



PDS-400 48V EO

High-wattage and outdoor rated power and data supply for large scale architectural and media applications

PHILIPS



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PDS-400 48V EO delivers integrated data and power to intelligent color and tunable white LED lighting luminaires. PDS-400 48V EO is the single solution for all large scale outdoor Ethernet intelligent installations, whether color or white.

- Easy installation—Accessible, clearly labeled terminal block connectors for Ethernet, line voltage, and luminaires make installation easy. Tethered cover with captive screws ensures convenient removal and replacement.
- Supports Ethernet intelligent luminaires—Philips PDS-400 48V EO merges line voltage and control data and delivers them to the luminaires over a single cable, dramatically simplifying installation and lowering total system cost.
- On-board diagnostics—On-board indicator LEDs provide visual feedback for normal operation, Ethernet connection detection, and Ethernet data transmission.
- Replaceable power supply—PS-600 48V can be easily installed to replace the power supply of any existing PDS-400 48V EO device without the need to remove the entire PDS-400 48V EO device.
- Outdoor-rated for use in damp and wet environments—PDS-400 48V EO offers superior leakage protection in a cast aluminium, IP66-rated enclosure.
- Multiple conduit entries—PDS-400 48V EO conduit entries accommodate NPT conduit in US trade sizes of 1/2 in and 3/4 in, or metric sizes of PG13.5 and PG16.
- Universal power input range—PDS-400 48V EO automatically senses line voltages ranging from 100 to 277 VAC, and passes line voltages through AC daisy chain to all connected PDS-400 48V EO devices.
- ActiveSite integration—ActiveSite is the first ever cloud-hosted connected lighting system for architectural LED lighting installations. ActiveSite allows you to remotely monitor, manage, and maintain an installation site from anywhere in the world, using a secure web connection.

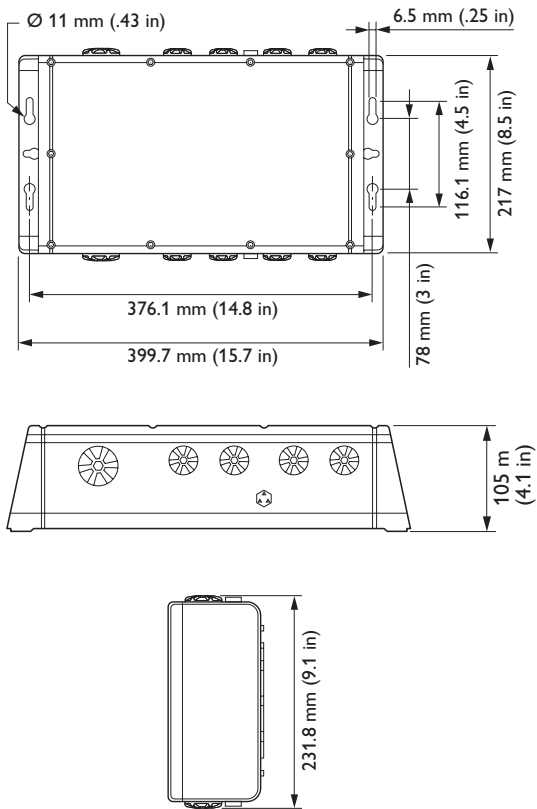


Power and Durability

PDS-400 48V EO is designed to handle large scale outdoor applications and comply with modern shock and vibration standards.

Specifications

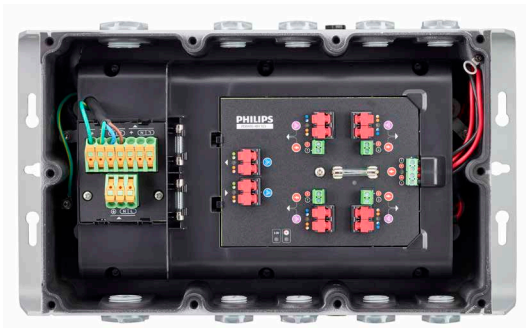
Due to continuous improvements and innovations, specifications may change without notice.



Item	Specification	Details
Electrical	Input Voltage	100 to 277 VAC, auto-ranging, 50/60 Hz
	Maximum Input Current	16 A maximum
	Load Current	8.5 A
Connections	Power Input	3-wire terminal block connector†
	Power/Data Output (To luminaire)	2-wire terminal block connector† Double-pair, double-entry IDC connectors‡
	Ethernet Input/Output	Double-pair, double-entry IDC connectors‡
Physical	Dimensions (Height x Width x Depth)	105 x 232 x 400 mm (4 x 9 x 15 in)
	Weight	9 kg (19.8 lb)
	Construction	Cast aluminium enclosure with slots for surface mounting
	Finish	Powder-coated industrial gray matte
	Threaded Openings	3/4 in NPT for power, 1/2 in NPT for data (UL) PG16 for power, PG13.5 for data (CE)
	Temperature Ranges	-40 to 50 °C (-40 to 122 °F) Operating -20 to 50 °C (-20 to 122 °F) Startup -40 to 80 °C (-40 to 176 °F) Storage
	Humidity	0 to 95%, non-condensing
	Cooling	Convection
	Data Input Source	Philips Color Kinetics full range of controllers, including Light System Manager, Video System Manager Pro, iPlayer 3, Antumbra iColor Keypad, and ColorDial Pro, or third-party controllers
Certification and Safety	Certification	UL/cUL, FCC Class A, CE, RCM
	Environment	Dry/Damp/Wet Location, IP66

† Terminal block connectors accept recommended wire sizes from 10 to 24 AWG (0.2 to 6 mm²) for 3-wire, and 12 to 20 AWG (0.5 to 3.3 mm²) for 2-wire.

‡ IDC connectors accept wire sizes from 22 to 26 AWG (0.326 to 0.129 mm²).



Ordering Information

Item	Type	Item Number	Philips 12NC
PDS-400 48V EO	UL	109-000200-00	912400133799
	CE	109-000200-01	912400134110

Use Item Number when ordering in North America.

Installation

PDS-400 48V EO integrates data and power transmission for Accent Compact luminaire family. Installation specifics will vary depending on luminaire types, controller, environment (dry or damp/wet).

Owner/User Responsibilities

It is the responsibility of the contractor, installer, purchaser, owner, and user to install, maintain, and operate PDS-400 48V EO in such a manner as to comply with all applicable codes, state and local laws, ordinances, and regulations. Consult with the appropriate electrical inspector to ensure compliance.

Installing in Damp or Wet Locations

When installing in damp or wet locations, seal all junction boxes, power supplies, and other devices with electronics-grade RTV silicone sealant so that water or moisture cannot enter or accumulate in any wiring compartments, cables, luminaires, or other electrical parts. You must use suitable outdoor-rated junction boxes when installing in wet or damp locations. Additionally, you must use gaskets, clamps, and other parts required for installation to comply with all applicable local and national codes.

✳ Refer to the PDS-400 48V EO Installation Instructions for specific warning and caution statements from www.colorkinetics.com/lis/pds/pds400/.

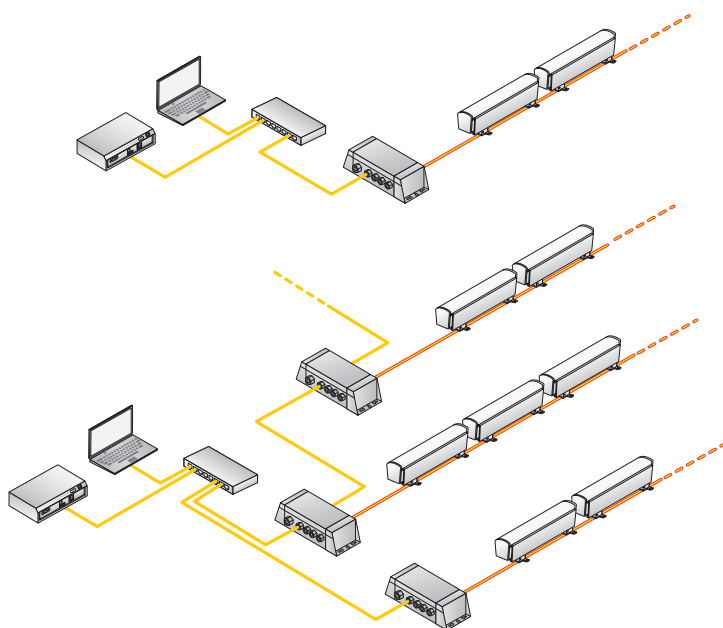
Plan the Installation

To streamline installation and ensure accurate configuration, start with a layout or a lighting design plan that shows the physical layout of the installation and identifies the locations of all luminaires, PDS-400 48V EO devices, controllers, switches, and cables.

Ethernet Configuration Guidelines

PDS-400 48V EO can be used in Ethernet connections. Ethernet is the preferred environment for large-scale, color-changing light shows and media displays, both of which require large numbers of unique addresses.

Typical Ethernet installations with Philips Color Kinetics LED luminaires use an Ethernet switch, an Ethernet controller such as Light System Manager or Video System Manager Pro, Ethernet Controller Keypads for push-button light show triggering, and one or more PDS-400 48V EO devices. While your specific lighting network configuration may allow for additional devices, we recommend that you limit individual Ethernet runs to eight or fewer PDS-400 48V EO devices. For additional PDS-400 48V EO devices in a network, use additional Ethernet switch ports.



iColor Accent Compact luminaire run length example

12 @ 28 W (1220 mm luminaire) with 15 m (50 ft) cable
11 @ 28 W (1220 mm luminaire) with 30 m (100 ft) cable
20 @ 16 W (610 mm luminaire) with 15 m (50 ft) cable
18 @ 16 W (610 mm luminaire) with 30 m (100 ft) cable
31 @ 10 W (305 mm luminaire) with 15 m (50 ft) cable
28 @ 10 W (305 mm luminaire) with 30 m (100 ft) cable

Electrical Configuration Guidelines

The maximum number of luminaires each PDS-400 48V EO can support depends on the luminaire type and method of connection, as well as on additional configuration details such as luminaire spacing, circuit size, wire gauge, and line voltage. As an example, the table to the left lists the maximum number of iColor Accent Compact luminaires each PDS-400 48V EO can support at various voltages, assuming a 20 A circuit and 1.5 m (5 ft) jumper cables between luminaires. Keep in mind that these figures, provided as a guideline, are accurate for the specified configuration only, and that changing the configuration can affect the number of luminaires per PDS-400 48V EO.

You can connect up to eight PDS-400 48V EO devices in a series if on a 277 VAC AC line. Up to three devices can be connected if on a 100 VAC AC line.

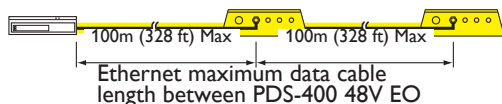
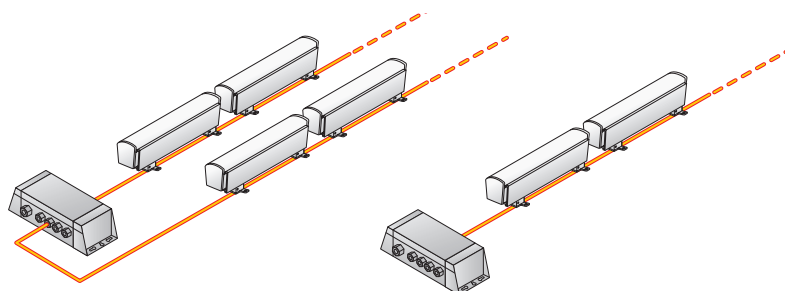
PDS-400 48V EO must be installed in a location that allows air to move freely around the device. Startup and operating temperatures are rated to 50 °C (122 °F). Exceeding this temperature limit may cause device damage or failure.

Data Configuration Guidelines

In addition to maximum luminaire run lengths determined by the electrical configuration, each PDS-400 48V EO imposes maximum run lengths based on data integrity.

When selecting mounting locations for the PDS-400 48V EO devices in your installation, keep cable and luminaire run length maximums in mind:

- In Ethernet networks, maximum data cables lengths are 100 m (328 ft) between Ethernet devices without a repeater (for example, controller to switch, or switch to PDS-400 48V EO).



Assemble Additional Items

The following additional items are required to mount and connect PDS-400 48V EO:

- 4 mounting screws suitable for the mounting surface
- For installations using US trade size conduit, 3/4 in NPT watertight conduit and fittings for power, and 1/2 in NPT watertight conduit and fittings for data, as required by local codes
- For installations using metric size conduit, PG16 watertight conduit and fittings for power, and PG13.5 watertight conduit and fittings for data, as required by local codes
- Cat. 5e or better data cable, as required
- Associated cable listed in Accessory Part Numbers table can be ordered
- Electronics-grade RTV silicone for installations in damp and wet locations

- Screwdrivers, wire strippers, and other tools as needed

Inspect PDS-400 48V EO and Accessories

Carefully inspect the box containing PDS-400 48V EO and the contents for any damage that may have occurred in transit.

We recommend that you ensure your PDS-400 48V EO devices are running the latest version of the firmware, and update the firmware if necessary, before positioning and mounting the devices. See www.colorkinetics.com/support/downloads/firmware/ for complete information.

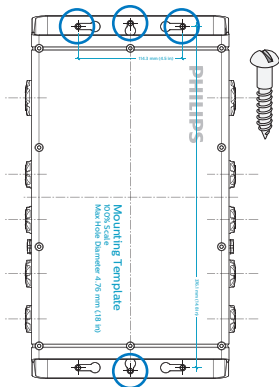
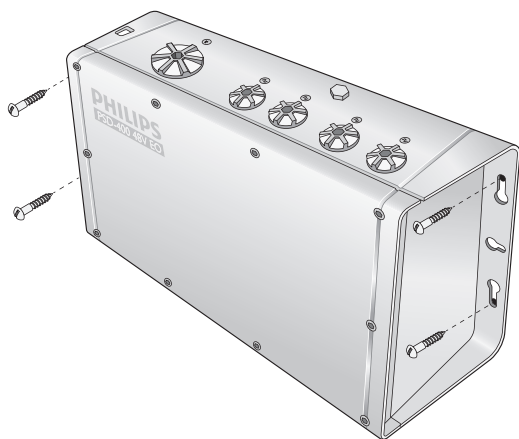
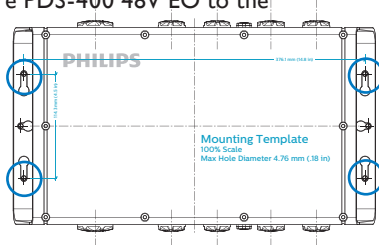
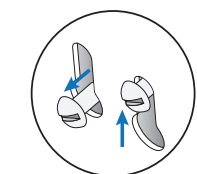
Position and Mount PDS-400 48V EO

Make sure the power is OFF before mounting and connecting PDS-400 48V EO.

1. Each PDS-400 48V EO device is identified by a unique serial number and IP address. The serial number and default IP addresses are located on a label on the housing the PDS-400 48V EO housing. If your installation requires multiple PDS-400 48V EO devices, record the IP addresses (Ethernet) in a layout grid (typically a spreadsheet or list) for easy reference.
2. Assign each device to a position in the lighting design plan.
3. Position each PDS-400 48V EO device in its designated mounting location. Make sure the mounting surface is flat, suitable for the mounting hardware, and clear of debris and other obstructions.

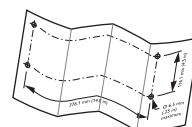
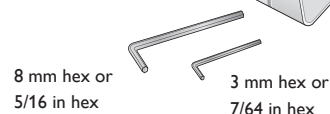
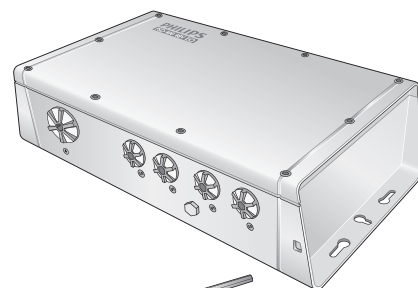
The overall dimensions of each PDS-400 48V EO device are 105 mm (4 in) wide x 232 mm (9 in) deep x 400 mm (15 in) high. Make sure the mounting location allows enough space around the housing for air to move freely around the device. Be careful not to obstruct or submerge the vents on either side of the PDS-400 48V EO housing.

4. Use four suitable mounting screws to secure PDS-400 48V EO to the mounting location.

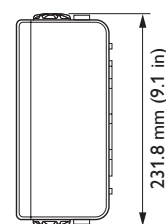
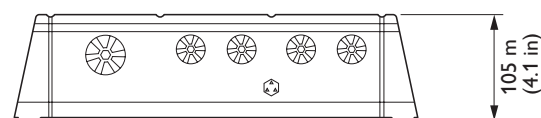
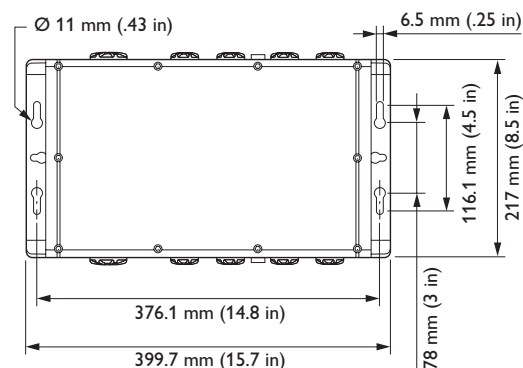


Included in the box

PDS-400 48V EO
8 mm hex wrench
3 mm hex wrench
Mounting Template

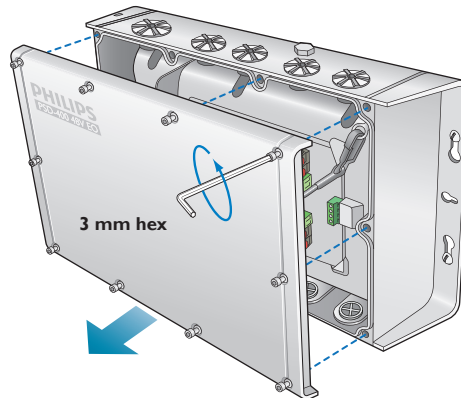


Mounting Accessories



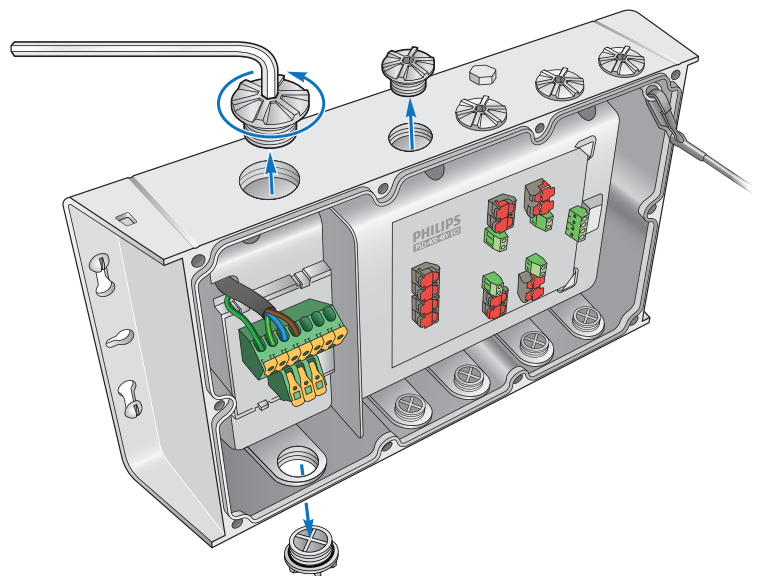
Prepare for Cable Connections

1. Using the included 3 mm hex wrench, loosen the housing cover's ten captive screws to open the PDS-400 48V EO housing.



2. Identify which openings to use for power and data cables, and remove the seal plugs from the openings.
 - For installations using US trade size conduit, the larger openings accommodate 3/4 in NPT cable connectors for power, and the smaller openings accommodate 1/2 in NPT cable connectors for data.
 - For installations using metric size conduit, the larger openings accommodate PG16 cable connectors for power, and the smaller openings accommodate PG13.5 cable connectors for data.
3. Install and tighten cable connectors to manufacturer specifications. Do not overtighten.
4. Torque remaining seal plugs to approximately 19 in-lb (2.2 Nm).

8 mm hex or
5/16 in hex



Make Data Input Connections

Instead of RJ45 connectors, PDS-400 48V EO uses double-pair, double-entry IDC connectors, which accept unstripped cable wire strands.

Ethernet Data Input Connections

1. Run CAT 5e or better cable from the data output port of a Philips Color Kinetics Ethernet controller, such as Light System Manager or Video System Manager Pro.

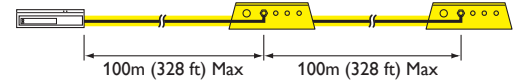
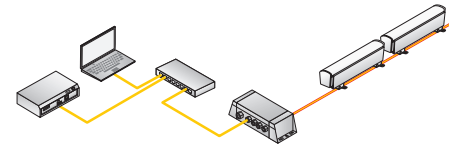
2. If necessary, cut the cable jacket to expose the wire pairs. Do not strip the wire pairs.

The Brown, Brown/White, Blue, and Blue/White wires are not used and should be capped and turned back.

3. Locate the Ethernet input pivot connectors inside the PDS-400 48V EO housing. Open both pivot connectors.

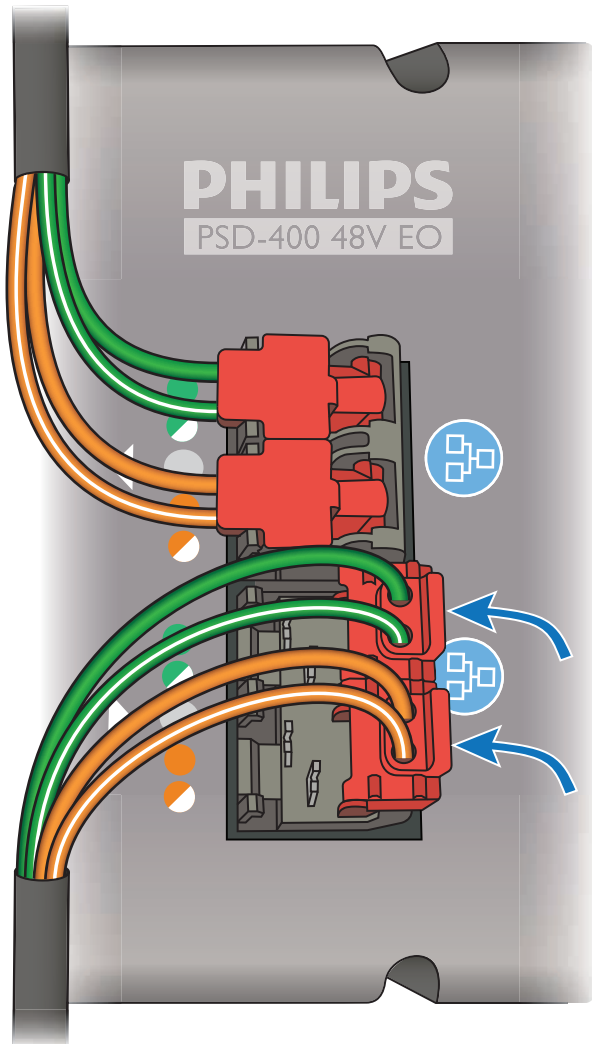
4. From right to left, following the wire color codes printed on the data board, insert the Orange/White, Orange, Green/White, and Green wires into the pivot connector's wire entry holes.

5. While holding the wires firmly in place, push down on the pivot connectors until they click shut.



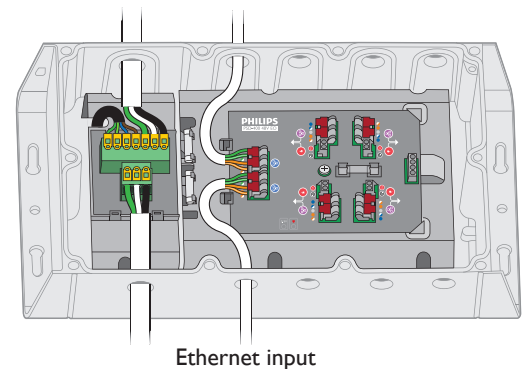
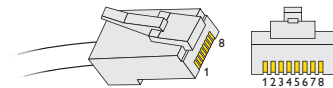
Ethernet maximum data cable length between PDS-400 48V EO

⚠ IDC connectors accept wire sizes from 0.326 to 0.129 mm² (22 to 26 AWG).



Ethernet Pinouts

RJ45 Pin #	Ethernet Signal	Wire Color
1	RxD+	Orange/White
2	RxD-	Orange
3	TxD+	Green/White
6	TxD-	Green



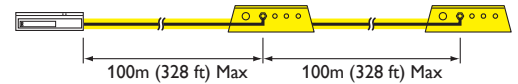
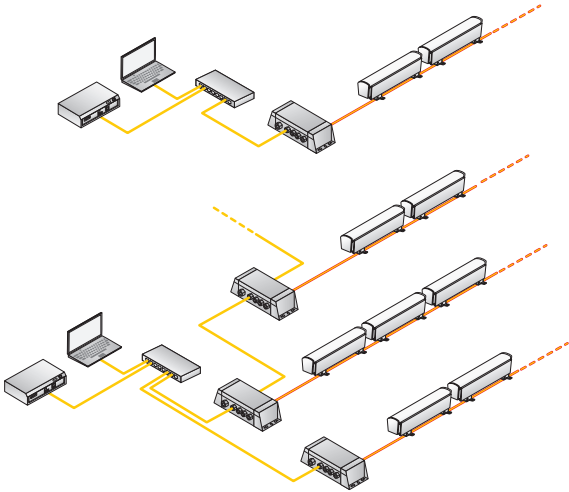
Connecting PDS-400 48V EO Devices in Series (Optional)

Installations with large numbers of luminaires may require multiple PDS-400 48V EO devices.

Series Connection Using Ethernet

You can connect up to eight PDS-400 48V EO devices in series if on a 277 VAC AC line (three devices can be connected if on a 100 VAC AC line). Use additional Ethernet switch ports to connect additional PDS-400 48V EO devices to your network.

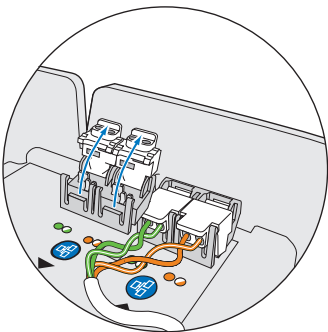
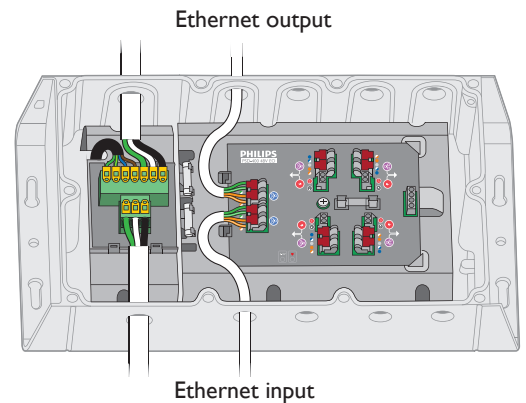
In Ethernet networks, maximum run lengths for data cables are 100 m (328 ft) between Ethernet devices without a repeater.



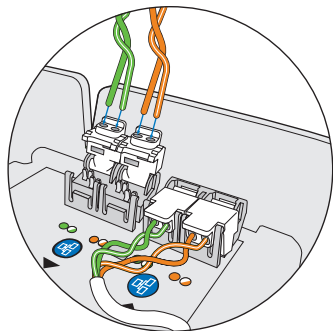
Ethernet maximum data cable length between PDS-400 48V EO

1. Cut a sufficient length of Cat. 5e or better cable to connect the first PDS-400 48V EO device in a series with the next.
2. If necessary, cut both ends of the cable jacket to expose the wire pairs. Do not strip the wire pairs.

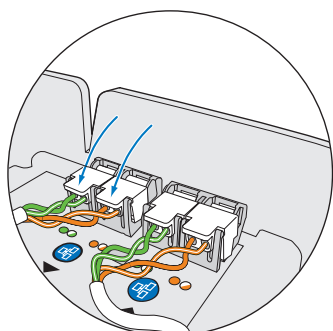
The Brown, Brown/White, Blue, and Blue/White wires are not used and should be capped and turned back.
3. Run one end of the cable through a cable connector installed on the output side of the first PDS-400 48V EO device in the series.
4. Locate the Ethernet output pivot connectors inside the PDS-400 48V EO housing. Open both pivot connectors.



5. From right to left, following the wire codes printed on the data board, insert the Orange/White, Orange, Green/White, and Green wires into the pivot connectors.
6. While holding the wires firmly in place, push down on the pivot connectors until they click shut.



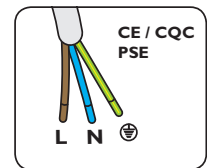
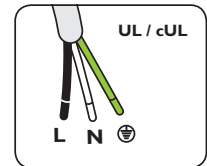
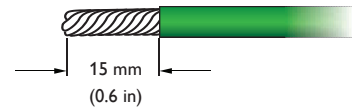
7. Run the free end of the cable to the next PDS-400 48V EO device in the series, and make Ethernet data input connections as described in the previous section.



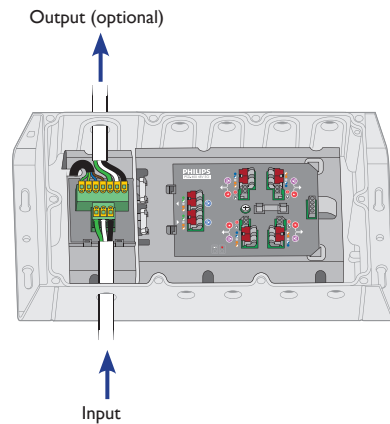
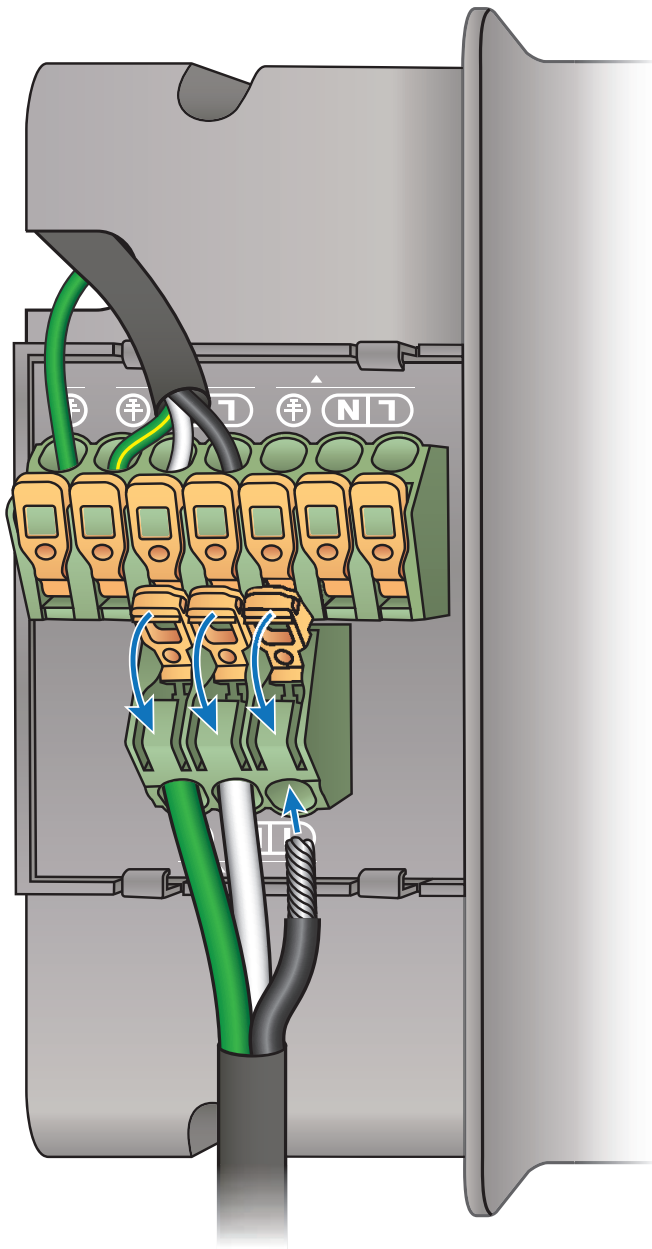
8. Repeat for each PDS-400 48V EO device in the series.

Make Line Voltage Connections

1. Run the line voltage power cable through a cable connector installed on the input side of the PDS-400 48V EO housing. Pull at least 127 mm (5 in) of wire into the housing.
2. Strip 15 mm (0.6 in) of insulation from the wires. If using stranded wire, twist each wire tight to secure the wire threads.
3. Locate the line voltage 3-wire PC terminal block connector inside the PDS-400 48V EO housing.
4. (Optional) Multiple PDS-400 48V EO devices can be run in series by running the line voltage power cable through the series connection output.

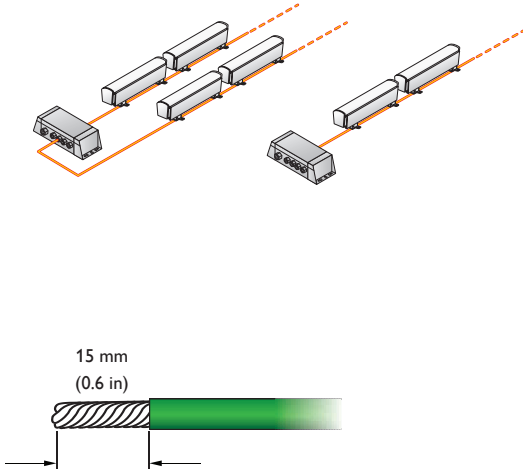


* PC terminal block connectors accept recommended wire sizes from 10 to 24 AWG (0.2 to 6 mm²).



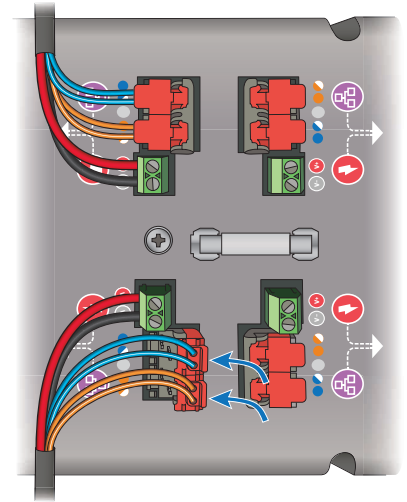
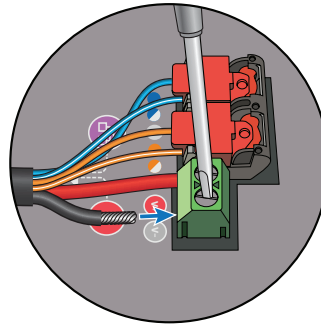
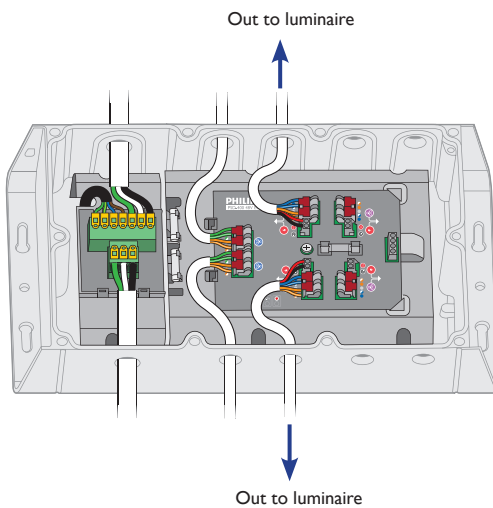
Make Fixture Cable Connections

Philips Color Kinetics intelligent LED luminaires that use PDS-400 48V EO either have a detachable leader cable with flying leads. Leader cables range from 15 m (50 ft) to 30 m (100 ft), while integrated power/data cables can be as long as 3.7 m (12 ft) or as short as 152 mm (6 in).



✳️ PC terminal block connectors accept recommended wire sizes from 10 to 24 AWG (0.2 to 6 mm²) for 3-wire and 12 to 20 AWG (0.5 to 3.3 mm²) for 2-wire.

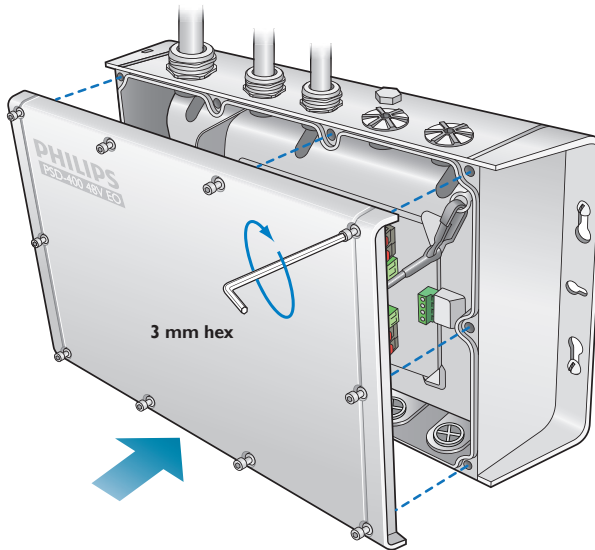
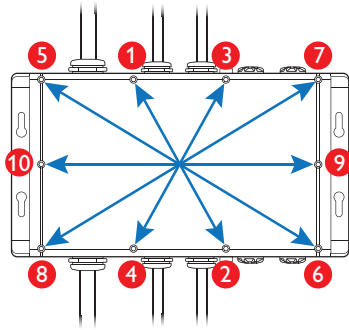
1. Run a leader cable from a run of luminaires, or a lead wire from a junction box, through a cable connector installed on the output side of the PDS-400 48V EO housing (the side with two openings). Drag at least 152 mm (6 in) of wire into the housing.
2. Strip 15 mm (0.6 in) of insulation from the wires. If using stranded wire, twist each wire tight to secure the wire threads.
3. Locate the luminaire cable 2-wire PC terminal block connector and Double-pair, double-entry IDC connectors inside the PDS-400 48V EO housing.
4. Securely install line, neutral, ground, and data in the terminal block:



Secure Cover

Once you have finished connecting all data and power inputs and outputs, secure the PDS-400 48V EO cover.

1. Seat the cover on the PDS-400 48V EO housing.
2. Using the included 3 mm hex wrench, tighten the housing cover's ten captured screws, in the order indicated in the diagram to the left.



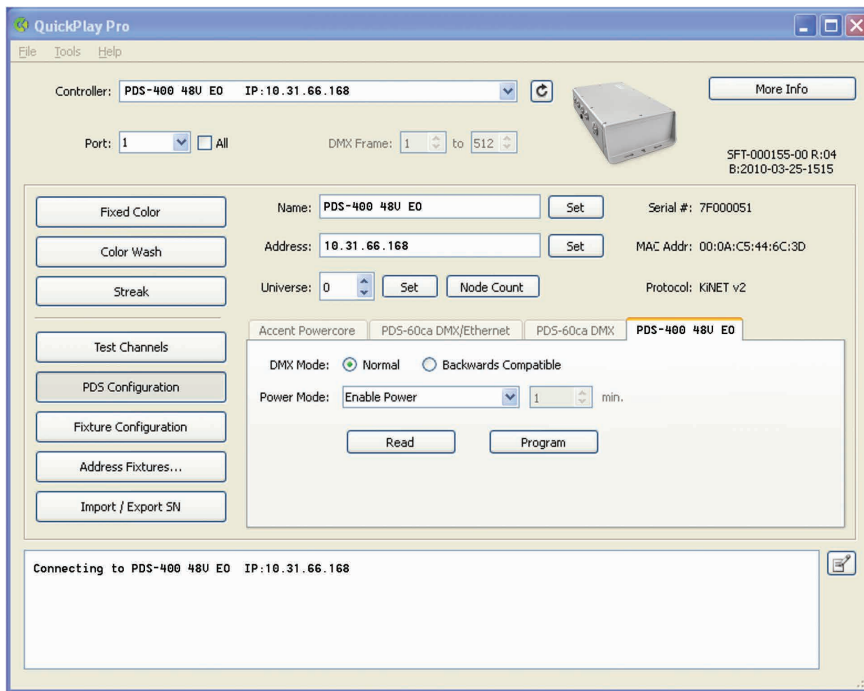
3. Torque each screw to approximately 16 in-lb (1.8 Nm).

Configuring PDS-400 48V EO with QuickPlay Pro (Optional)

You can configure PDS-400 48V EO devices using QuickPlay Pro addressing and configuration software. In Ethernet installations, you can automatically discover all PDS-400 48V EO devices using QuickPlay Pro with a computer connected to your lighting network.

When a PDS-400 48V EO device is connected to your lighting network, the PDS-400 48V EO tab under PDS Configuration becomes active.

* You can download QuickPlay Pro from www.colorkinetics.com/support/addressing/.



* For details on standard QuickPlay Pro options for PDS-400 48V EO devices, refer to the Addressing and Configuration Guide, which you can view or download at www.colorkinetics.com/support/addressing/.

Updating PDS-400 48V EO Firmware

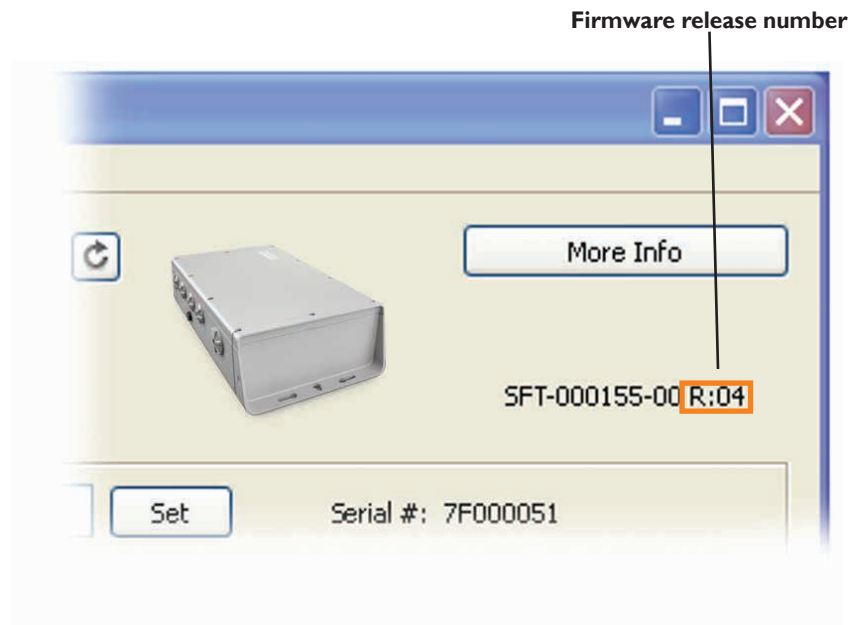
The PDS-400 48V EO firmware image is periodically updated to improve system performance and functionality. To maximize system performance, make sure your PDS-400 48V EO devices are running the most recent version of the firmware. We recommend that you confirm that your PDS-400 48V EO devices have the most recent version of the firmware before installing them in your lighting network.

Determine PDS-400 48V EO Firmware Version

1. You can determine the firmware version that your PDS-400 48V EO devices are running with a computer and QuickPlay Pro:
 - In Ethernet installations, connect a computer to the lighting network and run QuickPlay Pro. QuickPlay Pro automatically discovers all connected PDS-400 48V EO devices. Select a device from the Controllers list.
2. If necessary, select a PDS-400 48V EO device from the Controllers list.

The firmware version for the selected PDS-400 48V EO device appears at the top of the QuickPlay Pro window, on the right.

* You can find more information on
Firmware [www.colorkinetics.com/support/
downloads/firmware/](http://www.colorkinetics.com/support/downloads/firmware/).



Download PDS-400 48V EO Firmware

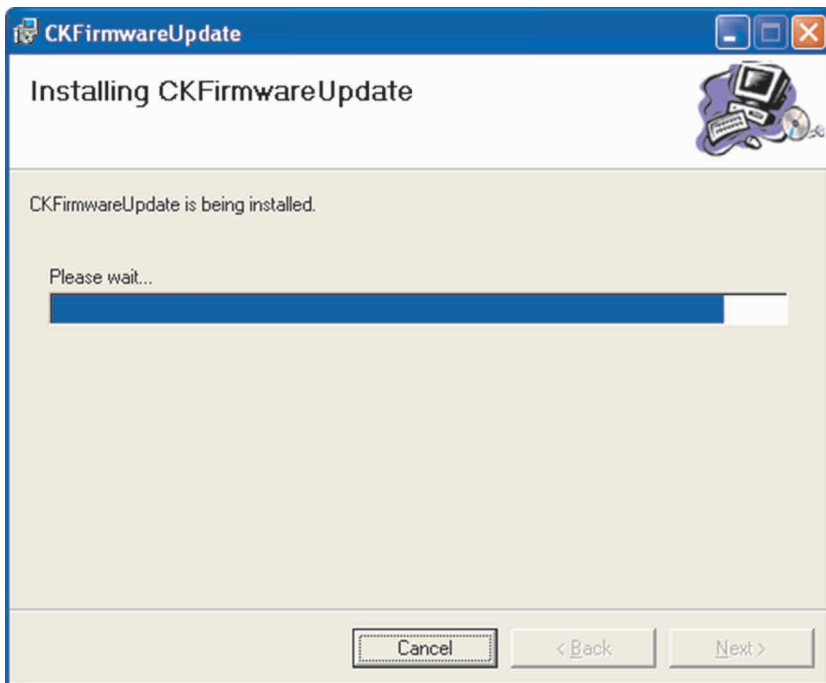
If a more recent version of the PDS-400 48V EO firmware is available, download the firmware file (.hex extension):

1. Visit the Firmware Updater page at www.colorkinetics.com/support/downloads/firmware/ to check for the latest firmware version.
2. If a newer firmware image is available, click the link on the Firmware Updater page to download the firmware file to an accessible location on your computer.

Download CK Firmware Updater

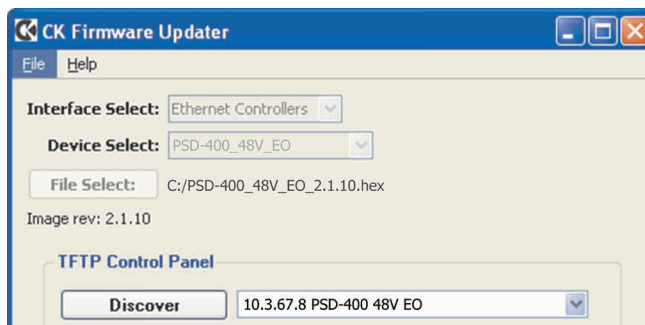
To update the firmware image on a PDS-400 48V EO device, you must download and install the CK Firmware Updater application on your computer.

1. Visit the Firmware Updater page at www.colorkinetics.com/support/downloads/firmware/.
2. Download the CK Firmware Updater installer.
3. Decompress the file to an accessible location on your computer and open it.
4. Run the installer, and follow the on-screen instructions.



Running a PDS-400 48V EO Firmware Update (Ethernet network)

1. Connect a computer to the lighting network, and run CK Firmware Updater.
2. From the Interface Select list, select Ethernet Controllers.
3. From the Device Select list, select PDS-400 48V EO.
4. Click File Select, navigate to the folder to which you downloaded the firmware file (.hex extension), and click Open.
5. Click Discover. CK Firmware Updater automatically discovers all PDS-400 48V EO devices connected to your lighting network.
6. Select a PDS-400 48V EO device and click PROGRAM.
7. Repeat step 6 for each PDS-400 48V EO device that you want to update.



Recovering from Firmware Update Errors

In rare instances, you may experience power or data loss or interruption during the firmware update process. In such cases, a PDS-400 48V EO device may receive an incomplete or corrupt firmware image. You must successfully re-install the firmware image to restore normal PDS-400 48V EO operations.

- In the case of power loss or interruption, the PDS-400 48V EO device retains its assigned IP address, but you are temporarily unable to communicate with the device using that address.

If this happens, enter the reserved IP address 10.1.250.250 in CK Firmware Updater, and re-install the firmware image.

Once the firmware image is successfully installed, you can again communicate with the PDS-400 48V EO device using its assigned IP address.

- In the case of data loss or interruption, you must manually enter the device IP address in CK Firmware Updater to re-install the firmware image.

If you don't know the device assigned IP address, you can cycle power, then use the reserved IP address 10.1.250.250, as described above.

