C-Splash 2

Submersible LED spotlight with intelligent color light

PHILIPS

COLOR KINETICS

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Submersible LED spotlight with intelligent color light

C-Splash 2 is an ultra-thin, submersible fixture designed to provide vibrant color and color-changing light in water to a depth of 15 ft (4.6 m). With its watertight cast brass housing and silicon bronze adjusting hardware, C-Splash 2 is perfect for water-based applications such as fountains and theme park installations, as well as for applications situated in harsh environments.

- Rugged and watertight — Cast brass housing and yoke with silicon bronze adjusting hardware isdesigned for submersion in water to a depth of 15 ft (4.6 m). This IP68-rated fixture is also able to withstand water treated with bromine or chlorine.

- Two beam angles — The frosted tempered glass lens offers a soft-edge beam of light at 22°, while the clear glass lens offers extended light projection at 10°.

- Unified power and data cable — Each C-Splash 2 fixture comes with a 60 ft (18.3 m) unified power and data cable to minimize wiring. C-Splash 2 is intended for use with PDS-150e and PDS-60 24V power / data supplies.

- Industry-leading controls — C-Splash 2 works seamlessly with the complete line of Philips controllers, including iPlayer 3, Light System Manager, and ColorDial Pro, as well as third-party controllers.

- Versatile light positioning — Locking base and pivot allows vertical and horizontal rotation through a full 360°.

- Temperature monitoring — C-Splash 2 has a temperature monitoring feature that automatically interrupts operation to protect the fixtures from damage due to extreme operating temperatures.

High Output — Underwater
This submersible fixture offers the full range 16.7 million RGB colors and an output of over 500 lumens. Long-life LEDs significantly reduce or eliminate required maintenance, a major advantage for underwater installations.

Creating a Lake of Dynamic Color in the Desert

Not all great lakes are on the Third Coast — not since the Lake of Dreams appeared in Las Vegas. An extraordinary one-of-a-kind attraction. The man-made Lake of Dreams

(shown here and on the cover) encompasses three acres and serves as the visual centerpiece of the 217-acre Wynn Las Vegas resort and casino.

Unveiled during the resort's grand opening in April 2005, the Lake of Dreams boasts the largest-ever intelligent LED lighting installation of its kind.

More than 4,000 submersed and individually controlled C-Splash 2 fixtures, installed on 700 removable panels at the bottom of the lake, transform the lake's surface into a spectacular light-and-water show.

The entire system spans 25 DMX universes for individual control of each C-Splash 2 fixture. This precise level of control allowed the lighting designer to devise a series of eye-catching sequences and seamless transitions, including intricate patterns and psychedelic colors that complement video images projected onto a waterwall rising 150 ft behind the lake. While the original lighting concept called for the Lake of Dreams to be illuminated with solid red lighting, the use of C-Splash 2 LED fixtures, which can generate up to 16.7 million colors, allowed the lighting designer to design dynamic color-changing effects.

Various statues appear to emerge from the lake's depths, creating an ethereal and dreamlike atmosphere. The light shows are programmed to run every 20 minutes from just after sunset until 1:00 am, drawing large crowds every time.

Photography: Studio West Photography, Las Vegas

Photography: Studio West Photography, Las Vegas

The dynamic effects of Philips Color Kinetics technology can also be seen in the resort's resident show, Le Rêve. The theater-in-the-round set incorporates 300 C-Splash 2 units to light the central pool and water-based effects.

Photography: Studio West Photography, Las Vegas
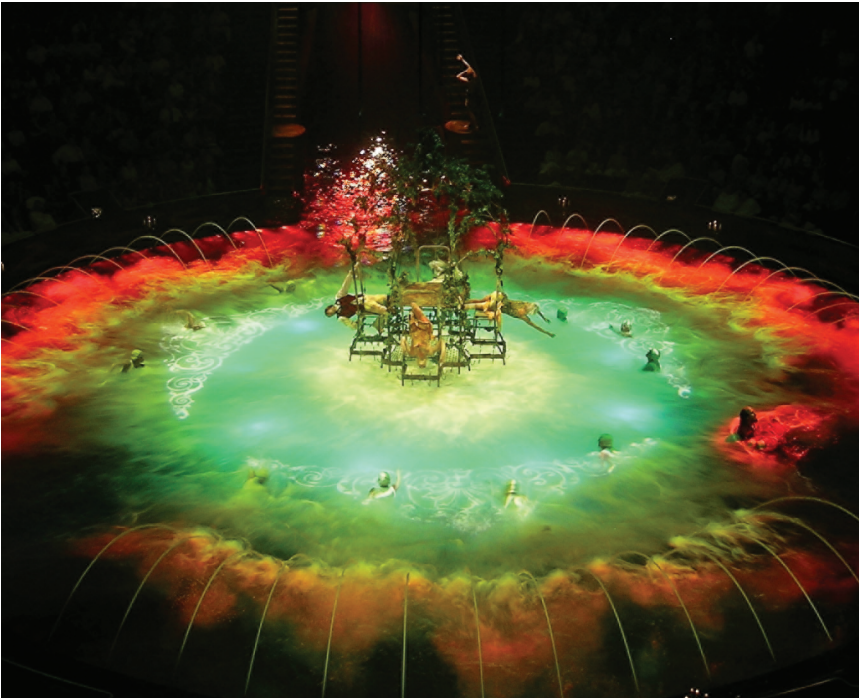
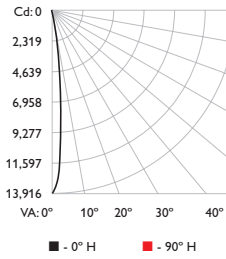Photography: Studio West Photography, Las Vegas

Photometrics

Photometric data is based on test results from an independent NIST traceable testing lab. IES data is available at www.philipscolorkinetics.com/support/ies.

C-Splash 2 — 10° clear lens

LED	Lumens	Efficacy
RGB	583	23.3

Polar Candela Distribution

■ - 0° H   ■ - 90° H

	0	22.5	44	67.5	90
0	13916	13916	13916	13916	13916
5	6549	6549	6549	6549	6549
15	217	217	217	217	217
25	72	72	72	72	72
35	49	49	49	49	49
45	23	23	23	23	23
55	8	8	8	8	8
65	2	2	2	2	2
75	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0

Illuminance at Distance

	Center Beam fc	Beam Width
2.5 ft	2227 fc	0.4 ft
5.0 ft	557 fc	0.8 ft
7.5 ft	247 fc	1.3 ft
10.0 ft	139 fc	1.7 ft
12.5 ft	89 fc	2.1 ft
15.0 ft	62 fc	2.5 ft

118 ft (36 m) ▭ Beam Spread: 9.6°
1 fc maximum distance

Zonal Lumen

0-30	524.4	89.9%	90.1%
0-40	555.1	95.2%	95.4%
0-60	579.9	99.5%	99.6%
60-90	2.1	0.4%	0.4%
0-90	582.0	99.8%	100%
90-180	0	0%	0%
0-180	582.0	99.8%	100%

Total Efficiency: 99.8%

Coefficients Of Utilization - Zonal Cavity Method
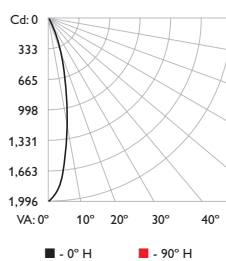
Effective Floor Cavity Reflectance: 20%

RCC %:	80				70				50			30			10			0
RW %:	70	50	30	0	70	50	30	0	50	30	20	50	30	20	50	30	20	0
RCR: 0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.00	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.15	1.14	1.12	1.10	1.13	1.11	1.10	.98	1.08	1.06	1.05	1.04	1.03	1.02	1.01	1.00	.99	.98
2	1.12	1.09	1.07	1.04	1.10	1.08	1.05	.96	1.04	1.03	1.01	1.02	1.00	.99	.99	.98	.97	.96
3	1.09	1.05	1.02	1.00	1.08	1.04	1.01	.94	1.02	.99	.98	1.00	.98	.96	.97	.96	.95	.94
4	1.07	1.02	.99	.96	1.05	1.01	.98	.92	.99	.97	.95	.98	.95	.94	.96	.94	.93	.92
5	1.05	1.00	.96	.94	1.03	.99	.96	.91	.97	.95	.93	.96	.94	.92	.95	.93	.91	.90
6	1.02	.97	.94	.91	1.01	.97	.93	.89	.95	.93	.91	.94	.92	.90	.93	.91	.90	.89
7	1.01	.95	.92	.90	1.00	.95	.92	.88	.94	.91	.89	.93	.90	.89	.92	.90	.88	.87
8	.99	.94	.90	.88	.98	.93	.90	.87	.92	.90	.88	.92	.89	.87	.91	.89	.87	.86
9	.97	.92	.89	.87	.97	.92	.89	.86	.91	.88	.86	.90	.88	.86	.90	.88	.86	.85
10	.96	.91	.88	.86	.95	.90	.87	.85	.90	.87	.85	.89	.87	.85	.89	.86	.85	.84

RCC %: Ceiling reflectance percentage, RW %: Wall reflectance percentage, RCR: Room cavity ratio

C-Splash 2 — 22° frosted lens

LED	Lumens	Efficacy
RGB	515	20.6

Polar Candela Distribution

■ - 0° H   ■ - 90° H

	0	22.5	44	67.5	90
0	1996	1996	1996	1996	1996
5	1689	1689	1689	1689	1689
15	583	583	583	583	583
25	182	182	182	182	182
35	79	79	79	79	79
45	43	43	43	43	43
55	24	24	24	24	24
65	13	13	13	13	13
75	5	5	5	5	5
85	0	0	0	0	0
90	0	0	0	0	0

Illuminance at Distance

	Center Beam fc	Beam Width
2.5 ft	319 fc	0.9 ft
5.0 ft	80 fc	1.9 ft
7.5 ft	35 fc	2.8 ft
10.0 ft	20 fc	3.8 ft
12.5 ft	13 fc	4.7 ft
15.0 ft	9 fc	5.6 ft

44.6 ft (13.6 m) ▭ Beam Spread: 21.3°
1 fc maximum distance

Zonal Lumen

0-30	390.9	75.9%	76%
0-40	441.3	85.7%	85.8%
0-60	496.4	96.4%	96.5%
60-90	18.0	3.5%	3.5%
0-90	514.5	99.9%	100%
90-180	0	0%	0%
0-180	514.5	99.9%	100%

Total Efficiency: 99.9%

Coefficients Of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance: 20%

| RCC %:	80				70				50			30			10			0
RW %:	70	50	30	0	70	50	30	0	50	30	20	50	30	20	50	30	20	0
RCR: 0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.00	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.14	1.11	1.09	1.06	1.11	1.09	1.07	.94	1.05	1.03	1.01	1.01	1.00	.98	.98	.97	.96	.94
2	1.08	1.04	1.00	.97	1.06	1.02	.98	.89	.99	.96	.93	.96	.93	.91	.93	.91	.90	.88
3	1.03	.97	.93	.89	1.01	.96	.92	.84	.93	.90	.87	.91	.88	.85	.89	.86	.84	.83
4	.99	.92	.87	.83	.97	.91	.86	.79	.89	.85	.81	.87	.83	.80	.85	.82	.80	.78
5	.95	.87	.82	.78	.93	.86	.81	.75	.84	.80	.77	.83	.79	.76	.81	.78	.76	.74
6	.91	.83	.78	.74	.90	.82	.77	.72	.81	.76	.73	.79	.75	.72	.78	.75	.72	.71
7	.87	.79	.74	.70	.86	.79	.74	.69	.77	.73	.70	.76	.72	.69	.75	.72	.69	.68
8	.84	.76	.71	.67	.83	.75	.70	.66	.74	.70	.67	.73	.69	.66	.72	.69	.66	.65
9	.81	.73	.68	.64	.80	.72	.68	.63	.72	.67	.64	.71	.67	.64	.70	.66	.64	.62
10	.79	.70	.65	.62	.78	.70	.65	.61	.69	.65	.62	.68	.64	.61	.68	.64	.61	.60

RCC %: Ceiling reflectance percentage, RW %: Wall reflectance percentage, RCR: Room cavity ratio

For lux multiply fc by 10.7

Specifications

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

Item	Specification	Clear Lens	Frosted Lens
Output	Beam Angle	10°	22°
	Lumens*	583	515
	Lumen Maintenance†	50,000+ hours L$_{50}$ @ 50° C (full output)	
	LED Channels	Red / Green / Blue	
Electrical	Input Voltage	24 VDC via PDS-150e, or PDS-60	
	Power Consumption	25 W maximum at full output, steady state	
Control	Interface	PDS-150e 24V (DMX or Ethernet) PDS-60 24V (DMX, Pre-programmed, or Ethernet)	
	Control System	Philips full range of controllers, including Light System Manager, iPlayer 3, and ColorDial Pro or third-party controllers	
Physical	Dimensions *(Height x Width x Depth)*	10.3 x 9 x 1.6 in (262 x 229 x 41 mm)	
	Weight	22 lb (10 kg)	
	Housing	Cast brass	
	Lens	Clear tempered glass	Tempered ground glass
	Fixture Connections	60 ft (18.3 m) unified power / data cable	
	Temperature Ranges	-40° – 122° F (-40° – 50° C) Operating -4° – 122° F (-20° – 50° C) Startup -40° – 176° F (-40° – 80° C) Storage	
	Humidity	0 – 100%	
	Cable Length	60 ft (18.3 m) standard 150 ft (45.7 m) maximum 400 ft (121.9 m) total per power / data supply	
	Maximum Fixtures Per Power / Data Supply	PDS-150e 24V: 6 (1 per port)	
		PDS-60 24V: 2 (1 per port)	
Certification and Safety	Certifications	UL / cUL, FCC Class A, CE, C-Tick, CQC, SAA	
	Environment	Dry / Damp / Wet, IP68	
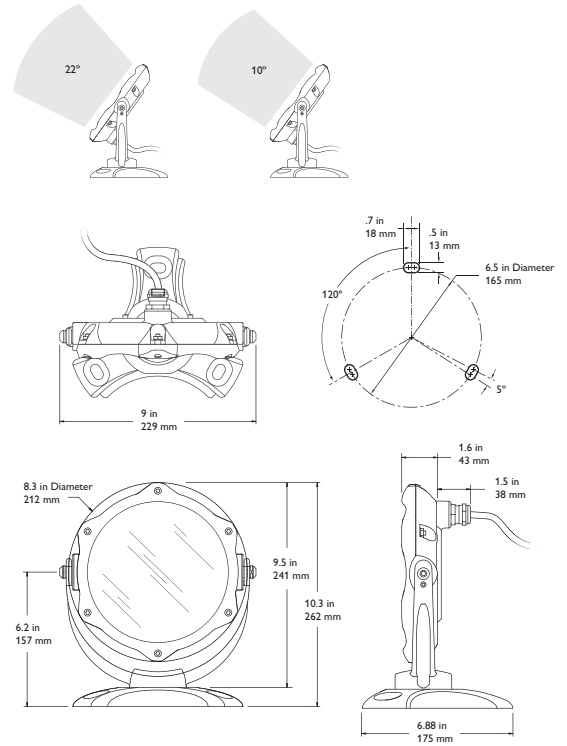
* Lumen measurement complies with IES LM-79-08.
† L$_{50}$ = 50% lumen maintenance (when light output drops below 50% of initial output). Ambient luminaire temperatures specified. Lumen maintenance calculations are based on lifetime prediction graphs supplied by LED source manufacturers. Calculations for white-light LED fixtures are based on measurements that comply with IES LM-80-08 testing procedures. Refer to www.philipscolorkinetics.com/support/appnotes/lm-80-08.pdf for more information.

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Fixtures and Accessories

C-Splash 2 fixtures are part of a complete low-voltage system which includes fixtures and:

- One or more power / data supplies

- One Leader Cable to connect each power / data supply output to a fixture

- Any Philips controller, including Light System Manager, iPlayer 3, and ColorDial Pro, or a third-party controller

Included in the box

C-Splash 2 fixture with standard 60 ft (18.3 m) Leader Cable

Installation Instructions

	Item	Type	Item Number	Philips 12NC
C-Splash 2 fixtures	C-Splash 2	10° clear lens	116-000024-01	910503700617
		22° frosted lens	116-000024-00	910503700616
Power / data supplies	PDS-150e 24V	DMX / Ethernet	109-000008-01	910503700092
	PDS-60 24V	Pre-programmed	109-000017-00	910503700096
		DMX / Ethernet	109-000017-03	910503700097

Use Item Number when ordering in North America.

C-Splash 2

Controller Keypad

iPlayer 3 Controller

ColorPlay 3 Software

PDS–60 24V Power / Data Supply

DMX Control 1 to fixtures

DMX Control 2 to fixtures
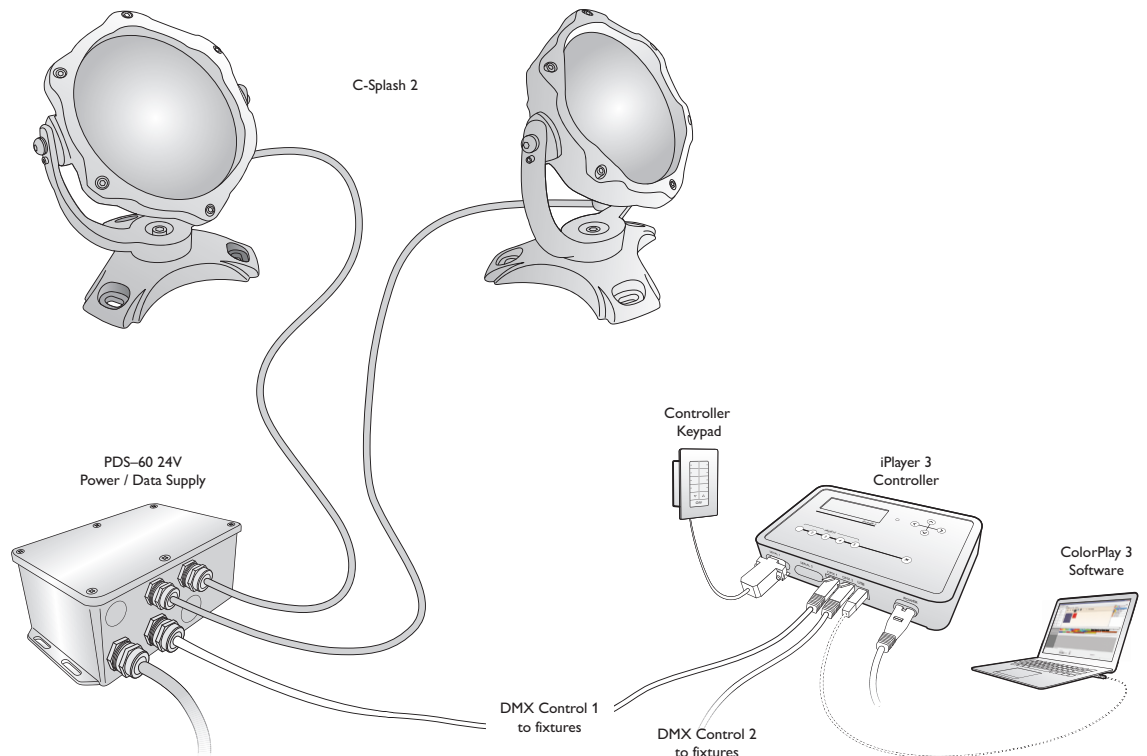
Typical C-Splash 2 installation

For detailed wiring diagrams visit www.philipscolorkinetics.com/support/wiring/ls_prod.html

Installation

C-Splash 2 submersible, color-changing LED fixtures are designed to be installed in fresh or salt water to a depth of 15 ft (4.6 m). When using in fountains, basins, or other man-made water-based environments, make sure that the mounting locations are dry before installing, addressing, and testing your fixtures. C-Splash 2 fixtures are not for use in human-occupied installations such as swimming pools and spas.

Owner / User Responsibilities

It is the responsibility of the contractor, installer, purchaser, owner, and user to install, maintain, and operate the C-Splash 2 fixture 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, you must seal all junction boxes and power / data supplies with electronics-grade RTV silicone sealant so that water or moisture cannot enter or accumulate in wiring compartments, cables, fixtures, or other electrical parts. You must use suitable submersible junction boxes when installing under water. Additionally, you must use gaskets, clamps, and other parts required for installation to comply with all applicable local and national codes.

Create a Lighting Design Plan

1. Determine the appropriate location of each power / data supply in relation to the fixtures, and of the fixtures in relation to each other. Refer to the power / data supply's Installation Instructions or Product Guide for guidelines on configuring and positioning the power / data supply in relation to the controller.

   With the native 60 ft (18.3 m) Leader Cable supplied with each fixture, you can connect up to six C-Splash 2 fixtures to each PDS-150e, or up to two fixtures to each PDS-60. Using 18 AWG, 4-conductor stranded copper wire, you can extend the cable for each individual fixture to a maximum length of 150 ft (45.7 m), as long as the total cable length for each power / data supply does not exceed 400 ft (121.9 m).

   C-Splash 2 fixtures can be submerged or partially submerged, and can be installed in both fresh water and salt water. The maximum submersion depth is 15 ft (4.6 m).

2. On an architectural diagram or other diagram that shows the physical layout of the installation, identify the locations of all switches, controllers, power supplies, fixtures, and cables.

3. Each C-Splash 2 fixture comes pre-programmed with a unique serial number. As you unpack the fixtures, record the serial numbers in a layout grid (typically a spreadsheet or list) for easy reference and light addressing.

4. Assign each fixture to a position in the lighting design plan.

5. To streamline installation and aid in light show programming, you can affix a weatherproof label identifying the order or placement in the installation to an inconspicuous location on each light fixture's housing.

Start the Installation

1. Install all power / data supplies, including any interfaces with controllers.

2. Ensure that the number of free power / data supply power ports is adequate.
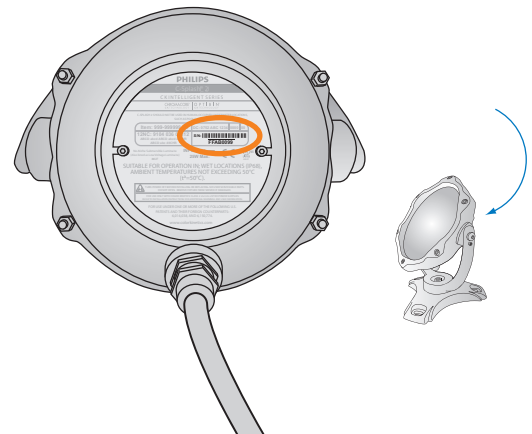
❋ *Refer to the C-Splash 2 Installation Instructions for specific warning and caution statements.*

❋ *For complete instructions on how to wire the power / data supply, refer to the specific power / data supply's Installation Instructions. For sample wiring diagrams, visit www.philipscolorkinetics.com/support/wiring/ls_prod.html.*

❋ *C-Splash 2 is not for use in human-occupied installations such as pools and spas. Philips Color Kinetics provides LED-based pool and spa illumination products through its partners Balboa Instruments and Hayward Pool Products.*

Record fixture serial numbers

.7 in
18 mm

.5 in
13 mm

6.5 in Diame
165 mm

120°

5°

Do not remove or loosen the fixture's sealing bolts, as doing so will destroy the watertight seal.

Leader Cable dimensions

.4 in
(10 mm)

18 AWG
.1 in (2.5 mm)

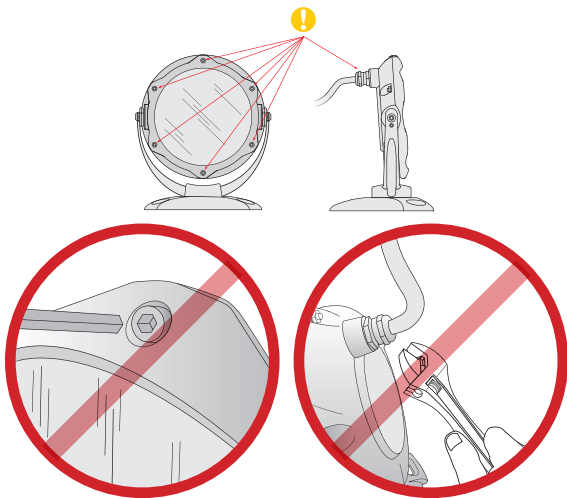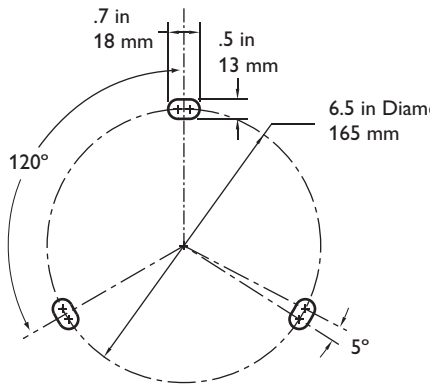**Leader Cable dimensions**

.4 in
(10 mm)

18 AWG
.1 in (2.5 mm)

3. Verify that all additional supporting equipment (switches, controllers) is in place, and that all additional parts and tools are available.
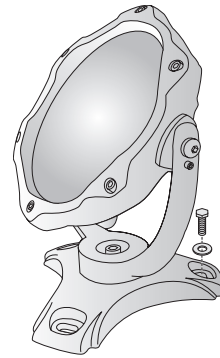
Install the Fixtures

C-Splash 2 fixtures can be installed in fresh or salt water to a maximum depth of 15 ft (4.6 m). If your lighting design plan calls for submerging or partially submerging fixtures (in a fountain or pool, for example), make sure that the mounting location is dry when installing, addressing, and testing your fixtures.

Make sure the power is OFF before mounting and connecting C-Splash 2 fixtures.

1. When pre-drilled pilot holes are required, you can use the provided C-Splash 2 template or the fixture's base to mark the three screw holes for each fixture.

2. Mount the fixtures to the mounting surface with three 3/8 in-16 silicon bronze cap screws and washers.

3. Pull the cables from the fixtures to the power / data supply.

4. Pull each fixture cable through a knockout in the side of the power / data supply.

5. Connect 24 VDC, common, ground, and data to a provided connector, then snap the connector into the connector terminal inside the power / data supply housing.
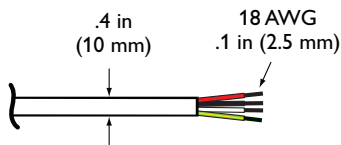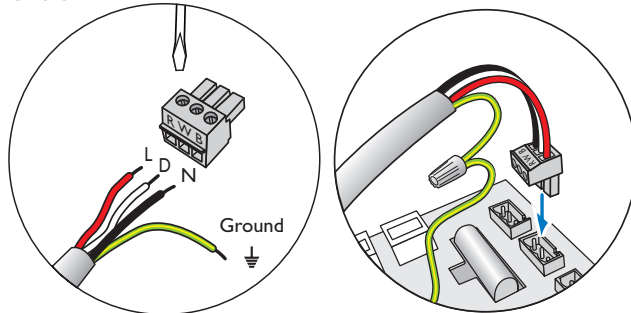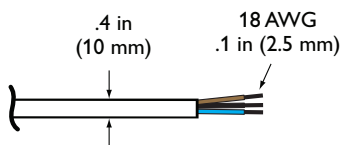
UL / CE

Ground

CQC
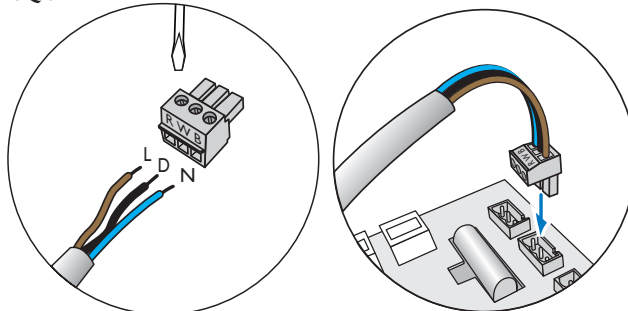
6. Using wire nuts, connect the green ground wire from each fixture Leader Cable to the earth ground on the power / data supply,
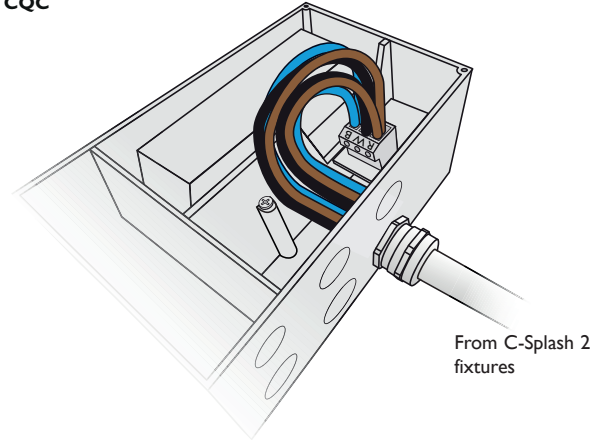
PDS-60

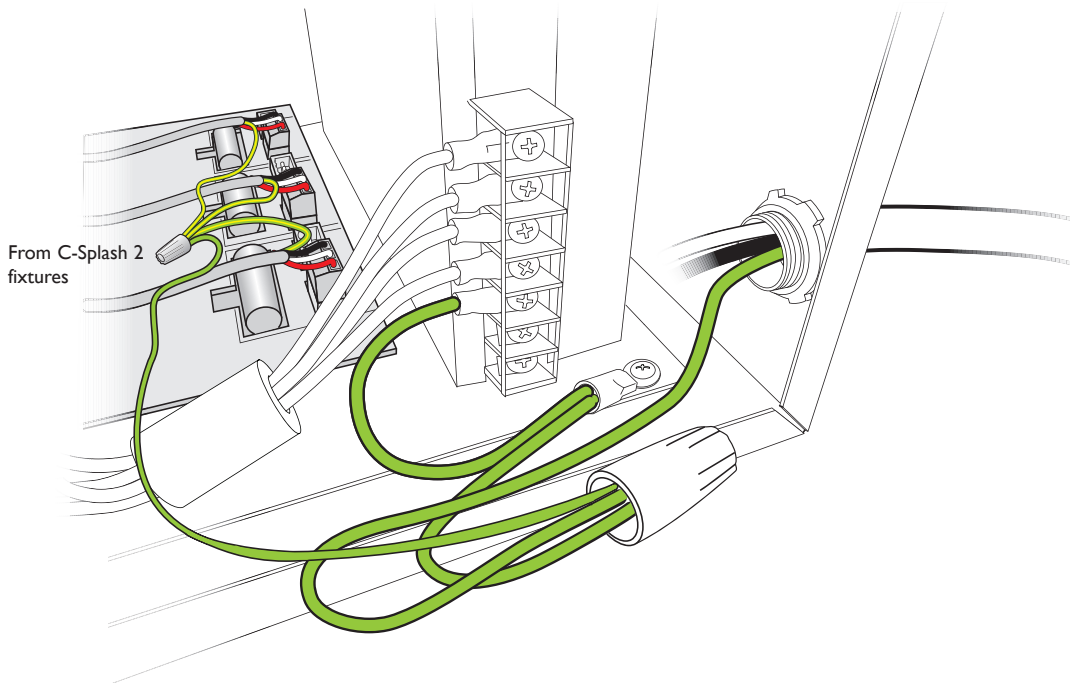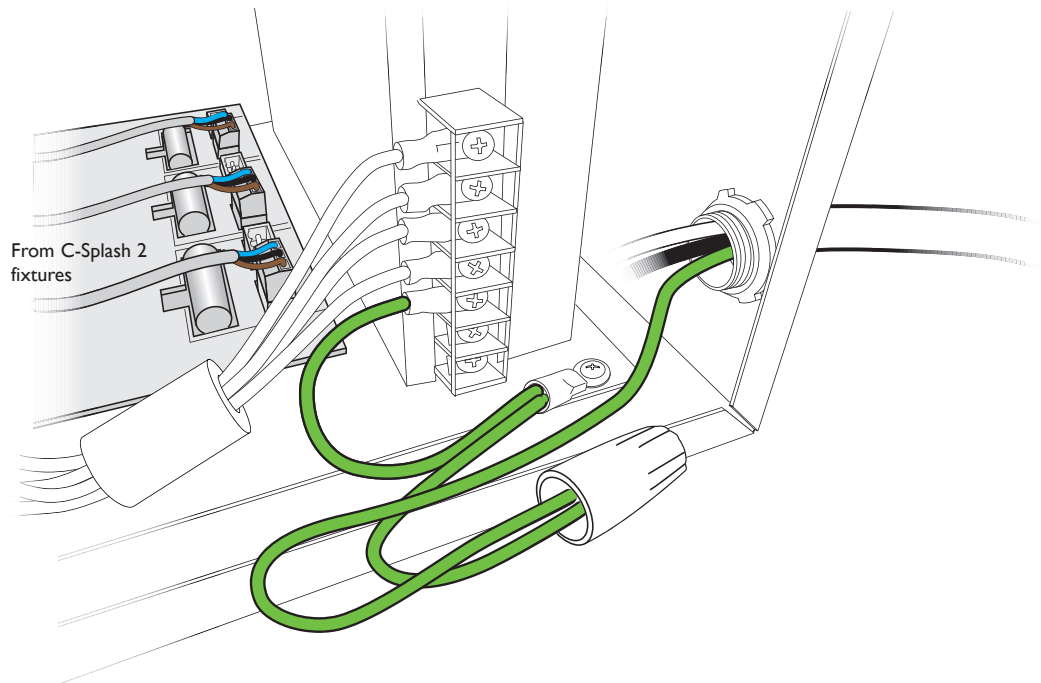❋ *Make sure to protect all wire terminations from exposure to water.*

UL / CE

From C-Splash 2 fixtures

CQC

From C-Splash 2 fixtures

PDS-150e

UL / CE

From C-Splash 2 fixtures

CQC

From C-Splash 2
fixtures
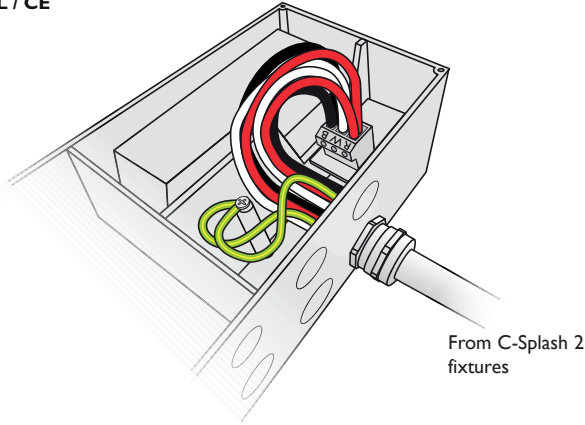
7. Repeat for each power / data supply in your installation.

Address and Configure the Fixtures

Make sure the power is ON before addressing and configuring fixtures.

Each C-Splash 2 fixture uses three sequential DMX channels or addresses, one for red, one for green, and one for blue. C-Splash 2 fixtures come factory-addressed to DMX channels 1 (red), 2 (green), and 3 (blue).

For lighting designs where fixtures work in unison, all fixtures can be assigned the same DMX addresses. Changes to the default addresses are not necessary, but if lights were previously readdressed for use in other installations, you must reset them. For light show designs that show different colors on different fixtures, you must assign unique DMX addresses to your fixtures and sort them in a useful order.

• In Ethernet installations, you can address and configure your fixtures using QuickPlay Pro with a computer connected to your lighting installation's network. QuickPlay Pro can automatically discover all of your fixtures, controllers, and Data Enabler Pro devices for quick configuration.

• In DMX installations, you can address and configure your fixtures using QuickPlay Pro with iPlayer 3 or SmartJack Pro. You can manually enter fixture serial numbers, or you can import a spreadsheet listing each fixture's serial number and starting DMX address.

For complete details on addressing and configuring fixtures, controllers, and power / data supplies with QuickPlay Pro, refer to the *Addressing and Configuration Guide*, which you can view or download at www.philipscolorkinetics.com/support/addressing.
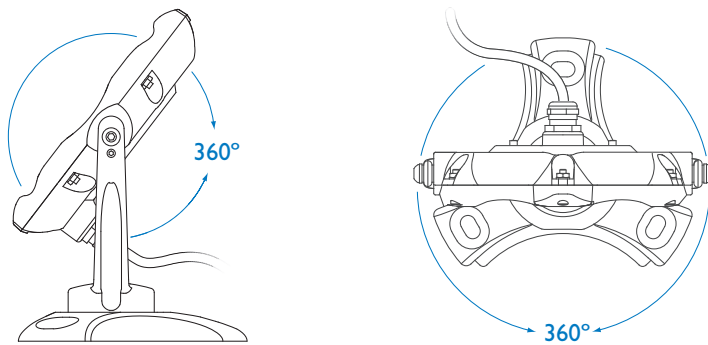
Aim the Fixtures

Make sure the power is ON before aiming the fixtures.

C-Splash 2 has a rotating base and pivot, allowing for 360° rotation both vertically and horizontally.

❋ Do not over-tighten the pivot or base bolts, and do not allow the fixture cable to become pinched in the housing.

1. To pivot the fixture, loosen the pivot bolts with a **3/16 in (4.5 mm)** hex key wrench, point the fixture as desired, and tighten the pivot bolts to hold the fixture in position. For additional stability, tighten the locking bolts with a **1/8 in (3 mm)** hex key wrench.

5/16 in (8 mm)

1/8 in (3 mm)

3/16 in (4.5 mm)
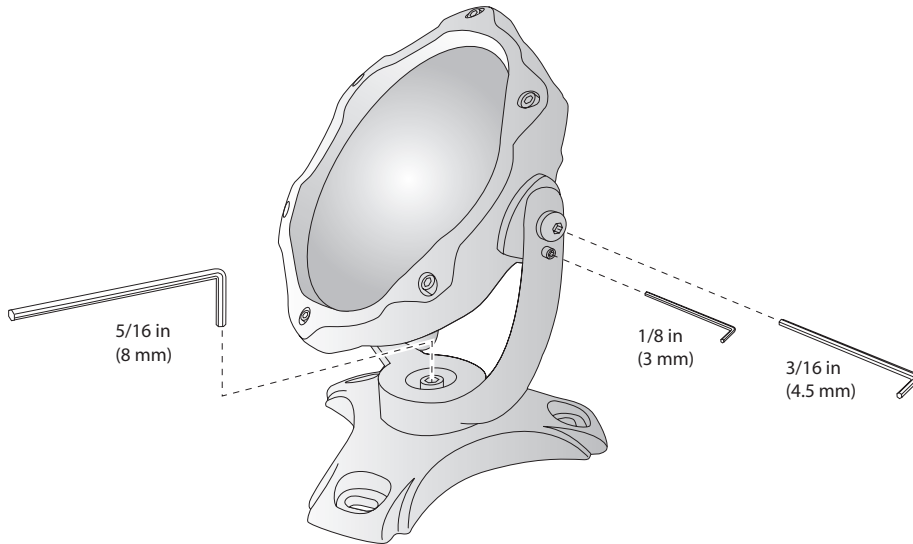
2. To rotate the fixture, loosen the base bolt using a **5/16 in (8 mm)** hex key wrench, rotate the fixture yoke to the desired position, and tighten the base bolt to lock the fixture in position.

360°

360°

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