

FiberLamp™

OPERATION MANUAL

Indoor/Outdoor Models

FL110

FL111

FL210

FL211

FL2100

FL2110



UL 2108 Listed



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FiberLamp

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FiberLamp

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PRODUCT OVERVIEW

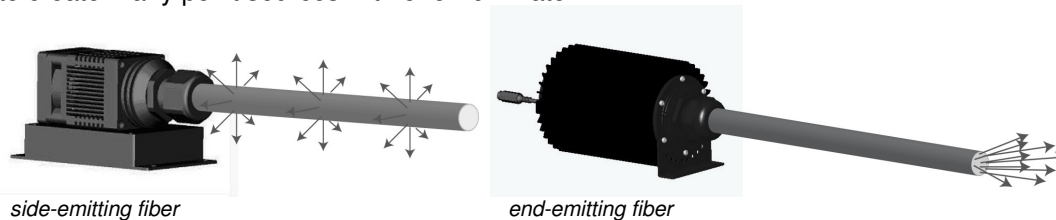
1

The FiberLamp is a professional grade fiber optic LED illuminator. Only a licensed professional should install this fixture.

FiberLamp Overview

DiCon's FiberLamps are LED based fiber optic illuminators that have tunable white and dynamic color changing capabilities with manual, USB, and DMX512 interfaces. FiberLamps come in actively or passively cooled models depending on the application and environment.

The FiberLamp line is designed for use with side-emitting and end-emitting fibers. Side-emitting fibers extract light along the length of the fiber to provide the look of neon while being passive and flexible. End-emitting fibers transport light from one end of the fiber to the other with minimal loss to create many point sources with one illuminator.



Models

This manual is intended for use on the following FiberLamp models:

FL110
FL111
FL210
FL211
FL2100
FL2110

The FL110, FL210, and FL2100 are UL certified for damp locations.
The FL111, FL211, and FL2110 are UL certified for wet locations.

Please reference the label at the bottom of the unit to confirm that you are using one of these models. If not, contact the manufacturer for the proper user manual.

HARDWARE SETUP

2

FL110/FL111 Configuration

The FL110 and FL111 feature a remote driver. The unit requires a 12V DC power supply with at least a 1.5A current capacity. Please see Figure 1 for device configuration.

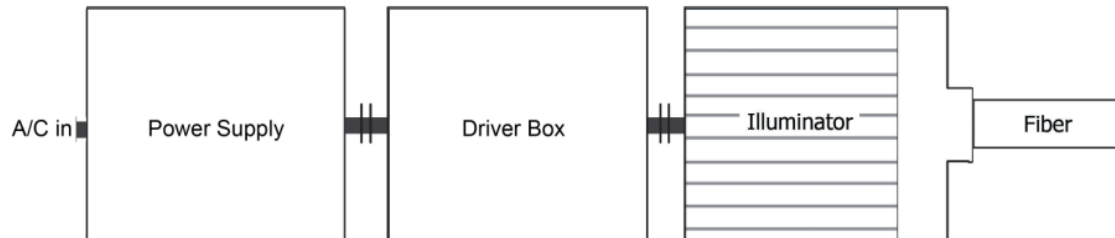


Figure 1: Wiring configuration for FL110 and FL111. (Left to right) Power supply, remote driver, illuminator module, and fiber.

FL110/FL111 ILLUMINATOR MODULE

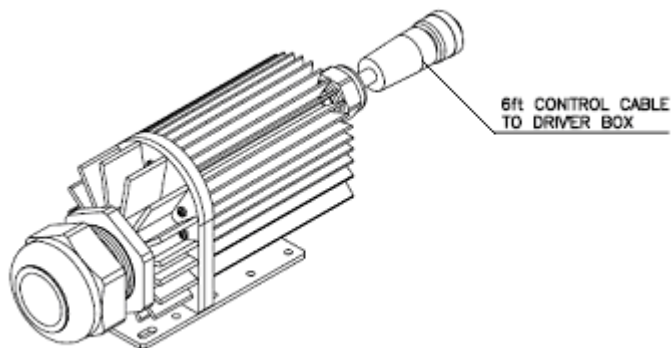


Figure 2: Illuminator module with control cable for connection to the driver box.

FL110 CONTROLS (DRIVER BOX)

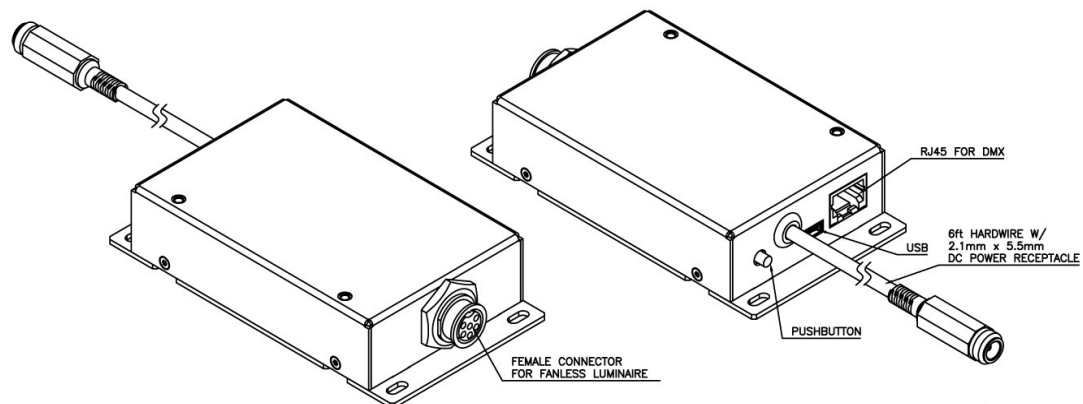


Figure 3: (Left) Female connector for twist lock connection to illuminator module. (Right) Push button, DC power jack, USB connector, and RJ45 connector.

FiberLamp

FL111 CONTROLS (DRIVER BOX)

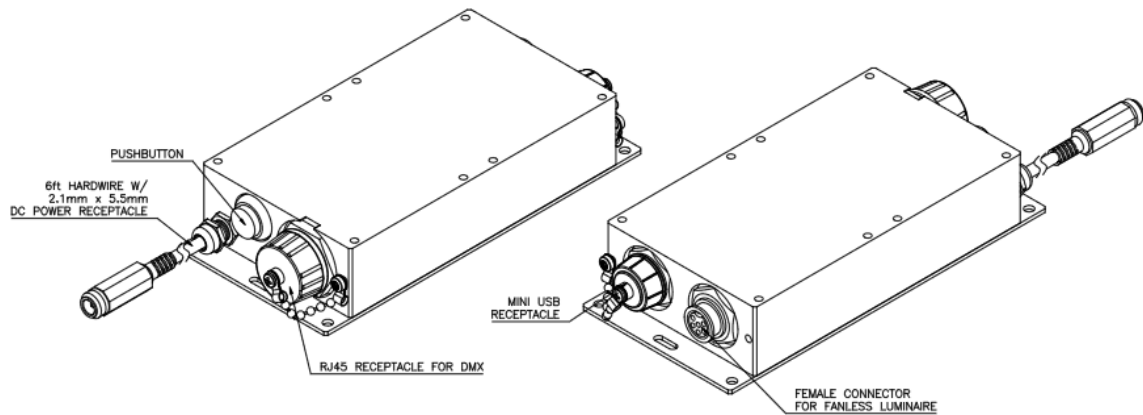


Figure 4: (Left) DC power receptacle, push button, sealed receptacle for RJ45 connector. (Right) Sealed receptacle for USB connector, female connector with twist lock connection to illuminator module.

FL210/FL211 Configuration

The FL210 and FL211 have the driver electronics built into the illuminator. The unit requires a 12V DC power supply with at least a 3A current capacity.

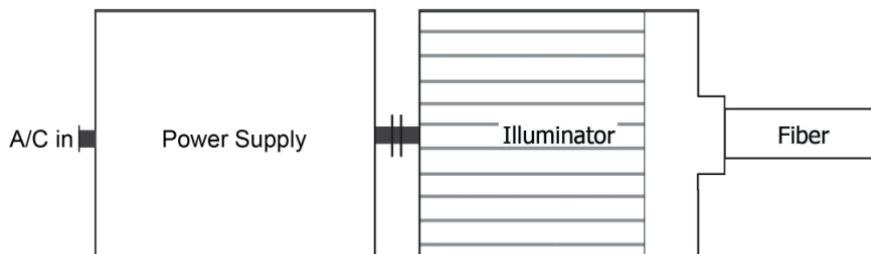


Figure 5: Wiring configuration for FL210 and FL211. (Left to right) DC power supply, illuminator, and fiber. FL210/FL211 connected to remote DC power supply using the DC power receptacle (optional).

FL210/FL211 CONTROLS

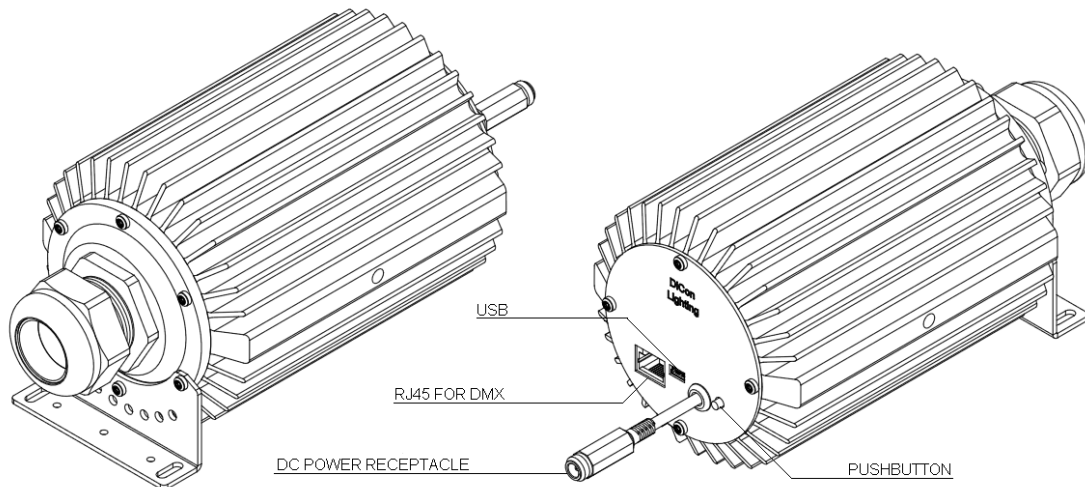


Figure 6: (Left to right) DMX RJ45 connector, USB connector, DC power receptacle, and push button.

FiberLamp

FL2100/FL2110 Configuration

The FL 2100 and FL2110 have the driver electronics built into the illuminator. The unit requires a 12V DC power supply with at least a 3 A current capacity.

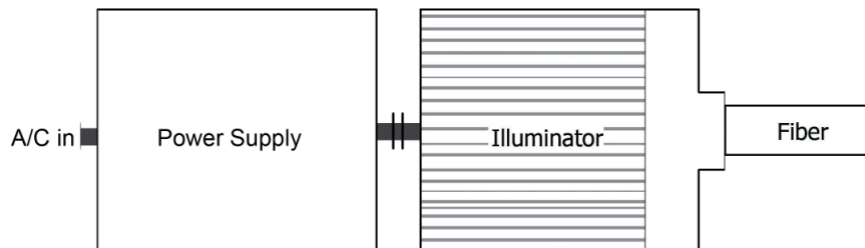


Figure 7: Wiring configuration for FL2100 and FL2110. (Left to right) DC power supply, illuminator, and fiber. FL2100/FL2110 connected to remote DC power supply using the DC power receptacle (optional).

FL2100 CONTROLS

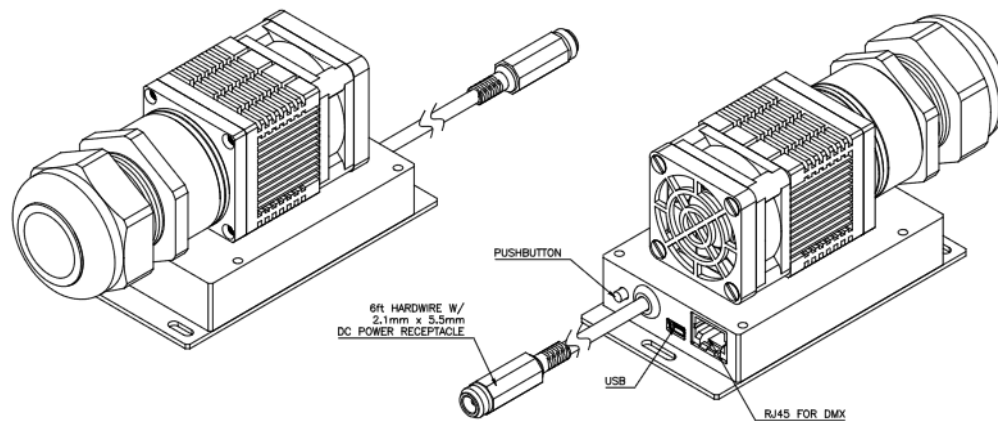


Figure 8: (Left to right) Push button, DC power receptacle, USB connector, and RJ45 connector.

FL2110 CONTROLS

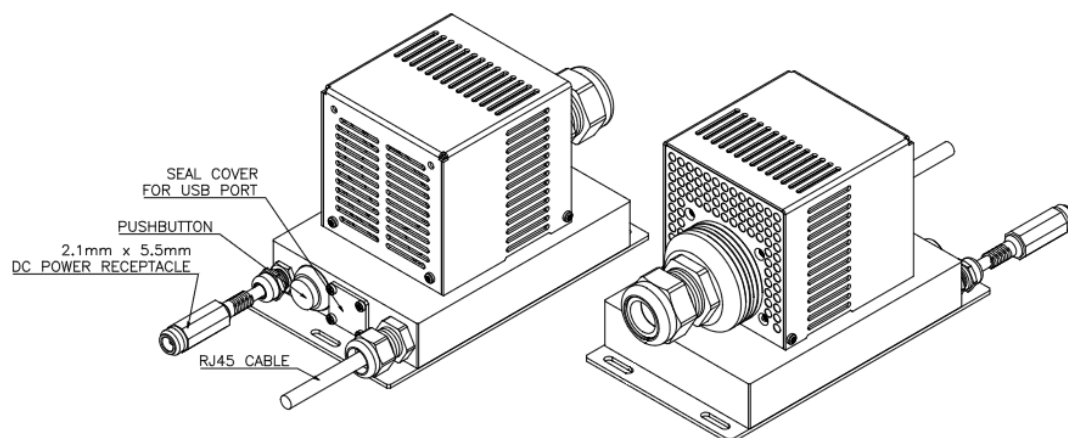


Figure 9: (Left to right) DC power receptacle, push button, dust cover for the USB connector (must be removed for programming), and RJ45 connector.

MANUAL OPERATION

3

Push Button

A push button is located at the rear of the unit to manually operate the FiberLamp. This button is used to scroll through all the modes on the FiberLamp.

Table 1: Preprogrammed Modes

Mode	0	1	2	3	4	5
Color	OFF	Red	Green	Blue	Cyan	Yellow

Mode	6	7	8	9	10	11
Color	Magenta	White	Rainbow	Custom		

Note: Modes 8-11 are customizable Playlist modes.

Off Mode

The lamp is “off” in mode zero. This mode cannot be reprogrammed.

Single Color Modes

There are seven single color modes on the FiberLamp. These modes store static colors (no color changing or fading) on the device. Default single colors are red, green, blue, cyan, yellow, magenta, and white in that order. To use any of the single color modes, press the push button until you find the proper mode. The colors on the first seven preset modes can be reprogrammed using LightMix (see section 4 of this manual).

Rainbow Mode

The FiberLamp also has a slow rainbow mode on mode 8 by default. To use this mode, press the push button until you reach mode 8. This mode can be reprogrammed to a custom Playlist.

Playlist Modes

Modes 8-11 are four custom Playlist modes built onto the FiberLamp flash memory. Each mode is capable of storing dynamic lighting effects on it. These modes can be programmed using LightMix (see section 4 of this manual). Modes 9-11 are empty and will not show any light until programmed.

Return to Mode

The FiberLamp has a Return to Mode feature that allows it to return to the same mode it was on originally in the event of a power failure.

SOFTWARE OPERATION

4

LightMix Overview

The LightMix Software is an application designed to program single color and playlist preset modes, and to configure DMX512 settings through the USB interface on the FiberLamp. The user interface is organized into three tabs: Single Color, Playlist Builder, and System Information.

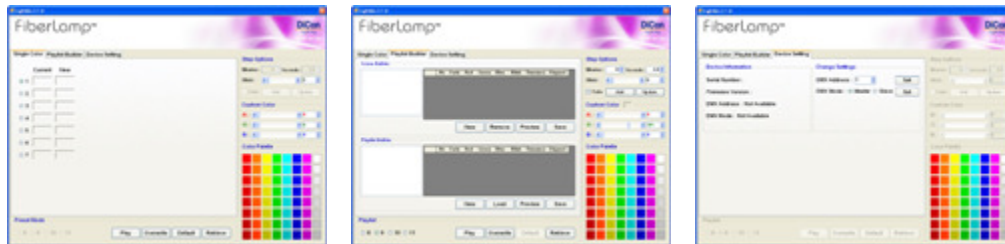


Figure 10: Single Color, Playlist Builder, and System Information tabs.

Installation

To install, insert the CD that accompanies the FiberLamp into the CD drive. Open the CD drive and click on the Setup file. A window with the Setup Wizard will appear with instructions. Follow the instructions until installation is complete.

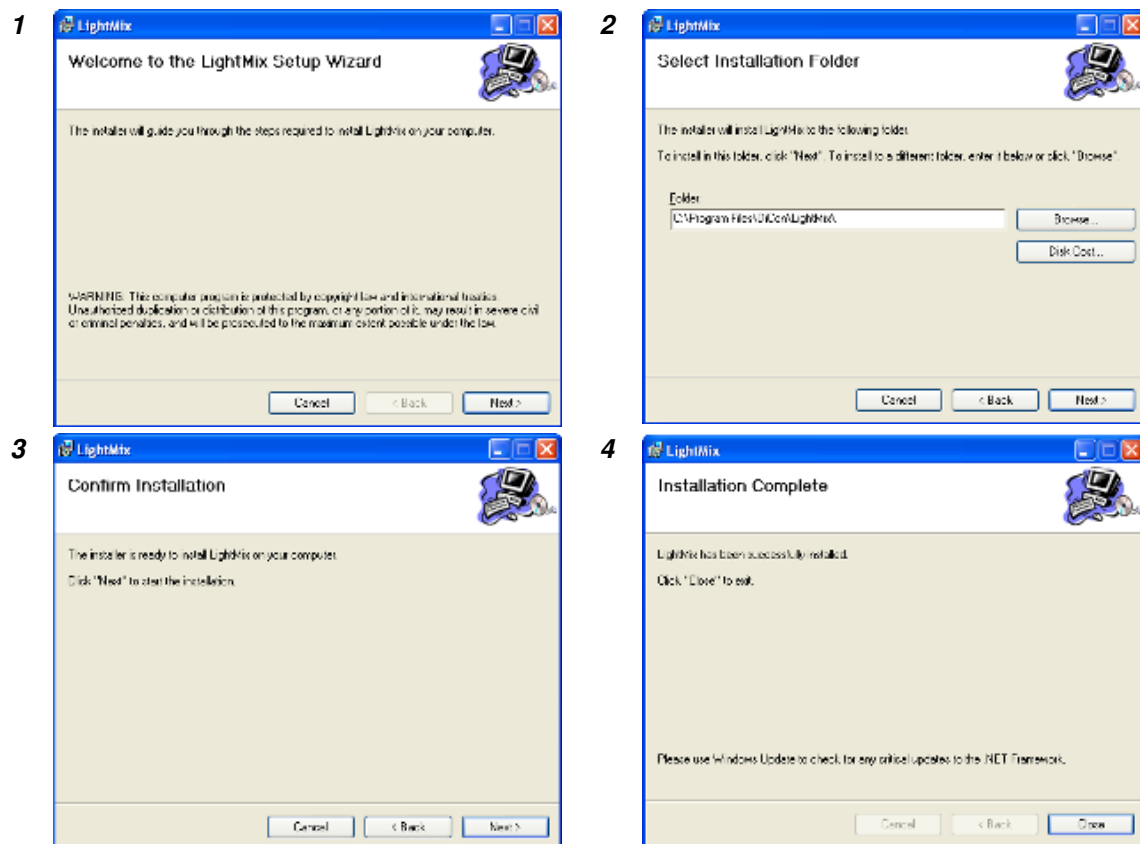


Figure 11: Installation screenshots (left to right, top to bottom).

FiberLamp

Program

1. To begin programming the preset modes on the FiberLamp, or to configure system settings, connect the FiberLamp to the PC using the USB cable.
2. Connect the power cord to the FiberLamp. Launch the LightMix Software.

Definitions

- **Preset mode:** A static color or Playlist saved on the built-in flash memory of the FiberLamp. Accessible through the push button.
- **Playlist:** A collection of steps built in LightMix programmed onto the FiberLamp to be played repeatedly as a dynamic color light show.
- **Scene:** A small collection of steps to help construct a large and complicated Playlist, especially useful when repetition appears frequently in the desired Playlist.
- **Step:** The set of attributes (color, fade option, blink rate, time duration) that define individual elements in a Scene or Playlist.
- **Blink rate:** Represents how fast the current step blinks. A blink rate of zero means the step does not blink. Blink rates become increasingly faster as the blink rate is increased.
- **Fade:** An option that specifies whether the color of the current step gradually fades into the color of the next step. The alternative is that the step's color remains constant throughout its duration.
- **DMX mode:** In the DMX master mode, the FiberLamp will continuously send out packets of data through its DMX port representing the active color that is displayed. In the DMX satellite mode, the FiberLamp will receive data packets from its DMX port. If the data represents valid color information, the FiberLamp will display that color.

FiberLamp

Single Color Tab

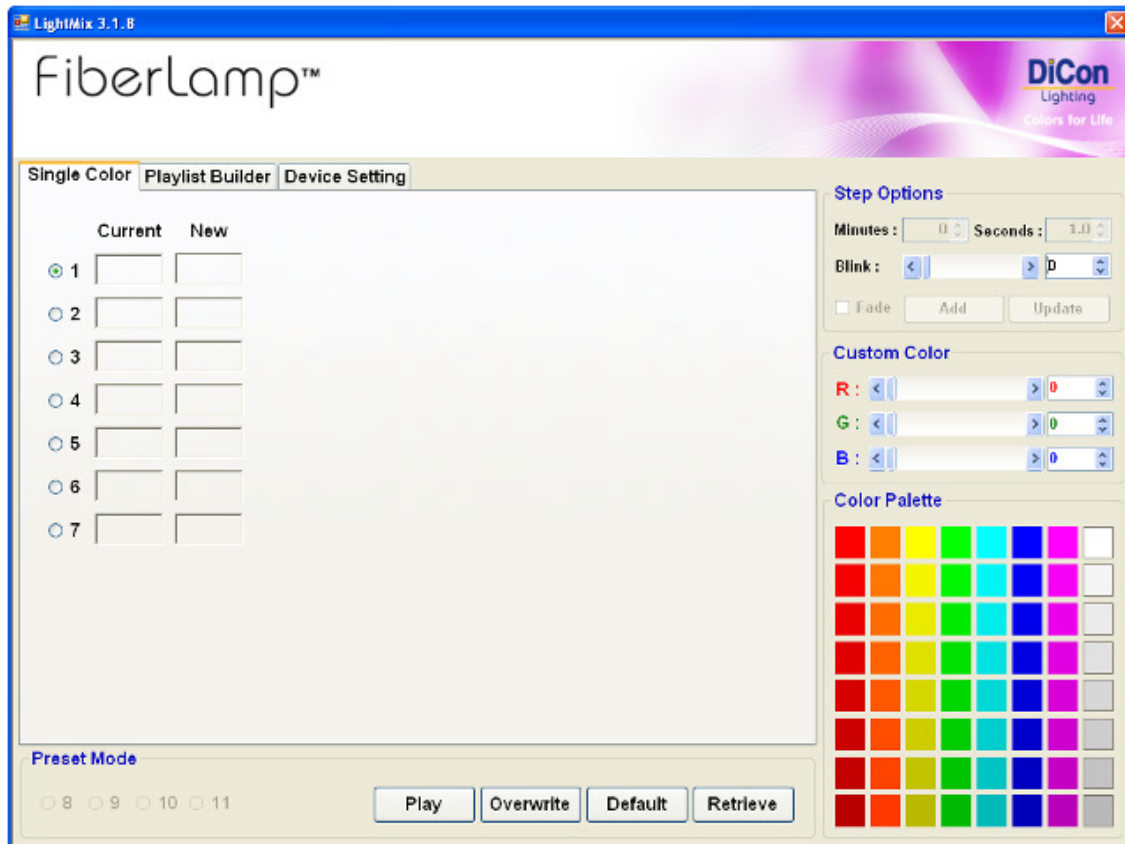


Figure 12: Screenshot of single color programming user interface

The Single Color tab allows you to program single colors onto the first seven preset modes. Follow the instructions below to program single color modes:

1. To program the single color modes on the FiberLamp, click on the Single Color tab in LightMix. To change the pre-defined colors, select the single color number to be changed.
2. Select a pre-defined color from the Color Palette, or customize the color with the red, green, and blue scroll bars in the Custom Color section. *Note: The color shown in LightMix is only an approximation of the actual light color output from FiberLamp. The connected FiberLamp shows the actual light color output.*
3. When the desired light color is achieved, click the “Overwrite” button to program the new color for the selected single color mode.
4. To restore the single color mode to the factory default, select the single color mode number, and click the “Default” button.
5. To see the current color of a single color mode programmed on the FiberLamp, click on the mode number, and click “Retrieve.”

FiberLamp

Playlist Builder

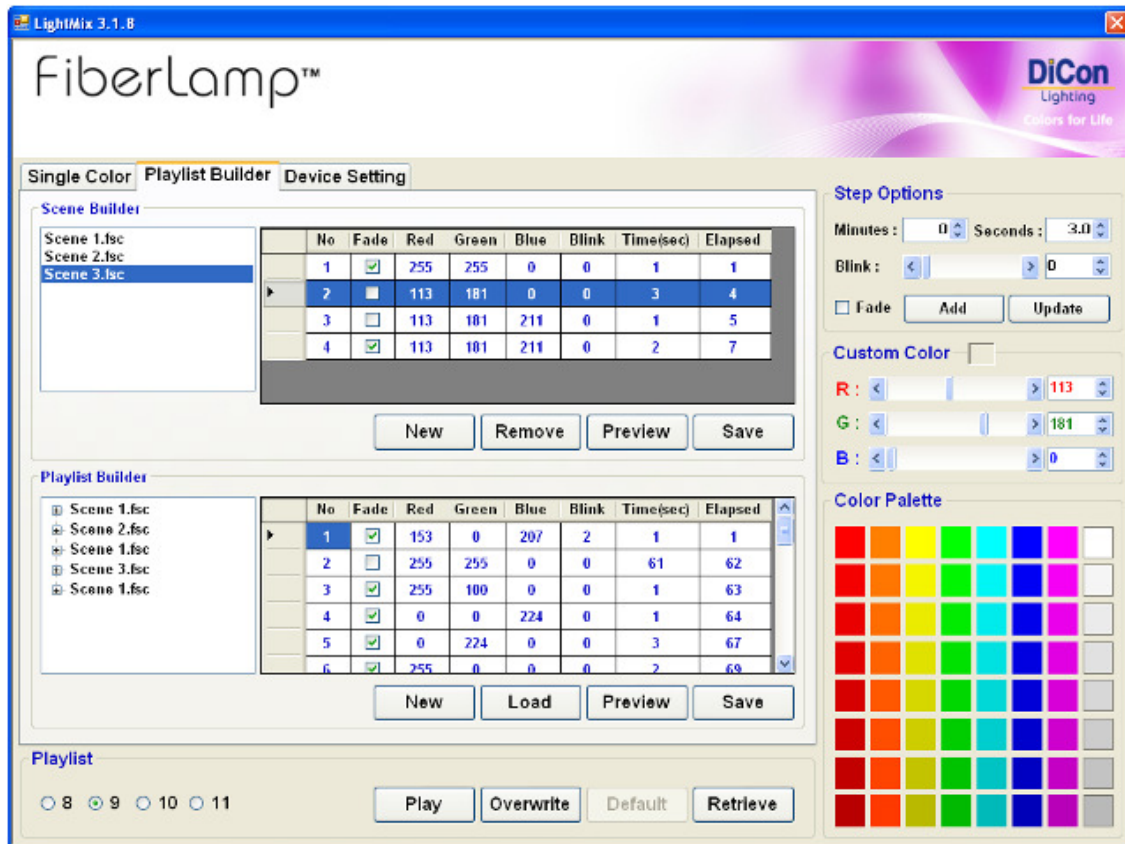


Figure 13: Screenshot of user interface for programming playlists

The Playlist Builder tab allows you to program Playlists onto the last four preset modes. Follow the instructions below to program a dynamic color changing Playlist:

1. To program a custom Playlist on the FiberLamp, use the Playlist Builder tab in LightMix.
2. Begin by building a scene using the Scene Builder. In the Scene Builder section, click new to create a new scene.
3. Add steps to the scene by choosing the color and step options, then click "Add." To remove steps, click on the step you wish to delete, then click "Remove".
4. Save the scene to file by clicking the "Save" button.
5. Click "Preview" to preview the scene.
6. After the desired scenes have been created, create a Playlist by clicking "New" in the Playlist Builder section.
7. Drag the scenes in the preferred order into the Playlist Builder box. To remove a particular scene, right click on the scene you wish to delete and select the "Remove Selected Node" option.
8. Click "Preview" to preview the Playlist.
9. To program the Playlist onto the FiberLamp, select the preset mode number to program to, and then click "Overwrite." *Note: This will replace the Playlist at the specified preset mode number on the FiberLamp. This action cannot be undone.*
10. Play the Playlist by selecting the preset mode number and clicking "Play", disconnect the USB cable and use the push button to access the preset mode with the newly programmed Playlist.

FiberLamp

DMX Settings

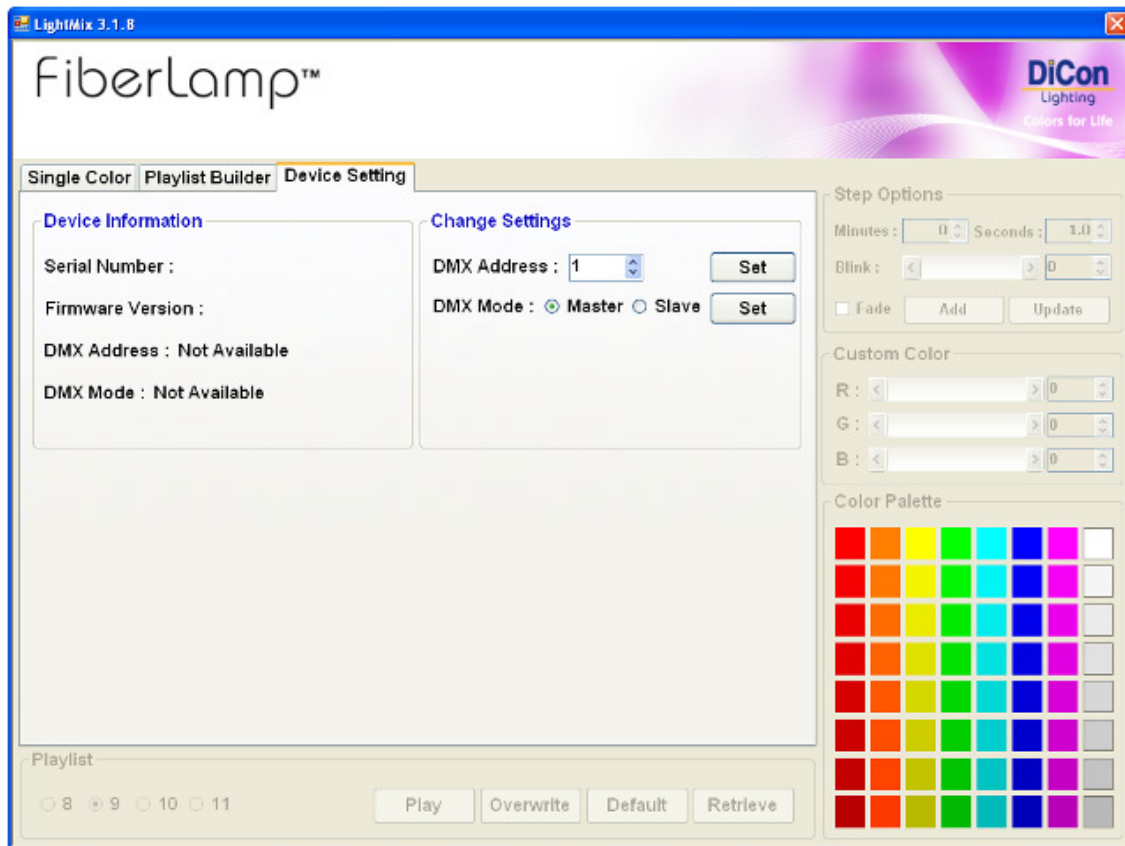


Figure 14: Screenshot of user interface for device information and DMX settings

The System Information tab displays information about the Fiberlamp. DMX settings are also visible from this tab. The DMX Address is applicable to both DMX modes. When the Fiberlamp is in DMX master mode, the Fiberlamp sends out the color data at the specified DMX address. When Fiberlamp is in DMX satellite mode, the Fiberlamp will interpret the data at the specified DMX address, and process it if it is valid. For more detailed information on DMX master and satellite operations, refer to DMX Operation section (section 5).

DMX OPERATION

5

DMX Overview

DMX is an industry standard abbreviation for “digital multiplex”. It is an RS-485 based protocol that has become the industry standard for digital lighting control interfaces. DMX allows users to synchronize fixtures to a centralized lighting controller. DMX can also be used to link devices to other inputs. It supplies a constant flow of data to the fixture so that the unit knows what it should be doing at all times.

DMX Hardware

The FiberLamp comes with an RJ45 female connector at the rear of the unit. This connector is used to apply DMX data signal to the device.

CAT-5E CABLE

Most architectural installations use Cat-5e cable to transmit data to the fixtures. This cabling can be coupled with RJ45 connectors to be compatible with the FiberLamp. In order to daisy chain, you can splice the data cable to connect the illuminators in series-parallel configuration, or use a T-line splitter (recommended). Figure 14 shows a possible configuration for daisy chaining using Cat-5e cable.

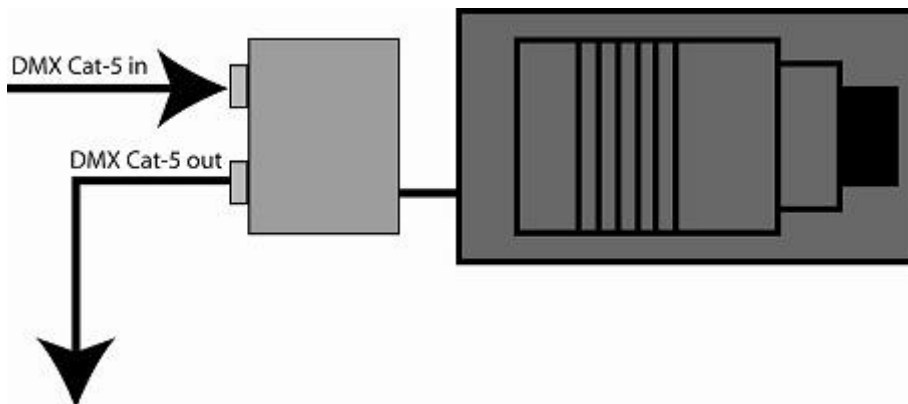


Figure 15: Diagram of a FiberLamp linked to a T-line splitter for daisy chaining using Cat-5e cable.

XLR CABLE

In entertainment lighting, XLR cable has become the standard because of its robust construction. (This is the same type of cable used for microphones.) XLR cable is better suited for modular/temporary installations. To connect the FiberLamp using an XLR connector, an XLR to RJ-45 adapter must be fabricated, or the DiCon XLR adapter can be used. The DiCon XLR adaptor (see Figure 16) bolts directly to the FiberLamp, and has a female and male connection for easy daisy-chain configurations. It connects to the FiberLamp with a short Cat-5e cable.

XLR ADAPTOR

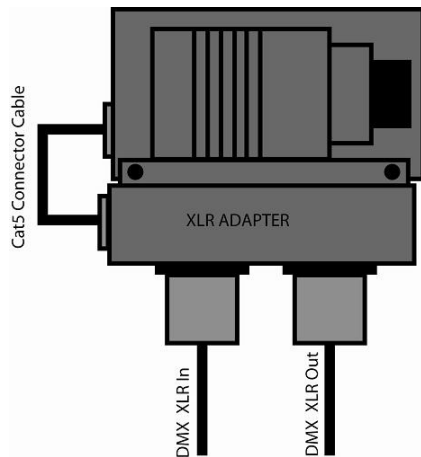


Figure 16: Diagram of a FiberLamp linked to a DiCon XLR adapter for daisy chaining using XLR cable.

PINOUTS

Table 2: Pinout for RJ45 connector

RJ45	Color	Function	XLR3	XLR5
1	White/orange	Data (+) in	3	3
2	Orange	Data (-) in	2	2
3	White/green	Not Assigned	-	5
4	Blue	Internal use only	-	-
5	White/blue	Internal use only	-	-
6	Green	Not assigned	-	4
7	White/brown	DMX Ground	1	1
8	Brown	DMX Ground	1	1

DMX Wiring Configurations

Depending on the size of the installation, there are several configurations that will ensure that each illuminator is supplied with a clear data signal for synchronized installations.

INSTALLATIONS WITH LESS THAN 30 ILLUMINATORS

For installations under 30 units or for installations less than 1,200 feet in length, the signal can be daisy chained in series from one unit to the next using either Cat-5e cable or XLR cables. Figure 18 shows a typical daisy chain configuration.

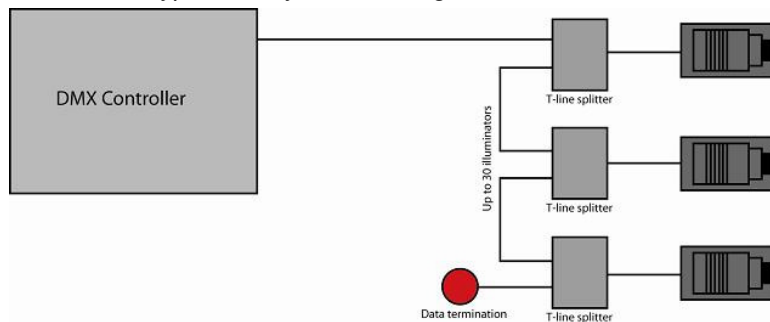


Figure 18: Daisy chain configuration with data termination.

FiberLamp

LARGER INSTALLATIONS OR LONG DISTANCE

Installations requiring more than 30 units or installations spanning lengths greater than 1,200 feet will need to use a splitter/amplifier to ensure that each string of thirty FiberLamps receives sufficient signal strength.

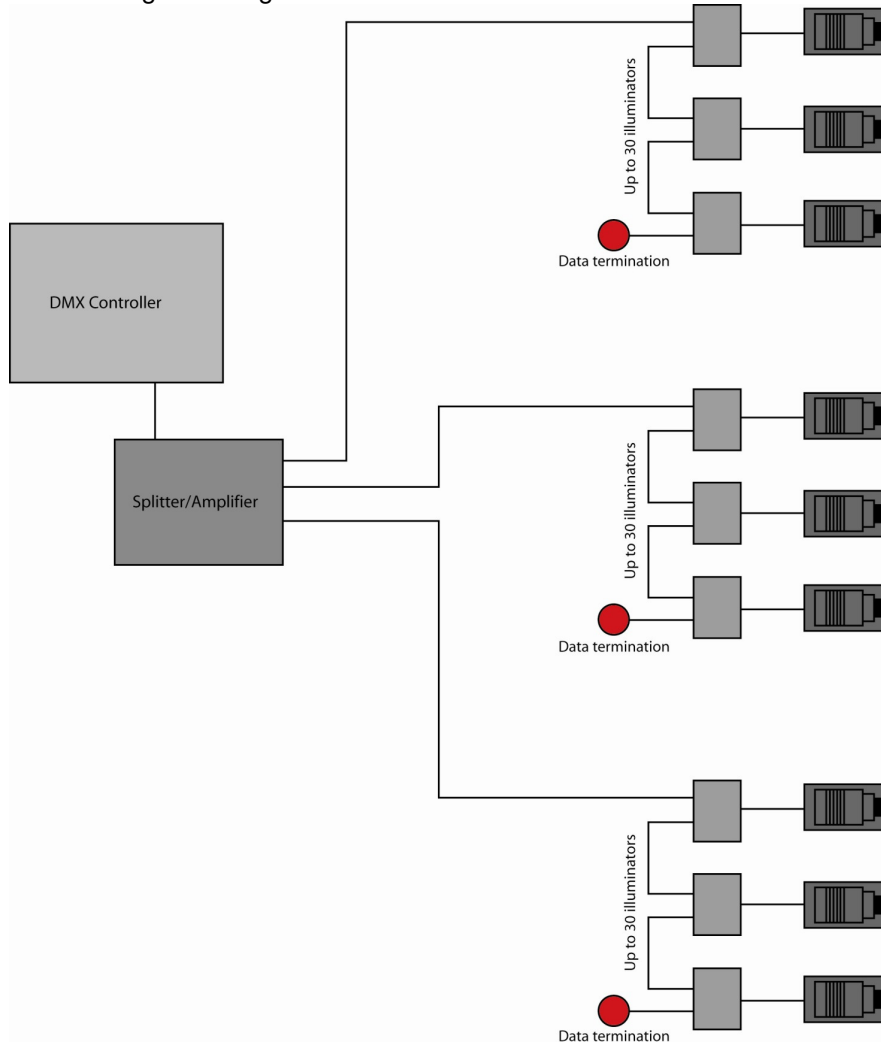


Figure 19: Daisy chain configuration for larger installations requiring more than thirty illuminators or cable length in excess of 1200 feet.

DATA TERMINATION

It is always recommended that data lines be terminated with a resistor of the same characteristic impedance as the cable (typically 100-120 Ohms will be sufficient). To terminate a data line, place the resistor across pin 1 and pin 2 as shown in Figure 20.

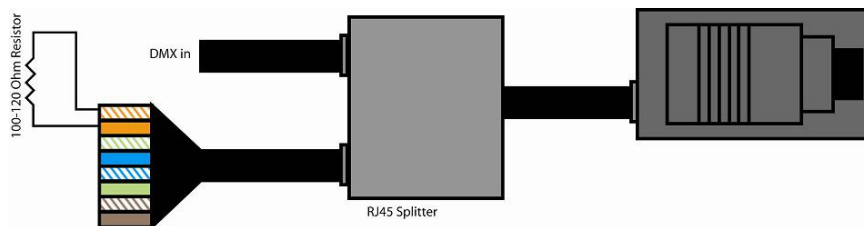


Figure 20: Wiring diagram for placing a resistor across data lines to eliminate signal reflection.

Master/Satellite Operation

The FiberLamp is able to act as a DMX satellite or a master on the DMX line, depending on the settings.

DMX MASTER OPERATION

When in DMX master mode, the FiberLamp puts the current display color in a DMX data packet at the configured DMX address and sends out the packet from the DMX port. *Note: When in DMX master mode, the FiberLamp will not receive any incoming DMX data.*

To engage DMX Master Mode, follow these instructions:

1. Connect the FiberLamp to the PC with the USB cable and launch the LightMix software.
2. Click on the "System Information" tab.
3. Verify that the DMX base address is the same as all of the Satellite units in the installation. If not, enter the appropriate base address and click "Set."
4. Check the "Master" button and click "Set."
5. After the FiberLamp has been properly installed at the desired physical location, turn on the unit. Use the push button to access the desired preset mode, and then plug in the data cable that connects it to the DMX satellite units. (The previous subsections go into detail on networking FiberLamps with various types of data cable.)

DMX SATELLITE OPERATION

When in DMX slave mode, the FiberLamp receives DMX data packets from the DMX controller, and will process the data at the DMX address it is configured to. *Note: The DMX controller may be another FiberLamp configured to be the DMX master or a third party device.*

To ensure that the FiberLamp responds properly to DMX signals, make sure the unit is configured to be in DMX satellite mode and set to the correct DMX address. After the FiberLamp has been properly installed at the desired physical location, turn the unit on, and plug in the data cable from the DMX controller. Verify that the DMX controller is outputting signal and that the FiberLamp is responding accordingly.

INSTALLATION RECOMMENDATIONS

6

General

These recommendations apply primarily to indoor FiberLamp installations where the unit will be attached to a portable power supply and plugged into standard line voltage.

POWER SUPPLY

The portable power supplies included with some units are not suitable for outdoor or recessed environments. Do not install these units in a location that may expose them to moisture. A Class 2 power supply is required for UL compliance. Some power supplies included with the FiberLamp are not rated Class 2. If you are unsure of the rating of your power supply, please contact the manufacturer.

CONNECTOR

The portable power supply comes with a standard 2.1mm x 5.5mm female barrel connector for simple plug-and-play operation. Do not use this device to hang the FiberLamp in any way.

ACOUSTICS

Although the FiberLamps have been engineered for minimal fan noise, the acoustics of these units should not be overlooked in any installation, especially residential. If acoustics become a concern, consider a fanless unit (FL110, FL111, FL210, FL211).

WIRE LENGTH

FiberLamps should be configured to be within fifteen feet of their power supply. DC Voltage tends to drop linearly with respect to distance. Keeping the FiberLamp close to the power supply will ensure that the unit is receiving enough voltage to operate properly.

Recessed Indoor

These recommendations apply to installations where the FiberLamp will be placed in a recessed location. These include installations where the device will be mounted inside walls, between ceilings, or beneath floors. These types of installations do not require an enclosure. Please see Figure 21 for an example of a recessed installation.

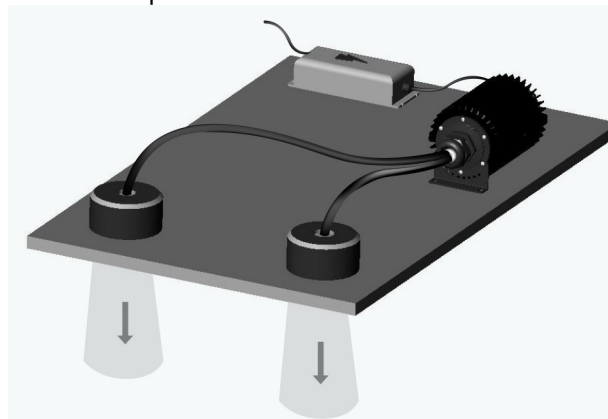


Figure 21: Recessed installation with FiberLamp located above ceiling linked to downlights.

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DUST/DEBRIS

Actively cooled FiberLamps circulate more air volume, but they are also more prone to pulling in dust and debris from their installation site. Avoid using these units if they are going into an environment with excessive amounts of dust or debris.

MANDATORY HARDWIRING

To meet UL requirements, make sure that the FiberLamp and power supply being installed is a hardwired model and that all connections are compliant with UL standards for recessed lighting. Please contact the manufacturer for a list of Class 2 UL compliant 12V DC power supplies.

USING A POWER SUPPLY WITHIN A JUNCTION BOX

This diagram below shows a typical wiring configuration for using a power supply that is built within a junction box. A compression fitting should be used on each side to protect the wiring connection from dust/debris and to provide strain relief. Be sure to ground the A/C wire input securely on the enclosure. In order to wire directly to the FiberLamp, strip the wire connected to the unit and place it inside the junction box so that the strain relief is on the larger outermost wire jacket.

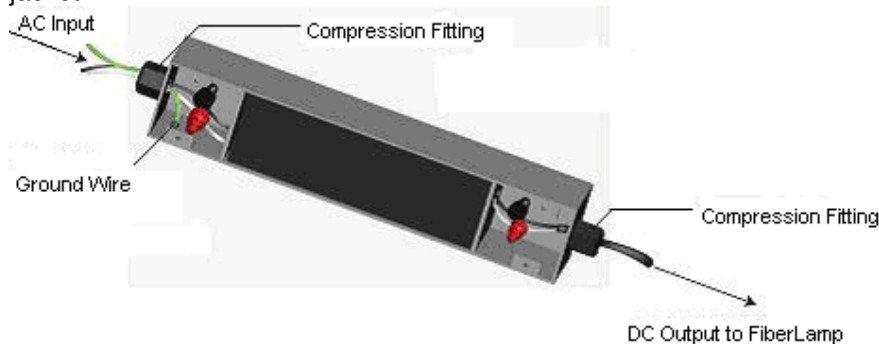


Figure 22: Wiring using a power supply with built-in junction boxes on both sides.

USING A CUSTOM ENCLOSURE FOR THE POWER SUPPLY

When using a custom enclosure, always allow enough space to make wiring connections. Use some type of strain relief fitting on each end of the enclosure. Be sure to ground the A/C wire input securely on the enclosure. In order to wire directly to the FiberLamp, strip the wire connected to the unit and place it inside the junction box so that the strain relief is on the larger outermost wire jacket.

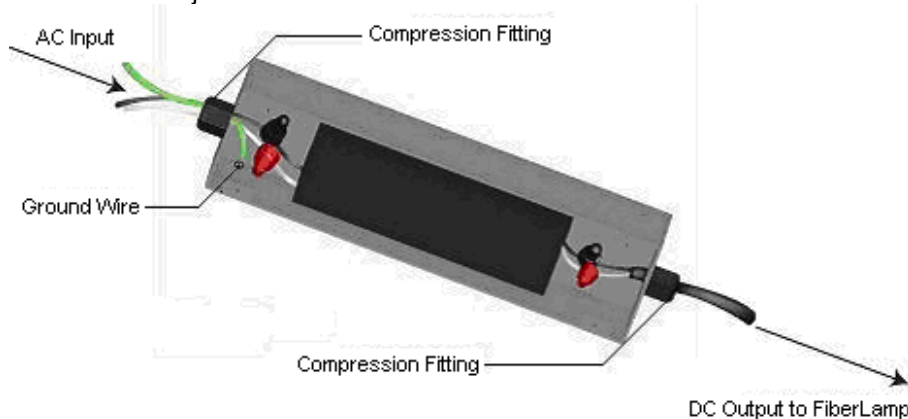


Figure 23: Wiring using a power supply in a custom enclosure

Outdoor Installation

These recommendations apply to installations where the FiberLamp will be in an outdoor environment exposed to the elements.

SOLAR LOADING

If the FiberLamp is being used during the day, try to install the illuminator in a place where it will be shielded from the sun. The absorption of sunlight will increase operating temperature substantially and shorten the lifetime of the device. Harmful UV rays will also accelerate the degradation of the side-emitting fiber.

WEATHER RATINGS

The FL2110 and the FL211 are designed to withstand exposure to high-pressure water. These units are not intended for submersion. The driver box on the FL111 can be submersed temporarily.

MOUNTING ORIENTATION

Do not install the outdoor rated FiberLamps with the endcap oriented up. If exposed to water, water can accumulate in the endcap, submersing the array.

Enclosures

If possible, avoid using an enclosure. If an enclosure is necessary for the installation, take the following precautions to make sure that the units can operate properly:

VENTILATION

If possible, create ventilation on the enclosure. You can increase ventilation by placing a wire mesh over a cutout area on the enclosure. This will dramatically help increase air.

DRAINAGE

When using an enclosure in a wet environment, it is important to create drainage. The FL111, FL211, and FL2110 are not suitable for long-term submersion, so make sure enclosures have adequate drainage.

Submersed Installation

Any installation using the FL110 and FL111 in a submersed environment should take the following recommendations into consideration.

FIBER OPTICS

Fiber optics are not intended for underwater applications. The system will perform in a submersed environment, but the fiber may not reach the expected lifetime specified by the manufacturer. Please contact your fiber manufacturer regarding fiber submersion related questions.

FiberLamp

ILLUMINATOR AND DRIVER MODULES

The viability of permanent submersion also depends on chemicals in the water that may corrode the illuminator module. Although the FL110 and FL111 illuminator modules are designed to withstand submersed installations, the same does not apply to the drivers. The driver module on the FL110 must be stored in a dry location. The FL111 driver module is capable of withstanding temporary submersion.

Mounting

The FiberLamp can be installed in many environments in various orientations. The following considerations should be made before choosing a mounting location:

SURFACES

The mounting plate can be mounted onto wood, masonry, drywall, or metal. Use the four holes on the base to mount to a surface. Be sure that the mounting surface is capable of supporting the weight of the fiber lamp.

ORIENTATION

On passively cooled models (FL110, FL111, FL210, FL211), if possible position the FiberLamp so that it is oriented with the LED array module facing upwards or downwards. By doing this, the natural convection is most effective and the unit will run cooler.

TROUBLESHOOTING

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Table 4: Possible problems and remedies for FiberLamp failure

Problem	Remedy
Lamp does not turn on	Check that the green light on the power adapter is on and verify that all of the connections to the adapter and the FiberLamp are properly connected.
	Hit the push button several times to make sure that the unit is not in "off" mode.
Light output only appears red	Make sure that the protective dust cover on the end cap has been removed.
	Push the button several times to engage different color modes.
Fan does not turn on	The fan will only turn on when the unit's temperature reaches a critical point. To verify that the fan is operating properly, hit the push button to go to the white mode. Allow the FiberLamp to run for several minutes to verify that the fan is engaging. If the fan fails to engage, turn off the unit immediately and contact the manufacturer.
FiberLamp is not emitting all of the colors	Hit the push button several times and scroll through the seven factory preset colors. If any of the colors appear unusually dim, please contact the manufacturer.
DMX signal is not reaching the lamp	Make sure the pin assignments and polarities on the DMX connectors are properly aligned
	Terminate the DMX signal line with a resistor of the same characteristic impedance as the cable.
	Check to verify that the DMX controller is outputting a signal by connecting it to a different fixture.
	Connect the FiberLamp to LightMix and change the DMX address to a new assignment and apply DMX signal.
Lamp flickering issue	Flickering is often a result of the driver not receiving a high enough DC voltage. Increase the voltage from the power supply until flickering stabilizes.
	Shorten the line from the power supply to the FiberLamp. Never exceed more than a 15 ft length from the power supply.
	Power cycle the FiberLamp by shutting off the power to the power supply and restarting.
FiberLamp has shut down and is hot	Check to make sure the fan is operating properly and the device is being used within its environmental temperature range (see <i>Mounting in Installation Recommendations, section 6</i>).
	Make sure there is nothing obstructing the airflow to the FiberLamp. It is required that a minimum of eight cubic feet of airspace is provided around the device.

SPECIFICATIONS

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Environmental Specifications

Table 5: *Environmental specifications for all FiberLamp models*

Model	Operating Temp. Range	Storage Temp. Range	Humidity	IP Rating
FL110 / Driver Box	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP40
FL111 / Driver Box	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP67
FL210	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP40
FL211	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP56
FL2100	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP40
FL2110	-20/+45 °C (-4/113 °F)	-40/+75 °C (-40/167 °F)	10-90%	IP56

Absolute Maximum Ratings

Table 6: *Absolute maximum ratings for all FiberLamp models*

Model	Input Voltage	Input Current
FL110/ FL111	12 V DC (±5%)	1.5 A
FL2100/ FL2110/ FL210/ FL211	12 V DC (±5%)	3.0 A

Optical Performance

Table 7: *Typical optical performance at 25 °C for RGB and tunable White FiberLamp™ models*

Model	Typical CCT/ λD (nm)	White (lm)	Red (lm)	Green (lm)	Blue (lm)
FL110/ FL111 RGB	6500 K	300	100	240	34
FL110/ FL111 Tunable White	2700-7500 K	230-320			
FL2100/ FL2110/ FL210/ FL211 RGB	6500 K	700	240	480	100
FL2100/ FL2110/ FL210/ FL211 Tunable White	2700-7500 K	460-800			

Mechanical Dimensions

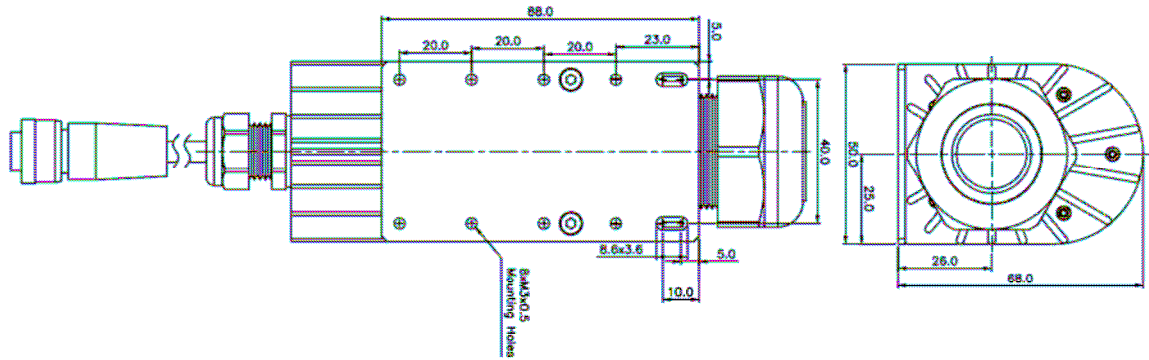
Table 8: *Mechanical dimensions for all FiberLamp models*

Model	Dimensions (Illuminator)	Driver Dimension (mm)
FL110	113 (L) x 50 (W) x 68 (H)	120 (L) x 65 (W) x 25.6 (H)
FL111	113 (L) x 50 (W) x 68 (H)	160 (L) x 75 (W) x 31.6 (H)
FL210	191 (L) x 110 (W) x 111 (H)	
FL211	210 (L) x 110 (W) x 111 (H)	
FL2100	140.4 (L) x 60 (W) x 59.6 (H)	
FL2110	135 (L) x 75 (W) x 83.6 (H)	

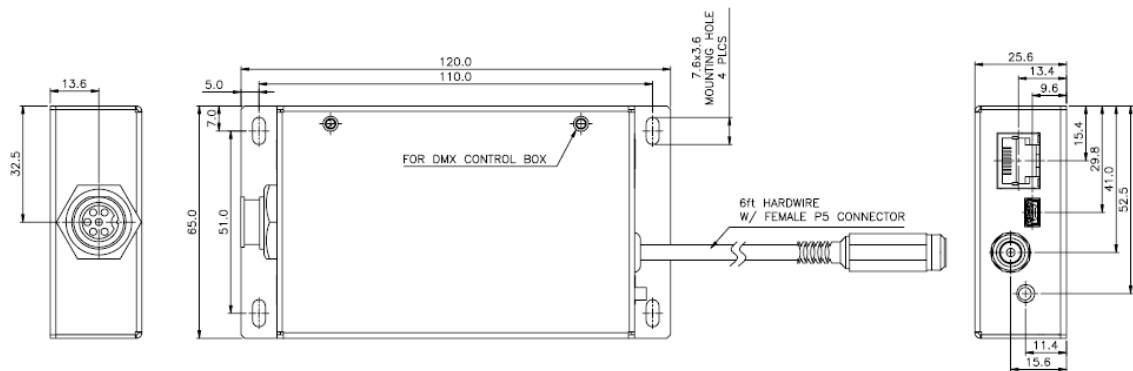
FiberLamp

Mechanical Drawings

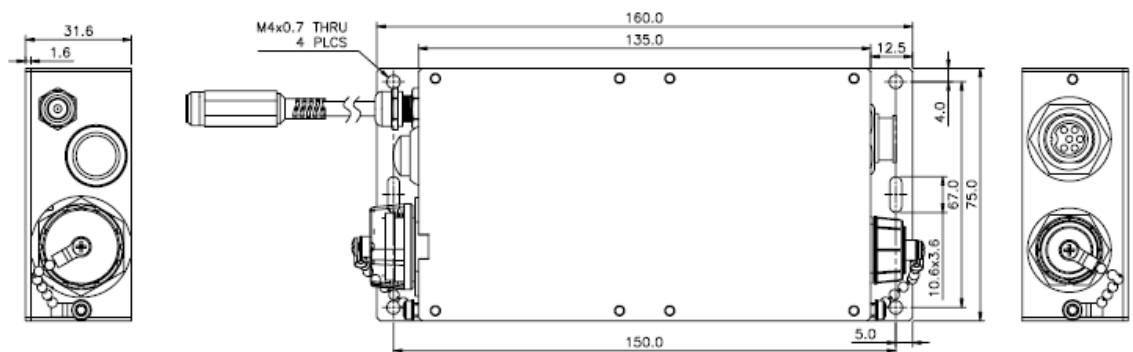
FL110/FL111 ILLUMINATOR



FL110 DRIVER BOX

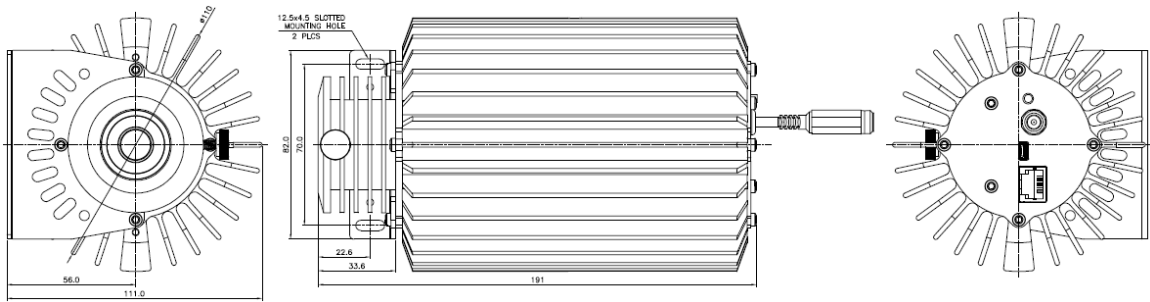


FL111 DRIVER BOX

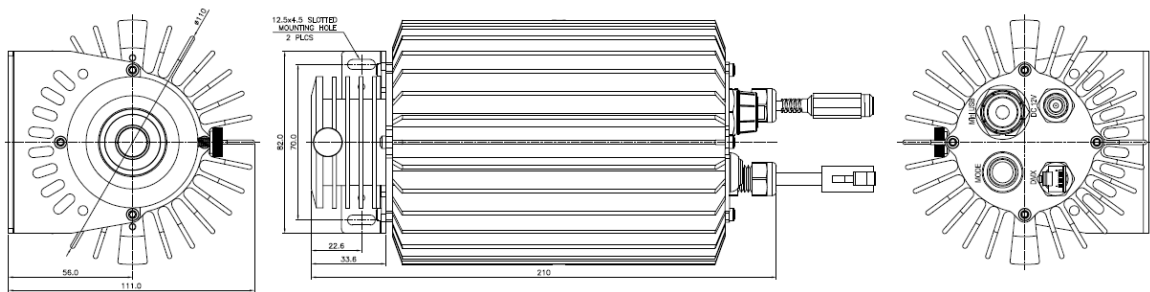


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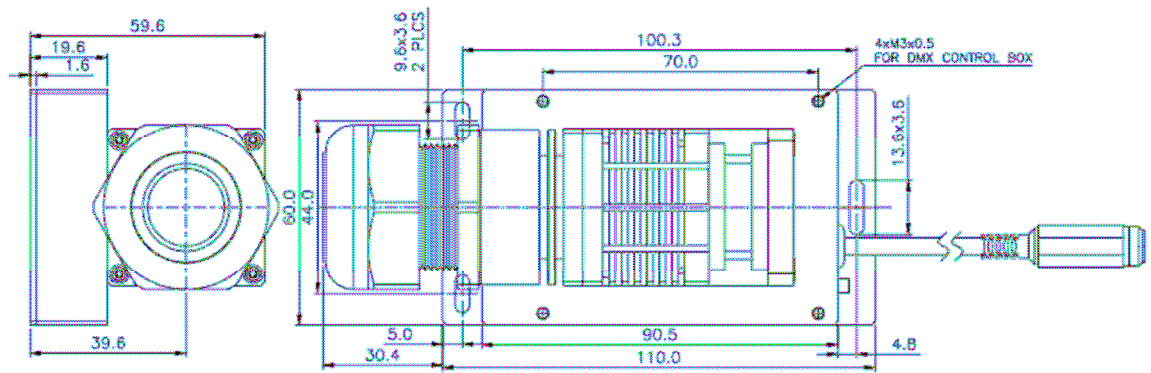
FL210



FL211



FL2100



FL2110

