<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About Graybar Canada/Intro</td>
<td>4</td>
</tr>
<tr>
<td>Fiber Cable</td>
<td>5</td>
</tr>
<tr>
<td>Fiber Management &amp; Connectivity</td>
<td>10</td>
</tr>
<tr>
<td>Cabinets, Hubs &amp; Pedestals</td>
<td>20</td>
</tr>
<tr>
<td>Splice Closures</td>
<td>22</td>
</tr>
<tr>
<td>FTTx Electronics</td>
<td>23</td>
</tr>
<tr>
<td>Network Power</td>
<td>26</td>
</tr>
<tr>
<td>Tools, Test &amp; Installation</td>
<td>28</td>
</tr>
<tr>
<td>Construction</td>
<td>37</td>
</tr>
<tr>
<td>MDU Solutions</td>
<td>43</td>
</tr>
</tbody>
</table>
Welcome to Graybar Canada

The power of a big corporation ... the integrity and drive of a neighborhood business.

As FTTx projects continue to roll out across the country, service providers must ask themselves, “How do we upgrade our infrastructure today in order to be prepared for tomorrow?”

This FTTx Guide is designed to provide you with an overview of the essential products and equipment carried by Graybar Canada which are necessary to successfully expand an FTTx network.

At Graybar Canada, we are committed to staying at the forefront of product and technology developments that will help you, our valued customer, in your quest to achieve the most efficient network. Talk with one our Service Provider Specialists today to assist you with product selection and application.

Graybar Canada, an employee-owned company, is a wholesale distributor for thousands of items from leading manufacturers of electrical and communications and data products. Headquartered in Halifax, Nova Scotia, Graybar Canada operates over 30 locations across the country and is organized into specialized product divisions: Electrical Supply, Industrial/Automation, Lighting, Comm/Data, Utility, Security & Technology, and Oil & Gas. Graybar Canada’s trained specialists and top-quality products enable them to provide customers with a complete solution.

Committed to quality through its customer service, products, supply and distribution, and performance, Graybar Canada is a subsidiary of Graybar Electric Company Inc., a Fortune 500 company, and one of the oldest and largest American electrical distributors.

Graybar Canada’s wire and cable is centered at the national wire and cable warehouse located in Markham, Ontario. With more than 40,000 square feet of warehouse space and the ability to cut master reels up to 15,000 lbs, the national wire and cable warehouse is a key part of Graybar Canada’s national operations.

What Can Graybar Canada Offer You?

• An extensive network of locations - 30 stocking locations across Canada and access to 290 more across North America
• Convenient counter service, showroom displays, and wireless Internet access for customers
• Dedicated, experienced, and skilled staff including solutions specialists
• Diverse product line with a multitude of leading brands
• 24-Hour emergency services
• Dependable shipping and delivery and custom delivery including drop shipments
• On-site customer training facilities
• Product staging and kitting
• Inventory management
• Project management
• Online order entry with Graybar Canada eSales
• Reliability and dependability as a solvent company.

To learn more about Graybar Canada, visit our website at www.graybarcanada.com or contact us: info@graybarcanada.com 1.800.GRAYBAR

ALTOS® Gel-Free Ribbon Cables

ALTOS® Gel-Free Ribbon Cables are designed for easy installation and access in outside plant applications. The design is based on the reliable stranded loose tube cable that has been an industry standard for years. Available in fiber counts from 288 to 432 fibers, these cables are protected against water penetration by innovative water-blocking tapes and yarns that swell to absorb water. The SZ-stranded, flexible buffer tubes isolate fiber ribbons from installation and environmental rigors and the precise fiber and ribbon geometries result in excellent mass-splicing yields.

- Innovative water-blocking technology prevents water penetration
- Individually numbered 12-fiber ribbons for easy identification
- Up to 864 fibers in a compact design to maximize use of critical duct space
- Based on stranded loose tube design

ezDISTANCE™ Loose Tube

The Draka Ultra Low Loss Fiber cable solution enhances system performance by extending the distance the system can reach. This is important in long distance, FTTx, and analog video applications. This cabling solution combines the full features of Ultra Low Loss Fiber and ezPREP Loose Tube. The Ultra Low Loss fiber cabling solution provides improved attenuation performance across the full 1260 to 1625nm band and across the full temperature range of -50°C to +70°C.

- Low cable loss - up to 25% improvement in specified cable attenuation at 1550 nm
- Backward fiber compatibility
- Polypropylene buffer tubes for enhanced flexibility
- Adhesive bond armor for easy cable entry

ezRIBBON™ Central Tube Ribbon Cable

Draka’s ezRIBBON™ central tube cables combine robust performance for aerial lashed, duct and direct buried installations with the productivity of mass fusion splicing. Adhesive armor, flexible core tube, swellable water-blocking and exclusive ColorLock XS fiber coating make ezRIBBON™ the easiest ribbon cable to access and prep.

- Adhesive bond armor greatly improves cable entry
- Compatible with ribbon equipment and procedures (heat strip and mass splicing)
- ColorLock XS provides consistently reliable coloring
- Available with BendBright bend-tolerant singlemode fiber

ezSPAN™ ADSS Long Span All-Dielectric Self-Support Loose Tube Cable

Draka’s ezSPAN™ ADSS long span version provides reliable self-support performance for spans up to 2,500 feet and is custom engineered for optimum placement on utility towers and to operate under severe weather load, ensuring safe reliable performance.

- Higher count designs utilize 24 fibers per tube to reduce environmental load
- Exclusive ColorLock XS® fiber coating for permanent embedded color and long-term performance
- Custom engineered for operation under full load
- Optional track-resistant jacket prevents dry-band arcing damage for line voltages up to 275 kV
**Single Jacket, All Dielectric Cable**

Loose Tube — Outdoor, and Indoor/Outdoor Riser Rated. Gel-filled buffer tube prevents water migration. All-dielectric strength member. Available as Riser rated cable, thereby eliminating the need for service entrance splicing to in-building cable. Full dielectric construction, no grounding required. Available with up to 216 fibers. Length markings in meters for easy determination of cable length. Applications include:

- Medium to high fiber count requirements
- Inter-building duct installations
- Lashed aerial
- Indoor/outdoor, industrial outside plant

**ezPREP® Central Loose Tube**

Economical armored protection for lower fiber counts, ideal for multi-purpose aerial and underground use near the network edge. Draka’s ezPREP Loose Tube | Central 300 cable is an excellent cost effective 300 lb tensile rated design for low fiber counts and provides flexible routing including multi-purpose drop applications.

- Easy Cable Entry & Preparation
- Flexible Routing and Termination
- Multi-purpose Installation & Use
- Reliable Lifetime Performance

**ezPREP® Loose Tube**

Versatile multi-purpose fiber cable; robust performance and simple loose tube access & prep.

Draka’s popular ezPREP Loose Tube cables provide versatile performance for aerial lashed, duct, and direct buried installations. These cables combine adhesive armor, flexible tubes, swellable dry water-blocking, and exclusive ColorLock® fiber coating to make ezPREP the easiest loose tube cables to access and prep - preferred by installers 3:1 over other brands.

- Easy access and preparation
- Flexible routing and termination
- Multi-purpose installation and use
- Reliable lifetime performance

**FREEDM® Loose Tube Indoor/Outdoor Cables, 2-288 Fibers**

FREEDM® Loose Tube Cable is a lightweight cable designed for indoor/outdoor applications. The cable consists of gel filled buffer tubes containing up to twelve 250μm color-coated optical fibers. These buffer tubes are SZ-stranded around a dielectric central member that provides tensile strength and anti-buckling protection. The cable is fully water-blocked through the use of water-swellable tapes and yarns and is constructed with a flame-retardant, UV-resistant jacket.

- Flexible, craft-friendly buffer tubes are easily routed in closures
- Standard buffer tube size reduces the number of access tools required by craft personnel
- Color-coded fibers and buffer tubes for quick and easy identification during installation
- Ideal for high-fiber-count trunk applications, especially in areas with limited conduit or vault space
**ALTOS® Gel-Free, All-Dielectric Cables 12-288 Fibers, Enhanced**

ALTOS® All-Dielectric Gel-Free Cables are lightweight cables designed for duct and aerial (lashed) installation. The loose tube design provides stable performance over a wide temperature range and is compatible with any telecommunications-grade optical fiber. The gel-free design is fully water-blocked using craft-friendly water-swellable materials making cable access simple and requiring no clean up. The SZ-stranded, loose tube design isolates fibers from installation and environmental rigors and facilitates mid-span access.

- Flexible, craft-friendly buffer tubes are easy to route in closures
- Dielectric central strength member has no preferential bend and requires no bonding or grounding
- Medium-density PE jacket is rugged, durable and easy to strip
- Over 20 ft of buffer tube can be stored in splice closures and pedestals, providing flexibility for mid-span access

---

**Fortex™ DT Single Jacket Loose Tube Cable**

This fiber cable delivers the durability and reliability essential for outside plant (OSP) use in an innovative, completely dry cable design. Fortex DT Single Jacket Cable offers all the benefits of a standard loose tube cable plus it's completely gel-free – even inside of the buffer tubes! Unlike traditional OSP fiber optic cables that use gels in direct contact with optical fibers, Fortex DT Single Jacket Cable replaces gels with a specially-designed, superabsorbent yarn in each buffer tube that provides water blocking "on demand".

- Totally gel-free cable design for cleaner, faster installations
- Highly durable and reliable for duct and lashed aerial installations (including duct-to-lashed aerial) and general OSP installations
- Smaller, more flexible buffer tubes for easier installation and routing
- Fiber counts to 288

---

**ezMOBILITY™ Fiber-Copper Composite Cable**

Draka’s ezMobility product line is designed for applications requiring fiber and copper components in a single cable. Frequently used in cell tower applications, this cable has multiple outdoor uses when a 6 awg or 8 awg copper conductor is needed for remote power. Available in configurations from 4 to 24 fibers. Available with single armor and a UV stabilized outer jacket.

---

**Mini LT Flat Drop Cable**

The small, lightweight Mini LT Flat Drop Cable offers an ideal solution for the smaller fiber counts that are needed in the final sections of an optical network, particularly in a fiber-to-the-premise (FTTx) installation. The buffer tube fiber core offers easy access and a familiar design for customers who are accustomed to working with loose tube cables.

- Compact, easy-to-access design allows for easy installation and handling
- Suitable for self-supporting aerial, direct buried, and duct FTTx drop installations
- Compatible with industry-standard wedge clamps and closure strain reliefs
- Excellent tensile strength and crush-resistance
**RealFlex™ Universal Drop Cable**

Designed for operational efficiency and scalability, TE’s FTTX solutions simplify network installation, maintenance and management from the central office/headend to the outside plant. TE’s RealFlex Universal Drop Cable is the latest innovation in drop cable technology for FTTX networks. The cable is designed to meet all outdoor drop cable requirements, as well as indoor drop cable requirements, in a single, all-in-one solution.

- Available in dielectric or toneable versions
- Ruggedly designed and tested to meet the highest quality standards for outside plant use
- Factory preconnectorized solution speeds construction throughout the FTTP network
- Universal Drop Cable promotes highly flexible network infrastructures

---

**ezDROP™ Flat Drop Cable Dielectric and Toneable**

Draka’s ezDROP™ flat drop cable provides easy FTTX installation and termination using existing hardware and methods. Its flat profile is compatible with existing wedge clamps for self-support aerial spans up to 300 ft.

- Available in dielectric or toneable versions
- Comes standard with BendBright bend insensitive SMF fiber
- Available in boxes or small/medium/large reel sizes

---

**OptiTap® Drop Cable Assembly**

The OptiTap® Drop Cable Assembly with factory-terminated, environmentally sealed and hardened connectors reduces the cost and time of drop cable deployment in optical access networks. The OptiTap Drop Cable Assembly is designed to significantly reduce required drop cable installation time for subscriber connection, therefore reducing the total installed cost of connectorization. It also provides superior durability and reliability in the drop segment of the network and is designed for aerial, direct-buried or duct installation. Single fiber, single-mode SC APC or SC UPC drop cable assemblies available with one or both ends connectorized.

- Proven design provides a hardened connector for outside plant deployment.
- Robust design – can be pulled through 1.25 inch conduit
- Connector is designed to install on SST-Drop™ dielectric and toneable cable
- Fully standards-compliant product ensures the highest network reliability and durability

---

**ClearCurve® Compact Drop Cable**

Corning Cable Systems ClearCurve® Compact Drop Cables are part of a product family developed to solve the challenges associated with multi-dwelling unit (MDU) deployments. Enabled by a truly bend-insensitive fiber, this small-profile, yet durable, cable is optimized for applications within the living unit. Smaller and more flexible than CAT 5e cable, ClearCurve Compact Drop Cable can accomplish tight turns to a minimum bend-radius of 5 mm (0.2 in) with negligible bend loss and can be run under carpet, along door frames and molding, in raceway or micro-duct.

- Better than copper cable alternatives, ClearCurve Compact Drop Cable for MDU applications outperforms typical CAT 5e or CAT 6 cable with a:
  - Higher bandwidth-carrying capacity
  - Smaller outer diameter
  - Lighter weight, smaller minimum bend-radius
What is OPGW Cable?

Optical Ground Wire is a dual functioning cable. OPGW cable is designed to replace traditional static / shield / earth wires on overhead transmission lines with the added benefit of containing optical fibers which can be used for telecommunications purposes. OPGW must be capable of withstanding the mechanical stresses applied to overhead cables by environmental factors such as wind and ice.

OPGW must also be capable of handling electrical faults on the transmission line by providing a path to ground without damaging the sensitive optical fibers inside the cable.

---

AlumaCore Optical Ground Wire (OPGW)

AFL AlumaCore Optical Ground Wire is preferred for its central aluminum pipe and color-coded fiber optic buffer tubes which simplify the splicing process while providing optimum fiber protection as well as long term product reliability.

- Preferred option for easy handling and splicing
- Thick-walled aluminum pipe provides excellent crush resistance
- Hermetically sealed pipe protects optical fibers
- Outer wire strands selected to optimize mechanical and electrical properties

---

CentraCore Optical Ground Wire (OPGW)

AFL CentraCore Optical Ground Wire is preferred for its compact size and ability to house up to 72 fibers in a diameter starting at only 12mm. Its small profile offers an exceptional solution to the diameter and weight concerns on many of today’s overloaded transmission towers where an existing shield wire needs to be replaced with an OPGW cable.

- Fiber counts up to 72 in same diameter product
- Small diameter, low weight reduces retrofit impact
- Laser-welded, hermetically sealed stainless steel tubes provide mechanical and thermal protection for fibers
- Thick-walled aluminum pipe provides crush resistance and boosts fault current rating

---

HexaCore Optical Ground Wire (OPGW)

AFL HexaCore Optical Ground Wire cable utilizes fiber-bearing stainless steel tubes stranded alongside aluminum clad steel and/or aluminum alloy wires to create a multi-layer cable design suitable for a variety of environmental and geographical conditions. HexaCore OPGW was developed in response to the demand for higher fiber counts, specifically those greater than 96.

- Fiber counts up to 432 or higher if needed
- Laser-welded, hermetically sealed stainless steel tubes provide mechanical and thermal protection for optical fibers
- High load, long span capability
- Each stainless steel tube is uniquely identified for organization at splice locations

---
Multiport Service Terminal (MST)

Benefits:

- The ultimate “Plug and Play” solution for durable and reliable service connection in the outside plant/drop segment of the network
- Technician-friendly and greatly simplifies installation and maintenance by minimizing splicing required on the distribution side of the network
- Cost effective solutions that provide for lower overall installed costs throughout the FTTx network
- Facilitates easy troubleshooting as maintenance can be done at the MST by simply unplugging a connector rather than breaking a splice or going directly to the side of the home
**Multiport Service Terminal (MST)**

The Multiport Service Terminal (MST) incorporates hardened connector technology that is designed to withstand the rugged outside plant environment. These uniquely designed hardened connectors are factory-terminated and environmentally sealed for use in optical drop cable deployments.

**RealFlex Universal Drop Cable**

RealFlex™ Universal Drop Cable is the latest innovation in drop cable technology for FTTX networks. The cable is designed to meet all outdoor drop cable requirements, as well as indoor drop cable requirements, in a single, all-in-one solution. A cable within a cable, the RealFlex Universal Drop consists of a hardened flat drop exterior to weather the harsh outdoor conditions, plus an inner 3 mm simplex cable UL-listed and approved for indoor use. The hardened drop cable incorporates a legacy full size connector, which can be quickly mated to a service terminal on a pole, street or underground. The 3 mm inner simplex cable is equipped with a small SC connector, which can be easily transitioned into a building for connecting to an indoor ONT, splice cabinet or termination box.

**Hardened Cables**

TE’s Hardened Cables are environmentally robust to provide a reliable interface for fiber drop cables in the outside plant environment. At the same time, the hardened connector approach dramatically reduces splicing labor requirements. The rugged optical connector is hardened to protect against extreme temperature, moisture, UV, chemical exposure and other harsh conditions typically found in the outside plant.

**Graybar Canada Wire & Cable National Warehouse**

Graybar Canada’s wire and cable is centralized out of the national warehouse located in Markham, Ontario. With the ability to cut master reels up to 15,000 lbs, the national wire and cable warehouse is a key part of Graybar Canada’s national operations.

Graybar Canada’s specification assistance program will help customers find the perfect solution through the review of a customer’s cable applications and designs of specialty cable. Staff at the National Wire and Cable Warehouse as well as at local branches are there to provide customers with quality service and any wire and cable products needed to complete their project.
**Fiber Express Rack-Mount Patch Panels with Universal Adapter Strips**

These components can be used with tight-buffered or loose-tube optical fiber cables and they can be tailored to specific needs in terms of density and management. Applications: Backbone terminations in telecommunications rooms or main distribution rooms; Central Office equipment bays.

- Universal Connector Panel and Strips allowing flexible and customized patch panel design
- Mounted on a hinge, swings out to allow easy access to the back of the panel, from the front
- Rugged design protects fiber terminations and fiber connectors

---

**FieldSmart Fiber Crossover Distribution System (FxDS)**

The FieldSmart FxDS Panel provides an interconnect or cross-connect environment for up to 288-ports of high-density fiber in central office and outside plant environments. It is a high density, low maintenance fiber distribution panel for use in a 23” or 19” frame. Utilizing the Clearview Cassette, FieldSmart FxDS Panels are intelligently designed to provide the user with superior fiber access while using craft friendly radius protected fiber management for routing and deploying fiber jumpers in high density applications.

- Supports all industry standard SM/MM connectors
- Individual radius fingers provide organized and intuitively managed fiber jumpers and minimize pile-up
- On- or off-frame splicing configurations support cable constructions up to 144-fiber

---

**Closet Connector Housing (CCH)**

Closet Connector Housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like all LANscape Solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

- Interconnect and cross-connect capability, ideal for field connectorization
- Removable, translucent top covers (1U, 2U, 3U), removable rear cover (4U) for visibility and ease of access for installation, testing and troubleshooting
- Variety of field termination options (accepts panels, modules and cassettes)
- Adaptable to use as a modular splice housing, splices are stored and protected in same

---

**Fiber Optic Combination Shelf**

The OFS LGX® Combination Shelves are the original fiber frame solution. Customize your installation with this fast installation design. These units are a combination of 7” or 9” Termination Shelves with splice units and fanouts installed. All combination units are factory assembled allowing a rapid installation. Direct splicing in single or mass fusion configurations are available. Select from existing designs or work with your local representative for a customized solution.

- Rapid Field Installation
- Use in controlled environments or OSP cabinets
- Frame Mount in 23” or 19”
- Combine 7, and 9 inch high shelves
Clearview xPAK

The Clearview xPAK supports 2, 4 or 6-ports of patch and splice configurations. The compact 4” x 5” solution is perfect for landing small count terminations at the fiber delivery point. The kit comes with everything you’ll need: flat cassette, adapters, (1) 2, 4 or 6 fiber 900um 1/2 meter assembly, splice sleeves, strain relief boot, grommet tape, zip ties, and universal mounting bracket.

- Supports industry standard SC and LC singlemode connectors
- Radius protected storage for up to 1/2 meter of 900um jacketed fibers
- Small design facilitates ease of use in crowded environments
- Plug and play with MTP/MPO configurations

Clearview™ Cassette

The Clearview™ Cassette is a system of 6 parts that fully nest together to support any application in the inside or outside plant. Parts are added or removed to support the configuration element desired for the environment into which it is being deployed. All types of fiber construction can be integrated into the cassette.

- Cassette can support all patch only, patch splice, passive optical component hardware, and plug n’ play scenarios
- Multiplies and scales to meet your port density and application needs
- Serves as a multiplier for fiber management solutions that scale from 12-port Wall Mount Panels to 864 cross-connects, and everything in between.
- Six sub-components that work together to support a variety of applications: top cover, splice tray, radius limiter, cable assembly tray, expansion ring and 12-pack adapter plate

Tii FDH 1

Wall mount fiber distribution hub designed to support patching, splicing and optical splitting in one unit. The enclosure has 9 adapter panel positions allowing for a wide variety of patching and splitting combinations. Two compartments separate the network terminations from the distribution terminations and a single outer door. Applications: Indoor demarcation points and MDU distribution.

- Flexible multi-application use
- 2 splitter module capacity
- Multiple bottom cable entry points
- Removable door; Lockable

Rapid Fiber Panel Series

TE’s new Rapid fiber panel combines IFC cables with fiber panels using our patented RapidReel™ fiber spooling system. With applications ranging from central offices and data centers, to cell sites and customer premises, Rapid fiber panels offer extensive features and benefits. Rapid fiber panels provide as much as 25% savings on the total cost of installation:

- Reduces site survey costs by eliminating the need to precisely measure IFC cable lengths. In many cases, the cost of a site survey can be eliminated.
- Reduces fiber cable congestion – fiber is always the right length between intermediate fiber panel and Optical Distribution Frame.
- Facilitates worry-free installation of fiber with a robust micro-cable that is easier to handle.
Inteird Fiber Distribution Terminal (iFDT)

This series provides Customer Premises Equipment applications with a compact and secure family of enclosures for connecting fiber cables within building entrance locations, communication closets, computer rooms and other indoor environments. The iFDT products utilize a rugged double-hinged design that effectively isolates the splicing and cable termination in the rear compartment from the jumper interconnection in the front compartment. Separating the cable splicing and termination function from the interconnection function allows the unit to be used as a dual-access product with secure lockable access provided for each compartment.

- 12-Packs provide for high-density terminations and conserve wall space
- Integrated splice tray offers flexible splice management for individual or mass splicing
- Sealed enclosure protect fibers from dust, water spray, insects and other contaminants
- Dual-hinged design ensures separation of owner/client network segments

FiberExpress Wall-Mount Patch Panels

This series is an economical solution for the protection of optical fiber terminations and splices in hostile environments. Using the FiberExpress Universal Adapter Strips (ordered separately), the Wall Mount Patch Panels Series allow for flexible and customized patch panel design. It is compatible with most industry standard connectors: ST Compatible, SC, 568SC (SC Duplex), MT-RJ, LC and FC.

- Asymmetric design allowing more space on the cable side
- Metal door on the cable side allowing for extra protection; Lexan door on the user side allowing for quick visual check
- Units can be stacked for system expansion
- Splicing capability on all three models

Wall-Mountable Closet Housing (WCH)

Corning Cable Systems Wall-Mountable Connector Housing (WCH) provides interconnect or cross-connect capabilities between the outside plant, riser or distribution cables and the opto-electronics. Units accept standard closet connector housing (CCH) connector panels and modules and options include jumper routing guides and a bracket for securing buffer tube fan-out kits.

- Interconnect and cross-connect capabilities for a variety of applications
- Drop-down access door allows for temporary work area during installation
- Jumper routing guides for easy fiber management
- Field-installable lock kit (optional) for additional security

Wall Mount Distribution Enclosures

Tii’s wall mount fiber distribution units are designed to support patching and splicing in one unit. Each enclosure has one or more 118 LGX compatible panel positions allowing for a wide variety of fiber termination connector types. Two compartments separate the network terminations from the distribution terminations and have a single outer door with optional key lock.
Packaged, Ruggedized & Direct Connect PLC Splitter Housings

The Ruggedized PLC Splitter offerings by OFS provide a truly flexible solution that addresses the needs of today’s FTTX networks. Combining the optical splitter expertise of Furukawa Electric Company with the connectivity and packaging capabilities of OFS, the three options of packaged, ruggedized and direct connect splitters offer superior optical performance in a flexible, yet easy-to-manage package. The use of these splitters allows for rapid installation into traditional cabinets and closure splice trays.

- Maximizes closure tray utilization, more splitters per tray
- Fibers are color coated per standard color scheme
- Modular approach provides cost effective incremental growth
- Improves and simplifies fiber routine

Singlemode PLC Splitters

Singlemode PLC splitters are passive optical assemblies that split and combine signals in fiber networks.

The 1RU panel is 19 and 23 inch rack mountable. Meets GR1221 Telcordia performance standards.

FieldSmart Ruggedized Splitter

The Clearfield FieldSmart Ruggedized Splitter is the standard splitter component in its line of FieldSmart FSC OSP Cabinets. The splitter addresses environmental and human handling issues that other standard splitters in the industry cannot combat. It provides improved fiber protect, management and maintenance in OSP FTTx deployments.

- Supports all industry standard singlemode and multimode connectors
- Ruggedized jacket material of input and output legs provide superior flexibility in temperatures ranging from -55 C (-67 F) to +85 C (+185 F)
- Individual splitters come preloaded in parking lot for easy access and turn-up
- Grow as you go." Only buy splitters as customer take rates increases

Passive Optical Splitter Modules

The Mini Plug and Play Splitter Modules support centralized splitting architectures. The modules are available in a wide range of split ratios and are used in ADC’s FDH 3000 series cabinets, chassis, and rack mounts. The rugged packaging is built for high performance, while the true plug and play design reduces installation time.

- Bend-optimized fiber and ruggedized extreme temperature cabling
- Easy to insert and remove without affecting adjacent splitters
- Reversible dust cap makes test and turn-up easy; allows pass-through of up to 2 fibers per splitter
- Universal module designed for use across applications – cabinets, chassis and frames

Solving the Fiber Puzzle
**SlimBox 4-Fiber Rosette Module**

The SlimBox 4-Fiber Rosette Module is used as a distribution or termination point for optical fiber in an indoor environment. It allows termination of an optical cable using direct connectorization or splice (fusion or mechanical) to optical extensions (pig tails) of 2 optical fibers (without the tray).

- Optional splice tray with reduced dimensions design to accommodate up to four G.657A (Bend-Insensitive) fibers or optical splitters
- Up to 02 optical adapters (SC type) can be placed in the module
- Four cable access: 02 in the bottom/01 superior/01 at the right side and 01 in the back (from the wall)
- Formed in plastic with high mechanical resistance and efficient design

**Charles Fiber Transition Terminals (CFTT)**

CFTT are commonly referred to in the industry as fiber network interface devices (NID). The NID serves as a customer demarcation point for fiber entering the customer premises. CFTT are often used to store fiber before service turn-up. They protect fiber drops from the elements, and provide organized fiber slack storage. Fiber bend controls ensure proper bend radius requirements are met.

- Non-metallic outdoor rated product
- Small Footprint: 10.25HW X 8.5"W X 3"D
- Wall mounting flanges
- Cabinet Security: ¼ turn latches for 216 tool

**FET Optical Demarcation Enclosures**

Indoor/Outdoor optical demarcation enclosure designed for wall or pole mounting. Made of weather resistant thermal plastic. Small form factor for FTTH, FTTB and MDU drops.

- Patch only or patch & splice configurations
- Cable stub options
- Small form factor low fiber count installation
- Integrated slack storage area

**CFBT - Compact**

For indoor applications, the CFBT is a wall-mountable fiber interconnect enclosure designed for indoor use. It is ideally suited for terminating fiber optic cables in building entrance rooms or communication closets for enterprise or MDU applications and can be used inside existing OSP enclosures at cell towers, creating a point of presence (POP) for quick turn-up of cell customers needing fiber for their equipment upgrades.

- Dimensions: 17"W x 13"H x 7"D
- Indoor rated enclosure
- For fiber interconnect applications of up to 48 fibers
- Ideal for FTTB or FTT-MDU applications
**LC Jumpers**

Wirewerks fiber optic patch cords provide the ideal medium for all your fiber optic interconnect applications. They are designed, manufactured and tested according to protocol and performance dictated by the industry standards. The quality of the components used to build our fiber optic patch cords ensures long lasting and high repeatability connections. Wirewerks offers a wide variety of connector options, jacket colors and diameter as well as different flammability ratings, and have the capability to custom build to meet your most stringent mechanical and performance specifications.

- Single mode OS2, and Multimode OM1, OM2, OM3, OM4
- Custom patch cord available on request
- All connector style available
- Bend Insensitive

---

**FxDS Distribution Assemblies**

Distribution cable assemblies are used where multi-fiber tight-buffered constructions are required for density. These assemblies combine the bandwidth capacity of individual cable assemblies in one easy-to-use assembly, and can be used in OSP patch/splice applications.

Intrafacility (IFC) cable is the de facto standard for central office/head-end multi-fiber applications. This compact and rugged construction is perfectly suited for high fiber count trunk cables, in-panel assembly, communication closets, raceway, and dropped ceiling/raised floor architectures.

- Color-coded per Telcordia and EIA/TIA and sub-grouped to provide clear, quick, accurate identification
- Low-smoke, zero-halogen constructions available
- Rip cords provide for easy preparation
- Low memory retention

---

**FiberExpress® Brilliance® Field-Installable Connectors**

FiberExpress® Brilliance® Field-Installable Connectors make fiber termination simple and fast with our industry-leading, tool-less design. They are quick and simple to use, allow fiber termination in only 5 seconds and require no specialized tools.

- A fiber termination can be achieved in as little as five (5) seconds
- No tools needed means that there are no special/proprietary tools to purchase
- A simple product and installation process removes installation inconsistencies
- Product has a long life-cycle

---

**Why Clean Connectors?**

Cleaning saves time and money. Dirty connectors cause a major percentage of fiber optic network failures. Repeated fiber optic connector disconnection and reconnection often leaves debris in the bulkhead adapter or receptacle. Dust particles can block the fiber core resulting in signal loss. Prevention is as simple as cleaning connectors!
**FiberGuide®**

FiberGuide is a raceway system designed to protect and route fiber optic patch cords and multi-fiber cable assemblies to and from fiber splice enclosures, fiber distribution frames and fiber optic terminal devices. FiberGuide ensures a two-inch minimum bend radius is maintained throughout the system.

- Express Exit™ drops as well as tool-less products including Snap-Fit™ junctions, snap-on covers and new hinged cover options save valuable time for installers.
- Express Exit system enables new drops to be added or removed quickly and easily. A drop can be added into a fully loaded raceway in seconds—without cutting.
- FiberGuide features 38 support structures, over 75 fittings, multiple drop options and several other components to suit any application you create.

**KWIKPATH® Riser Couplings**

Made from the same material as Kwipath Riser Raceway, Kwipath Riser couplings and terminal adapters are available in 3/4" to 2" sizes. Kwipath fittings need no messy cement bonding; their unique six locking tab design offers tremendous pull-out strength and ensures once a fitting is connected, it stays connected. Our plenum rated Y- Coupler quickly snaps into place, creating a branch for any raceway size (3/4” to 2”).

- Unique snap-on fittings
- Six locking tabs ensures fittings stay connected
- No messy cementing or screws to tighten

**KWIKPATH® Riser Raceway**

The backbone of the structured cabling system, Kwipath Riser is a nonmetallic, flexible PVC corrugated product manufactured and tested specifically for riser applications. Easily identified by its mandarin orange color, it’s available in convenient coil or reel packaging with sequential markers every 1 foot.

- Available in coil lengths of 200 ft. and reel lengths up to 5000 ft.
- Lightweight coil lengths are easy to handle
- Disposable reels ensure you do not have to store and return large steel reels

**Surface Raceway Systems**

PAN-WAY Metal and Non-metallic Surface Raceway provides maximum flexibility for routing, protecting and concealing high performance copper, voice, video, fiber-optic and electrical wiring. All of PANDUIT surface raceways provide a full complement of fittings that are designed to maintain proper bend radius control, channel capacity and separation in applications requiring both data cabling and power wiring. PANDUIT surface raceway products are tamper resistant, offering increased safety benefits, discourages unauthorized access, protects sensitive cabling from accidental damage, and physical contact with electrical wiring.

- Designed with attention to form as well as function
- Allows for moves, adds and changes for future upgrades
- Aesthetically pleasing to lend with any décor
### Ladder Rack

Hubbell Premise Wiring’s NEXTFRAME® Ladder Rack is the effective and widely used cable runway that supports and delivers bundles of cable between cabinets, racks, and closets, along walls, and suspended from ceilings. The Ladder Rack System features light, rugged, tubular steel construction. It is designed for mechanical support and strain relief in long runs of cable and creates a smooth gradual bend for cable. Rail and stringer material is 16 gauge steel tubing.

- Supports horizontal/vertical and overhead cable management
- Durable black or gray powder coat finish
- Supports UTP or fiber cabling
- Complete family of accessories includes: wall supports and brackets, cable drops, retaining posts, splice kits, and ceiling mounting kits

![Ladder Rack Image]

### Smart Pathways

Finally an LB specifically designed and approved for network cabling! Smart Conduit Bodies TM maintain the bend radius requirements for both copper and fiber cabling applications. Available in both die cast aluminum and PVC while ranging from 1 1/4” to 4 in size. The 11th edition of the BICSI TDMM reads “only the telecommunication conduit body should be used in a telecommunication installation.” They are great for electrical installs as well.

![Smart Pathways Image]

### Cable Tray

Cablofil Wiremesh Cable Tray concept based upon performance, safety and economy; three qualities which make Cablofil Wiremesh Cable Tray system preferred by installers. Cablofil adapts to the most complex configurations, and its structure gives maximum strength for minimum weight. The ease of creating fittings, carried out on site, as well as the wide range of unique and universal accessories gives complete freedom in routing combined with exceptionally fast installation.

- Special Safe-T-Edge: protects installers from sharp ends while it prevents cables from fraying
- Wire mesh is smooth and round: to resist dirt and dust build-up
- Standard 10’ lengths: straight and easy to handle
- Large mesh size (2” wide by 4” long): allows cable installers to route cables in and out at any point without cutting the tray

![Cable Tray Image]
Fiber Distribution Cabinet

TE’s FDH 3000 Cabinet is designed from the ground-up to meet the needs of carriers around the globe. Intelligent design allows for standardized pad mount frame size, splitter modules and accessories across cabinet sizes. The unique “swing-out frame” design allows all fiber management to swing outside of the cabinet, allowing access to the back of the modules for repairs and maintenance. All sizes use a common “Mini Plug & Play” Splitter Module with a common output length. This allows for true plug & play functionality.

- Unique design to meet diverse customer requirements
- Engineering friendly to support both low and high-density applications, different network system designs, and diverse installation environments
- Flexible and modular: standardized splitter modules and accessories for all FDH 3000 cabinets

OptiTect® Local Convergence Cabinet, LS Series

Provides everything necessary to manage up to 864 fibers for an outside plant FTTx application. All LS Series Cabinets share the same intuitive and efficient cable routing and splitter storage. Each cabinet provides superior ergonomics with full-front access, resulted in minimal installation time, quick connections and ultimately increased profits. A new feature that the OptiTect Local Convergence Cabinet, LS Series offers is the field-replaceable shell. This feature allows operators the ability to avoid interrupting service while installing a new cabinet should the shell become damaged or vandalized. This cabinet also offers a removable rear door for easy access to the multiple feeder and distribution cable entries.

- Simplifies installation and subscriber connections
- Clear dust caps for easy visual fault location operations
- Multiple pad- and polemount configurations for maximum deployment flexibility
- Unique grounding system - single point outside the cabinet to isolate and tone cables in the cabinet

Fiber-to-the-Node (DSLAM)

The challenge of providing broadband services to an increasingly rural population is alleviated with the CUBE cabinets. With support for power and various protection options, Charles has a complete line of integrated CUBE solutions to meet your FTTN needs with 24-1000 port configurations. Their optimized size and weight allow technicians to install these terminals in virtually any location quickly and easily. Designed to house a variety of communications equipment, CUBE are pre-wired to meet your power, protection and physical interface requirements. Many customizable sizes and features provide the flexibility to meet your every backhaul application. All CUBE Cabinets are designed to meet GR-487 and NEMA 3R or 4X standards.

- Swing Rack for rear access
- Up to 1000 pair protection
- Up to 12 Position Load Center
- Separate equipment, battery, handoff and protection chambers

Outdoor Fiber Distribution Terminal (oFDT)

TE’s Large Fiber Distribution Terminal is designed to terminate, splice and interconnect up to 96 fiber optic cables with SC connectors, or 192 cables with LC connectors in an outdoor environment. This terminal may be adapted to applications by mounting the enclosure to the exterior surface and connecting between the distribution cable and drops.

- Environmental enclosure provides heavy-duty protection from wind, rain, and other contaminants
- Aluminum welded construction provides strength and resists corrosion
- Flexible design accommodates 24 and 48 fibers
- Lightweight structure provides for easy installation
Charles Fiber Distribution Point™ (CFDP) Interconnect Pedestals

CFDP Pedestals offer two-stage environmental protection of fiber distribution points. This two-stage protection is accomplished by housing a weather-tight interior enclosure within the confines of a non-metallic buried distribution pedestal.

- Weather-tight “enclosure within an enclosure” architecture designed to exceed Telcordia GR-771 environmental protection standards
- Pre-connectorized “interconnect” fiber drops to multi-tenant cell sites
- Available with or without pre-spliced and terminated 900 micron, color-coded SC/APC or SC/UPC pigtails

Charles Fiber Flexibility Pedestals (CFFP)

CFFP offer a scalable, low cost alternative to placing centralized split points (also known as fiber distribution hubs—FDH) in the outside plant. Their compact size compared to large cabinets makes them easier to install and ideally suited to small communities and neighborhoods. CFFPs are available in four sizes with up to 72, 96, 144 and 288 fiber counts.

- 8” – 12” diameter pedestals
- Available in both stake-mount and vault-mount configurations
- Craft-friendly 360° access to internal fiber organization
- Ideal for FTTH, FTTB or FTTCS applications

Charles Fiber Interconnect Terminals (CFIT)

Charles Fiber Interconnect Terminals (CFIT) provide a compact, rugged outdoor cabinet solution for remote pre-connectorized interconnect applications of up to 48 fibers. CFIT cabinets are ideally suited to cell sites, campuses, strip malls, business parks and other environments where the customer requires high-capacity fiber bandwidth for wireless backhaul, private networks or data and video broadband services. their convenient form factor saves space and allows for one-person placement on walls, poles or H-Frame mounts.

CFIT - Enclosure
- Dimensions: 20”W x 20”H x 9”D
- Outdoor environmental enclosure
- Built-in SC/APC or SC/UPC adaptor bulkhead (48 count)
- Splice tray basket for up to four 4”x9” trays and slack storage

CFIT-D3 - Multi-User Enclosure
- Dimensions: 26”W x 21”H x 7”D
- Outdoor environmental enclosure
- Parking lot for up to 24 SC/APC or SC/UPC pigtails
- 3 lockable customer chambers each with 8 fiber interconnect
Fiber-Optic Splice Closures (FOSC-400) feature a unique sealing system engineered specially for fiber-optic applications. Cable seals use a Raychem heat-shrinkable sleeve and hot-melt adhesive system that is installed with a hot-air gun. The product can be used in any environment (aerial, buried, handhole, manhole) and in many applications (expressed, tap-off, branch, and repair).

- Single-ended thermoplastic closure
- Base and dome sealed with clamp and O-ring system
- One oval entry port for looped cable
- Up to eight round ports for single cable entry/exit

FOSC 450

This gel-sealed fiber optic splice closure is a mechanical butt closure based on the well-established FOSC 400 mass and single element splice closure. The gel used for sealing the cables is applied as a unique wrap-around module which gives a reliable, simple seal without the use of tapes or grommets. Gel seal cable terminations automatically adjust to cable size and shape, require no special tools, and allow easy cable removal. They are also completely re-usable.

- Pre-installed gel profile in wrap-around block for cable sealing
- FOSC splice trays are hinged for access to any splice without disturbing other trays
- Compatible with most cable types (single fiber or ribbon) and cable constructions (loose tube, central core, slotted core)

SCF Splice Closures

The SCF Splice Closure family is designed for splicing fibers in aerial, below-ground and buried applications. These canister and in-line closures are available in a size and fiber configuration to fit most applications. All end caps feature two express ports for uncut feeder cables. QUICK-SEAL™ Mechanical Seal drop cable ports allow for rapid and easy installation during initial build or cost effective, future expansion.

- Modular fiber management system providing flexibility of configurations
- Corrosion-free construction means less maintenance
- Two-piece end caps separate allowing easy installation of uncut cables

FOSC Optical Grounding Wire Closure

The FOSC OPGW, part of the FOSC 400 closure family, is a single-ended closure system specially developed for use on the optical grounding wires of overhead electrical power lines. The closure is suitable for use above ground; it can be attached to high voltage towers, poles, walls or other support structures.

- A galvanized steel mounting frame holds the thermoplastic dome and base and the OPGW cable clamps.
- A pole mounting kit is included which allows the closure to be mounted on a traverse strut of a high voltage tower without the need to drill holes in the metal construction.
- Cable seals are manufactured from heat shrinkable material.
- Internal storage utilizes FOSC splice trays which are hinged for access to any splice without disturbing other trays.
Multi-Service Access Node

Zhone’s MXK™ is a fully redundant, carrier-grade all-IP platform enabling multi-service terabit access solutions from the edge to the core of a service provider’s network, with seamless and integrated support for multiple technologies including GPON, Active Ethernet, VDSL2, ADSL2+, EFM, PWE and POTS. Additionally the MXK supports a comprehensive range of voice protocols including SIP, MGCP and H.248. The system is designed for high scalability, flexibility, and performance.

- Built on 480 Gbps pure IP switching and 4.6 Terabit total system switching capacity
- Cost effective to scale as few as 24 to 9,200 subscribers in a single MXK system chassis
- Up to 46,000 subscribers in a single MXK system rack
- Maximizes ROI for the service provider

1U SLMS Portfolio

Zhone’s 1U SLMS Portfolio (XP and MX) is designed as a small form-factor, high-performance access platform, providing uncompromised performance for every access subscriber. The 1U SLMS portfolio is based on native packet processing/switching architecture with non-blocking switching capacity. The portfolio supports Integrated Web Interface for quick device turn-up including advanced configuration & management.

- ZMS management support
- Link Aggregation, RSTP, EAPS
- Dual power inputs
- Removable fan tray

zNID 24xx Series Indoor GPON ONT

Zhone’s indoor residential 24xx Series GPON ONT is standards based CPE designed for advanced triple-play deployments in Fiber-to-the-Home/Premise application. The indoor models in Zhone’s zNID product line of ONT’s provide a lower cost alternative to outdoor ONT solutions. The small package contains many features including QoS, VoIP, and multicast video support. The series include up to four 10/100/1000Mbps LAN Ports, two POTS Voice FXS ports and one RF video in a compact enclosure for indoor use. Standard ITU G.984 GPON

- Indoor deployment
- Triple-Play QoS, Multicast video
- VoIP with CLASS 5 Features
- 802.11b/g/n WiFi
1000 Managed OAM Switch

The SM24-1000SFP-AH Gigabit Metro Ethernet Switch provides a flexible platform to enable carrier-class access technology through easy-to-maintain hardware architecture and advanced management software features. With all front panel access, field-replaceable fan tray, and redundant power supply design, SM24-1000SFP-AH eases the necessary field installation.

- 24 Gigabit SFP ports
- 2 10G XFP ports
- 2 expansion slots to accommodate 2 additional 10G XFP ports

ION Chassis

The ION219-A is an all new intelligent, high-density, multi-protocol system supporting a variety of network interface devices. Designed for both carrier class and enterprise network applications where multiple points of fiber integration and secure network management of the fiber interface devices is essential. An end-to-end fiber integration solution can be achieved by pairing the modules in a high density ION chassis with the modules in another ION chassis, an ION standalone, or a Transition Networks’ Point System™ standalone device.

- Variety of management access methods including: telnet, web, SNMP
- Single slot design allows for more slide-in-modules to be inserted in the ION Chassis
- Management VLAN, Based on Public MIBs, 2 10/100 Ethernet interfaces, USB console port
- Import/Export configuration files in human readable / editable format

S3240 Remotely Managed NID (Network Interface Device)

The S3240 of Network Interface Device (NID) is a multi-service NID that provide SLA-assurance and advance fault management that is compliant with MEF and IEEE standards. The S3240 is designed for business Ethernet and mobile backhaul deployments.

- Multi-port 10/100/1000Mbps
- IP-based remote management
- Jumbo frame support and bandwidth allocation
- 802.3ah Link OAM and 802.1ag Service OAM
- MEF 9, 14, and 21 certified
- Multiple power inputs for redundancy and extended operating temperature

3220 Series OAM/ IP-Based Remotely Managed NID (Network Interface Device)

The ION 3220 Series of Network Interface Devices (NIDs) are a remotely managed product that offers IP or IP-Less management methods for secure delivery of Ethernet services for business and mobile backhaul applications. With MEF 9, 14 & 21 certification, the ION 3220 series ensures you are compliant with the latest standards.

- Gigabit Ethernet
- 10/100/1000Base-T to 1000Base-SX/LX
- 802.3ah Link OAM
**GPON Outdoor ONT**

Based on wire-speed router architecture, Zhone's outdoor GPON ONTs deliver best-in-class data throughput regardless of packet size to support the most demanding FTTx applications. All new models provide dual 1Gigabit Ethernet LAN ports, two or four voice ports with support for SIP, SIP-PLAR and MGCP Voice over IP protocols. This gives service providers an elegant migration path from legacy to softswitch architectures without replacing ONTs. GPON models are available with and without support for downstream RF Video or RfoG.

**SFP Transceiver Modules**

The Transition Networks TN-GLC-xxx series small form factor pluggable (SFP) transceiver modules are designed to install in any SFP port allowing for 1000Base-T, 1000Base-SX or 1000Base-LX interfaces to the network through the SFP connector. The TN-GLC-xxx transceivers are Cisco compatible* and are designed for bi-directional serial-optical data communication such as Gigabit Ethernet or fiber channel at speeds up to 1.25 Gbps.

- Hot-Pluggable SFP Footprint Duplex LC Optical Transceiver - both simplex and duplex
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- Compatible with SFP Multi-Sourcing Agreement (MSA)

---

**Graybar Canada Specialists**

Service Provider Specialists – service providers are continuously planning and delivering powerful technology solutions. The service provider specialists at Graybar Canada provide them with personal assistance and advice based on their knowledge and experience. By offering scalable solutions from our best-in-class manufacturers, our specialists will ensure start-to-finish attention to detail to help customers manage their most complex projects for maximum efficiency.

Security Specialists – security specialists support sales personnel and customers. These individuals are trained on security products, equipped with knowledge of various technology integration methods and skilled at positioning the best Graybar Canada solution. Security specialists can handle the wide range of security applications across all customer markets served by Graybar Canada. The product segments included in our offering are surveillance (IP and analog), access control, intrusion, notification and fire.

Technology Solutions Specialists – technology in the communications and data industry is evolving at a rapid rate and has shifted from a commodity-based market to a solutions sell. The Comm/Data group has the skill & product knowledge, product selection and extensive distribution & logistic systems necessary to provide customers with complete first-rate communications and data solutions.
**Slimline Power System**

The Slimline Power System is a 48V DC Outside Plant and Customer Premise Solution that provides advanced controller features in a compact, cost-efficient footprint. The SPS shelf is 1.75” high, 10.3” deep and mounts in 19-inch or 23-inch wide frames, with three power slots for rectifiers and distribution. The Pulsar Edge controller has Ethernet connectivity to facilitate remote network management to monitor and control rectifiers, batteries, and distribution. SPS is a reliable DC power solution where system height and depth are restricted.

- Customer premise power for converged networks
- Large plant features in a small plant package
- 3000 Watts / 60 Amps single shelf capacity in 1RU
- Greater than 90% efficiency

**CPS6000 Cabinet Power System**

CPS6000 systems are easy to setup and operate with a broad range of applications in outside plant and customer premise locations. The controller can be configured using either the front panel display, a laptop computer connected to the local port, or remotely using the Ethernet connection. Battery management features and options include slope thermal compensation, low voltage battery disconnect, battery high temperature alarm and battery shorted cell detection.

- Hardened for extreme environments
- OSP cabinet and customer premise applications
- Efficiency approaching 97%
- High density power, 10 to 600A Systems at -48V

**Line Power System**

The Line Power System is designed to remotely power -48Vdc network equipment reliably using +/- 190Vdc over existing copper lines deployed between central offices and remote outside plant (OSP) cabinets. New voice, video and data subscriber services can be delivered over fiber optic lines, while the legacy copper lines already deployed in the ground are used to leverage the central office battery backup and generator power sources in the event of an electrical utility grid outage.

- Hardened for extreme environments
- Central Office and OSP cabinet deployment
- Upstream and downstream modular architecture
- High density power

**CyberShield™ CS24U12V**

The CyberPower® CyberShield™ CS24U12V indoor DC battery backup solutions provide 12VDC for single-family dwellings. The CS24U12V unit functions as a battery backup supplying continuous DC power to network interface units, cable telephony modems, wireless base stations and fiber to the home interface modules or integrated access devices.

- Microprocessor based intelligent control
- Telemetry interface
- Easy user-replaceable batteries
- Audible alarm signals utility failure and low battery
- Optional extendable runtime

*Additional models available 12VDC & 48VDC*
**EATON Rackmount UPS**

The Eaton 9130 Rackmount UPS delivers online power quality and scalable battery runtimes for rack servers, voice and data networks, storage systems and other IT equipment. With an efficiency rating of >95%, the 9130 UPS cuts energy costs while packing up to three kVA of power into only 2U of rack space. The 9130 UPS significantly extends battery service life with ABM technology and also has a bright LCD user interface to simplify monitoring.

- Cuts energy usage and costs with >95% efficiency rating in high efficiency mode
- Conserves valuable rack space with 2U form factor that includes internal batteries and a 4-post rail kit
- Provides more real power (watts) to protect more equipment and leave room for expanding IT systems with a 0.9 power factor
- Increases battery service life and system uptime with ABM battery charging technology and hot-swappable batteries

**CyberShield™ CS150U48V3**

The CyberPower® CyberShield™ CS150U48V3 outdoor DC battery backup solution provides (48VDC) for small business units and multi-dwelling locations. This model has cold start, rust-resistant maintenance-free aluminum enclosure; user-replaceable batteries with universal input voltage, battery management features and a microprocessor based intelligent control system. Optional battery packs are available for extended runtimes.

- Outdoor design allows for easy accessibility
- Rust-resistant enclosure
- Microprocessor based intelligent control
- Easy user-replaceable batteries
- Optional extendable runtime

*Additional models available 12VDC & 48VDC

**TelcoFlex® III Central Office Power Wire and Cable**

The cable has low-smoke, lead-free and silicone-free non-halogenated insulation. Southwire’s TelcoFlex® III cable is single conductor with a class B stranded tinned copper conforming to ASTM B-33 and Underwriters’ laboratories requirements. An opaque Mylar tape shall be applied over the conductor to facilitate stripping. Insulation is 90°C rated low smoke, non-halogen, TelcoHyde™ 5221 conforming to Underwriters’ Laboratories standard 44 and Telcordia Specification GR-347-CORE, also UL and CSA 105°C AWM rated. The insulation has a limiting oxygen index of 35%.

- 600 Volts, Copper Conductor
- Central Office / Telecom Power Cable
- Class B Strand With Braid
- CSA approved, Non-Halogen Insulation
- 14 AWG - 750 KCMIL - Single Conductor

**Thomas and Betts Lugs**

Thomas and Betts Lugs are part of the Color-Keyed System providing consistent and reliable connections. Compression Lugs are manufactured of wrought copper that is electro-tin plated to prevent oxidation and corrosion. They are Color-Keyed to match colored bands on the installation dies to provide technicians with the assurance that they are crimping the T&B lug with the appropriate compression die. A die index number is noted on each lug for additional verification and to simplify inspection. Two-hole lugs work best for situations where two bolts are necessary to prevent lug rotation. One-hole lugs are for standard use. Long-barrel Thomas and Betts lugs are used for heavy-duty industrial applications which require more mechanical strength. Short-barrel lugs are used for standard applications and will work well in confined spaces.
As bandwidth increases beyond 10 Gb/s to 40 and 100 Gb/s, the use of fiber optics in enterprise networks continues to grow—and so do the requirements for testing and certification. To ensure the performance of mission-critical fiber infrastructure, network owners need a better picture of their fiber plant. And no fiber test tool provides a more complete picture than OptiFiber.

• Perform inspection, verification, certification, troubleshooting, and documentation of fiber cabling
• Save time and money when diagnosing fiber cabling problems that diminish network performance
• Quickly locate and eliminate fiber problems

Fiber OneShot® PRO

Fiber OneShot PRO takes the complexity out of singlemode fiber testing by analyzing fiber links and measuring faults up to 15 miles in less than five seconds. Whether you are troubleshooting FTTx, Hybrid Fiber Coax (HFC), fiber links between Central Offices, or working on regional or rural access networks, the simple, one-button test feature means no training and can cut the average job time by 30 percent.

• Measure up to 75,459 feet (23,000 metres) of fiber in seconds
• Locate severe bends, high-loss splices, breaks and dirty connectors in singlemode fiber
• Save and store up to 99 test results for later review
• Confirm channel connectivity by analyzing the fiber link

OV-1000 Optical Time Domain Reflectometer (OTDR)

The OV-1000 Optical Time Domain Reflectometer (OTDR) provides testing flexibility by combining a rugged platform with field-interchangeable multimode, single-mode and advanced testing modules. All OTDR modules can be used as continuous wave (CW) light sources. It is used for the testing and troubleshooting of LAN, Telco, CATV and FTTx networks.

• Rugged, splash-proof mainframe allows for testing in harsh conditions
• 6.4-in color thin-film transistor (TFT) liquid crystal display (LCD) is easily readable
• Dial and keypad make scrolling and selecting faster and easier
• Accommodates up to two field-interchangeable modules, eliminating the need to change modules as often

OTS-600 Series Light Source and Power Meter

The Corning Cable Systems OTS-600 Series is ideal for optical network certification. The unit is designed for testing and troubleshooting of various telecommunication networks, with ease of use achieved using a large color LCD screen, soft-key menus and a testing wizard.

• Large LCD screen and soft key menus
• Source and meter in one unit to improve bi-directional testing
• Auto wavelength switching and detection cuts typical testing time in half
• USB data ports for convenient transfer of data
**OptiSplice® One Handheld Fusion Splicer**

Corning Cable Systems OptiSplice® One Handheld Fusion Splicer is a durable, reliable and affordable splicer for restoration and installation of Enterprise, Telco, CATV and FTTx networks with single fibers.

It features an intuitive user interface for easy menu navigation and dual cameras which provide a splice loss estimate of the completed splice. The high intensity LEDs provide splice area illumination and can also illuminate the interior of a splice closure, making this splicer perfect for restoration purposes.

- Fastest total splice cycle time in the industry
- Graphical user interface for easy menu navigation
- Work area faces the operator and includes a removable splice tray holder
- Great visibility, even in bright sunlight

**OFI-FTTx Active ONT Detector**

The OFI-FTTx is a rugged, handheld optical fiber identifier designed to identify the presence of an active Optical Network Terminal (ONT) on the FTTx F2 fibers at the Fiber Distribution Hub (FDH), the customer drop or anywhere in between. Without removing the F2 fiber from service, the OFI-FTTx can verify that a splitter pigtail at the FDH is connected to an active circuit. The OFI-FTTx can help verify FTTx network records and recover splitter pigtails and F2 fibers that are connected at the FDH but, in fact, are available for new subscribers.

- Identifies 1310 nm ONT-OLT upstream signals
- Visual and audible indicators
- Rugged, drop-proof construction
- US Patent 7916983

**FSM-11R Splicer**

The SpliceMate (FSM-11) is the world’s smallest and most portable fusion splicer, designed to meet the challenges posed by today’s fiber networks. Fitting in the palm of your hand, the SpliceMate is smart and reliable enough to be used with confidence by inexperienced operators. SpliceMate’s advanced intelligence features include dual-camera fiber inspection to insure the splice is right, and auto arc calibration...an industry first. It’s easy to operate and quickly makes low loss splices with all common types of optical fibers up to 4-fiber ribbons. The SpliceMate is available with a variety of powering options including a battery pack and adapters to work with AC or DC power sources.

- Highly portable
- Dual camera inspection
- 3.5” dual direction monitor
- Single or 4-fiber versions available

**Optical Fiber Identifier**

The OFI-200D is a rugged, hand-held, and easy-to-use fiber optic test instrument designed to detect optical signals transmitted through a single-mode fiber without disrupting traffic on that fiber. During installation, maintenance, rerouting, or restoration it is often necessary to isolate a specific fiber. By simply clamping an Optical Fiber Identifier onto a fiber, the unit will indicate if there is NO SIGNAL, TONE or TRAFFIC and the associated signal direction. It allows technical personnel to unambiguously identify a specific fiber and eliminates the risk of accidental disruption of revenue service.

- One hand operation
- Drop-proof design
- Unique two-position head
- Low insertion loss
**Splice Protection Sleeves**

AFL Telecommunications offers a wide selection of fiber protection sleeves to meet any application. The FP-03 series is the industry standard for durable and lasting protection of single fiber splices in field installations, while the FP-04(T)/05 provide these same performance levels for 8/12 fiber ribbon respectively. The FPS01 and FPS04 series are specially designed for optical components, where small packaging is a priority. These micro sleeves provide the known reliability of Fujikura sleeves in the smallest possible lengths. This easy and cost effective method is a great alternative to recoating.

**MPO Cleaner**

The MPO Cleaner is a high-performance device designed for cleaning the ferrule end-faces of MPO (MTP®) connectors. Cost effective tool for cleaning fiber end-faces without the use of alcohol. It saves time by effectively cleaning all 12 fibers at once. The MPO connector cleaner is designed to clean both exposed jumper ends and connectors in adapters. Effective on a variety of contaminants including dust and oils.

- Capable of cleaning MPO ferrules inside or outside an MPO adapter
- Narrow design reaches tightly spaced MPO adapters
- Easy one-handed operation
- Up to 500 cleanings/Low cost per clean

**IBC Ferrule Cleaner**

The US Conec IBC™ dry cloth ferrule cleaners are designed to effectively remove oil and dust contaminants that can negatively impact optical performance. The IBC cleaners can be used on unmated connectors such as cable assemblies or by removing the ferrule adapter; the unit will slide into an adapter and properly clean the ferrule behind a patch panel without having to remove the connector.

- Styles available for 1.25mm, 2.5mm and MTP/MPO ferrules
- One tool cleans both cable assemblies and ferrules in bulkheads
- Easy pushing motion engages connector ferrule and initiates cleaning

**Cletop**

The Cletop optical fiber connector cleaners from AFL are a rugged handheld tool for cleaning fiber optic connector end faces. The Cletop cleaners quickly and effectively clean a variety of connectors. Cletop cleaners are a safe cleaning option without the need for alcohol, which can be toxic and flammable. Cletop cleaners have refillable cleaning tapes with 400 cleans per tape making them ideal for lab and field use. The simple push button shutter operation makes cleaning connectors quick and easy.

- Compact and light weight design
- Simple push button shutter operation
- Replaceable clean tape reels are cost effective
- Over 400 swipes each tape

**Splice Protection Sleeves**

**MPO Cleaner**

**IBC Ferrule Cleaner**

**Cletop**
FiberExpress Brilliance Installation Kits

Although the termination of this connector requires no specialized or proprietary tools, Belden has developed two (2) Installation Kits to allow installers to easily and cost-effectively acquire or transition to FiberExpress Brilliance connector technology.

<table>
<thead>
<tr>
<th>FiberExpress Brilliance</th>
<th>Basic Installation Kit (AX104268)</th>
<th>Precision Installation Kit (AX104271)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Pouch</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Installation guide and Laminated Measuring Card</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Demonstration Video</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Optimax-to-Brilliance Transition Cleaver Marker</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Brilliance Support Handle with Adaptors</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Fiber/Cable Strippers</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Tweezers</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Pen Marker</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Alcohol Wipes (10)</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Scissors</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Waste Bottle</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Safety Glasses</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Brilliance Pocket Visual Fault Locator (VFL) with Adaptor Cords</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Brilliance Precision Cleaver</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

FiberExpress Brilliance

FiberExxpress Brilliance
FiberInspector™ Mini
Use to examine installed fiber terminations or ensure terminations are smooth and clean. Avoid the #1 cause of fiber link failure: dirty end-faces. Dirt, dust and other contaminants are the enemy of high-speed data transmission over optical fiber. Today’s network applications require more bandwidth, making loss budgets tighter than ever. It is critical that all optical connections are clean and free of contaminants to ensure application success.

- 200x magnification probe enables inspection of both multimode and singlemode end-faces inside ports and on patch cords
- Miniature display boasts an exceptionally sharp 1.8” screen
- Grip trigger activation extends battery life

Pro-Tool™ Kits
All the tools you need (in one pouch) to cut, strip, clean and make connections. The most essential tools for electrical and telecom technicians in our sleek form-fitting PVC Dur-A-Grip™ Tool Pouch – holds your tools securely inside, even upside down. Six tool kits combinations to choose from to meet a multitude of applications.

- All kits include ergonomically designed Dur-a-Grip pouch for convenient tool storage on belt
- D914™ and D814™ industry standard punchdown tools make for solid terminations
- Easy to use cable stripper quickly rings and slits many types of cable

Fiber Optic Stripper Three Hole- JIC - 375
Three hole Fiber Optic Stripper model performs all common fiber stripping functions. This Fiber Optic Stripper strips the 1.6-3 mm fiber jacket down to the 600-900 micron buffer coating. The second hole strips the 600-900 micron buffer coating down to the 250 micron coating and the third hole is used to strip the 250 micron cable down to the glass fiber without nicks or scratches. Handle is made of TPR (Thermoplastic Rubber) and tool is 6” long.

Three Piece Fiber Optic Kit TK - 375
Kit includes the JIC-375 Fiber Optic Stripper, ES-1964 Electrician’s Scissor, and convenient molded plastic pouch (with belt loop).
Three Piece Splicer’s Kit
TK - 400

This compact kit contains a special purpose ergonomic cable splicer’s knife, scissor and leather pouch. The knife features a short 1 3/4” tough, cutlery-steel blade and a non-slip handle.

The scissors are made of high carbon steel with scraper and file on one side plus 2 stripping notches. Both items fit securely in the leather pouch which can be mounted on belts up to 2” wide.

Round Cable Stripper
CST-1900

The CST-1900 is designed for fast and precise jacket removal of PVC, rubber, PE and other jacket materials, and works well on round cables with diameters ranging from 3/16” to 1-1/8” (4.5-29 mm).

This is a Triple Action Tool, cutting longitudinally for end stripping, spiral for end stripping and mid-span cuts, and circular for jacket removal. A simple versatile easy to use tool your customers will love. The Replaceable Cutting Blade CST-7915 is spring loaded, adjustable for various cable diameters, provides a 90° blade rotation and is designed for long life.

Can Wrench

The can wrenches feature color-coded socket ends and built-in ribs on the barrel for user comfort, safety, and greater torque power. The two hex head sockets (7/16 inch and 3/8 inch) have reduced outside diameters that fit all new network interface devices. The 7/16 inch is black oxidized to easily distinguish it from the 3/8 inch zinc-plated socket end.

- Two hex head sockets (7/16 inch and 3/8 inch)
- Color-coded socket ends for quick size identification
- Wrench body constructed of tough, impact resistant, and abrasion resistant material
- Socket ends guaranteed not to split or break up to a maximum torque of 45 ft. lbs.

Ergonomic Fiber Optic
Kevlar® Cutter - JIC - 186

High carbon stainless steel blades designed to cut Kevlar®, cabling insulation, tape, cable ties and other material.

Ergonomic handles for user comfort and durability. Adjustable joint screw under protective cap, serrated blades grip material, sharp and durable 6” long.
Cable Sheath Stripper & Ring Tool JIC-4366

The Cable Sheath Stripper and Ring Tool is good for copper cables as well as tight buffer optical fiber cables.

Used for butting and stripping cables too large for hand held pliers. Use 1 blade to butt PVC sheathing and use the second blade to strip the sheathing. Depth of the cut has two adjustments for .018” or .031” thick plastic, rubber or fabric insulation, and can handle cable diameters from 1/8” to 3/8”. One spare blade of each style is included with the tool.

High Leverage Cable Cutters - JIC - 63050

High leverage design for superior cutting ability.

Designed with a shear-type jaw for cutting aluminum and soft copper. Not for use on steel or ACSR type cables. Cuts up to 100-pair cables (24 AWG). Red handle 9 1/2” long.

High Leverage Diagonal Cutter - JIC - 2288

Crafted for heavy-duty wire cutting and made of specially forged alloy steel designed for strength and cutting ability.

Red plastic handle 8” long.

Linesmans B Side Cut Pliers JIC - 683

Designed for heavy duty use in construction and maintenance work.

These pliers are high leverage for cutting bolts, nails, and many gauges of wire including high-strength wire. Cutting edges cut clean and remain sharp. The cushioned-grip, comfortable handles are red plastic dipped to approximately .007”. 9 3/8” long. Also known as SIDECUTB9.
**Fiber Optic Strippers**

NO-NIK® tools are available in sizes ranging from 152 to 305 microns. Exclusive centering device positions fiber for precise scoring and removal of buffer coating. The color-coded, cushion-grip handles for quick identification. The plastic heads, which make contact only with the buffer, center and support your work on both sides. The cutting blades made from razor quality steel score the buffer completely. Back-up blades support the cutting blades, nest positively, and “lock up” when the tool is closed to maintain perfect concentricity. The buffer being removed acts as guide and protection for the fiber.

- Stripping blade diameter clearly marked on plastic handle
- Arrow indicates direction pressure should be applied when stripping on head
- Made in the U.S.A.
- Length: 5.3 in (135 mm); Weight: 1.6 oz (45 g)

---

**Mule Tape**

Whether you’re installing cable or locating your underground network, NEPTCO MULETAPE has the power and performance you need. Available in a variety of constructions including woven polyester and aramid, versatile MULETAPE allows you to thread, measure, pull and detect with a single product, saving both time and money. Prelubricated for easy pulling and reduced friction.

- Available in strengths from 200 to 6,000 lbs. (91-2727 kg) for greater pulling capacity and durability
- Durably printed with sequential footage or metric markings
- Packaged in splice-free lengths up to 100,000 ft. (30 km) for faster, easier cable placement
- Low elongation enhances worker safety and prevents crushed capstans
- Lightweight, easily blown through conduit or innerduct

---

**Cable Pulling Lubricant**

Polywater® FTTx Lubricant is a high performance, liquid cable pulling lubricant designed specifically for communication cable installations. Lubricant FTTx is highly concentrated and works with only a thin coating. It can be sprayed or wiped for easy application, or poured into innerduct for long pulls. It has excellent cling and wetting, evenly coating the entire cable jacket surface. Lubricant FTTx works even after it has dried. The residue is a thin, slippery film that retains lubricity for months after use.

Polywater® FTTx Lubricant is recommended for quick and easy lubrication with no mess. The lubricant is suitable for all types of communication cable installations.

- Easy spray or wipe application
- Lubricates with a thin film; excellent friction reduction
- Performs after drying
- Compatible with cable jackets

---

**Telecom Long Nose D Pliers - JIC - 842**

Pliers are for general use looping, bending and cutting. Grips small wires and parts and reaches into tight spaces. Jaws are knurled, serrated and have side cutting blades. Cushion gripped yellow plastic handle 6 7/8' long.

---

**Mule Tape**

Whether you’re installing cable or locating your underground network, NEPTCO MULETAPE has the power and performance you need. Available in a variety of constructions including woven polyester and aramid, versatile MULETAPE allows you to thread, measure, pull and detect with a single product, saving both time and money. Prelubricated for easy pulling and reduced friction.

- Available in strengths from 200 to 6,000 lbs. (91-2727 kg) for greater pulling capacity and durability
- Durably printed with sequential footage or metric markings
- Packaged in splice-free lengths up to 100,000 ft. (30 km) for faster, easier cable placement
- Low elongation enhances worker safety and prevents crushed capstans
- Lightweight, easily blown through conduit or innerduct

---

**Tools, Test & Installation**

**FTTx Solutions Guide**

**Fiber Optic Strippers**

NO-NIK® tools are available in sizes ranging from 152 to 305 microns. Exclusive centering device positions fiber for precise scoring and removal of buffer coating. The color-coded, cushion-grip handles for quick identification. The plastic heads, which make contact only with the buffer, center and support your work on both sides. The cutting blades made from razor quality steel score the buffer completely. Back-up blades support the cutting blades, nest positively, and “lock up” when the tool is closed to maintain perfect concentricity. The buffer being removed acts as guide and protection for the fiber.

- Stripping blade diameter clearly marked on plastic handle
- Arrow indicates direction pressure should be applied when stripping on head
- Made in the U.S.A.
- Length: 5.3 in (135 mm); Weight: 1.6 oz (45 g)
FDS-2-3MM Fiber Drop Stripper & Buffer Tube Slitter

This is a multi-purpose tool designed for stripping Flat Drop Fiber jacket and accessing 2 mm and 3 mm buffer tubes on (FTTH) “Fiber to the Home” applications. It provides three individual stripping channels in one compact tool body for jacket removal and 2 mm and 3 mm buffer tube slitting.

- Lightweight polymer body
- T-bar handle grip design for extra ease of jacket stripping
- Made in the U.S.A.
- Length: 3.71 in (95.00 mm); Weight: 6.76 ounces (193.0 g)

Riser Break-out Tool

The Riser break-out tool is for use in FTTH – MDU (Multiple Dwelling Units) as well as other riser cable applications. It is a preparation tool especially designed to shave a break-out window in riser cable with no fiber damage and allowing individual fiber extraction. The tool is compact and lightweight yet incorporating rugged aluminum body design. It allows easy and fast access to closely spaced riser cables especially in small confined areas.

- Compact and thin profile tool design allows for ease of use when riser cable is surface mounted
- Shaves a longitudinal break-out window in 8.5 mm, 10.5 mm and 14 mm O.D. riser cables without any time consuming tool adjustment
- Factory fixed shaving blade made of high carbon steel and is safely recessed away from installer’s hand to minimize exposure
- Length: 3.9 in (100.00 mm); Height: 1.482 in (38.00 mm); Width: 0.663 in (17.00 mm); Weight: 3.68 ounces (105.0 g)

Graybar Canada’s On-site Training Facilities

Many of Graybar Canada's branches offer a conference/demonstration room that can be used for customer training. The rooms are equipped with audio/visual equipment and can accommodate up to 30 people for seminars and 12 people for classroom training. Training is offered on a regular basis to keep customers up-to-date on new technology, products and improved methods.
CraftSmart Fiber Protection Vault

Formed from a High Density Polyethylene (HDPE) Thermoplastic, these vaults provide a solid base and light-weight material alternative to traditional polymer concrete enclosures. Three industry standard sizes - FPV1730, FPV2436 or FPV3048 - can be ordered with solid covers or pre-cut covers to accommodate various FieldSmart cabinet solutions.

- Meets and is qualified to Telcordia GR-902-CORE specifications. Complies with applicable elements of Western Underground, ANSI/SCTE 2002.
- 5,000 lb. static load for thermoplastic cover, 20,000 lb. with polymer concrete cover/ ring
- Multiple cover options – single piece solid thermoplastic, split thermoplastic (with plug), solid or split polymer concrete, provide ease of access as well as multiple applications for the products model

FiberTel® High Density Polyethylene (HDPE) Innerduct

FiberTel® HDPE Innerduct combines the features of flexibility, durability, light weight and ease of installation. Mechanically and chemically resistant to a host of environmental conditions, FiberTel is resistant to decomposition, oxidation, and hostile elements that cause damage to other materials. The wall thickness, diameter, color, resin type and coil lengths can all be specified to meet the requirements of your project.

- Allows for easy bending during installation
- Complete with sequential footage printing on the pipe indicating how much footage is left after installation
- Walls are available with a smooth or longitudinally ribbed surface
**GUY-GRIP Dead-ends**

GUY-GRIP Dead-ends, installed at the top, the breaker and the anchor, provide today’s most effective method for securing guy strand. This unique, one-piece dead-end is neat in appearance and free from bolts or high-stress holding devices. The GUY-GRIP Dead-end was the first to offer the cabled loop, a feature that provides more durability, easier tensioning and adaptability to multiple guying. GUY-GRIP Dead-ends are made of the same material as the strand to which they are applied. They should be used on hardware that is held in a fixed position. The fitting should not be allowed to rotate or spin about the axis of the strand. They should not be used as tools including come-alongs, pulling-in grips, etc.

![GUY-GRIP Dead-ends Image]

**Wedge Dead for OPGW**

AFL’s optical ground wire (OPGW) wedge dead end improves the ease and speed of installing OPGW as compared to bolted and formed wire devices. The wedge dead end is sold mostly assembled and only requires connecting three components (the body, top wedge and locking pin) during preparation. The unique cam action in the pivoting cable guide ensures proper alignment of the wedges prior to loading and the wedges automatically provide the necessary gripping action to meet the holding strength requirements. A removal tool (sold separately) is available to unlock the wedges for situations requiring additional adjustment of the dead end.

- Three loose components as compared to 15+ with bolted dead ends
- No bolts to torque – self-locking wedge design secures the cable
- Eliminates human error associated with proper torque on bolted dead ends
- Shorter and easier to install than formed wire dead ends

![Wedge Dead for OPGW Image]

**E Lashing Wire Clamp**

Designed for permanent wire terminations, this clamp has the same hardware, construction and clamping range as our D Clamp, but with a one-piece stamping formed to let both sides grip the messenger in perfect alignment. We also supply an oversize E lashing Wire Clamp for strand up to 9/16 in. (14 mm).

![E Lashing Wire Clamp Image]

**Download Clamps for OPGW and ADSS**

AFL downlead clamps are used to guide optical ground wire (OPGW) from the top of the structure to the splice box. AFL’s downlead clamps install easily, provide proper spacing and hold strength without damage to the cable. From poles to towers, AFL offers a full line of OPGW downlead clamps to meet the needs of any application.

- Slip strength: >100 lbs.
- Lattice adapters provided with break-away bolts for precise torque during installation
- Steel tower guide clamps available with adapters to eliminate the need for drilling
- Banding adapters available

![Download Clamps for OPGW and ADSS Image]
**J 2 Cable Lasher**

The Model J2 Cable Lasher is used to lash a single aerial cable or numerous cables to a supporting strand or to an existing lashed cable with stainless steel lashing wire. It will lash any single or multiple aerial cables up to 3 in. (76 mm) diameter across on any suspension strand from 1/4 in. (6 mm) to 7/16 in. (11 mm). A factory modification will allow the lasher to accommodate 1/2 in. (12.7 mm) strand if necessary.

- Each of two recessed magazines will hold a 1200 ft. coil of .045 in. (365 m of 1 mm wire) lashing wire (or 450 ft. of .065 in.). The Lashing Wire is fully recessed and covered by a gate.
- Positive internal gear-to-gear mechanism has no chains or belts to stretch, slip or break.
- Pre-drilled and tapped at the factory for mounting of the lasher guard or “halo”. For use when lashing in overgrown areas.

**Stainless Steel Lashing Wire**

Stainless Steel Lashing Wire is used in a lasher to lash an aerial cable or combination of cables to a supporting strand. A specially controlled annealing process yields a uniform, fine grain structure throughout wire length and cross section for best results.

- GMP lashing wire is packaged as 6 coils per carton for your ordering convenience.
- Available in 430, 302, and 316 stainless steel alloy.
- All lashing wire is wound in a straight hub configuration to fit all the standard GMP lashers.

**Reel Buck**

A tough, easily maneuvered and portable frame that’s ideal for supporting any reel up to 36 in. (914 mm) wide x 50 in. (1270 mm) diameter.

- Two welded, rectangular steel members make up the frame.
- Designed for one-person handling.
- Will accommodate the Corning FlexNap™ cable drums.
- Frame protected against corrosion.

**Reel Caddy**

These large diameter Reel caddies can be used to support and dispense drop cable quickly and easily. The caddy is lightweight and folds flat for compact storage. It’s fabricated from durable painted steel tubing for years of dependable service.

- Supports reels up to 30” in diameter.
- Easily accommodates multi port deployment on cardboard or plastic reels.
- Quick and simple to setup with one hand.
- Supports reels up to 200 lbs. with a minimum 1 1/2” spindle diameter.
**Strand Wire**

From Utility Grade through Extra High Strength, Bekaert has the specifications you need. Coatings range from Class A through our longer lasting Bezina® coatings. All Strand exceeds ASTM specification and is TL-9000 certified. Bezina® is Bekaert’s industry leading coating technology with unsurpassed corrosion resistance. Bezina® is a 95% Zinc + 5% Aluminum (+Mischmetal) eutectic alloy that exhibits remarkable corrosion resistant properties by combining passivation corrosion characteristics present with aluminum together with the sacrificial protection offered by the zinc content of the alloy. With superior formability, longevity, and durability, Bezina® is an ideal solution to your wire needs.

- Extensive range in terms of diameter range and tensile strength range
- Excellent ductility on wire level leading to optimal fatigue properties on strand/rope level
- Finish: bright phosphated wire, normal and heavily galvanized wires, Bezina® coated wires, stainless steel wires
- Broad portfolio of stainless steel grades with bright and shiny surface finishes

**THHN/THWN/TWN75/T90**

Southwire Type THHN or THWN-2* conductors are primarily used in conduit and cable trays for services, feeders, and branch circuits in commercial or industrial applications as specified in the National Electrical Code. When used as Type THHN, conductor is suitable for use in dry locations at temperatures not to exceed 90°C. When used as Type THWN-2*, conductor is suitable for use in wet or dry locations at temperatures not to exceed 90°C or not to exceed 75°C when exposed to oil or coolant. When used as Type MTW, conductor is suitable for use in wet locations or when exposed to oil or coolant at temperatures not to exceed 60°C or dry locations at temperatures not to exceed 90°C (with ampacity limited to that for 75°C conductor temperature per NFPA 79). Conductor temperatures not to exceed 105°C in dry locations when rated AWM and used as appliance wiring material. Voltage for all applications is 600 volts.

**Pole Mount Spindle**

Equipped with a Ratchet Binder using a 2” wide web to provide a sturdy, yet temporary, attachment to a pole for FIOS/VATS cable reels.

- Durable, bright yellow powder coat finish for visibility and to protect against corrosion
- Hardware is also protected against corrosion

**Corner Blocks 45 & 90 Degrees**

These rugged and lightweight corner blocks are used to guide cable and evenly distribute the load on the cable when pulling around corners.

- Welded and painted steel frames.
- New and improved plastic roller now allows you to pull with Poly rope.
- Accepts up to a 1 3/8” diameter cable or innerduct on a 23° bending radius.
- Cable retaining roller helps prevent the cable from jumping off of the rollers.
Splicer Combination Tent

Gives splicers everything they've ever wanted in a shelter including super-light weight 16 lbs. (7.2 kg) rigid, storm-proof frame, simple closure system, and natural white light for 100% true color rendition inside. It's the ideal multi-use shelter for splicers working aloft or in manholes. On a multi-cable installation, you can even mount the tent on the lower strand.

- 8 ft. 8 in. (2.64 m) H x 48 in. (1.22 m) D x 42 in. (1.06 m) along strand
- Features new single-action buckle fasteners that open and close easily with one hand
- Same fasteners are attached to four straps that let you roll up the sides for ventilation
- Covers attach to the frame with velcro, allowing easy replacement if damaged

Clip-On Cable Block

This tempered spring steel block is used to support cable up to 1 in. (25 mm) during cable pull-out.

- Fits over existing cable bundles to 2 in. (51 mm)
- Holes in top of frame allow for temporary anchoring using light duty tie wraps
- The unique housing profile keeps the lashing machine (71422 & 86070) from "riding" over the unit
- The pliable urethane roller is forgiving of field abuse and will never mar or scar cable

Cable Block with Rubber Roller

This economical block has a rubber roller and is used for new strand and overlash work.

- Accommodates up to a 2 in. (51 cm) cable
- The strand wedges in the "V" notch of the sturdy cast aluminum frame
- The spring-loaded strand retaining pin will clear two previously lashed 3/4 in. (19 mm) cables for overlashing
- A rotating gate keeps line or cable on the roller

D Cabinet Balcony

Our newest pole mounted work platform, the GMP D Cabinet Balcony was designed to accommodate the new generation of fiber optic based cabinets as well as the existing line of cross connect cabinets. The 22” (559 mm) D x 30” (762 mm) W durable aluminum grate seat resists buildup of snow, water and debris while giving you secure footing. The 36” (914 mm) H rear guard railing along with balcony entrance step on either side (or both sides with optional step), give you extra safety and convenience. All frame parts are produced from hot-dipped galvanized steel or stainless steel for corrosion resistance. The D Cabinet Balcony has a 375 lb. WLL (working load limit).
**MDU Rapid Fiber System**

Configurations with Spliced or Stubbed IFDH

- Rapid FDT with built-in spool
- Rapid MDU Collector Enclosure
- Rapid Indoor FDH with built-in MT

---

**MDU Rapid Fiber System**

Indoor FDH Configurations with Built-in MT Connectors

- Rapid FDT with built-in spool
- Rapid Indoor FDH with built-in MT
FieldSmart SCD Outdoor Indoor Wall Box

Ideal for any small-count "landed" fiber scenarios where up to 24 fibers are required in a discrete footprint without sacrificing fiber management. Ideal for MDU (Multi-Dwelling Units). Optimized for use with the Clearview Cassette and the Clearview xPAK.

- Mounting hole pattern for multiple applications
- Dual snap locks to ensure lid seals to base
- Small design facilitates ease of use in crowded environments
- Easy to install with both internal and external mounting holes

FDH 1 (24-48 fiber)

Wall mount fiber distribution hub designed to support patching, splicing and optical splitting in one unit. The enclosure has 9 adapter panel positions allowing for a wide variety of patching and splitting combinations. Two compartments separate the network terminations from the distribution terminations and a single outer door. Applications: Indoor demarcation points and MDU distribution.

- Available with adapters, splice trays and pigtails
- 2 splitter module capacity
- Multiple bottom cable entry point
- Removable door; lockable

Fiber Building Terminals (CFBT Hub)

For indoor applications, the CFBT is a wall-mountable fiber interconnect enclosure designed for indoor use. It is ideally suited for terminating fiber optic cables in building entrance rooms or communication closets for enterprise or MDU applications and can be used inside existing OSP enclosures at cell towers, creating a point of presence (POP) for quick turn-up of cell customers needing fiber for their equipment upgrades.

- Dimensions: 20"W x 20"H x 7"D
- Indoor rated enclosure
- For fiber interconnect applications of up to 96 fibers.
- Ideal for FTTCS, FTTB or FTT-MDU applications

EZ-Bend® InvisiLight™ Optical Solution

Enables fast, easy, virtually invisible in-residence fiber drop connections. OFS’ EZ-Bend Fiber enables the EZ-Bend InvisiLight Optical Solution to be routed around the many corners in a residence with negligible signal loss, enabled by its 2X - 3X better tight bending performance than competing ultra-bend insensitive fibers. This plug and play solution reduces the need for field terminations and solves the slack management challenge through an innovative auto-slag manager.

- Virtually invisible with minimal disruption– for greater acceptance, take rates, and revenue
- 10X smaller than 2.9 mm cordage, 20X smaller than taped fiber system
- Staple-free adhesive application minimizes damage to walls and moldings
- Faster, easier plug and play solution – to enable lower installed cost
**EZ-Bend® Multifiber Drop Bundle**

The EZ-Bend® Multifiber Drop Bundle provides the same high performance that the single fiber EZ-Bend Assemblies provide but has the added benefit of saving time in installation by pulling 5, 6 or 12 assemblies at one time. The OFS Outside Plant EZ-Bend Multifiber Drop Bundles feature the ruggedized 4.8 mm Indoor/Outdoor cable with EZ-Bend Ultra-Bend Insensitive Fiber.

- Faster, easier installation: no extra steps to install bend limiters, conduits, or raceways
- Compact installation and storage: Conforms to building, slack fits in small storage spaces
- Fast, easy, low loss splicing to G.652D fiber with existing core and clad aligned splice equipment
- MDU and in-home optimized: Ideal for in-residence wiring and difficult installation routes in MDU overbuilds

**ClearCurve® Compact Drop Cables**

Corning Cable Systems ClearCurve® Compact Drop Cables are part of a product family developed to solve the challenges associated with multi-dwelling unit (MDU) deployments. Enabled by a truly bend-insensitive fiber, this small-profile, yet durable, cable is optimized for applications within the living unit. Smaller and more flexible than CAT 5e cable, ClearCurve Compact Drop Cable can accomplish tight turns to a minimum bend-radius of 5 mm (0.2 in) with negligible bend loss and can be run under carpet, along door frames and molding, in raceway or micro-duct.

- Better than copper cable alternatives, ClearCurve Compact Drop Cable for MDU applications outperforms typical CAT 5e or CAT 6 cable with a:
  - Higher bandwidth-carrying capacity
  - Smaller outer diameter
  - Lighter weight, smaller minimum bend-radius

**ezINTERCONNECT™ MDU Drop**

Ruggedized, bend-insensitive optical drop cable for a variety of MDU/MTU architectures, such as apartments, condominiums, high rise and business retail centers. This cable family combines a 900μm tight buffered bend-insensitive fiber with robust, flame retardant cable constructions. Cable designs are available in both riser rated and plenum rated versions for deployment in any indoor application. A riser rated indoor-outdoor version incorporates waterblocking performance and a UV stabilized outer jacket.

**ezDROP™ Indoor Bundled MDU Assembly**

Indoor Bundled MDU Assembly provides the installer with time and cost savings by enabling efficient and rapid deployment of optical connections to multiple locations on the same floor. This application is commonly found inside residential multi-dwelling units (MDU) and commercial multi-tenant units (MTU). This riser rated product is available in color-coded 6 fiber or 12 fiber units and is intended for use with wall mounted conduit systems typically found in residential hallways or office corridors.

- Stranded design without an outer jacket for easy access
- Incorporates Ultra Bend Insensitive Fiber (UBIF) for use in constrained spaces
- Pre-terminated with SCAPC connectors to support plug and play installation
- TIA-598 color-coded subunits for easy identification