X-PoE Fixture Integration Guide



INTRODUCTION

About This Guide

This guide explains how a lighting fixture connects to an X-PoE powered device (XPD). The X-PoE port supplies the LED drive current, so the fixture does not need its own driver. The work is choosing where the XPD lives: in a junction box on site, inside the fixture at the factory, or as a circuit designed into the fixture.

Power Limits

Each X-PoE port has two channels. Use these limits when deciding how many fixtures can share a port, and read the X-PoE Integrated LED Driver Specification before designing a fixture around the port.

- 1,115 mA maximum per channel.
- 2.23 A maximum per port, across both channels.
- Up to 65 W per channel and 130 W per port. Delivered power still depends on the fixture forward voltage and the input voltage.

Count fixtures per channel, not only against the port total. A channel that is already near 1,115 mA cannot take another fixture even when the other channel is empty.

INTEGRATION LEVELS

There are three ways to attach a fixture to an XPD. The level is about who does the work and how the fixture is built. It is not a ranking of light quality.

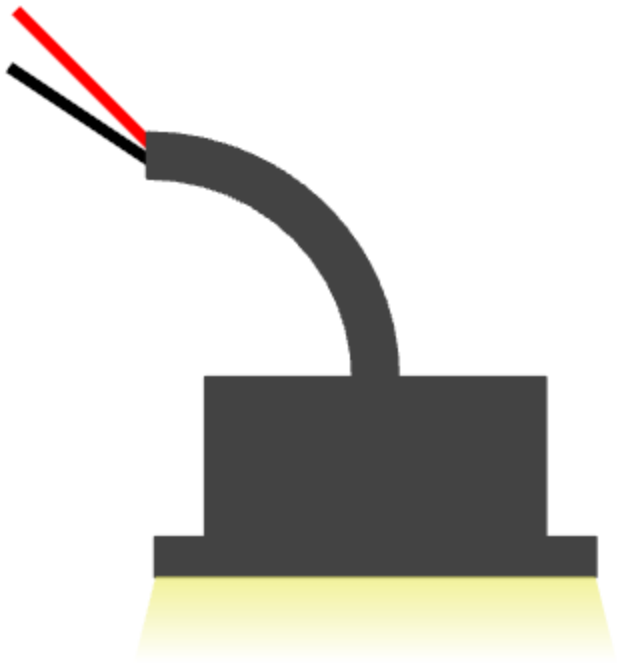
XPD integration levels

Level	Factory effort	Typical fixtures	What the manufacturer does	What happens in the field

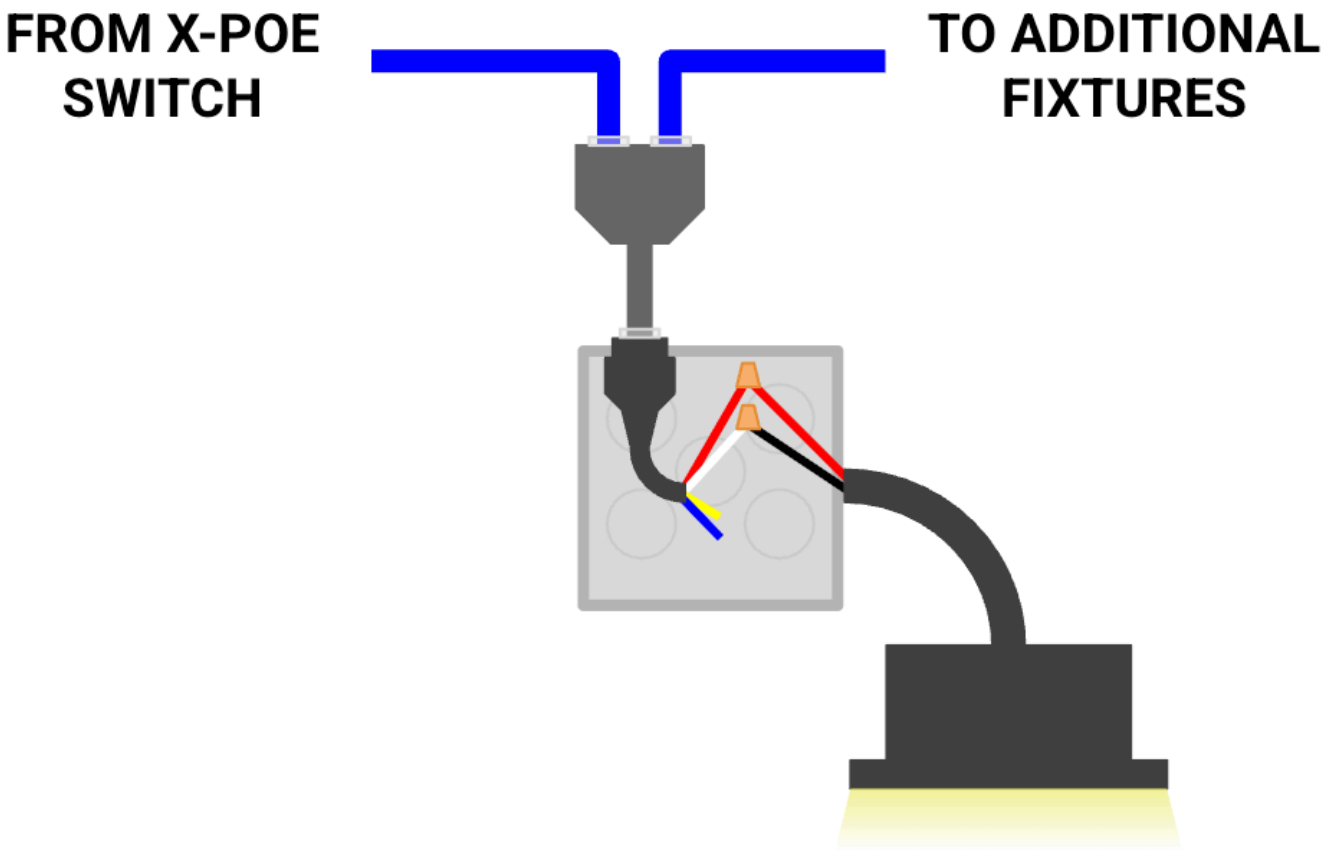
Level	Factory effort	Typical fixtures	What the manufacturer does	What happens in the field
0	None	LED tape, and downlights with no wiring compartment	Ship the fixture with no LED driver.	An installer mounts a two-channel XPD, usually in a junction box, and lands the fixture leads there.
1	Low	Fixtures that already have a wiring compartment	Install an off-the-shelf XPD in that compartment and wire it to the LED board.	The fixture arrives ready for the X-PoE cable.
2	High	Fixtures that are often daisy-chained, where a built-in connection is worth the factory work	Design the XPD circuit into the fixture, expose one or two RJ45 ports, and certify that construction.	The fixture connects directly to the X-PoE cable.

LEVEL 0 — FIELD INSTALLED

The manufacturer ships a driverless fixture with leads from the LED board. The installer connects an XPD on site. Put the XPD in a junction box and make the splices in that box. Only a two-channel XPD is used at this level. The published parts are the XPD-T2P-G Data Sheet for fixtures and the XPD-P2H-G Data Sheet for LED strip.



How it ships from the factory

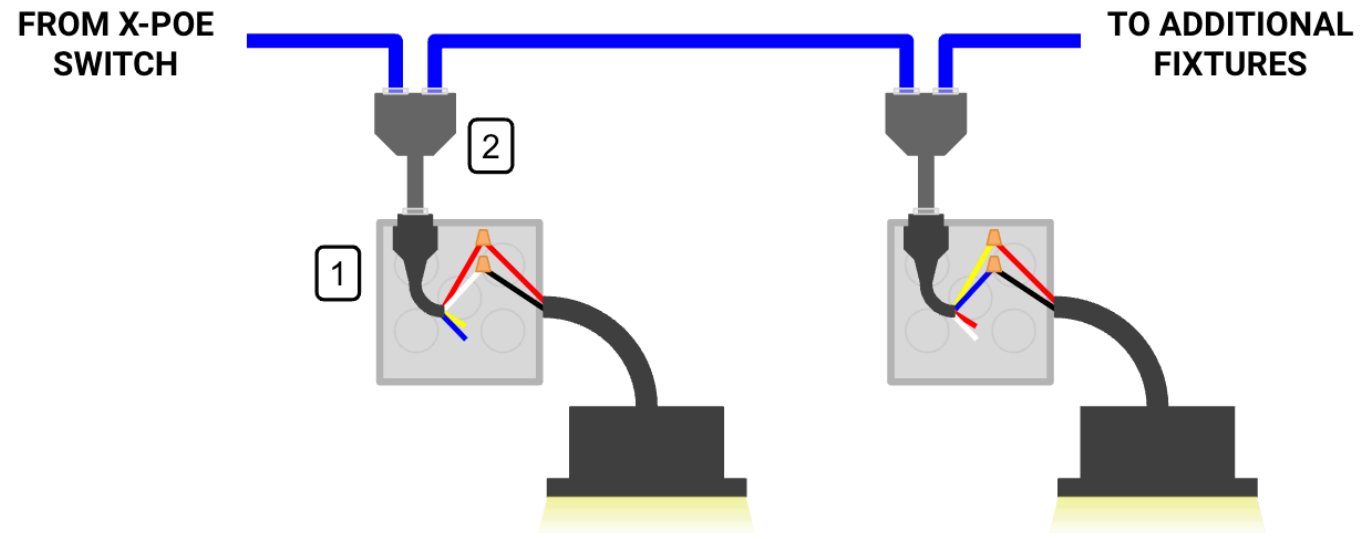


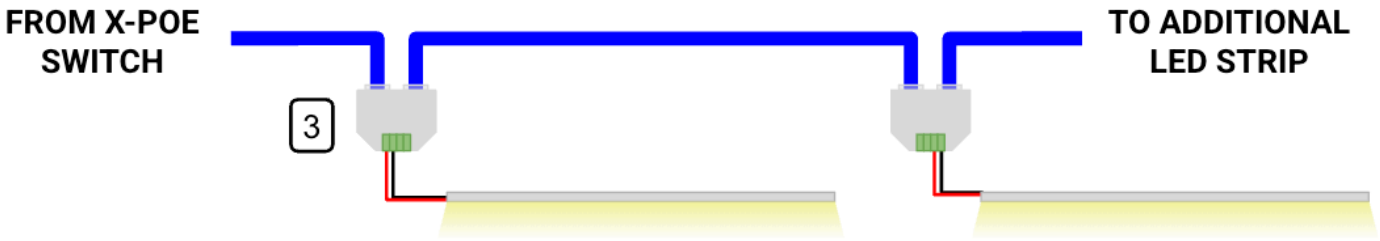
How it is installed in the field

One LED Board

A one-board fixture uses a single channel. Plan the port one channel at a time. One 700 mA fixture fits on a channel, because a second 700 mA fixture on that same channel would be 1.4 A, which is over the 1,115 mA channel limit. Those two fixtures can still share the port if they land on opposite channels. The pair draws 1.4 A, under the 2.23 A port limit, but only because the channels are split.

When several one-board fixtures share a daisy chain, put the first fixture or group on channel 1 and the next on channel 2. Do that at every XPD in the run.



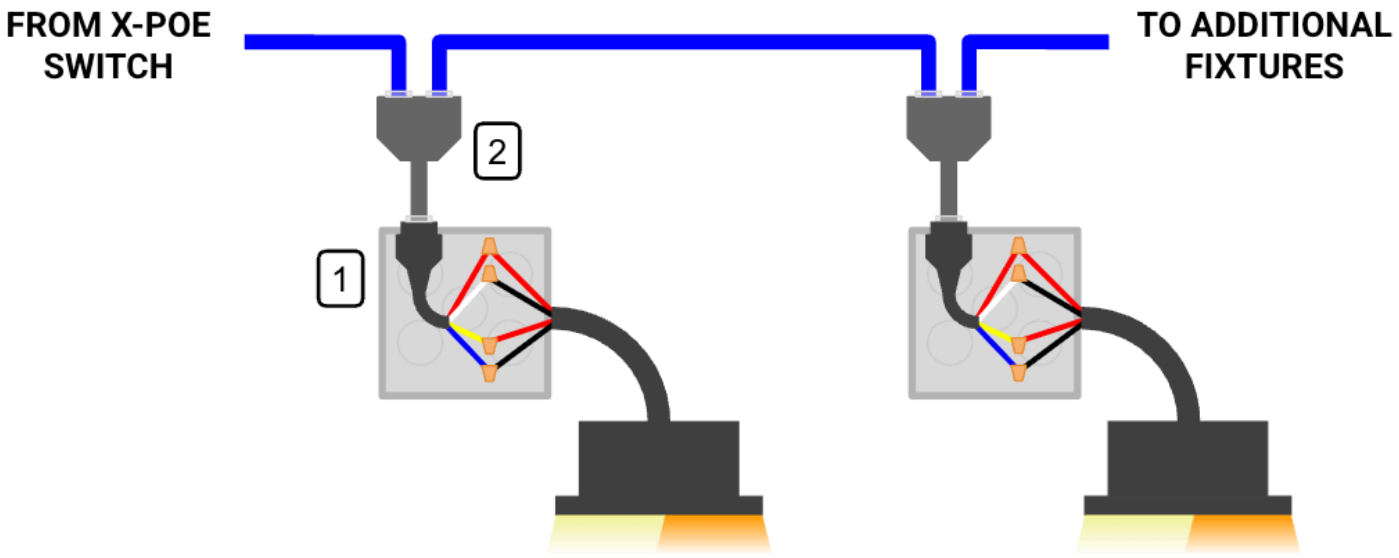


1. Fixture XPD (XPD-T2P-G Data Sheet), installed on site.
2. Daisy-chain splitter, only when fixtures are daisy-chained. This guide does not assign a part number for the splitter.
3. LED-strip XPD (XPD-P2H-G Data Sheet), installed on site.

> **CHANNEL WIRING**
>
> The first fixture is wired to channel 1 (red/white). The second fixture is wired to channel 2 (yellow/blue).

Two LED Boards

A fixture with more than one LED board, including color tuning and directional optics, can use both channels and the full 2.23 A of the port. Split the power across the boards. Daisy-chaining this kind of fixture does not require a channel-by-channel wiring plan at each XPD.

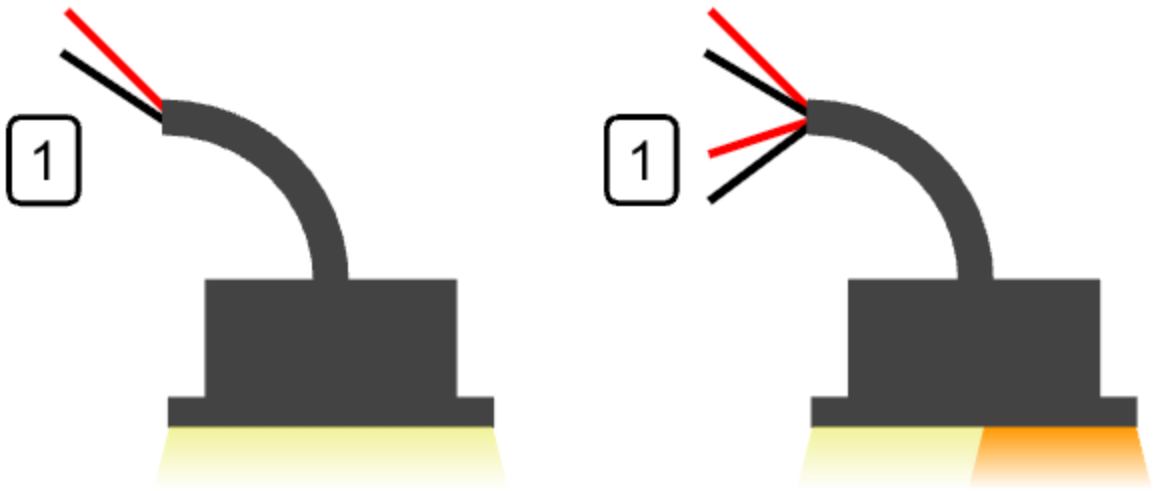


1. Fixture XPD (XPD-T2P-G Data Sheet), installed on site.
2. Daisy-chain splitter, only when fixtures are daisy-chained. This guide does not assign a part number for the splitter.

> **MULTIPLE BOARDS**
>
> A fixture can have more than one LED board without offering color tuning or directional light. Use both channels inside that fixture anyway, so the load is shared and the installer does not have to pick a channel.

What the Manufacturer Ships

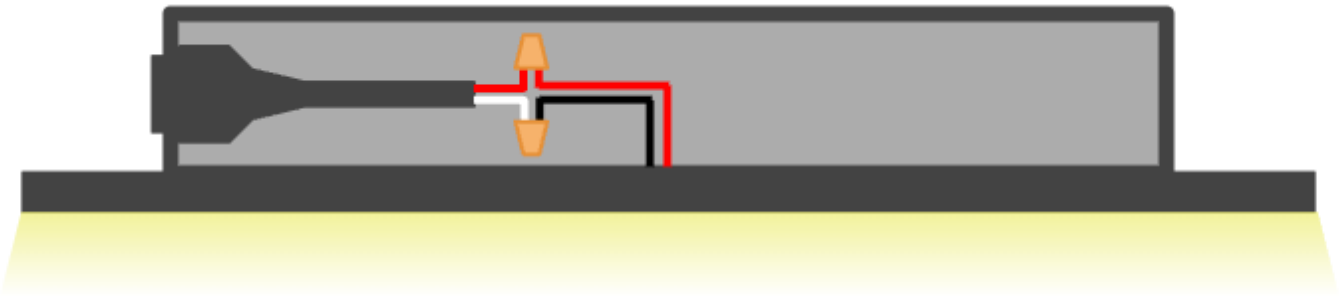
Ship the fixture with no driver, and with leads from each LED board brought out of the housing.



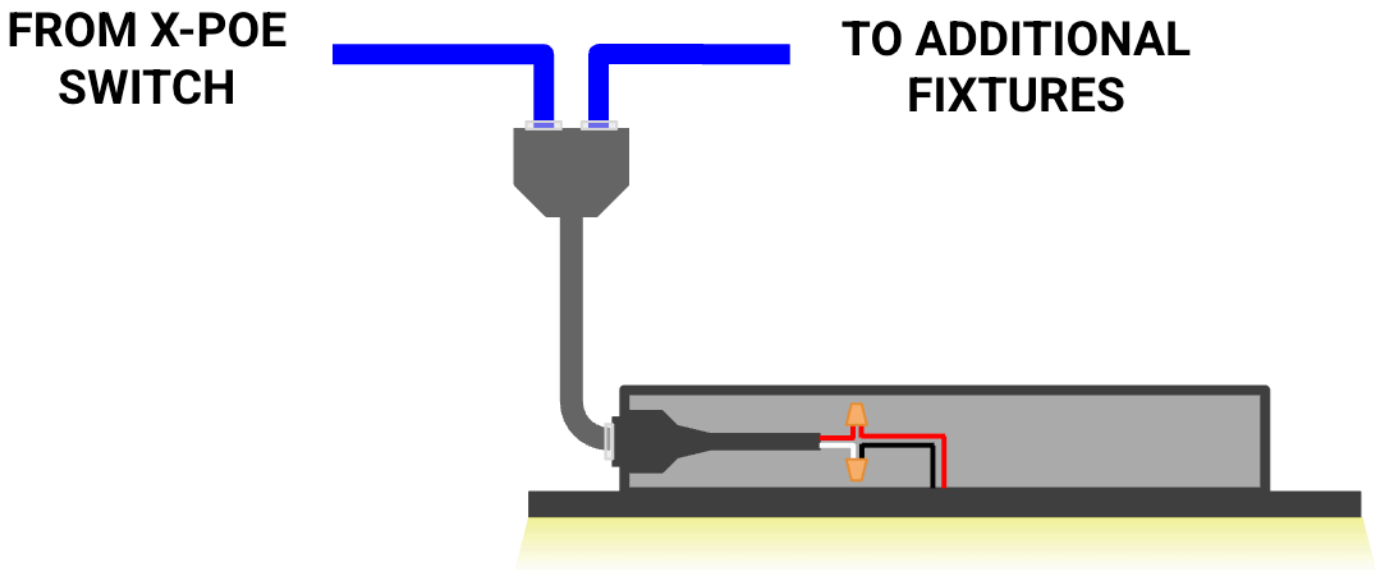
1. A whip with positive and negative leads connected directly to the LED board or boards.

LEVEL 1 — FACTORY INSTALLED XPD

The manufacturer installs an off-the-shelf XPD in a fixture that already has a wiring compartment. The fixture ships ready to land on the X-PoE cable. A one-channel or two-channel XPD can be used. The wiring stays inside the fixture, and the XPD has to be installed before the fixture leaves the factory.



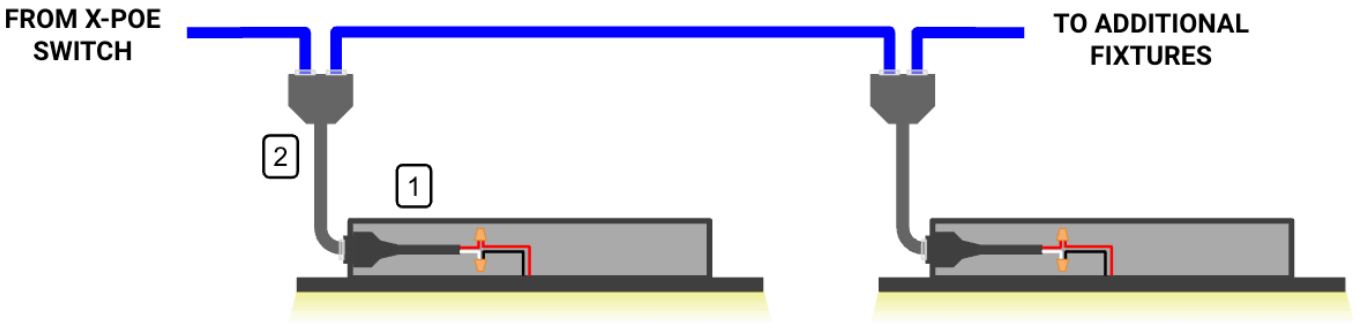
How it ships from the factory



How it is installed in the field

One LED Board

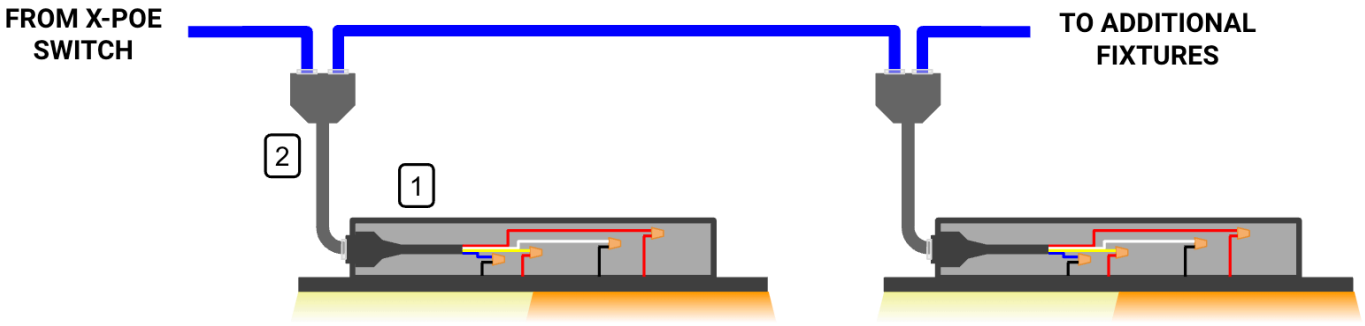
Use a one-channel XPD unless the fixture has separate LED boards for color tuning or directional light. The factory wires that XPD to the LED board.



1. Fixture with a one-channel XPD installed by the manufacturer.
2. Daisy-chain splitter, only when fixtures are daisy-chained. This guide does not assign a part number for the splitter.

Two LED Boards

Use a two-channel XPD when the fixture has separate LED boards for color tuning, directional light, or any other split. The factory wires each board to its channel. The published fixture-mount part is the XPD-T2P-G Data Sheet.

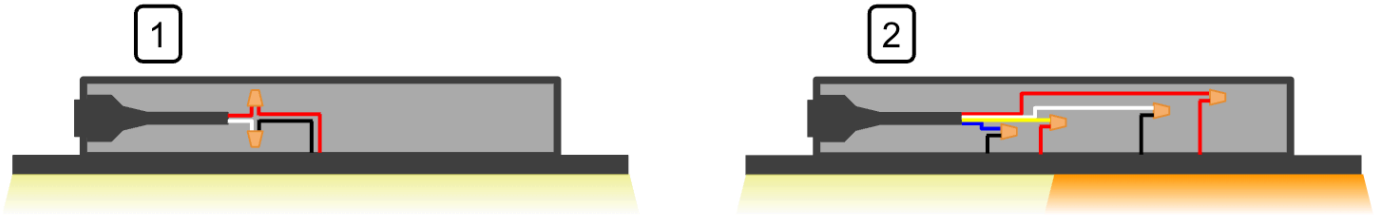


1. Fixture with an XPD-T2P-G Data Sheet installed by the manufacturer.
2. Daisy-chain splitter, only when fixtures are daisy-chained. This guide does not assign a part number for the splitter.

> **MULTIPLE BOARDS**
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> A fixture can have more than one LED board without offering color tuning or directional light. Use both channels inside that fixture so the load is shared.

What the Manufacturer Ships

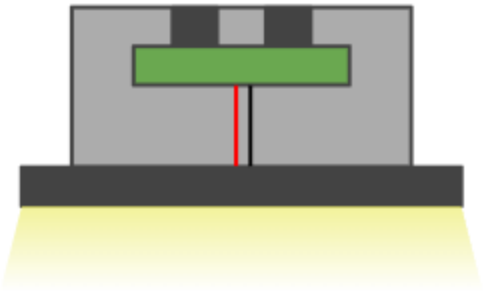
The fixture needs a wiring compartment, and it needs to ship with the XPD already installed and wired.



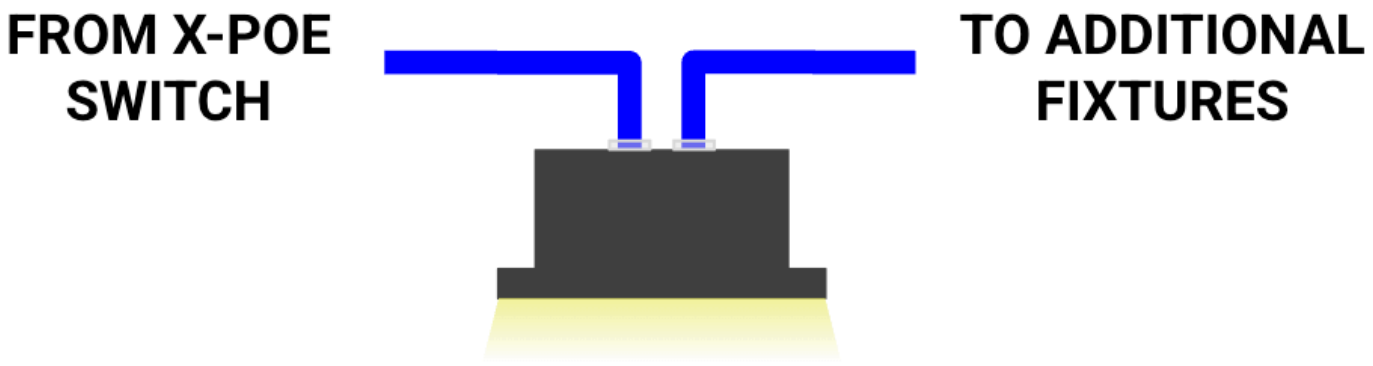
1. Fixture with a one-channel XPD installed by the manufacturer.
2. Fixture with an XPD-T2P-G Data Sheet installed.

LEVEL 2 — INTEGRATED XPD CIRCUIT

The manufacturer designs the XPD circuit into the fixture. This is the most factory work, and it is the most compact result. The fixture ships with the circuit inside and with RJ45 ports ready for the X-PoE cable. Both channels are available, whether the fixture has one LED board or several.



How it ships from the factory



How it is installed in the field

This level needs a custom circuit and a fixture design that can pass UL with that circuit installed. It fits low-power fixtures that are often daisy-chained, where a field-installed XPD or a factory-stuffed module is the wrong shape.

The Fixture

Both channels can feed a single LED board or separate boards, including color tuning and directional light.

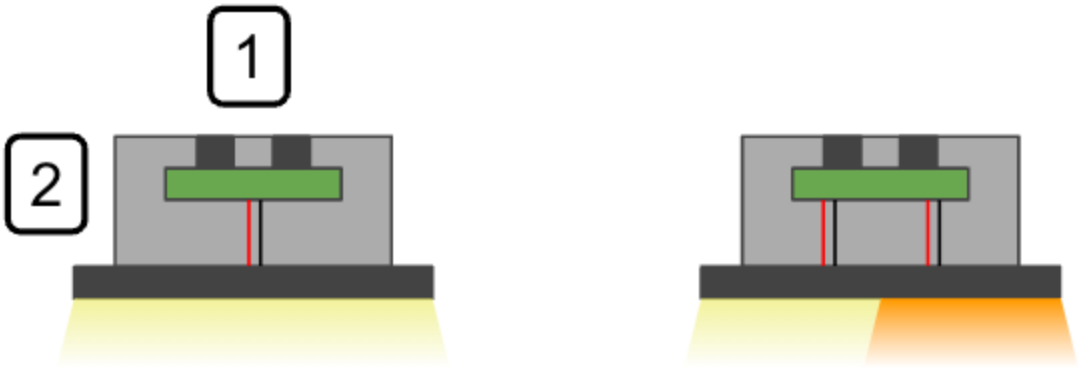


1. X-PoE fixture with the XPD circuit integrated.

> **DAISY CHAINING**
> If the fixture can be daisy-chained and the manufacturer can fit only one RJ45 port, a daisy-chain splitter is required in the field. This guide does not assign a part number for that splitter.

What the Manufacturer Builds

Integrate the XPD circuit in the fixture and bring one or two RJ45 ports out as the connection. Use both channels for a single LED board and for fixtures with several boards.



1. RJ45 port or ports exposed on the fixture.
2. Integrated XPD circuit. Reference schematics are available for download below.

Reference Schematics

These drawings show the integrated XPD circuit for a single LED board and for two LED boards. They are reference material for the fixture manufacturer, not a substitute for the UL review of that fixture.

- Single LED board XPD circuit (PDF)

- Dual LED board XPD circuit (PDF)

FIXTURE TYPE GUIDELINES

Use this table to pick a level. Yes means the level fits. Limited means it is possible with the constraint in the notes. No means do not use that level. Contact means talk to Luum before specifying the fixture.

Fixture	Level 0	Level 1	Level 2	Notes
LED strips (1,115 mA segments)	Yes	Limited	Limited	There is no fixture housing to install an XPD in. Field-install the XPD in an accessible location.
Linear fixtures (1,115 mA segments)	Yes	Limited	Limited	These housings usually have no room for an XPD. Field-install the XPD in an accessible location.
Under 1,115 mA, single LED board	Yes	Yes	Yes	Balance these fixtures across both channels when the XPD is field installed, or integrate them with an aggregate XPD.
Over 1,115 mA, single LED board	No	Yes	Yes	These fixtures need an aggregate XPD, installed in the fixture at the factory, so both channels feed the one board.
Under 2.23 A, multiple LED boards	Yes	Yes	Yes	Any level works. Both XPD channels feed the boards.
Pendant and suspended fixtures	Yes	Limited	Limited	Dropping a suspended fixture on Category 6 is usually a poor installation. Field-install the XPD in an accessible location.
Under 2.23 A, multiple outputs (color tuning, direct/indirect)	Yes	Yes	Yes	Any level works. Both XPD channels feed the outputs.
Over 2.23 A	Contact	Contact	Contact	Contact sales@luum.io before specifying an XPD for this load.

X-POE CLASS

Each XPD channel has a signature resistor. The X-PoE controller reads that resistor, identifies the X-PoE class, and uses the class to set the port. The class is how the port learns the load. It is not a guarantee that the fixture can take more current than the channel limit above.

Class signature resistors

Signature resistor	X-PoE class
32k	300 mA constant current

Signature resistor	X-PoE class
13k	400 mA constant current
14k	500 mA constant current
16k	600 mA constant current
6k5	800 mA constant current
10k6	900 mA constant current
7k	1,000 mA constant current
8k	1,200 mA constant current
8k5	48 V constant voltage
9k5	36 V constant voltage
11k5	24 V constant voltage
12k5	Manual configuration, default 100 mA

WHERE THE RESISTOR GOES

The class signature resistor is placed for channel 1. When the fixture needs more than 1,200 mA, use one signature resistor on each channel and split the load evenly across the two channels.

FIXTURE CERTIFICATION

Fixture manufacturers can submit a product to the X-PoE certification program. Luum tests the fixture, stores the port settings that performed best, and works out an XPD approach for that housing, including a custom XPD when the standard parts do not fit. Certified fixtures are listed for specifiers.

To submit a fixture, contact sales@luum.io.

RELATED INFORMATION

Technical Support

Questions about fixture integration can be sent to support@luum.io. Include the fixture type, the LED-board count, and the expected current per board.

Document Feedback

While we have taken great care to ensure the accuracy and completeness of this document, we welcome your feedback and suggestions. If you notice any errors or omissions, or feel a topic could benefit from further explanation, please email your feedback to support@luum.io.

Revision History

Date	Revision	Notes
11/3/2026	A	Converted to the current guide format. Integration levels aligned to 0, 1, and 2.

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