Smart Grid

Network Infrastructure







High Speed Data Networks Empowering Smart Grid

Utility companies started the move to smart meters a decade ago which allowed them to read the power usage of a building remotely instead of sending a person to the site. The next step in the evolution to a complete digital infrastructure is the total control of distribution of power to and from the grid. Utilizing today's high speed network technologies, Smart Grid provides intelligent real-time monitoring and management of power generation, transmission, and distribution.

The aging power grid infrastructure has been highlighted as a top priority for most countries. As a central part of this upgrade, Smart Grid makes strong financial sense as it increases the efficiency and safety in the power plants while enhancing productivity and reducing the scope and time of power interruptions. It is also imperative as changes such as increased use of electric vehicles and green energy sources like wind and solar become a larger part of our power grid.

changes in real-time to

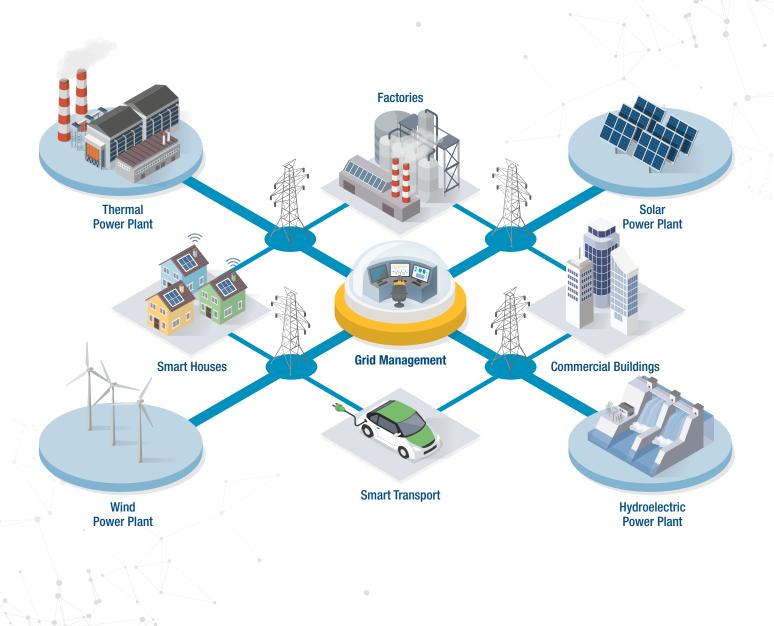
provide power resiliency.

For 30 years, Panduit has been at the forefront of fiber optic technologies used in data center and central office communications. Our Innovation Center boasts some of the most advanced optical research in the industry. Our fiber infrastructure is trusted by government, financial, industrial, and technology companies to deliver world-class reliability, scalability, and support for whatever the future brings.

Let us help you plan and deliver the right solution for your Smart Grid.

Smart Grid

Electricity Supply Network









Smart Grid Solutions Overview



Racks and Cabinets

Accelerate deployment with a next-generation cabinet or rack with custom configurations to meet your network needs.

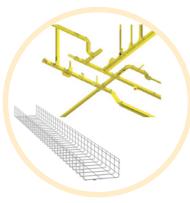
Page 6



Connectivity

Comprehensive fiber optic and copper systems that support advanced bandwidth and mission-critical physical infrastructures that deliver high performance, reliability, and scalability.

Page 10



Cable Routing and Pathways

Segregate, route, and protect fiber optic and highperformance copper cabling from distribution areas to equipment cabinets or racks.

Page 14



Power and Electrical

Monitor data center power by continuously scanning for electrical circuit overloads and environmental conditions that place critical IT equipment at risk.

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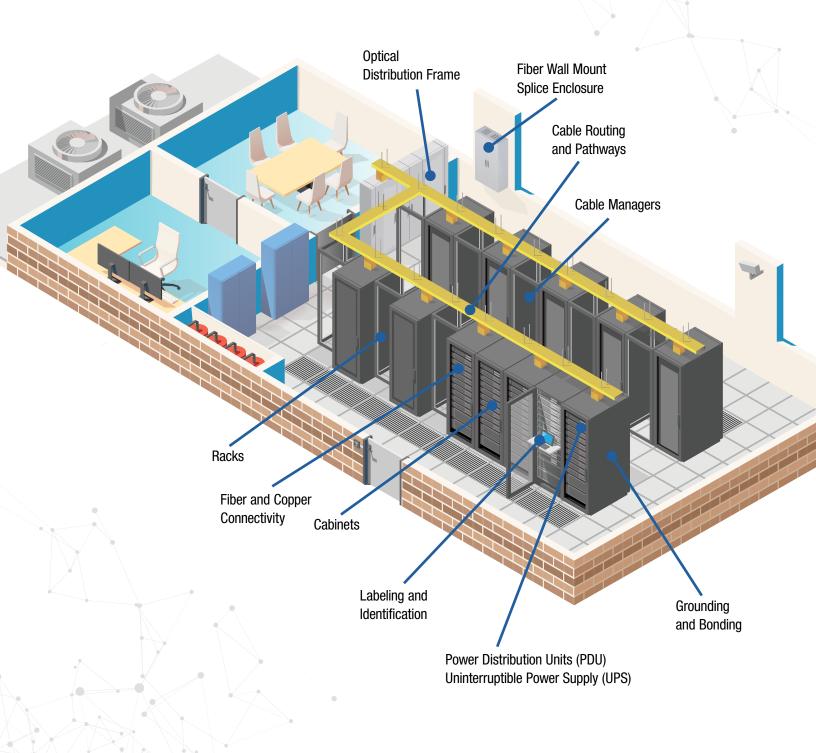


Labeling and Identification

Improve productivity, accuracy, and workplace safety with innovative labeling and identification.

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Smart Grid Hut or Head End



Racks & Cabinets

FlexCore[™] Optical Distribution Frame

The FlexCore Optical Distribution Frame is a versatile front-access cabling system that provides the necessary protection for critical connections. Utilizing innovative cable management and simple, intuitive cable routing, the FlexCore ODF simplifies and reduces the time for moves, adds, and changes. With standard doors with locks and optional locks for each enclosure, the FlexCore ODF solution enables multi-tiered security that is important for multiple client access.



- Highly intuitive cable routing paths remove guesswork and prevents 'rip and replace' costs
- Innovative cable management and lockable vertical cable manager doors eliminate circuit risk and downtime
- Up to 3,168 fibers per frame when using standard 24 fiber cassettes
- Data center floor space can be reduced by 50%*
- Simplifies and reduces the time for moves, adds, and changes
- Multiple form factor (width) cassettes optimize rack space across wider applications
- Patch cords consolidated to a single length freeing up capital locked in maintaining inventory
- Multi-layer security with lock capability available at both 4RU enclosure and ODF doors

*Assumes 4 double frames (2 double frames in a 'back-to-back' arrangement). Design conditions and configuration specifics apply.

For more information on our FlexCore Optical Distribution Frame solution, scan the QR code.





HD Fusion Fiber Wall Mount Splice Enclosure

Fiber Optic Splice Enclosures house, organize, manage, and protect cable-to-cable fusion splice connections and are common for both middle mile and central office entrance facilities. They can accommodate up to 6,912 fibers typically coming in from the outside of the building (OSP) which can be spliced to indoor or indoor/outdoor cabling. A variety of cable sizes are accommodated using movable panels with grommeted openings allowing the transition from larger fiber count cables to smaller counts. Splice trays can accommodate individual or ribbon fibers.



For more information on our HD Fusion Fiber Wall Mount Splice Enclosure solution, scan the QR code.



FlexFusion™ XGL Cabinets

FlexFusion XGL Cabinets are the preferred choice for applications that require maximum flexibility in data center, enterprise or collocations deployment. Select from 16 models that are equipped with the essential options that provides a simple cost-effective cabinet solution.



Part Number	Width (mm)	Cabinet Height (RU)	Depth (mm)	Color
XGL64212B		42	1070	
XGL64222B	600	42	1200	
XGL64812B	000	48	1070	
XGL64822B		40	1200	Black
XGL84212B		42	1070	Diack
XGL84222B	900	42	1200	
XGL84812B	800	48	1070	
XGL84822B		40	1200	
XGL64212W		42	1070	
XGL64222W	600	42	1200	
XGL64812W	800	48	1070	
XGL64822W		40	1200	White
XGL84212W		42	1070	vviiite
XGL84222W	800	42	1200	
XGL84812W	300	48	1070	
XGL84822W		40	1200	



For more information on our FlexFusion Cabinet solution, scan the QR code.

Racks

4 post racks are designed to be an effective solution for the telecommunications room or network row. The rack can be used to manage high-performance copper and fiber patch cables.



Part Number	Description
R4P36	4 post EIA rack with #12–24 threaded rails. Dimensions: 84.0"H x 23.25"W x 36.0"D (2134mm x 591mm x 914mm).
R4P	4 post EIA rack with #12–24 threaded rails. Dimensions: 84.0"H x 23.25"W x 30.0"D (2134mm x $591mm \times 762mm$).
R4PCN	4 post EIA rack with cage nut rails. Dimensions: 84.0"H x 23.25"W x 30.0"D (2134mm x 591mm x 762mm).

The 2 post standard equipment rack provides a reliable foundation for mounting telecommunication and data center equipment. The rack can be used to manage high-performance copper and fiber patch cables.



Part Number	Description
R2P	2 post EIA rack with #12–24 threaded rails. Dimensions: 84.0"H x 20.3"W x 3.0"D (2134mm x 516mm x 76mm).
R2P6S	2 post EIA rack with #12–24 threaded rails. Dimensions: 84.0"H x 20.3"W x 6.0"D (2134mm x 615mm x 152mm).



For more information on our full line of Racks, scan the QR code.

Cable Management Systems

PATCHRUNNER™ 2 ENHANCED VERTICAL CABLE MANAGER

PatchRunner 2 Enhanced Vertical Cable Manager is designed to manage high density networking equipment in up to half the area required by traditional cable management systems. The reduction in square footage combined with fewer components ordered, inventoried, and installed results in significant cost savings for the network infrastructure.

For more information on our full line of Cable Management solutions, scan the QR code.





Accessories

TAK-TAPE™ HOOK AND LOOP ROLL

The Tak-Tape Hook and Loop Cable Roll is constructed of soft, premium material that is safe to use on high performance cables to protect against over-tensioning. The hook and loop cable tie is adjustable, releasable, and re-usable making it ideal for applications requiring frequent moves, adds, or changes.

Part Number	Description
TTR-35RX0	Tak-Tape Hook and Loop Cable Roll is 35' L x 0.75" W (6.1m x 19.1mm). The cable roll comes in packages of 10.

SMARTZONE™ SECURITY HANDLE

SmartZone G5 Security Handle is specially designed to meet the most rigorous of security challenges (both digital and physical) in today's data center environment.



Part Number	Description
ACF05	SmartZone Security Handle with dual frequency (125 kHz and 13.56 MHz) card reader and integral humidity sensor. All handles feature the base tumbler (TU020X) pre-installed at the factory.
ACF06	SmartZone Security Handle with dual frequency (125 kHz and 13.56 MHz) card reader, integral humidity sensor, and keypad for dual authentication

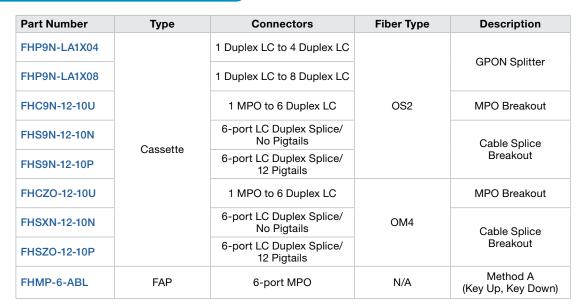
Connectivity

Fiber Optic Systems

Providing advanced bandwidth and mission-critical physical infrastructures with comprehensive fiber optic systems that deliver high performance, reliability, and scalability.

HD FLEX™ HIGH DENSITY FIBER CASSETTES







⁴ and 12 port cassettes are also available

HD FLEX HIGH DENSITY FIBER ENCLOSURES



Part Number	Cassettes/FAP Capacity	Rack Units (RU)	Max Fiber Capacity	
FLEX1U06*	12	1	144	
FLEX2U06*	24	2	288	
FLEX4U06*	48	4	576	

^{*}Replace 06 with 04 or 12 for 4 port and 12 port enclosures

HD FLEX HIGH DENSITY FIBER ACCESSORIES





Part Number	Description
FLEX-PLATE1U	HD Flex Enclosure Trunk Slack Plate – 1 RU.
FLEX-PLATE4U	HD Flex Enclosure Trunk Slack Plate – 4 RU.
FLEX-CM12S	HD Flex Universal Rear Cable Manager, 12-position transition managers with a screw mount bracket.
FLEX-CM18S	HD Flex Universal Rear Cable Manager, 18-position transition managers with a screw mount bracket.

Fiber Adapter and Cassettes

OPTICOM® FIBER ADAPTER PANELS



Part Number	Adapter Type	Fiber Type	Adapter Color
FAP6WAGDSCZ	SC APC Duplex	OS2	APC Green
FAP6WAQDSCZ	SC Duplex	OM4	Aqua
FAP6WBUDSCZ	SC Duplex	OS2	Blue
FAP12WAGDLCZ	LC APC Duplex	OS2	APC Green
FAP12WAQDLCZ	LC Duplex	OM4	Aqua
FAP12WBUDLCZ	LC Duplex	OS2	Blue

OPTICOM ENCLOSURES

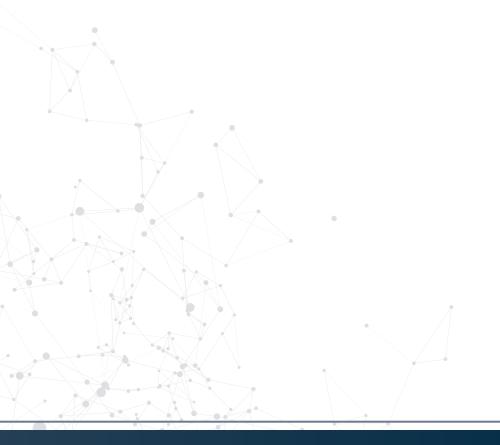


Part Number	Cassettes/FAP Capacity	Rack Units (RU)	Max Fiber Capacity	
FCE1U	4	1	96	
FCE2U	8	2	192	
FCE4U	12	4	288	

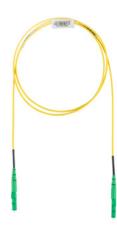
OPTICOM MPO FIBER ADAPTER PANELS



Part Number	Ports	Polarity	Color
FAPH0612CGMPO	6	Method B, Key-Up/Key-Up	Charcoal Gray
FAPH1212BLMPO	12	Method A, Key-up/Key-Down	Black



FIBER JUMPERS (PATCH CORDS)



Part Number	Fiber Type	Fiber Count	Cable Type (mm)	Jacket Type	Connectors	Length (m)
FZ2RPU1U1ONM001*	OM4	2	2mm Uniboot	Plenum (OFNP)	LC Duplex to LC Duplex	1
F92RPU1U1ONM001*	OS2	2	2mm Uniboot	Plenum (OFNP)	LC Duplex to LC Duplex	1
F92RPU2U2ONM001*	OS2	2	2mm Uniboot	Plenum (OFNP)	LC APC Duplex to LC APC Duplex	1
F923RANANSNM001*	OS2	2	3mm Duplex Zip Cord	Riser (OFNR)	SC APC Duplex to SC APC Duplex	1
F91BN1NNNSNM001^	OS2	2	1.6mm Simplex	Riser (OFNP)	LC Simplex to Pigtail	1
F91BNANNNSNM001^	OS2	1	3mm Simplex	Riser (OFNR)	SC APC Simplex to Pigtail	1



*The last 3 digits indicate length. Fiber Jumper (Patch Cords) are available in lengths 001 to 050m ^The last 3 digits indicate length. Fiber Pigtails are available in 001, 002, and 003m

To configure your own fiber patch cords, visit www.panduit.com/configure-fiber-patch-cord.

FIBER TRUNK CABLES



Part Number	Fiber Type	Fiber Count	Jacket Type	Connectors	Polarity	Length (Ft.)
FYZTP77Y005F100*	0144	12	Plenum	PanMPO™ Female to PanMPO	Method B,	100
FYZUP77Y005F100*	OM4	24	(OFNP)	Female with 1m breakouts, pulling eye end A	Optimized IL	100
FY9TP77B005F100*	OS2	12	Plenum (OFNP)	PanMPO Female to PanMPO	Method B,	100
FY9UP77B005F100*	052	24		(OFNP)	Female with 1m breakouts, pulling eye end A	Standard IL

^{*}The last 3 digits indicate length. Fiber trunks are available in lengths 015 to 999 feet. To configure your own fiber trunk assemblies, visit www.panduit.com/configure-fiber-trunk.

FIBER INTERCONNECTS



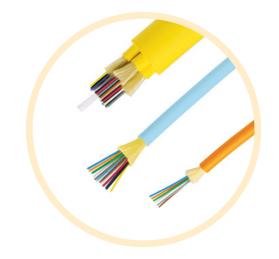
Part Number	Fiber Type	Fiber Count	Jacket Type	Connectors	Polarity	Length (Ft.)
FRZTP77Y001F001*			Plenum (OFNP)	PanMPO Female to PanMPO Female	Method B, Standard IL	1
FRZTP77Y001F002*		10				2
FRZTP77Y001F003*	OM4	12				3
FRZTP77Y001F005*						5
FR9TP77B001F001*	OS1/2	19 1	Plenum	PanMPO Female to PanMPO	Method B, Standard IL	1
FR9TP77B001F002*						2
FR9TP77B001F003*			(OFNP)	Female		3
FR9TP77B001F005*						5



*The last 3 digits indicate length. Fiber interconnects are available in lengths 001 to 300 feet. Pre-labeled fiber interconnects all come standard with *RapidID™* labels for easy installation and identification

Bulk Fiber Optic Cable

Offering a wide range of fiber optic cable, including indoor cable, indoor/outdoor cable, and outside plant cable.



Indoor/Outdoor Fiber Optic Cable Solutions
For a full listing of Indoor/Outdoor
Fiber Optic Cable solutions, scan the QR code





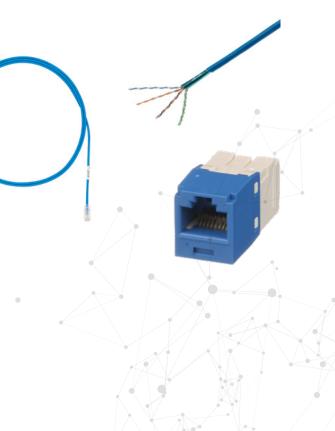
Indoor Fiber Optic Cable Solutions
For a full listing of Indoor Fiber Optic Cable solutions, scan the QR code.

Copper Systems

Offering a full-line of innovative copper products that support all of today's most common IP applications including PoE and wireless technologies. Get the greatest value on the market, guarantee future reliability, and provide the foundation for your network's growth by choosing from our copper jack modules, patch cords, patch panels, punchdown systems, cable, and pre-terminated solutions.

For more information on our full line of Copper System solutions, scan the QR code.





Cable Routing and Pathways

FiberRunner® Cable Routing System

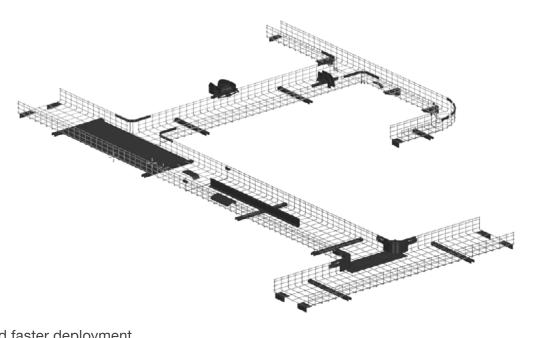
The FiberRunner Cable Routing System ensures maximum network reliability and reduced cost of ownership. Robust, highly engineered components with integral bend radius control surfaces can be configured to meet virtually any network application to provide optimum cable protection and assure network performance. Fast and easy to deploy, this scalable cable routing solution reduces installation cost and speeds implementation of new services.

For a full listing of FiberRunner Cable Routing System sizes, accessories, options, and colors please visit www.panduit.com/fiber-runner



Wire Basket Overhead Cable Tray Routing System

The Wire Basket Cable Tray
Routing System is designed
to route and manage copper
data cables, fiber optic,
or power cables within a
variety of settings, including
central offices, data centers,
connected buildings, and
industrial automation
applications. Innovative
features provide quick,
safe, and easy assembly for
reduced installation costs and faster deployment.



For a full listing of Wire Basket Cable Tray Routing System sizes, accessories, options, and colors please visit www.panduit.com/wire-basket

Basket Trays

Heights come in 2 inches, 4 inches, and 6 inches. Widths come in 4 inches, 6 inches, 8 inches, 12 inches, 18 inches, and 24 inches. Colors include black, white, and electro zinc.



Waterfalls

Variety of waterfall options supporting a variety of widths in colors of black and electro zinc.



Mounting Brackets

Variety of mounting bracket options with width sizes of 4 inches, 6 inches, 8 inches, 12 inches, 18 inches, and 24 inches. Colors include black, white, and electro zinc.



Tray Liners

Tray liners support widths of 12 inches, and 18 inches. Colors come in black and pre-galvanized.



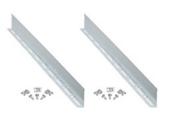
Hardware

Hardware options include splice and clip accessories that support a variety of sizes and come in colors of black and electro zinc.



Divider Walls

Divider walls support widths of 2 inches and 4 inches. Colors come in black and pre-galvanized.



Intersections

Intersection support basket heights of 2 inches and 4 inches with colors of black and electro zinc.





For more information on our Wire Basket Cable Tray Routing System solution, scan the QR code.

Power and Electrical

SmartZone G5 iPDUs

SmartZone G5 iPDUs monitor the data center power and the environment by continuously scanning for electrical circuit overloads and physical environmental conditions that place critical IT equipment at risk. By monitoring physical access points, the PDUs increase cabinet security to protect your systems and data. With some of the highest outlet densities and the smallest form factors available in the market, your cabinets will be functioning at their most resourceful state.

PRODUCT FAMILIES

Monitored Input (MI) Series

Input power monitoring

Monitored Switched (MS) Series

Input power monitoring and outlet switching

Monitored per Outlet (MPO) Series

Input and Outlet level power monitoring

Monitored and Switched per Outlet (MSPO) Series

Input and Outlet level power monitoring and outlet switching

Basic

Reliable power distribution (non-network)

Accessories

A variety of environmental sensors, security devices, and power cords

Note: All intelligent PDUs include capabilities for environmental monitoring and rack access control

For a full listing of our Intelligent Power Distribution Units, Accessories, and Power Cords, scan the QR code.



SmartZone Uninterruptible Power Supply

The SmartZone Uninterruptible Power Supply delivers highly efficient and reliable power protection and backup power for your computer IT equipment. To continually meet the growing power demands of data center, enterprise and edge IT equipment, the SmartZone UPS provides excellent electrical performance, intelligent battery management, enhanced intelligent monitoring, secure network functions, and a long lifespan for lithium units. Additionally, they comply with ENERGY

STAR® 2.0, EMC, and safety standards and have been integrated with the SmartZone Cloud Next Generation DCIM Solution.



Part Number	Input Plug	kVA	UPS Toplogy	Form Factor
U05S11V	NEMA-L6-30P	5		6U
U05N11V				
U06N11V	Hardwire (L-L-G)	G Double Conversion	Dauble Conversion	
U06S11V		6	Double Conversion	
U10N11V		10		
U10S11V				

For more information on our line of Uninterruptible Power Supply solution, scan the QR code.



Cable Cleats

Cable Cleat solutions ensure cables remain contained in the event of a short circuit fault to minimize disruption and damage to personnel and property. Uniquely engineered for ease of installation and available in a range of applications and harsh environments, our cable cleats meet the needs of any project while providing on-the-job productivity, reliability, and safety.









Part number	Material	Description	Size
CCSSTR3036-X		Trefoil	30mm-36mm cable diameter
MS10W75T30-Q6	Stainless Steel	Buckle Strap	991mm length
MLT6DSH-Q		Locking Strap	152mm length
CCALTR2326-X	Aluminum	Trefoil	23mm-26mm cable diameter
CCAL2H3846-X		Two-Hole	38mm-46mm cable diameter
CCAL1H2732-X		One-Hole	27mm-32mm cable diameter
CCPLTR2633-X	Polymer	Trefoil	26mm-33mm cable diameter
CCPL2H4658-X		Two-Hole	46mm-48mm cable diameter
CCPL1H4651-X		One-Hole	46mm-51mm cable diameter

Each product comes in different cable diameters, consult our ordering guide for a full list of diameter options.



For more information on our Cable Cleat solutions, scan the QR code.

Grounding and Bonding

Grounding and bonding solutions meet customer needs and today's critical application requirements for grounding data centers and telecommunication spaces. Panduit offers a wide variety of individual components and accessories to solve multiple grounding and bonding applications:



GROUNDING AND BONDING EQUIPMENT BONDING JUMPER KIT



Part Number	MCBN Conductor Size #6-#2 AWG	Description
RGCBNJ660P22	HTCT2-2-1	#6 AWG (16mm2) jumper; 60" (1.52m) length; 45° bent lug on grounding strip side; provided with .16 oz. (5cc) of antioxidant, two each #12–24 x 1/2", M6 x 12mm, #10–32 x 1/2" and M5 x 12mm thread-forming screws and a copper compression HTAP* for connecting to the MCBN.

GROUNDING BUSBAR

Part Number	Description			
Grounding Busbar Kits for Threaded Rail Fasteners				
RGRB19U	Grounding busbar; 19" (483mm) length; tin-plated; 20 holes arranged for flexibility in mounting with 20 #12–24 x 1/2" hex head screws installed; mounting hole sets have 5/8" (15.9mm) spacing; provided with two each #12–24 x 1/2", M6 x 12mm thread-forming screws, and two #12 flat washers for mounting.			



GROUNDING STRIP



Part Number	Description
RGS134-1Y	Grounding strip; 78.65" (2m) length; .67" (17mm) width; .05" (1.27mm) thickness; provided with .16 oz. (5cc) of antioxidant, one grounding sticker and three each #12–24 x 1/2" and M6 x 12mm thread-forming screws.

GREEN BONDING CAGE NUT KIT



Part Number	Description
CNBK	Green bonding cage nut, includes 50 #12–24 bonding cage nuts (.06–.11 thick panel) and 50 #12–24 x 1/2" bonding screws with #2 Phillips/slotted combo hex head (use 5/16" or 8mm socket).

STRUCTUREDGROUND™ GROUNDING SYSTEM



Description

StructuredGround™ Grounding System provides high quality, visually verifiable, and dedicated grounding path to maintain system performance and protect network equipment and personnel. Panduit grounding and bonding components are designed for use on racks and cabinets which meet EIA-310.

For more information on our Grounding and Bonding solutions, scan the QR code.



Labeling and Identification

Offering a full line of labeling products, software, and printers to assist you with your labeling requirements. We also offer signs and permanent identification solutions to deliver improved productivity and workplace safety.



PRINTERS



The Panduit MP300 mobile label printer is the ideal solution for labeling in the field. Our printer offers a wide variety of die-cut and continuous label sizes up to 1.5" wide and an automatic cutter with capabilities for full and half cuts. With 360 dpi resolution and fast printing speed, the MP300 increases labeling productivity. Printer comes with one label cassette, hard carrying case, rechargeable battery pack, magnetic attachments, USB cable, and power adapter. Available only in North America.

CASSETTE LABELS





Part Number	Description
S100X150VAM	Vinyl self-laminating label cassettes can easily be installed on existing terminated wires and assemblies and does not require disconnecting wires or cables. Adhesive labels for wire/cable identification with white print-on area and clear overlaminate. Label is 1.0" x 1.5", with 1.0" x 0.5" print-on area. Designed for Category 5e/6/6A UTP and Category 5e FTP/10 - 6 AWG cable. 175 labels per cassette.
R100X150V1M	Turn-Tell label cassettes, have an innovative design that allows label rotation to any angle for improved visibility, aesthetics, and easy repositioning. Label is 1.0" x 1.5" with 1.0" x 0.5" white print-on area and clear overlaminate. It can easily be installed on existing terminated wires and assemblies and does not require disconnecting wires or cables. For use with Panduit MP series printers. 100 labels per cassette.



For more information on our line of Labeling and Identification solutions, scan the QR code.

Our most important connection is with you.

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

www.panduit.com

Let's Connect

www.panduit.com/contact-us

