



# **Power Control Processor Mk2**

## **For use with Elaho Relay Panel Mains Feed and Elaho Relay Panel Feedthrough**

### **Configuration Manual**

4.0.0

Part Number: 8123M2410-4.0.0 Rev.A

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# Introduction

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Congratulations on your purchase of a product that utilizes the Elaho Power Control Processor Mk2. This manual contains basic maintenance and service procedures along with information on using the Power Control Processor Mk2 with the following products:

- Elaho Relay Panel Mains Feed (ERP)
- Elaho Relay Panel Feedthrough (ERP-FT)

Each of these products provides professional-quality switching of dimmed and non-dimmed loads controlled by DMX-512 or Ethernet.

## Help from Echoflex Solutions Technical Services

If you have questions that are not answered by this document, try the main website at [echoflexsolutions.com](http://echoflexsolutions.com). If none of these resources are sufficient, contact Technical Services directly at the office identified below.

When calling for help, take these steps first:

- Prepare a detailed description of the problem
- Go near the equipment for troubleshooting
- Find your notification number if you have called in previously

Please have the following information handy:

- Your location and job name
- Model of breaker or relay panels
- Type of relays and breakers used including the model numbers and quantities
- All option cards installed in the panel
- Other components in your system including dimmers, switch gear, etc.
- DMX or network control source used for system-wide control, if any
- Related system problems or equipment failure

## Technical Services

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## Document Conventions

This document uses the following conventions to draw your attention to important information.



**Note:** *Notes are helpful hints and information that is supplemental to the main text.*

---



**CAUTION:** *A Caution statement indicates situations where there may be undefined or unwanted consequences of an action, potential for data loss or an equipment problem.*

---



**WARNING:** A Warning statement indicates situations where damage may occur, people may be harmed, or there are serious or dangerous consequences of an action.

---



**WARNING: RISK OF ELECTRIC SHOCK!** This warning statement indicates situations where there is a risk of electric shock.

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Please email comments about this manual to: [TechComm@etconnect.com](mailto:TechComm@etconnect.com).



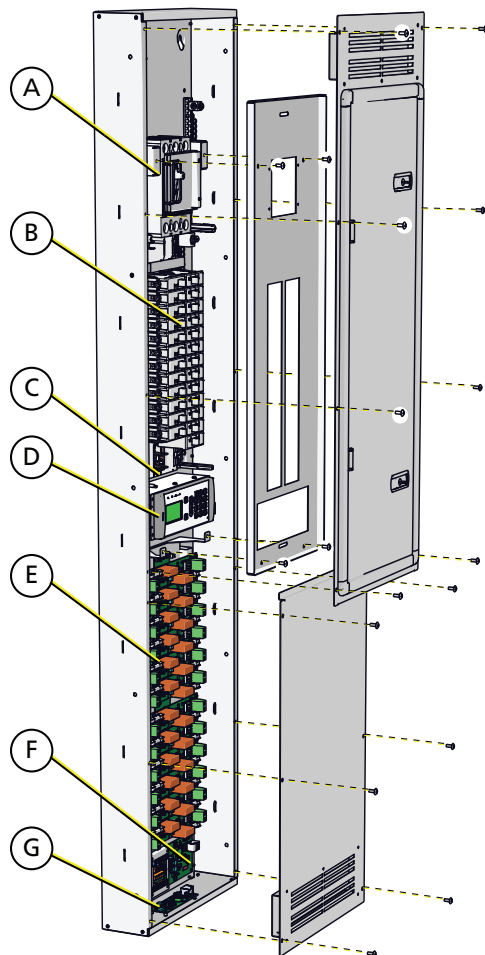
# Chapter 1

## Overview of Panels

The Power Control Processor Mk2 is designed for use in Elaho Relay Panel Mains Feed and Elaho Relay Panel Feedthrough.

### Elaho Relay Panel Mains Feed Overview

The Elaho Relay Panel Mains Feed (ERP) with Power Control Processor Mk2 provides professional-quality switching and dimming of loads controlled by DMX512 or Ethernet.



|   |   |
|---|---|
| A | Main lugs or field-installed Main Circuit Breaker kit |
| B | Circuit breakers                                      |
| C | Install ERP-RTO behind processor                      |
| D | Power Control Processor Mk2                           |
| E | Relays  |
| F | I/O termination board                                 |
| G | Option cards: ERP-CI, ERP-LVD, ERP-DALI               |

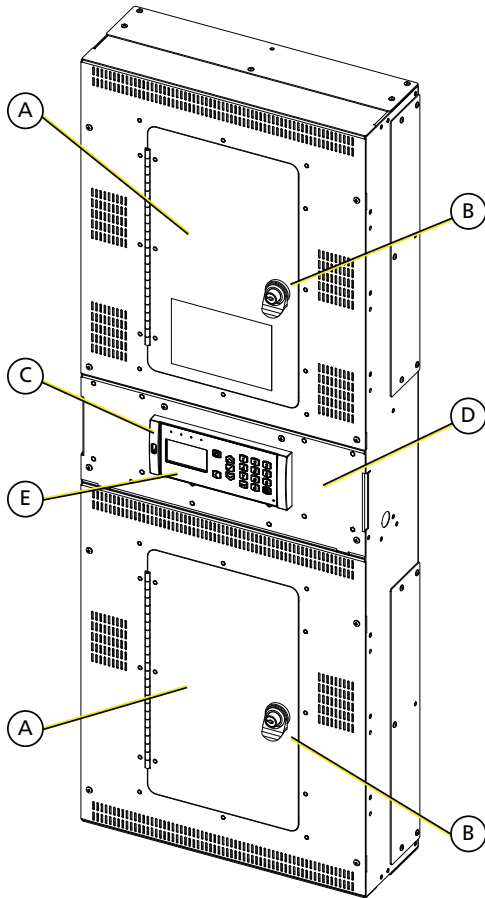


#### Note:

- You can install cable troughs to run the length of the right or left sides of the panel for low-voltage cable routing.
- The bottom cover attaches behind the door, overlapping the top cover.

# Elaho Relay Panel Feedthrough Overview

The Elaho Relay Panel Feedthrough (ERP-FT) with Power Control Processor Mk2 provides professional-quality switching and dimming for up to 48 channels of non-dim loads in a single panel. Loads are controlled by DMX512 or Ethernet.



|   |   |
|---|---|
| A | Up to 24 relay modules, top (not shown)<br>Up to 24 relay modules, bottom (not shown) |
| B | Locking door, top<br>Locking door, bottom   |
| C | Power Control Processor Mk2   |
| D | Option cards: ERP-CI, ERP-LVD, ERP-DALI   |
| E | Install ERP-RTO behind processor  |

## Option Cards

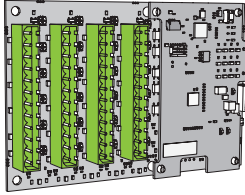
Option cards are available for field installation into each of the panels. Each option adds another level of features and functions to your system.

For more information on the specification or installation of the option cards, see the individual manual supplied with the relay panel (Elaho Relay Panel Mains Feed and Elaho Relay Panel Feedthrough) or the instructions supplied with the Ride-Thru Option Card. Manuals are available for download at [etconnect.com](http://etconnect.com).



**Note:** A single ERP Mains Feed or ERP Feedthrough panel supports the use of either the 0–10V Dimming Control option or a DALI Control option, but not both in the same panel.

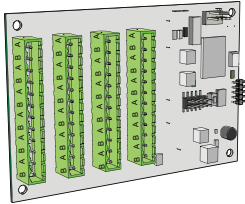
## 0–10V Dimming Control



The 0–10V Dimming Control option provides 24 outputs for control of 4-wire current-sink, 0–10 VDC fluorescent or electronic loads.

- Each of the 24 outputs are rated to control a maximum of 400 mA per channel (up to 50 ballasts per channel).
- Loss of power at the Control Processor results in releasing control levels to full.

## DALI Control

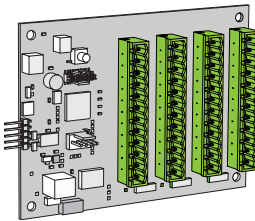


The Digital Addressable Lighting Interface (DALI) Control option controls 24 loops of 64 DALI-compatible ballasts in broadcast mode. Each loop of up to 64 DALI ballasts is linked one-to-one with the relay panel circuit for power control.

The DALI ballast must be powered by an external DALI loop power supply (supplied by others). This supply is connected externally of the processor. Each DALI loop requires its own power supply and possibly more than one power supply depending on the ballast load.

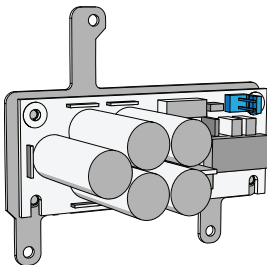
Installation is limited to 64 DALI-compatible fluorescent ballasts per DALI loop.

## Contact Input



The Contact Input option provides the ability to directly control the relays using a momentary or maintained dry contact input.

## RideThru Option



The RideThru option maintains power to the Power Control Processor Mk2 for a minimum of 15 seconds in the event of a brown-out or power loss.

## System Concepts and Definitions

### Spaces

Spaces are used to divide the outputs of the relay panel into logical segments (such as different rooms in a building). Preset, sequence and zone level adjustments all happen within a "space".

Each panel supports separation of its controllable outputs (relays, 0–10V Dimming Control, and DALI Control). Spaces 1 through 255 are available for assignment, with spaces 1–16 reserved for Echo control.

## Outputs

An output refers to the physical position of the relay, dimmer, or intelligent breaker in the panel. Up to 48 circuit outputs are available based on the type of system installed.

- The ERP-FT can be populated with single-pole and double-pole relays, and the ERP Mains Feed can be populated with single-pole, double-pole, and three-pole relays.
- In an ERP Mains Feed, a double-pole relay requires two output positions, and a three-pole relay requires three output positions.
- The ERP can be populated with dimmer modules. Each dimmer module is the same size, and installs in the same manner, as a single-pole relay module.
- The Sensor IQ 120V can be populated with single-pole, double-pole, and three-pole breakers. Sensor IQ 277V does not support multi-pole breakers.
- In a Sensor IQ, a double-pole relay requires two output positions and a three-pole relay requires three output positions.

## Circuits

Circuits are the logical reference number used to talk about a controllable output in the ERP Mains Feed and ERP Feedthrough. Circuits are unique within a space and are user-configurable in software. The combination of space and circuit provides a unique identification of an output within a system.

For example, a single panel can have two circuits numbered 1 when they belong to separate spaces.

## Source Arbitration

Each panel can accept a variety of control sources, including DMX, Streaming ACN (sACN), presets, sequences, manual set levels, and panic.

Circuit output arbitration is based on the sACN model of source priority, meaning each source is assigned a priority between 1 and 201 (201 is the highest priority). With this priority, control sources are arbitrated based on their set priority. The default priority is 100.

The panel uses the priority assigned within the sACN packet, sent from the control source. Each panel sets the configured priority for DMX, presets, and sequences.

The Contact Input Option card can be used to:

- trigger presets and sequences, which will play at the priority configured for architectural sources or;
- direct control one or more outputs. The priority of these outputs is configurable. If nothing is configured, the last action takes precedence.

Manually setting levels from the user interface of the Power Control Processor overrides all other control sources with the exception of panic, which is the highest possible priority.

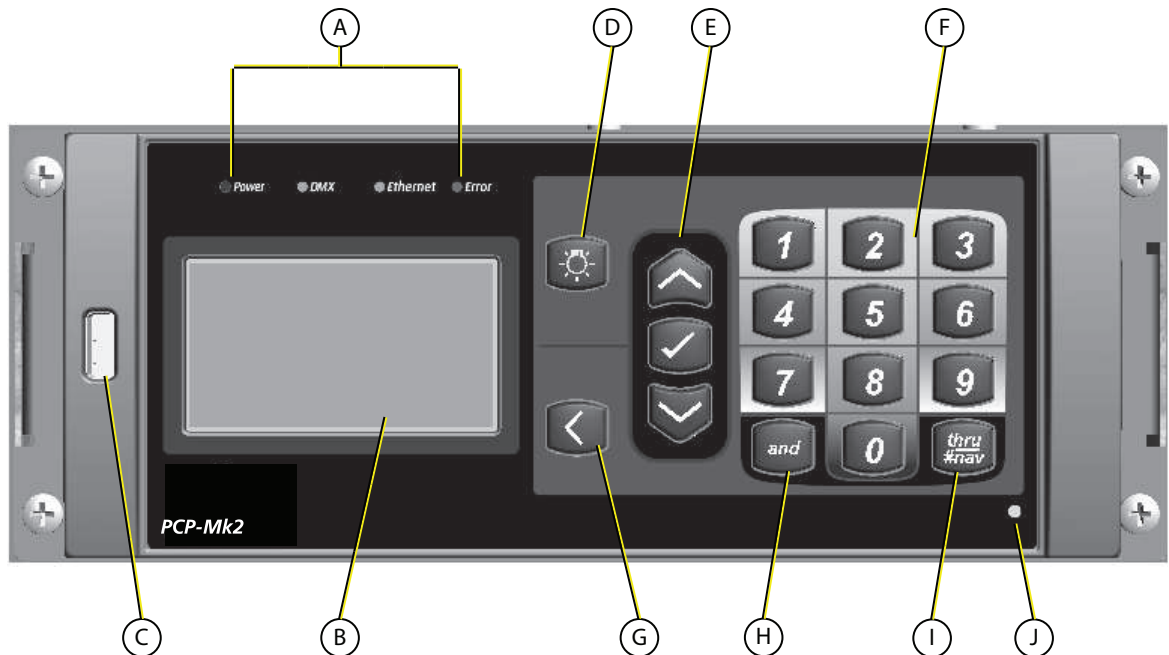
## Zones

A Space within an Echo control system can be broken down further into zones. You can assign a zone to an Echo station for direct control using that station's buttons or faders. You can have multiple zones within a space, and a single zone can control multiple outputs across multiple panels.

# Chapter 2

## The User Interface

The Power Control Processor Mk2 features a simple user interface with up and down arrows for menu navigation, a numeric keypad for direct selection, and an easy-to-read graphical display. Additionally, a USB port is provided on the left side of the controller for storage of configurations to a flash drive.



|   |   |
|---|---|
| A | Status indicators, see <a href="#">Status Indicators on the next page</a>                             |
| B | Display, see <a href="#">The Display on the next page</a>   |
| C | USB port, see <a href="#">USB Media on page 12</a>  |
| D | Control button, see <a href="#">The Control Button on page 12</a>                                     |
| E | [Up] (▲) button, [Enter] (✓) button, and [Down] (▼) button, see <a href="#">Navigation on page 13</a> |
| F | 12-button keypad, see <a href="#">Navigation on page 13</a>   |
| G | [Back] (◀) button, see <a href="#">Navigation on page 13</a>  |
| H | [and] button, see <a href="#">Navigation on page 13</a>   |
| I | [thru/#nav] button, see <a href="#">The thru/#nav Button on page 12</a>                               |
| J | Reset switch, see <a href="#">The Reset Switch on page 12</a>   |

The Power Control Processor Mk2 can be configured from the user interface or from Net3 Concert by editing offline and transferring the configuration file by USB. For more information about configuration in Net3 Concert, select Help from the menu of the Net3 Concert application. Net3 Concert is available for free download at [etconnect.com](http://etconnect.com).

## Status Indicators

| Indicator | LED Color | LED State     | Status                                      |
|-----------|-----------|---------------|---|
| Power     | Blue      | Solid         | Power is on                                 |
| DMX       | Green     | Solid         | DMX input is enabled and DMX is present     |
|           |           | Slow blinking | DMX input is enabled and DMX is not present |
|           |           | Fast blinking | DMX input is enabled with DMX input error   |
|           |           | Off           | DMX input is disabled                       |
| Ethernet  | Green     | Solid         | Ethernet is connected                       |
|           |           | Blinking      | Ethernet is active                          |
|           |           | Off           | No Ethernet activity                        |
| Error     | Red       | Off           | Not in error state                          |
|           |           | Solid         | Error state                                 |

See [Status Messages on page 41](#) for a description of errors and other status messages.

## The Display

The Power Control Processor Mk2 features a high-contrast, 21-character, 8-line, backlit screen. When scrolling through the menu, the first row of the display is reserved for the menu title.

A scroll bar displays on the right side of the screen, indicating there is more content to be displayed. Use **[Up]** (▲) and **[Down]** (▼) on the User Interface to scroll through the available menus.

### Wake

The menu system and display backlight are set, by default, to sleep after three minutes of inactivity. Any button press wakes the user interface and backlight.

### Home Screen

The home screen is shown by default at power-up. The display reverts to the home screen automatically from any point in the menu after two minutes of user inactivity.

Two displays are available from the home interface:

- The **Output Status** screen shows information about the current state of the channels.
- The **Arch Control Status** screen shows present status information.

Switch between the two screens by pressing **[Up]** (▲) or **[Down]** (▼).

### Contrast

From the home screen, press and hold **[Back]** ( ) and press **[Up]** (▲) to increase the display contrast or **[Down]** (▼) to decrease the display contrast.

### Backup Power Active

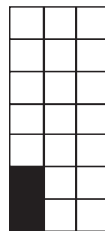
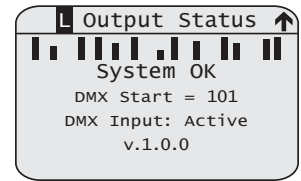
Three seconds after mains power is no longer detected, ERP Mains feed or Sensor IQ will display a warning message " *BACKUP POWER ACTIVE!*" While this warning is displayed, all other menu screens are inaccessible.

Once mains voltage is restored, the display will revert back to the home screen and menu functionality will return.

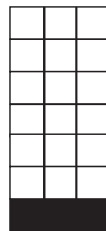
## Output Status

The **Output Status** screen displays several lines of information:

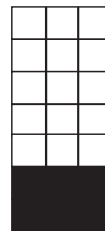
- Line 1 shows:
  - The name of the display: **Output Status**
  - An "L" symbol is shown when levels are set locally at the panel.
  - The up ↑ or down ↓ arrow in the upper-right corner shows the option to navigate to an additional menu.
- Lines 2 and 3 combine to show blocks representing the set levels.
  - Each block shows the status of the channel from left to right, with 1 at the left and the highest number (up to 24) on the right. For racks with more than 24 channels, a second block is shown for the additional channels 25–48. Levels are indicated for each channel in a separate block of pixels. For 0–10V Dimming Control or DALI Control channels, the level is shown.



0% The two bottom left pixels are used as a placeholder



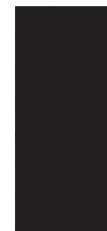
1-15% The bottom row is filled



16-30% The bottom two rows are filled



...continue in steps of 15%



91-100%



**Note:** When relays are installed that occupy more than one output position, only a single bar is shown per relay.

- Lines 4 and 5 display the rack status.
  - Status messages in the chart below with *Yes* in the "Illuminate Error LED" column will cause the red error LED to light.
  - Status messages with *Yes* in the "Cycle with Others" column share the display by cycling through each applicable message at a rate of one every two seconds.

| Status Message     | Cause   | Illuminate Error LED | Cycle with Others | ERP | ERP-FT |
|--------------------|---|----------------------|-------------------|-----|--------|
| System OK          | No other messages active  | No                   | N/A               | Yes | Yes    |
| Emergency Active   | Emergency look is active  | Yes                  | No                | Yes | Yes    |
| Breakers Tripped   | No voltage detected at one or more relays                       | Yes                  | Yes               | Yes | No     |
| Relay Mismatch     | One or more relays in the rack do not match the configuration   | Yes                  | Yes               | Yes | No     |
| Relay Removed      | One or more relays in the rack are not found                    | Yes                  | Yes               | Yes | No     |
| Breaker Mismatch   | One or more breakers in the rack do not match the configuration | Yes                  | Yes               | No  | No     |
| Breaker Removed    | One or more breakers in the rack are not found                  | Yes                  | Yes               | No  | No     |
| Breaker Error      | Breaker is detected as an impossible type                       | Yes                  | Yes               | No  | No     |
| Dim Overtemp       | Dimmer is in an overtemp state                                  | Yes                  | Yes               | Yes | No     |
| Invalid Cfg Loaded | User has loaded a configuration file that is invalid            | Yes                  | Yes               | Yes | Yes    |

See [Status Messages on page 41](#) for descriptions of status messages.



**Note:** When an Emergency Status is active, no other status indicators will be shown. Emergency Status will always take precedence over all other status options.

- Line 6 shows the lowest configured DMX Start address value in the Power Control Processor Mk2. If the panel is patched straight (one for one) the equals sign (=) displays. When the panel is set up with a custom address, approximate equals sign (≈) is used instead.
- Line 7 alternates each second between the status of the DMX connection and, when the ports are enabled, the status of the sACN connection.
  - **DMX Input** will be displayed as either *Active*, *Inactive*, or *Disabled*.
  - **sACN Input** will be displayed as either *Active*, *Inactive*, or *Disabled*.
- Line 8 shows the status of connected Echo power station status (On or Off) and the current Power Control Processor Mk2 software version number.

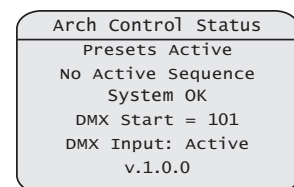


**Note:** Echo power station support is reserved for later development.

## Arch Control Status

Arch Control Status displays several lines of information:

- Line 1 shows:
  - The name of the display: **Arch Control Status**
  - The up ↑ or down ↓ arrow in the upper-right corner shows the option to navigate to an additional menu.
- Line 2 shows *Presets Active* if any presets are active in the rack. If no preset are active, *No Active Preset* will be shown.





- Line 3 cycles (in 1 second intervals) between the following information:
  - *Sequence Active* if the sequence is active or *No Active Sequence* if no sequence is currently active
  - The panel's IP address
- Lines 4 and 5 display the system status. See [Status Messages on page 41](#).
- Line 6 shows the lowest configured DMX Start address value in the Power Control Processor Mk2. If the panel is patched straight (one for one) the equals sign (=) displays. When the panel is set up with a custom address, approximate equals sign (≈) is used instead.
- Line 7 alternates each second between the status of the DMX connection and, when the ports are enabled, the status of the sACN connection.
  - **DMX Input** will be displayed as either *Active*, *Inactive*, or *Disabled*.
  - **sACN Input** will be displayed as either *Active*, *Inactive*, or *Disabled*.
- Line 8 shows the status of connected Echo power station status (On or Off) and the current Power Control Processor Mk2 software version number.



**Note:** *Echo power station support is reserved for later development.*

---

## USB Media

The Power Control Processor Mk2 includes a USB type A socket located on the left side of the user interface. A USB storage device is not included and must be purchased separately.

Use a compatible USB storage device to save and load backup files of your configuration and to update the Power Control Processor Mk2 firmware. See [File Operations on page 29](#) for more information.

### Compatible USB Storage Device

Use a USB storage device that is pre-formatted with the compatible FAT file system. As needed, you can reformat a USB storage device using a PC with the Windows operating system or an Apple computer. See the operating system's online help for instructions to format the USB media.

## The Control Button

[Control] (⌘) provides quick access to the control menus.

- Press [Control] (⌘) to alternately access the **Switching Control** menu and the **Arch Control** menu.
- Press [Control] (⌘) twice (double press) to enter "All On" mode. In All On mode all outputs of the panel turn on at full. Press the [Back] (⏪) button or [Enter] (✓) button to exit All On mode.

## The thru/#nav Button

[thru/#nav] provides quick access to number navigation (#nav) mode from the home screen. Each menu item is preceded by a number. Pressing that number on the keypad while in #nav mode will execute that menu function. If you are in a menu line where it is possible to enter a numeric value, pressing this button will act as a thru selection key.

## The Reset Switch

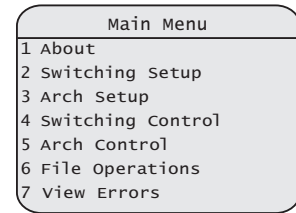
Reset the Power Control Processor Mk2 by pressing the reset switch located on the bottom-right corner of the user interface. Access this reset switch using a blunt push tool (for example, the tip of a ballpoint pen). Outputs from installed option cards may change with a reset.

# Navigation

To enter the main menu, press **[Enter]** (✓) from the home screen.

## Number Navigation

Press **[thru/#nav]** on the user interface at any point to access the number navigation (#nav) feature of the menu. Each number corresponds to a different menu option, allowing quick navigation through the menu.



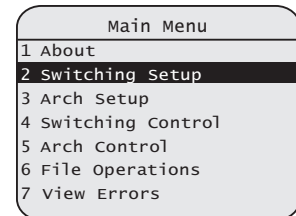
The main menu includes:

- 1 About, [About Menu on page 15](#)
- 2 Switching Setup, [Switching Setup Menu on page 17](#)
- 3 Arch Setup, [Arch Setup Menu on page 23](#)
- 4 Switching Control, [Switching Control Menu on page 25](#)
- 5 Architectural Control, [Arch Control Menu on page 26](#)
- 6 File Operations, [File Operations on page 29](#)
- 7 View Errors, [View Errors on page 30](#)

## Menu Navigation

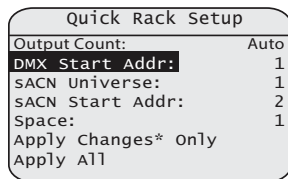
### List Menu

In a list style menu, use **[Up]** (▲) or **[Down]** (▼) to navigate through the menu options. Options are highlighted when they are selected. Press **[Back]** ( ) to return to the previous menu selection. Press **[Enter]** (✓) to enter the selected menu option.

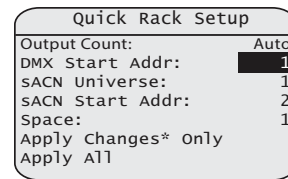


### Settings Menu

Use **[Up]** (▲) or **[Down]** (▼) to navigate through the menu options. Edit values in the settings menus using **[Up]** (▲) or **[Down]** (▼) or use the numeric keypad for numeric entries. Press **[Enter]** (✓) to begin editing the option and to commit the menu selection and move to the next item.



Press  
**[Enter]**  
(✓)



## Multi-Part Options

In a multi-part menu, press **[Enter]** (✓) to modify an editable item, then use the numeric keypad or **[Up]** (▲) or **[Down]** (▼) to enter the correct value.

| 1 AND 3 THRU 6 |         |       |
|----------------|---------|-------|
| Out            | Address | Univ  |
| 1:             | 1       | 63999 |
| 2:             | 2       | 1     |
| 3:             | 3       | 12    |
| 4:             | 126     | 1     |
| 5:             | NA      |       |
| 6:             | 1       | 1     |

Press  
**[Enter]**  
(✓)

| Patch sACN Input |         |       |
|------------------|---------|-------|
| Out              | Address | Univ  |
| 1:               | 201     | 63999 |
| 2:               | 2       | 1     |
| 3:               | -       | 12    |
| 4:               | -       | 1     |
| 5:               | -       |       |
| 6:               | -       | 1     |

Press  
[2], [0], [1],  
then **[Enter]** (✓)

| Patch sACN Input |         |      |
|------------------|---------|------|
| Out              | Address | Univ |
| 1:               | 201     | 1    |
| 2:               | 2       | 124  |
| 3:               | 202     | 1    |
| 4:               | 203     | 1    |
| 5:               | NA      |      |
| 6:               | 204     | 1    |

Press  
**[Enter]**  
(✓)

Press [1],  
then **[Enter]** (✓)

Press **[Back]** ( ) to return to the previous selected field.



**Note:** Press **[Enter]** (✓) on the last field for the selection or press **[Enter]** (✓) on "Apply Changes" to save changes.

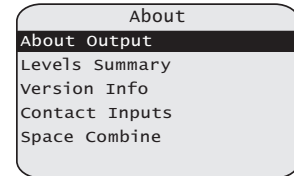
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# Chapter 3

## Menu Structure

### About Menu

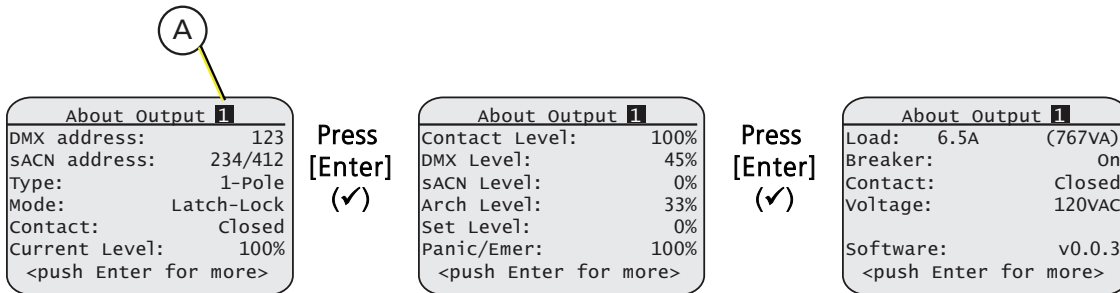
The **About** menu provides information about the Power Control Processor Mk2 configuration.



### About Output

The **About Output** menu is a three-screen, read-only menu that gives status information for each source feeding a relay or breaker.

- To navigate between screens, press **[Enter]** (✓). If you press **[Enter]** (✓) from the third screen the display will return to the first screen.
- Select the output position number by entering a number or with **[Up]** (▲) or **[Down]** (▼). The selected circuit is highlighted in the top right corner of the screen (A, below).



- Type** displays the relay or breaker type detected at the selected position. Depending on panel type, the options are *None*, *1-Pole*, *2-Pole*, *3-Pole*, and *Dimmer*.
- Mode** displays the configured mode of the circuit.

| Load Type | Modes       | Description   |
|-----------|-------------|---|
| Relay     | Normal      | For a relay, the output is off below the threshold and on at or above the threshold. For a dimmer, the output is off below the threshold and dims above the threshold.  |
|           | Fluorescent | Used for circuits in conjunction with the 24-channel, 0–10V Dimming Control option. The circuit will switch on at the threshold value and control the 0–10V dimmed levels using the option card.  |
|           | Latch/Lock  | Latch/Lock mode can be used for circuits where extra security is desired when turning them on or off. To turn the relay or breaker on, the DMX or sACN level must be held at a specified value for a certain period of time, and at another value to turn it off. The on and off values are configurable. See <a href="#">Output Setup on page 17</a> . |
|           | DALI        | Used for circuits in conjunction with the DALI option card. The circuit will switch on at the threshold value and control the DALI output using the option card.  |
|           | Always On   | Output is always turned on.   |
| Dimmer    | Auto        | Automatically detects phase angle control of the connected load.  |
|           | Forward     | Forward-phase dimming control.  |
|           | Reverse     | Revers-phase dimming control.   |

- Current Level** displays the current level of the selected circuit from the controlling data source as a percentage (%). When no control is present, current level displays a dash (–).

The following five menu options display the individual levels (if applicable) for DMX, sACN, Arch, current set level, Panic/Emergency, and Contact Input.

- **Breaker** displays the state of the breaker in the pane as either *On* or *Off*.
- **Contact** displays the state of the relay contact as either *Closed* or *Open*.
- **Load** displays the load both as amperes (A) and calculated (VA). The load value displays and updates in real time. Multiple-pole relays will show load for each pole (load (1), load (2), etc.).
  - For the Elaho Relay Panel Feedthrough, voltage is not measured, and this field contains a dash (-).
- **Voltage** displays the voltage as received for the output.
  - For Elaho Relay Panel Mains Feed, this is equal to the measured voltage coming into the rack.
  - For Elaho Relay Panel Feedthrough, voltage is not measured, and this field contains a dash (-).
- **Software** displays the version number of the installed software in the relay card.

## Levels Summary

**Levels Summary** displays the output information for each position, including its highest-takes-precedence (HTP) control level and winning input source. Use **[Up]** (▲) or **[Down]** (▼) to view additional lines of text. The information provided includes:

| Pos | Ckt | Src   | Level |
|-----|-----|-------|-------|
| 1   | 12  | Cont  | 255   |
| 2   | 1   | sACN  | 125   |
| 3   | 2   | Arch  | 75    |
| 4   | 3   | ---   | ---   |
| 5   | 4   | DMX   | 255   |
| 6   | 5   | Emerg | 255   |
| 7   | 6   | Set   | 0     |

- **DMX:** DMX input level
- **sACN:** streaming ACN level
- **Set:** set level
- **Arch:** preset, sequence, or zone level
- **Emerg:** emergency look
- **Cont:** contact input
- **---**: no control of dimmer
- **HLL:** the control source (DMX or sACN) has been lost and the circuit is holding its level received from the last look

## Version Info

**Version Info** displays the software version for each component installed in the panel. Options include Application, Network, DALI 1, FLO 1, Contact, and Bootloader.

| Version Info |             |
|--------------|-------------|
| Application: | 1.2.3.4.5.0 |
| Network:     | 2.3.4.5.6.0 |
| DALI 1:      | 1.2.3.4.5.0 |
| DALI 2:      | 1.2.3.4.5.0 |
| Contact:     | 1.2.3.4.5.0 |

## Contact Inputs

**Contact Inputs** shows the status of the contact in the contact input card. Each of the option card's 24 inputs displays a status of *OFF* or *ON* and will be updated in real time. This is read-only information.

If there is no Contact Input Card installed, the screen will read *Contact input card not installed*.

A (+) symbol displays when more information is not shown because of screen space limitations.

| Contact Inputs |        |        |
|----------------|--------|--------|
| 1:OFF          | 2:OFF  | 3:OFF  |
| 4:OFF          | 5:OFF  | 6:OFF  |
| 7:OFF          | 8:OFF  | 9:OFF  |
| 10:OFF         | 11:OFF | 12:OFF |
| 13:OFF         | 14:OFF | 15:OFF |
| 16:OFF         | 17:OFF | 18:OFF |
| 19:OFF         | 20:OFF | 21:OFF |
| 22:OFF         | 23:OFF | 24:OFF |

## Space Combine

**Space Combine** shows the combined spaces for each Elaho Space in the panel. *None* will display next to a Space if a space is not combined with any other Spaces.

| Space Combine |     |
|---------------|-----|
| Space 1:      | 2   |
| Space 2:      | 1   |
| Space 4:      | 5,6 |
| Space 5:      | 4,6 |
| Space 6:      | 4,5 |

## Switching Setup Menu

| Switching Setup |                   |
|-----------------|-------------------|
| 1               | Output Setup      |
| 2               | Patch DMX Input   |
| 3               | Patch sACN Input  |
| 4               | Emergency Setup   |
| 5               | Quick Rack Setup  |
| 6               | Switching Options |

## Output Setup

**Output Setup** allows configuration of operation parameters for each position in the panel. Use **[Up]** (▲) or **[Down]** (▼) or the numeric keypad to select a single position, or select multiple positions using **[and]** and **[thru/#nav]**. The selected circuit parameters display.

If you select an output that is a multi-pole relay, the information shown will be duplicated.

When you select multiple relays or breakers using **[and]** and **[thru/#nav]**, the top line updates to show as much information as possible for the selection. A (+) symbol displays when more information is not shown because of screen space limitations.

| Output Setup 1 |        |
|----------------|--------|
| Mode:          | Normal |
| Type:          | 1-Pole |
| Threshold:     | 1%     |
| Space:         | 1      |
| Zone:          | 1      |
| Circuit:       | 1      |
| Allow Manual:  | Yes    |
| Min Scale:     | 1%     |

- **Mode:** Configure the type of load in the output position. See **About Menu > Mode** on [page 15](#).
  - When you install a relay at the output position, the options are *Normal*, *Fluorescent*, *Latch/Lock*, *DALI*, and *Always On*.
  - When you install a dimmer at the output position, the options are *Auto*, *Forward*, or *Reverse* phase.



**Note:** ERP-DIM-MLV can be set to **Mode:** Reverse, but this will be ignored by the dimmer.

- **Type:** The following types are available per rack.
  - ERP: 1-pole, 2-pole, Dimmer, None
  - ERP-FT: 1-pole, None
- **Threshold** displays the percentage level at which the relay switches on. The default value is 1%.
- **Space** allows configuration of the Space to which the selected outputs are allocated. The default is Space 1. See [Spaces on page 6](#).
- **Zone** allows configuration of the Zone to which the selected outputs are allocated. See [Zones on page 7](#).
- **Circuit** displays the currently assigned circuit number for the dimmer or relay position in the panel.

- **Allow Manual** determines what happens when a manual override occurs on products supporting manual override.
  - *Yes* (default): the relay is treated as if the level has been set to full.
  - *No*: When a manual override is attempted, the controller will reassert control and change the relay to the state requested by the incoming control inputs.
- **Min Scale**(dimmers only) displays the percentage level at which a dimmer switches on. The default is 1%.

### Multi-Select Space Alteration

If you select multiple positions in the panel and the assigned Space value is altered, the new assigned Space might contain multiple circuits of the same number.



**Example:** *Space 1 contains Circuits 1–5 and Space 2 contains Circuits 1–10. You select Space 1 Circuits 1–5 and change them to Space 2. A warning will present the option to auto-number all circuits to fit within the selected Space.*

- *Select "Yes" to complete auto-numbering. The Power Control Processor Mk2 will renumber the circuits to 11–15 and move them into Space 2.*
- *Select "No" to keep circuits as set.*

| Warning  |  |
|--|--|
| Space and circuit numbers are already in use. Auto assign circuit numbers? |  |
| Yes  |  |
| No   |  |

## Patch DMX Input

**Patch DMX Input** is an editable screen that allows you to set the DMX address of each circuit.

| 1 AND 3 THRU 6 |     |
|----------------|-----|
| Output         | DMX |
| 1:             | 123 |
| 2:             | 124 |
| 3:             | 125 |
| 4:             | 126 |
| 5:             | NA  |
| 6:             | 128 |

Press  
[Enter]  
(✓)

| Patch DMX Input |     |
|-----------------|-----|
| Output          | DMX |
| 1:              | -   |
| 2:              | 124 |
| 3:              | -   |
| 4:              | -   |
| 5:              | NA  |
| 6:              | -   |

Press [2] [2] [2], then  
[Enter]  
(✓)

| Patch DMX Input |     |
|-----------------|-----|
| Output          | DMX |
| 1:              | 222 |
| 2:              | 124 |
| 3:              | 223 |
| 4:              | 224 |
| 5:              | NA  |
| 6:              | 225 |

1. While in the **Patch DMX Input** screen, select the DMX circuit number on the keypad. If applicable, use **[and]** and **[thru/#nav]** to select multiple circuits.
2. Wait 2 seconds for the panel to recognize the requested circuits.
3. Press **[Enter]** (✓).
4. Using the keypad, type the required **starting** DMX address for the selected circuit or group.
  - The panel will consecutively auto-fill all additional circuits within the selected group.
5. Press **[Enter]** (✓) to commit the selection.
  - Pressing **[0]** then **[Enter]** (✓) will unpatch a circuit.
  - Unpatched circuits are shown as **-**.
  - For multi-pole breakers/relays, the DMX address will be shown for the first, or lowest, output of the relay.

For multi-pole breakers and relays, the DMX address is displayed for the first, or lowest, pole. All other poles are shown as *N/A*. If the breaker or relay is not configured as multi-pole, all poles are available.

## Patch sACN Input

**Patch sACN Input** is an editable screen that allows you to select the patch number for each selected circuit.

| 1 AND 3 THRU 6 |         |       |
|----------------|---------|-------|
| Out            | Address | Univ  |
| 1:             | 1       | 63999 |
| 2:             | 2       | 1     |
| 3:             | 3       | 12    |
| 4:             | 126     | 1     |
| 5:             | NA      |       |
| 6:             | 1       | 1     |

Press  
[Enter]  
(✓)

| Patch sACN Input |         |       |
|------------------|---------|-------|
| Out              | Address | Univ  |
| 1:               | 201     | 63999 |
| 2:               | 2       | 1     |
| 3:               | -       | 12    |
| 4:               | -       | 1     |
| 5:               | -       |       |
| 6:               | -       | 1     |

Press  
[2], [0], [1],  
then [Enter] (✓)

| Patch sACN Input |         |      |
|------------------|---------|------|
| Out              | Address | Univ |
| 1:               | 201     | 1    |
| 2:               | 2       | 124  |
| 3:               | 202     | 1    |
| 4:               | 203     | 1    |
| 5:               | NA      |      |
| 6:               | 204     | 1    |

Press [1],  
then [Enter] (✓)

- While in the **Patch sACN Input** screen, select the circuit position number on the keypad. To select multiple circuits, use the **[and]** and **[thru/#nav]** keys.
- Wait 2 seconds for the panel to recognize the requested circuits.
- Press **[Enter]** (✓).
  - You will now see the **Address** column highlighted.
- Use the keypad to select the starting patch number.
- Press **[Enter]** (✓) to commit the patch number selection.
- Press **[Enter]** (✓) a second time to advance to the **Univ** column.
- Use the keypad or **[Up]** (▲) and **[Down]** (▼) to enter the desired sACN universe.
  - Only sACN universes that have been configured can be entered. If you enter the number of a non-configured universe, the panel will reject the value and automatically revert to the previous setting. See [sACN Universes on page 24](#).

## Emergency Setup

- Emergency Outputs** allows you to assign each position to be *On* or *Off* when the panic input is active.
- Emergency Level** is the value that the emergency circuits will activate to when the emergency input is active. You can set **Emergency Level** to any percentage between *1%*–*100%*. The default is *100%*.
- Load Shedding** determined what happens to loads in the rack that are not part of the recorded emergency look. You can set **Load Shedding** to *On* or *Off*. The default is *On*.
  - When set to *Off*, the circuits will remain at their last control level at the time of emergency contact activation.
  - When set to *On*, the circuits that are included in the emergency look will turn on to the set **Emergency Level**. Any circuits that are not set to be included in the emergency look will turn off.

| Emergency Setup           |      |
|---------------------------|------|
| <b>Emergency Outputs:</b> |      |
| Emergency Level:          | 100% |
| Load Shedding:            | On   |

## Quick Rack Setup

The **Quick Rack Setup** menu offers a simple, initial setup of the panel and is available by default when the panel is otherwise unconfigured.

For additional setup or to quickly change a setting after initial configuration, access **Quick Rack Setup** from the main menu.

| Quick Rack Setup     |      |
|----------------------|------|
| <b>Output Count:</b> | Auto |
| DMX Start Addr:      | 1    |
| sACN Universe:       | 1    |
| sACN Start Addr:     | 2    |
| Space:               | 1    |
| Apply Changes*       | Only |
| Apply All            |      |





---

**CAUTION:** *The "Quick Rack Setup" operation will erase your panel's configuration and generate a new one. Echoflex Solutions recommends making a backup of your configuration before entering this menu option.*

---

- **Output Count:**
  - If you select *Auto*, the numbering and arrangement of the outputs is automatically detected by the presence or absence of breakers or relays.
  - If you enter a number, the controller assumes that number is the number of relays.
  - Any output positions where relays or breakers are not detected are assumed to contain a single-pole option.
- **DMX Start Address** displays the first DMX address used for patching. The default is 1.
- **sACN Universe** displays the first sACN universe in the panel (1–63999).
- **sACN Start Address** displays the first sACN address in the panel (1–512).
- **Space** determines the Space to which all relays or breakers in the panel will be assigned (1–255).
- **Apply Changes\* Only:** Applies to only the items that have been changed.
- **Apply All:** Applies to all items, whether they have changed or not.



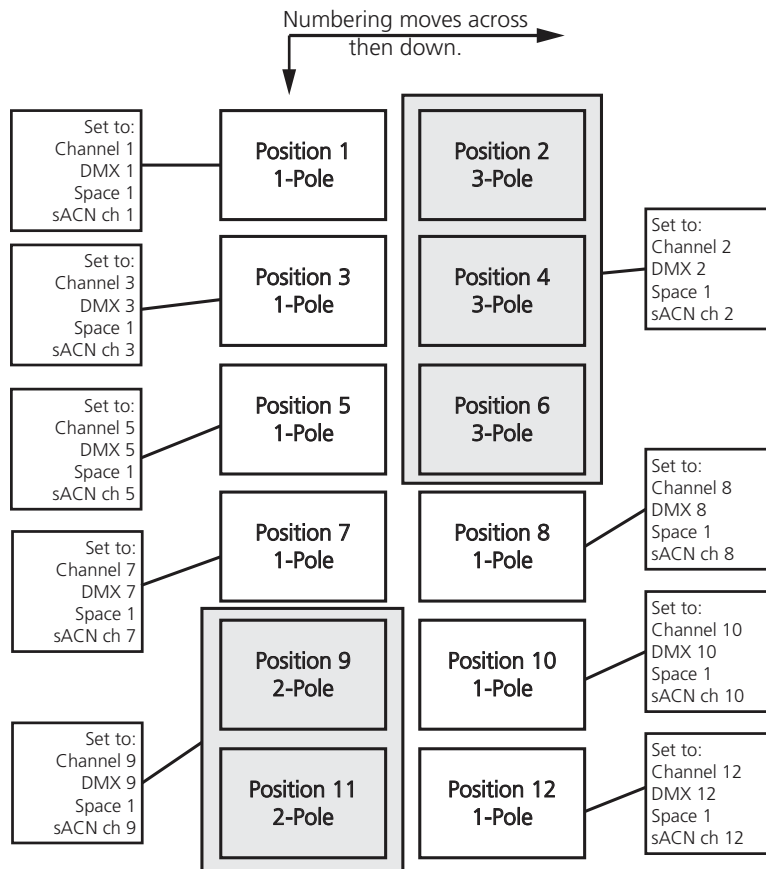
**Example:** *If you enter a DMX Start Address of 510 and select **Apply All**, the panel's auto-fill feature may cause consecutive addresses to extend beyond the allowed 512. In this case, the panel will automatically unpatch all circuits with an invalid address by assigning them to DMX zero.*

*A similar result happens if an sACN address entry causes an address overflow. All relays or breakers holding invalid addresses will be unpatched by assigning them to zero.*

## Address Assignment

The **Quick Rack Setup** operation automatically assigns addresses to the outputs in the panel.

For ERP and ERP-FT, the numbering is based on a left-to-right (horizontal) and then down (vertical) sequence as shown below.



## Switching Options

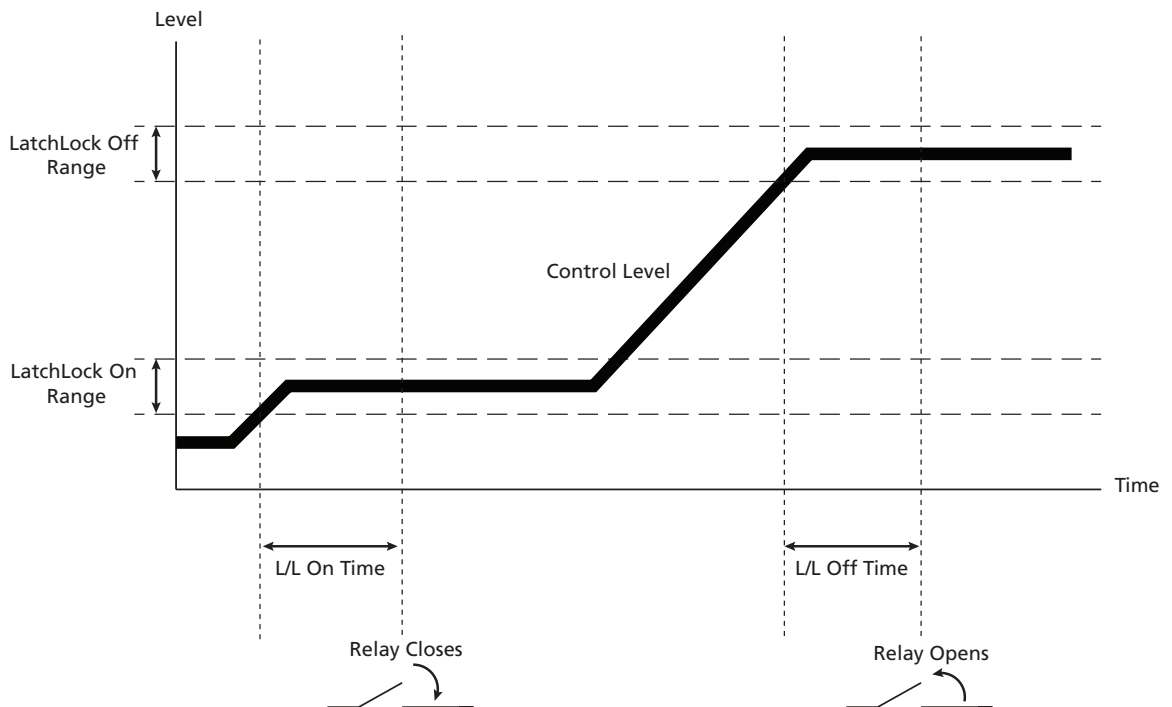
The **Switching Setup** menu allows you to configure the switching delay and LatchLock settings.

| Switching Options |         |
|-------------------|---------|
| Relay Delay:      | 0ms     |
| LatchLock On:     | 91-100% |
| L/L On Time:      | 5s      |
| LatchLock Off:    | 41-50%  |
| L/L Off Time:     | 5s      |

- **Relay Delay** is the delay when outputs turn on, in milliseconds. Outputs turn on in sequential order within the panel.
- **LatchLock On** displays the input control level range that causes the **L/L On Time** to start. **LatchLock On** is configurable in 10% ranges.
- **L/L On Time** is the amount of time the control level must be set before a circuit is switched on with LatchLock. **L/L On Time** can be set to a value between 1–350 seconds. The default is five seconds (5s).
- **LatchLock Off** displays the input control level range that causes the **L/L Off Time** to start. **LatchLock Off** is configurable in 10% ranges.
- **L/L Off Time** is the amount of time the control level must be set before a circuit is switched off with LatchLock. **L/L Off Time** can be set to a value between 1–350 seconds. The default is five seconds (5s).

### LatchLock Mode

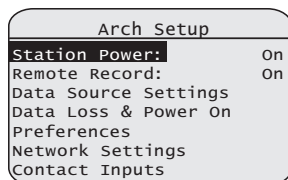
LatchLock mode provides added security against incidental turn-on or turn-off of critical circuits. It requires that the control level remains in a specific range for a specific amount of time in order to switch on or switch off the circuit.



#### Note:

- After the relay closes, the control source can go to any level and the relay will stay closed as long as the control level does not stay in the **LatchLock Off** range for longer than the **L/L Off Time**.
- After the relay opens, the control source can go to any level and the relay will stay open as long as the control level does not stay in the **LatchLock On** range for longer than the **L/L On Time**.

## Arch Setup Menu



### Data Source Settings

- **DMX Input** determines if the DMX input port to the controller is *Enabled* or *Disabled*. The default is *Enabled*.
- **DMX Priority** determines the priority level of the DMX input. See [Source Arbitration on page 7](#) for more information. The default value is *100*.
- **Arch Priority** determines the playback priority to be used for Preset, Sequence, and Zone activations controlled by the connected Preset Stations. The last action takes precedence. See [Source Arbitration on page 7](#) for more information. The default value is *100*.
- **Contact Priority** determines the priority of the contact input source. The range can be set from *1–201* with a default of *100*.
- **Packet Delay** allows the controller to manage the number of times a DMX value must be present before acknowledging and reacting to that value. With the default setting of *0*, the panel will react the first time it receives a valid DMX command. With the max setting of *10*, the panel will react after receiving the same DMX command ten times.



**Note:** DMX refreshes approximately 40 times per second.

### Data Loss & Power On

**Data Loss Settings** displays a sub-menu that allows configuration of the **DMX Loss Behavior**, **sACN Loss Behavior**, and **Power On Behavior**.

#### DMX Loss Behavior and sACN Behavior

- **Mode** may be set to *Wait and Fade* or *Hold Last Look*. The default **Mode** is *Hold Last Look*.
  - **Hold Last Look** holds any active dimmers at the last levels they received prior to the loss of data. The last levels are retained until data is restored or another source takes control.
  - **Wait and Fade** holds the last levels received when data was lost for the user-defined amount **Wait Time** and then fades those input levels to zero intensity using the user-defined **Fade Time**.
- **Wait Time** is set in minutes and seconds if the **Mode** is *Wait and Fade*. The range is from 0–59 minutes and 0–59 seconds. The default **Wait Time** is three minutes and zero seconds (*3min 0sec*). If the **Mode** is set to *Hold Last Look*, the **Wait Time** cannot be modified and displays as *Forever*.
- **Fade Time** is set in minutes and seconds. The range is from 0–59 minutes and 0–59 seconds. The default **Fade Time** is three seconds (*0min 3sec*).

| DMX Loss Behavior  |                |
|--------------------|----------------|
| Mode:              | Wait and Fade  |
| Wait Time:         | 3min 0sec      |
| Fade Time:         | 0min 3sec      |
| sACN Loss Behavior |                |
| Mode:              | Hold Last Look |
| Wait Time:         | Forever        |
| Power On Behavior  |                |
| Power On:          | Last-Look      |

## Power On Behavior

**Power On** determines the behavior for the control when the Elaho powers on. The options include *Last-Look* and *Off*. The default is *Last-Look*.

- *Last-Look*: Relays remain in their positions from the last power cycle, when the controller was powered up, if there is no control source.
- *Off*: Relays go to *Off* when the controller is powered up, if there is no active control source.

## Preferences

- **Backlight Mode** provides three possible modes: *Auto*, *On*, or *Off*. The default is *Auto*.
  - *Auto* keeps the display backlight illuminated after boot-up and after the last button push for a specified amount of time.
  - *On* keeps the display backlight illuminated at all times.
  - *Off* turns off the backlight illumination.
- **Backlight Time** controls the length of time before the backlight turns off when in *Auto* mode. The default is 3 minutes (3:00). **Backlight Time** can be set from ten seconds (0:10) to nine minutes and 59 seconds (9:59).
- **Contrast** can be set from 1–100 from the **Preferences** menu or from the home screen. See [Contrast on page 9](#).
- **Language**: default setting is *English*.

| Preferences     |         |
|-----------------|---------|
| Backlight Mode: | Auto    |
| Backlight Time: | 3:00    |
| Contrast:       | 100     |
| Language:       | English |

## Network Settings

**Network Settings** provides editing and setup including IP address configuration and sACN universe setup.

### IP Address

**IP Address** allows you to edit and set up network properties. Two options are available: *Automatic* and *Manual*. The default is *Automatic*.

- *Automatic*: the Elaho will attempt to acquire an address from a DHCP (Dynamic Host Configuration Protocol) server on the network. If a DHCP server is not found, the Elaho will default to a Link Local address for the current power cycle.
- *Manual*: you can manually enter an **IP**, **Mask** (subnet mask), and **Gway** (gateway). The default **IP** and **Gway** addresses will be *10.101.1.1*. The default **Mask** will be *255.255.0.0*.

| IP Address     |                  |
|----------------|------------------|
| Type:          | Manual           |
| IP:            | 10.101.165.101   |
| Mask:          | 255.255.0.0      |
| Gway:          | 10.101.165.101   |
| Apply and Exit |                  |
| MAC:           | 00:c0:16:aa:bb:c |

### sACN Universes

**sACN Universes** allows you to configure the sACN universes that are available for patching. The Elaho supports up to four sACN universes.

Each universe must be set to zero (entered as 0, but shown as –) to indicate that the universe is unused, or to a valid sACN universe number between 1–63999.

When you change a value, any output currently set to that universe will be reconfigured to the new universe.

| sACN Universes |       |
|----------------|-------|
| Universe A:    | 63999 |
| Universe B:    | 12    |
| Universe C:    | 233   |
| Universe D:    | –     |

## Contact Input

There are 24 contact inputs available in the panel. The following settings can be configured for each contact input:

- **Contact** displays the numbers of the contacts being configured. Select contacts in the range numbered 1–24. The default contact selection is contact number 1.
- **Evaluate on boot** determines whether the contact state is evaluated on boot. If you set **Evaluate on boot** to *Yes*, the action configured for the contacts is performed at the time of boot.
- **Space** determines the Space in which the selected action will happen.
- **On Open** determines the action that occurs when the contact is opened. The following actions are available:
  - *None* (default): No action will be performed when the contact opens.
  - *Off*: Off will be activated in the selected **Space** when the contact opens.
  - *Preset*: The selected **Preset** will be activated in the selected **Space** when the contact opens. Enter a **Preset** number 1–64.
  - *Sequence*: The sequence configured for the selected **Space** will be activated when the contact opens. See [Sequences on page 27](#).
  - *Output to FL*: When you select this option, you are able to select a range of **Outputs** on the bottom line of the **Contact Input** screen. The selected range of **Outputs** will be driven to full when the contact opens.
  - *Output to 0%*: When you select this option, you are able to select a range of **Outputs** on the bottom line of the **Contact Input** screen. The selected range of **Outputs** will be driven to 0% when the contact opens.
- **On Close** determines the action that occurs when the contact is closed. The available actions for **On Close** are the same as the actions listed for **On Open**, above.

| Contact Input     |              |
|-------------------|--------------|
| Contact:          | 1            |
| Evaluate on boot: | No           |
| Space:            | 1            |
| On Open:          | Preset       |
| Preset:           | 1            |
| On Close:         | Output to FL |
| Outputs:          | 1 thru 1     |

## Switching Control Menu

The **Switching Control** menu is provided to set output levels, check outputs and release any set output levels. Direct access to the **Switching Control** menu is also available by pressing **[Control]** (⌘) on the user interface.

### Set Levels

The **Set Levels** menu allows you to select circuits by slot number and manually set them to a level. All configured relays/breakers are listed.

- *NA* indicates a position that is either part of a 2-pole or 3-pole relay, or where no relay exists.
  - *–* indicates the dimmer is released from Set Level control or is not under Set Level control.
1. Use the numeric keypad including **[and]** and **[thru/#nav]** to specify a circuit or range of circuits.
  2. Press **[Enter]** (✓) to confirm the selection.
  3. Enter a level value.
  4. Press **[Enter]** (✓) to apply that level or **[Back]** ( ) to discard it.

When you exit the **Set Levels** menu you will be prompted to **Release Set Levels**.

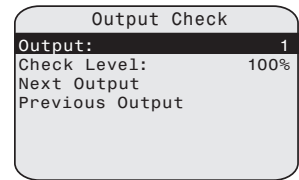
- Select *Yes* to return all set levels to the default value.
- Select *No* to cause all set levels to remain until released.

| Switching Control |                    |
|-------------------|--------------------|
| 1                 | Set Levels         |
| 2                 | Output Check       |
| 3                 | Release Set Levels |

## Output Check

The **Output Check** menu allows you to check outputs individually.

- **Output** defaults to position 1. It is then possible to scroll through all outputs to perform a quick functionality check. Output position numbers will roll over from one to the maximum and from maximum back to one.
- **Check Level** sets the percentage to which each position will be driven during an output check.
- **Next Output** advances to the next position.
- **Previous Output** moves backward to the previous position.



Output control is released when you exit the **Output Check** menu.

## Release Set Levels

Use this menu to release all set levels. After one second, this screen will return to the **Switching Control** menu.

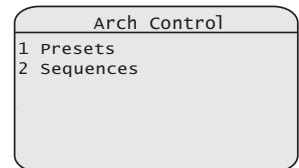


**Note:** The **Output Check** menu and **Set Levels** menu do not time out and revert to the home screen. These menus will remain visible until you leave them.

## Arch Control Menu

The **Arch Control** menu provides access to the setup and timing of the control system Presets and Sequences.

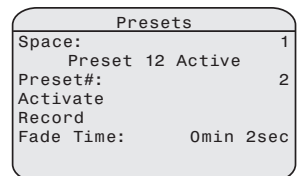
- **Presets** opens the **Presets** menu. See [Presets below](#).
- **Sequences** opens the **Sequences** menu. See [Sequences on the next page](#).



### Presets

The **Presets** menu provides the tools to select, activate, deactivate, record, and configure Presets.

- **Space** determines the space to which the entered Preset number (**Preset#**) applies. The available choices will depend on the configured Spaces within the rack.
- Below **Space** is a line indicating the status of the currently active Preset for the selected Space or *No Active Preset* if there is no active preset.
- **Preset**: Select the desired Preset within the Space. Each Space contains presets numbered between 1–64.
- **Activate/Deactivate**
  - When the currently selected Preset is NOT active, **Activate** will be displayed for selection. Select **Activate** and press **[Enter]** (✓) to activate the current preset. Any other Preset playing in the Space will be deactivated.
  - Select **Deactivate** and press **[Enter]** (✓) to deactivate the currently selected Preset.
- **Record**: Press **[Enter]** (✓) to record the currently selected **Preset** using the current levels of all of the circuits within the selected **Space**. Levels can be DMX, sACN, manually set levels from the user interface, or a combination of sources.
- **Fade Time** determines the length of time it will take for the **Preset** to fade up and down.



## Sequences

The **Sequence** menu provides the tools to start and stop a Sequence, edit the steps of a Sequence, and configure the Sequence mode.

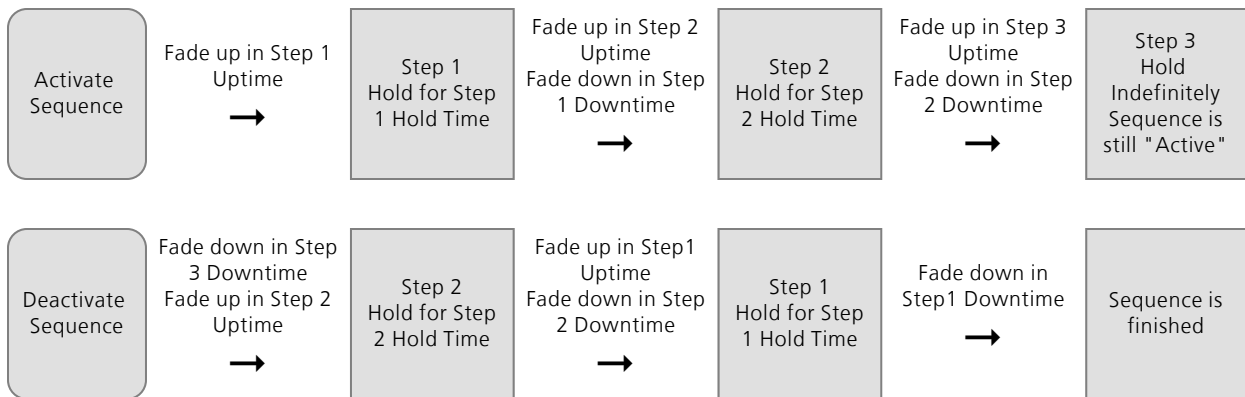
| Sequences  |          |
|------------|----------|
| Space:     | 1        |
| Sequence   | Inactive |
| Start      |          |
| Seq Mode:  | Single   |
| Edit Steps |          |

- **Space:** Select the Space to which the selected sequence applies. The available choices depend on the configured spaces in the rack.
- Below **Space** is a line indicating the status of the Sequence in the selected Space (*Sequence # Active*) or *Sequence Inactive*.
- **Start/Stop** or **Activate/Deactivate:**
  - When the **Seq Mode** is *Single* or *Loop* select **Start** to start the Sequence or **Stop** to stop the Sequence.
  - When the **Seq Mode** is *Bounce* this setting changes to **Activate/Deactivate**.
- **Seq Mode:** Select *Bounce*, *Single*, or *Loop*. See the examples below.
- **Edit Steps** opens the **Edit Step** menu, see [Edit Steps on the facing page](#).

### Bounce Sequence Example

*Bounce* is similar to a Preset; it can be activated or deactivated. When it is activated, it runs through the Sequence steps in order of recorded Presets for the Space, similar to a fade up. When it is deactivated, it runs through those steps in reverse order, similar to a fade down. A *Bounce* Sequence is useful for powering on and powering off equipment that needs to be turned on or turned off in a particular order, such as sound amplifiers and mixers.

The following example shows the activation and deactivation of a bounce sequence with three steps. The default fade time for sequences is zero seconds, so by default the panel will "snap" through these steps.

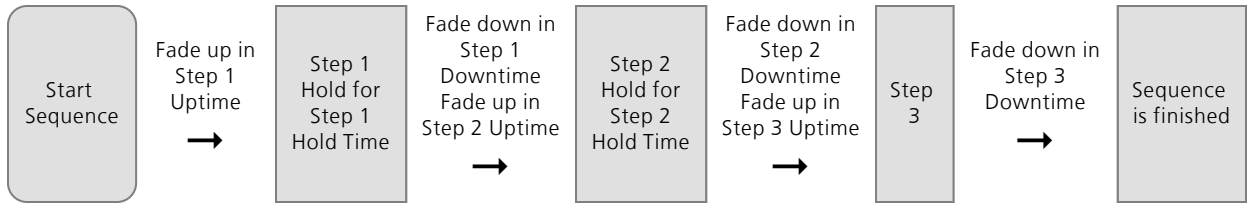




## Single Sequence Example

*Single* sequences run from beginning to end and then terminate. A *Single* sequence is activated by a **Start** command.

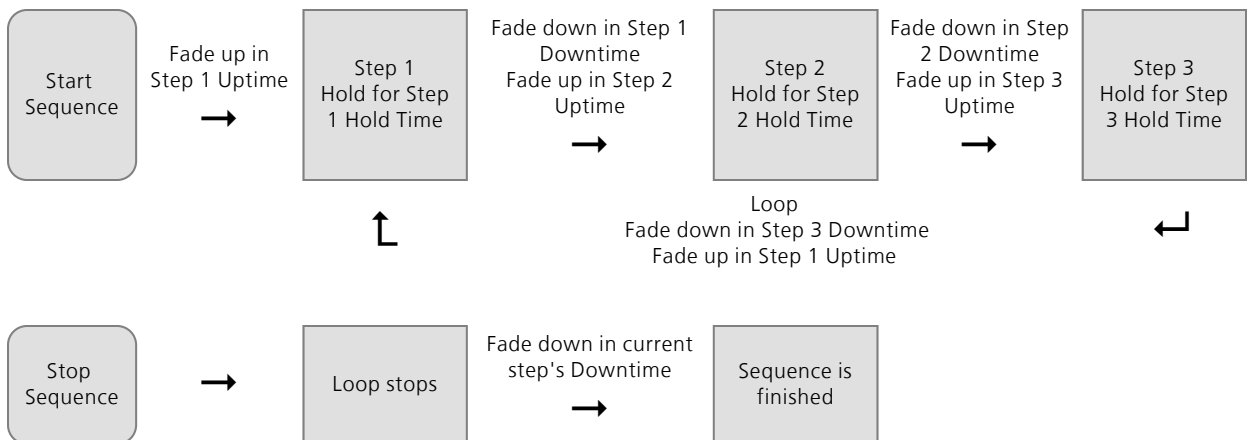
The following example shows the activation of a sequence with three steps in *Single* mode. The sequence runs through all of the steps and then terminates.



## Loop Sequence Example

*Loop* sequences run the sequence steps in a loop from 1 through the highest programmed step, then start over with step 1. For example, if there are 3 steps in a sequence, the steps will run: 1, 2, 3, 1, 2, 3, 1, 2, 3, etc.

The following example shows the activation and deactivation of a sequence with three steps in *Loop* mode. A *Loop* sequence is activated by a **Start** command. When activated, the sequence keeps running until it is deactivated by a **Stop** command.



## Edit Steps

The **Edit Step** menu allows you to snapshot sequence steps using the current output levels of the panel and to alter the sequence timing and add or remove steps. A sequence must have at least one step.

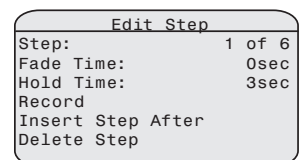
**Step:** Scroll through each existing step in the sequence. Select the step to edit.

**Fade Time** determines the fade time for a step in seconds. At zero seconds, the step will "snap" with no fade time. Zero is the default.

**Hold Time** determines the length of time between the activation of one step and the activation of a consecutive step.

**Record:** Record the current state of the panel output into the currently selected step.

**Insert Step After:** Add another step into the sequence after the currently selected step.

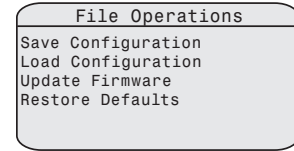


**Delete Step:** Delete the currently selected step and shift all subsequent steps by one to close the gap.

## File Operations

The **File Operations** menu provides the tools to save and load a configuration file, update firmware, and restore factory defaults.

Saving and loading files using the **File Operations** menu requires removable USB media.



### Save Configuration

Saving a panel configuration creates a file for storage to the root directory of a connected USB storage device.

1. Insert a USB storage device in the USB port on the left side of the front of the user interface. The USB device must be compatible with the processor. See [USB Media on page 12](#).
2. Navigate to **File Operations**.
3. Press **[Enter]** (✓) to select **Save Configuration**.
4. The Save Configuration screen displays and the default "Filename: Echo1" is selected. You can save your file under a name between Echo1 and Echo16.
5. To select a different filename, press **[Enter]** (✓). The selection will focus on "Echo#".
6. Use **[Up]** (▲) and **[Down]** (▼) to scroll through the list. Press **[Enter]** (✓) to make the selection.
7. Scroll to **Save to USB key** and press **[Enter]** (✓). The dialog will display "Saving to USB". The file will always be saved to the root directory of the USB device.

### Load Configuration

Loading a panel configuration file replaces all existing configuration data (circuit assignments, presets, sequences, and patching) with the new configuration. Before loading a new configuration onto the Power Control Processor Mk2, Echoflex Solutions recommends saving the existing configuration file. See [Save Configuration above](#).

1. Insert a USB storage device in the USB port on the left side of the front of the user interface. The USB device must be compatible with the processor. See [USB Media on page 12](#).
2. Navigate to **File Operations**.
3. Press **[Enter]** (✓) to select **Load Configuration**.
4. Press **[Enter]** (✓) to select **Load from USB Key**.
5. Use **[Up]** (▲) and **[Down]** (▼) to scroll through the USB directories. Configuration files are named Echo#.CFG where the # can be any number from 1–16.
  - You can descend into other directories on the USB device by scrolling to the name of the directory and pressing **[Enter]** (✓).
  - You can return from directories by selecting the ".." entry in a subdirectory location.
6. When you have selected the configuration file to be loaded, press **[Enter]** (✓). The dialog will display "Loading Configuration".

## Software Update Instructions

### Update Firmware

Power Control Processor Mk2 ships with the current version of software installed. The firmware of your Power Control Processor Mk2 can be field-upgraded as needed. When new firmware is released, Echoflex Solutions Technical Services can supply the necessary files. Some

USB keys may not be able to reliably update panels. If you run into this situation, contact Echoflex Solutions Technical Services and request a USB upgrade Kit (part number 7123K1024-4.0.0), which includes a known-working USB key.



**CAUTION:** *Updating firmware may cause outputs to change. Only perform firmware updates when it is acceptable for output levels to turn on or off. Interrupting power during a firmware update may render the panel inoperable.*

---



**CAUTION:** *Do not remove the USB key until the update has completed.*

---

1. Technical Services will send you the most current software in a zip file or on the USB key in the upgrade kit. If using your own USB storage device, unzip and save the software file (e\_pcp\_2.efw) to the root directory of the device. See [USB Media on page 12](#) for information about compatible USB devices.
2. Insert the USB storage device in the USB port on the left side of the front of the user interface.
3. Press **[Enter]** (✓) to access the main menu.
4. Navigate to **File Operations**.
5. Navigate to **File Operations** and Press **[Enter]** (✓).
6. Scroll to **Update Firmware** and select it.
7. Press **[Enter]** (✓) to select **Load from USB Key**.
8. Firmware file extensions are ".EFW". Use **[Up]** (▲) and **[Down]** (▼) to scroll through the USB directories.
  - You can descend into other directories on the USB device by scrolling to the name of the directory and pressing **[Enter]** (✓).
  - You can return from directories by selecting the ".." entry in a subdirectory location.
9. When you have selected the firmware file to be installed, press **[Enter]** (✓). A dialog will display confirming your intent to upgrade.
10. Select **OK** or **Cancel**. The controller will reboot and begin loading the firmware, displaying progress for each part of the update.
11. Save the current configuration onto the USB device.
12. Select **Update Firmware**. If you are using the upgrade kit, the firmware is located in the subdirectory on the provided USB key.
13. Select the firmware file. The update will automatically begin.



**Note:** *Do not turn off power to the controller during the firmware update process.*

---

## Restore Defaults

To reset the Power Control Processor Mk2 to factory defaults, removing all configured settings, select **Restore Defaults** from the **File Operations** menu. A dialog will display asking for confirmation: "All settings in memory will be lost! Are you sure?" Select **Yes** to confirm or **No** to cancel.

## View Errors

**View Errors** is a read-only screen where you can scroll through a list of existing errors in the panel. See the Status Messages table on [page 11](#) for a list of possible error types. Errors associated with a specific position in the panel will list the position number after the error.

# Chapter 4

## Service and Maintenance

---

### Help from Echoflex Solutions Technical Services

If you have questions that are not answered by this document, try the main website at [echoflexsolutions.com](http://echoflexsolutions.com). If none of these resources are sufficient, contact Technical Services directly at the office identified below.

When calling for help, take these steps first:

- Prepare a detailed description of the problem
- Go near the equipment for troubleshooting
- Find your notification number if you have called in previously

Please have the following information handy:

- Your location and job name
- Model of breaker or relay panels
- Type of relays and breakers used including the model numbers and quantities
- All option cards installed in the panel
- Other components in your system including dimmers, switch gear, etc.
- DMX or network control source used for system-wide control, if any
- Related system problems or equipment failure

### Technical Services

3031 Pleasant View Road  
Middleton, WI 53562  
800-775-4382 (USA, toll-free)  
+1-608 831-4116  
[service@echoflexsolutions.com](mailto:service@echoflexsolutions.com)

# Maintenance

## Vacuum the Interior

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**WARNING: RISK OF DEATH BY ELECTRIC SHOCK!** Failure to disconnect all power to the panel before working inside could result in serious injury or death.

**De-energize main feed to the panel and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.**

---

1. Remove power from the panel.
2. Remove any doors, top, and bottom front panels from the panel.
3. Vacuum the dust from the interior of the unit. If needed, use canned air to blow dust from the relay or breaker panels.
4. Reinstall the front panels and door before applying power to the unit.

### Replacing Fuses

The Elaho Relay Panel Mains Feed features internal fuses on the relay cards to protect the relay in the event of a high current short circuit. Most faults should cause the associated circuit breaker to trip; however, very high current direct shorts may cause fuse failure.

Two spare fuses are included inside the panel. The fuse is a 30A SC-30 (part number F334). Replace the fuse with the same type only.

# Appendix A

## Menu Flow Chart

---

This appendix contains the Power Control Processor Mk2 menu structure:

- About on [page 34](#)
- Switching Setup on [page 35](#)
- Arch Setup on [page 36](#)
  - Contact Input on [page 37](#)
- Switching Control
- Arch Control
- File Operations

About Output 1  
 Load: 6.5A (767VA)  
 Breaker: On  
 Contact: Closed  
 Voltage: 120VAC  
 Software: v001  
 <push Enter for more>

About Output 1  
 Contact Level: 100%  
 DMX Level: 45%  
 SACN Level: 0%  
 Arch Level: 33%  
 Set Level: 0%  
 Panic/Emer: 100%  
 <push Enter for more>

About Output 1  
 DMX address: 123  
 SACN addr: 1234/412  
 Type: 1-Pole  
 Mode: Latch-Lock  
 Contact: Closed  
 Current Level: 100%  
 <push Enter for more>

About  
 About Output  
 Levels Summary  
 Version Info  
 Contact Inputs  
 Space Combine

| Pos | Ckt | Src   | Level |
|-----|-----|-------|-------|
| 1   | 12  | Cont  | 255   |
| 2   | 1   | SACN  | 125   |
| 3   | 2   | Arch  | 75    |
|     | 4   | 3     | ---   |
| 5   | 4   | DMX   | 255   |
| 6   | 5   | Emerg | ---   |

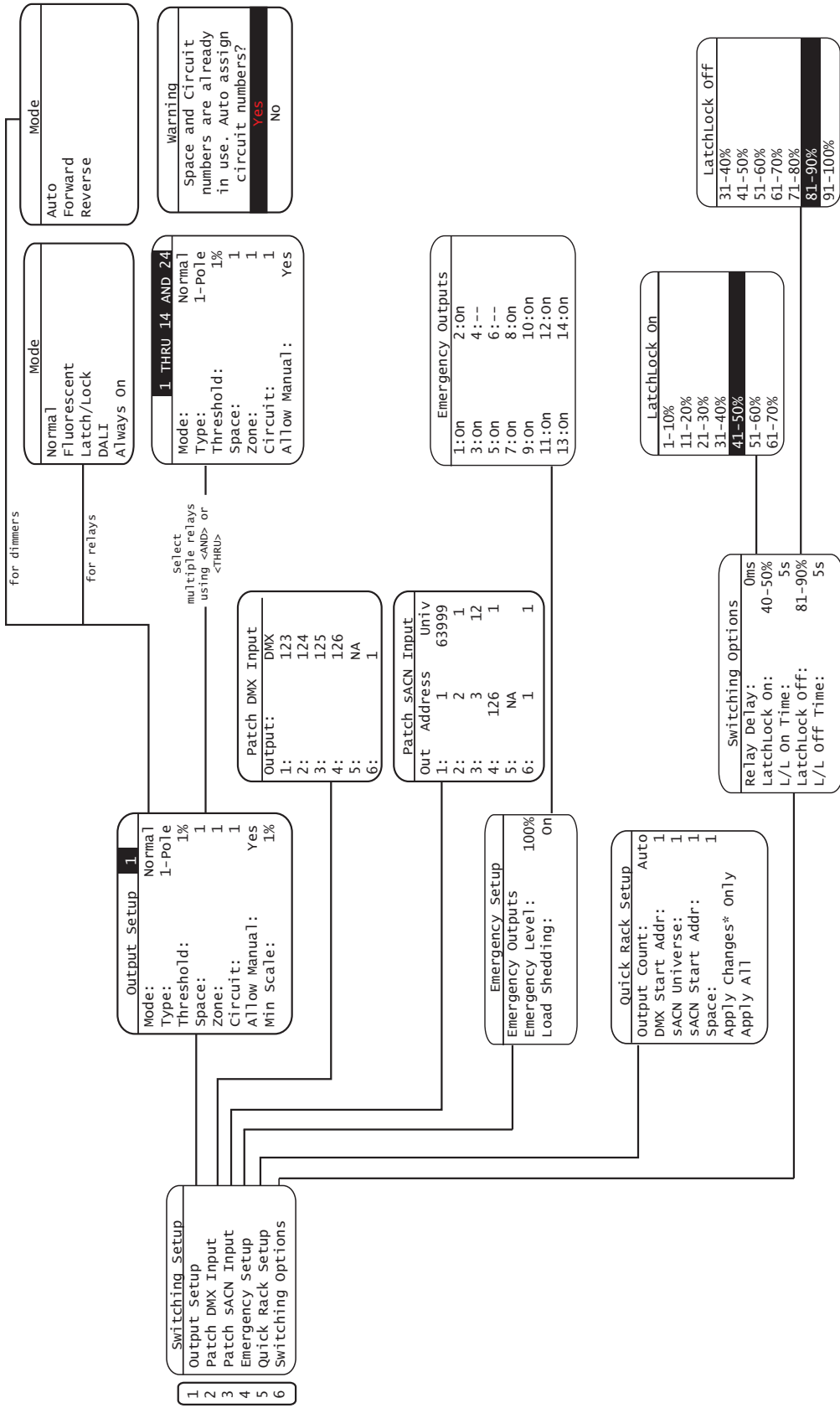
Version Info  
 App: 4.0.0.15  
 AppBL: 1.0.0.4  
 Echo MAC: 18  
 Contact: 1.2.3.4.5.6

Contact Inputs  
 1:OFF 2:OFF 3:OFF  
 4:OFF 5:OFF 6:OFF  
 7:OFF 8:OFF 9:OFF  
 10:OFF 11:OFF 12:OFF  
 13:OFF 14:OFF 15:OFF  
 16:OFF 17:OFF 18:OFF  
 19:OFF 20:OFF 21:OFF  
 22:OFF 23:OFF 24:OFF

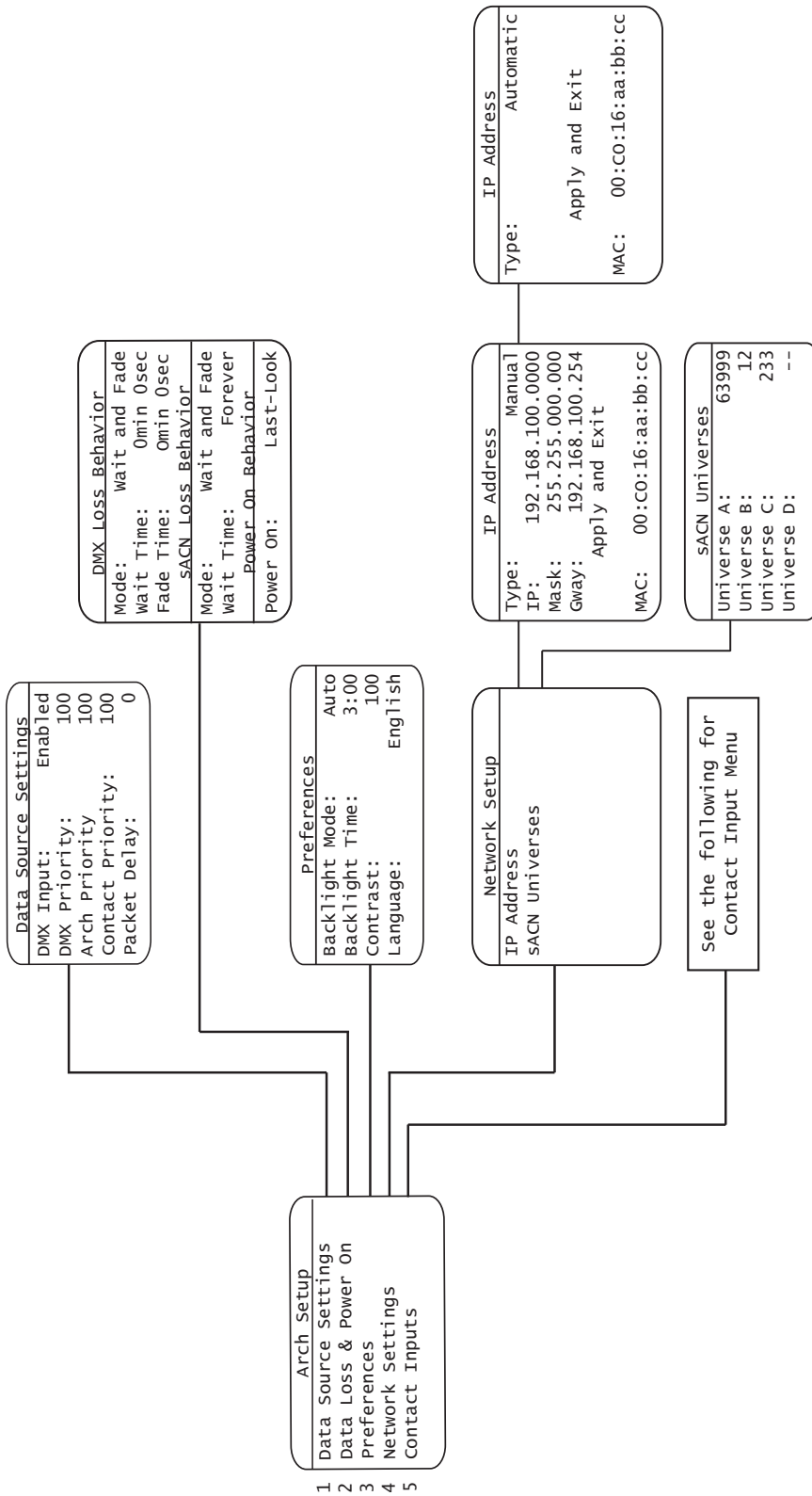
OR

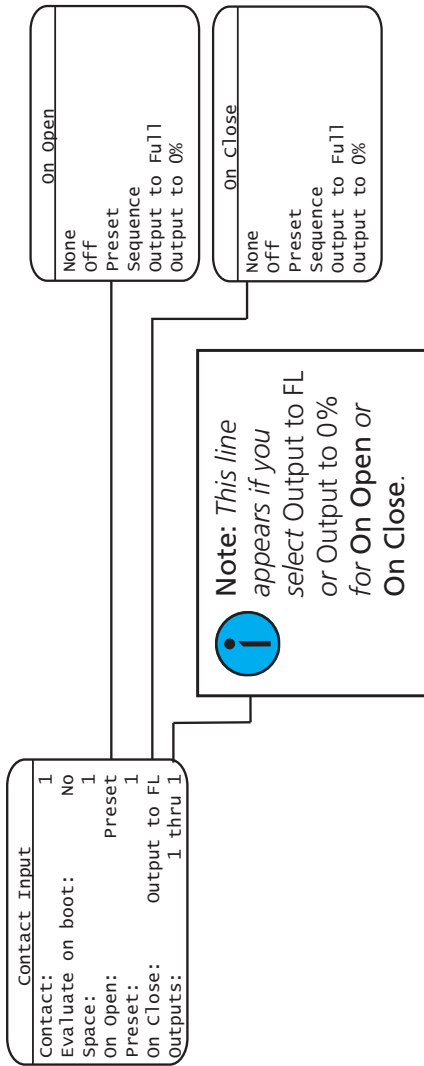
Contact Inputs  
 Contact input card  
 not installed

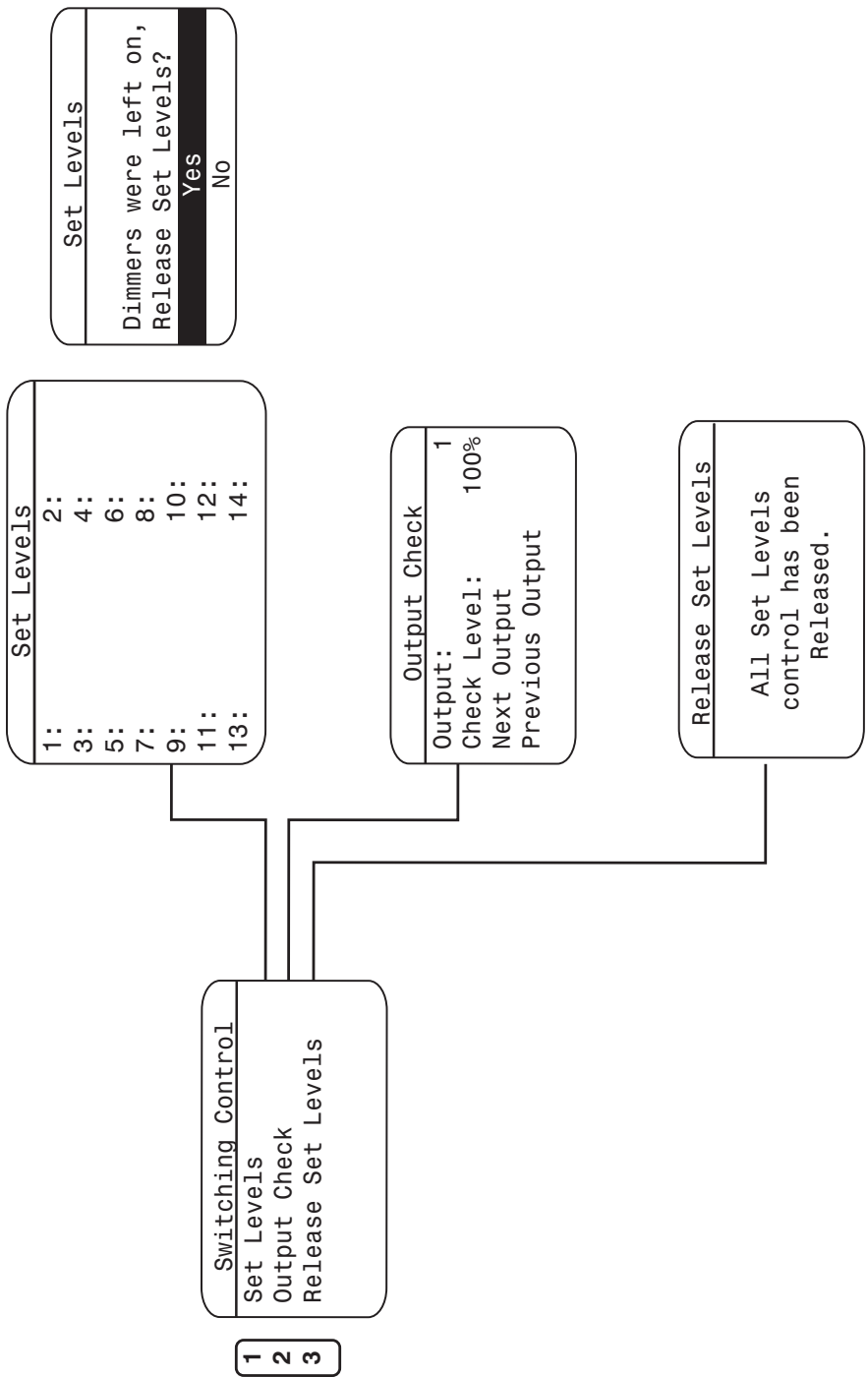
Space Combine  
 Space 1: 2  
 Space 2: 1  
 Space 3: None  
 Space 4: 5-6, 9, 11  
 Space 5: 4, 6, 9, 11











Set Levels

Dimmers were left on,  
Release Set Levels?

Yes  
No

Set Levels

1:  
2:  
3:  
4:  
5:  
6:  
7:  
8:  
9:  
10:  
11:  
12:  
13:  
14:

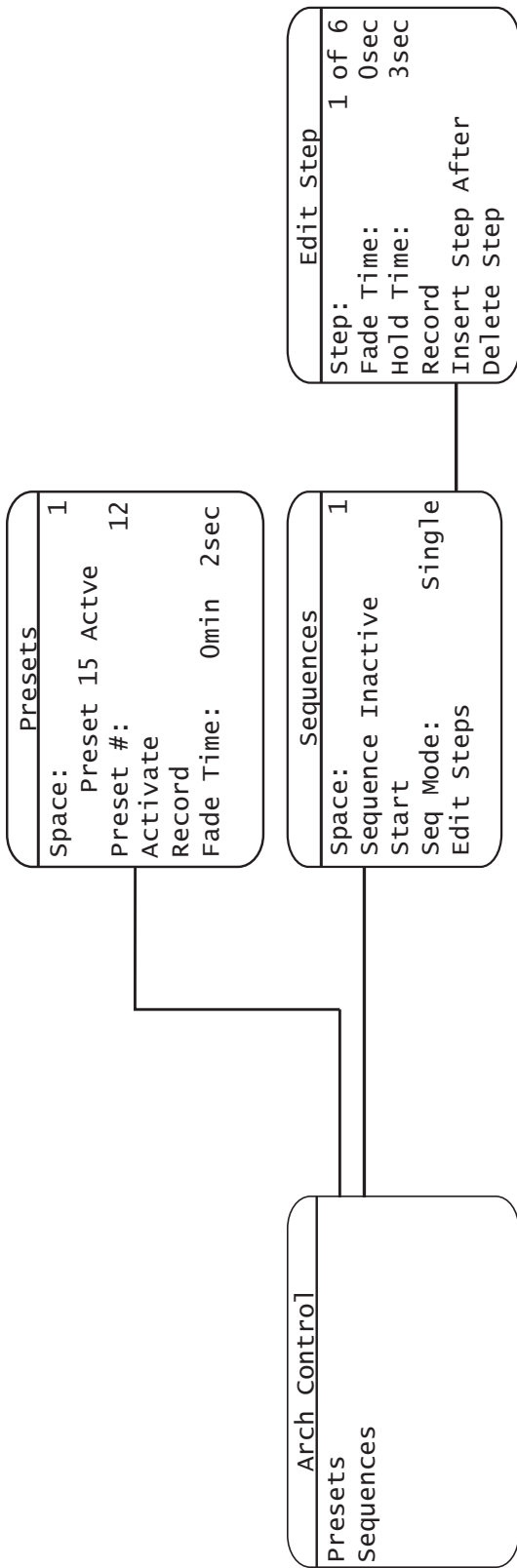
Output Check

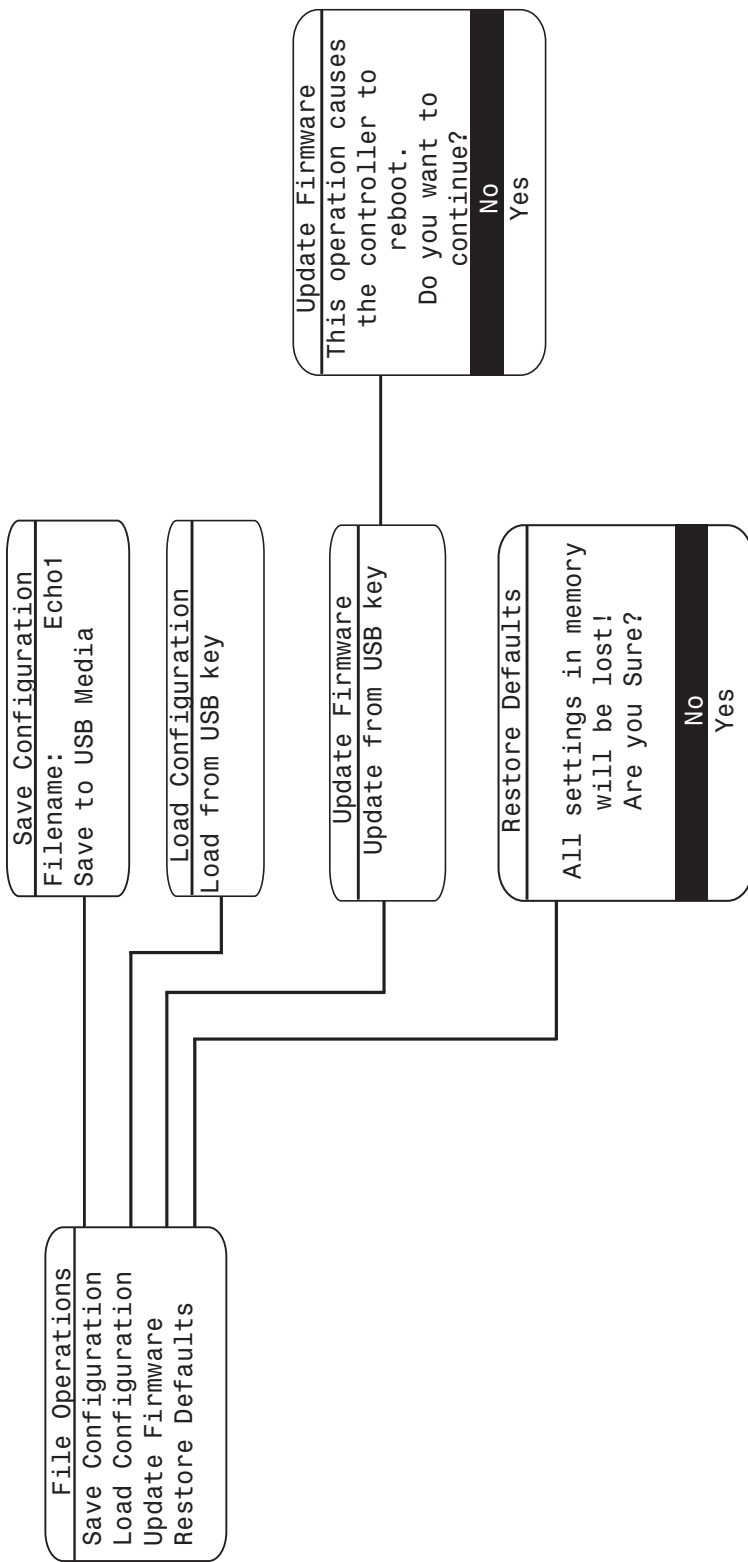
Output: 1  
Check Level: 100%  
Next Output  
Previous Output

Release Set Levels

All Set Levels control has been Released.

- 1
- 2
- 3





# Appendix B

## Status Messages

The Power Control Processor Mk2 shows messages on the display to advise status of the system or the components in the panel itself.

| Status Message     | Cause   | Illuminate Error LED | Cycle with Others | ERP | ERP-FT |
|--------------------|---|----------------------|-------------------|-----|--------|
| System OK          | No other messages active  | No                   | N/A               | Yes | Yes    |
| Emergency Active   | Emergency look is active  | Yes                  | No                | Yes | Yes    |
| Breakers Tripped   | No voltage detected at one or more relays                       | Yes                  | Yes               | Yes | No     |
| Relay Mismatch     | One or more relays in the rack do not match the configuration   | Yes                  | Yes               | Yes | No     |
| Relay Removed      | One or more relays in the rack are not found                    | Yes                  | Yes               | Yes | No     |
| Breaker Mismatch   | One or more breakers in the rack do not match the configuration | Yes                  | Yes               | No  | No     |
| Breaker Removed    | One or more breakers in the rack are not found                  | Yes                  | Yes               | No  | No     |
| Breaker Error      | Breaker is detected as an impossible type                       | Yes                  | Yes               | No  | No     |
| Dim Overtemp       | Dimmer is in an overtemp state                                  | Yes                  | Yes               | Yes | No     |
| Invalid Cfg Loaded | User has loaded a configuration file that is invalid            | Yes                  | Yes               | Yes | Yes    |

### Emergency Active

Emergency contact closures are commonly used with auxiliary systems, such as fire alarms. For information on wiring and configuring the emergency input on your specific panel, see the installation manual for your product at [etconnect.com](http://etconnect.com). "Emergency Active" indicates that the emergency ("Panic") contact input has been triggered and the configured emergency look is active in the panel.

"Emergency Active" is the highest priority message; no other status message displays while this status is active. In addition, this status cannot be cleared until the condition is cleared. For example, resetting the fire alarm signal would clear the condition.

### Breakers Tripped

A "Breakers Tripped" message indicates that voltage is not detected at one or more relay or breaker inputs. Typically this condition is caused by one of the circuit breakers at the panel tripping or being switched off. To resolve this message, check the circuit breakers in the panel and verify that they are all turned on. As needed, reset the breaker or determine if additional troubleshooting of the circuit is required.

To achieve short circuit ratings, the Elaho Relay Panel Mains Feed has an in-line fuse for each relay card. Two spare fuses are included inside the panel. The fuse is a 30A SC-30 type fuse, available from Echoflex Solutions with part number F334. Replace the fuse only with a fuse of the same type. See [Replacing Fuses on page 32](#).

## Relay Mismatch

A "Relay Mismatch" message indicates that there is a difference between the types of one or more relays in the configuration for the Power Control Processor Mk2 and the types of relays detected in the panel. This condition occurs when relays have been added or altered in the panel after configuration.

To resolve a "Relay Mismatch" condition, reconfigure the panel using the **Quick Rack Setup** menu. See [Quick Rack Setup on page 19](#).

## Relay Removed

A "Relay Removed" message indicates that one or more relays are missing from the panel, according to the configuration of the Power Control Processor Mk2.

This condition occurs when relays have been removed from the panel after configuration. To resolve a "Relay Removed" condition, reconfigure the panel using the **Quick Rack Setup** menu (see [Quick Rack Setup on page 19](#)) or replace the relay in the panel following appropriate electrical safety procedures.

When a relay has not been removed from the panel and the condition persists, additional troubleshooting is required with power removed.

## Breaker Mismatch

A "Breaker Mismatch" message only applies to Sensor IQ panels. "Breaker Mismatch" indicates that there is a difference between the types of one or more breakers in the configuration and the types of breakers detected in the panel. This condition occurs when breakers have been added or altered in the panel after configuration. To resolve a "Breaker Mismatch" condition, reconfigure the panel using the **Quick Rack Setup** menu. See [Quick Rack Setup on page 19](#).

## Breaker Removed

A "Breaker Removed" message only applies to Sensor IQ panels. "Breaker Removed" indicates that one or more breakers are missing from the Sensor IQ panel, according to the configuration of the Power Control Processor Mk2. This condition occurs when breakers have been removed from the panel after configuration. To resolve a "Breaker Removed" condition, reconfigure the panel using the **Quick Rack Setup** menu (see [Quick Rack Setup on page 19](#)) or replace the breaker in the panel following appropriate electrical safety procedures.

When a breaker has not been removed from the panel and the condition persists, additional troubleshooting is required with power removed. For information on how to replace a breaker, see the *Sensor IQ Installation Manual*.

## Breaker Error

A "Breaker Error" message only applies to Sensor IQ panels. "Breaker Error" indicates that the control boards are unable to communicate with a circuit breaker.

Perform the following steps to resolve a "Breaker Error":



**WARNING: RISK OF DEATH BY ELECTRIC SHOCK!** Failure to disconnect all power to the panel before working inside could result in serious injury or death.

**De-energize main feed to the panel and follow appropriate Lockout/Tagout procedures as mandated by NFPA 70E. It is important to note that electrical equipment such as breaker panels can present an arc flash hazard if improperly serviced. This is due to the high amounts of short-circuit current available on the electrical supply to this equipment. Any work must comply with OSHA Safe Working Practices.**

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1. Turn off all power to the panel.
2. Remove the breakers that reported the error.
3. Visually inspect the contact on the bottom of the breaker and the mating contacts within the panel for damage. If you see any damage, contact Echoflex Solutions Technical Services for assistance.
4. Re-seat the breaker, making sure it is firmly seated in place.
5. Replace the panel covers.
6. Re-energize the panel and check that the problem has been resolved.

## Dim Overtemp

A "Dim Overtemp" message only applies to ERP panels fitted with dimmer modules. "Dim Overtemp" indicates that one or more dimmers within the panel are running too hot. To troubleshoot, check that the temperature of the room where the panel is installed is within the recommended temperature and humidity range, and that any ventilation or air conditioning systems are functioning appropriately.









