

Product Manual & Install Guide

Universal

FGI LED Dimming Module



forever **green** indoors
horticultural technology solutions

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Product Overview:

The FGI Dimming Module is a 0-10V Universal Dimmer Sunrise/Sunset Timer which allows for both standard dimming and optional timed sunrise and sunset control of power output to LED fixtures that contain drivers capable of 0-10V dimming.***

Although this product has been geared for LED applications in plant growth, it can be used to manage and dim any dimmable LED with an appropriate dimmable LED driver. Please consult the specifications of your lamp and the driver for confirmation that it can be connected to this controller.

Capabilities of this product include manual 0-10V dimming, programmable sunrise start and sunset dimming stop times which will gradually turn the light intensity up to 100% (and back down again) over a set number of minutes. In addition the unit contains a built in temperature probe and the ability to program the unit to reduce the power output of the LED(s) when a set room temperature level is exceeded.

SAFETY PRECAUTIONS AND OPERATION

Before using your new FGI Dimmer Module, please read this manual thoroughly to ensure that you know how to operate the features and functions that your controller offers safely and efficiently.

This product is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or those who lack experience and knowledge, unless they have been given supervision or instruction concerning the use of the unit by a person responsible for their safety.

- Do not install the module in a wet location or place where it may come in direct contact with running water.
- Do not place the module or the temperature probe in direct heat from room heaters.
- Do not bend the power cord excessively or place heavy objects on it.
- Do not twist or tie the power cord tightly.
- Never unplug your module by pulling on the power cord.
- Never use gas pipes, telephone lines, or other potential lightning attractors as an electrical ground as this could cause the units power supply to become unusable.
- If it is necessary to use an extension cord, use only a 3-wire extension cord that has a 3-blade grounding plug and a properly ground outlet.
- This unit runs on a 110V standard US outlet. Do not plug into 220V outlets or rewire this unit in any form.
- Plug the power plug into the wall socket firmly. Do not use a damaged power plug, damaged power cord, or loose wall socket. This may result in an improper connection which can cause your LED to flicker or not work correctly.
- Do not spray the LCD screen with chemicals. Clean the light with a damp cloth using water only.
- Before cleaning or performing maintenance, unplug the power from the module.
- FGI does not assume responsibility for plant growth / health when using this accessory.

****** This module is designed for use with LED drivers which are specifically designed for 0-10V dimming. Please check the product label on the lamp and driver before connecting to the Controller to ensure the unit has the appropriate 0-10V dimming capability. Under no circumstances should this units + and - connections be connected to other driver wiring. Failure to connect this product properly with appropriately labeled 0-10V dimmable driver wiring will damage the unit and voids the warranty and any product return guarantees.***

Connecting your FGI Controller Module:

Power Input Connection:

The unit comes supplied with a 15 V DC power supply. Do not substitute!

Step 1: Insert the connector into the power input jack on the left side of the unit.

A reliable electrical connection will improve the performance of this device, especially if multiple LEDs will be daisy chained to this unit for dimming and switching.

LED Output Connection:

This unit is designed to connect only to LED lights with drivers with Dim+ and Dim- wires. Under no circumstances can this unit be connected to any other type of light or to non-dimmable LED drivers.

Step 2: There are press down terminals on the right side of the unit. + (Red) Volts is on top and - (Black) Volts is on the bottom. Note: Some LED drivers use different colored Dim or Dimming wires which you will typically find clearly labeled on the product label for your driver. Ensure that you match up the + or DIM+ labeled wire, regardless of color, to the + (Red) press down terminal on the dimming module. And also the appropriate - or DIM - labeled wire from your driver to the - (Black) press down terminal. Also, make sure that wire insulation does not interfere with the terminal connection. The terminals are not designed to press through insulation. Your wire must be cleanly stripped and in connection with both +/- terminal or the module will not function correctly.

Note that LED output voltage to dimmable drivers is considered low voltage. We recommend that a wire equal to or greater than 23 AWG (typical Cat5 or Cat6 PC network wiring or similar) is used if creating an extension to your LED light and driver. You can use single strands, pairs, or other types of wiring equal to or greater than 23 AWG. For longer runs or daisy chain to multiple LED drivers 23 AWG is the minimum wire gauges. Use shielded wiring to run longer lengths. We recommend CAT6 over CAT5 due to the faster signal capacity.

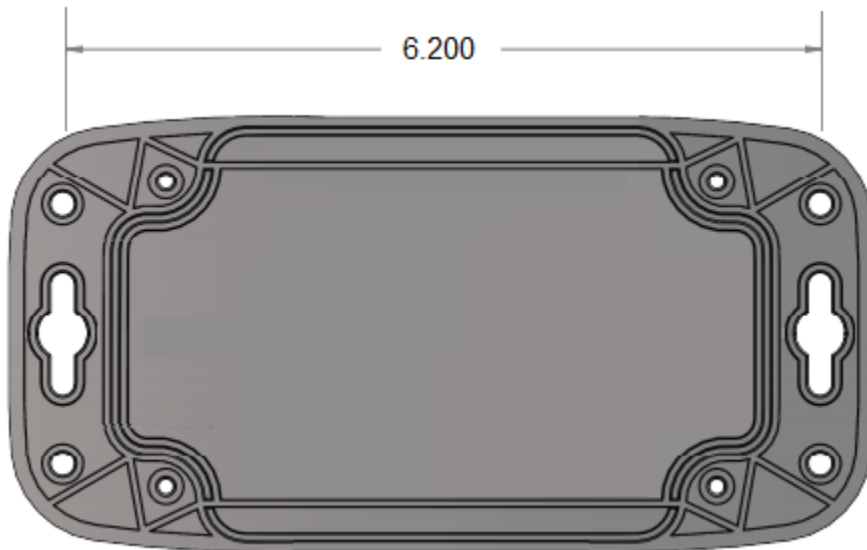
When connecting over distance ensure that the two wires coming from the dimmable LED driver are securely connected. Ideally a heat shrink solder connection should be made but wire nuts of the correct size can also be substituted.

Be cautious when connecting your lights. Make sure you know which wires are Dim + and Dim - for your fixture. Consult the specifications on your driver before connecting.

Mounting:

There are several screw holes available for securing the dimmer. All holes are equally spaced at 6.2 inches. (Figure 1)

Figure 1. Mounting plate dimensions.



Operating Your FGI Dimming Module:

Main Screen:

The main screen provides summary information about the setting and performance of your controller module. The LCD screen is touch sensitive.

These include (figure 2):

Current Power setting. The power level being output to your LED(s) is indicated by this graph which shows output power in 1% increments between 10% and 100%. 100% power output indicates your LED is running at the full manufacturer's wattage level.

Power %. The Power % reading indicates the current % of power being operated (the % of total wattage that your fixture is capable of).

Time To Start: Indicates the amount of time left, as a countdown in hours, minutes and seconds, to when you fixture will begin the Ramp Up time.

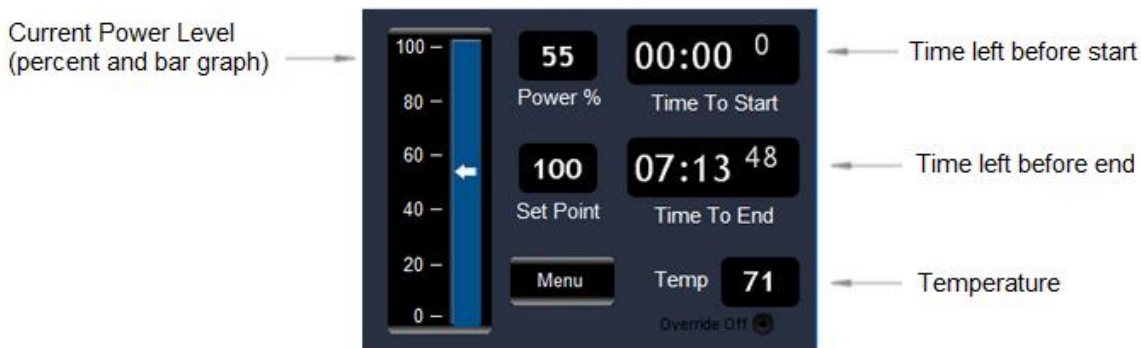
Time to End: Indicates the amount of time left, as a countdown in hours, minutes, and seconds, to when you fixture will begin the Ramp Down time.

Note that the Time to Start and Time to End does not indicate the time when the lights will turn on or off. Dim to off is unique to each driver. In most cases this unit will dim to 10%.

Temperature: Indicates the current room temperature. Assuming the included temperature probe is installed and operating).

Menu. The Menu button allows access to the programmable setting for this module which will be covered next.

Figure 2: Main Screen



Programming:

To program the various parameters start by pressing the touch sensitive Menu button on the main LCD screen to access the Menu Screen (Figure 3).

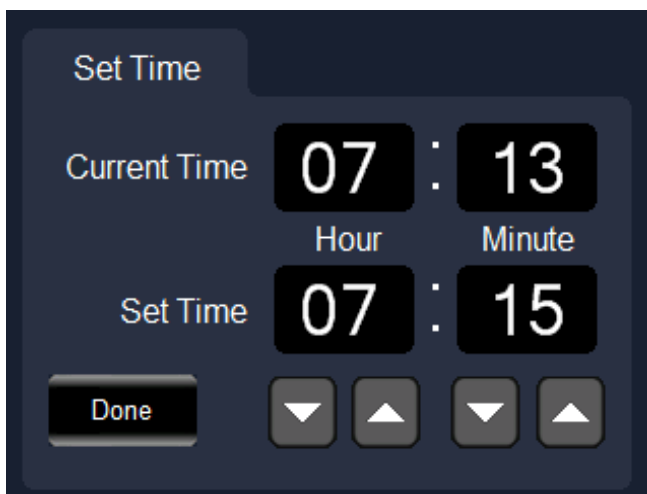
Figure 3. Menu Screen



Set the current time: The Set Time screen shows the current time (in 24 hour format). (Figure 4.)

To adjust the current time use the Plus and Minus keys for Hour and Minute. Press “Done” when finished. The current time is now set. You will return to the Menu Screen.

Figure 4. Set Time Screen



Ramp: The ramp time is unique approach to managing how your lights come on. It serves more than one purposes. (Figure 5.)

The primary purpose of the Ramp feature is to allow you to choose to mimic sunrise and sunset.

Sunrise. Sunrise is the amount of time in minutes it takes to go from 0% output to 100% of the maximum power desired. This maximum power can be programmed as well using Max Power. For example setting Sunrise to 12 minutes allows your lights to come on gradually in 1% increments to mimic a natural sunrise. Adjust this feature with the up/down arrows.

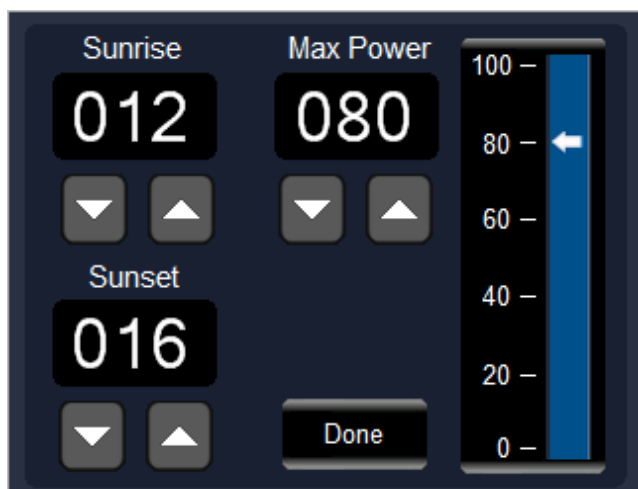
Sunset. Sunset is just the opposite and is the amount of time it takes to go from the max power setting to 0. *Note that not all lights will turn off at 0. This is a function of the LED driver.* Adjust this feature with the up/down arrows.

Example: For instance in Figure 5 below the maximum power is set to 80%. The Sunrise ramp time is 12 minutes. Once the Start Time (discussed below) is reached the dimmer will start ramping up the power to the light fixture. In this case it will take 12 minutes to go from 0% to 80%. The Sunset is set to 16 minutes. It will take 16 minutes to go from 80% to zero.

Max Power. Is the master setting for dimming when using Ramp features. When set to 100% when the light turns on “Start Time”, discussed below, the light will Ramp to 100%. No dimming has been programmed. When set to 50% the light will Ramp to 50% and stop. This is a very important setting when using the Controller during plant growth cycles where dimming is important. Adjust this feature with the up/down arrows. Press Done when programming is completed to save these settings. You will return to the Menu Screen.

Start at 100% Toggle Button: Toggling “Start at 100%” will override all Ramp settings causing the lights to immediately start at 100% power when the Start Time is achieved. This serves to eliminate all dimming and sunrise/sunset settings. This setting can be toggled on/off to return to Ramp setting.

Figure 5. Ramp Screen



Manual. The manual dimming mode allows the timed settings and max power to be adjusted in real time. Figure 6.

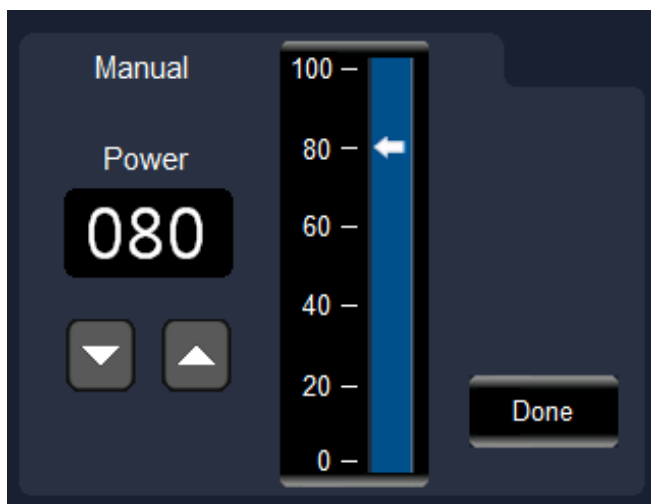
To continue running in Manual mode be sure and stay on this page. Pressing “Done” will switch the system back to scheduled settings on the Menu.

To adjust the output press the arrow indicator on the bar graph and slide either up or down. Once the button is released the output will be set.

For fine adjustment use the Up or Down arrow keys. Each time the button is released the new value will be set.

Press Done when programming is completed to save these settings. You will return to the Menu Screen.

Figure 6. Manual dimming mode.

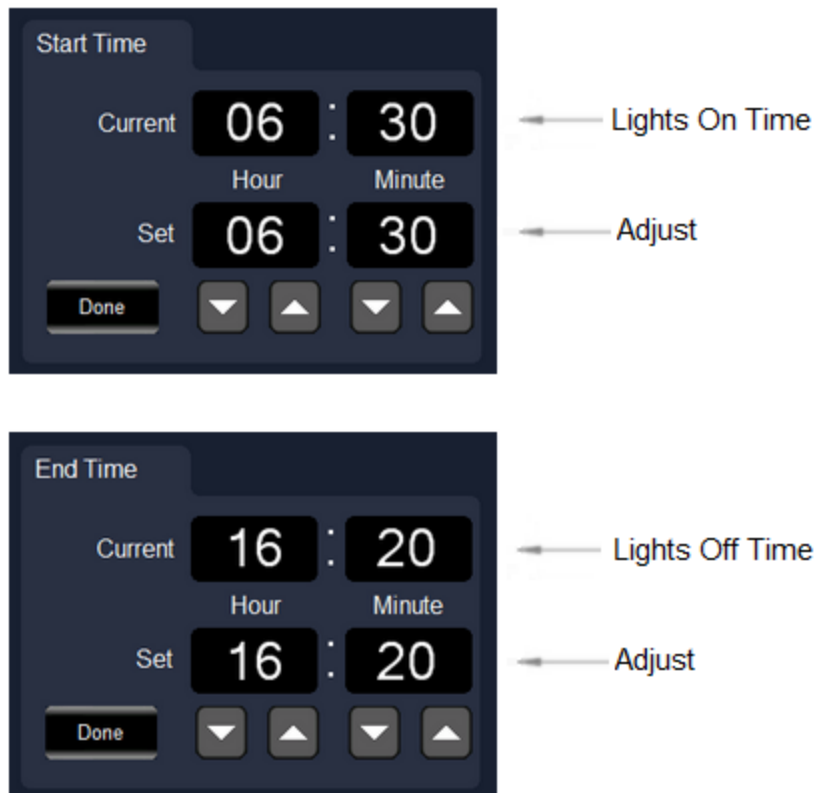


Start and End Times. The Start Time indicates when the module will start outputting control to the light fixture to Ramp on. When the unit hits start time the Ramp feature is activated. Time indicated is a 24 hour clock. Figure 7.

The End Time indicates when the module will start outputting control to the light fixture to Ramp down. When the unit hits End Time the Ramp feature is activated.

Press Done when programming is completed to save these settings. You will return to the Menu Screen.

Figure 7.



Enable and Set Temperature. The set point, if enabled is the temperature at which the lights will reduce power to either off, or to Dim Down.

To enable temperature shut off/dimming select the Enable button to on. Adjust the set point where the lights should shut off or dim down.

Enabling the Dim Down feature allows the light output to step down 20% at a time until the room cools below the set point. LED lighting creates heat and reducing the power to the light is one method of reducing heat.

Leaving this disabled will cause the output to go right to zero power instead of ramping down slowly. Please use this feature carefully as it could affect the growth stage of your plant if the light is set to turn off completely.

Press Done when programming is completed to save these settings. You will return to the Menu Screen.



Temperature Probe. The temperature probe is designed to indicate the ambient room temperature based on where the probe is located. We recommend that the probe is mounted near the center point of the wall height for indoor grow chambers/rooms where the probe will read average temperatures in the room.

For greenhouse applications mount the probe in permanent full shade in an area where the average ambient room temperature can be sensed accurately by the probe.

Using the temperature probe is optional. To disable the temperature probe and it's features choose the "Enable" button and select to "Off".

LIMITED WARRANTY FOR FGI BRAND PRODUCTS

This limited warranty is provided by Forever Green Indoors, Inc. (FGI) ("Seller") to the original purchaser of the FGI brand product that is identified by history of the original purchase (the "Product") by the customer. FGI Brand products carry the FGI or Forever Green Indoors model and logo.

This limited warranty is non-transferable to subsequent purchasers of the Product, provided that such Product is resold in used condition.

Seller warrants that the Product, when delivered in new condition and in its original packaging, will be free of defects in material and workmanship for a period of FIVE (5) YEARS from the date of original purchase. The determination of whether the Product is defective shall be made by Seller in its sole discretion with reasonable consideration given to the overall performance of the Product.

If Seller determines the Product is defective, Seller will elect, in its sole discretion, to refund you the purchase price of the Product, repair the Product or replace the Product. This limited warranty will not apply to loss or damage to the Product caused by: negligence; abuse; misuse; mishandling; improper installation, storage or maintenance; damage due to fire or acts of God; vandalism; civil disturbances; power surges; improper power supply or wiring; electrical current fluctuations; corrosive environment installations; induced vibration; harmonic oscillation or resonance associated with movement of air currents around the Product; alteration; accident; failure to follow installation, operating, maintenance or environmental instructions prescribed by Seller or applicable electrical codes; or improper service of the Product performed by someone other than Seller or its authorized service provider. THIS LIMITED WARRANTY IS VOID IF THE PRODUCT IS NOT USED FOR THE PURPOSE FOR WHICH IT IS DESIGNED.

Seller reserves the right to utilize new, reconditioned, refurbished, repaired or remanufactured products or parts in the warranty repair or replacement process. Such products and parts will be comparable in function and performance to an original product or part, as determined by Seller in its sole discretion, and warranted for the remainder of the original warranty period.

In order to make a warranty claim, the original purchaser (customer) must notify Seller in writing of the defect, provide proof of purchase such as the purchase receipt or FGI invoice and comply with Seller's other warranty requirements. Upon receiving that notice, Seller may require you to promptly return the Product to Seller, or its authorized service provider, freight prepaid. Your warranty claim should be addressed to Forever Green Indoors, Inc., 1314 S. Grand Blvd, Suite 2-127, Spokane, WA 99202.

THE FOREGOING WARRANTY PROVISIONS ARE EXCLUSIVE AND ARE GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY AGAINST INFRINGEMENT AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SELLER BE LIABLE FOR INCIDENTAL, COMPENSATORY, CONSEQUENTIAL, INDIRECT, AND SPECIAL OR OTHER DAMAGES. SELLER'S AGGREGATE LIABILITY WITH RESPECT TO A DEFECTIVE PRODUCT SHALL IN ANY EVENT BE LIMITED TO THE MONIES PAID TO SELLER FOR THAT DEFECTIVE PRODUCT.

This warranty is effective for purchases of Product on or after the effective date set forth below. Seller reserves the right to modify this warranty from time to time. Any modification of this warranty shall be effective for all orders placed with Seller on or after the effective date of such revised warranty.

Effective Date 11/20/2019