PDS-60

Versatile power/data supply for indoor and outdoor applications

PHILIPS

PDS-60

Versatile power/data supply for indoor and outdoor applications

PDS-60 24 V Pre-programmed is a versatile power/data supply designed for indoor and outdoor LED lighting installations using luminaires from Philips Color Kinetics.

- PDS-60 24 V accommodates input voltages ranging from 100 VAC to 240 VAC. Short-circuit protection prevents device failure due to incorrectly wired luminaires.
- Features a NEMA 4 (IP66) enclosure, PDS-60 24 V installs in dry, damp, and wet locations.
- PDS-60 24 V DMX/Ethernet is compatible with both DMX and Ethernet controllers.
- PDS-60 24 V Pre-programmed features built-in visual effects, allowing configurations without DMX or Ethernet controllers.
- PDS-60 24 V offers multiple standard-size conduit entries to accommodate 1/2 in and 3/4 in US trade-sized conduit.
- PDS-60 Pre-Programmed functions as a master controller, delivering data to the other power/data supplies in the run. Use one PDS-60 Pre-Programmed unit per run, and standard DMX units for all additional power/data supplies. A downstream power/data supply does not have to be a PDS-60, but can be any DMX-based power/data supply.
- Instead of attaching luminaires to a Pre-Programmed PDS-60, you could opt to use it as an outdoor-rated light show controller for downstream power/data supplies and luminaires.

Compatible Luminaires

Luminaire	Max. Quantity Per PDS-60 24 V
ColorBlast 6	2
ColorBlast 12	1
ColorBurst 6	2
C-Splash 2	2

Versions and Features

Version	Features
PDS-60 24 V DMX/Ethernet	Compatible with both DMX and Ethernet networks. On-board indicators show the status of the data connection.
PDS-60 24 V Pre-Programmed	Has configurable, on-board effects. Cannot receive controller data, but can send data to downstream DMX-based power/data supplies and connected luminaires.

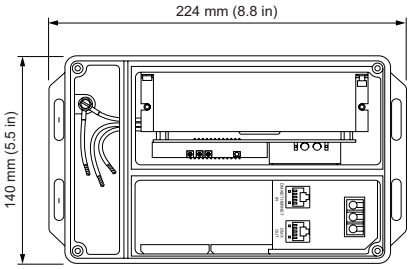
Versatile power/data supply for indoor and outdoor applications

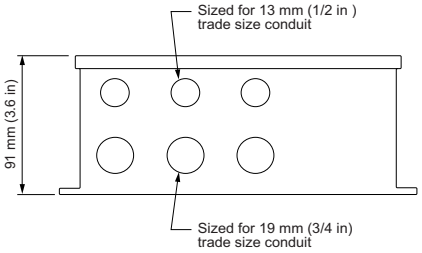
The device's NEMA 4 (IP66) enclosure allows for installation in dry, damp, and wet locations.

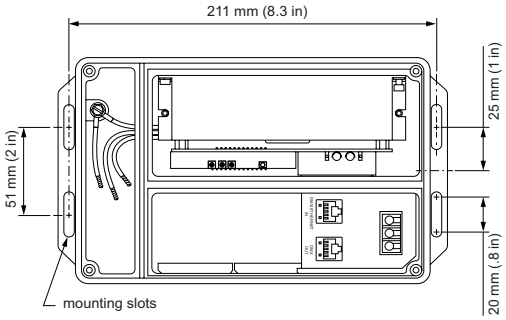
Specifications

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

Item	Specification	Details	
Electrical	Input Voltage	100 to 240 VAC, auto-ranging, 50/60 Hz	
	Power Consumption	1.7 A at 100 VAC, 1.5 A at 120 VAC, 0.75 A at 240 VAC	
	Power Output	24 VDC, 62 W maximum	
	Fuse Rating	(2) 4 A, 5 x 20 fast blow fuses	
Control	Threaded Openings	19 mm (0.75 in), 13 mm (0.5 in) NPT	
	Data Input Source	PDS-60 DMX/Ethernet	Philips full range of controllers, third-party DMX controllers, or KiNET-compatible* third-party Ethernet controllers
		PDS-60 Pre-Programmed	Internal
	Data Input	RJ-45 input and output connectors (PDS-60 DMX/Ethernet only)	
	Data Output	RJ-45, 3-pin terminal block (PDS-60 DMX/Ethernet only)	
	Power Input	Line-neutral-ground cable, flying leads	
	Power Output	2-pin spring terminal	
Physical	Dimensions *(Height x Width x Depth)*	91 x 140 x 224 mm (3.6 x 5.5 x 8.8 in)	
	Weight	2 kg (4.5 lb)	
	Housing Material	Cast aluminium enclosure	
	Finish	Powder-coated gray matte	
	Mounting	Slots for surface mounting	
	Temperature Ranges	-10 to 40 °C (14 to 104 °F) Operating -10 to 50 °C (14 to 122 °F) Startup -40 to 80 °C (-40 to 176 °F) Storage	
	Humidity	0 to 95%, non-condensing	
	Cooling	Convection	
	Airflow	Front panel input, back panel output	
	Heat Dissipation	25% of total power input at maximum load	
Certification and Safety	Certification	UL/cUL, CE, PSE, C-Tick, SAA	
	Classification	UL Class 2 power supply	
	Environment	Dry/Damp/Wet Location, IP66	







Ordering Information

Item	Item Number	Philips 12NC
PDS-60 24 V DMX/Ethernet	109-000017-03	910503700097
PDS-60 24 V Pre-programmed	109-000017-00	910503700096

Use Item Number when ordering in North America.

Included in the box

- PDS-60 power/data supply
- (2) White clamp-on EMI suppression cores
- Black clamp-on EMI suppression core
- (2) Spare fuses
- (4) Sealing plugs and rings 1/2 NPT
- (4) Sealing plugs and rings 3/4 NPT
- (3) Push wire connectors

Installation

PDS-60 is a power/data supply designed for indoor and outdoor DMX and Ethernet lighting installations. PDS-60 supplies power and data to low-voltage luminaires from Philips Color Kinetics and delivers 62 watts of low-voltage output via two ports. It features a NEMA 4 (IP66) enclosure, allowing for installation in dry, damp, and wet locations. It automatically accommodates input voltages ranging from 100 VAC to 240 VAC.

Owner/User Responsibilities

It is the responsibility of the contractor, installer, purchaser, owner, and user to install, maintain, and operate PDS-60 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.

Refer to the PDS-60 Installation Instructions for specific warning and caution statements.

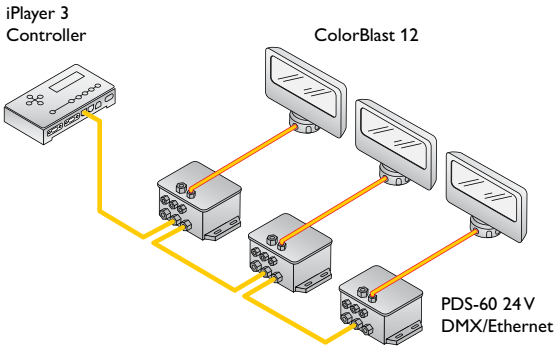
Plan the Installation

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 lighting luminaires, power/data supplies, controllers, switches, and cables.

DMX and Ethernet Configurations

PDS-60 DMX/Ethernet can be used in either DMX or Ethernet networks. PDS-60 Pre-Programmed versions can be used only in DMX environments and cannot receive incoming signals from controllers. However, they can connect to DMX power/data supplies and connected luminaires via their DMX OUT ports.

DMX is appropriate for relatively simple installations, or for installations in which groups of lights operate in unison (for example, for accent lighting, perimeter lighting, or cove lighting applications). Typical DMX installations with luminaires from Philips Color Kinetics use a controller such as iPlayer 3, a Controller Keypad for turning lights on and off and triggering light shows, and one or more PDS-60 devices. PDS-60 devices can be connected in series to deliver DMX data from a single controller to all connected lights. Note that the maximum for DMX data run lengths is 305 m (1,000 ft).

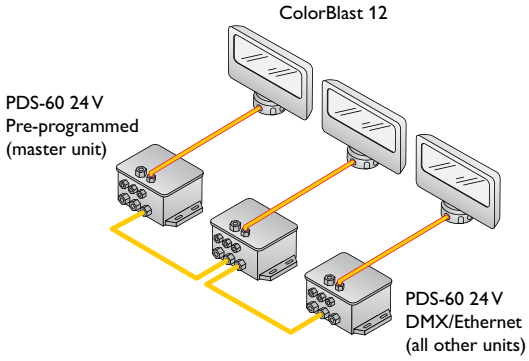


Typical DMX Installation

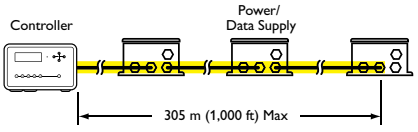
Because it is not subject to the DMX addressing limitations, Ethernet is the preferred environment for large-scale, color-changing light shows and video displays, both of which require large numbers of unique addresses.

Typical Ethernet installations with LED lighting luminaires from Philips Color Kinetics use an Ethernet switch, an Ethernet controller (such as ColorDial Pro, Light System Manager, or Video System Manager Pro), one or more Ethernet Controller Keypads (for light show triggering), and one or more PDS-60 devices. For additional devices in a network, use additional Ethernet switch ports.

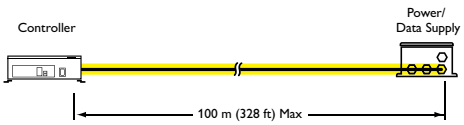
In an Ethernet environment, each Philips Color Kinetics power/data supply has a unique IP address. Each luminaire connected to the device is automatically assigned unique identifiers that controllers use to identify and manage each luminaire.



Typical Pre-Programmed Installation

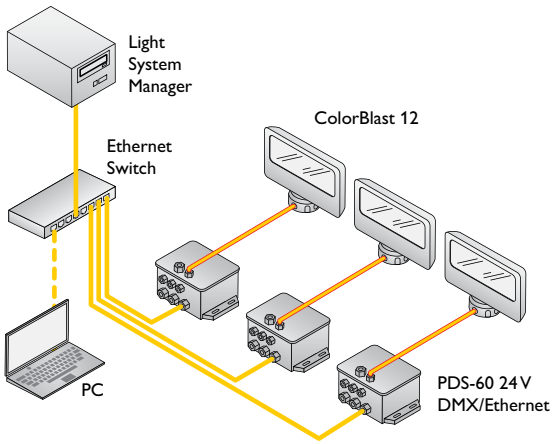


DMX maximum data run length



Ethernet maximum data run length

Maximum data cable lengths are 100 m (328 ft) between Ethernet devices without a repeater.



Typical Ethernet Installation

Compatible Luminaires

Luminaire	Max. Quantity Per PDS-60 24 V
ColorBlast 6	2
ColorBlast 12	1
ColorBurst 6	2
C-Splash 2	2

Electrical Configuration Guidelines

The number of luminaires that each PDS-60 unit can support depends on the power requirements of the specific luminaires that you are using. Refer to the table on the left for quantities of each luminaire that you can connect per PDS-60 device. Refer to the luminaire product guides for information on electrical configuration for luminaires.

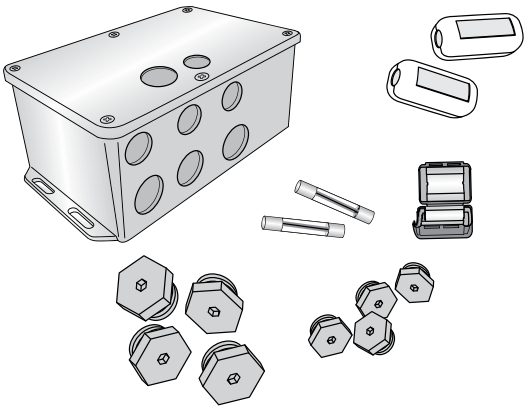
When installing in damp or wet locations, seal all points of possible moisture ingress with electronics-grade RTV silicone sealant so that water or moisture cannot enter or accumulate.

Inspect PDS-60 and Accessories

Carefully inspect the box containing the PDS-60 and the contents for any damage.

Included in the box

PDS-60 power/data supply
(2) White clamp-on EMI suppression cores
Black clamp-on EMI suppression core
(2) Spare fuses
(4) Sealing plugs and rings 1/2 NPT
(4) Sealing plugs and rings 3/4 NPT
(3) Wire connectors



Assemble Additional Items

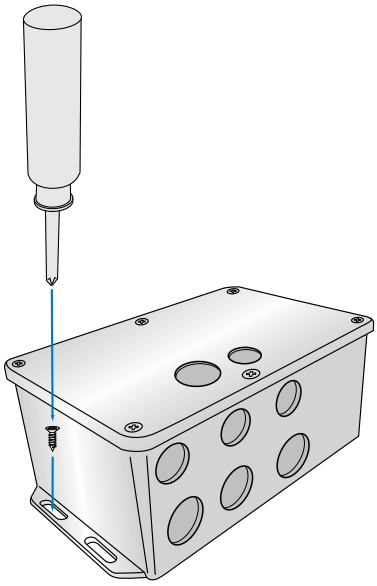
The following items are required to mount and connect the PDS-60:

- 3-conductor copper wire for power connections, as required. Luminaire connections also require 3-conductor copper wire, with the exception of C-Splash luminaires, which require 4-conductor wire. Standard 3.31 mm^2 (12 AWG) stranded wire is recommended.
- One insulated ring or spade crimp terminal, one 203 mm (8 in) connecting wire and one wire nut per C-Splash 2 luminaire
- The included three push wire connectors
- CAT 5e or better data cable, as required
- The included black magnetic EMI suppression core (for the power cable)
- The included two white magnetic EMI suppression cores (for luminaire leader cables)
- Power screwdriver (for mounting)
- Four screws suitable for the mounting surface
- Phillips screwdriver
- An 8 mm hex wrench or adjustable wrench
- The included four 1/2 and 3/4 NPT sealing plugs and rings
- Electronics-grade RTV silicone for installations in damp and wet locations
- Cable strain relief and other connectors as needed (water tight, if required)
- Wire strippers and other tools as needed

Mount the PDS-60

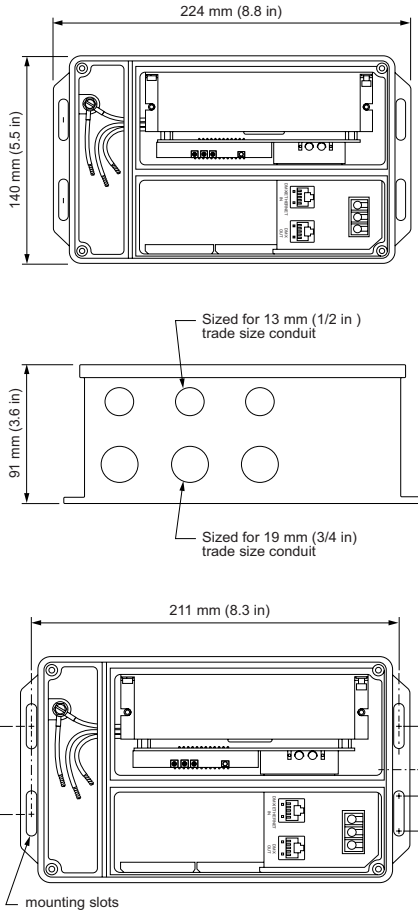
Make sure line power is OFF before mounting and connecting. A power screwdriver is recommended.

1. Position the PDS-60 device in its designated mounting location. Make sure the mounting location is flat, suitable for the mounting hardware, and clear of debris and other obstructions.
2. Using four screws suitable for the mounting surface, secure the PDS-60 device to the surface using the two mounting slots located at both ends of the device.



Make sure that there is adequate space to make all connections to the top and side of the device.

Make sure that the device is securely attached and free of excessive vibration.

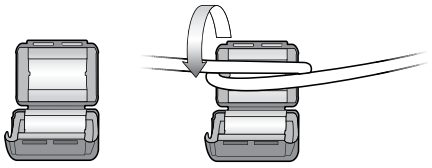


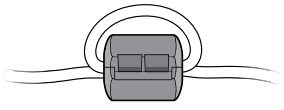
Install EMI Suppression Cores

The PDS-60 arrives packaged with three EMI suppression cores. These suppression cores reduce electromagnetic noise that can interfere with other electrical equipment. The white suppression cores are for iColor and eW Flex strands or luminaire leader cables. The black suppression core is for the power cable.

Before attaching the cores, make sure that each set of ferrite metal halves are secure in their plastic housing.

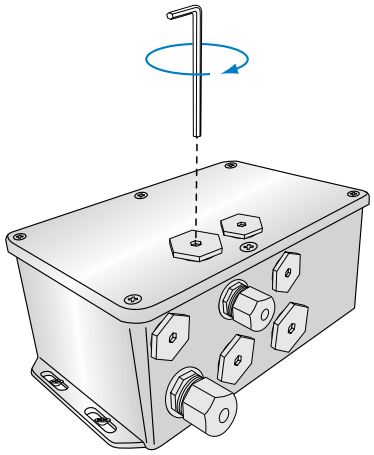
1. Attach the black suppression core to the power cable:
   - Near the end of the cable that connects to the power/data supply, coil the power cable into a small loop.
   - Place the section of the loop where the cord is doubled into the suppression core. Be sure the cord is securely in the core's middle.
   - Snap the core shut around the doubled cord.
2. Attach a white suppression core to the luminaire strand or leader cable attached to port 1.
   - Near the connection to the power/data supply, coil the strand or cable into a small loop.
   - Place the section of the loop where the cord is doubled into the suppression core. Be sure the cord is securely in the core's middle.
   - Snap the core shut.
3. Repeat step 2 for the second white suppression core, if necessary.



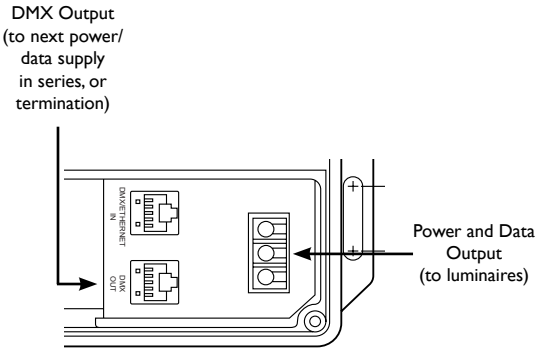


Prepare Cable Connections

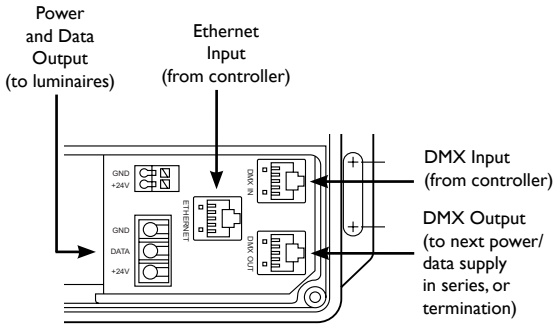
1. Using a Philips screwdriver, loosen the housing cover's six screws to open the PDS-60 housing.
2. Identify which openings to use for power and data cables, and using an 8 mm hex wrench or adjustable wrench, place the included sealing plugs and rings in the unused openings. Make sure that the sealing rings are seated correctly. Use RTV silicone if installing in damp or wet locations.
3. Torque the sealing plugs to approximately 2.2 Nm (19 in-lb).



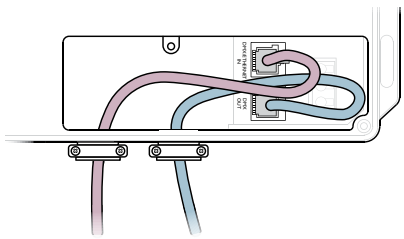
4. Install and tighten cable connectors or conduit to manufacturer's specs in the remaining openings. Do not overtighten.
   - For installations using US trade size conduit, the larger openings accommodate 3/4 in NPT cable connectors for power, and the smaller openings accommodate 1/2 in NPT cable connectors for data.



PDS-60
Pre-Programmed



PDS-60
DMX/Ethernet



Make Data Input Connections

PDS-60 has different layouts for data connection ports, depending on the version you have. See the illustrations on the left as a guide to the port locations in the connection chamber.

The PDS-60 Ethernet / DMX power/data supply listens for data on both the DMX and Ethernet input ports. When valid data is detected, PDS-60 automatically switches to the appropriate mode. The PDS-60 Pre-Programmed cannot receive input from controllers, but it can pass light show data to downstream DMX devices using its DMX OUT port.

DMX

1. Using an RJ45 connector cable, connect your controller's DMX output port to the DMX IN port on the PDS-60 (not applicable for pre-programmed devices).
2. To add a second power/data supply to your DMX network, connect an RJ45 cable from the PDS-60 device's DMX OUT port to the DMX IN port on the second PDS-60 device.
3. If necessary, continue connecting power/data supplies (up to 32 without a repeater).

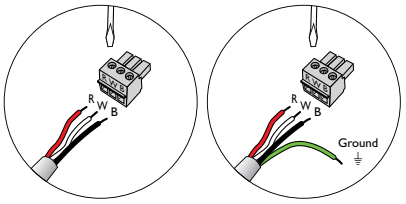
Ethernet

- Using a CAT 5 cable, connect the ETHERNET IN port on the PDS-60 to an available port on an Ethernet switch connected to your lighting network.

Connect Luminaires to PDS-60

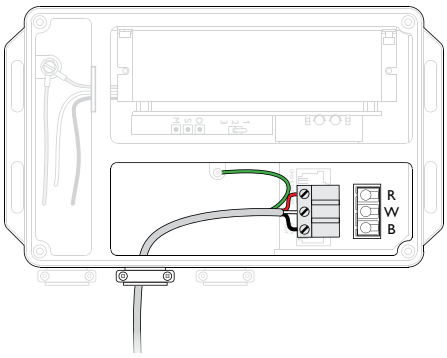
Make sure line power is OFF before connecting luminaires.

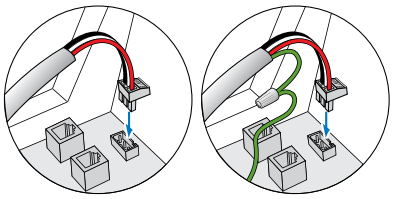
1. If necessary, prepare each of the luminaire's leader cables by cutting the cable jacket to expose the luminaire wire and then stripping the jacket from the wire.
2. Using a small flathead screwdriver, loosen the three captive screws inside one of the 3-pin connectors.
3. Guide each luminaire leader cable into an opening into the PDS-60 connection chamber.
4. If you are connecting more than one luminaire, use a strand of 3-conductor copper wire (4-conductor copper wire for C-Splash 2) and wire connectors to connect each luminaire leader cable to a single short cable. (See the illustrations below.)
3. Insert the red, white, and black wires of the single cable into the 3-pin connector's corresponding wire entry slots. (See the illustration on the right.)
4. Guide the connector and cable into the PDS-60 luminaire port.



ColorBurst 6
ColorBlast 6
ColorBlast 12

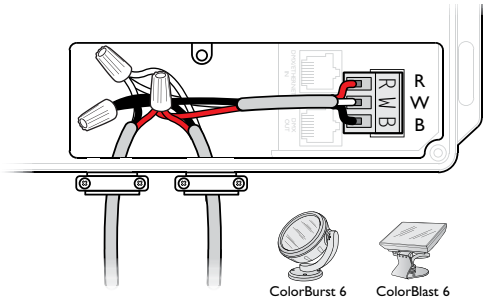
C-Splash 2



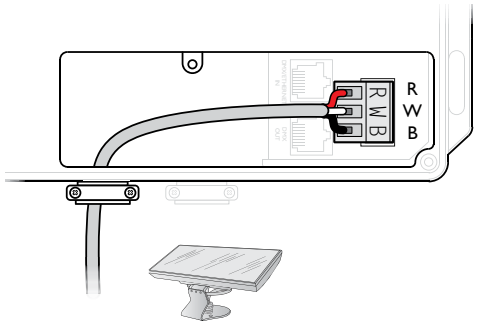


ColorBurst 6
ColorBlast 6
ColorBlast 12

C-Splash 2

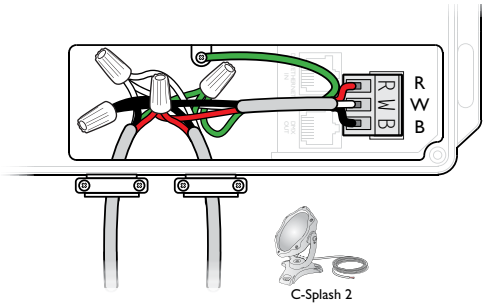


ColorBurst 6 ColorBlast 6



ColorBlast 12

5. If installing a C-Splash 2 luminaire, connect the green ground wire to a wire nut and an 203 mm (8 in) connecting wire. Using an insulated ring or spade crimp terminal, attach the connecting wire to the ground located in the connection chamber.

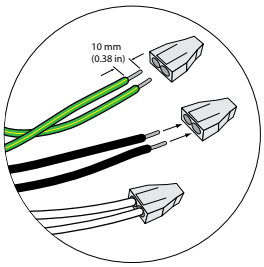


C-Splash 2

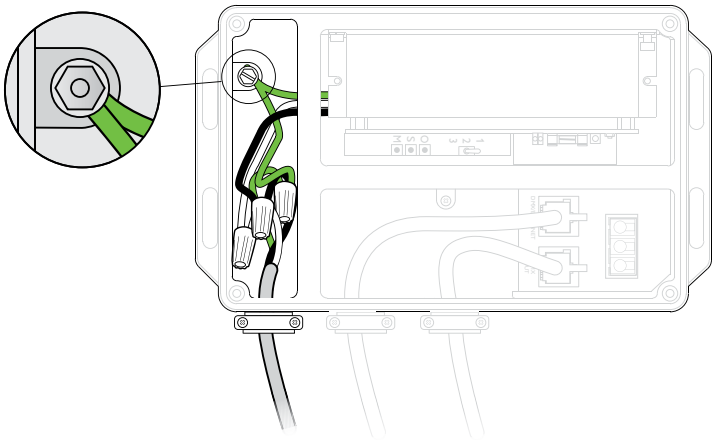
Connect the PDS-60 to Line Power

Make sure line power is OFF before connecting it to the PDS-60.

The device arrives with line, neutral, and ground wires in the form of flying leads ready for connection in the power connection chamber. You connect line power to the leads by using the included push wire connectors.



1. Install a cable strain relief connector in one of the device's 3/4 in openings in the power connection chamber. If necessary, use conduit as required by local electrical codes.
2. Run the mains voltage power cable through the opening. Pull at least 152 mm (6 in) of wire into the chamber.
3. Strip at least 10 mm (0.38 in) of insulation from the wires. Join the mains line wire with the flying leads using the three included push wire connectors.



PDS-60 connected to mains line power

Display Light Effects (Pre-Programmed Only)

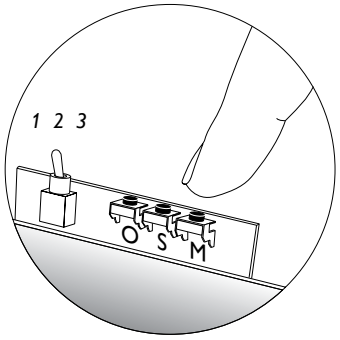
If you have the pre-programmed version of the PDS-60, you are able to display effects on your luminaires without a controller. Pre-programmed devices cannot receive signals from external controllers, but they can send light show data to other downstream DMX-based power/data supplies via the DMX OUT port. This means PDS-60 Pre-Programmed devices can effectively play the role of controllers. (Refer to the Make Data Input Connections section for instructions on how to link power/data supplies via DMX OUT ports.)

To achieve the effects you want, you use the controls inside the device, which consists of a toggle switch and three buttons. Once you have set the mode, speed, and options for effects using the control button, PDS-60 stores your settings and records them, even after you have cycled the power on the device.

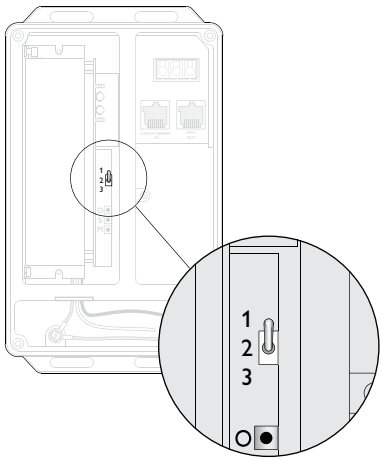
To display effects:

1. With the PDS-60 cover removed and the power off, set the toggle switch inside the device's housing to position 1.
2. Power the PDS-60 on.
3. Use the Mode button to select an effect. Press and release the Mode button to cycle through the effects described in the Light Effect Settings table below.
4. If desired, use the Options button to modify the effect you chose with the mode button.
5. Use the Speed button to change the speed of effect. Hold down the Speed button to change the color for Fixed Color effect.

Effect setting changes are immediate.

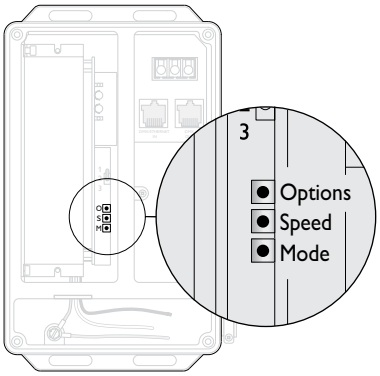


Pre-programmed effects buttons and toggle switch



Effects toggle switch

Switch positions 2 and 3 are not used on this device.



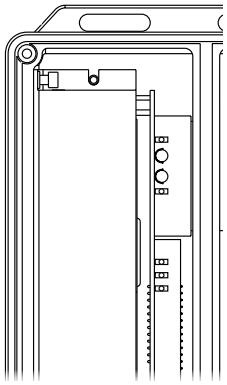
Effects buttons

Light Effect Settings (Switch Position 1 Only)

Mode Button	Description	Speed Button	Options Button
1. Rainbow	Produces a smooth transition through the color spectrum. Colors appear to follow each other from luminaire to luminaire	Cycles through four effect speed settings	Cycles through four width settings, then reverses direction and decreases widths
2. Random	Produces a sequence of randomly generated solid colors simultaneously on all fixtures		Toggles between immediate and fade changes
3. Colorwash	Produces a smooth hue transition on all luminaires simultaneously, progressing through the color spectrum		Reverses effect direction
4. Fixed Color	A static display of one solid color, with a configured color and intensity level.	Press and hold the speed button to change the color	Not Applicable

PDS-60 Pre-Programmed has four controls located inside the device's housing:

- The toggle switch selects the luminaire type (on the PDS-60, this should be set to position 1).
- The lowest button (farthest from the toggle switch) sets the Mode, which cycles through the different available effects
- The middle button sets the Speed for most effects, and sets the color for Fixed Color effects (hold the button down to cycle through the spectrum)
- The highest button (nearest to the toggle switch) sets the Options, which cycles through effect properties



PDS-60
DMX/Ethernet

Addressing and Controlling Luminaires

PDS-60 devices use DMX addresses to communicate with connected luminaires. Each node receives three sequential DMX addresses, one for the red channel, one for the green channel, and one for the blue channel. When using a PDS-60 device in a DMX or an Ethernet network, you assign luminaires start DMX addresses using controller software, such as QuickPlay Pro or Light System Composer (Light System Manager's creative design software).

Ethernet is the preferred environment for installations requiring large numbers of individually controllable nodes, such as video displays and dynamic light shows with intricate effects. In Ethernet networks, each PDS-60 device comes pre-programmed with a unique IP address, so it effectively functions as its own DMX universe. In an Ethernet network, you can discover all PDS-60 devices in an installation using QuickPlay Pro, then you can assign them start DMX addresses.

In DMX network, you address PDS-60 devices by assigning start DMX addresses to luminaire serial numbers in QuickPlay Pro.

Pre-programmed PDS-60 devices cannot receive input from controllers, but they can send light show data to other DMX power/data supplies connected to the Pre-Programmed device's DMX OUT port. No address programming is required for a PDS-60 Pre-Programmed device. However, you will need to address luminaires connected to downstream PDS-60 devices in the same way you would address luminaires in an ordinary DMX network.

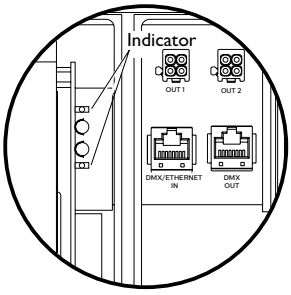
For complete details on addressing, and on using QuickPlay Pro, refer to the Addressing and Configuration Guide, available at www.colorkinetics.com/support/addressing/.

Status Indicators

Each PDS-60 has between two and five status indicators, depending on the version of the device. All indicators are located inside the luminaire's housing.

Power Indicators (All Devices)

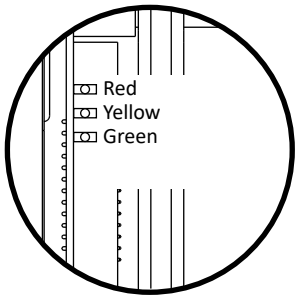
Both versions of the PDS-60 have two power indicators, one for each luminaire port. If a port fails for any reason (for instance, if a fuse blows), the red indicator light will be off.



Power indicators

PDS-60 Ethernet/DMX

The PDS-60 Ethernet/DMX power/data supply listens for data on both the DMX and Ethernet input ports. When a valid connection is detected, PDS-60 Ethernet/DMX switches to the appropriate mode. Three indicator lights show the mode (Ethernet or DMX) and if applicable, the status of the Ethernet connection:



PDS-60 Ethernet/DMX indicators

Status Indicators: PDS-60 Ethernet / DMX

Color	Indicator	Mode	Meaning
Red	DMX/Ethernet Mode Status	Continuous Red	PDS-60 is operating in DMX mode
		Blinking Red (once per second)	PDS-60 is operating in Ethernet mode
Yellow	Ethernet Data Status	Flickering Yellow	Blinks for every Ethernet packet received
Green	Ethernet Link Status	Continuous Green	A valid Ethernet link is detected
		Off	No Ethernet link is detected

Securing the Cover and Sealing PDS-60

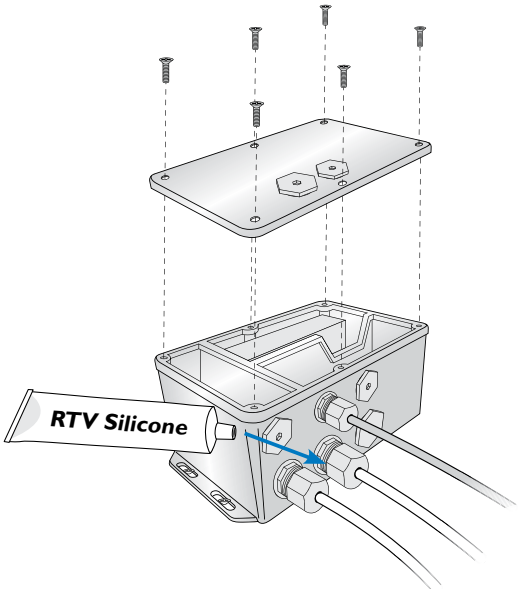
After all the power and data connections, addressing, and pre-programmed effects changes have been made, and you have made sure that all through holes are water-tight, you may seal the device.

1. Replace the cover, ensuring that the gasket is seated properly and that no wires are pinched.
2. Attach the cover with the six included screws. Tighten screws to 8 to 10 in-lbs (1 in-lb = 11.2985 N-cm). If you are installing in a wet or damp location, seal with RTV silicone.

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 damp or wet locations. Additionally, you must use gaskets, clamps, and other parts required for installation to comply with all applicable local and national codes.

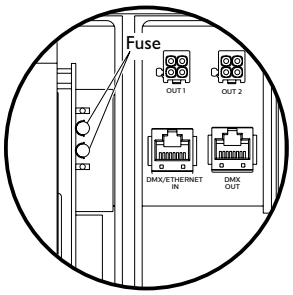
In wet or damp locations, use electronics-grade RTV silicone to seal all points of entry in all PDS-60 devices and all connected junction boxes to prevent water infiltration.



Replacing Fuses

PDS-60 has a fuse for each of its ports, protecting each port from excessive current. Always replace a blown fuse with a 4 A, 5 x 20 fast blow fuse.

1. Make sure that the device's power is OFF.
2. Using a Phillips screwdriver, unscrew the six screws holding the cover in place.
3. Remove the blown fuse from its metal clips next to the luminaire and data connection ports (see image below).



4. Replace the fuse with a new, 4 A, 5 x 20 fast blow fuse.
5. Replace the cover, ensuring that the gasket is seated properly and that no wires are pinched.
6. Attach the cover with the six included screws. Tighten screws to 8 to 10 in-lbs (1 in-lb = 11.2985 N-cm). If you are installing in a wet or damp location, seal with RTV silicone.

DAS-000059-00 R01 10 April 2018

Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.385.5742
Tel 617.423.9999
Fax 617.423.9998
www.colorkinetics.com