

iColorTile MX

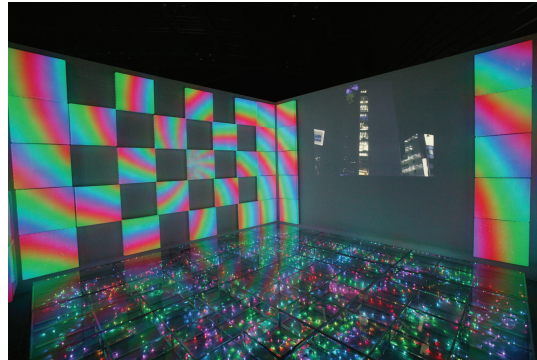
Precision-controlled direct-view interior LED panel with dynamic color light

iColorTile MX

Precision-controlled direct-view interior LED panel with dynamic color light

iColor Tile MX is a full-color LED light panel for creating stunning light art and accents in a variety of surface-mounted and recessed applications. Each 23.5 x 23.5 in (597 x 597 mm) panel has 144 individually addressable nodes to enable an infinite variety of effects at an unprecedented level of fine-grained control and intricacy.

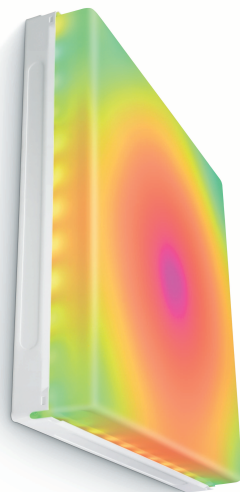
- An innovative canvas — With 144 individually addressable, high-intensity, full-color LED nodes, iColor Tile MX can serve as a canvas for creative lighting designs, effects, animation, and large-scale video displays.
- Seamless effects — iColor Tile MX is a base unit for indoor applications, ideal for wall and ceiling installations. Install behind a custom panel, or use the available impact-resistant, translucent white diffuser lens for seamless, uniform optical effects.
- Highly consistent color — Optibin, our proprietary binning optimization process, ensures optimal color consistency from fixture to fixture.
- Versatile mounting options — Designed for recess and surface mounting on walls or ceilings. Capable of retrofitting ceiling tiles. Standard leader cables of 25 ft (7.6 m), 50 ft (15.2 m), and 100 ft (30.5 m) let you position power / data supplies at an appropriate distance from fixtures.
- Industry-leading controls — Works with Philips full range of controllers, including Video System Manager, Light System Manager, iPlayer 3, or third-party controllers.



Photography: Nicasa & Partners

A total of 113 iColor Tile fixtures created a checkerboard-like canvas at the World Lighting Fair in Tokyo, Japan. Morphing colors, patterns, and animations were displayed across the fixtures' 16,272 individually controllable, full-color LED nodes.

- Quick setup for complex and large-scale installations — Each iColor Tile MX fixture offers a pre-configured, 12 x 12 grid of 144 LED nodes, with a fixed pixel pitch of 2 in (51 mm) on center. Fixtures can be installed flush to extend consistent pixel pitch across multiple tiles. Fixtures can be easily leveled and installed using the included wall-mounting cleat or mounting through-holes in the fixture housing.



Superior Light Output

Each iColor Tile MX fixture produces full-color light output of 559 nits.

The X Factor in Direct-View LED Lighting

The US may have *American Idol*, but *The X Factor* — created by *Idol* judge Simon Cowell — rules the airwaves in the UK. With an estimated 10 million regular viewers, the talent search program is one of the UK's top-watched entertainment shows. Its vibrant set combines several applications of LED technology to stellar effect.

Designers Dave Davey and Christopher George conceptualized an LED floor that would generate dynamic effects to uniquely complement the action on stage. More than 170 iColor Tile fixtures were installed beneath the slightly frosted stage floor, making each fixture's 144 full-color nodes visible for crisp definition. The approximately 25,000 individually controllable iColor Tile nodes are collectively capable of displaying sophisticated designs, patterns, and video across the entire floor.

The iColor Tile fixtures are controlled by Video System Manager (VSM), a sophisticated Ethernet-based lighting controller and video server from Philips Color Kinetics. Video content was generated using a third-party video creation and

editing software system, then downloaded to the Video System Engine, the hardware component of VSM responsible for streaming video to the iColor Tile fixtures.

“The extraordinary visual impact of Color Kinetics systems coupled with their ease of control and rugged, durable nature makes them an ideal solution for *The X Factor* set,” said lighting director Dave Davey. “LED technology allows a completely new level of creative flexibility in lighting design, and the saturated colors translate very effectively on camera.”

Because the entire system is under digital

control, the set designers and lighting director can dynamically change or fine-tune the appearance of *The X Factor* set on the fly. And because their LEDs radiate no heat, iColor Tile fixtures can be positioned virtually anywhere on the set . . . even underfoot!



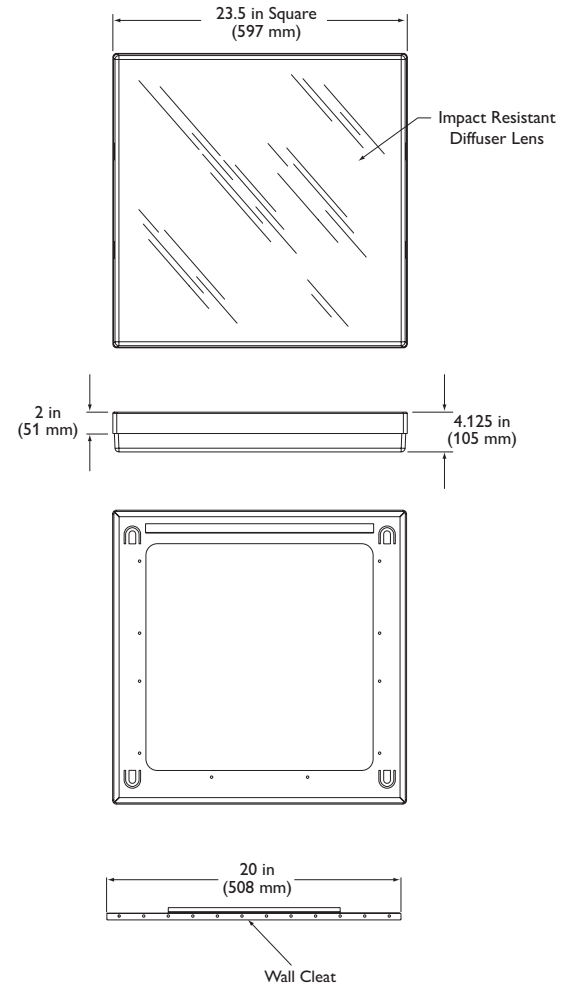
Lighting Design: Dave Davey and Christopher George
Photography: Louise Stickland

Specifications

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

| Item | Specification | Details |
|--------------------------|--|---|
| Output | Lumen Maintenance* | 50,000+ hours L50 @ 50° C (full output) |
| | LED Channels | Red / Green / Blue |
| Electrical | Input Voltage | 7.5 VDC via PDS-60ca and sPDS-60ca |
| | Power Consumption | 62 W maximum at full output, steady state |
| | Power Factor | .98 @ 120 VAC |
| Control | Interface | sPDS-480ca 7.5V (Ethernet) PDS-60ca 7.5V (Pre-programmed or DMX / Ethernet) |
| | Control System | Philips full range of controllers, including Video System Manager Pro, Light System Manager, and iPlayer 3, or third-party controllers |
| Physical | Dimensions (Height x Width x Depth) | 23.5 x 23.5 x 2 in (597 x 597 x 51 mm), without lens |
| | Weight | 23 lb (10.4 kg) Tile 5 lb (2.3 kg) Lens |
| | Housing | Sheet metal, white powder-coated finish |
| | Lens | Impact-resistant copolyester with carbon steel mounting hardware |
| | Fixture Connections | Integrated 3-pin connector |
| | Temperature Ranges | -4° – 122° F (-20° – 50° C) Operating ≥ 32° F (≥ 0° C) Handling -4° – 122° F (-20° – 50° C) Startup -22° – 185° F (-30° – 85° C) Storage |
| | Humidity | 0 – 95%, non-condensing |
| Certification and Safety | Certification | UL / cUL, FCC Class A, CE |
| | Environment | Dry Location, IP20 |

* L50 = 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.

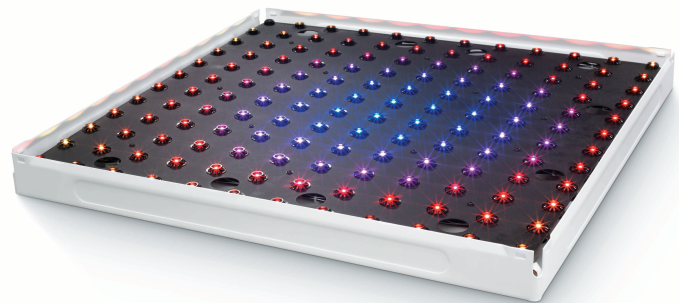


CHROMACORE CKTECHNOLOGY | CHROMASIC™ CKTECHNOLOGY | OPTIBIN® CKTECHNOLOGY

Photometrics

Luminance (nits)

| Lensing | On-Axis Candela | Viewing Angle |
|--------------|-------------------------|---------------|
| No lens | 559 cd / m ² | 110° |
| Frosted lens | 227 cd / m ² | 120° |



Fixtures and Power / Data Supplies

iColor Tile MX fixtures are part of a complete system which includes:

- One or more power / data supplies
- Two Leader Cables to attach each iColor Tile MX fixture to a power / data supply
- Optional white translucent lenses for diffusing fixtures' light output
- Any Philips controller, including Video System Manager Pro, Light System Manager, and iPlayer 3, or any third-party controller

Included in the box

| |
|--------------------------|
| iColor Tile MX fixture |
| Mounting alignment cleat |
| (6) Corner clips |

iColor Tile MX fixtures
and accessories

| Item | Type | Item Number | Philips 12NC |
|---------------------|-----------------------|---------------|--------------|
| iColor Tile MX | White | 101-000071-00 | 910503701017 |
| iColor Tile MX Lens | White Translucent | 101-000044-00 | 910503700564 |
| | Black 25 ft (7.6 m) | 108-000045-00 | 910503700696 |
| Leader Cables | Black 50 ft (15.2 m) | 108-000045-01 | 910503700697 |
| | Black 100 ft (30.5 m) | 108-000045-02 | 910503700698 |

Power / data supplies

| | | | |
|-----------------|----------------|---------------|--------------|
| PDS-60ca 7.5V | Pre-programmed | 109-000015-00 | 910503700093 |
| | DMX / Ethernet | 109-000015-03 | 910503700094 |
| sPDS-480ca 7.5V | Ethernet | 109-000022-00 | 910503700107 |

Use Item Number when ordering in North America.

Installation

iColor Tile MX is a direct-view light panel for creating stunning light art, accent lighting, and video displays in a variety of surface-mounted and recessed applications. iColor Tile MX is a 23.5 x 23.5 in (597 x 597 mm) panel with 144 individually addressable nodes for intricate, fine-grained control. Each panel can be installed with a white translucent lens, or behind a scrim or other translucent surface.


Because of their potential complexity, iColor Tile MX installations require upfront planning for configuring, positioning, and mounting fixtures. Planning includes understanding how to position fixtures in relation to power / data supplies and the number of fixtures each power / data supply can support. Planning for video displays involves additional considerations, such as pixel pitch, minimum and maximum viewing distances, sampling, and display resolution.

All installations involve three main steps:

1. Create a lighting design plan and layout grid
2. Mount fixtures
3. Address, configure, and test fixtures

Owner / User Responsibilities

It is the responsibility of the contractor, installer, purchaser, owner, and user to install, maintain, and operate iColor Tile MX fixtures 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 iColor Tile MX Installation Instructions for specific warning and caution statements.

DMX or Ethernet Control?

iColor Tile MX installations can be controlled via either DMX or Ethernet. DMX is appropriate for simple installations, or for installations where all nodes or fixtures operate in unison — for example, for accenting or simple color-changing light shows.

Each node in an iColor Tile MX fixture is controlled by three sequential DMX addresses — one for red, one for green, and one for blue. A DMX universe consists of 512 addresses, so the maximum number of individually controllable tri-color nodes available in a DMX universe is 170 ($170 \times 3 = 510$).

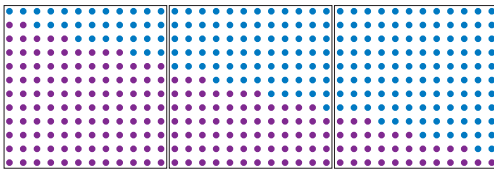
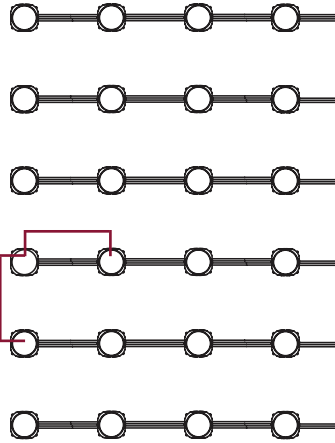
Because it is not subject to the DMX addressing limitations, Ethernet is the preferred environment for complex, color-changing light shows and video displays, both of which require large numbers of individually controllable nodes. In an Ethernet environment, each power / data supply effectively acts as its own universe.

DMX installations require the use of a PDS-60ca 7.5V power / data supply, while the sPDS-480ca 7.5V power / data supply is Ethernet only.

Considerations for Video Displays

In addition to the planning required for all iColor Tile MX installations, planning for video displays involves special considerations such as pixel pitch, minimum and maximum viewing distances, sampling, and display resolution.

iColor Tile MX fixtures have a fixed pixel pitch of 2 in (51 mm) on center in both directions



Install iColor Tile MX fixtures as close together as possible to maintain a pixel pitch of 2 in (51 mm) across fixtures

Pixel Pitch and Viewing Distances for Video Displays

When using iColor Tile MX fixtures to display video, each node acts as a pixel in the display. Images on an LED video display appear to be sharper to the human eye as the distance to the display increases. Likewise, images appear less visible as the distance decreases. The spacing between pixels, known as the *pixel pitch*, determines the minimum and maximum viewing distances for discernible video output. Pixel pitch is measured center-to-center. Nodes in iColor Tile MX fixtures have a fixed pixel pitch of 2 in (51 mm).

You can achieve a consistent pixel pitch across multiple iColor Tile MX fixtures by installing fixtures side by side at the minimum allowable distance. Nodes are positioned along each edge of the fixture in such a way as to maintain 2 in (51 mm) on center node spacing across fixtures when fixtures are installed as close together as possible.

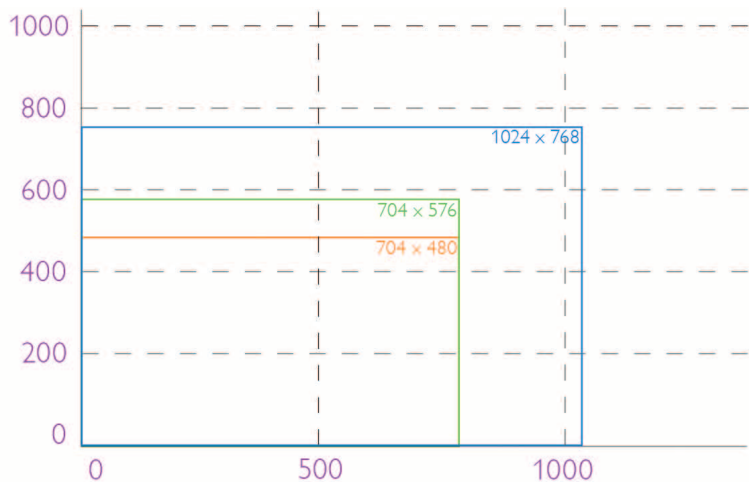
The following calculations provide general guidelines for determining minimum and maximum viewing distances for a grid of iColor Tile MX fixtures, mounted as close together as possible:


- To determine minimum viewing distance, multiply pixel pitch by 100 distance units. At a pixel pitch of 2 in (51 mm), the minimum viewing distance is 16.7 ft (5.1 m).
- To determine the maximum viewing distance for discernible video, multiply the screen height by 20 distance units. For example, if the screen is 20 fixtures or 40 ft (12.2 m) high, then the maximum viewing distance for recognizable video is 800 ft (243.8 m).
- LED screens are visible beyond the maximum viewing distance for discernible video. To determine the maximum viewing distance that still creates visual impact, multiply the screen height by 50 units. For example, a screen 40 ft (12.2 m) high will continue to create visual impact at 2000 ft (609.6 m).

Working with Video Display Resolutions

The resolution of an LED video display equals the total number of vertical and horizontal pixels — the greater the pixel count, the greater the resolution.

- The resolution of VSE Pro digital video is 1024 x 768
- The resolution of PAL video is 704 x 576
- The resolution of NTSC video is 704 x 480



 VSE Pro, or Video System Engine Pro, is the hardware component of Video System Manager Pro, an integrated video controller from Philips Color Kinetics. Visit www.philipscolorkinetics.com/l/controllers/vsmpro/ for complete information

Reproducing a video signal with 1:1 pixel mapping on an LED display requires a substantial pixel count. For example, true NTSC video output requires 337,920 pixels, PAL output requires 405,504 pixels, and digital video output requires 786,432 pixels.

However, you can use a controller such as Philips Video System Manager Pro to reduce the required pixel count for any video format by sampling pixels from the source video to match your installation.

For example, if you sample every tenth line of pixels horizontally and vertically, you can retain the correct aspect ratio while exponentially reducing the pixel count. From a distance, even with the video output reduced by a factor of 10, the human eye can still discern video images because the the aspect ratio has been preserved and the resolution is sufficiently dense. A VSE digital video display sampling every tenth pixel would have a pixel count of 7,752 yet still display discernible digital video output.

✳ For designs where the acceptable level of discernible video may be more or less demanding, or for help with your specific installation, contact Philips Color Kinetics Application Engineering Services for assistance.

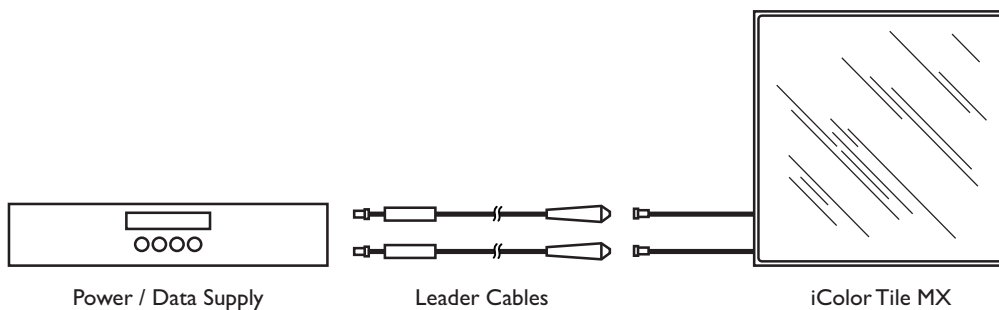
Create a Lighting Design Plan and Layout Grid

Even for relatively simple installations, it's good practice to create a lighting design plan. For complex installations displaying light shows with dynamic effects, and especially for Ethernet-based video displays, such a plan is essential. A lighting design plan is typically an architectural diagram or other diagram that shows the physical layout of the installation, including the appropriate positioning and spacing of all fixtures, power / data supplies, power sources, controllers, cables, and other required hardware. For Ethernet installations, the plan should record the IP address of each power / data supply and the number of fixtures connected to each power / data supply.

Keep the following considerations in mind when creating a lighting design plan and layout grid:

- Determine the appropriate location of each power / data supply in relation to the fixtures, and of the fixtures in relation to each other. You connect each iColor Tile MX fixture to two available power / data supply ports using two Leader Cables of 25 ft (7.6 m), 50 ft (15.2 m), or 100 ft (30.5 m).

✳ Refer to the Installation Instructions or Specification Sheet of your power / data supply for guidelines on configuring and positioning the power / data supply in relation to a controller or Ethernet switch.



- On an architectural diagram or other diagram that shows the physical layout of the installation, identify the locations of all switches, controllers, power supplies, and fixtures.
- Nodes in each fixture are sequentially and automatically addressed by the power / data supply or controller. It is therefore important to ensure that each fixture in a multi-fixture installation is installed in the same orientation. Consistent orientation is especially critical when using dynamic effects or video.
- In Ethernet environments, each power / data supply is identified with a unique IP address. We recommend recording the IP address of each power / data supply

on a layout grid. For complex installations with many power / data supplies, we recommend assigning meaningful IP addresses to each power / data supply so that their locations are easy to identify.

Start the Installation

1. Install all power / data supplies, including any interfaces with controllers. Power / data supplies send power and control signals to fixtures over the Leader Cables.
2. Verify that all additional supporting equipment (switches, controllers) is in place.
3. Ensure that all additional parts (for example, optional iColor Tile MX lenses) and tools are available.

Mount the Fixtures

You mount iColor Tile MX fixtures to a vertical surface using the the included mounting alignment cleat and the fixture's 10 pre-drilled mounting holes, with fasteners appropriate for the mounting surface.

You install iColor Tile MX fixtures in ceilings using the fixture's four mounting tabs and 12-gauge hanger wire to attach the fixture to secure anchor points overhead.

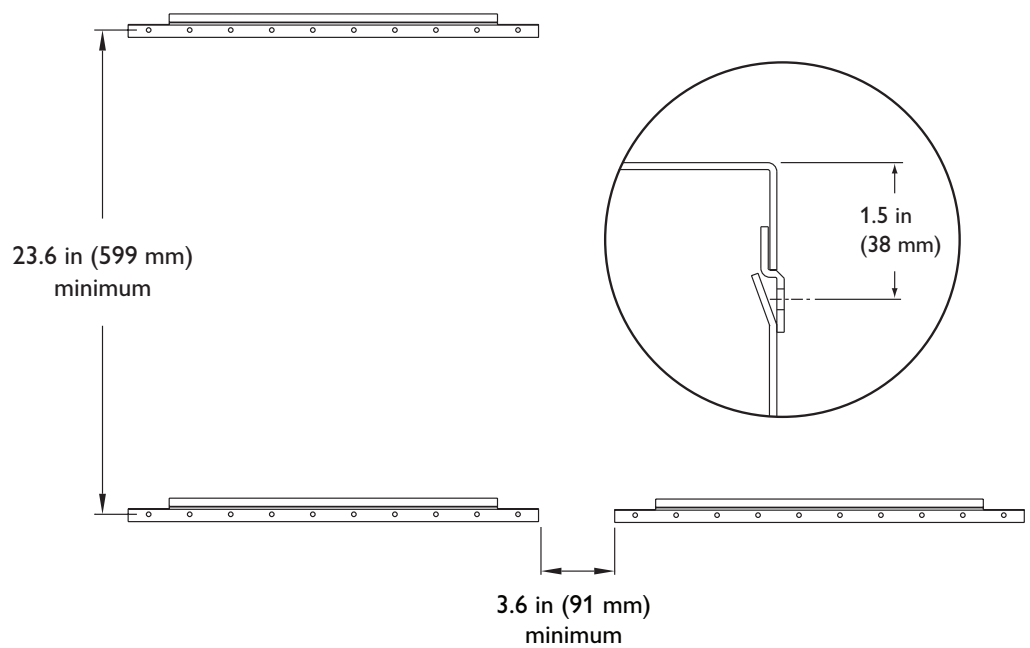
Make sure the power is OFF before mounting and connecting iColor Tile MX fixtures.

Determine Fixture Spacing

When installing multiple fixtures to create a video wall or other continuous panel for displaying effects, you must butt-mount the fixtures to ensure consistent pixel spacing.


- To achieve minimum horizontal fixture spacing, allow 3.6 in (91 mm) between mounting alignment cleats, measured on center.
- To achieve minimum vertical fixture spacing, allow 23.6 in (599 mm) between mounting alignment cleats.

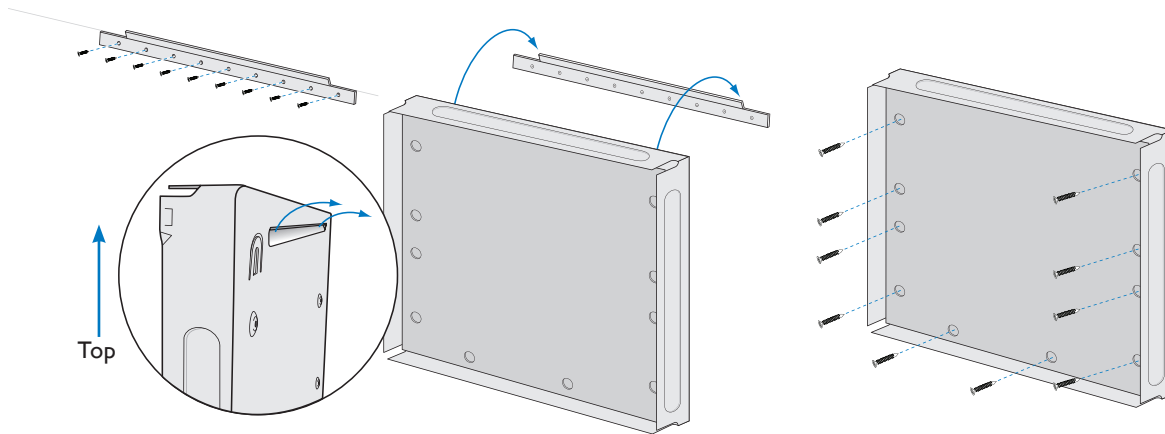
When installed, the top edge of the fixture housing extends 1.5 in (38 mm) above the center-line of the mounting alignment cleat's screw holes.



Wall-Mounting iColor Tile MX Fixtures

1. Using a pencil or chalk line and level, mark the horizontal locations for each mounting alignment cleat.
2. Align the top edge of each cleat to the appropriate mark, and attach it to the wall using nine fasteners appropriate for the mounting surface.
3. Orient fixtures top-up to ensure proper display of visual effects. (The mounting cleat lip is located toward the fixture's top edge.)
4. Slide the mounting cleat lip of each fixture onto a mounting alignment cleat.
5. Attach each fixture to the mounting surface using 10 suitable #10 screws.

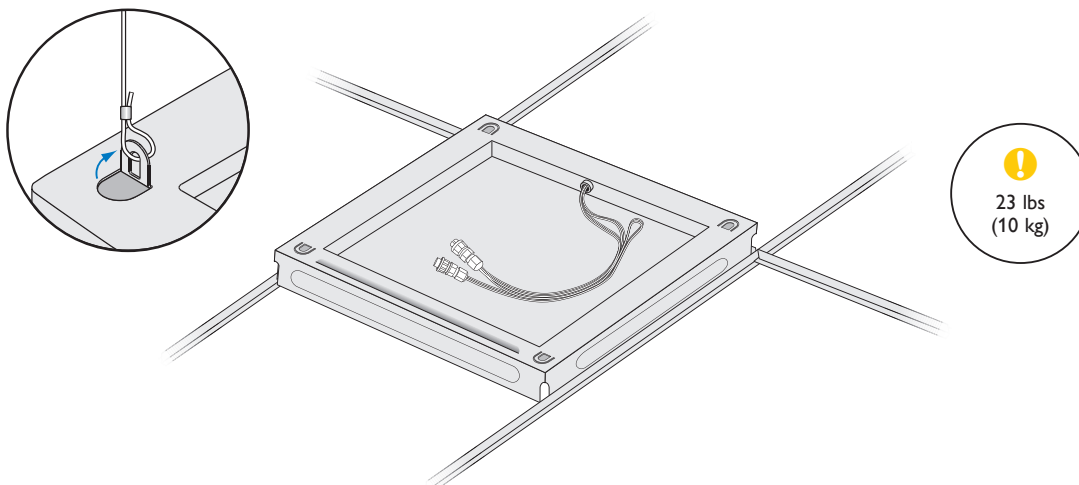
 The alignment cleat is intended to align the fixture during installation, but it is not intended to support the fixture in a permanent installation.



Ceiling-Mounting iColor Tile MX Fixtures

iColor Tile MX fixtures are designed to fit into 2 x 2 ft (609 x 609 mm) suspended ceiling frames. Since ceiling frames are not adequate to safely suspend iColor Tile MX fixtures, you must use 12-gauge hanger wire and wire hanger screws for secure overhead installation.

1. Orient all fixtures in the same direction to ensure proper display of visual effects. (The mounting cleat lip is located toward the fixture's top edge.)
2. Bend the four ceiling mount tabs perpendicular to each fixture's back plate.
3. Thread 12-gauge hanger wire through each tab, and attach wires to secure anchor points using hanger wire screws appropriate for the mounting surface.
4. Adjust wire lengths to align fixtures with the suspended ceiling height.



Maximum strands per power / data supply

| | |
|-----------------|---|
| PDS-60ca 7.5V | 1 |
| sPDS-480ca 7.5V | 8 |

Make Power and Data Connections

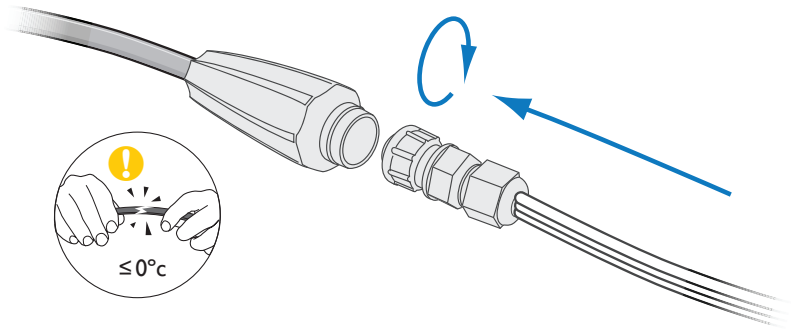
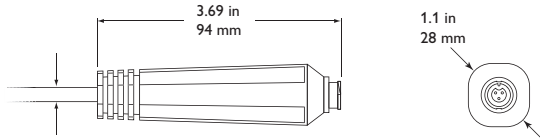
iColor Tile MX fixtures are designed to work with 7.5 VDC power / data supplies from Philips Color Kinetics. Power / data supplies send power and data to iColor Tile MX fixtures over two Leader Cables. Each sPDS-480ca 7.5V can power up to 8 fixtures in Ethernet installations, while each PDS-60ca 7.5V can power one fixture in either Ethernet or DMX installations.

Make sure the power is OFF before connecting iColor Tile MX fixtures.

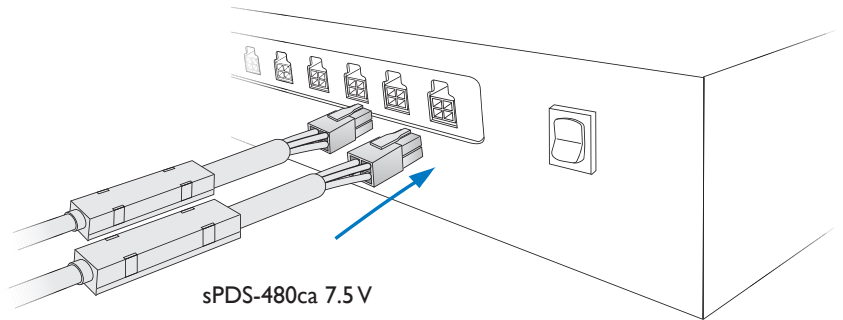
Connecting to the sPDS-480ca 7.5V Power / Data Supply

1. Connect two Leader Cables to the three-pin connectors on both fixture cables by turning the fixture cables' grommets clockwise. Use caution when handling the Leader Cables or fixture cables in sub-freezing temperatures, as the wiring can become brittle and break.

Leader Cable connector dimensions



2. Connect each Leader Cable to available power ports on the back of the power / data supply housing.

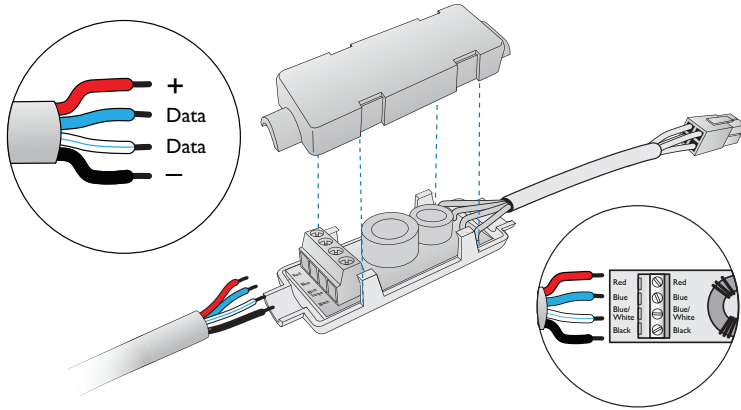


3. Repeat for each fixture in the installation.

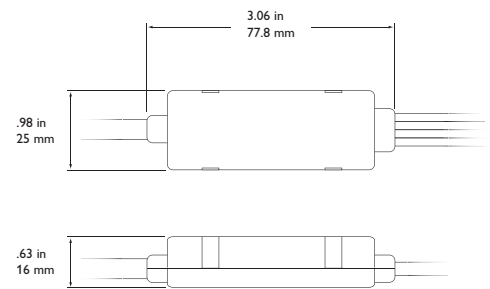
Connecting to the PDS-60ca 7.5V Power / Data Supply

1. Remove the power / data supply cover.
2. Remove the cover of the transmitter PCA junction box on the Leader Cable by expanding the four tabs on the side and sliding the cover from the base.
3. Connect line, common, ground, and data to the provided terminal block, then replace the cover of the transmitter PCA junction box.

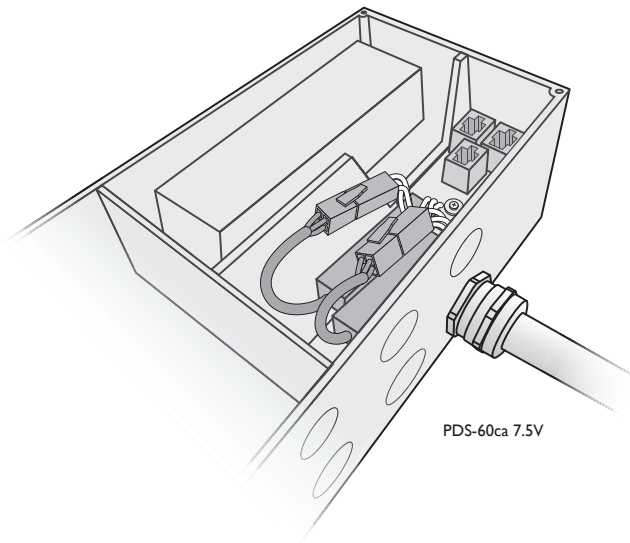
✳ If using conduit, remove the transmitter PCA junction box cover from the Leader Cable, as described here, before pulling the cable through the conduit, then replace the junction box cover.



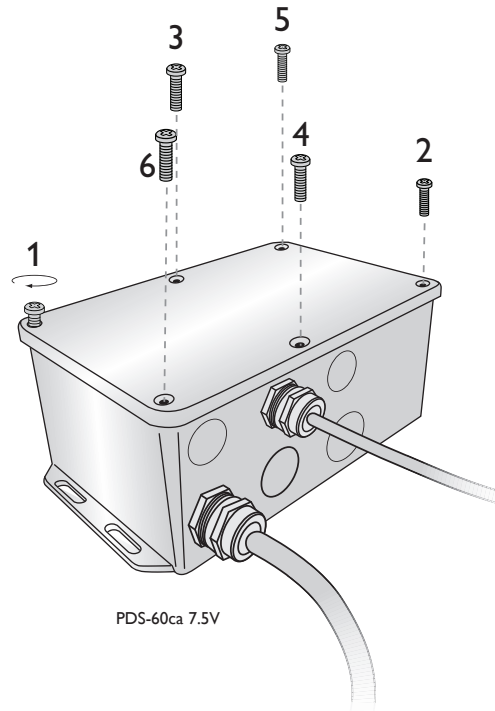
Transmitter PCA junction box dimensions



4. Connect the Leader Cable connectors to available ports inside the power / data supply housing.



5. Secure the power / data supply cover.

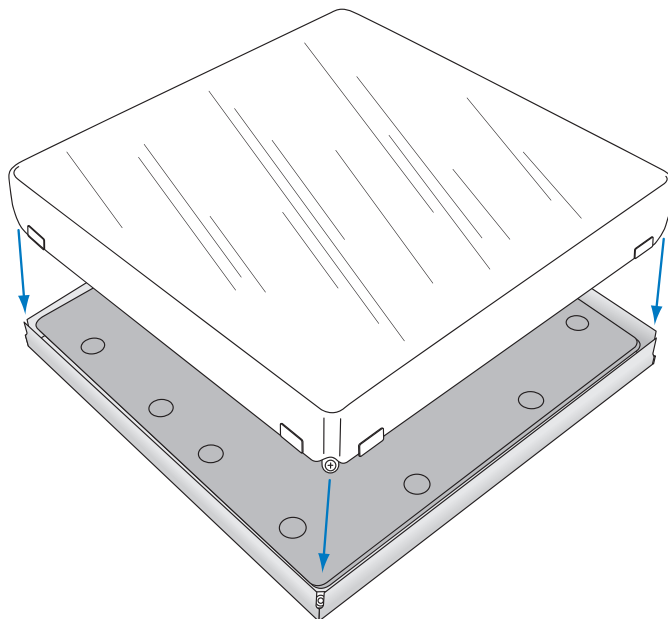
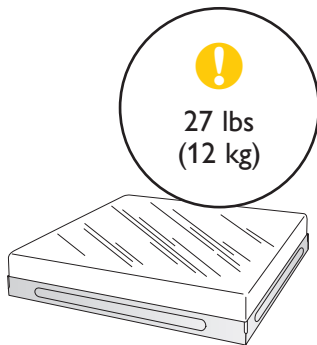


6. Repeat steps 1 – 5 for each power / data supply in the installation.

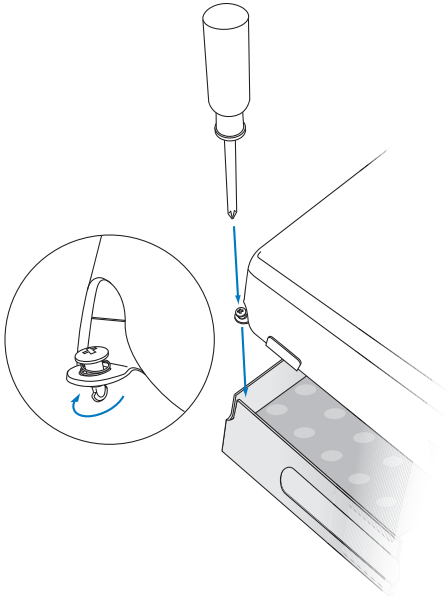
Install iColor Tile MX Lenses (Optional)

iColor Tile MX lenses, available separately, are translucent white lenses that can be used to blend the light output from a fixture's 144 nodes.

1. Position a lens over a fixture, aligning the quarter-turn fasteners with the four attachment holes located at the corners of the fixture housing.

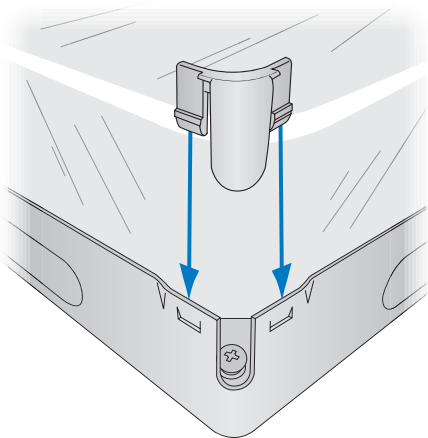


2. Firmly seat the lens in the fixture housing.
3. With a Phillips screwdriver, push and turn the spring-loaded fasteners 90° clockwise. When properly attached, the fasteners stop firmly after a quarter turn



4. To give an iColor Tile MX fixture a finished appearance, install corner clips to cover the lens attaching hardware. Press corner clips firmly into the corner openings until they snap into place.

***** Once the corner clips are in place, they can be difficult to remove, so make sure the installation is complete before installing them.



Address and Configure the Fixtures

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

Power / data supplies and controllers work together to stream data to the iColor Flex MX strands in your installation.

- Each individual iColor Tile MX node is assigned three consecutive DMX addresses, one for red, one for green, and one for blue. A DMX universe consists of 512 addresses, so the maximum number of individually controllable nodes in a DMX universe is 170 ($170 \times 3 = 510$).

When using a PDS-60ca 7.5V power / data supply with DMX control, you program the power / data supply rather than addressing the iColor Tile MX fixtures directly. You use SmartJack Pro (or iPlayer 3) with QuickPlay Pro addressing software to set a base DMX address for the power / data supply, and to specify the node quantity of each attached fixture (144).

For lighting designs where nodes work in unison, all nodes should be set to the same DMX addresses. For dynamic light show designs that show different colors on different nodes simultaneously, you must assign DMX addresses to each node. Starting with its base DMX address, PDS-60ca automatically assigns a sequence of addresses to iColor Tile MX nodes.

- Because you are limited to 170 individually controllable nodes per DMX universe (effectively one fixture with 144 nodes), Ethernet is the preferred environment for video displays and dynamic light shows with intricate effects.

Each Ethernet-based power / data supply comes pre-programmed with a unique IP address, so the power / data supply functions as its own universe. When creating a light map with a controller or media server such as Light System Manager or Video System Manager Pro, each iColor Tile MX node automatically receives a unique identifier.

You can discover all power / data supplies by IP address using QuickPlay Pro, Light System Manager, or Video System Manager Pro. For large installations, and especially for video displays, we recommend giving power / data supplies meaningful IP addresses to streamline installation, mapping, testing, and troubleshooting. When readdressing power / data supplies, you will need the layout grid you created when you recorded each power / data supply's IP address during installation planning.

For complete details on addressing and configuring fixtures, controllers, and power / data supplies, refer to the *Addressing and Configuration Guide* or the User Guide or Specification Sheet for your controller or power / data supply.

* You can download the QuickPlay Pro software and the Addressing and Configuration Guide from www.philipscolorkinetics.com/support/addressing/



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