

V-Line[®] **Gen2**[™] V2355

Installation Guide

Thank you for purchasing the
V-Line[®] **Gen2**[™] LED Module!

Support

If you have questions after reading this information or would like our advice on your project, call us before working with any product from i2Systems.

i2Systems Technical Support is available from 9 a.m. to 5 p.m. EST by phone at +1.860.567.0708 or email at support@i2systems.com.

A free copy of this installation guide is available online at www.i2systems.com along with these resources:

- Gen2 V2355 Spec Sheet
- LightLink LL-205 Installation Guide
- Power Box E10PW Datasheet

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Product information is subject to change without notice.

Introduction

Use these instructions to plan, install, and wire your new Gen2 LED module. Proper installation will ensure this LED module will provide superior linear architectural lighting with minimal maintenance and electric consumption for many years.

Lighting architects and installers can play a critical role in the reliability of the lighting system by planning and taking precautions in the layout, routing, shielding and grounding of the lighting system. Considerations include:

- effectively grounding the LED module housings,
- providing shielding of the cabling through grounded conduit or enclosed trays,
- segregating circuits such that the low voltage lighting circuits are not in close proximity to AC circuitry where transients may be induced between the circuits,
- minimizing wire/cable lengths by placing the drivers/power supplies as close to the lighting loads to allow for more effective control and reduce the sensitivity to electrical disturbances.

WARNING: Only a qualified electrician should install i2Systems products.

While it may be tempting to skip sections, we assure you that reading this material will help you to avoid problems and speed up the installation process.

Identify all parts

- Familiarize yourself with the LED module, Power Box, and Accessories

Review the installation site

- Pick an accessible area that allows for future maintenance and/or service of the LED module
- Review the temperature and environmental conditions to ensure the LED module operates within recommended ratings as outlined in this guide

Install the LED Module

- Use the adjustable or fixed brackets to secure the LED module to the mounting surface
- Connect multiple LED modules in a run, if applicable

Wire the LED Module

- Use the wiring diagram that best describes your installation criteria

Electrical Warnings

Failure to follow these warnings could cause injury or death, damage the LED module, and/or void the warranty.

- Read and understand the LED module installation instructions and safety labels before you begin your installation.
- Turn off the power before installing or servicing the LED module and/or connecting or disconnecting individual units.
- Follow all national and local electrical and construction codes and regulations.
- Avoid all temptation to disassemble the LED module. There are no serviceable parts, and tampering with it could cause shock.
- Use only LED modules marked for exterior use in outdoor applications.
- Comply with the maximum voltage rating of the LED module.
- Operate the LED module within the specified temperature ranges.
- Avoid making live connections, also known as hot swapping.

LED Module Maintenance

Clean the LED module with mild soap and water only and never immerse or soak the LED module in liquid.

Avoid damaging the optic by cleaning it with products that do not contain plasticizers.

Never clean the LED module with high-pressure washers or pointed objects as they can damage the LED module and potentially breach the seals.

Certifications



IP66

Installation Site Considerations

i2Systems designs its LED modules for an extended, trouble-free operating life. However, as part of the installation process, equipment requires cleaning, service, and eventually relamping.

To make maintenance easier, make sure you install the LED module with a simple, inexpensive means of safely accessing the LED module in the future.

i2Systems LED modules are not for use in applications that would require scaffolding, swing stages, cranes, or any exotic means of accessing the LED modules for replacement and/or relamping. You will void the warranty if you create such an installation without first obtaining written permission from i2Systems management.

Temperature Considerations

This LED module is rated for an operating temperature range of -20 to 40°C with a rated maximum case temperature of 50°C. After installation, measure the case temperature to ensure it will not exceed 50°C on any point on the housing at worst-case ambient temperature.

The LED module has i2Systems' Active Thermal Management (ATM), which will reduce power and therefore the case temperature if the LED module overheats. However, you should not rely on the ATM to regulate temperature as part of the normal operation of the LED module.

Failure to operate the LED module within specified operating and case temperature guidelines will void the warranty.

Situations that would cause the case temperature to exceed 50°C include:

- Areas where the ambient temperature is above 40°C
- Direct sunlight in hot climates
- Sealed compartments
- Between panes of glass or directly behind a glass window
- Inside a tight and/or insulated space

Should the case temperature exceed the maximum rating of 50°C, you can reduce power to the LED module by dimming it, decrease the ambient temperature, increase the airflow or volume of air around the LED module, and/or remove the LED module and install a lower power LED module.

Never install the LED module in applications that have a greater-than-average ambient temperature variation. Rapid heating and cooling, beyond that which occurs normally in nature, can damage the LED module.

If you have any questions or concerns about temperature as it relates to the LED module, call +1.860.567.0708 before you begin the installation process.

Wet Location/Outdoor Use LED Module Labeling

Use only wet location LED modules for exterior applications.

LED modules marked with an “I” are intended for indoor use only. They should not be used for exterior applications.

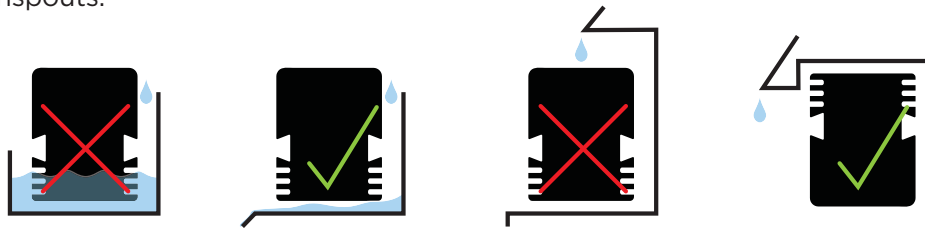
V2355A-23CBB ✓

V2355A-23CBB I ✗

Outdoor Installation Considerations

You must install and operate all i2Systems LED modules within the recommended temperature and environmental ratings.

- LED modules rated for exterior applications are not rated for submersible use. You should not mount the LED module in a location that has or may have standing water.
- You should never install an LED module where there is or may be moving water from runoff or downspouts.



It is good practice to seal all LED modules and junction boxes with electronics-grade RTV silicone sealant. This will ensure that moisture cannot enter or accumulate in wiring compartments, cables, or other electrical parts when you install the LED module in wet or damp locations.

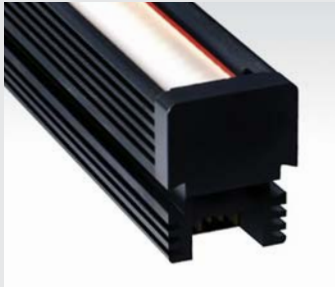
You should also install a service loop into the cable at the LED module end to prevent water from wicking towards the LED module, as well as for strain relief. Inspect the cable after installation to ensure that the cable jacket will not be subject to potential damage caused by chafing, pulling, or cutting.

Wet Location Connection Considerations

i2Systems designed the Gen2 for use as a continuous run of lights and therefore provides the LED modules with a convenient Plug-Together feature.

- For proper seating and secure electrical connection, each input cable, extension cable, and end-to-end connector is provided with a metal retention clip. Please ensure that these accessories are properly installed and that the connectors are fully seated. Failure to do so may result in intermittent connection, corrosion, and/or leaking into the main housing.
- For the last LED module in any run, use End Plug Model VLAK2-P1 to cap any unused connector. Failure to do so may result in intermittent connection, corrosion, and/or leakage in the main housing.

Gen2 Specifications



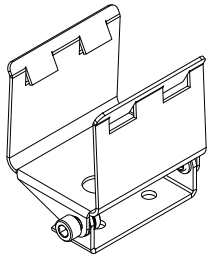
Watts:	V2355A: 14 Watts / Foot (HO) V2355B: 7 Watts / Foot (SO)
Input Voltage:	20-30V DC
Operating Temp:	-20°C to 40°C
Max Case Temp (Tc):	50°C
Humidity:	0 to 95% Non-Condensing

Use the following information to ensure that you have all the proper components before you start the installation. Note that some of the components are optional, depending on whether you want to install the dimming feature and/or connect multiple LED modules to form a longer run.

Call i2Systems directly at +1.860.567.0708 or contact your local distributor if you have questions or believe components are missing from your product package.

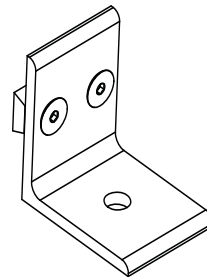
Gen2 Mounting Brackets (Use One Type)

Depending how your LED module was specified during the ordering process, you will find one of the following bracket types in your product package.



VLA-17 Adjustable

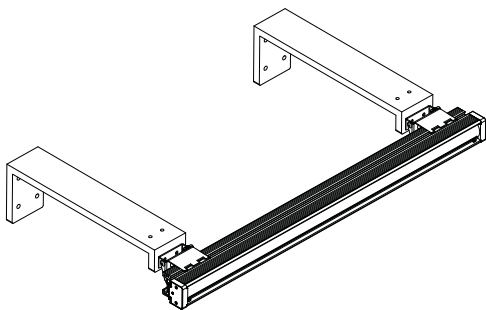
Stainless steel adjustable mounting bracket with stainless steel screws.



VLA-9 Fixed

Aluminum mounting bracket with stainless steel screws. Mates with dovetail slots on Gen2.

Extension Arms



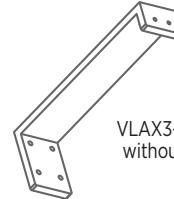
Aluminum mounting arm is designed for extension of the Gen2 LED module 6 or 12 inches (specify model) from the mounting surface. Extension arm is provided with VLA-17 adjustable mounting bracket.

VLAX3-6 (6")



VLAX3-6 shown with VLA-17

VLAX3-12 (12")



VLAX3-12 shown without VLA-17

Power Boxes for the Gen2 (Use One Type)

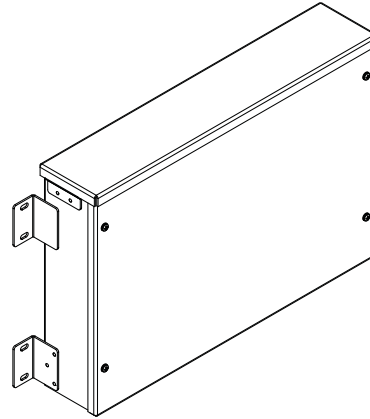
Depending where you will install the LED module and how it was specified during the ordering process, you will find one of the following Power Boxes in your product package.

PS30V280W-E10PW

120-277V AC Input
Powers up to 20 Feet of Gen2 HO, 40 Feet of Gen2 SO

PS30V560W-E10PW (Dual Output)

120-277V AC Input
Dual Output
Powers up to 40 Feet of Gen2 HO (2 runs of 20 Feet)
and 80 Feet of Gen2 SO (2 runs of 40 Feet).

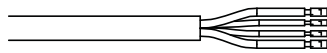


Rated for Indoor / Outdoor Use.

Plug and Play Cables for the Gen2

Power Input Cables (Required)

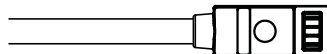
6 foot power input cable for hard-wire or connection to Power Box. Retaining clip included.



Three options available:

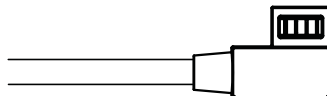
Straight:

VLAK2-C1-06
(replaces 685-01859-6)



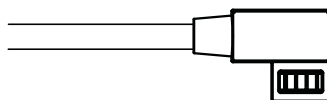
Right-angle:

VLAK2-C1-06R



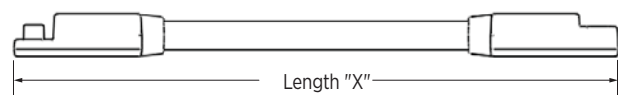
Left-angle:

VLAK2-C1-06L



Power Extension Cables (Optional)

Power extension cables with dual plugs. Available in many lengths:

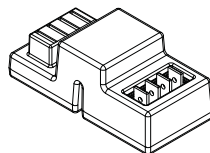


Part No.	Length "X"
VLAK2-C2-6IN	6 in
VLAK2-C2-01	1 ft
VLAK2-C2-02	2 ft
VLAK2-C2-03	3 ft
VLAK2-C2-06	6 ft
VLAK2-C2-10	10 ft
VLAK2-C2-20	20 ft
VLAK2-C2-30	30 ft

End-to-End Connector (Optional)

VLAK2-J1

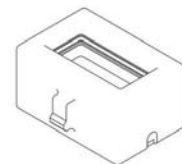
Connector allows vertical installation and relamping. Includes retaining clip and dovetail mounting bars for fixture rotation and stabilization. (replaces 720-01868)



End Plug (Required)

VLAK2-P1

One end plug must be installed in last fixture of each run to properly seal the fixture.



Refer to LED module Installation section for instructions

Dimming Components for the Gen2



LightLink LL-205-10V

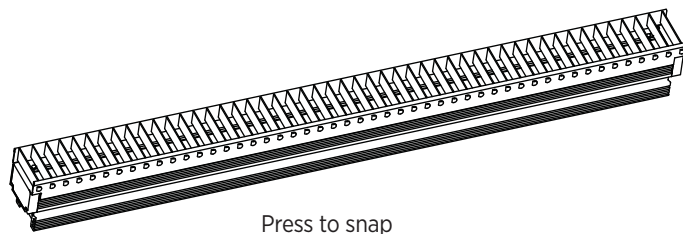
Use as a stand-alone Dimmer or as a bridge to a 0 to 10V Dimming Input (sink or source) 120-277V AC Input.

Dimming Cable (Optional)

- Indoor: 685-01561-100
- Outdoor: 685-02026-100

For dimming installations, i2Systems provides both indoor and outdoor rated Dimming Cable for your wiring convenience. Use the Dimming Cable to connect the LightLink LL-205 Dimmer to Power Boxes and to “daisy-chain” Power Boxes together. The cable is available in 100-foot spools.

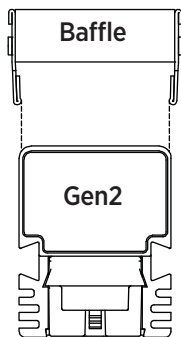
Gen2 Baffles (Indoor Only)



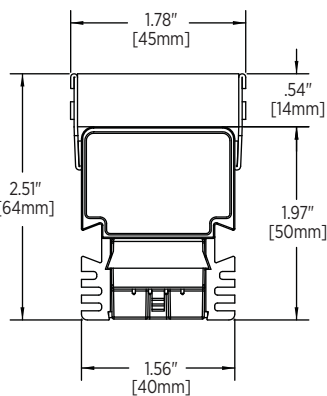
Press to snap baffle into place

Baffle Part Numbers

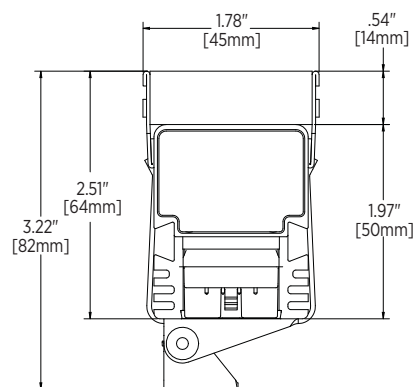
Black Finish		White Finish	
12":	810-02305-12B	810-02305-12W	
24":	810-02305-24B	810-02305-24W	
36":	810-02305-36B	810-02305-36W	
48":	810-02305-48B	810-02305-48W	



Gen2 w/ Baffle only



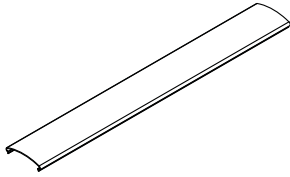
Gen2 w/ Baffle and VLA-9



Gen2 w/ Baffle and VLA-17

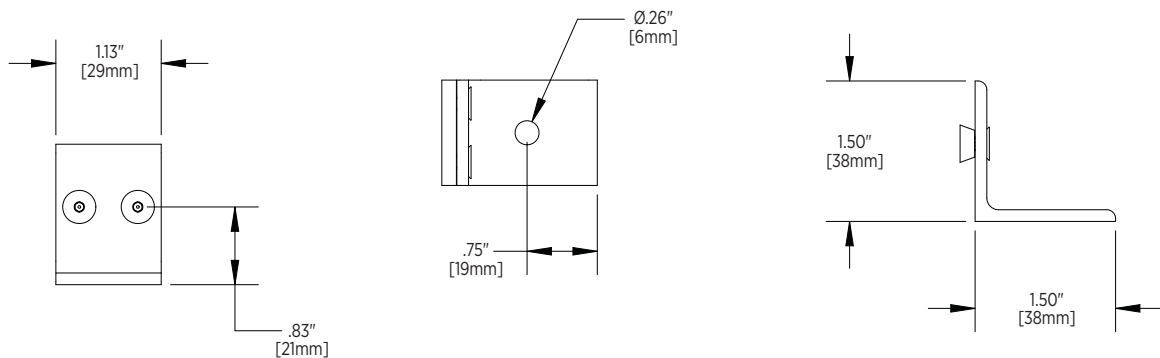
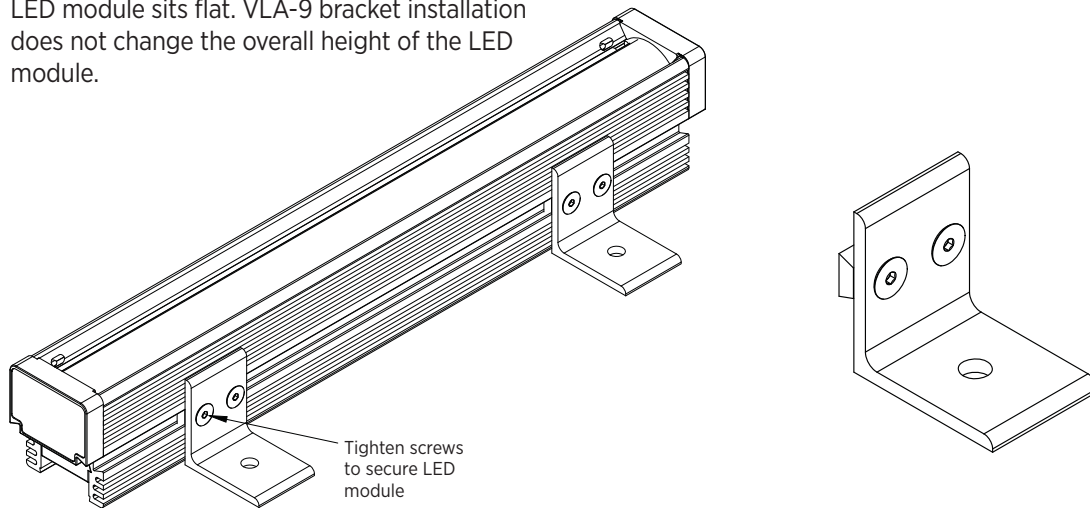
Outdoor Installation

Our outdoor-rated LED modules are provided with a UV-resistant polycarbonate shield. Please do not remove this guard during installation.



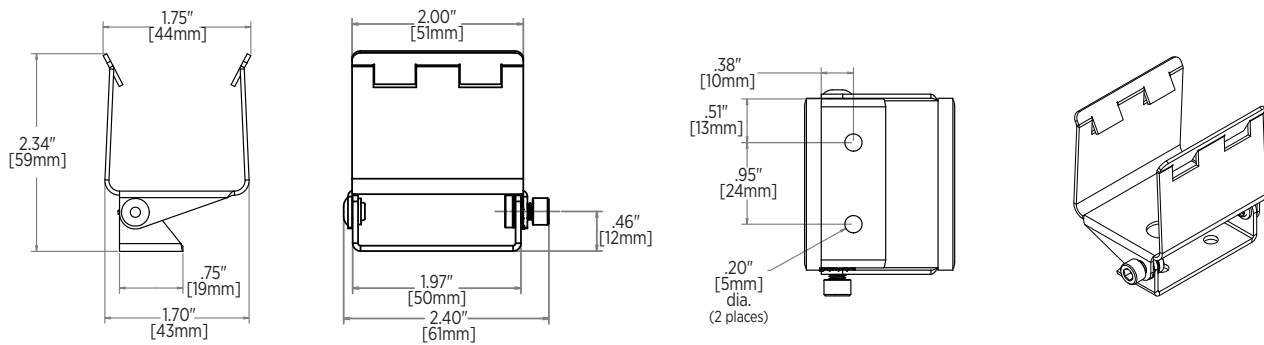
Installing VLA-9 Fixed Brackets

LED module sits flat. VLA-9 bracket installation does not change the overall height of the LED module.

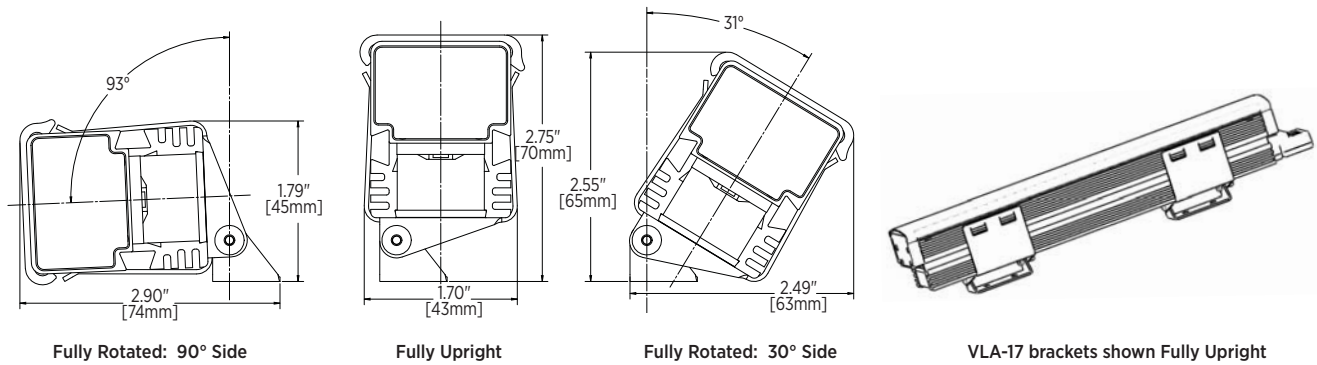


Always use two VLA-9 brackets per LED module, regardless of whether you are creating a stand-alone installation or combining any number of LED modules in a continuous run.

Installing VLA-17 Adjustable Brackets



VLA-17 can be adjusted to mount the LED module in a number of different angles.



Fully Rotated: 90° Side

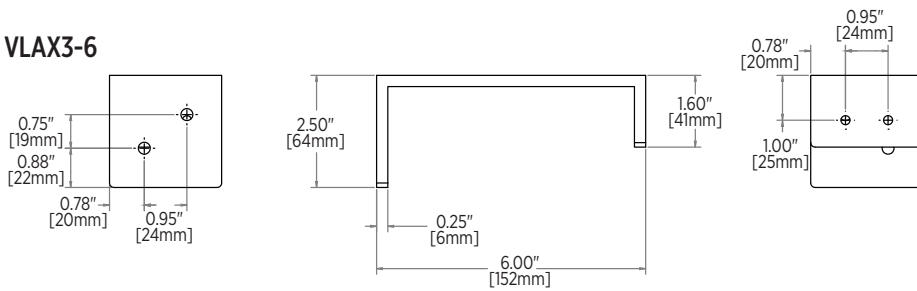
Fully Upright

Fully Rotated: 30° Side

VLA-17 brackets shown Fully Upright

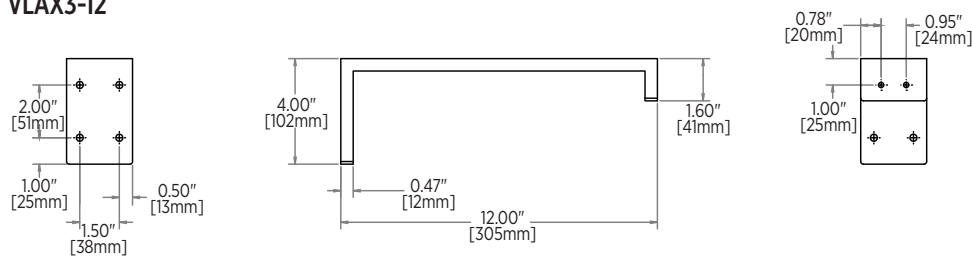
VLAX3-6 / VLAX3-12 Extension Arms (used with VLA-17)

VLAX3-6



Refer to next page for more on using Extension Arms with VLA-17.

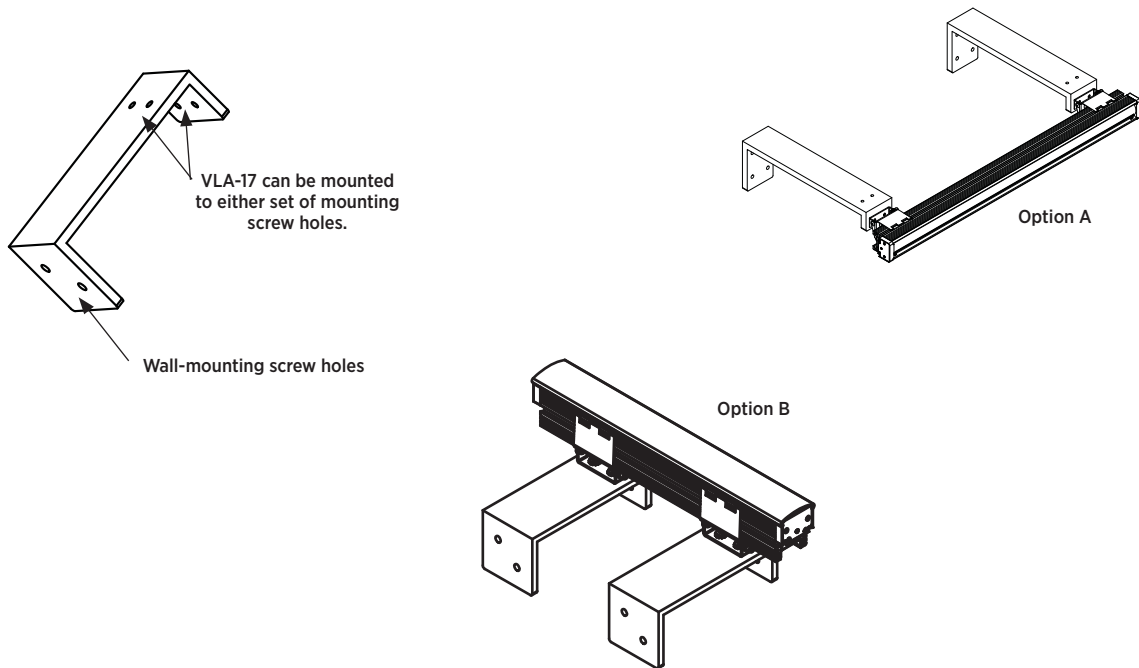
VLAX3-12



For a standalone installation, use two brackets for each LED module. If you are installing a continuous run of LED modules, use one bracket per LED module, until you reach the last LED module in the run, where you will install two brackets.

Using VLA-17 Adjustable Brackets with Extension Arms

VLA-17 can be mounted on Extension Arms in a variety of ways. In addition to the mounting angles of the VLA-17 bracket itself, the bracket can be mounted to two different sets of mounting holes on the extension.



Wiring Restrictions

Powering & Plugging Together LED Modules

Always use a minimum of 12 AWG wire between the Power Box and LED modules.

The maximum power wire distance from the last light to the Power Box is 50 feet for High Output (HO) and 100 feet for Standard Output (SO).

The nominal linear length of LED modules that may be plugged together is 20 linear feet for the High Output (HO) and 40 linear feet for Standard Output (SO).

Never exceed the maximum limits as outlined in this Installation Guide.

Dimming

The LightLink LL-205-10V provides a digital signal to communicate with your Gen2 LED modules via 2 wires independent of power and ground. One LightLink is required for each dimming zone.

In order to prevent loss of signal, the dimming wire distance between the LL-205-10V and the last connected power box should not exceed 1000 feet. Exceeding this limit may cause flicker and/or reduce dimming performance.

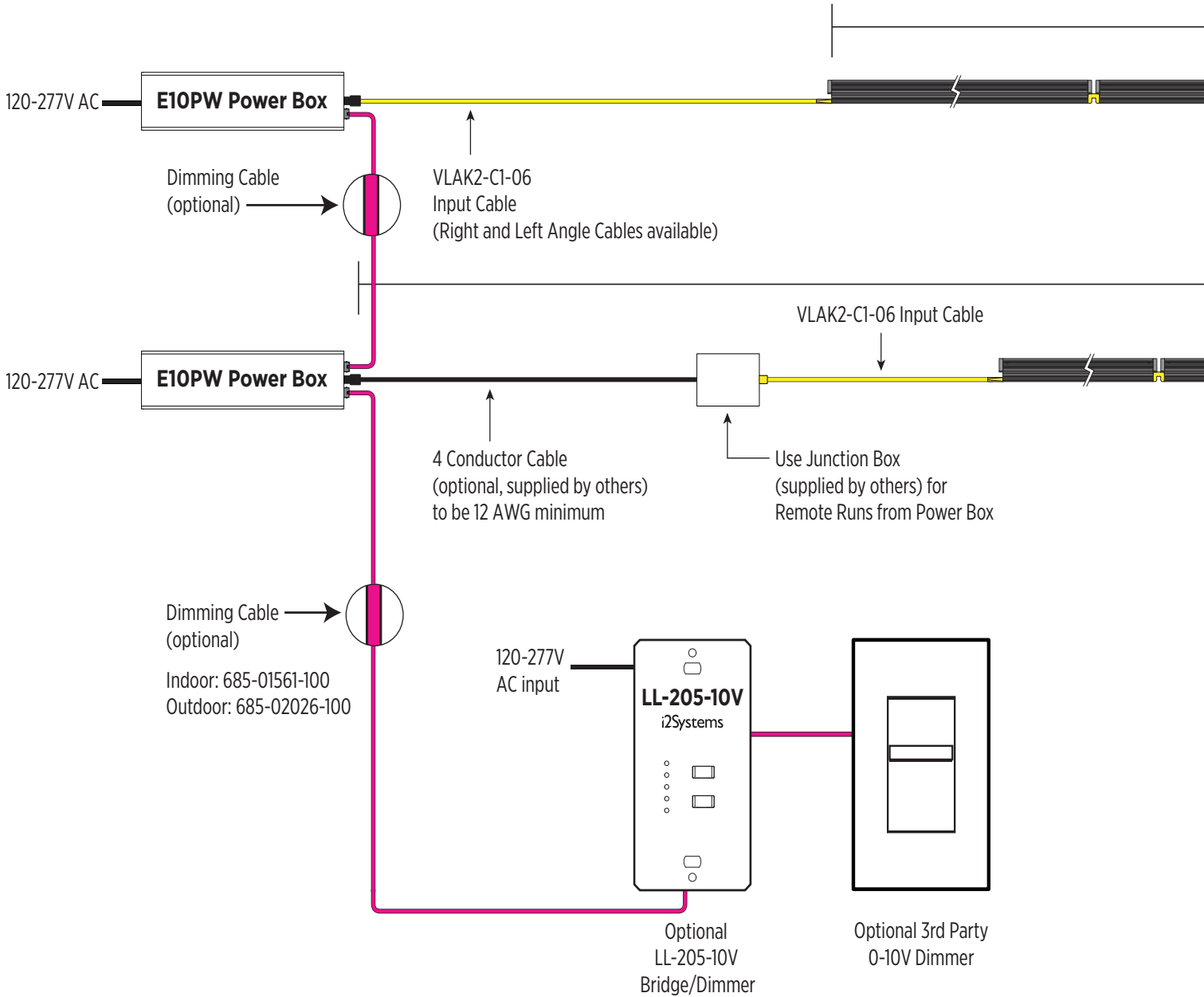
Multiple LightLinks may be connected to a single 0-10V control signal from which they will dim together.

Up to 200 LED modules may be dimmed via a single LightLink LL-205-10V.

Call +1.860.567.0708 or email support@i2systems.com if you have further questions about dimming.

System Layout

The diagram below illustrates a basic system installation using the hardwire LED module configuration with dimming functionality. If your installation does not require dimming, omit the LL-205, dimming cables, and third party dimmer.



Max LED module Plug Together

20 Ft HO (14W / Ft), 40 Ft SO (7W / Ft)



0.044" gap required between LED modules



Install End Plug 530-01757 in last light of each run

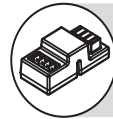
Max Wire Distance

(Including Gen2 LED module lengths and all cables)

50 Ft HO (14W / Ft), 100 Ft SO (7W / Ft)



VLAK2-C2-X
Extension Cable
(Various lengths available)



End-to-End Connector VLAK2-J1 allows vertical installation and relamping.

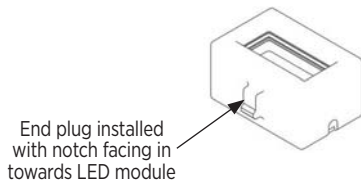


Install End Plug 530-01757 in last light of each run

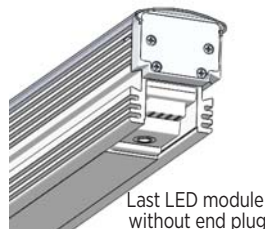
CAUTION: End Plug must be installed to properly seal the LED module.

End Plug Installation

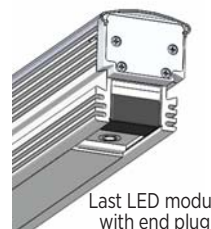
Install End Plug in last LED module of each run to properly seal the LED module.



End plug installed with notch facing in towards LED module



Last LED module without end plug



Last LED modul with end plug

Power Box Considerations

i2Systems offers two Power Box Models:

Single Output: 280 Watts

Dual Output: 560 Watts

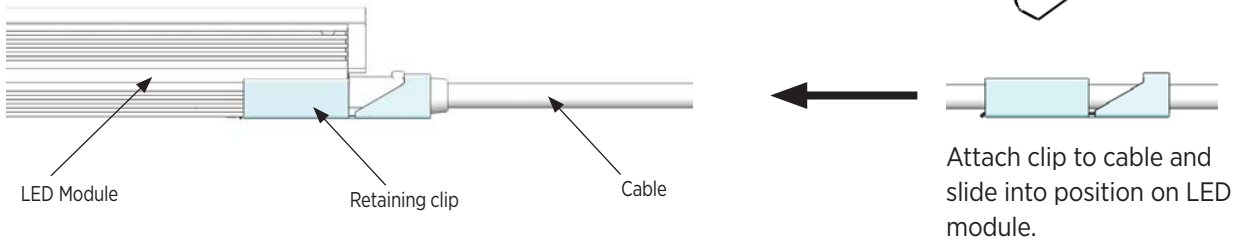
When using a Dual Output Power Box, each output operates separately and are not to be tied together to power a single run.

For a successful and smooth installation, be sure to follow the guidelines above and the wiring diagrams on the following pages.

Cabling and Connections

Power Cable Retention

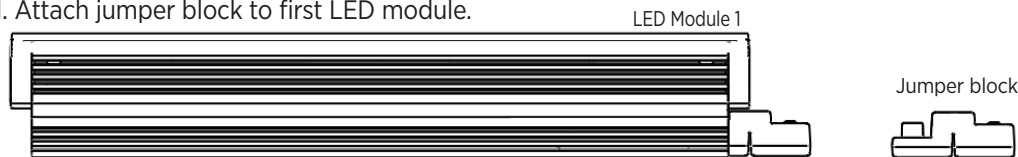
Retaining clips are included with power input and extension cables.



Jumper Block

Jumper blocks are provided to connect two LED modules end-to-end. VLAK2-J1 includes two dovetail support bars for end-to-end LED module rotation and stabilization, along with a “U” retaining clip. Refer to diagrams for installation.

1. Attach jumper block to first LED module.



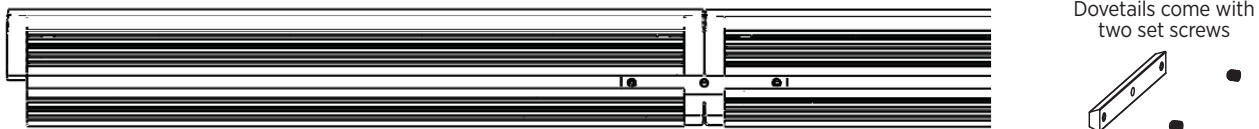
2. Slide in two dovetails, one on each side of the first LED module.



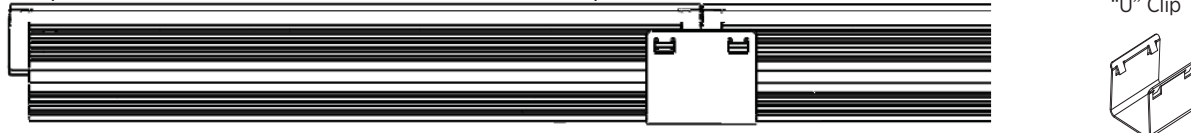
3. Attach second LED module, assuring that the jumper is plugged in correctly and the dovetails are in place.



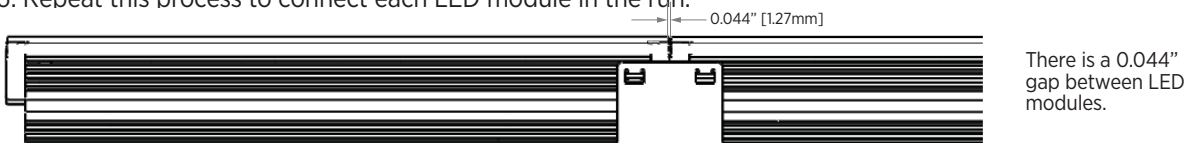
4. Tighten the set screws on the dovetails.



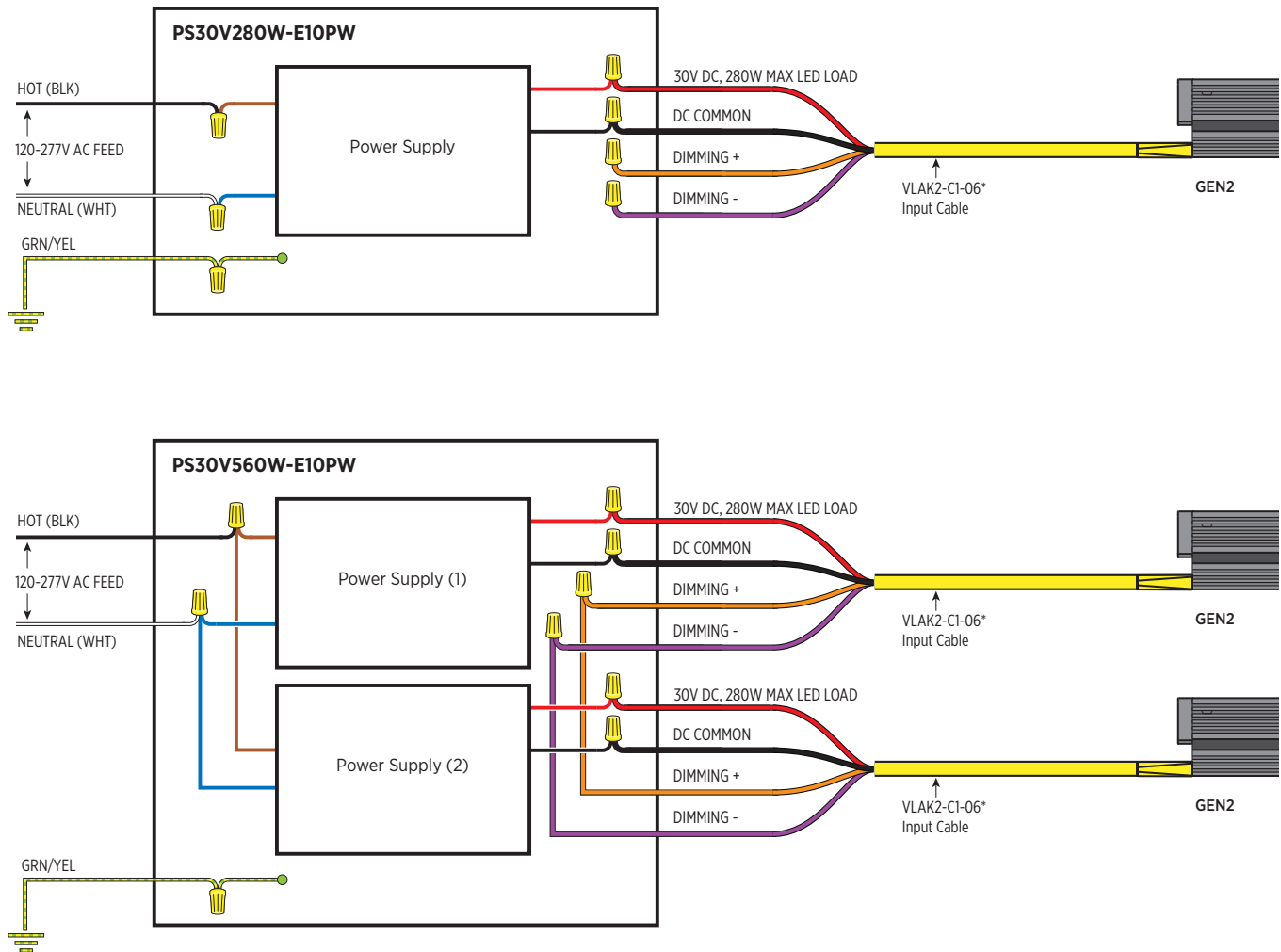
5. Clip on the “U” bracket to secure the assemblies in place.



6. Repeat this process to connect each LED module in the run.



Installation: 100% Intensity, No Dimming

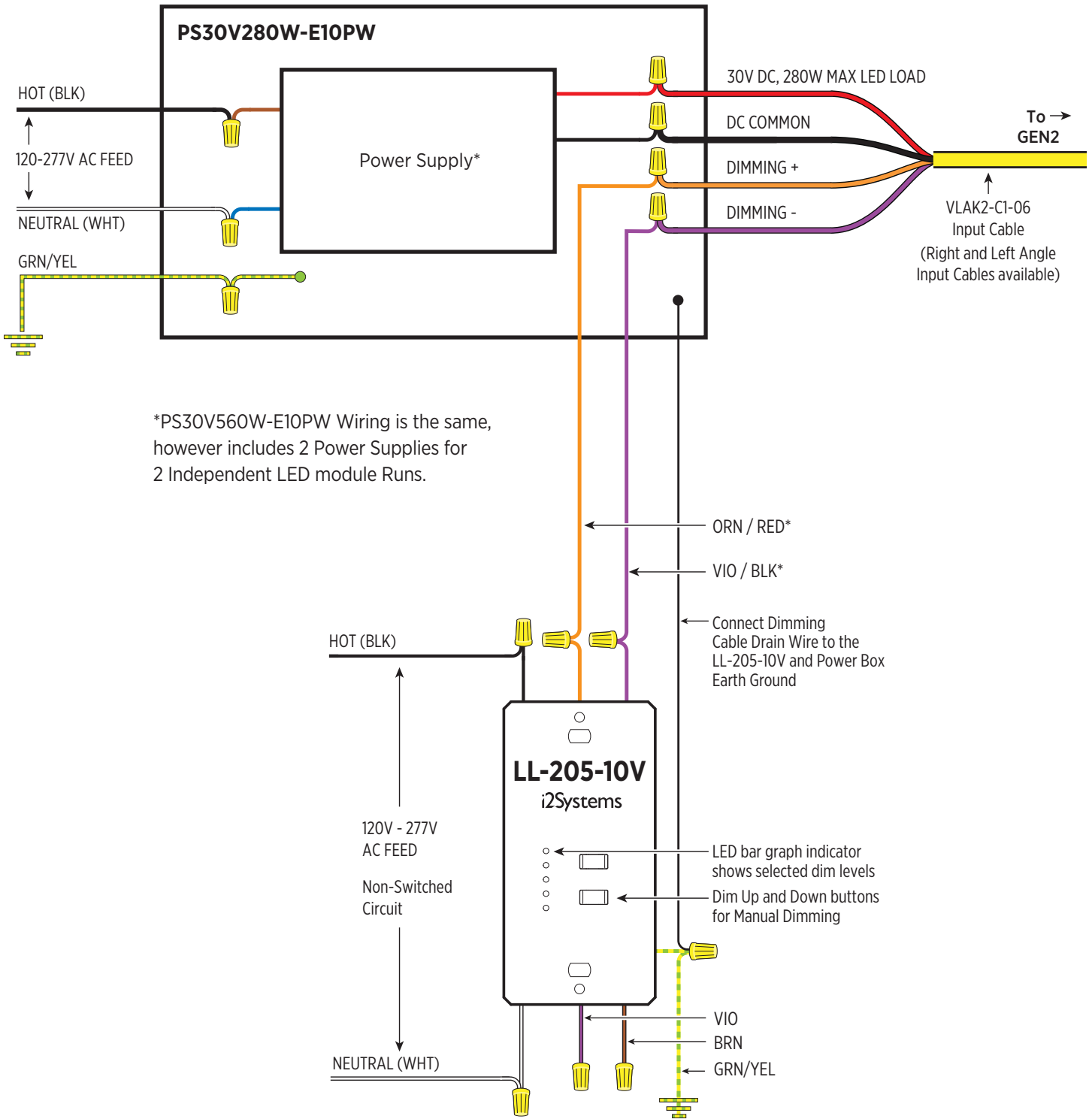


* Right and Left Angle Input Cables available

Synchronizing LED Modules

The Gen2 LED modules are “smart” LED modules that synchronize and start simultaneously when power is applied to one or more Power Boxes. For dimming installations, this feature is enabled automatically. To synchronize multiple Power Boxes without the dimming feature, link the Power Boxes together using i2Systems Dimming Cables and tie all orange wires (Dim+) together and then repeat this step for the violet wires (Dim-). No dimmer is necessary.

Installation: Wall Mount, Push-Button Dimming



*PS30V560W-E10PW Wiring is the same, however includes 2 Power Supplies for 2 Independent LED module Runs.

*Indoor Dimming Cable uses Red and Black Conductors. Outdoor Dimming Cable uses Orange and Violet.

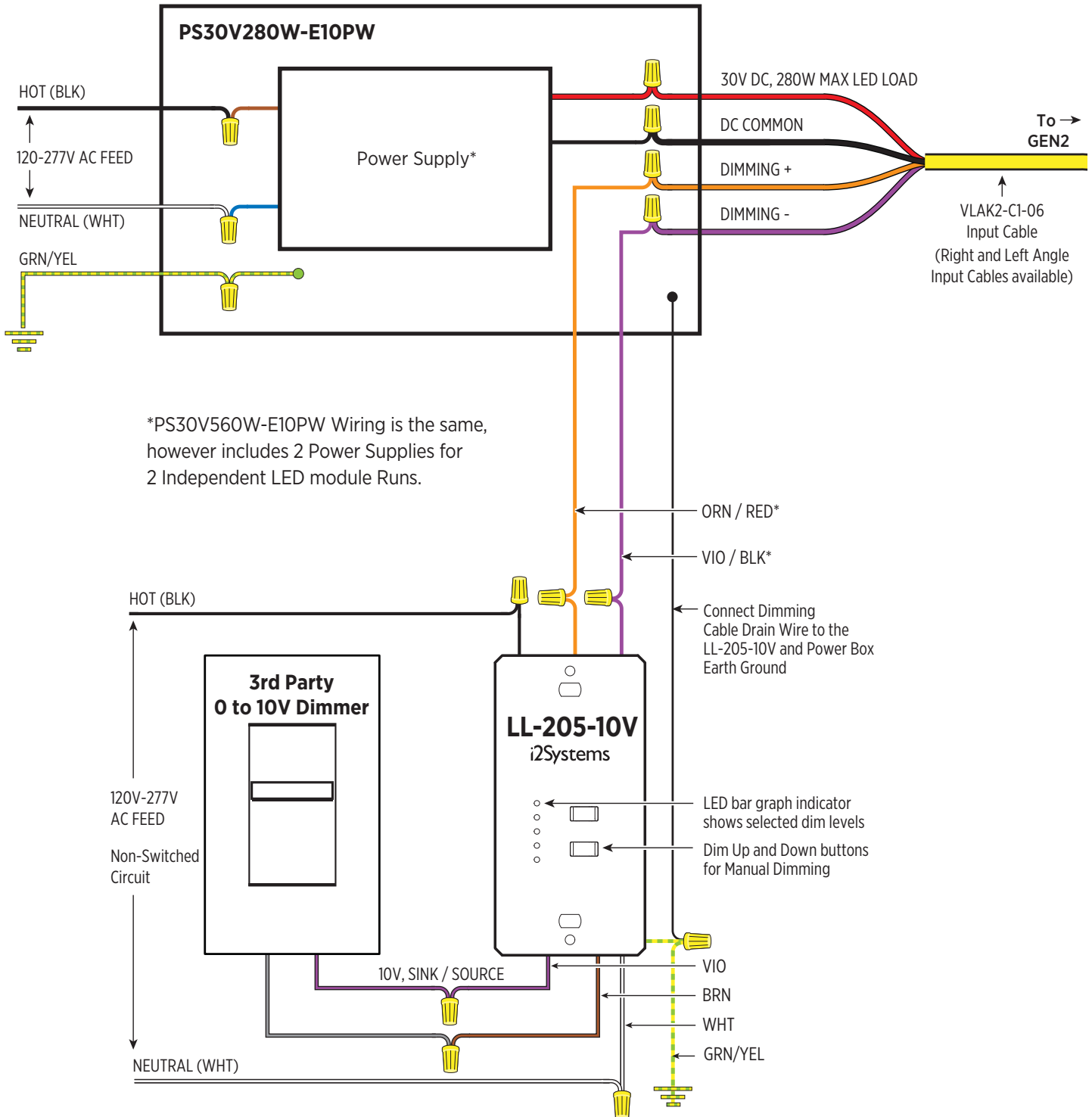
Operation

The LED bar graph will indicate the current dim level. Press and hold the top Dim button to increase the light intensity, and tap twice for 100% intensity. To decrease the light intensity, press and hold the bottom Dim button. Tap once to turn off the lights.

Use the Dimming Cables as specified on page 9 to combine or “daisy-chain” Power Boxes to a single LL-205, making sure you connect the Dimming Cable Drain Wire as shown above.

You can use the LL-205-10V Dimmer for push-button dimming. Refer to the LL-205 Installation Guide for technical specifications on these products.

Installation: 0 to 10V Dimming, Sink or Source



Operation

The LED bar graph will indicate the current dim level, based on 0 to 10V levels. The LL-205-10V reads these levels and translates them to i2Systems LightLink protocol, adjusting the light intensity of the connected Gen2 LED modules from 1% to 100% (less than 1V is equal to 0% and greater than 9V is equal to 100%).

Use the Dimming Cables as specified on page 9 to combine or “daisy-chain” Power Boxes to a single LL-205-10V, making sure you connect the Dimming Cable Drain Wire as shown above.

Refer to the LL-205 Installation Guide for technical specifications on all available models of this Dimmer.

Frequently Asked Questions

Q: Can I connect the Gen2 directly to line voltage?

A: No. Connecting the Gen2 directly to line voltage or any voltage higher than 30V DC will damage the LED module and void the warranty. Use E10PW i2Systems Power Box to convert line voltage to the proper voltage.

Q: What are the effects of Voltage Drop on the Gen2?

A: The Gen2's onboard SmartDriver provides 100% intensity over the full range of 20-30VDC. Because of this feature, for longer runs where there will be long power feed cables and/or many LED modules plugged together (refer to pages 13-14 of this guide), the LED module will draw higher current at 20V DC than it does at 30V DC. i2Systems E10PW Power Box provides a 30V output to counter the effects of voltage drop, however excessive voltage drop (beyond that anticipated by our guidelines) will draw additional power from the Power Box and may overload it).

Q: Can I load the Power Box to the full wattage specified (i.e., 280W)?

A: Yes. The power supplies installed in i2Systems Power Boxes are derated (i.e. a 280W Power Box uses a 320W power supply). That considered, the Gen2 regulates for constant power, in which case be sure to follow the installation guidelines in this guide to ensure the power supply is not overloaded due to excessive voltage drop. Refer to the Power Box Datasheet for additional details.

Q: Can I use a third party low voltage power supply?

A: No. Any damage or reduced performance caused by a third party power supply will void the Gen2 warranty. Only use i2Systems E10PW Power Box.

Q: For installations without dimming, what do I do with the orange and violet wires on the Gen2?

A: The orange and violet wires on the Gen2 cables are for isolated dimming control. Orange is positive (Dim+) and violet is negative (Dim-). These wires are optically isolated from the Gen2 power and may be cut and capped using best industry practices. Alternatively, tie all orange wires to orange wires and violet wires to violet wires to synchronize light turn-on when power is applied. Refer to the diagram on page 16 of this installation guide.

Q: When using the LightLink LL-205 Dimming Module, do I need a third party dimmer?

A: No. The LL-205 can also be used as a standalone dimmer. This feature is useful for simple installations and/or troubleshooting dimming installations where the LightLink is able to override the incoming dimming signal to help pinpoint the problem.

Q: Can I mix and match i2Systems LED Modules on the same LightLink dimmer?

A: The practice is not recommended. Add a second LightLink dimmer and control both LightLinks with the same 0-10V Input.

Limited Warranty

1.1 Limited Warranty. Products are warranted to be free from defects in material and workmanship and to conform substantially to i2Systems' then-current (as of the date of Product shipment) user documentation and specifications for a period of three (3) years from the date of invoice (the "Warranty Period"), provided the Products are used under those operating conditions (including electrical values and environmental conditions) described in i2Systems' then-current user documentation and specifications for such Products. i2Systems shall not be liable under the foregoing warranty if Buyer fails to provide i2Systems with notice of the alleged defect during the Warranty Period.

1.2 Remedies. In the event a Product does not comply with the foregoing express warranty, Buyer may notify i2Systems within the Warranty Period and if so notified i2Systems will, at i2Systems' option: (a) provide a replacement for such Product or defective component or part thereof that has caused the warranty claim (such Product or defective component or part thereof that has caused the warranty claim, the "Warranty Item"); or (b) refund to Buyer the lesser of (1) the amount Buyer paid for the Warranty Item, or (2) Buyer's cost to replace the Warranty Item, in each case as determined by i2Systems in its sole and absolute discretion following receipt and inspection by i2Systems of the Warranty Item. For the avoidance of doubt, "provided a replacement for such Product or defective component or part thereof" expressly does not include any removal or reinstallation costs or expenses, including without limitation labor costs or expenses. All exchanged Warranty Items shall become the property of i2Systems. i2Systems may use either new or remanufactured, reconditioned or refurbished components or parts (if in like-new condition), or functionally equivalent components or parts, in the furnishing of replacement(s) for any Warranty Item. i2Systems' warranty flows only to Buyer of the products. If i2Systems chooses to replace the Product and is not able to do so because it has been discontinued or is not available, i2Systems may replace it with a comparable product.

1.3 Limitations. The foregoing warranty is limited, and does not extend to, and i2Systems shall incur no liability for: (a) lumen maintenance of the Products; (b) color shift of light output of the Products; (c) degradation or discoloration of the Product housing(s); (d) mechanical or cosmetic deterioration of the Products associated with normal wear and tear. For clarity and without limiting the generality of the foregoing, the foregoing warranty does not apply if a Product's light module continuously generates light at any intensity, regardless of whether such intensity has decreased since the date of first use of such Product [(viz., warranty coverage only applies in the event that such light module generates no light or generates light intermittently)]. This limited warranty only applies when the product has been properly wired and installed and operated within the electrical values, operating range and environmental conditions provided in the Specifications. This warranty does not apply to damage or failure to perform arising as a result of any Acts of God or from any abuse, misuse, abnormal use or use in violation of any applicable standard, code, or instructions for use including those contained in the latest National Electrical Code, the Standards for Safety of Underwriters Laboratory, Inc., the Standards for the American National Standards Institute or, in Canada, the Canadian Standards Association. This Warranty shall become void in the event any repairs or alternations not duly authorized by i2Systems in writing are made to the Product by any person.

Buyer shall convey with each Product distributed to end users this LIMITED WARRANTY, and if i2Systems determines that the appropriate remedy for a defective product is refund of Buyer's purchase price, Buyer shall refund to the end user (or arrange for the refund to the end user of) the full purchase price paid by the end user for such defective Product.

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1.4 Exclusions; Buyer Indemnification. The foregoing warranty shall be void with respect to defective conditions or non-conformities of the Products resulting from: (a) modifications of Products not authorized by i2Systems; (b) misuse, neglect, accident or abuse, improper wiring, repairing, splicing, alteration, installation, storage or maintenance; (c) use in a manner not in accordance with i2Systems' published operating specifications or instructions for the applicable Products; (d) Product defects caused by Buyer's combination of the Products with equipment provided or manufactured by third party vendors (unless i2Systems is advised, in writing, of such proposed combination and i2Systems thereafter consents in writing to such combination); (e) breach by Buyer or its employees, partners to whom Buyer sold Product, contractors, representatives, agents or affiliates, (collectively, "Buyer Parties") of any obligation herein; or (f) negligent use, application, installation or implementation of Product by any of the Buyer Parties. Buyer shall indemnify, defend and hold harmless i2Systems and its officers, directors, agents, employees, affiliates, representatives, successors, and assigns from and against all losses, liabilities, costs, and expenses (including, without limitation, attorneys' fees) arising out of or in connection with claims by third parties for any loss, damage, or injury (including death) caused by or alleged to be caused by the circumstances described in this Section 5.4. Buyer shall not join, settle or otherwise attempt to affect or dispose of any such claim without i2Systems' written consent.

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