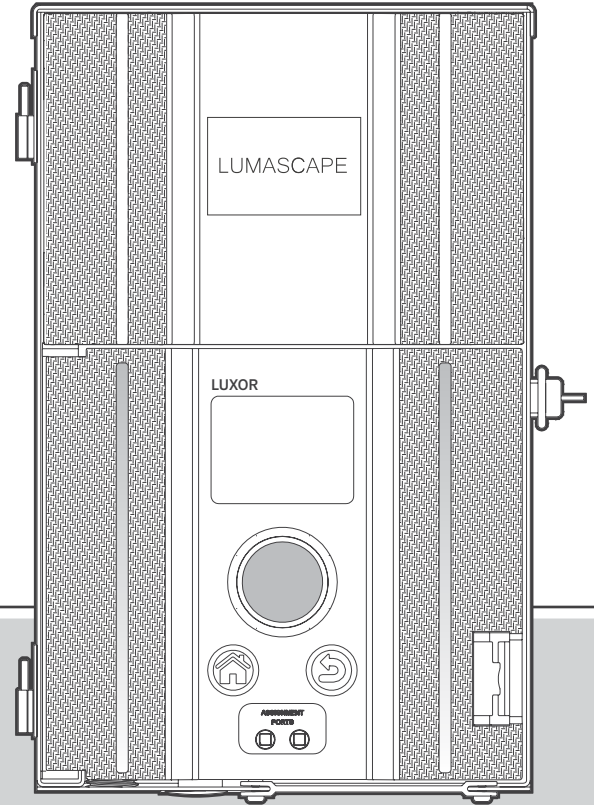


ZDClink[®]

with Luxor[®] Technology

OWNER'S MANUAL

LED Landscape Lighting Controller
Installation Instructions



 LUMASCAPE

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ZDClk with Luxor Technology is a lighting transformer and controller that lets you adjust light intensity at set times for groups of lights. Two-wire connections power and communicate with all lights in the system.

ZDClk Components

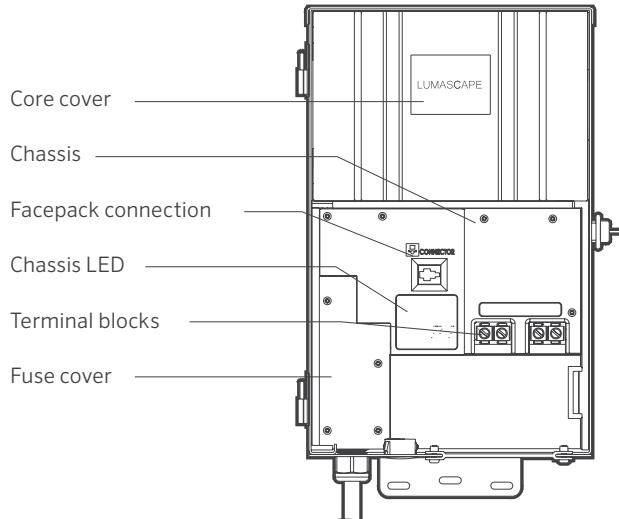


Figure 1: ZDClk Controller



This controller is intended for use with Lumascape low-voltage LED luminaires or devices containing Lumascape ZD Technology® or ZDC Technology®. Use with other LED luminaires is not recommended due to the absence of communication capabilities. Do not use this controller with incandescent luminaires.

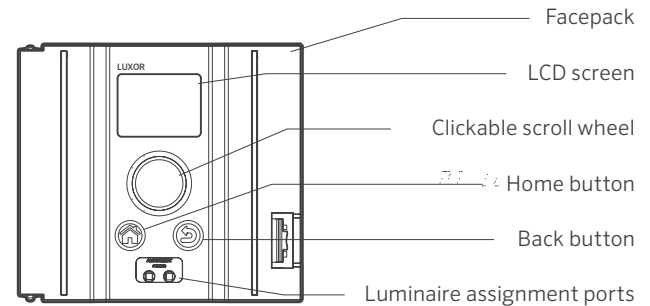


Figure 2: ZDClk Facepack

Glossary of Terms

Group: An addressed set of lights that is designated numerically and controlled as a set by the controller.

Theme: A predetermined set of groups, intensities, and colors called to action by the program or manual functions.

Luminaire: Light unit that contains a Lumascope low-voltage LED board, ZD technology, or ZDC technology.

Intensity: Value indicating the measurable amount of brightness, from 1% to 100%.

Event: The initiation, adjustment, or conclusion of a selected theme or group with specific intensity and/or color settings.

Duration: The length of time an event will run.

Hue: The primary attribute of a color; it is represented by a numeric value between 0 and 359.

Saturation: The richness of a color mixed with white light, from 0% to 100%.

Color: The visual combination of hue and saturation.

Primary Controller: A Luxor controller containing a facepack.

Satellite Controller: A controller without a facepack.

Safety Information

These cord-connected units consist of step-down, isolated, two-winding-type transformers, circuit breakers, and associated circuitry intended to supply power to low-voltage, submersible luminaires.

WARNING — Risk of Electric Shock. Install power unit 5' (1.5 m) or more from a pool or spa and 10' (3 m) or more from a fountain. Where the power unit is installed within 10' (3 m) of a pool or spa, connect power unit to a GFCI-protected branch circuit. Do not use an extension cord when connecting the power unit to the 120 V source. Use a grounding conductor that is 12 AWG (2.05 mm) minimum. Connect the outdoor power unit to a GFCI-protected, hooded, flush-type cover plate receptacle marked "Wet Location" while in use.

Caution: The supply circuit for the landscape lighting system should be protected by a Class A-type ground fault circuit interrupter, unless it is provided with the landscape lighting system. This device is accepted as a component of a landscape lighting system where the suitability of the combination will be determined by local inspection authorities having jurisdiction. Do not connect two or more power supplies in parallel. Not for use in dwelling units. This presents a risk of fire. Do not place insulation under terminal plate. Check connector after installation.

Circuit Protection

- 11 A for 150 W power controller
- 22 A for 300 W power controller

Step 1: Placing the Transformer

1. Place transformer(s) in a well-ventilated area away from direct irrigation spray and central to the proposed installation site of the majority of the luminaires. The primary goal is to minimize the length of cable runs from your transformer to the luminaires, which minimizes voltage drop and cable size. A common mistake is to locate the single transformer on the service side of the house or in the garage, which might result in excessively long cable runs to reach lighted areas. Transformer(s) with power cords must be located adjacent to a 120 V, GFCI-protected exterior electrical receptacle. If a 120 V power source is not available at the desired transformer installation location, it is advised that you hire a licensed electrician to run a dedicated 120V, 15 A circuit to the desired location. For the international/export version, the previously mentioned information applies for 230 V, 10 A circuits.
2. Test all existing receptacles with both a receptacle tester and a digital voltmeter or amp clamp to verify proper wiring and voltage at the receptacle.

Step 2: Mounting the Transformers

Wall-Mount Installation

1. Install all transformers a minimum of 12" (310 mm) above the finish grade, as measured from finish grade to the bottom of the transformer and according to code.
2. Drill pilot holes into the mounting surface, insert anchors, and install screws into the anchors, leaving approximately 1/8" (3 mm) of the thread exposed on the screw. Mount the transformer on the screw.

3. Use a level and a pencil to determine and mark locations for the bottom anchors. Remove transformer from the wall. Drill bottom anchor holes and install anchors.
4. Place the transformer back on top of the uppermost mounting screw, and install screws into anchors at the bottom of the transformer to secure it to the wall.

Post-Mount Installation

1. Install pressure-treated 4" x 4" x 36" (100 mm x 100 mm x 920 mm) minimum post in concrete footing.
2. Repeat wall-mount installation instructions (Figure 3 on page 6), without the use of wall anchors.

All Luxor controllers come equipped with a 5' (1.5 m), 12 AWG (2.05 mm), 3-prong electrical power cord. Only use the Luxor power cord in conjunction with a GFCI-protected, 120 V exterior receptacle (or 230 V receptacle for international/export version).



When installing the controller Wi-Fi Module, consider increasing the installation height to improve signal strength and screen visibility.

Installing the Controller

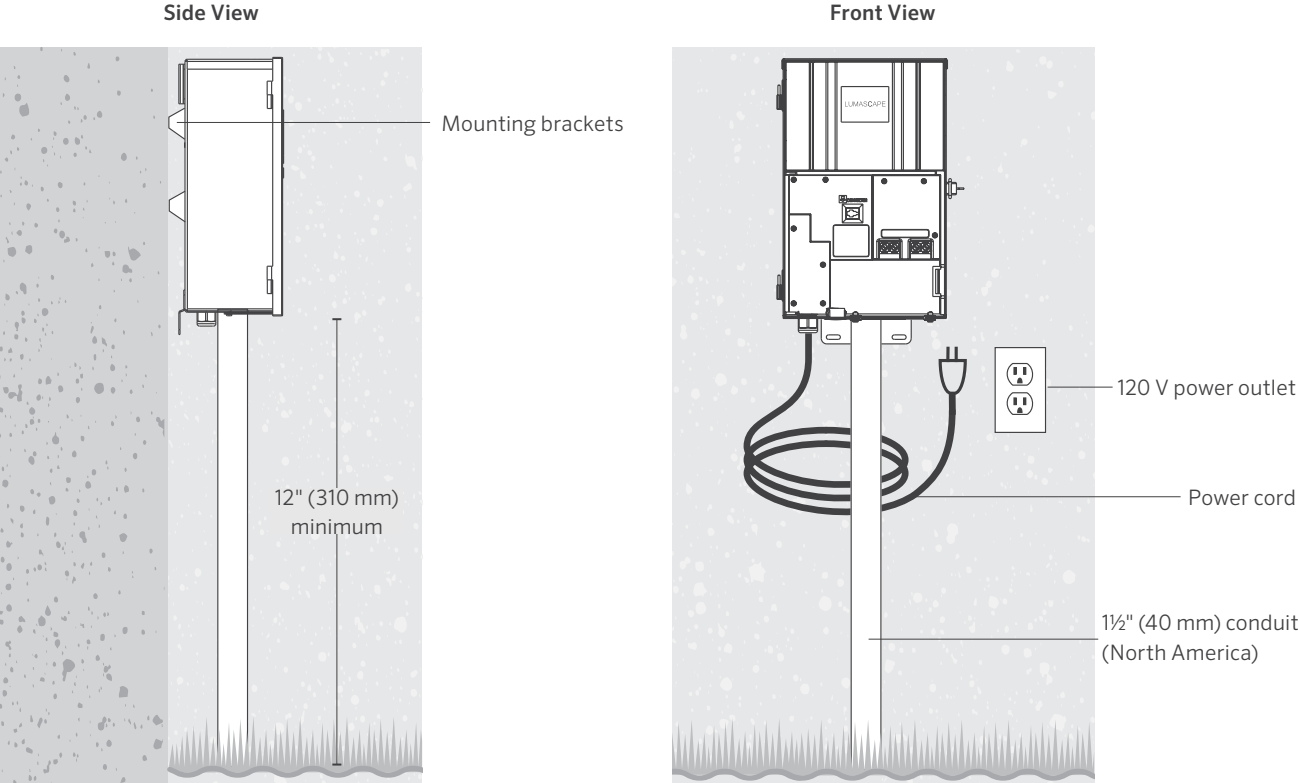


Figure 3: ZDCLink wall mounting

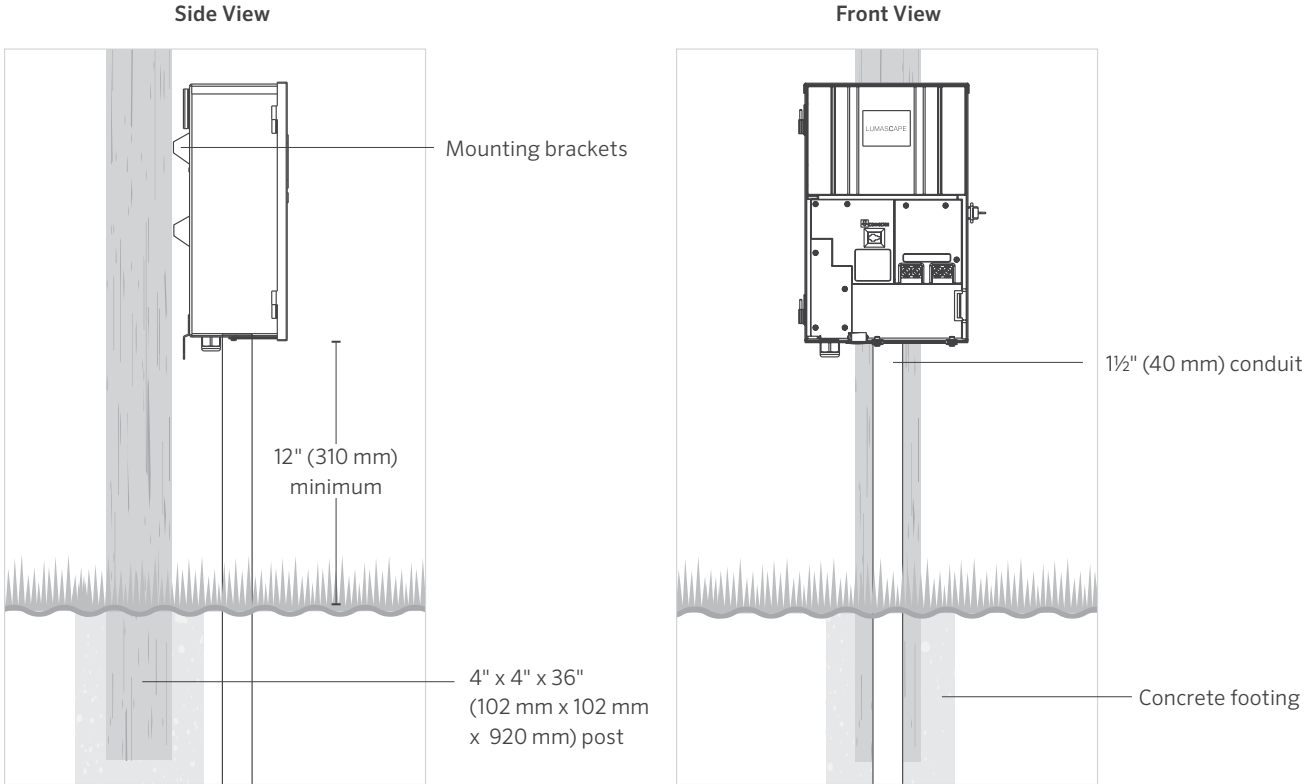


Figure 4: ZDLink post mounting

Installing the Controller

Step 3: Running Cable to the Luminaires

Once the transformer has been installed and all luminaire locations have been determined, the next step is to run the correct size cable from the transformer to the luminaires. Lumascape low-voltage LED luminaires require between 10 and 15 V for optimal operation and longevity. This is accomplished by the following:

1. Grouping luminaires into distance zones as illustrated below. Do not have a luminaire that is 10' (3 m) away from the transformer on the same cable run as one that is 100' (30 m) away.
2. Use the proper cabling method for the application. Try to center-load all cable runs when possible to minimize the voltage differential between luminaires.
3. Use a correctly sized cable to accommodate voltage drop. As a general rule of thumb, limit the wattage load per cable run to no more than 160 W.

CIRCUITING GUIDELINES

Loads Per Cable



Close Zone: 0' to 40' (0 m to 12.2 m)

12 AWG (2.05 mm): 160 W max.

10 AWG (2.59 mm): 180 W max.

8 AWG (3.26 mm): 220 W max.



Mid Zone: 40' to 80' (12.2 m to 24.4 m)

12 AWG (2.05 mm): 120 W max.

10 AWG (2.59 mm): 140 W max.

8 AWG (3.26 mm): 200 W max.



Far Zone: 80' to 120' (24.4 m to 36.6 m)

12 AWG (2.05 mm): 100 W max.

10 AWG (2.59 mm): 120 W max.

8 AWG (3.26 mm): 180 W max.



Out There Zone: 120' to 160' (36.6 m to 54.9 m)

12 AWG (2.05 mm): 60 W max.

10 AWG (2.59 mm): 100 W max.

8 AWG (3.26 mm): 160 W max.

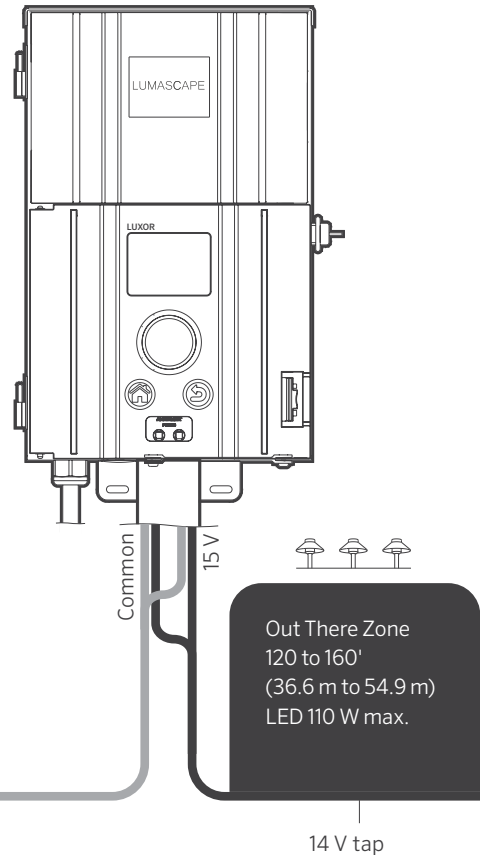
Summary

For maximum light output and LED life, each luminaire should be provided with 10 to 15 V.

Cable Stats

Low-voltage lighting systems are typically installed using direct-burial-rated stranded cable. The most common cable used is 12/2 AWG (2.05 mm) stranded cable. The size of cable used to wire the lighting system will be determined by the wattage load and length of cable run from the transformer to the luminaires.

Keep in mind that all low-voltage cable has a maximum rating. Overloading cable can create a dangerous safety hazard, so be sure to choose the proper cable size for your lighting system.



Watts shown are per 12 AWG (2.05 mm) cable. Install additional cable runs as needed to complete the project. To increase the wattage maximum, run 8 AWG (3.26 mm) or double 12 AWG (2.05 mm) to the first luminaire in the zone. Use a digital voltmeter to fine-tune the circuits.

Figure 5: Wiring example

Installing the Controller

Low-Voltage Cable

Each low-voltage lighting cable consists of two parts. One part of the cable is designated to carry the voltage load and is referred to as the common lead. The common lead is installed into one of the two COM terminal blocks. The other wire lead is installed into one of the two lugs labeled 15 V. Voltage is carried out from the transformer to the luminaires via the common side of the cable and returns back to the transformer 15 V tap via the other half of the cable, thus completing the circuit.

Cablings Methods

Within each cabling zone, you may utilize any number of cabling methods. The primary objective is to minimize voltage drop by installing the proper size feeder cable (home run) to each zone, and to make sure each luminaire on each cable run is receiving 10 to 15 V. Center feeding the home run (the main cable run from the transformer to the first luminaire on the circuit) will help minimize the voltage differential between the first luminaire and the last luminaire on the cable run.

Connecting Cables at the Terminal Block

The controller includes two common lugs and two 15 V hot lugs. One conductor from each cable run coming from the lights to the transformer must be connected to one of the common lugs. The other conductor will be installed into one of the 15 V hot lugs.

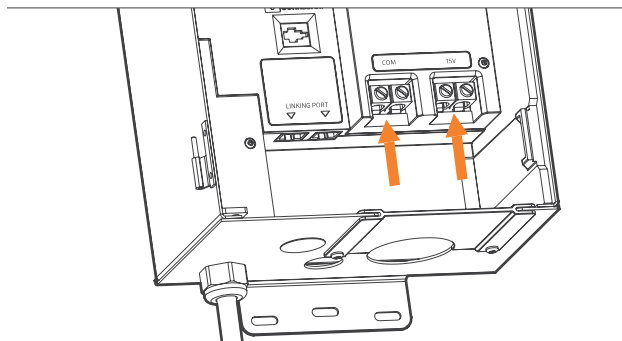


Figure 6: Output terminal blocks

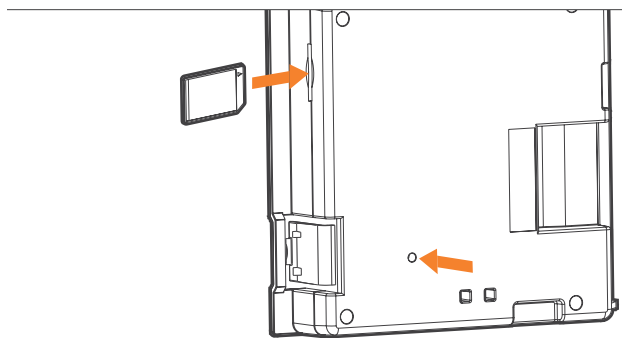


Figure 7: Back of facepack showing SD card and reset button

Navigating the Controller

The controller contains only three user interface elements:

- **Home button:** Opens main screen while on any other function
- **Back button:** Navigates to previous screen
- **Clickable scroll wheel:** Primary interaction and selection tool

Home Screen

All functions on the controller are accessible through the **Home** screen. The default display on the **Home** screen displays the following:

- Current time.
- Current date.
- Sunrise/sunset for the current day (dependent on location, see **Set Location** under **Setup**).
- All category options are listed.

All category options are located on the right side of the **Home** screen and are selected using the main **scroll wheel**. Turn the black **scroll wheel** clockwise or counterclockwise until the desired category is highlighted in light blue. Press the **scroll wheel** inward to select and enter the desired category.

- While in any screen, the **Home** button can be pressed to return to the **Home** screen.
- While in any screen, the **Back** button can be pressed to return to the previous screen.



Figure 8: Home screenshot

Operating the Controller

Activity Screen

After five minutes of inactivity, an **Activity** screen will appear on the LCD screen if the lights are running. The wait time is reduced to only five seconds when the current screen is the **Home** screen.

The **Activity** screen displays:

- Chassis Load: Shows the amp load of the controller chassis, displayed from 1 to 10. Only a chassis with an active load will display an orange load bar.
- Current Time: Provides current time for tracking purposes.
- Source: Lists the source of the transformer load as either Manual or Schedule.

No selections can be made on this screen; it is simply an activity display. Press the **Home** button to return to the **Home** screen.



Figure 9: Activity screenshot

Diagnostics Screen

- Chassis Number: Lists the chassis by number.
- Assigned: Identifies the assigned controller.
- Communicating: Indicates if the controller is communicating.
- Overloaded: Signals when a controller is overloaded.
- Chassis Load: Shows the percentage of controller load.



Figure 10: Diagnostics screenshot

Setup Screen

All background tools and settings (except color) are accessible in the **Setup** screen. Scroll through the various options to set up the controller.

Time/Date

- Select **Auto** to sync the controller time clock every 24 hours.
- Set the three date categories (Month, Date, Year) to the current date. First, push the scroll wheel when the appropriate field is highlighted. Then scroll through the options. Press the scroll wheel again to finalize the selection.
- Set the three time categories (Hr:Min:Sec) to the current time settings by pushing the scroll wheel when the appropriate field is highlighted, scrolling through the numeric options, and pressing the scroll wheel again to finalize the selection.
- Turn past 12 on the hour (“Hr”) setting to adjust a.m. and p.m., as displayed next to the seconds (“Sec”).
- To convert the clock to a 24-hour time convention, mark the “24hr” selection box.
- Setting the month, date and year automatically sets the day of the week, which appears to the right of the year.
- Daylight Saving Time (DST), when activated, will adjust time forward or backward by one hour at the appropriate dates each year. To initiate it, select **On**. To deactivate it, select **Off**.

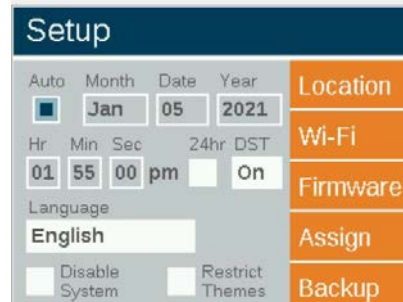


Figure 11: Setup screenshot

Operating the Controller

Language

In the **Setup** screen, select the language field by pressing the scroll wheel and turning it to the desired language. Press the scroll wheel again to finalize the selection.

- The language change will not take effect until either the **Back** or the **Home** buttons are pressed.

Location

The **Location** menu is designed to graphically represent a controller's location on a map for accurate sunrise and sunset times based on the current date, time zone, and longitude/latitude settings.

First, select **Location** from the **Setup** screen. While in the Location screen, select **Region**. Once region is selected, scroll to **Time Zone** and select the current time zone.

If latitude and longitude coordinates are known, enter the values into the **Lat** and **Long** fields. To set latitude and longitude using the map feature, scroll to **Map** and press the scroll wheel.

- The full-screen crosshairs designate the user's location on the map. The map will change based on the selected region.
- Latitude is first adjusted by rotating the scroll wheel to move the crosshairs up and down. Numeric indicators at the top right display the actual coordinate. Press the scroll wheel to select the latitude; it is set by pressing the scroll wheel.
- Longitude is next adjusted by rotating the scroll wheel to move the crosshairs left and right.

- The coordinate settings are automatically saved after each press of the scroll wheel. Select the **Home** button to leave the **Location** screen.
- Reset or adjustment is initiated by pressing the scroll wheel and then repeating the above latitude and longitude steps.



Figure 12: Location screen



Figure 13: Location map of the United States

Assign

When compatible luminaires are plugged in to the luminaire programming ports, the assign screen will automatically display. The **Assign** screen is also accessible under the **Setup** menu.

Network (Wi-Fi or LAN)

By default, the LAN tab will be displayed. The Wi-Fi or label will be displayed when the FX Luminaire Wi-Fi Module is inserted into the accessory port in the back of the facepack. For more information on using the Wi-Fi, refer to Luxor Wi-Fi owner's manual.

Restrict Themes

The restrict function prevents changes to themes.

1. From the **Home** screen, navigate to the **Setup** screen and select **Restrict Themes** using the scroll wheel.
2. To remove the restriction, deselect **Restrict Themes**.

Backup

The backup function saves all user input information, including programs, themes, colors, and setup data. To create a backup file for your controller, follow the steps below.

1. Insert an SD card into the side of the facepack with the pins facing toward the front of the facepack.
2. From the **Home** screen, use the scroll wheel to navigate to the **Setup** screen and then to the **Backup** screen.
3. Input a file name for the backup file. You do not need to use all available spaces.
4. Press **Backup**.
5. After backup is successful, press the SD card inward and then release to remove the card from the facepack.

To restore an existing file, follow the steps below:

1. Insert an SD card (pins facing the front) with the preloaded file into the side of the facepack. Press the card completely inward and then release. The card will lock into place.
2. From the **Home** screen, navigate to the **Setup** and then select **Backup** using the scroll wheel.
3. Input the file name of the desired database to restore. The filename must match exactly.
4. Using the scroll wheel, select **Restore**.
5. After a successful restore, press the SD card inward and then release to remove the card from the facepack.

Assigning Luminaires into Groups

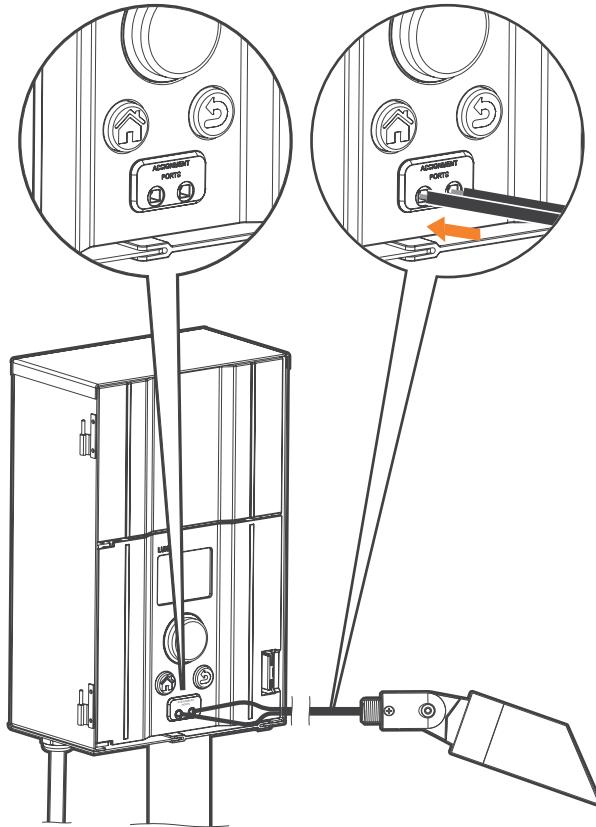


Figure 14: Luminaire assignment wire diagram

The lighting assignment screen is automatically displayed when a Lumascope low-voltage LED luminaire or device containing ZD Technology or ZDC Technology is connected into the assignment ports of the facepack. This mode can also be forced by navigating to **Setup** and selecting **Assign**.

- Enter this mode by placing two separate wires from a single Lumascope low-voltage LED luminaire or device containing ZD Technology or ZDC Technology into each of the assignment ports on the front of the facepack. The wires must maintain contact inside the assignment ports during the entire process.
- Navigate to **Program** and press the scroll wheel to initiate assignment. When complete, the screen will show “Assignment Successful” or “Assignment Failed.” If the assignment fails, reposition wires and try again. If the problem persists, the board or device may either be defective or not programmable.
- The assigned group number is stored in the device and not in the facepack. Thus, power loss or other errors within the Luxor controller will not affect the luminaire assignment. If a device (e.g., LED board, lamp, CUBE) is replaced, the new device must be programmed to the desired group number.



Only one luminaire can be addressed at a time. Attempting to address more than one luminaire at a time can result in assignment failures.

Setting Up Programs

The **Programs** screen is where all daily running programs are set up. Programs are set by calling up luminaires that have been assigned to groups or themes. For more about assigning luminaires to groups, see “Assigning Light Luminaires into Groups.” (See page 17.)

- Each program is designated by a letter (“A” through “G”) at the top right section of the screen. Select the desired letter using the scroll wheel prior to selecting the days of the week.
- Selecting days of the week designates which days the program will run based on the event settings. Select or remove each day by highlighting the corresponding box over each day with the scroll wheel and pushing to select or deselect.
- The **Event** field specifies what will initiate a timed event. Options include sunrise, sunset, or time.
- The **Time** field specifies what time the programmed event will occur. Sunrise/sunset times are based on astronomical timing set by the location (longitude and latitude) of the unit. Optional timed offsets (± 15-minute increments) are available for sunrise/sunset events. Time events are determined by time of day.
- The **Group/Theme** field specifies which group or theme is associated with each event. Scroll right to select groups. Scroll left to select available themes.
- The **Color** field specifies the desired color for group events. Colors are not available for themes.

- The **%** field specifies the desired intensity for each event. Values range from 0% (off) to 100%. Theme events are limited to **On** or **Off**.
- Multiple events can be created to initiate/change various intensities, but must be designated to “Off” using a separate event in order for them to extinguish.

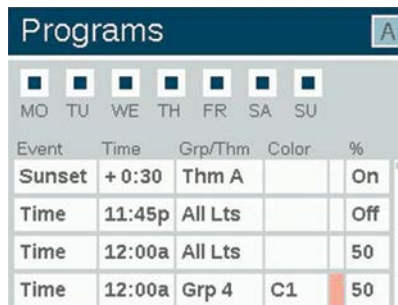


Figure 15: Programs screenshot



Day Beginning and End

Days are designated to start and end at noon (12 p.m.). This allows lights to continue running after midnight within a single day’s program setting.

Calendar-Based Programming

Calendar programming allows program(s) to run during specific dates throughout the year.

To set a calendar-based program, enter the Date-Based Scheduling screen by selecting the calendar icon located in the right-hand corner of the **Program** screen.

Users can select the **Start** and **End** dates for each desired program. Selecting **Exclusive** will allow the controller to only run the specified program during the requested dates. The controller will revert back to the non-exclusive programs after the controller is outside of the **Exclusive** date range.

Program	Start Date	End Date	Exclusive
A	Jan 1	Dec 31	<input type="checkbox"/>
B	Feb 14	Feb 15	<input checked="" type="checkbox"/>
C	Jul 1	Jul 5	<input checked="" type="checkbox"/>
D	Oct 30	Nov 1	<input checked="" type="checkbox"/>
E	Dec 1	Dec 26	<input checked="" type="checkbox"/>

Figure 16: Date-Based Scheduling screenshot



Calendar-based programming is not required for controller operation.

Themes

A theme is a planned set of groups at stated colors and intensities. A user can call up themes in the **Program** menu for quick setting of a series of groups, or in the **Manual** menu for on-demand control. Common uses for themes include location-based (e.g., gazebo) and lifestyle-based (e.g., vacation or party).

- Themes are set initially by selecting the **Theme** function from the **Home** screen.
- Each theme is designated by a letter (“A” through “Z”) at the top right section of the screen. Select the desired letter using the scroll wheel.
- Enter the various groups selected for the theme, with corresponding colors and intensities.

Operating the Controller

- Select the **Test Theme** checkbox to temporarily turn on all groups that have been set in a theme. While this function is active, a user can make adjustments to the theme and see the changes in real time. This function will end when a key has not been pressed for five minutes, the home key is pressed, or another theme is selected.
- To completely clear the theme, select the **Erase** button. This function not only clears all fields in the theme, but it also removes the erased theme from any existing programs.



Figure 17: Themes screenshot

Manual Mode

The manual mode is used to turn on and adjust lights outside of the set programs. Manual settings will always take precedence over any currently running programs.

1. From the **Home** screen, navigate to the **Manual** screen using the scroll wheel.
2. Designate a group number and choose the desired intensity.

3. Set the duration or the amount of time that the group will run.
4. Navigate to and select the **Start** button with the scroll wheel.
5. To stop the countdown, activate the **Stop** button. This will only pause to allow for adjustments and should not delete any settings above.

If the group is currently running within a program, the manual setting will take precedence.

When the manual settings are finished, the regularly scheduled program will immediately continue its operation at the next event time, even if it was interrupted.

After manual settings have been started, the intensity and time can be adjusted while it is still running.

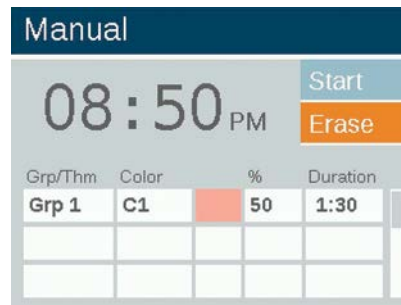


Figure 18: Manual screenshot

Color

ZDC Technology adds color in addition to zoning and dimming. A color system requires a ZDC LED board to be installed in each desired Lumascape low-voltage LED luminaire. Standard and ZD-enabled Lumascape low-voltage luminaires will zone and zone and dim, respectively, but color is achieved only through the use of specific ZDC LED boards.



Figure 19: Home screenshot

Color Palette

Colors are selected on the **Color Palette** screen. The controller can store up to 250 preset colors, labeled numerically as seen in Figure 19. Each color requires hue and saturation values. Hue is the primary attribute of a color. The selected value is found on the standard color wheel and is represented by numeric values between 0 and 359. Saturation is the percentage of hue seen with white light filling in the remainder (e.g., 80% saturation is 80% of the selected hue and 20% of white light).

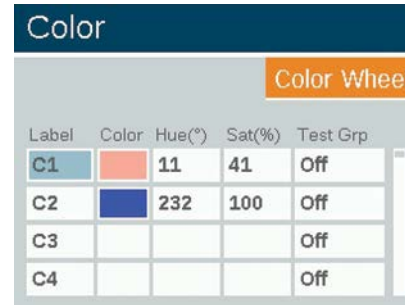


Figure 20: Color palette screenshot

- Access the color palette by selecting the **Color** function from the **Home** screen.
- Only four colors are displayed at a time. Turn the scroll wheel clockwise to access the remaining 246 color labels.
- Use the scroll wheel to highlight the desired color label (e.g., C1). Adjust the hue/saturation settings using one of two methods:
 1. **Color Swatch:** Scroll one click to the right to highlight the color swatch and press the scroll wheel to open the **Color Selection** screen. Adjust the **Hue** (top) and/or **Saturation** (bottom) by selecting the appropriate chart, scrolling left or right until the desired setting is located, and pressing the scroll wheel again to finalize the setting.
 2. **Hue/Sat Values:** Scroll to highlight the hue or saturation numeric values. Press the scroll wheel to select, then scroll to choose the desired values. Press scroll wheel again to finalize the setting.

- The test group column allows the user to view the created color of a specific group. The color will remain active until the color palette screen is exited or the test group is set to off. Scroll to the test group box and select a group to activate a color label onto that group.
- Changes to colors in real time are made when the color is active through a test group, a theme, a program, or a manual program.

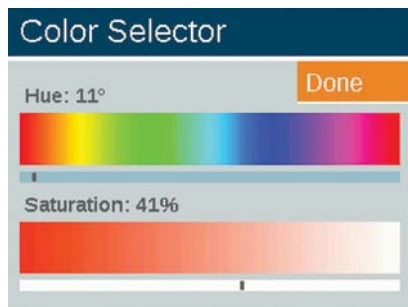


Figure 21: Color selection screenshot

Color Wheel

The color wheel feature scans through all 300 hues constantly at intervals determined by the user. The scan is applied at the group level, allowing various groups to cycle at different colors and rates.

1. Access the color wheel menu by selecting the **Color Wheel** function from the **Home** screen.
2. Choose a label for your wheel (e.g., CW2).
3. Select a starting color. This is a user-defined color from the **Color Palette** menu.
4. Select the number of seconds in which the Luxor will scan through all 300 hues, beginning first at the “Starting Color.” For rapid color changes, choose a lower number of seconds.
5. Apply the color wheel into programs, themes, and manual modes using the same principles described in the “Color” section (page 21). Rather than applying a single color to each group (e.g., C1), scroll the reverse direction to apply a color wheel (e.g., CW1).



Color and non-color LED boards must be assigned to different groups.

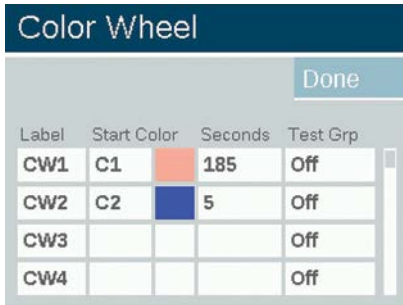


Figure 22: Color wheel screenshot

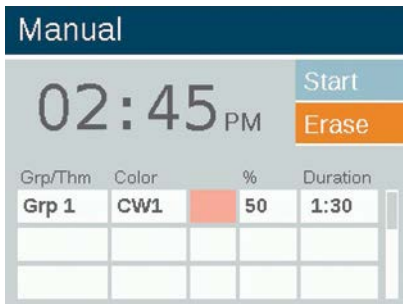


Figure 23: Manual mode screenshot

Mixing Z, ZD, and ZDC

Lumalandscape offers a variety of low-voltage LED boards with ascending functionality when used with the ZDLink Controller. The standard board is zoneable, the ZD board offers zoning and dimming, and ZDC encompasses the first two and adds color to the mix.

	STANDARD	ZD	ZDC
Zoning	●	●	●
Dimming		●	●
Color			●

! When “all lights on” is activated in the manual mode with an assigned color, non-color lights (e.g., standard and ZD) will not turn on. Select the white color (0 hue and 0 sat) to ensure all lights turn on in this mode.

Using Other Devices with the Controller

The controller can communicate with devices other than Lumascape low-voltage integrated LED boards. Two of those devices include the Luxor CUBE and the Luxor ZD MR-16 Lamp.

Luxor CUBE

The Luxor CUBE allows the controller to control, zone, and dim lighting luminaires and other device that don't have built-in ZD technology. Install the CUBE in-line prior to the luminaires or devices you wish to control as a zone. When that zone is activated by the controller, all luminaires or devices in-line after the CUBE will initiate and dim according to the commands of the controller.

The CUBE is offered in three models to ensure maximum flexibility:

- Low-Voltage Lighting (LCM-LV)
- Line-Voltage Lighting (LCM-HV)
- Relay and 0-10 V Dimming (LCM-RLY-010V)

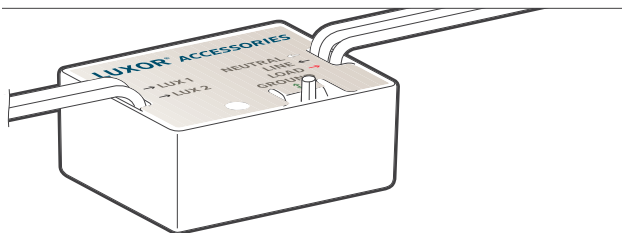


Figure 24: Luxor CUBE

Luxor ZD MR-16 Lamp

The ZD MR-16 is a convenient, high-quality LED replacement lamp that converts incandescent luminaires to energy-efficient LED luminaires. When connected to a ZDLink Controller, the ZD MR-16 adds zoning, dimming, and control capabilities to any brand of low-voltage landscape lighting luminaire utilizing an MR-16 socket.

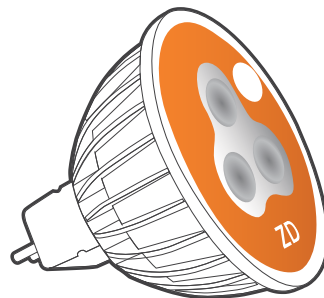


Figure 25: Luxor ZD MR-16 Lamp



For additional information on installing the CUBE please use the wiring diagram located in the installation guide included with the product.

Disable

The **Disable** option shuts down all lighting events in the **Manual** and **Program** modes regardless of time or status, indefinitely. This mode does not turn off the unit. Instead, it suspends all lighting events until the user decides to reactivate. The lights will remain off after a reactivation is executed and will not turn back on until the next event (program or manual) occurs.

1. The **Disable** feature is accessed from the **Setup** screen.
2. When **Disable System** is selected, the unit will immediately shut down all luminaires in **Programs**, **Manual**, or **Themes**.
3. All lights will remain off and the lights will not reactivate until **Disable System** is deselected. If in the **Off** state and a manual event is initiated, it will run until finished or another **Disable System** is performed.
4. The **Home** screen will show **Off** in place of the current time when the unit is shut down.



Figure 26: Shutdown screenshot



Figure 27: Home screen in disabled mode

Controller Linking Setup

Linking allows for a single point of control for sites that require multiple ZDCLink Controllers. Primary and satellite controllers are linked using a Cat 6 connection. A linking system can contain a total of nine satellite controllers.

Primary Controller: ZDCLink installed with facepack. Linking firmware is required for both facepack and chassis.

Satellite Controller: No facepack installed. Linking firmware is required for chassis.



Prior to running a Linking system, verify that the primary and satellite controllers have the latest version of Linking firmware for both the facepack and chassis.

Connecting Satellite Controllers

1. Disconnect power to primary and satellite controllers.
2. Insert one end of the Cat 6 cable into the Linking Port of the primary controller.

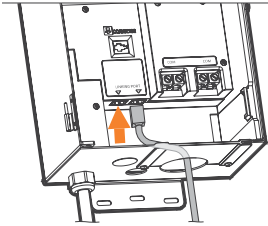


Figure 28: Primary controller

3. Insert the opposite end of the Cat 6 cable into the Linking Port of desired satellite controller.

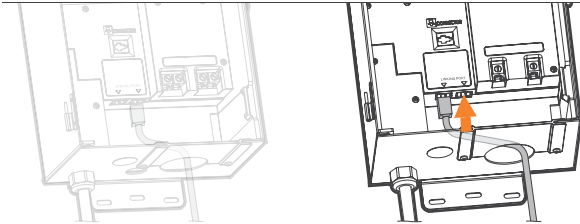


Figure 29: Satellite controller

4. If the site requires multiple satellite controllers, insert a new Cat 6 cable into the unused Linking Port of the previous satellite controller.
5. Insert the opposite end of the Cat 6 cable into the unused Linking Port of the next satellite controller.

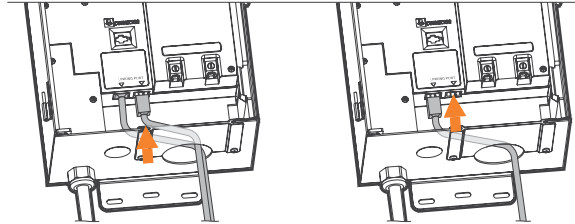


Figure 30: Satellite controller

6. Continue this connection method until all satellite units are installed in series with the primary controller.

Chassis Communication and Assignment

1. Apply power to the primary controller.
2. On the facepack **Diagnostics** screen, verify that the primary controller has been “Assigned” and is “Communicating.”



Figure 31: Diagnostics screenshot

3. Apply power to the satellite controllers.
4. On the facepack **Diagnostics** screen, verify that the satellite controllers have been “Assigned” and are “Communicating.”

Before proceeding, confirm that the number of total chassis assigned and communicating is equal to the total number of the primary and satellite controllers.



The assigned chassis numbers do not always correspond with the installed primary and satellite controllers shown on the display.

Regular Preventive Maintenance

To ensure peak performance, perform the following regular preventive maintenance procedures:

CATEGORY	DESCRIPTION	TIMELINE
Transformer	Tighten all terminal lugs.	Annually
	Blow out all insects and debris.	Annually
Luminaires	Clean dirty lenses to minimize calcium deposits.	Annually
	Straighten all pathway luminaires.	Quarterly
	Trim all plant material as needed; relocate luminaires as needed as plant materials mature.	Quarterly
	Clean debris off well luminaire lenses and grates.	Quarterly
	Check cable and cable connectors.	Annually
	Rebury cable and connectors that may have crept to the surface.	Semi-annually
	Check aiming angles.	Semi-annually
Check, adjust, and replace all cable and cable ties in trees.	As needed	



When replacing low-voltage LED boards, always use Lumascape LED boards. Use of other brands may cause the unit to malfunction.

Troubleshooting

PROBLEM	CAUSE	RESOLUTION
Error message: “Overload” (uppercase “O”)	An uppercase “O” overload indicates current far in excess of normal operating current, typically caused by a short circuit. This is controlled by a hardware circuit and trips the overload immediately.	Check for shorts in the line. Resolve or repair the short circuit.
Error message: “overload” (lowercase “o”)	A lowercase “o” overload indicates a current in excess of the rated current, but not as much as the uppercase “O.” For 150 W transformers the limit is 11 A, and for 300 W transformers the limit is 22 A. For this current to trip the overload, it must be continually above these values for one second.	Reduce the number of luminaires by one, turning on, and repeating until the “overload” does not occur. Resolve/repair the short circuit.
Error message: “No Wi-Fi Card Present”	Wi-Fi card is not detected.	Pull out the Wi-Fi Card and reinsert. If the problem persists, install a new Wi-Fi card.
Error message: “Communications Failure”	Communication between the facepack and chassis is not present.	Replace the cable connecting the facepack to the chassis. If the problem persists, call technical services.
Transformer will not turn off when program is complete.	No off time is programmed.	Go to programs and add an event time with an intensity of zero for your off time.
The transformer display is on, but no luminaires are on.	The transformer’s fuse has blown.	Replace the fuse in the transformer.



Shorts and overloads are not covered by the Lumascape warranty. They are detected only when the transformer is tested in the field. Periodic system maintenance is required to keep your Lumascape lighting system operating at peak performance. Practicing these maintenance suggestions will lengthen the life and enjoyment of your lighting design.

Firmware Updates

Firmware updates are occasionally released to add features or enhance controller functionality. To update the facepack, chassis, Wi-Fi Module, and flash firmware on the controller, an SD card is required to transfer the data from a computer to the facepack.

1. Go to the Lumascape website (lumascape.com) and navigate to the ZDCLink product page. The firmware update files are located under the **Documents** tab.
2. Save the desired firmware onto an SD card.
3. Remove the facepack from the chassis by pulling on the tab to the right of the facepack and swinging the facepack door open.
4. Pull the black tab outward while pushing the facepack through the door carriage.
5. Insert the SD card with the pins facing the front of the facepack, pressing completely inward. Release to lock the card in place.
6. From the **Home** screen, select **Setup**. Navigate to the **Firmware** tab and press the scroll wheel.

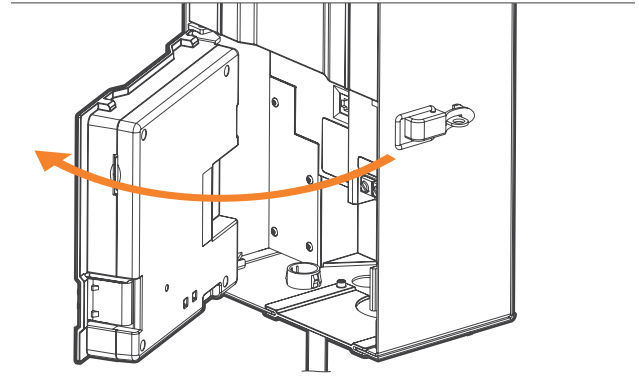


Figure 32: Facepack open

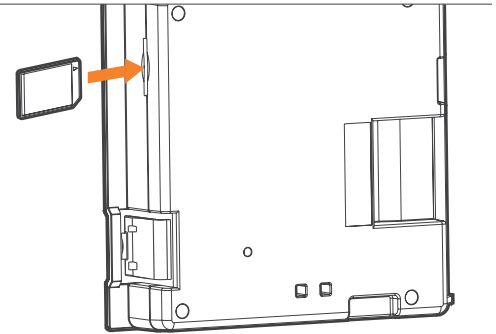


Figure 33: SD card installation

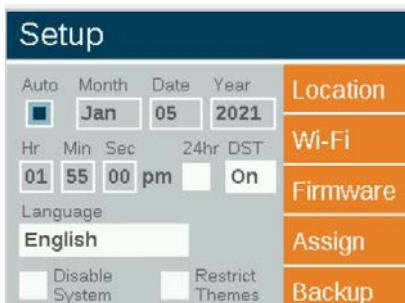


Figure 34: Setup screenshot (firmware)

7. Select the **Firmware Type** to be updated.
8. Next, navigate to **Update** and press the scroll wheel. The facepack and flash update processes usually take between 5 and 15 seconds. Chassis updates typically take a couple of minutes. Luminaire updates can take up to 15 minutes.

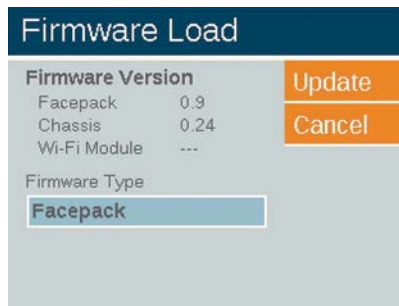


Figure 35: Firmware load screenshot

Fuse Replacement

If the unit is powering on, but the luminaires attached are not receiving power, the fuse may need to be replaced. To replace the fuse, follow these directions:

1. Unplug the controller from power.
2. Open face pack door of the transformer.
3. Remove the four Phillips screws from the fuse cover on the lefthand side.
4. Remove and replace the fuse with the following specifications:
 - 5 mm x 20 mm
 - 25 V
 - 10 A
 - UL rated
5. Replace the cover and four screws, reattach the luminaire wires, and restore power to the unit.

System Reset

There are two types of system resets: facepack reset and database reset. The facepack reset simply removes power to the facepack and restarts the firmware. A database reset deletes the entire database to allow the user to start from scratch. All program data is lost during a database reset, but luminaire group assignments remain intact.

Facepack Reset

1. Remove the facepack from the chassis by pulling on the tab to the right of the facepack.
2. Swing the facepack door open.
3. Locate a paper clip, pen tip, or other small-point tool.
4. Find the reset button on the back of the facepack.
5. Use the selected tool to press and hold the reset button for two seconds.

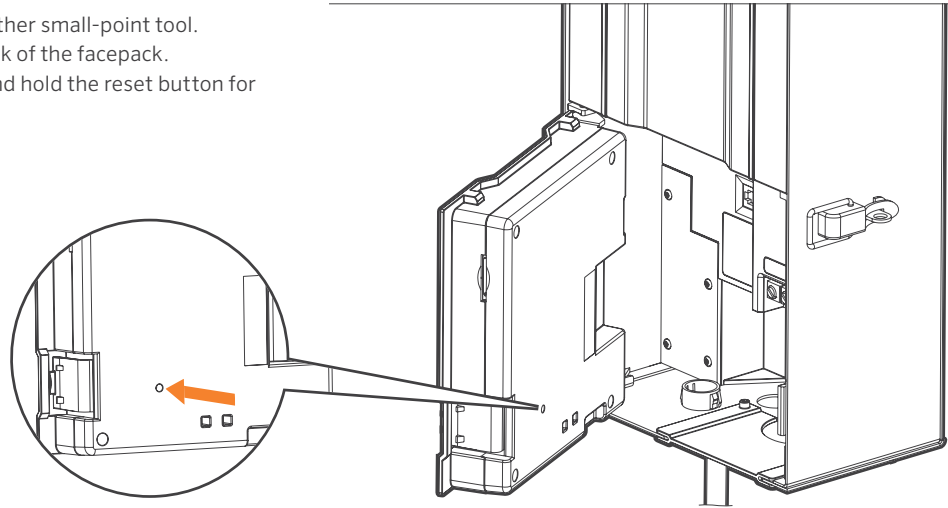


Figure 36: Reset button

Database Reset

1. From the **Home** screen, push the **Home** button and the **Back** button simultaneously to bring up the **Diagnostics** screen (Figure 2 on page 3).
2. Wait two seconds and press the center scroll wheel.
3. Navigate to the **Clear** option and press the scroll wheel (Figure 37).



Figure 37: Engineering testing screenshot



Clearing the database does not erase luminaire group assignments (page 17).

Chassis Indicator Lights

An indicator light displays the communication status of the chassis to the facepack. The following colors indicate the accompanying status:

- **Blinking green:** Communication established
- **Amber:** Communication error/facepack unplugged
- **Red:** Short or overload detected in the system

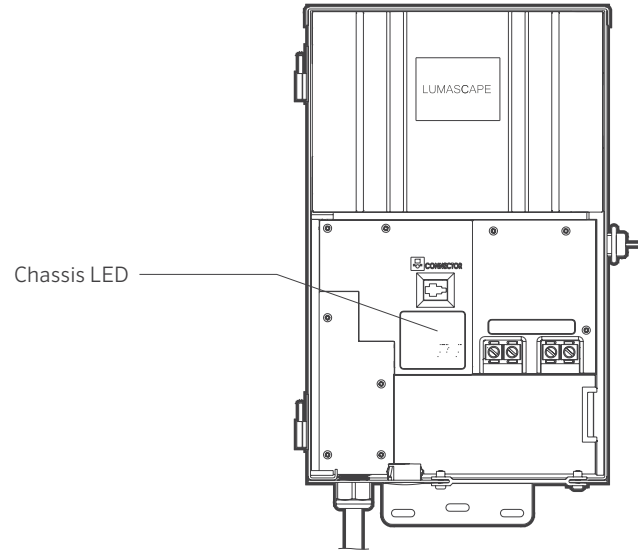


Figure 38: Chassis indicator lights

Statement of Limited Warranty

Hunter Industries Incorporated (“Hunter”) warrants Lumascope lighting products to be free of defects in materials or workmanship under normal use for a period of five (5) years from the date of invoice.

If a defect in a Lumascope product is discovered during the applicable warranty period, Hunter will repair or replace, at its option, the product or the defective part. This limited warranty does not extend to repairs, adjustments, or replacement of Lumascope products or parts resulting from misuse, negligence, alteration, modification, tampering, or improper installation and/or maintenance of the product. This warranty extends only to the original installer of the product. If a defect arises in a Lumascope product or part during the warranty period, contact the local authorized manufacturer’s representative.

Hunter’s obligation to repair or replace its products as set forth above is the sole and exclusive warranty set forth by Hunter. There are no other warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose. Hunter will not be liable to distributor or any other party in strict liability, tort, contract, or any other manner for damages caused or claimed to be caused as a result of any design or defect in Lumascope products, or for any special, incidental, consequential, or exemplary damages or any nature, including without limitation lost business or profits.

Notwithstanding the foregoing, if for any reason Hunter is found to be liable, in no event shall Hunter’s liability exceed the price of the product which gives rise to the claim, loss, or damage.

If you have any questions concerning the warranty or its application, please write to:

Lumascope Customer Service Department
1940 Diamond Street
San Marcos, CA 92078 USA



A Hunter Industries Company

Our mission is to create the most energy-efficient lighting products in the world while maintaining the highest level of quality and reliability. In every instance we will back our innovations with the unwavering support our customers need to succeed.

A handwritten signature in black ink that reads "Gene Smith". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Gene Smith, President, Landscape Irrigation and Outdoor Lighting

Need more helpful information on your product? Find tips on installation, controller programming, and more.



1-800-733-2823

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