

## LIGHTING CONTROLS

### Universal Dimmer

#### GFX-DIM



#### KEY FEATURES

- Schedule and dim any 0-10V dimmable LED light or 0-11.5V dimmable HPS light
- Connect up to 50 lights to each Universal Dimmer
- Compatible with most major manufacturers
- Enables PAR sensor control with Precision PAR®, sold separately
- Remote control and scheduling on any device through GrowFlux App
- Works with any control system with 0-10V transmitter, sold separately
- Wirelessly mesh network many Universal Dimmers for large installs
- Long range, reliable wireless communications with encryption
- IP66 waterproof
- Accessory sealed dimming cables
- Easy installation and setup

The Universal Dimmer is a connected lighting controller capable of scheduling and dimming up to 50 lights per controller. The Universal Dimmer scales to farms of any size with reliable GrowFlux Mesh wireless connectivity.

#### COMPATIBLE WITH MOST HORTICULTURAL LIGHTS

The Universal Dimmer signal interface has been developed and tested to be compatible with a wide range of horticultural lights, including LED and dimmable HPS lights from the industry's top manufacturers.

Tested with major manufacturers of LED drivers, including Inventronics, Meanwell, Artesyn, Powerland, and others.

Includes specialized support for signaling to large groups of dim-to-off drivers, ensuring lights turn off reliably in critical production environments

#### GROWFLUX MESH

Works together with the GrowFlux Access Point and other GrowFlux Mesh enabled products to propagate a high reliability wireless network locally within your farm. Utilizing 900MHz frequencies for ultimate range and reliability, GrowFlux Mesh is built for critical production environments and is hardened against security threats with AES128 and TLS encryption.

#### DIGITAL ZONING

Never manually program a lighting controller again with Digital Zoning. Zones can contain any number of Universal Dimmers and can be reconfigured in minutes within the GrowFlux App.

#### UNLOCK ENERGY SAVINGS

Meet regulatory requirements with both LED and HPS lights with precision scheduling and dimming. The GrowFlux App gives total control over PPFD light density and energy loads.

#### CONTROL FROM ANY DEVICE

Monitor, schedule, and control your lighting network from anywhere with the GrowFlux App for iOS and Android, or the browser based GrowFlux app at <https://panel.growflux.com>. GrowFlux Access Point required, sold separately.

## GrowFlux Mesh



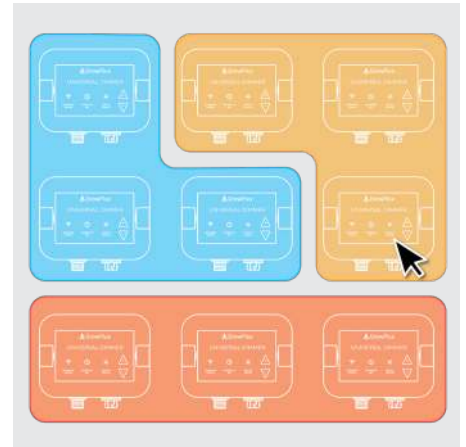
### MESH NETWORK UP TO 200 DEVICES

Up to 200 Universal Dimmers can be connected to each Access Point. Each Universal Dimmer extends GrowFlux Mesh; high reliability wireless mesh network connection is automatically managed.



### SENSOR CONTROL

Make your lights responsive to natural light with Precision PAR®, an easy to install wireless PAR sensor that works with the Universal Dimmer. Set precision PPFD setpoints and monitor crop DLI and PAR density.



### EASY DIGITAL ZONING

Reconfigure your farm with ease with digital zoning. Schedules and settings are sent to all devices in a zone at once, eliminating repetitive programming tasks. Make on the fly changes to your zones and your devices self configure like magic.



### CONTROL ON ANY DEVICE

Manage your lighting systems from anywhere on any device with the GrowFlux App, available for iOS and Android, as well as the GrowFlux web app for browser and desktop control.



### BUILT FOR OPERATIONS CONTINUITY

Reliable through power outages, internet outages, and on-the-fly changes to devices to the network to ensure that your farm runs on schedule no matter what. Each device stores a schedule, and the Access Point has a battery backed clock to keep accurate date and time on site through power and internet outages.



### IP66 WATERPROOF

UV resistant IP66 construction with IP67 connectors. Water resistant vent for pressure equalization keeps water out through changes in atmospheric pressure. Waterproof power cables are available separately.



### WORKS WITH ANY CONTROL SYSTEM

Paired with the 0-10V Transmitter, the Universal Dimmer enables wireless lighting control with any existing control system with a 0-10V interface. Retrofits onto control cabinets in minutes and eliminates contactor panels when paired with dim to off lights.

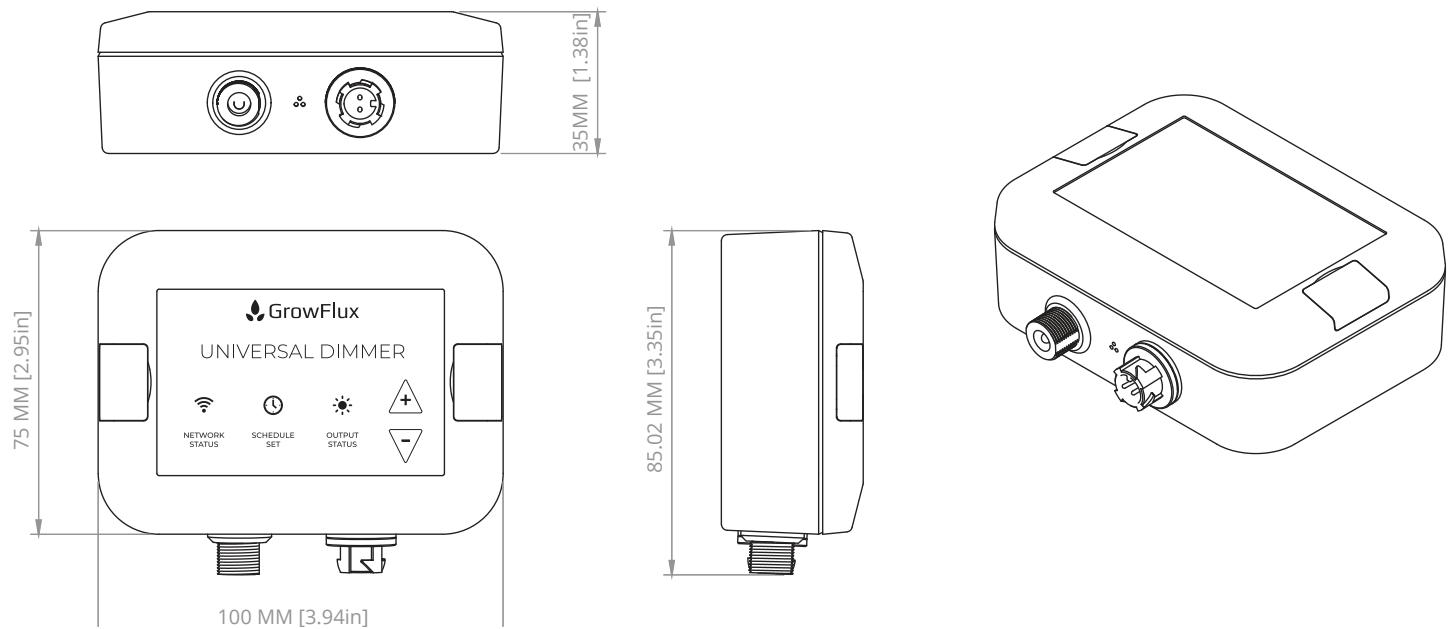
## Technical Specifications

| GENERAL SPECIFICATIONS           |                                                                                                                                                                                                                        |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions:                      | 100mm x 85mm x 35mm (3.94" x 3.35" x 1.38")                                                                                                                                                                            |
| Weight:                          | 150g (5.3 oz)                                                                                                                                                                                                          |
| Ingress Protection:              | IP66 - resistant to dust ingress and direct sprays of liquid water                                                                                                                                                     |
| Operating Temperature Range:     | -40 to 60°C (-40 to 140°F)                                                                                                                                                                                             |
| ELECTRICAL SPECIFICATIONS        |                                                                                                                                                                                                                        |
| Voltage input:                   | 15 - 24 VDC                                                                                                                                                                                                            |
| Current consumption:             | 320mA absolute max current draw at 15VDC; 220mA absolute max current draw at 24VDC                                                                                                                                     |
| Output control voltage range:    | 0.00-10.00 VDC <sup>1</sup> when configured for LED control; 0.00 - 11.50 VDC when configured for HPS <sup>1</sup>                                                                                                     |
| Dimming resolution:              | 8 bit                                                                                                                                                                                                                  |
| Quantity of lights supported     | Up to 50 lights <sup>2</sup>                                                                                                                                                                                           |
| Source / sink current output:    | 50mA; supports both sink and source type analog dimming control                                                                                                                                                        |
| Output voltage ripple:           | 50mV max <sup>3</sup>                                                                                                                                                                                                  |
| Power input current consumption: | 320mA absolute max current draw at 15VDC<br>220mA absolute max current draw at 24VDC                                                                                                                                   |
| WIRELESS SPECIFICATIONS          |                                                                                                                                                                                                                        |
| Wireless protocol:               | GrowFlux Mesh - standards based wireless mesh; requires GrowFlux Access Point and Ethernet internet connection for remote management & scheduling. Without Access Point, Dimmer functions with pushbutton control only |
| Security:                        | RF data is AES128 encrypted; application layer is TLS encrypted. No inbound connections                                                                                                                                |
| Wireless frequency:              | 902-928MHz (North America Market; ITU Region 2)                                                                                                                                                                        |
| Wireless range:                  | 500 feet line of sight (dimmer-to-dimmer or dimmer-to-Access Point / repeater; reduced to 300 feet indoors through most types of walls. Capable of 10km+ (6 mile+) wide networks with meshing <sup>4</sup>             |
| Meshing:                         | Automatically meshes to nearest always-on device, such as a Dimmer, Repeater, or GrowFlux Mesh enabled device from third party manufacturers; Smart range extension & self healing mesh <sup>4</sup>                   |
| Wireless channels:               | 50 channels; automatic channel hopping                                                                                                                                                                                 |
| Radio Power:                     | Up to +12dBm                                                                                                                                                                                                           |
| Antenna:                         | 2.0dB high gain internal antenna                                                                                                                                                                                       |

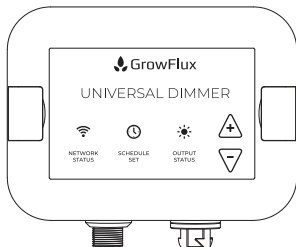
### Notes:

1. Some power supplies built into lighting products are biased with a positive voltage on the dimming control terminals, preventing the control interface from reaching 0.00V. Electrical characteristics of some lights may prevent 0-10V line from reaching 10.00v; voltage at dimming control terminals at light is dependent on proper sizing of wiring.
2. The Universal Dimmer contains specialized hardware and firmware for enhanced dimming performance for large networks of lights - up to 50 lights. Actual quantity of lights supported by the Universal Dimmer may vary by lighting manufacturer.
3. Performance measured simulated loads on 0-10v interface; actual performance may vary by lighting manufacturer.
4. The Universal Dimmer will extend network range of nearby devices by automatically meshing to devices at the edge of the network. 10km+ (6+ mile) network range is common for networks incorporating devices spread out over large areas such as farms and cities. The Universal Dimmer will extend battery life of nearby battery powered sensors by automatically relaying messages, allowing sensors to reduce transmit power and stay asleep. Building materials such as metal, concrete, metal stud walls, and metal paneling will affect indoor through-wall range. GrowFlux Mesh typically performs with 100-300 foot range through concrete floors, CMU walls, brick walls, metal stud walls, and low-e coated windows. GrowFlux Mesh Repeaters or any GrowFlux Mesh enabled (non-battery powered) device can be used to extend wireless range for all GrowFlux Mesh enabled devices.

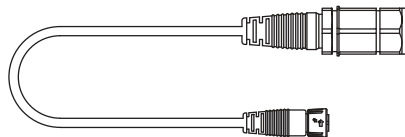
## Drawings



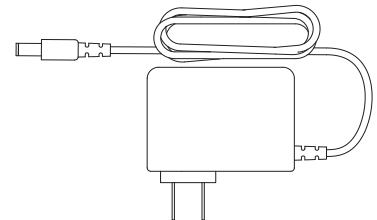
## Whats Included



Universal Dimmer  
GFX-DIM-10VP-1P2C-NA



2 conductor screw terminal break-  
out cable with sealed cable gland  
GFX-DIMA-ST

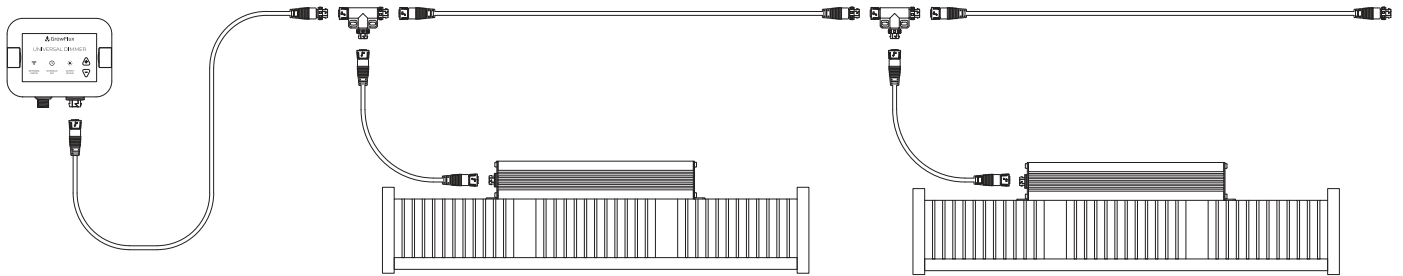


24VDC Power Adapter  
5.5mm x 2.0mm barrel plug,  
NEMA 115 / North America plug

**Not Pictured:**  
Perpetual license for Basic Cloud Controls  
Quickstart Guide

## Accessories

The Universal Dimmer product family includes a sealed IP67 cable system to daisy chain dimming signal to up to 50 lights. See [growflux.com](http://growflux.com) for latest manufacturer compatibility.



**GFX-DIMTEE**  
Signal tee connector



**GFX-DIMEXT-2M**  
Signal extension cable,  
2 meters



**GFX-DIMEXT-3M**  
Signal extension cable,  
3 meters



**GFX-DIMEXT-5M**  
Signal extension cable,  
5 meters



**GFX-DIMA-ST**  
Screw terminal bare  
wire adapter with  
sealed cable gland



**GFX-DIMA-RJ**  
Adapter cable with RJ  
connector



**GFX-DIMA-FB**  
Adapter cable for  
Fluence with 3-pin M16  
push lock connector



**GFX-DIMA-FBM12**  
Adapter cable for  
Fluence with 3-pin M12  
threaded connector



**GFX-DIMA-PH**  
Adapter cable for  
Philips GreenPower  
LED lighting



**GFX-DIMA-GE**  
Adapter cable for  
GE Current



**GFX-ATM-DC2.0-3M**  
IP67 sealed power  
cable, bare wire leads,  
3 meters length



**GFX-ATM-DC2.0-FW**  
IP67 sealed power  
connector. Soldering  
required.

## Ordering Information

### Typical Part Number

GFX - DIM - AV - 1C2P - NA - KIT

1

2

3

4

5

#### 1 - Series Name

DIM - GrowFlux Dimmer

#### 2 - Interface

AV - 0-10V or 0-11.5V configurable analog dimming signal with up to 30mA sink / source capability

#### 3 - Number of ports and channels

1C2P - 1 channel and 1 2-pin signal connector

#### 4 - Region

NA - North America, 900 MHz wireless

EU - Europe, 868 MHz wireless

#### 5 - Packaging

KIT - Plug and play kit in retail packaging. Bundled with basic cloud services including scheduling and zoning. Waterproof power and dimmer cabling available separately.

### Accessories

GFX-DIMTEE - Signal tee connector, IP67

GFX-DIMEXT-2M - Signal extension cable, 2 meters, IP67

GFX-DIMEXT-3M - Signal extension cable, 3 meters, IP67

GFX-DIMEXT-5M - Signal extension cable, 5 meters, IP67

GFX-DIMA-ST - Screw terminal bare wire adapter with sealed cable gland, IP67

GFX-DIMA-RJ - Adapter cable with RJ connector

GFX-DIMA-FBM12 - Adapter cable with 3-pin M12 threaded connector with metal locknut, for Fluence, IP67

GFX-DIMA-FB - Adapter cable with 3-pin M16 push lock connector, for Fluence, IP67

GFX-ATM-DC2.0-3M - Power extension cable, IP67 sealed on one end with locking connector, 3 meters length

GFX-ATM-DC2.5-FW - Power connector, field assembly, soldering required, IP67