

GROW

INCREASE YOUR

KNOWLEDGE.
EFFICIENCY.
OPPORTUNITY.
SAVINGS.
CONTROL.



WIFI-ENABLED

SMART-PHONE CONTROLLED

ZONE CONTROLLED

HLG

POWERED BY

 **GrowFlux**

Take control of your
GROW.



HOW THE ACCESS POINT WORKS:

The GrowFlux Access Point is an always-on wireless device that serves as the foundation for your on-site GrowFlux Mesh, a high reliability wireless mesh for lighting controls, sensing, and other devices.

The Access Point functions as a bridge between your GrowFlux Mesh devices and GrowFlux cloud applications. An Android or iOS device is required to set up the Access Point, however any device with any GrowFlux cloud application can be used to interact with devices once the Access Point is set up.

DATA CONFIDENCE:

CR2032 Lithium coin cell battery; powers internal clock to keep date and time in the event of powerand Internet connectivity loss

WIRELESS Eliminates control wiring	✓
SCHEDULING Capable of scheduling & dimming lights or only real time control	✓
AVAILABILITY Ready to use controls or custom engineered systems	Included on HLG lights
COST First cost for lighting controls and supporting equipment	Included on HLG lights; Access Point
INSTALLATION COST Labor related costs for installing equipment, cabling, etc.	Electrician not required; rapid setup with app
SMARTPHONE APPS & CONTROL Apps for Android & iOS	iOS & Android Apps
CLOUD CONNECTIVITY Control and manage your lighting system from any device and any location	✓
API CONTROL Integrate lighting controls with other software platforms and control systems	✓
STORES SCHEDULES Stores lighting schedule data on each light; reliable thorough loss of internet or signal	✓
BATTERY BACKUP TIMEKEEPING Stores battery backed time within control system; reliable through power loss	✓
SOFTWARE DEFINED ZONING Re-configure your farm with a few easy clicks. Easily push schedules to zones of lights.	✓
REMOTE SOFTWARE UPDATES Capable of device updates for enhanced features and security patches	✓



GET STARTED HERE:



Access Point

Quick Start Video Link

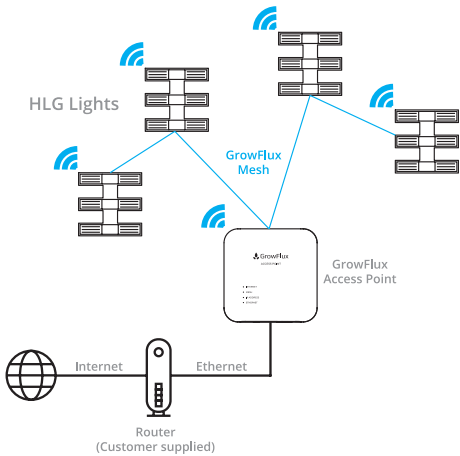
Requirements:

- iOS or Android device with Bluetooth (only needed for initial setup)
- Internet connection with 10Base-T Ethernet port
- AC power outlet for AC adapter

Wireless scheduling & Dimming

Your HLG light includes a wireless lighting controller that easily pairs with the GrowFlux Access Point for connected control. Reliable and secure mesh networking built into your light enables control from any device, from anywhere. Connect up to 200 lights to the GrowFlux Access Point, sold separately.

HOW CONNECTED CONTROL WORKS:



Module Quick Start Video:



App Link

Download GrowFlux App

- For iOS, search the App Store for 'GrowFlux'
- For Android, search the Google Play store for 'GrowFlux'
- Or scan the barcode below or navigate to growflux.com/app on your device.



How much light do crops need?

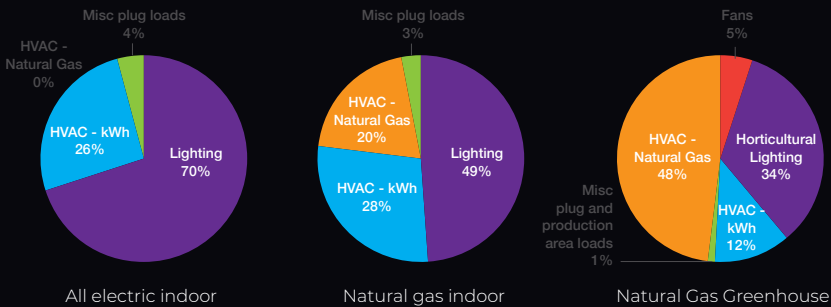
	CROP	MOLES OF LIGHT PER DAY	LIGHTING INTENSITY	
	Hemp	30-35	Very High	
	Tomatoes	20-30	High	
	Peppers	20-30	High	
	Cucumbers	15-30	Mid-High	
	Strawberries	17-20	Medium	
	Greens	12-17	Medium	
	Floriculture	10-30	Low-High	
	Herbs	10-12	Low	

The table above shows the minimum amount of light per day needed to profitably cultivate various greenhouse crops. Daily Light Integral (DLI) is measured in moles of light per day, and is quantified in the number of photons in the PAR spectrum.

For flowering crops like hemp and tomatoes, the timing of light is important to regulate the flowering cycle. During flowering, hemp crops are typically lit for 12 hours per day. Non-flowering crops like lettuce and leafy greens are far less sensitive to the timing at which the crop receives light, and are often lit for 18-22 hours per day.

State regulations throughout the US often require that medicinal hemp is grown indoors, State regulations throughout the US often require that medicinal hemp is grown indoors, requiring the entirety of the crop's light input as sole source electric lighting.

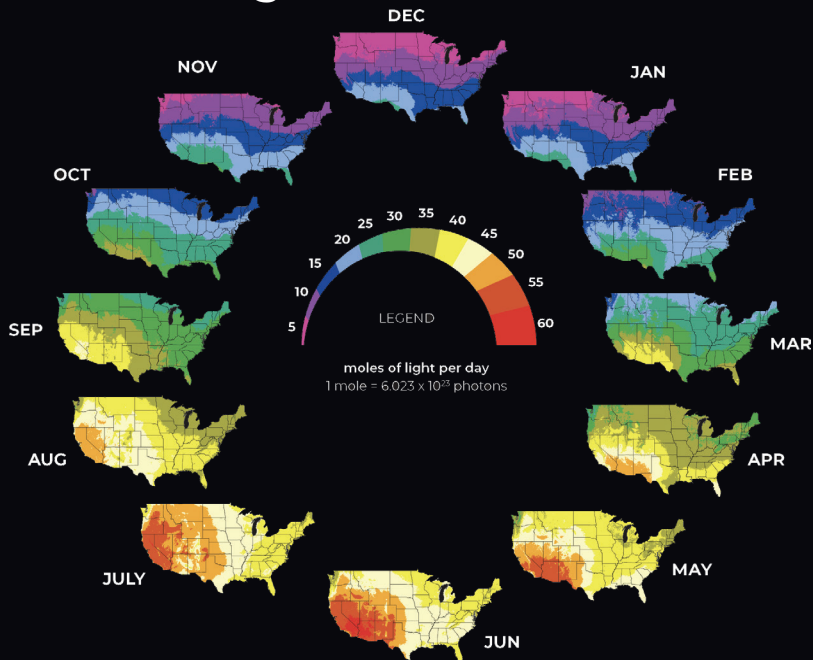
How much energy does horticultural lighting consume within farms?



Graphs from left: Energy Mix of All-Electric Indoor, Natural Gas Indoor, and Greenhouse Facilities in a Cold Climate
SOURCE: RESOURCE INNOVATION INSTITUTE



Where is supplemental light needed for greenhouses?



Source: Faust, J.E., and J. Logan. 2018. "Daily Light Integral: A Research Review and High-Resolution Maps of the United States," HortScience 53(9):1250-1257.

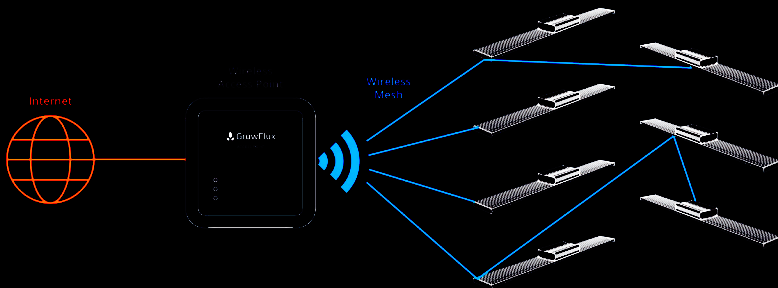
- Greenhouse films and glass reduce light levels by 10-20%, further necessitating supplemental lighting
- The entirety of the continental United States does not have enough natural light to cultivate hemp, tomatoes, and peppers year-round without supplemental lighting
- Some greenhouses opt for less than year-round cultivation to reduce the amount of supplemental lighting needed

How much energy does horticultural lighting consume overall?

	UNITS	INDOOR VERTICAL FARMING	GREENHOUSE	NON-STACKED INDOOR & HEMP
Average Electricity Consumption				
High Pressure Sodium (HPS)		N/A	11	56
LED	W/ft ²	15	7	35
LED with precision controls		13	5	28
Technology Adoption by industry				
High Pressure Sodium (HPS)		N/A	98%	86%
LED	%	90%	1.5%	8%
LED with precision controls		10%	0.5%	3%
Total Grow Area	Million ft ²	0.85	6.6	31.9
2019 Annual Energy Consumption	GWh/year	81	1,2028	,307

SOURCE: US Department of Energy & GrowFlux, Inc.

How do connected horticultural lighting controls work?



Connected lighting control systems use on-site wireless networking and Internet connectivity to enable energy savings. Wireless mesh networking significantly reduces the need for control wiring and control cabinets within agriculture facilities. Increasingly, smart grid features are being incorporated into connected lighting control systems to save energy and manipulate energy loads. Horticultural lighting has greater potential for load shedding schedules and demand response, while other loads like HVAC have more limited potential.

Fully wireless controllers provide individual wireless control for each luminaire and entirely eliminate control signal wiring from the system. Fully wireless controls provide the added benefit of software based zoning within farms, allowing growers to re-configure their farms with a few clicks rather than re-configuring wiring.



Modern control systems allow for control from any device, including smartphone apps. Growers increasingly are demanding remote management solutions in horticultural controls since many are managing multiple facilities, and monitoring of critical systems is a 24/7 task.

GrowFlux Mesh Lighting Adapter

HVIN: 3.4d

FVIN: HLG-650-R, HLG-S-DIABLO

FCC ID: 2AY24-GFX-HG01

IC: 27912-LAHG01

REGULATORY STATEMENTS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Ce matériel est conforme aux limites de dose d'exposition aux rayonnements, fac / ic rss-102 énoncée dans un autre environnement. Cette equipment devrait être installé et exploité avec distance minimale de 20 entre le radiateur et votre corps.

Desktop control at <https://panel.growflux.com> Requires Internet connection for connected control. Requires Android or iOS device & GrowFlux App for setup. Use of this product is subject to registration with GrowFlux, Inc. and the GrowFlux Terms of Service, located at growflux.com/tos. Some advanced features require subscription; see pricing at growflux.com.

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RoHS





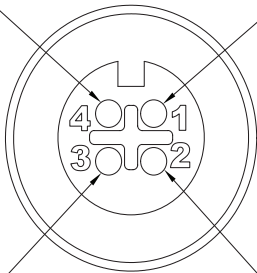
POWERED BY



Mating connector end view
Mates to GrowFlux Lighting Adapter

Socket 4:
DIM+

Socket 1:
-V supply
*see note



Socket 3:
DIM-
*see note

Socket 2:
+12V supply



*Note: DIM- and -V supply are internally connected
inside Lighting Adapter

MATING CONNECTOR: LLT female M12 4P
with push lock and female sockets Mates
to GrowFlux Lighting Adapter



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Westerville, OH 43082

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07/07/2022
Specifications subject to change without notice.

www.HLG.com
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