

# **LightLink™** LL-205

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## Installation Guide

**i2Systems**  
ADVANCED LED LIGHTING

Thank you for purchasing  
the **LightLink™** LL-205!

### 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](mailto:support@i2systems.com).

A free copy of this installation guide is available online at [www.i2systems.com](http://www.i2systems.com) along with these resources:

- LL-205 Spec Sheet
- Installation Guides for i2Systems Fixtures listed as LightLink Compatible

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Product information is subject to change without notice.

### Electrical Warnings

#### **Caution! High Voltage. Disconnect Power before Installing or Servicing.**

**Failure to follow these warnings could cause injury or death, damage the LL-205, and/or void the warranty.**

- Read and understand the LL-205 installation instructions and safety labels before you begin your installation.
- Turn off the power before installing or servicing the LL-205.
- Follow all national and local electrical and construction codes and regulations.
- Avoid all temptation to disassemble the LL-205 because there are no serviceable parts and tampering with it could cause shock.
- Comply with the maximum voltage rating of the LL-205 as specified on page 7. i2Systems is not liable for damage due to miswiring of low voltage signal wires to line voltage or any voltage higher than their maximum rating.
- Use the LL-205 only with i2Systems LED Lighting Products marked as LightLink Compatible.
- Use wire rated for +105°C or higher.

### Introduction

Use these instructions to plan, install, and wire your new LL-205. Proper installation will ensure that this equipment will provide superior service as a digital controller with minimal maintenance for many years.

***WARNING: Only a qualified electrician should install i2Systems products.***

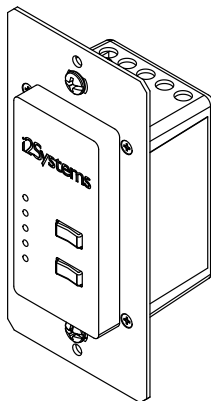
While it may be tempting to skip sections, we assure you that reading this material will help to avoid problems and speed up the installation process.

### Certifications



### Contents

Please take note of the following component included in the box.



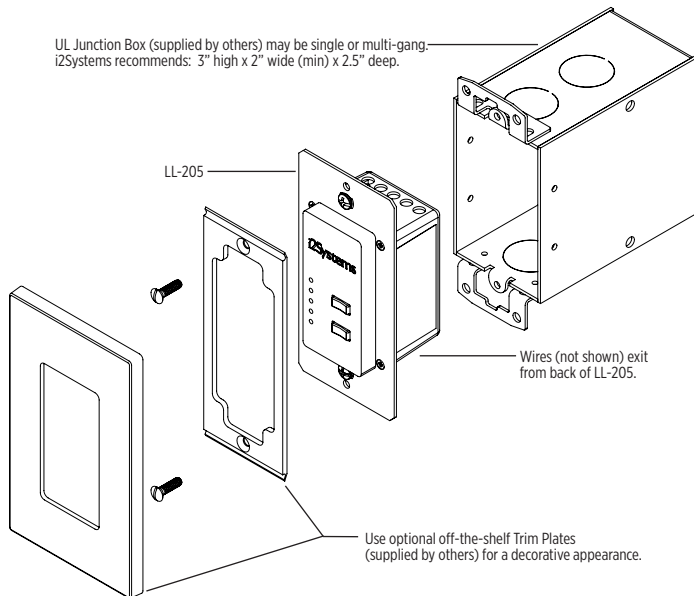
(1) LightLink LL-205

## Specifications

PARAMETER	LL-205-S	LL-205-10V
<b>Input</b>		
Voltage		100-277V AC
Frequency		50/60Hz
Max Current		20mA/120V AC
<b>0-10V Control Input</b>		
Typical Voltage	-	0-10V DC
Max Voltage	-	15V DC
Typ. Current	-	.5mA
<b>Dimming Output</b>		
Max Voltage		30V DC
Max Current		30mA
<b>Environmental</b>		
Operating Temp		-20 to 40°C
Humidity		95% Non-Condensing



## Installation into a Junction Box



## Push-Button Dimming: Wiring

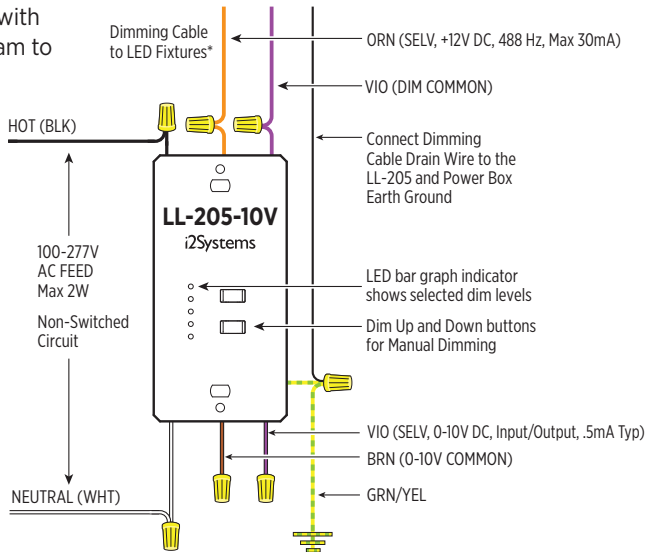
All LL-205 models are equipped with push-button dimming. The diagram to the right shows the LL-205-10V.

### Installation Tips:

The LL-205 sets dimming levels and controls ON/OFF operation of the i2Systems LightLink compatible LED Fixtures. All LED Fixtures connected to a single LL-205 will dim together. Use one LL-205 per dimming zone.

\* When connecting the LL-205 to i2Systems Power Boxes and/or LED Fixtures, use i2Systems Shielded Dimming Cables:

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



### Push-Button Dimming: Operation

#### Dimming Up (Top Button):

- To dim up, press and hold or tap repeatedly.
- Double-tap for 100% intensity.
- When lights are off, single-tap to return to previous intensity.

#### Dimming Down / Off (Bottom Button):

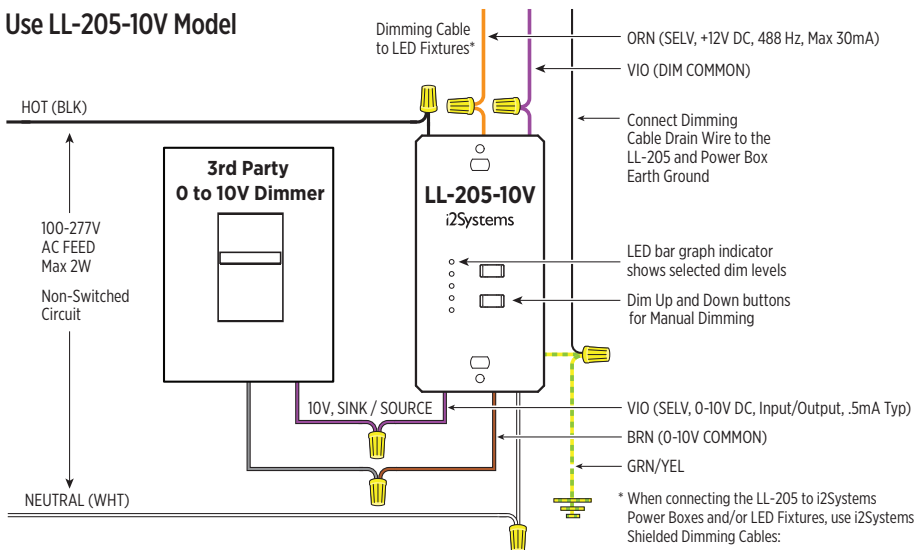
- To dim down, press and hold or tap repeatedly.
- Single-tap to turn off.

#### Installation Tips:

The LL-205 has built-in non-volatile memory and will remember the previous dimming state with power cycle. When using Push-Button Dimming, the dimming curve has been optimized for the eye's response.

## 0-10V Sink / Source: Wiring

### Use LL-205-10V Model



\* When connecting the LL-205 to i2Systems Power Boxes and/or LED Fixtures, use i2Systems Shielded Dimming Cables:

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

### 0-10V Sink / Source: Operation

- The LL-205-10V reads 0-10V levels and translates them to i2Systems dimming protocol.
  - Less than 1V = 0%.
  - Greater than 9V = 100%.
- Voltages between 1V and 9V will set intensity levels. The LL-205-10V is compatible with industry standard 0-10V sink or source dimmers.
- To manually override the incoming 0-10V signal, press either button on the LL-205-10V. Manual dimming operation is described on page 10.
- To exit manual override, change the intensity value on the 0-10V input by greater than 20% or press and hold both buttons on the LL-205-10V for 5 seconds.

#### Installation Tips:

The LL-205-10V's 10V output is electrically isolated and consumes .5mA per LL-205-10V. Use of more than one LL-205-10V on a single 0-10V dimmer is permitted. Refer to your 0-10V dimmer maximum load. Typically this is up to 60 "ballasts" or in our case would be 60 LL-205-10V dimmers.

Some 0-10V dimmers and dimming panels include an ON/OFF control used for triggering a remote relay (supplied by a 3rd party). This remote relay may be used for ON/OFF operation of i2Systems Power Boxes (used to provide low voltage to our low voltage LED Fixtures).

For optimal performance, when applying power to i2Systems Fixtures, power on the Power Box first, then use the LL-205 to turn on the Fixtures. When disconnecting power, do the opposite by first turning off the Fixtures with the LL-205, then disconnect the Power Box AC Feed.

### Frequently Asked Questions

**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: If I want to use the LL-205 as a standalone wall dimmer, what model should I buy?**

A: You can use all LL-205 Models as standalone wall dimmers. Be sure to cap all unused wires in accordance with national and local electrical standards.

**Q: If I'm using an incoming 0-10V signal to dim, what do the LL-205 Dimming Buttons and LED Indicators do?**

A: You can press either dimming button at any time to override the incoming 0-10V signal. This feature can be useful for troubleshooting and/or localizing control of the lights. The LED indicators will show the manual dim level or the LL-205's interpretation of the incoming 0-10V signal, depending on the selected mode. To exit the manual override mode, press and hold both dimming buttons for 5 seconds or change the incoming 0-10V signal by +/- 20%.

**Q: How many LL-205-10Vs can I install to a single 0-10V interface?**

A: The LL-205's 0-10V Interface is electrically isolated and appears to a 0-10V dimmer as would a 0-10V fluorescent ballast. Consult your 0-10V dimmer for maximum number of ballasts. Typically, this is up to 60 ballasts, which equates to 60 i2Systems LL-205-10V dimmers.

### Frequently Asked Questions

**Q: What 0-10V Dimmers are compatible with the LL-205-10V?**

A: The LL-205-10V operates in both 0-10V Sink and Source Modes of operation, making it compatible with all IEC 60929 (Annex E) compliant 0-10V Dimmers.

**Q: How many Dimming Zones will an LL-205 Control?**

A: The LL-205 controls 1 Dimming Zone. Use additional LL-205s for additional Zones.

**Q: Should I use the LL-205 to turn Fixtures on/off?**

A: In addition to dimming i2Systems Fixtures, always use the LL-205 to turn Fixtures on/off, then apply / disconnect Power to the Fixture Power Boxes. For best operation, the LL-205 should be connected to a non-switched Power Feed, noting however that upon power loss, the LL-205's non-volatile memory will return to its previous state. Refer to Installation tips located on page 12 of this guide.

**Q: Can I mix and match i2Systems Fixtures on the same LightLink LL-205?**

A: Generally, the practice is not recommended; rather add a second LightLink dimmer and control both LightLinks with the same 0-10V Input.

**Q: Where can I install the LL-205?**

A: The LL-205 must be installed into a junction box. For installations where the LL-205 is to be used as a standalone Dimmer, use an off-the-shelf decorative wall plate (not included).

### 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 one (1) year 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.



## Warranty

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