Fault Managed Power is Revolutionizing How Enterprise Networks are Powered

PANDUIT®

Enterprise Guide

The world's first Class 4-certified Fault Managed Power System delivers touch-safe power you can use anywhere in your network.

1st

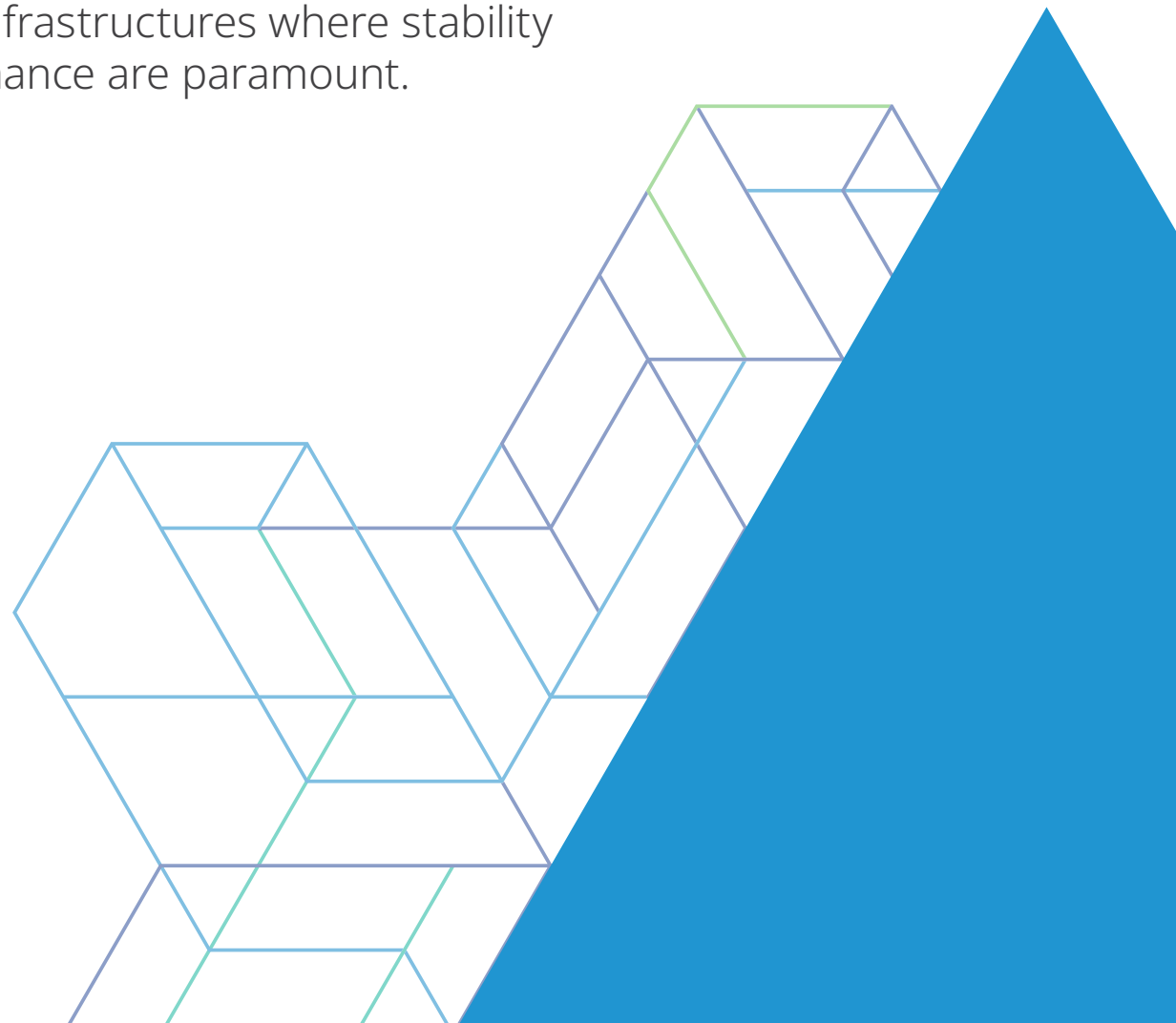
Fault Managed Power System

CERTIFIED FOR CLASS 4 POWER

Enterprise Fault Managed Power

In enterprise environments, dependable power delivery is crucial for maintaining uninterrupted operation of critical systems like surveillance cameras, access control, communication networks, and other essential devices. Our industry first UL listed Class 4 Fault Managed Power System (FMPS) is an innovative solution that combines safety, efficiency, and long-range power transmission into an easily deployable package.

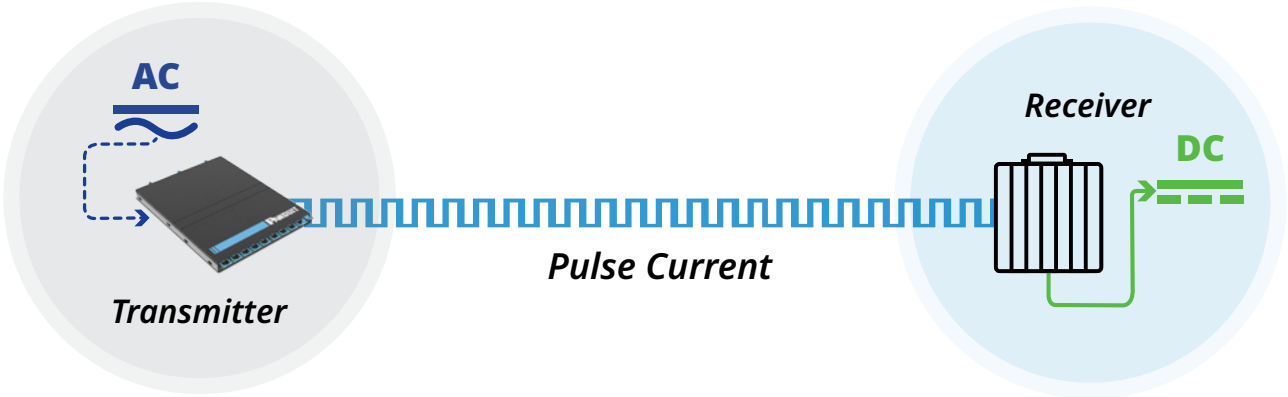
Providing safe, continuous, and reliable power, Panduit FMPS is the ideal choice for modern enterprise infrastructures where stability and performance are paramount.



What is Fault Managed Power?

The Panduit Class 4 Fault Managed Power System (FMPS) is an innovative power distribution solution that delivers safe, high-voltage power over long distances. Unlike traditional systems that require thick copper cables and complex setups, FMPS can provide significant power at distances up to 6,500 feet, all while maintaining efficiency and safety. Operating on a centralized power architecture, it eliminates the need for remote power sources like outlets or uninterruptible power supplies at the edge, simplifying the entire power infrastructure.

Touch Safe Power At-a-Glance



Main Equipment Room (Head-End)

Telecom Room (IDF)

Note It is always best practice to check with your local Authority Having Jurisdiction (AHJ) to ensure compliance with all applicable codes, regulations, and standards. Local requirements may vary, and obtaining approval from the AHJ helps prevent potential issues during inspection or enforcement.

Long Distance:
2 km/6,500 feet

Efficiency:
360 V DC Safe Distribution

Significant Power:
600 W per Copper Pair

Safety:
First UL-Certified Class 4 System

How Does FMPS Bring Value to Enterprise?

What makes FMPS a world-class solution for enterprise applications is its ability to significantly reduce installation time, cost, and complexity.

It allows enterprises to use shared pathways for fiber, data cables, and power without the need for conduit, reducing both materials used and labor costs.

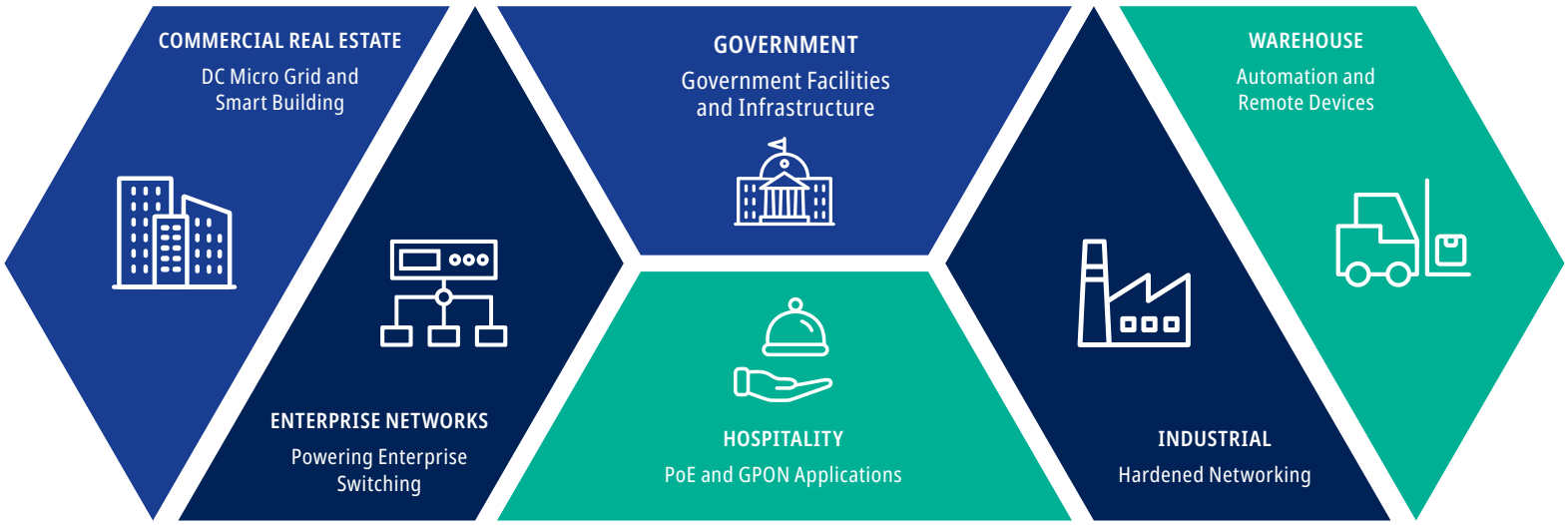
Additionally, FMPS supports remote monitoring and control, enabling IT and security teams to oversee and manage power systems from a central location. This ensures uninterrupted power to essential enterprise devices such as switches and servers, building management systems, and security; all while reducing the overall environmental footprint.

FMPS is a faster, more efficient, and more reliable power solution tailored for modern enterprise networks.

Reviews from the Field

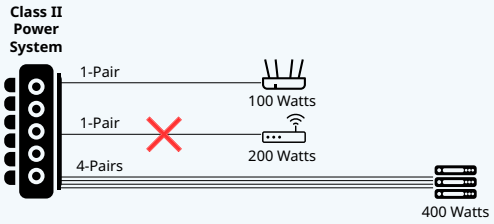
> "By far the easiest electrical install we have done so far. What would have taken several days to weeks, requiring prescheduled shutdowns, 1,000 feet of conduit, new breakers, junction boxes, etc., was done with one single shutdown for two hours, and completed in just under two days."
>
> Chris Cuyler, Sr.
> Project Manager Integrated Solutions
> Miller Electric Company

MILLER ELECTRIC COMPANY

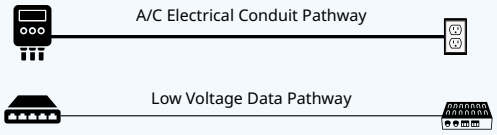


How It's Done Today

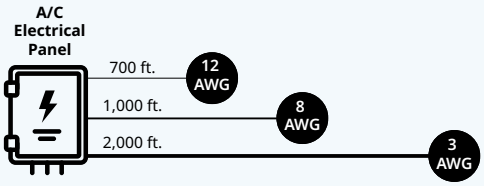
Class 2 Power Systems are limited to delivering no more than 100W per copper pair, meaning more copper is needed Day 1 and future expansion is incredibly difficult. Additionally, their low-voltage design demands larger gauge copper cables for distances exceeding 300 meters, increasing material costs and installation complexity.



Running Power Cables Outside requires deep trenching dependent on the conduit type: at least 6 inches for rigid conduit, 12 inches for PVC conduit, and 24 inches for direct burial. This adds significant labor and time to the installation process. The depth requirements increase both complexity and cost for outdoor power projects.



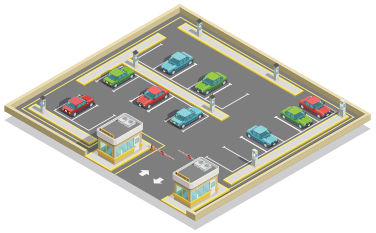
Traditional AC Power Systems require separate conduits for power and data, leading to increased labor and materials costs. Licensed electricians are required for even simple installations, adding additional coordination and time.

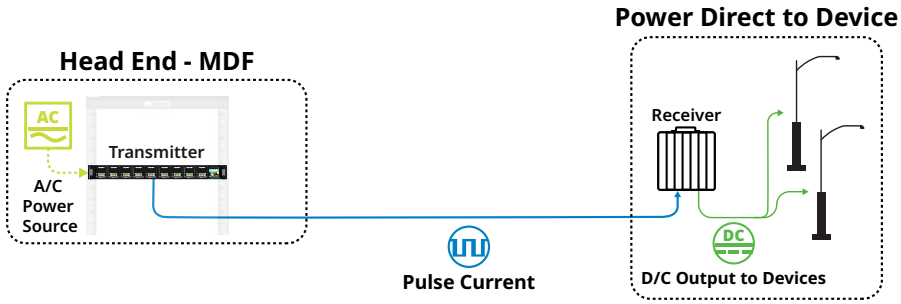


Panduit Fault Managed Power Solutions

Power Devices Directly

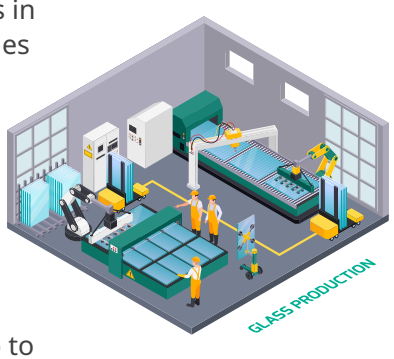
The Class 4 power receiver enables direct powering of devices, offering a reliable and efficient solution. By taking in multiple copper pairs of class 4 power, the receiver can power multiple devices directly.



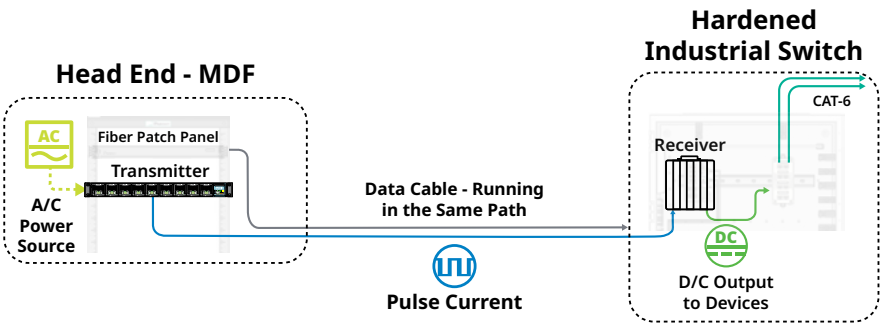


Powering Hardened Switches at the Edge

Supporting hardened network switches in outdoor and harsh environments enables enterprises to extend their network connectivity to areas previously inaccessible or too costly to deploy. This includes spaces such as guard houses, access and entry gates, and call boxes.

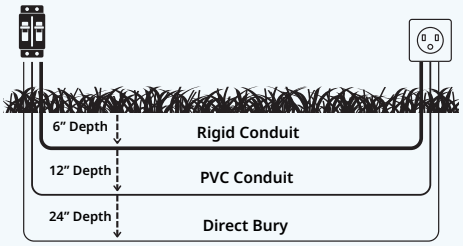


Mounted in a weatherproof enclosure, FMPS can support devices that need up to 1,600 Watts of power up to 2 km away—that's over 1 mile. Combine this reach with fiber optics, and enterprises can deploy a full suite of network devices and applications in areas where otherwise not possible.



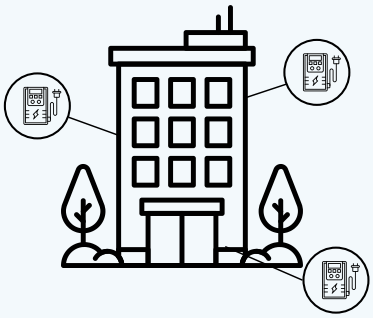
How It's Done Today (cont.)

For A/C Class 1 power over long distances, large copper cables or transformers are needed to address voltage drop, which increases the cost of copper, conduit size, and labor. This adds complexity and makes the system significantly more expensive to install and maintain.



Note It is always best practice to check with your local Authority Having Jurisdiction (AHJ) to ensure compliance with all applicable codes, regulations, and standards. Local requirements may vary, and obtaining approval from the AHJ helps prevent potential issues during inspection or enforcement.

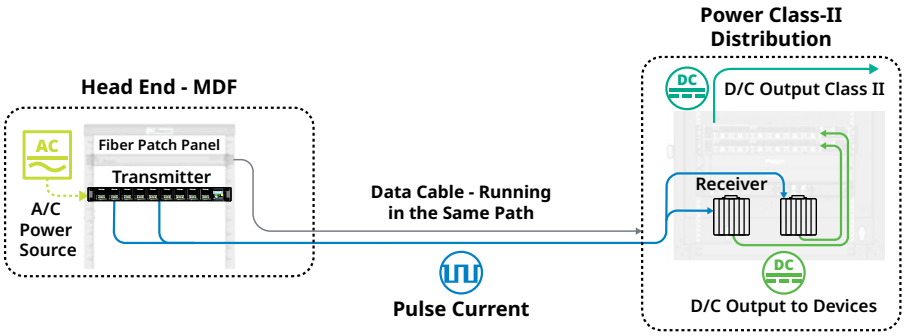
Managing distributed UPS systems can be challenging. They are often placed in hard-to-reach locations and inconsistent environmental conditions. This leads to higher operational costs to check and maintain units; as well as reduced battery life, requiring more frequent replacements.



Panduit Fault Managed Power Solutions

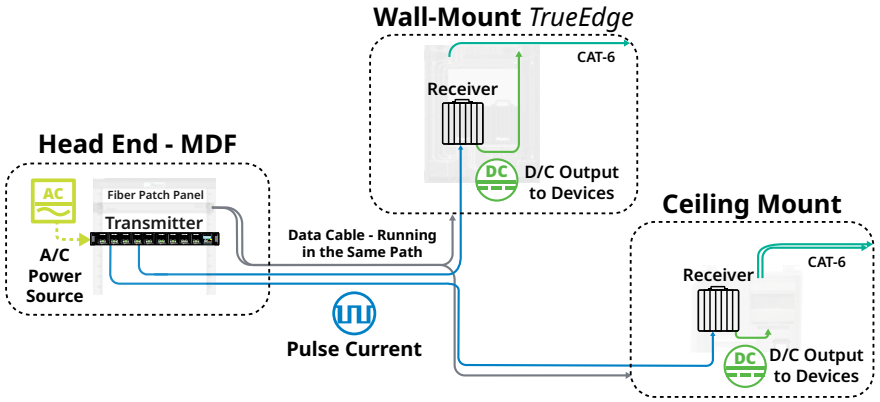
Powering Class 2 Distribution

FMPS can provide significant power over a long distance making it the perfect building block to power any network. With the common 48 V DC output, FMPS is not only able to power network devices but can also power other types of power distribution such as Class 2.



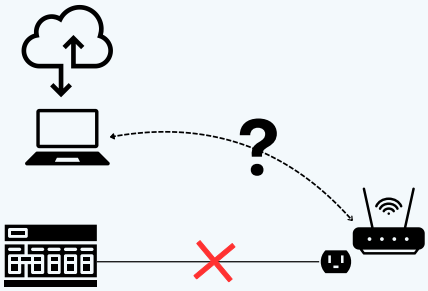
Powering Smart Building Edge

When talking about smart buildings the hardware and software take center stage. One area seems to have gone unnoticed, that is until now. Panduit Fault Managed Power is a power infrastructure solution that makes your smart building truly smart by revolutionizing how power is planned for and delivered.

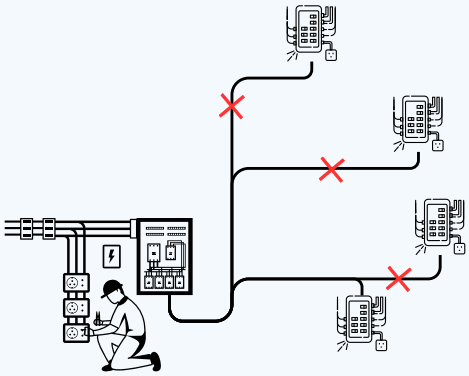


How It's Done Today (cont.)

Monitoring and troubleshooting with traditional power systems is limited, as users have no way to remotely monitor or control power to edge devices. There is no capability to power cycle devices or to trigger alarms for the power system independent of the network devices, making maintenance and issue resolution more difficult.



Working with traditional Class 1 circuits requires "shutdowns" when installing breaker panels, breakers, meters, and transformers, often resulting in off-hours work, multiple mobilizations, and more time spent onsite. These delays can be compounded by restrictive work schedules and coordination with other trades.

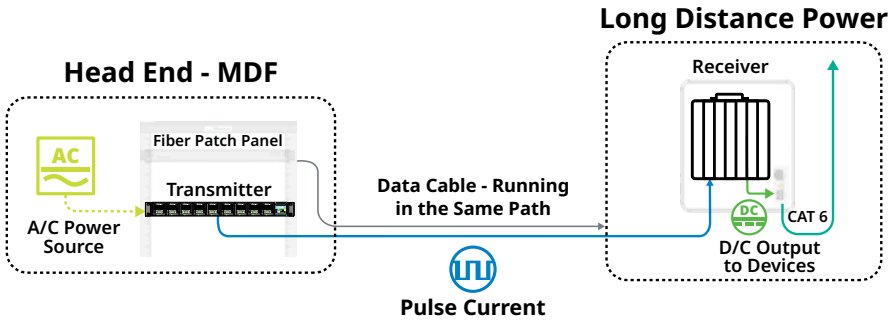


Panduit Fault Managed Power Solutions

Long Distance Power

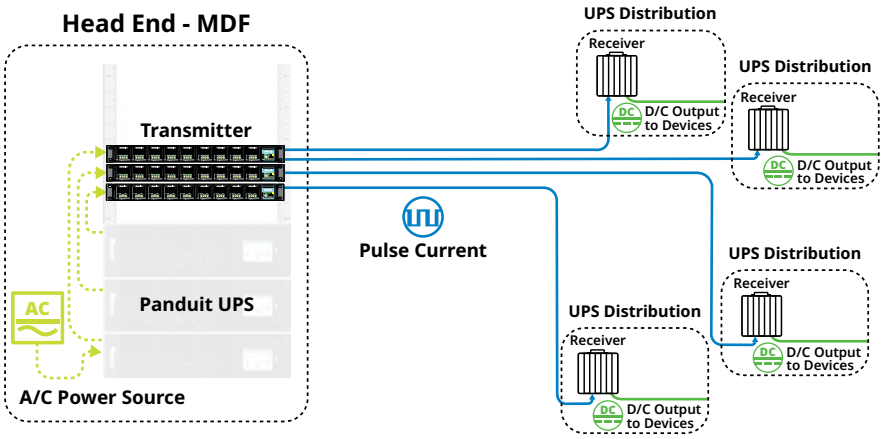
Enterprises often encounter scenarios where connectivity is needed in remote parts of their network for just one or two devices. These locations require connectivity but don't demand high power or bandwidth.

The challenge is the cost of bringing power and fiber to these areas. Traditional AC power solutions are too expensive, and Class 2 power becomes cost-prohibitive beyond 300 meters. This is where Class 4 power provides a cost-effective way for enterprises to reach these distant locations.



FMPS Head End and Centralized Battery Back Up

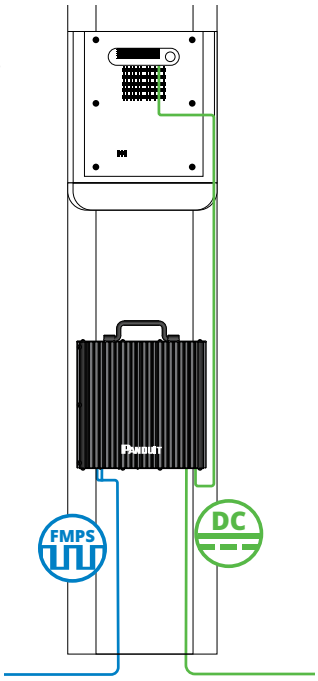
The head end for the FMPS can be located almost anywhere, typically it is in the MDF (Main Distribution Frame) or main IT room. The footprint of the transmitter is only 1 RU, so it takes up minimal space. The transmitter can run off of 120 V AC or 208 V AC, giving users flexibility in how they power the system. Connected to a UPS at the headend, FMP-powered devices can be backed-up centrally, eliminating the need for distributed UPSs that are a pain to monitor and manage. With Panduit's wide selection of UPSs, FMP-powered devices can operate on back-up power for minutes or hours.



Take a Closer Look: FMPS Solves Common Enterprise Challenges

Powering Light Poles for Added Security

In this enterprise scenario, a receiver is installed in an overflow parking lot located away from the main office building. To enhance safety and security, the facilities manager wants to install two new emergency call boxes. The lights use cellular technology to connect to the network wirelessly. Since these boxes operate on 48 V DC, FMPS can power them directly. Power is run from the main building to the first emergency box and distributed from there. With only three pairs of small-gauge copper, the system can power all the emergency equipment, with excess capacity for future devices if the need arises. In addition to the easy deployment of the new equipment, the system is capable of being centrally backed up, adding extra safety and security for employees.



	Description	Part Number
Receiver and Enclosure	Enclosure	Mounted in Pedestal
	Receiver	PXR1AJD/PXR1AJF
Cable and Grounding	Class 4 Power Cable	PXUP316AWH-UQ
	Class 4 Patch Cable	In Development
	Ring Terminal	P10-14R-L
	Grounding Bar	UGB2/0-414-6
	Grounding Kit	ACG24K
Non-Panduit Components	Copper Pair for Receiver Output Power	12 AWG
	Lightening Protection	Multiple Suppliers

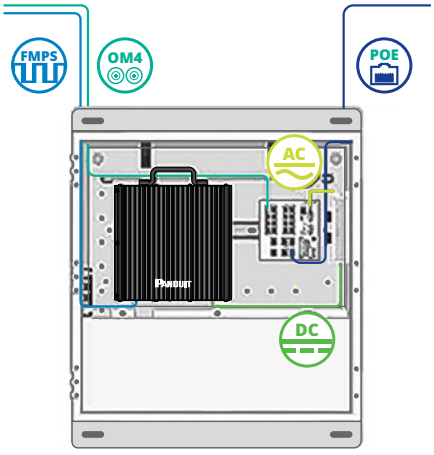
Note Complete the solution with Panduit!

Powering Industrial Hardened Switches

In this solution, the IT manager for a manufacturing facility needs to add a switch, Wi-Fi access point, and security cameras to a hazardous area of the facility. FMPS is able to feed a hardened switch, which then provides PoE to the access point, cameras, and sensors in this critical area of the plant. The advantage of using fault managed power is needing only a single conduit pathway, making retrofitting easier and saving on materials and labor. In addition, the easy-to-use interface allows technicians to power cycle equipment remotely instead of needing to send a technician to this hard-to-reach area.

	Description	Part Number
Receiver and Enclosure	Pre-Configured Enclosure	Z23C-6
	Receiver	PXR1AJD/PXR1AJF
Cable and Grounding	Class 4 Power Cable	PXUP316AWH-UQ
	Grounding Kit	RGEJ1024URT
Power Supply	Uninterruptible Power Supply	UPS00100DC
Fiber	Armored Fiber – 6 Strand	FSLR906
	Splice-on Connector	FLCS2/9SOCU9BU
Copper	Industrial Copper Cable	PSM7004BU-KEM
Non-Panduit Products	IoT Devices	
	PoE Lighting	
	Cameras	

Note Complete the solution with Panduit!

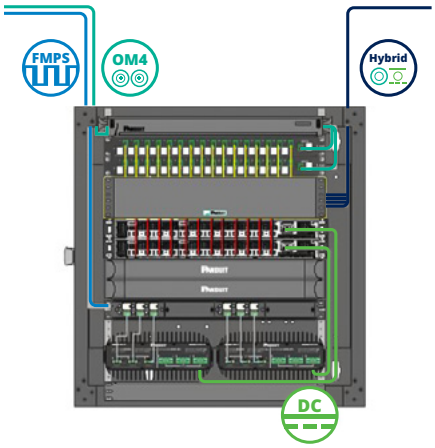


***Some applications or areas may require lightning protection**

Hotel Powering a GPON Network

During renovations, a hotelier found they had not installed AC power for their GPON ONTs in the guest rooms and could no longer power the devices locally. To compound the challenge, the telecom closet (where they planned to use Class 2 power) was on the opposite side of the building to the electrical closet, making extending an AC circuit for every floor cost prohibitive. With FMPS, the owner was able to centralize the power system in the head end and run power and fiber together in the same riser with no conduit. The FMPS receiver was able to power each Class 2 power distribution device powering the ONTs with no need for AC power.

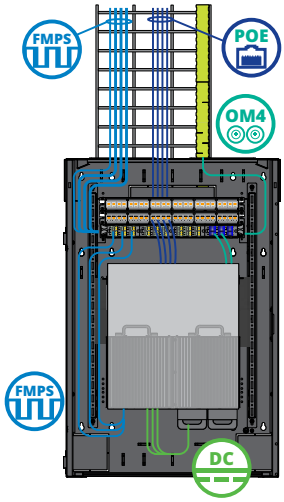
	Description	Part Number
Receiver and Enclosure	Enclosure	PZWMC1830W
	Receiver	PXR1AJD/PXR1AJF
Cable Management	Strain Relief	SRB19BLY
	2 RU Cable Manager	PZCHSM2
Cable and Grounding	Grounding Bar	GB2B0304TPI-1
	Grounding Kit	PZWMCGK
	Class 4 Power Cable	PXUP316AWH-UQ
	Class 4 Patch Cable	In Development
Terminations	Ring Terminal	P10-14R-L
Fiber	Fiber Patch Panel	FLEX1U04
	Fiber Cassette	FHS9N-12-3AP
	12 Strand Riser Rated Fiber	FSCR912Y
	Fiber Patch Cable	F923RANANSNM001
	1x16 Fiber Splitter	FCP9PP-1163GG
Non-Panduit Products	Class 2 power system with 48 V DC input	
	Class I Jumper (12 AWG)	

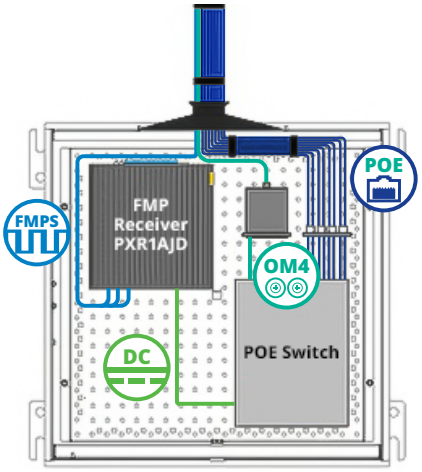


Note Complete the solution with Panduit!

Deploying a True Enterprise Edge Network

A project manager stepped into a newly demolished office space to begin planning for their new network. Knowing that the IT manager wanted to deploy their network devices as close to the edge as possible, power was a primary concern. Noting all the locations that would require power, it became clear that AC power would be much too expensive to use. And because there was no capacity on the building generator, the network couldn't be backed up. The project manager leveraged FMPS to deploy the exact network architecture they wanted, as well as add battery backup to all devices from a single centralized UPS.





	Description	Part Number
Receiver and Enclosure	Enclosure	WME9BL
	Mounting Bracket	In Development
	Receiver	PXR1AJD
Cable Management	Strain Relief	SRB19BLY
	1 RU Cable Manager	WMEBL1RU
	Power Connector Module	PXM1ARGRBL
	Patch Panel Power and Copper	CFAPPBL1
Cable and Grounding	Class 4 Power Cable	PXUP316AWH-UQ
	Class 4 Patch Cable	In Development
	Grounding Kit	WMEGK
Fiber	Fiber Patch Panel	FLEX1U04
	Fiber Cassette	FHS9N-12-3AP
	12 Strand Riser Rated Fiber	FSCR912Y
	Fiber Patch Cable	F923RANANSNM001
	Modular Panel Adapter	FMP6
	Fiber Adapter Panel Blank	FAPB
Copper	Copper Patch Cable	UTP28SP3BU
	Copper Field Term Plug	FP6X88MTG
	Single Port Blank Module	CMBBL-X
	GenSPEED EfficienC Category 6 Cable	8131800
Non-Panduit Products	Cisco 9300 Switch	
	48 V DC Cisco Power Supply 715 Watt DC Power Supply Unit PWR-C1-715WDC=	
	PoE Lighting	
	Cameras / APs / IoT	

Note Complete the solution with Panduit!

	Description	Part Number
Receiver and Enclosure	Enclosure	Design Specific
	Device Mount (Switch)	MSBRKT
	Mounting Bracket	In Development
	Receiver	PXR1AJD
Cable Management	Strain Relief	FMS1
	Power Connector Module	PXM1ARGRBL
	Patch Panel Power and Copper	MS8PPB
Cable and Grounding	Class 4 Power Cable	PXUP316AWH-UQ
	Class 4 Patch Cable	In Development
	Grounding Kit	MSGK
Fiber	Fiber Cassette Bracket	MSFCB2
	Fiber Cassette	FHS9N-12-3AP
	12 Strand Plenum Rated Fiber	FSCP912Y
	Fiber Patch Cable	F923RANANSNM001
	Modular Panel Adapter	FMP6
	Fiber Adapter Panel Blank	FAPB
Copper	Copper Patch Cable	UTP28SP3BU
	Copper Field Term Plug	FP6X88MTG
	Single Port Blank Module	CMBBL-X
	GenSPEED EfficienC Category 6 Cable	8131800
Non-Panduit Products	PoE Switch	
	PoE Lighting	
	Cameras / APs / IoT	

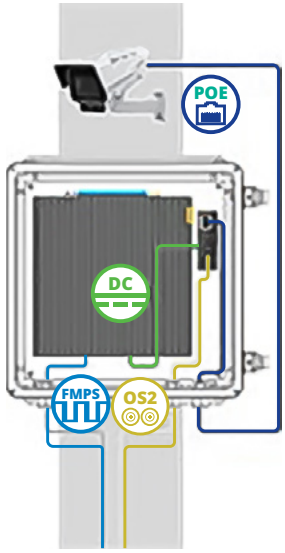
Note Complete the solution with Panduit!

Power for a Remote Camera

In this enterprise solution, FMPS feeds a security camera in a heavily trafficked outdoor area where previous attempts at providing power were too costly. Class 4 power cables are treated as low voltage when installed in outdoor applications. This means data and power can run through the same pathway and code requirements for in-ground cable protection are less stringent, reducing installation costs and complexity. Additionally, this high resolution camera can utilize a centralized UPS power backup without occupying additional space on the pole. By locating the batteries indoors, the enterprise significantly increases battery life and reduces operational expenses. This solution not only enhances safety and connectivity but also delivers substantial cost savings in enterprise applications.

	Description	Part Number
Receiver and Enclosure	Enclosure	Design Specific
	Drain / Vent Kit	Design Specific
	Receiver	PXR1AJD
Cable and Grounding	Class 4 Power Cable	PXUP316AWH-UQ
	Grounding Kit	ACG24K
Copper and Fiber	Outdoor 2-Fiber Cable	FLSN902
	Splice-on Connector	FLCS2/9SOCU9BU
	Copper Field Term Plug	FP6X88MTG
	Outdoor Copper Cable	ISFCH6X04ATL-UG
Non-Panduit Products	QTEL Lightning Protection	DS240S-350DC
	Fiber Media Converter with PoE+	
	Security Cameras	

Note Complete the solution with Panduit!



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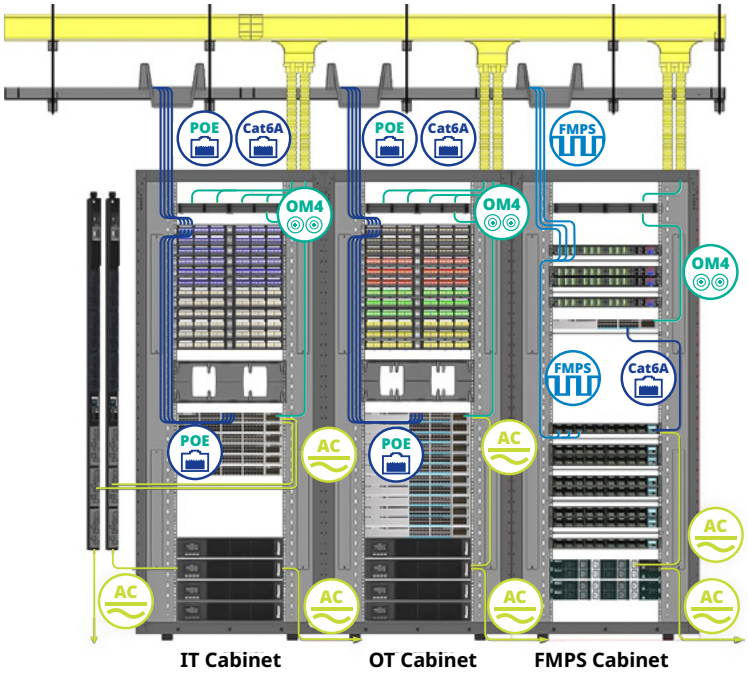
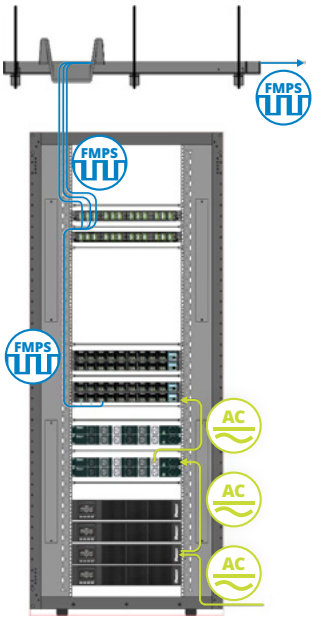
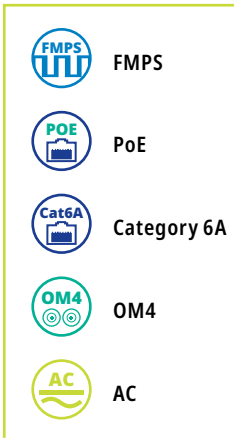
A Detailed Look at the FMPS Head End and Centralized UPS







	Description	Part Number
FMPS Class Transmitter	Transmitter Module	PXTM1AF
	Transmitter Chassis	PXTC1ARA
	Transmitter Power Supply	PXU1AJANNNXX
Power Cables	Class 4 Power Cable	PXUP316AWH-UQ
	Class 4 Patch Cable	In Development
Cabinet	FlexFusion Cabinet 42 RU	XGL64212B
Head End Power and PDU	Smart PDU – G6 32AMP (24) Outlets	P24E03G
Copper and Cable Management	Power Connector Module	PXM1ARGRBL
	Patch Panel Power and Copper	CFAPPBL1
	Single Port Blank Module	CMBBL-X
	Strain Relief	SRB19MDBL
	Strain Relief	SRB19BLY
	1 RU Blank	DPFPL
Fiber	Fiber Enclosure	FRME2U
	Fiber Patch Cable	F92ERLNLNSNM004
	Fiber Splice Cassette	FCS9N-12-10P
	Modular Panel Adapter	FMP6
	Fiber Adapter Panel Blank	FAPB
Centralized UPS	5KVA UPS – LiON Batteries	U05N11L
	UPS Stepdown Transformer (208VAC to 120VAC)	UTFMRDU

Note Complete the solution with Panduit!

We're ready to help.

Bring us your next network project to discover the Panduit Fault Managed Power Solution or check out our Cisco Validated Design to see how to implement Panduit FMP in your Cisco eco-system.

We have the knowledge and experience to help you make the most of your infrastructure investment.

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infrastructure for a connected world