Fiber Broadband

Build efficient, high-performing Fiber to the Home networks

PANDUIT®

Application Guide

Table of Contents

Introduction to Fiber Broadband 3

Fiber Broadband Components 5

- Multiport Service Terminals (MSTs) 6
- Fiber Drop Cable Assemblies 7
- Pedestal Enclosures 8
- Outdoor Dome Fiber Splice Closures 9
- Outside Plant Fiber Optic Cable 10

Application Scenarios 12

- Fiber Distribution Using Multiport Service Terminals (MSTs) 12
- Drop Cable Deployment to Subscriber Premises 14
- Protecting Fiber in Pedestal Enclosures 15
- Splicing and Securing Fiber with Outdoor Dome Closures 16

Ordering Information 17

- Multiport Service Terminals (MSTs) 17
- Fiber Drop Cable Assemblies 17
- Pedestal Enclosures 18
- Outdoor Dome Fiber Splice Closures 18
- Outside Plant Fiber Optic Cables 18
- Accessories 19

Threads of Light: Understanding Fiber Broadband

Panduit's Legacy in Infrastructure Solutions

Panduit's expertise in inside plant (ISP) solutions, such as structured cabling for data centers and enterprise networks, has now expanded to outside plant (OSP) fiber broadband solutions. This ensures reliable, high-speed internet connectivity to homes and businesses through innovative, future-proof fiber to the home (FTTH) infrastructure.

Overview of Fiber to the Home (FTTH)

Fiber to the Home is a broadband network architecture that delivers high-speed internet directly to residences and businesses using fiber-optic cables. Compared to legacy copper-based technologies such as DSL and coaxial cable, fiber broadband enables greater bandwidth, lower latency, and enhanced network reliability.

Why Fiber? Advantages of FTTH

- **High-Speed Connectivity:** Supports speeds up to 10 Gbps and beyond
- **Low Latency:** Ideal for real-time applications such as video conferencing, gaming, and telemedicine
- **Reliability and Longevity:** Resistant to electromagnetic interference, corrosion, and signal degradation
- **Scalability:** Easily upgradable to accommodate future bandwidth growth
- **Energy Efficiency:** Consumes less power than copper-based networks, reducing operational costs

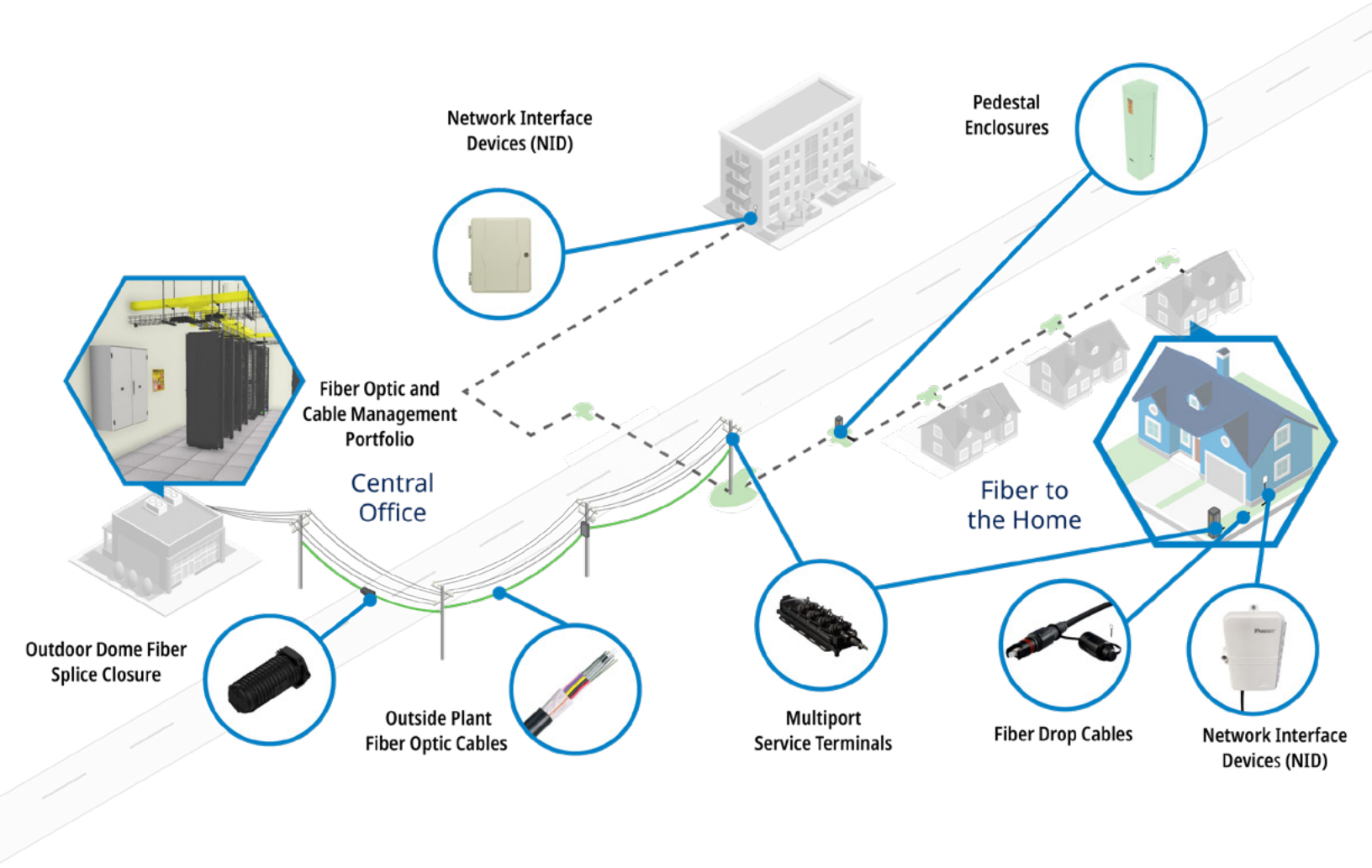
Industry Trends and Market Growth

- **Rising Demand for Gigabit Internet Services** due to increasing video streaming, remote work, and cloud computing
- **5G and Smart Cities Initiatives** require high-capacity fiber backhaul
- **Greenfield and Brownfield Deployments** by telecom operators and ISPs to expand broadband coverage

Our Commitment to Broadband Infrastructure

Panduit fiber broadband solutions are designed to simplify deployments, improve reliability, and ensure long-term scalability. With a strong focus on product innovation, quality, and ease of installation, Panduit broadband solutions enable service providers to build efficient, high-performing FTTH networks.

Fiber Broadband Components



Outdoor Dome Fiber Splice Closure

Keeps fiber splices secure with an IP68-rated, weatherproof seal. Protects against water, dust, and impact for long-term network reliability.

Outside Plant Fiber Optic Cables

Expands network capacity with fiber counts up to 144, allowing for easy scaling. Multiple jacket options protect against extreme outdoor conditions.

Multiport Service Terminals

Simplifies fiber distribution with a pre-installed terminal bracket, making installation faster and more efficient. Mounts easily in pedestals and aerial applications for flexible deployment.

Fiber Drop Cable Assemblies

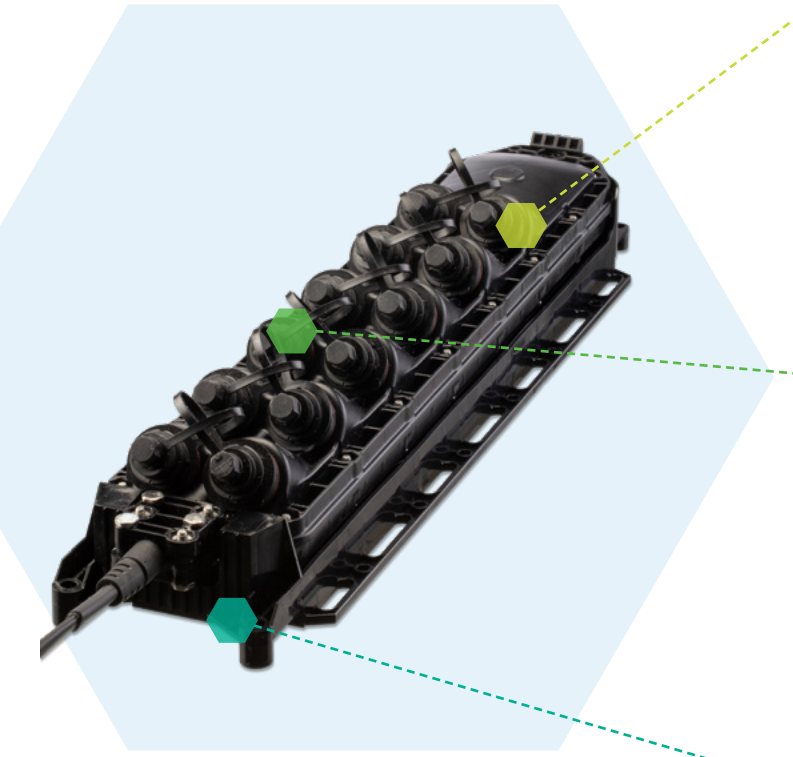
Speeds up fiber installations with weather-resistant technology. Available in two options to reduce costs or enhance deployment flexibility.

Pedestals

Protects fiber connections from harsh weather and physical damage, ensuring a long-lasting, stable network. Easy to install with minimal maintenance required.

Multiport Service Terminals (MSTs)

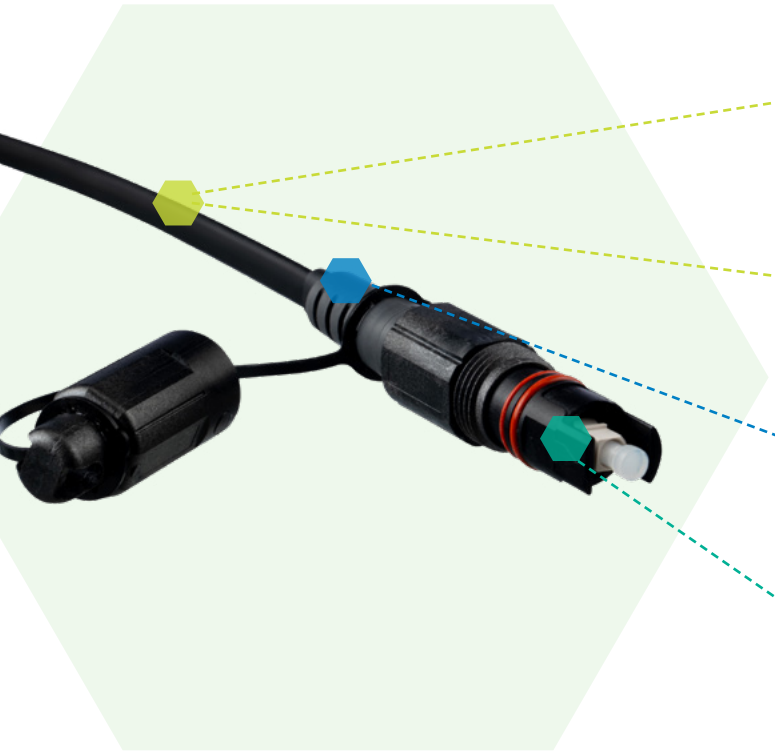
Function: MSTs serve as fiber distribution points, connecting distribution fiber to multiple drop cables in FTTH networks.



- 4-, 8-, and 12-port options equal flexible deployment choices.
- Flexible mounting options including handhole, pedestal, pole, or strand.
- OptiTap® Compatible plug-n-play adapter ports ensure rapid cable installation.
- Available in 200- and 500-foot lengths to suit different project scopes.
- IP68-rated, UV-stabilized housing ensures long-term durability in harsh environments.

Fiber Drop Cable Assemblies

Function: Pre-terminated fiber cables connect MSTs to subscriber Optical Network Terminals (ONTs).



Lengths ranging from 50 feet to 1,000 feet support deployment flexibility.

Designed to meet or exceed Telcordia GR-3120-CORE standard.

Toneable and non-toneable options for underground and aerial applications.

OptiTap® for plug-n-play connectivity for reliable and secure connections.

OptiTap® is a registered trademark of Corning, Inc.

Pedestal Enclosures

Function: Pedestal enclosures are made of robust galvanized steel to provide a protective housing for MSTs, fiber splices, and slack storage.

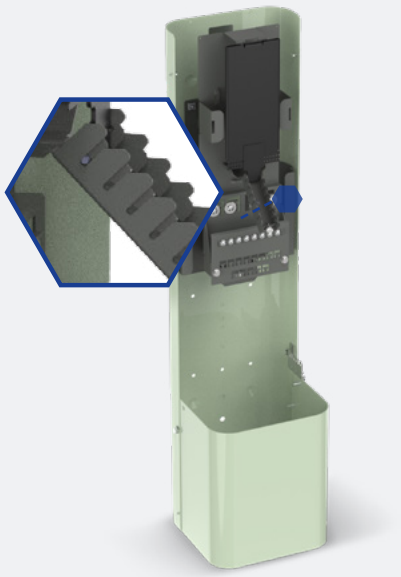
Pre-installed MST Mounting Bracket

Available in 8-inch and 10-inch models

Pedestal with MST bracket, for applications where speed of deployment is a priority.

Splice Tray holder

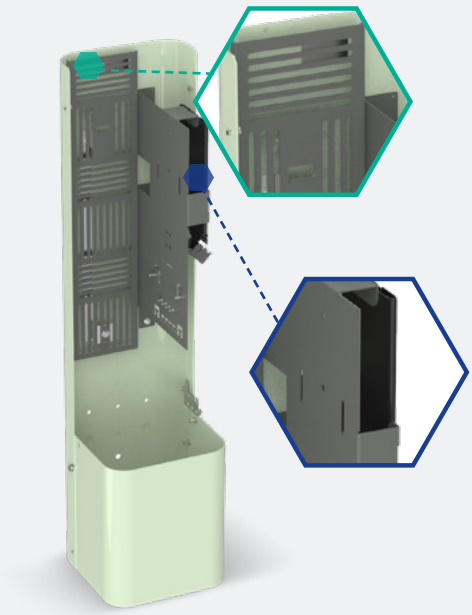
Available in 8-inch and 10-inch models



Pedestal for drop network requiring splicing, allowing up to six splice trays to be installed.

Splice Tray & MST mounting bracket

Available in 10-inch model only



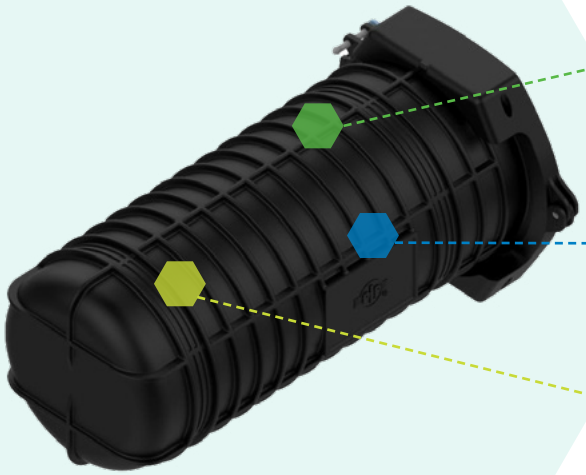
Pedestal for drop network requiring manual splicing and MSTs, simplifying deployment by bringing both functions into a single housing.

Pedestal splice enclosure

Pedestal splice enclosure for additional environmental protection. Available in 8-inch and 10-inch models.

Outdoor Dome Fiber Splice Closures

Function: Protects fiber splices in aerial or underground installations.



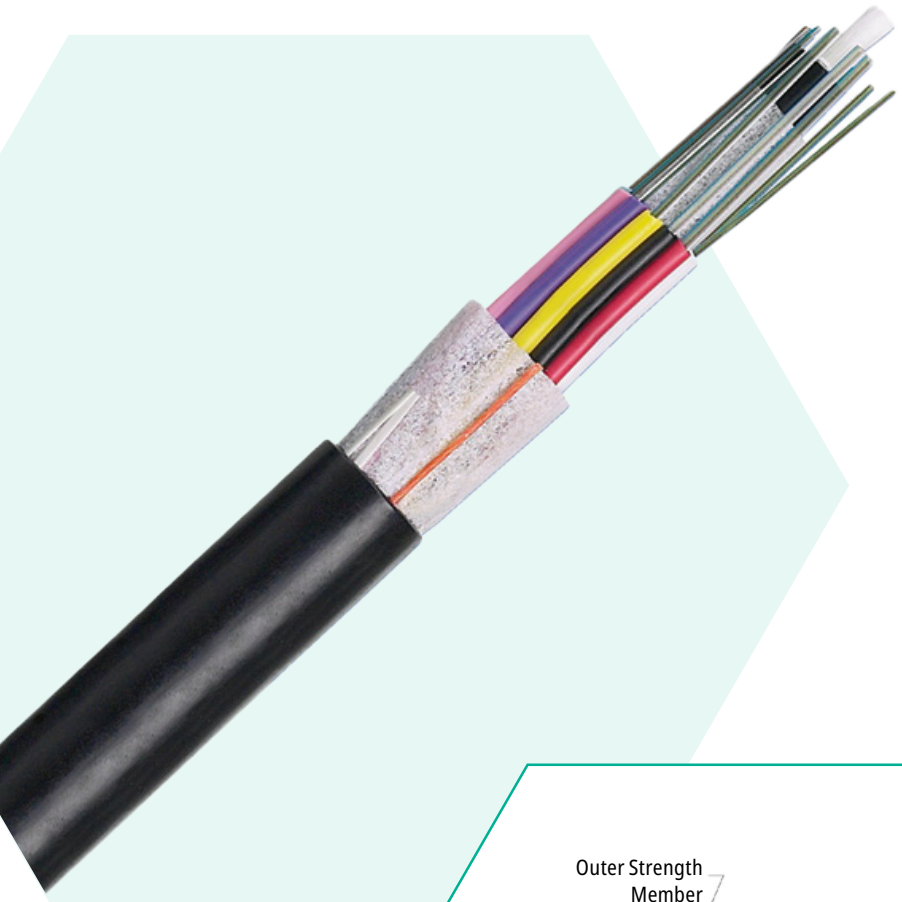
Segmented port design allows independent cable access.

Multiple fiber tray capacity supports high splice volumes up to 144 single fibers.

IP68-rated housing protects connections from water and dust.

Outside Plant Fiber Optic Cable

Function: All-dielectric outside plant fiber optic cables for outdoor use, including duct and lashed applications.

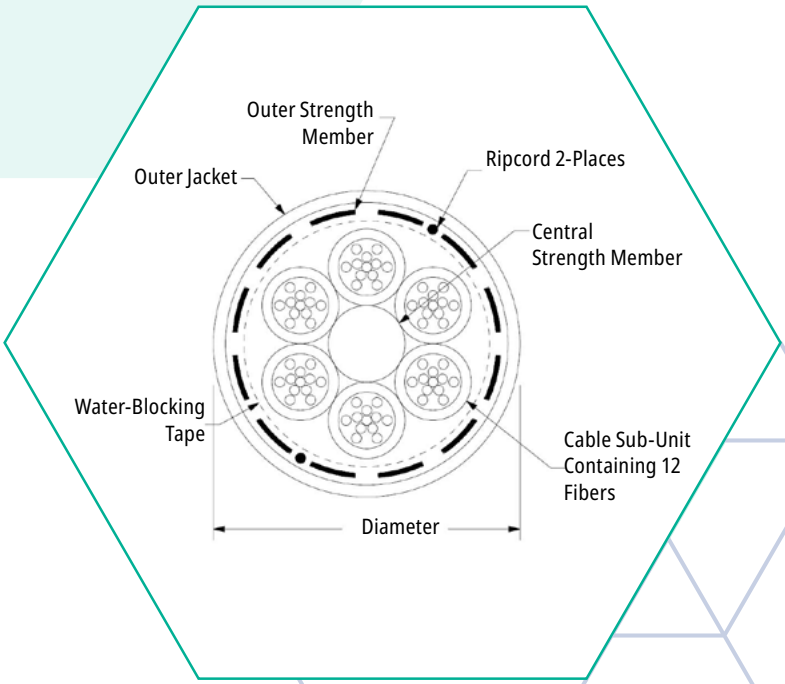


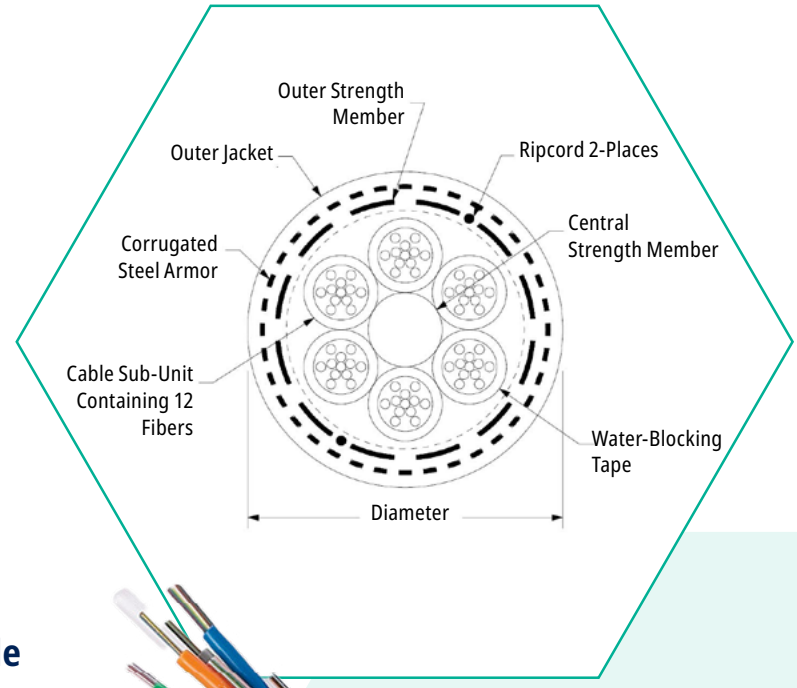
Dielectric (Non-armored) Fiber Optic cable

Gel-free with dry water-blocking element and UV-resistant outer jacket.

Non-metallic cable eliminates need for grounding and bonding.

Scalable fiber counts ranging from 48 to 144 fibers.



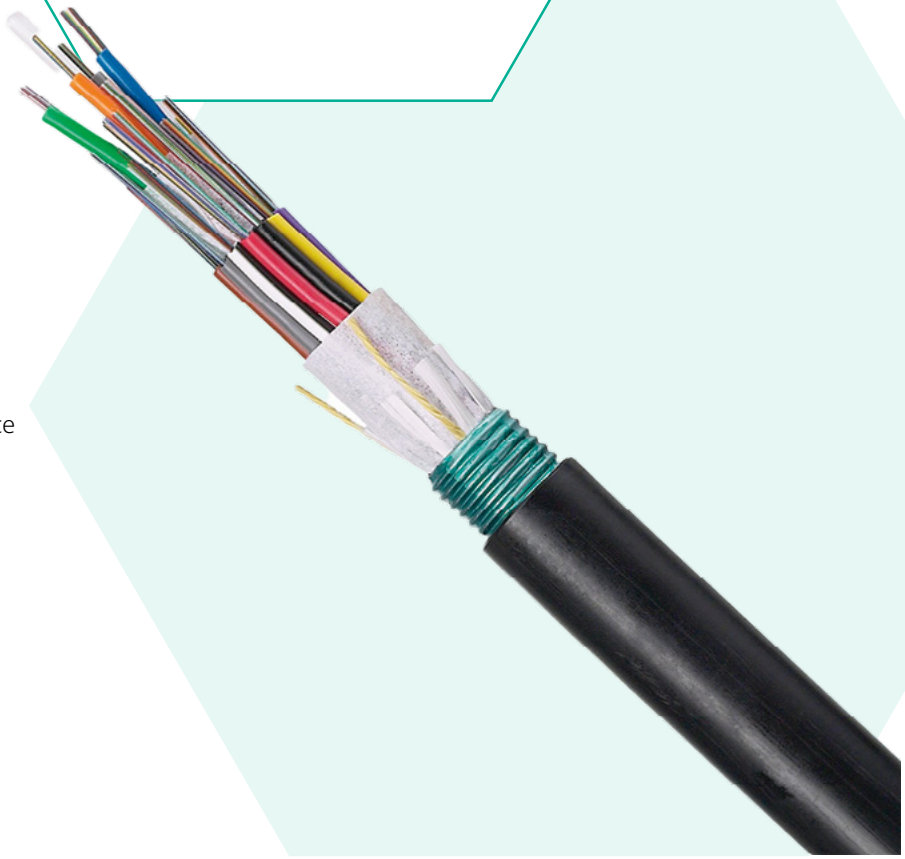


Armored Fiber Optic cable

Gel-free with dry water-blocking element and UV-resistant outer jacket.

Armor provides crush resistance and rodent protection.

Scalable fiber counts ranging from 48 to 144.



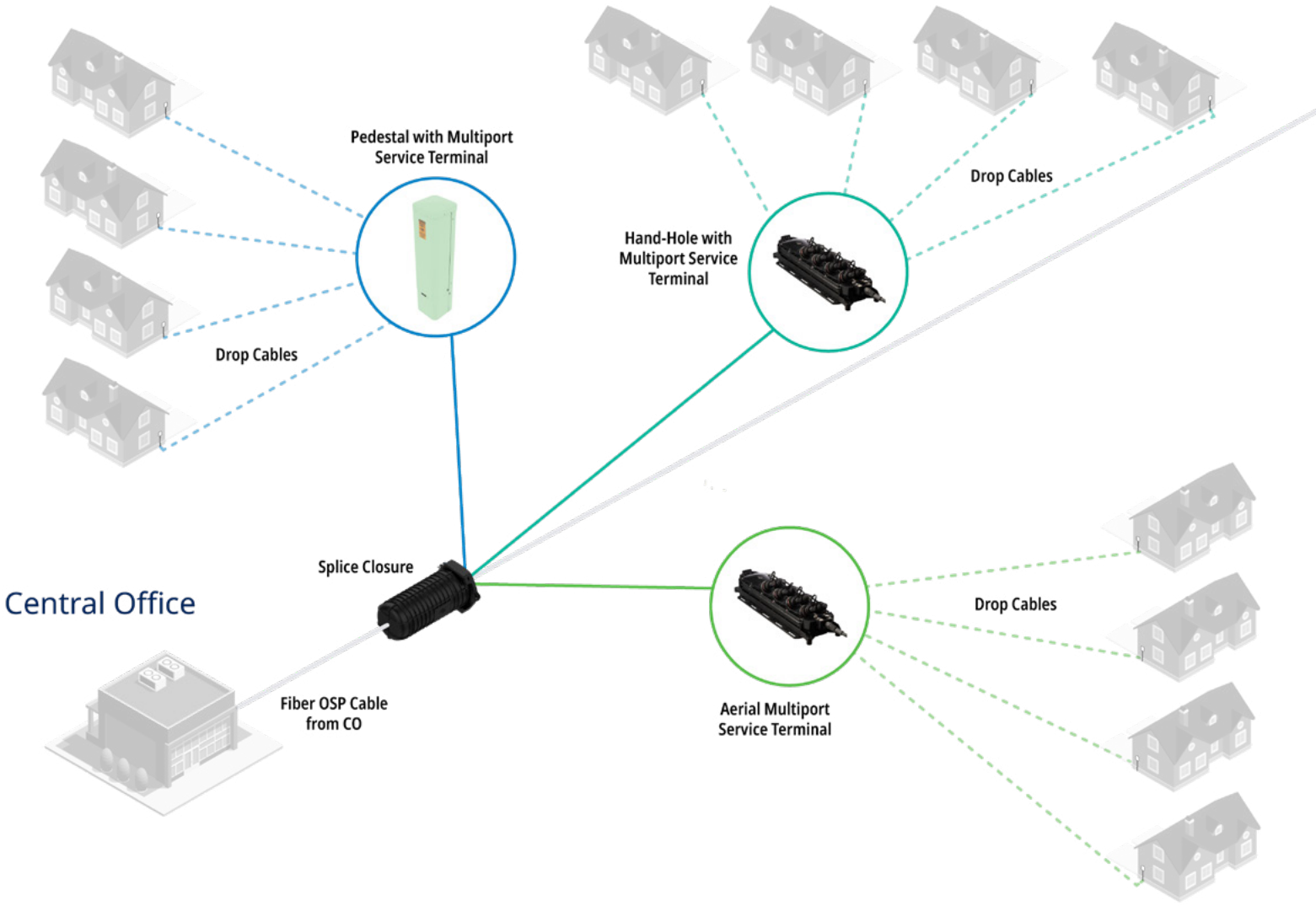
Application Scenarios

The following scenarios provide guidance on how and where Panduit's broadband products are best utilized in fiber networks:

Fiber Distribution Using Multiport Service Terminals

Application Overview:

Multiport Services Terminals are designed to facilitate the distribution and management of fiber optic lines in residential areas, providing multiple connection points for fiber optic cables. MSTs enable quick plug-and-play fiber connections, reducing labor-intensive splicing in the field.



Where It's Used:

- **New FTTH Deployments:** MSTs allow for rapid network buildouts, minimizing time to market.
- **Network Expansions:** Easily integrated into existing fiber infrastructure to add more subscribers.

Installation Considerations:

- **Aerial MST Deployment:** MSTs can be strand-mounted on poles, enabling quick drop cable connections to individual homes.
- **Underground MST Deployment:** MSTs can be placed inside vaults, handholes, or pedestals for underground fiber networks.
- **Drop Cable Routing:** Pre-terminated MSTs allow for direct plug-in of hardened fiber drop cables, eliminating the need for on-site splicing.

Best Practices:

- Use MSTs in areas where multiple subscribers require fiber connectivity from a single access point.
- Plan MST locations strategically to minimize the required drop cable length and reduce deployment costs.
- Ensure MSTs are securely mounted to prevent physical stress on fiber connectors.

Drop Cable Deployment to Subscriber Premises

Application Overview:

Fiber drop cables are used to extend fiber connectivity from MSTs to the Optical Network Terminal (ONT) at the subscriber's premises. Drop cables provide the final connection between the main fiber network and the customer's home or business.

Where It's Used:

- **Single-Family Homes:** Direct drop cables connect homes to overhead MSTs or underground handholes.
- **Multi-Dwelling Units (MDUs):** Drop cables connect multiple subscribers in apartment buildings or business complexes.
- **Rural Broadband Expansion:** In areas with longer distances between subscribers, drop cables extend fiber from the MST to homes.

Installation Considerations:

- **Aerial Drop Cables:** Suspended from utility poles and terminated at the subscriber's premises.
- **Buried Drop Cables:** Placed inside conduits or directly trenched for underground installations.
- **Toneable Drop Cables:** Help identify fiber routing and simplify troubleshooting for maintenance teams.

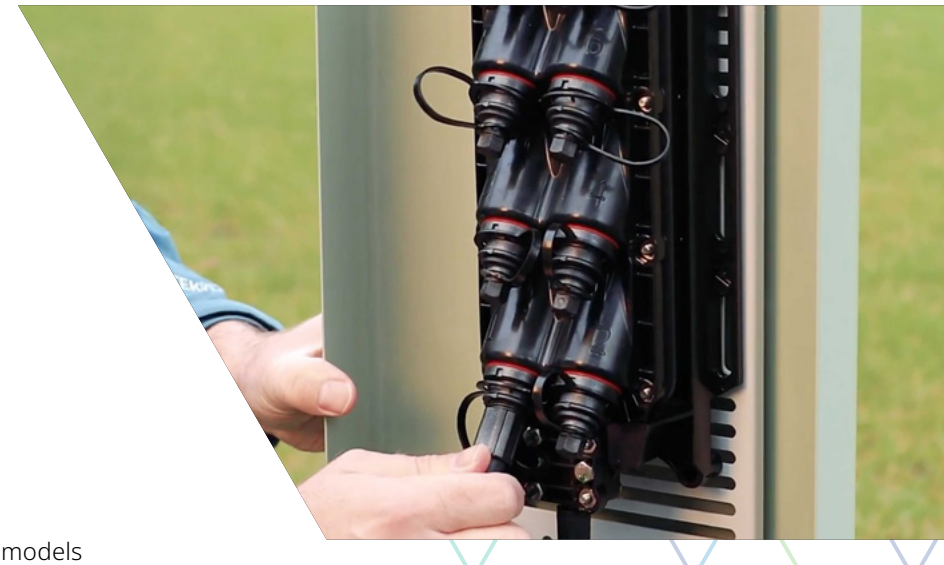
Best Practices:

- Use pre-terminated hardened connectors to eliminate the need for splicing.
- Maintain the minimum bend radius to avoid fiber breakage.
- Label fiber connections at both MST and ONT ends to aid future maintenance.
- Secure aerial cables properly to prevent sagging or excessive tension.

Protecting Fiber in Pedestal Enclosures

Application Overview:

Pedestal enclosures provide a secure, weatherproof housing for fiber optic splices, MSTs, and slack storage. They are essential for protecting network access points and ensuring long-term reliability in outdoor environments. Pedestals also support additional components such as splice tray holders, splice enclosures, and MST mounting brackets, enhancing scalability and flexibility.



Where It's Used:

- **FTTH Access Points:** Houses MSTs and splices at street-side distribution points.
- **Last-Mile Network Segments:** Protects fiber transitions between main feeder cables and drop cables.
- **High-Density Neighborhoods:** Provides an accessible connection hub for multiple subscribers.

Installation Considerations:

- **Pedestal Sizes:** Available in 8-inch and 10-inch models to accommodate different network needs.
- **Mounting and Anchoring:** Secure pedestals in soil, concrete, or mounting stakes for stability.
- **Fiber Storage:** Provides a dedicated space for slack fiber management, preventing tangling or damage.
- **Splice trays and enclosures:** When used, ensure splice trays are securely mounted within the pedestals. If a splice enclosure is used, verify all entry points are sealed to maintain protection against moisture, pest, and dust ingress.

Best Practices:

- Position pedestals in accessible areas while ensuring they are not obstructing pedestrian or vehicle pathways.
- Ensure the pedestal is properly sealed to prevent moisture, dirt, or rodent intrusion.
- Label fiber ports inside the pedestal for easy identification and troubleshooting.

Splicing and Securing Fiber with Outdoor Dome Closures

Application Overview:

Outdoor dome fiber splice closures are used to protect fiber splices and cable junctions from environmental exposure. These closures enable network flexibility, allowing for fiber expansions, repairs, and reconfigurations.

Where It's Used:

- **Backbone and Distribution Networks:** Splice closures are used where feeder fibers need to be split or branched to multiple locations.
- **Rural and Urban Deployments:** Used in both aerial and underground installations for protecting spliced fibers.
- **Harsh Environment Conditions:** Essential for areas prone to flooding, extreme heat, or heavy snowfall, ensuring fiber integrity.

Installation Considerations:

- **Splicing Capacity:** Choose a closure model with sufficient splice trays to match the number of fibers being terminated or split.
- **Environmental Sealing:** Ensure all entry points are properly sealed to maintain IP68-rated water resistance.
- **Mounting Locations:** Dome closures can be installed aerially (pole-mounted) or underground (handholes, vaults, pedestals).

Best Practices:

- Keep fiber splicing areas clean and free of dust to prevent insertion loss.
- Use buffer tubes and fiber organizers to prevent micro-bends in spliced fibers.
- Test fiber splices with an OTDR (Optical Time-Domain Reflectometer) after installation.
- If placed underground, verify that waterproof gaskets and compression seals are properly engaged.

Ordering Information

This section provides ordering information for the Panduit FTTH product portfolio, including multiport service terminals (MSTs), fiber drop cables, pedestal enclosures, splice closures, and fiber accessories.

Multiport Service Terminals (MSTs)

MSTs serve as fiber distribution points, efficiently connecting feeder fiber to subscriber drop cables. Available in 4, 8, and 12-port configurations, MSTs feature pre-terminated hardened connectors for rapid plug-and-play installations.

Part Number	Cable Construction	Number of Ports	Available Lengths
P-MST-4D	Flat Dielectric	4	200 ft. 500 ft.
P-MST-8D		8	
P-MST-12D		12	
P-MST-4T	Flat Toneable	4	
P-MST-8T		8	
P-MST-12T		12	

Fiber Drop Cable Assemblies

Fiber drop cables extend fiber connectivity from MSTs to subscriber premises. Available in toneable and non-toneable configurations, these cables support direct burial, aerial, or conduit installations.

Part Number	Type	Application	Configuration	Available Lengths
FHDCDPT-0050	Fiber Hardened Drop Cable	Dielectric	Plug-to-Pigtail	50 ft.
FHDCDPT-0*				*100 ft. - 1000 ft. (every 100 ft.)
FHDCTPT-0050		Toneable		50 ft.
FHDCTPT-0*				*100 ft. - 1000 ft. (every 100 ft.)

Pedestal Enclosures

Pedestal enclosures protect fiber optic connections and provide a secure housing for MSTs, splice trays, and fiber slack storage.

Part Number	Pedestal Type	Size (in.)
HUB-8-MB	Pedestal with MST Mounting Bracket	8
HUB-10-MB		10
HUB-8-FSTH	Pedestal with Fiber Splice Tray	8
HUB-10-FSTH		10
HUB-10-MB-FSTH	Pedestal with MST Mounting Bracket and Fiber Splice Tray	
HUB-8-E	Splice Enclosure for Pedestal	8
HUB-10-E		10

Outdoor Dome Fiber Splice Closures

Outdoor dome closures protect fiber splices from water, dust, and mechanical stress, making them suitable for aerial and underground fiber networks.

Part Number	Description	Capacity
OFC24SST	Single Fusion Fiber Splice Tray	24 fibers
OFC40SST	Single Fusion Fiber Splice Tray	40 fibers
OFCD6517BF	Dome Closure	Up to 6 trays

Outside Plant Fiber Optic Cables

Outside plant (OSP) fiber optic cables serve as the backbone of fiber networks, providing high-capacity, long-distance connectivity.

Part Number	Cable Type	Fiber Count	Armor Type
FSTN948	Singlemode OS2	48	Non-Armored
FSTN972		72	
FSTN996		96	
FSTN91A		144	
FSWN948		48	Armored
FSWN972		72	
FSWN996		96	
FSWN91A		144	

Accessories

Accessories support fiber network installations by enhancing mounting, grounding, and cable management.

Part Number	Description
P-MST-ASB	Strand Mounting Bracket Kit for MST
HUB-S32	32 in. Stake for FTTH Pedestal
HUB-S42	42 in. Stake for FTTH Pedestal
HUB-ST	Pedestal Splice Tray
HUB-GK	Pedestal Grounding Kit
HUB-GROM-KT	Pedestal Replacement Grommet Kit

Panduit fiber broadband solutions enable service providers to deploy fast, scalable, and reliable FTTH networks.

For additional details, please contact us at **broadband@panduit.com**

Learn more at **panduit.com/ftth**

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

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