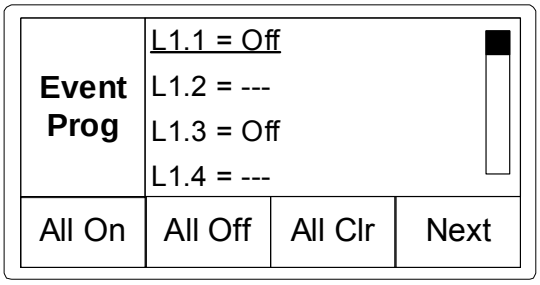
Select Event Type for Timeclock Event



c. Turn the selection knob to the desired event type and press **ENTER** or the soft button labeled **Next**.

- **Lights On/Off**
  Select Lights On/Off to activate/deactivate lighting loads when a timeclock event occurs.

  Set Load Functions for Timeclock Event



1) To select a load to be controlled, turn the selection knob to the desired load and press the **ENTER** button repeatedly to cycle between **Off**, **On**, and **---** (unaffected).

NOTE: Loads that are listed with "Warn" are set as warn loads.

2) To select all of the loads to turn on, press the soft button labeled **All On**. Press the soft button labeled **Yes** to set the all loads to turn on for the timeclock event or press the soft button labeled **No** to cancel.

3) To select all of the loads to turn off, press the soft button labeled **All Off**. Press the soft button labeled **Yes** to set the all loads to turn off for the timeclock event or press the soft button labeled **No** to cancel.

4) To clear the function from all of the loads and set the loads to be unaffected by the timeclock event, press the soft button labeled **All Clr**.

5) Press the soft button labeled **Next** to save the timeclock event. The timeclock event will be added to the event list.

- **Lock Keypads**
  Select **Lock Keypads** to lock all keypads when a timeclock event occurs.

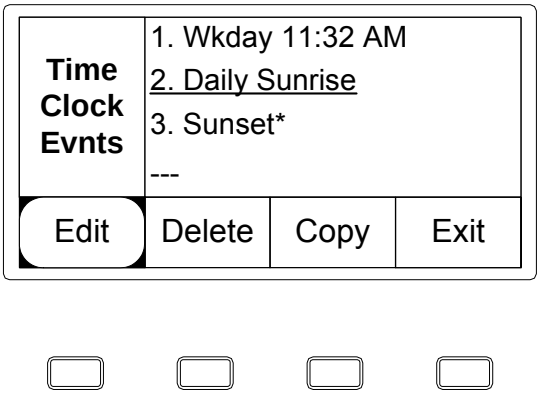
- **Unlock Keypads**
  Select **Unlock Keypads** to unlock all keypads when a timeclock event occurs.

Copy/Paste Timeclock Events

Timeclock events can be copied and pasted to a new event. Parameters in the new event can be edited as required. To copy and paste an event:

1. From the home page, press the soft button labeled **TmClk**. A list of events will be displayed.

   Time Clock Events List

2. Turn the selection knob to highlight an event and press the soft button labeled **Copy** to copy the event into memory.
3. Turn the selection knob to an empty event (listed as **---**) and press the soft button labeled **Paste** to paste the event.

Delete Timeclock Events

Timeclock events can be deleted from the event list. To delete an event:

1. From the home page, press the soft button labeled **TmClk**. A list of events will be displayed.
2. Turn the selection knob to highlight the event to be deleted.
3. Press the soft button labeled **Delete** to delete the event.

Sensors

Use the "Sensor Location Worksheet" in the IPAC-GL1 System Planning Worksheets (included with your IPAC) to identify sensors and their functions. After all of the sensors have been identified, use this section of the Setup Menu to configure the sensor functionality of the IPAC system.

The IPAC uses input from a sensor device connected to input **1** of the **INPUTS** port in addition to 80 additional sensors connected to DIN-IO8 DIN Rail Versiport Modules and GLS-SIM Sensor Integration Modules.

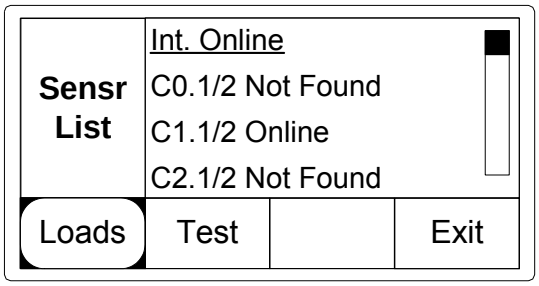
Input **1** on the **INPUTS** port is configured to connect to a GLS sensor. The sensor input can be configured as a normally open sensor (**N/O**) a normally closed sensor (**N/C**), active high (**Active Hi**), or active low (**Active Lo**). For more information, refer to "Test Sensors" on page 42.

Open Sensors

To open the Sensors section of the Setup Menu:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Sensors**.
3. Press **ENTER** or the soft button labeled **Select** to open the Sensors section of the Setup Menu.

Sensor List



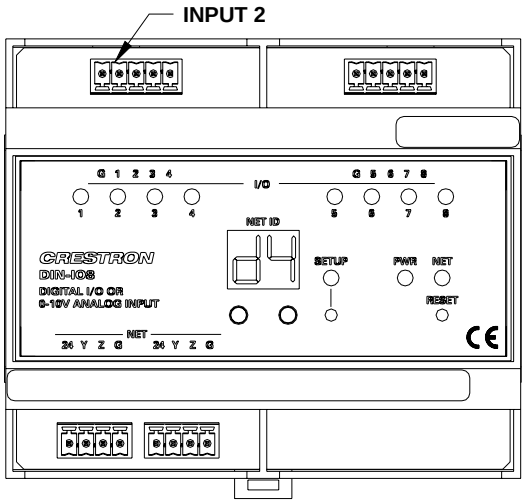
A list of sensors are displayed. Turn the selection knob to scroll through the list of sensors. Each line lists the sensor ID and its status.

The device listed on the display as **Int.** denotes a sensor device that is connected to input **1** on the **INPUTS** port of the IPAC. For more information on the **INPUTS** port, refer to the latest version of the IPAC Installation Guide (Doc. 6696) which is available for download from the Crestron website.

The list also shows up to 40 GLS-series sensors connected via 20 GLS-SIM Sensor Integration Modules and 40 GLS-series sensors connected via five DIN-IO8 DIN Rail Versiport modules. Sensors are identified by their network identification code (Net ID). For example:

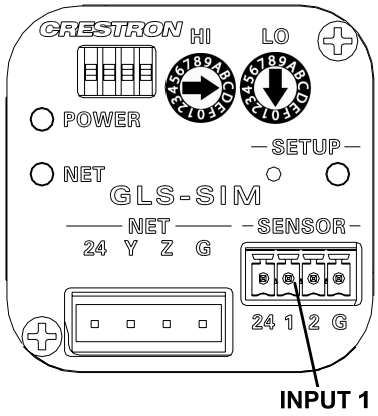
⇒ Device **D4.2** represents a sensor connected to port 2 on a DIN-IO8 with Net ID D4.

Input 2 on DIN-IO8 with Net ID D4



⇒ Device **C0.1** represents a sensor connected to sensor input 1 on a GLS-SIM with Net ID C0.

Input 1 on GLS-SIM with Net ID C0



⇒ Device **CC.2** represents the sensor connected to sensor input 2 on a GLS-SIM with Net ID CC.

Net IDs for sensor inputs are assigned as shown in the following table:

Net IDs Assignments for Sensor Inputs

NET ID Value(s)	Device Type
C0.1/2 through D3.1/2	GLS-SIM
D4.1-8 through D8.1-8	DIN-IO8

NOTE: All DIN-IO8 and GLS-SIM modules must be given unique Net IDs. Two or more modules having the same ID will cause unpredictable behavior. Additionally, a GLS-SIM with a Net ID outside of the GLS-SIM range of Net IDs or a DIN-IO8 with a Net ID outside of the DIN-IO8 range of Net IDs may conflict with other devices on the network.

GLS-SIM and DIN-IO8 modules that have been identified to the IPAC are listed as **Online**. If a GLS-SIM or DIN-IO8 has not been identified to the IPAC, it is listed as **Not Found**.

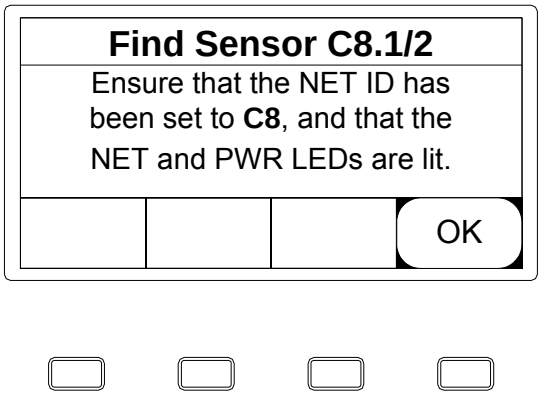
NOTE: The Online/Not Found status does not take the state of the actual sensors into account. For this, refer to "Test Sensors" on page 42.

Identify Sensor Modules

Every sensor module connected to the IPAC must be identified to the system. To identify a sensor module:

1. Open the Sensors section of the Setup Menu as described on page 39.
2. Turn the selection knob to highlight a sensor that is listed as **Not Found**.
3. Press the soft button labeled **Find** to begin the identification process.

Find a Sensor

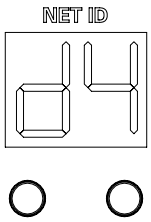


NOTE: This process merely serves as a guide to ensure that the Net IDs of GLS-SIM modules and DIN-IO8 modules are set correctly. There is no actual identification function.

4. Set the Net ID of the DIN-IO8 or GLS-SIM to the value shown on the IPAC display.

   ⇒ Use the front panel to set the Net ID on the DIN-IO8.

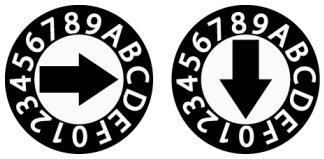
   DIN-IO8 Net ID Setting for Net ID D4

   For detailed instructions on setting a DIN-IO8's Net ID, refer to the latest version of the DIN-IO8 DIN Rail Versiport Module Operations & Installation Guide (Doc. 6664) which is available for download from the Crestron website.

⇒ Use a screwdriver to set the Net ID on the GLS-SIM.

GLS-SIM Net ID Setting for Net ID C0



For detailed instructions on setting a GLS-SIM's Net ID, refer to the latest version of the GLS-SIM Sensor Integration Module Operations & Installation Guide (Doc. 6768) which is available for download from the Crestron website.

5. Press the soft button labeled **OK** to return to the Sensors section of the Setup Menu.

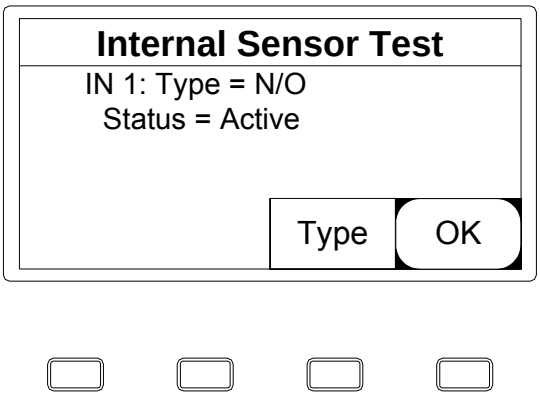
Test Sensors

Connected sensors can be tested for operation before they are assigned to loads. To test a sensor:

1. Open the Sensors section of the Setup Menu as described on page 39.
2. Turn the selection knob to highlight a sensor that is listed as **Online**.
3. Press the soft button labeled **Test** to begin testing a sensor.

⇒ For the internal sensor:

Internal Sensor Test



The internal sensor can be configured as:

Active HI (default)**:** A sensor which pulls down below 1.25VDC when inactive and which provides a voltage above 1.35VDC (and less than or equal to 24VDC) when active. (GLS occupancy sensors available from Crestron are of this type).

Active Low: A sensor which provides a voltage above 1.5VDC (and less than or equal to 24VDC) when inactive and which pulls down below 1.25VDC when active.

Normally Open (N/O): A sensor which provides an open circuit when inactive, and a dry contact closure when active.

Normally Closed (N/C): A sensor which provides a dry contact closure when inactive and an open circuit when active.

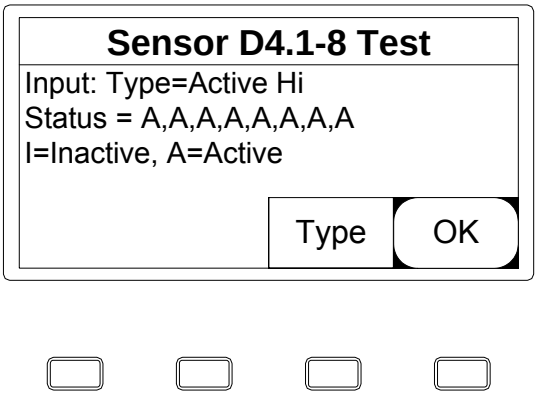
a. To toggle between the different types of sensors, press the soft button labeled **Type**.

b. Activate the sensor to test the functionality. The status will be displayed.

c. Press the soft button labeled **OK** to return to the Sensors section of the Setup Menu.

⇒ For a sensor connected via a DIN-IO8:

Sensor Test for Sensor Connected via DIN-IO8



The DIN-IO8 inputs can be configured as:

Active HI (default)**:** A sensor which pulls down below 1.25VDC when inactive and which provides a voltage above 1.35VDC (and less than or equal to 24VDC) when active. (GLS occupancy sensors available from Crestron are of this type).

Active Low: A sensor which provides a voltage above 1.5VDC (and less than or equal to 24VDC) when inactive and which pulls down below 1.25VDC when active.

Normally Open (N/O): A sensor which provides an open circuit when inactive, and a dry contact closure when active.

Normally Closed (N/C): A sensor which provides a dry contact closure when inactive and an open circuit when active.

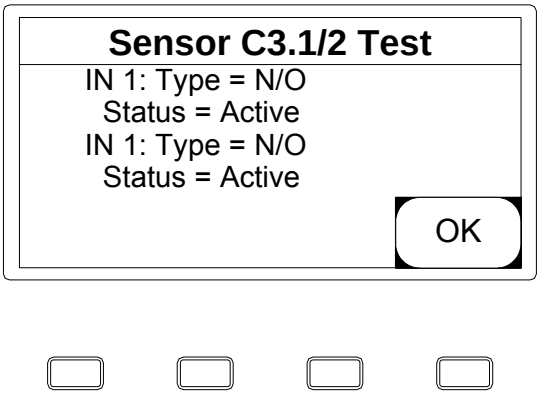
a. To toggle between the different types of sensors, press the soft button labeled **Type**.

b. Activate the sensor to test the functionality. The status will be displayed.

c. Press the soft button labeled **OK** to return to the Sensors section of the Setup Menu.

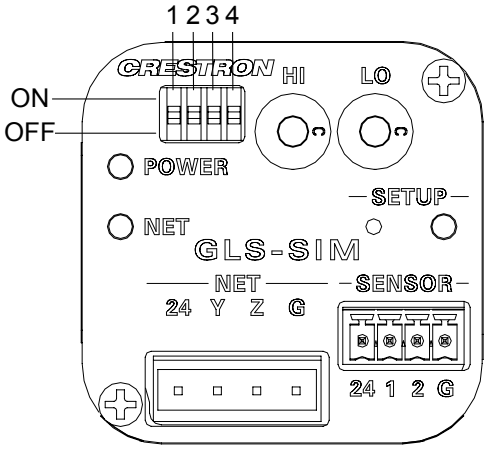
⇒ For a sensor connected via a GLS-SIM:

Sensor Test for Sensor Connected via GLS-SIM



The GLS-SIM uses DIP switches for setting the type of sensor that is connected. Sensors can be configured as a normally open sensor (**N/O**), a normally closed sensor (**N/C**), active high (**Active Hi**), or active low (**Active Lo**).

DIP Switches on GLS-SIM



DIP switches 1 and 2 set the sensor type for input 1 on the GLS-SIM while DIP switches 3 and 4 set the sensor type for input 2 on the GLS-SIM. The following table shows the settings for each sensor type.

DIP Switch Settings for the GLS-SIM

SENSOR TYPE	INPUT 1		INPUT 2	
	SWITCH 1	SWITCH 2	SWITCH 3	SWITCH 4
Active High	Off	Off	Off	Off
Active Low	Off	On	Off	On
Normally Open	On	Off	On	Off
Normally Closed	On	On	On	On

For more information, refer to the latest version of the GLS-SIM Sensor Integration Module Operations & Installation Guide (Doc. 6768) which is available for download from the Crestron website.

a. Activate each sensor displayed to test the functionality.

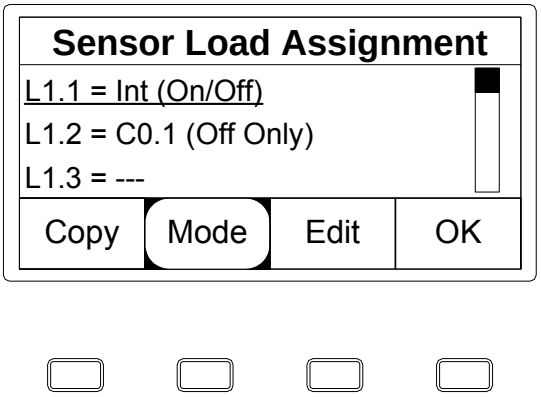
b. Press the soft button labeled **OK** to return to the Sensors section of the Setup Menu.

Assign Sensors and Modes to Loads

Loads can be assigned to perform a function based on a sensor input. Refer to the "Panel Worksheet" in the latest version of the IPAC-GL1 System Planning Worksheets when assigning loads to sensors. To assign a load and associated function to a sensor input:

1. Open the Sensors section of the Setup Menu as described on page 39.
2. Press the soft button labeled **Loads**. A list of loads will be displayed.

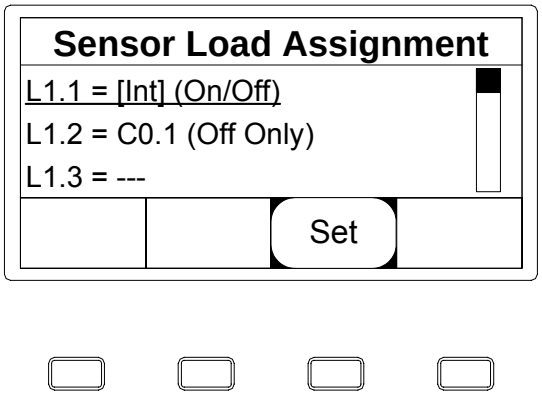
Sensor Load Assignments



⇒ To assign a sensor:

a. Turn the selection knob to highlight a load and press the **ENTER** button or the soft button labeled **Edit**.

Assign a Sensor



A load's sensor assignment and function can be copied to other loads. For more information, refer to "Copy/Paste Sensor " on page 46.

b. Turn the selection knob to the desired sensor and press the soft button labeled **Set**. To remove a sensor assignment, turn the selection knob until --- is displayed and press the soft button labeled **Set**.

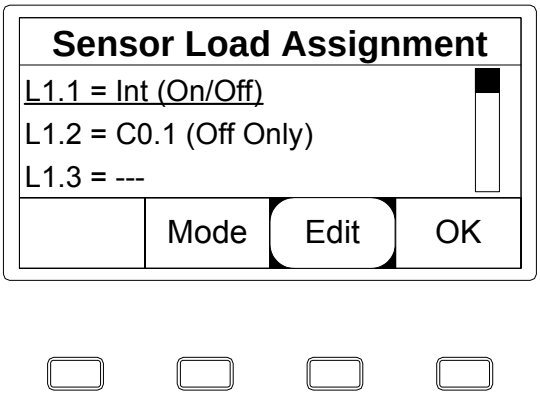
NOTE: A load can have only one sensor assigned to it.

⇒ To assign a function:

Loads can be set to turn off upon sensor input or toggle their state (on/off). To select a mode, turn the selection knob to highlight a load and press the soft button labeled **Mode** to toggle between the available modes (**Off Only** or **On/Off**).

When a sensor becomes active, all loads assigned to this sensor and set to **On/Off** shall turn on. When the sensor becomes inactive, all loads assigned to this sensor shall turn off.

Assign a Sensor



3. When you are finished assigning sensors and functions to loads, press the soft button labeled **OK** to return to the Sensors section of the Setup Menu.
4. To exit the Sensor section of the Setup Menu and save any changes, press the soft button labeled **Exit**. Otherwise, press **CANCEL**.

Copy/Paste Sensor Assignments

A load's sensor assignment and function can be copied to another load using the soft buttons labeled **Copy** and **Paste**.

- To copy a load's sensor assignment and functionality:
  1. Open the Sensors section of the Setup Menu as described on page 39.
  2. Press the soft button labeled **Loads** or press **ENTER.**
  3. Turn the selection knob to highlight the load containing the sensor assignment and functionality to be copied and press the soft button labeled **Copy**. The load's sensor assignment and functionality are now in memory and is ready to be pasted.
- To paste a load's sensor assignment and functionality:
  1. Open the Sensors section of the Setup Menu as described on page 39.
  2. Press the soft button labeled **Loads** or press **ENTER.**
  3. Turn the selection knob to highlight the load to contain the copied sensor assignment and functionality and press the soft button labeled **Paste**.
- To cancel the copy/paste operations and return to the list of sensor load assignments, press the soft button labeled **Cancel**.

Password

The IPAC can be configured to use password protection to unlock the front panel or open the Setup menu.

Open Password

To open the Password section of the Setup Menu:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Password**.
3. Press **ENTER** or the soft button labeled **Select** to open the Password section of the Setup Menu. If a password has been set, enter the password as described on page 48.

Create/Edit Password

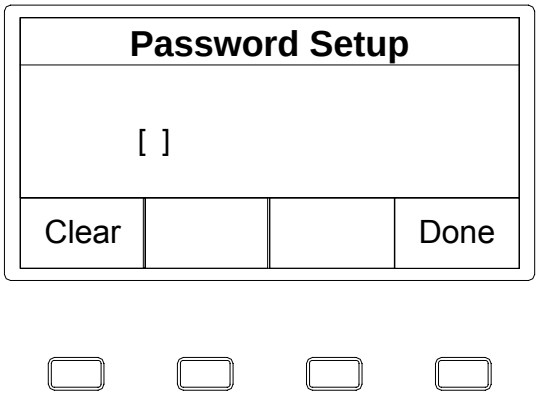
If a password has not been assigned, a password (eight-character maximum, letters only) can be assigned to lock the front panel of the IPAC.

If a password has already been set, the password can be edited.

To set/edit a password:

1. Open the Password section of the Setup Menu as described above.

Create a Password



2. Turn the selection knob until the first desired letter of the password is displayed.
3. Press **ENTER** to move the cursor to the next letter of the password.

   To move the cursor to the beginning of the password, press **ENTER** until the cursor is at the beginning of the password.
4. Turn the selection knob to display the next letter of the password.
5. Repeat steps 3 and 4 until the desired password is displayed.

   To erase the displayed entry, press the soft button labeled **Clear.**
6. Press the soft button labeled **Done**.

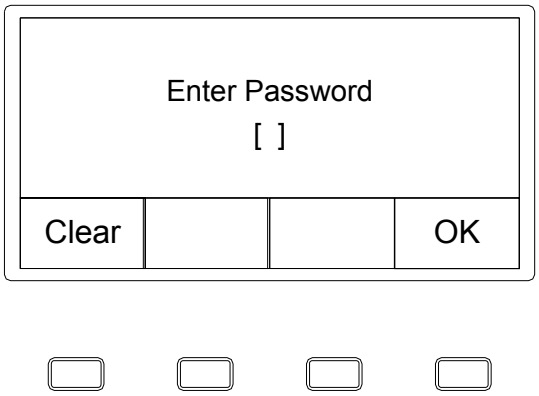
   If the password is left blank, pressing the soft button labeled **Done** will remove password protection

Enter Password

The front panel of the IPAC can be locked using with password protection. If a password was created, a password is required to unlock the keypad. To enter the password when prompted:

1. Open the Password section of the Setup Menu as described on the previous page.

   Enter Password

2. Turn the selection knob until the first letter of the password is displayed.
3. Press **ENTER** to move the cursor to the next letter of the password.

   To move the cursor to the beginning of the password, press **ENTER** until the cursor is at the beginning of the password.
4. Turn the selection knob to display the next letter of the password.
5. Repeat steps 3 and 4 until the desired password is displayed.

   To erase the displayed entry, press the soft button labeled **Clear.**
6. Press the soft button labeled **OK**. If a mistake was made, press the soft button labeled **Clear** to clear the password and start over.

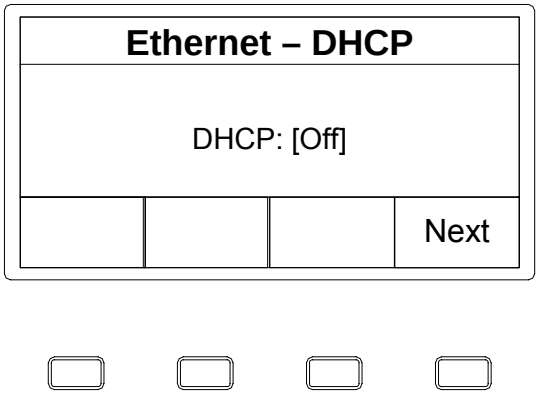
   Once the password is entered, it can be changed or removed. For details, refer to step 2 of "Create/Edit Password" on page 47.

Ethernet Setup

The IPAC can be configured to use a static IP address (DHCP is off) or to obtain an IP address from a DHCP server (DHCP is on). To configure the IPAC:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **Ethernet Settings**.
3. Press **ENTER** or the soft button labeled **Select** to open the Ethernet Settings section of the Setup Menu. The current DHCP setting will be displayed.

   Select DHCP Mode

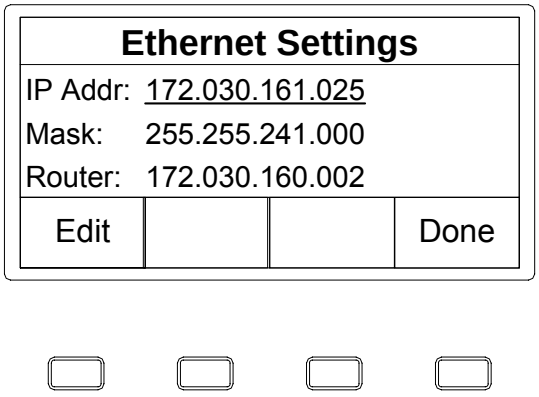


4. Turn the selection knob to the desired setting and press the soft button labeled **Done** (if enabling DHCP) or **Next** (if disabling DHCP).

   If **Done** is pressed, the IPAC will prompt to be rebooted. Press the soft button labeled **Yes** to reboot or press the soft button labeled **No** to return to the DHCP mode display. To view the Ethernet settings after enabling DHCP, open the About section as described on page 51.

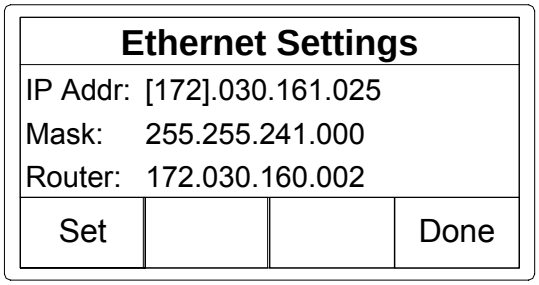
5. If DHCP mode is disabled, the IPAC's Ethernet settings will be displayed.

   Ethernet Settings



6. To change a setting, turn the selection knob to highlight the parameter to adjust and press the soft button labeled **Edit**. Otherwise, press the soft button labeled **Done**.

Adjusting Ethernet Settings



   a. Turn the selection knob to display the desired number.
   b. Press the **ENTER** button to move the cursor to the next octet.
   c. Repeat steps a and b for each octet until the desired IP address is displayed.
   d. Press the soft button labeled **Set** to store the new address.

7. To exit the Ethernet Settings section of the Setup Menu, press the soft button labeled **Done**.

About

The IPAC can display information about its programming and Ethernet configuration. To view information about the IPAC:

1. From the home page, press the soft button labeled **Setup**.
2. Turn the selection knob to highlight **About**.
3. Press **ENTER** or the soft button labeled **Select** to open the About section of the Setup Menu. Information about the IPAC will be displayed.
4. Turn the selection knob to scroll through the available information.
5. To exit the About section of the Setup Menu, press the soft button labeled **Exit** or press **ENTER**.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

IPAC-GL1 Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
IPAC does not have power.	IPAC is not receiving power from a Crestron power source.	Use the GLA-PWS-50 or equivalent Crestron power supply. Verify connections. Refer to the latest version of the IPAC Installation Guide for wiring details.
	IPAC is not receiving sufficient power.	Use the Crestron Power Calculator (www.crestron.com/calculators) to help calculate how much power is needed for the system.
System does not function as expected.	IPAC and/or peripheral devices are incorrectly wired.	Verify connections between IPAC and peripheral devices. Refer to the latest version of the IPAC Installation Guide for wiring details.
	Peripheral devices are not correctly identified.	Verify that modules report “OK” as described in “Open Panels” on page 12. Verify that external keypads report **Online** as described in “Open Keypads“ on page 15. Verify that GLS-SIM modules report **Online** as described in “Open Sensors” on page 39. Any device that is physically on the network but reports as **ERR** or **Not Found** should be corrected or temporarily removed from the network.
	Incorrect program is loaded.	Press the **HOME** button and verify the version number shown on the display (for Default Program only).
Lights turn on/off unexpectedly.	System clock and/or date are incorrectly set.	Verify time and date settings.
	Timeclock event is incorrectly set.	Verify settings for timeclock events.

(Continued on following page)

IPAC-GL1 Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Lights turn on/off unexpectedly.	Associated sensor is incorrectly programmed.	Verify settings for sensor.
	"Warning Flash" associated with a timeclock event.	Verify timeclock settings.
Loss of functionality due to electrostatic discharge.	Improper grounding.	Check that all ground connections have been made properly. Refer to the latest version of the IPAC Installation Guide for wiring details.

Check Network Wiring

Use the Right Wire

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire and only Crestron Certified Wire may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

Calculate Power

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

CAUTION: Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

Cable Length Equation

$$L < \frac{40{,}000}{R \times P}$$

Where: L = Length of run (or chain) in feet
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM^2))
or 1.6 Ohms (Cresnet HP: 12 AWG (4 MM^2))
P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet (101 meters). If Cresnet HP is used for the same run, its length could extend to 1250 feet.

NOTE: All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor and the other twisted pair is the Y conductor and the Z conductor.

Add Hubs

Use of a Cresnet Hub/Repeater (CNXHUB) is advised whenever the number of Cresnet devices on a network exceeds 20 or when the combined total length of Cresnet cable exceeds 3000 feet (914 meters).

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (www.crestron.com/manuals). This link will provide a list of product manuals arranged in alphabetical order by model number.

List of Related Reference Documents

DOCUMENT TITLE
2-Series Control Systems Reference Guide
CRESTRON GREEN LIGHT™ Power Switching Installation Guide
DIN-IO8 DIN Rail Versiport Module Operations & Installation Guide
GLS-SIM Sensor Integration Module Operations & Installation Guide
IPAC Installation Guide
IPAC-GL1 System Planning Worksheets

Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling Crestron at 1-888-CRESTRON [1-888-273-7876].

You can also log onto the online help section of the Crestron website (www.crestron.com/onlinehelp) to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the IPAC-GL1, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

Appendix A: Programming Software

The information contained in this section is for advanced programmers of Crestron Control Systems. For more information, contact Crestron at 1-888-CRESTRON [1-888-273-7876].

Have a question or comment about Crestron software?

Answers to frequently asked questions (FAQs) can be viewed in the Online Help section of the Crestron website. To post a question or view questions you have submitted to Crestron's True Blue Support, log in at http://support.crestron.com. First-time users will need to establish a user account.

Earliest Version Software Requirements for the PC

NOTE: Crestron recommends that you use the latest software to take advantage of the most recently released features. The latest software is available from the Crestron website.

NOTE: Crestron software and any files on the website are for authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

Crestron has developed an assortment of Windows®-based software tools to develop a controlled system. You can create a program using the Crestron programming tools D3 Pro™ or SIMPL Windows. Customers whose focus is on lighting systems may prefer to use the D3 Pro software since it is designed especially for creating lighting and environmental system control applications. Customers already familiar with SIMPL Windows who are including a lighting system as part of an overall control system project may prefer to continue using SIMPL Windows. For the minimum recommended software versions, visit the Version Tracker page of the Crestron website (www.crestron.com/versiontracker).

Programming with D3 Pro

NOTE: The default program that ships with the IPAC-GL1 is not protected. Uploading a new program will erase the default program.

Crestron's D3 Pro lighting software provides all the tools necessary to create a complete Crestron lighting system for residential applications. The lighting system includes the control system logic program, touchpanel projects and keypad programming, documentation and real-time lighting adjustment capabilities.

As with all Crestron software, D3 Pro provides extensive right-click and drag-and-drop functionality in addition to convenient keyboard shortcuts for frequently used functions and commands.

Programming is organized into six system **Views** of the lighting system, each providing a moveable toolbox of devices such as interfaces, fixtures and control modules. You can add a device to your system simply by selecting it from one of the toolboxes and dragging it to a room. The available toolboxes differ depending on the

View but all Views include a "General" toolbox that allows you to add areas and rooms at any time.

Programming with SIMPL Windows

NOTE: The default program that ships with the IPAC-GL1 is not protected. Uploading a new program will erase the default program.

NOTE: While SIMPL Windows can be used to program the IPAC, it is recommended to use D3 Pro for configuring a system.

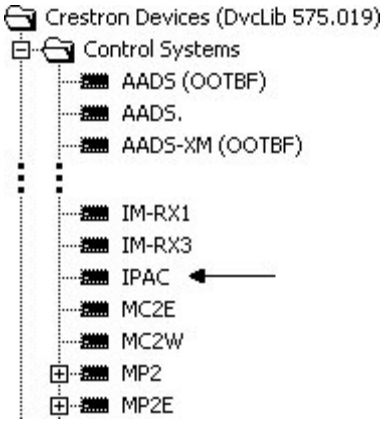
SIMPL Windows is Crestron's premier software for programming Crestron control systems. It is organized into two separate but equally important "Managers".

Configuration Manager

Configuration Manager is the view where programmers "build" a Crestron control system by selecting hardware from the *Device Library*.

- To incorporate the IPAC into the system, drag the IPAC from the Control Systems folder of the *Device Library* and drop it in the *System Views.*

Locating the IPAC in the Device Library



Program Manager

Program Manager is the view where programmers "program" a Crestron control system by assigning signals to symbols.

The symbol can be viewed by double clicking on the icon or dragging it into *Detail View*. Each signal in the symbol is described in the SIMPL Windows help file (**F1**).

Programming with VisionTools Pro-e

NOTE: Pages that are part of the default program are not protected and will be erased if a new VT Pro-e project is loaded to the IPAC.

VisionTools Pro-e (VT Pro-e) is used to design pages for the front panel that can be used to operate a program.

For more information, refer to the VT Pro-e help file (**F1**).

Default Program

The default program is not protected and can be erased if a new program or project is loaded to the IPAC. Instructions for using the default program begin on page 6.

Example Program

An example program for the IPAC is available from the Crestron website (www.crestron.com/exampleprograms).

Appendix B: Uploading and Upgrading

The information contained in this section is for advanced programmers of Crestron Control Systems. For more information, contact Crestron at 1-888-CRESTRON [1-888-273-7876].

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects or firmware) can be transferred to the control system (and/or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

While the next section provides an overview for communication, refer to "Establishing Communications with the Control System" in the Crestron 2-Series Control Systems Reference Guide (Doc. 6256) for connection details. If communications cannot be established, refer to "Troubleshooting Communications" in the same guide.

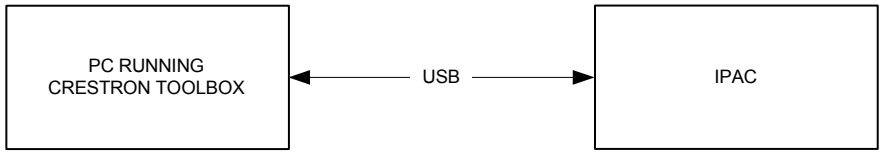
Establishing Communication

Use Crestron Toolbox™ for communicating with the IPAC; refer to the Crestron Toolbox help file for details. There are two methods of communication.

USB

NOTE: Required for initial setup of Ethernet parameters.

USB Communication



1. The **COMPUTER** port on the IPAC connects to the USB port on the PC via a Type A to Type B USB cable (not included).
2. Use the Address Book in Crestron Toolbox to create an entry using the expected communication protocol (USB). When multiple USB devices are connected, identify the IPAC by entering "IPAC" in the *Model* textbox, the unit's serial number in the *Serial* textbox or the unit's hostname in the *Hostname* textbox. The hostname can be found in the "System Info" window in the section marked *Ethernet* however, communications must be established in order to see this information in the "System Info" window.
3. Display the IPAC's "System Info" window (click the  icon); communications are confirmed when the device information is displayed.

TCP/IP

TCP/IP Communication

1. Establish USB communication between IPAC and PC.
2. Enter the IP address, IP mask and default router of the IPAC via the Crestron Toolbox (**Functions | Ethernet Addressing**); otherwise enable DHCP.
3. Confirm Ethernet connections between IPAC and PC. If connecting through a hub or router, use CAT5 straight through cables with 8-pin RJ-45 connectors. Alternatively, use a CAT5 crossover cable to connect the two **LAN** ports directly without using a hub or router.
4. Use the Address Book in Crestron Toolbox to create an entry for the IPAC with the IPAC's TCP/IP communication parameters.
5. Display the "System Info" window (click the  icon) and select the IPAC entry.
6. Use Crestron Toolbox to create the IPAC IP table.
7. Select Functions | IP Table Setup.
8. Either add, modify, or delete entries in the IP table. The IPAC can have multiple IP table entries.
9. A defined IP table can be saved to a file or sent to the device.
10. When using the IPAC as a "slave", edit the "master" control system's IP table to include an entry for the IPAC. The entry should list the IPAC's IP ID (specified on the IPAC's IP table) and its IP address.

Programs, Projects and Firmware

Program, project or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs and projects via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the SIMPL Windows help file, VT Pro-e help file or the Crestron Toolbox help file.

SIMPL Windows

If a SIMPL Windows program is provided, it can be uploaded to the control system using SIMPL Windows or Crestron Toolbox.

VisionTools Pro-e

Upload the VT Pro-e file to the IPAC using VT Pro-e or Crestron Toolbox.

Firmware

Check the Crestron website to find the latest firmware. (New users may be required to register to obtain access to certain areas of the site, including the FTP site.)

Upgrade IPAC firmware via Crestron Toolbox.

1. Establish communication with the IPAC and display the "System Info" window.
2. Select **Functions | Firmware…** to upgrade the IPAC firmware.

Appendix C: Specifications

IPAC-GL1 Specifications

SPECIFICATION	DETAILS
Processor	
CPU	32-bit Freescale ColdFire® Microprocessor
Memory	
SDRAM	32 MB
NVRAM	1 MB
Flash	8 MB
Power Failure Memory	10 years
Time Clock Accuracy	±1 minute per year
Operating System	Real-time, preemptive multi-threaded/multitasking kernel; FAT32 file system with long names; includes default program for Green Light Power Switching systems
Ethernet	10/100BASE-T, auto-negotiating, full/half duplex, static IP or DHCP, DNS, SSL, TCP/IP, UDP/IP, CIP, SMTP, SNMP, built-in Web server and e-mail client; supports Crestron e-Control®2 XPanel and RoomView® applications.
IR Receiver	
Reception Frequency	36 to 38 kHz IR
Formats	Crestron format, RC5
Range	Up to 50 feet (15 meters) line of sight typical, dependent on angle, obstructions, IR interference and IR remote signal strength
Power	
Cresnet Power Usage	10 Watts (0.42 A @ 24 VDC); GLA-PWS50 or equivalent power supply required (sold separately)
Available Cresnet Power	40 Watts using GLA-PWS50 power supply (sold separately)
Environmental	
Temperature	32º to 104 º F (0 º to 40 º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	20 BTU/Hr
Enclosure	
Faceplate	Plastic, black or white, with polycarbonate label overlay
Chassis	Plastic with steel mounting plate
Mounting	Requires 3-gang plaster ring or electrical box (not included), ≥ 2.5 in (64 mm) deep recommended
Dimensions	
Height	4.50 in (115 mm)
Width	6.70 in (171 mm)
Depth	2.24 in (57 mm)
Weight	1.32 lbs (0.60 kg)
Available Models	
IPAC-GL1-B-T	IPAC Integrated Professional Automation Computer for Power Switching (Black)
IPAC-GL1-W-T	IPAC Integrated Professional Automation Computer for Power Switching (White)

(Continued on following page)

IPAC-GL1 Specifications (Continued)

SPECIFICATION	DETAILS
Available Accessories	
DIN-IO8	DIN Rail Versiport Module
GLA-PWS50	Wall Mount 50 Watt Cresnet Power Supply
GLS-SIM	Sensor Integration Module
MP/MPC/IPAC_FRONT _LABEL-[B,W]-T	Set of Engravable Backlit Labels

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1. No merchandise may be returned for credit, exchange or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

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