MILLENNIUM®

Our vision supplies yours™

COMMSCOPE®

FTTH SOLUTIONS FOR NORTH AMERICA

SHAPING THE ALWAYS-ON NETWORKS OF TOMORROW

866.287.7830 | info@mtpllc.us | www.mymillennium.us

More bandwidth, more network capacity. Think Fiber.

Fiber optics delivers more traffic volume than any other medium, hands down. No other technology is capable of supporting gigabit, low-latency applications with such ease, including:

- 4K and 360° video
- Virtual Reality (VR) and gaming
- Cloud connectivity
- Self-driving cars

The end-user device may be wired or wireless. But to bring that traffic from the home, business, and cell site into the central office or headend, you'll need fiber.

Speed and ease of deployment.

Building fiber networks requires experienced staff with training and tools. At CommScope, we design robust products that are quicker and easier to install, with less specialized tools and less training, to eliminate bottlenecks and streamline deployment. We make high-tech accessible—easy to understand, easy to install, and easy to maintain.

Fiber access networks. with CommScope, it doesn't have to be hard.

With decades of reliable, proven results in FTTX projects around the world, we can help you optimize your network design, choose the most suitable products, and plan your deployment. Trust us to help you deliver your project on time, on budget.

This quick reference guide is a selection of popular solutions, suitable for a wide range of applications and environments. Start building your fiber network today.

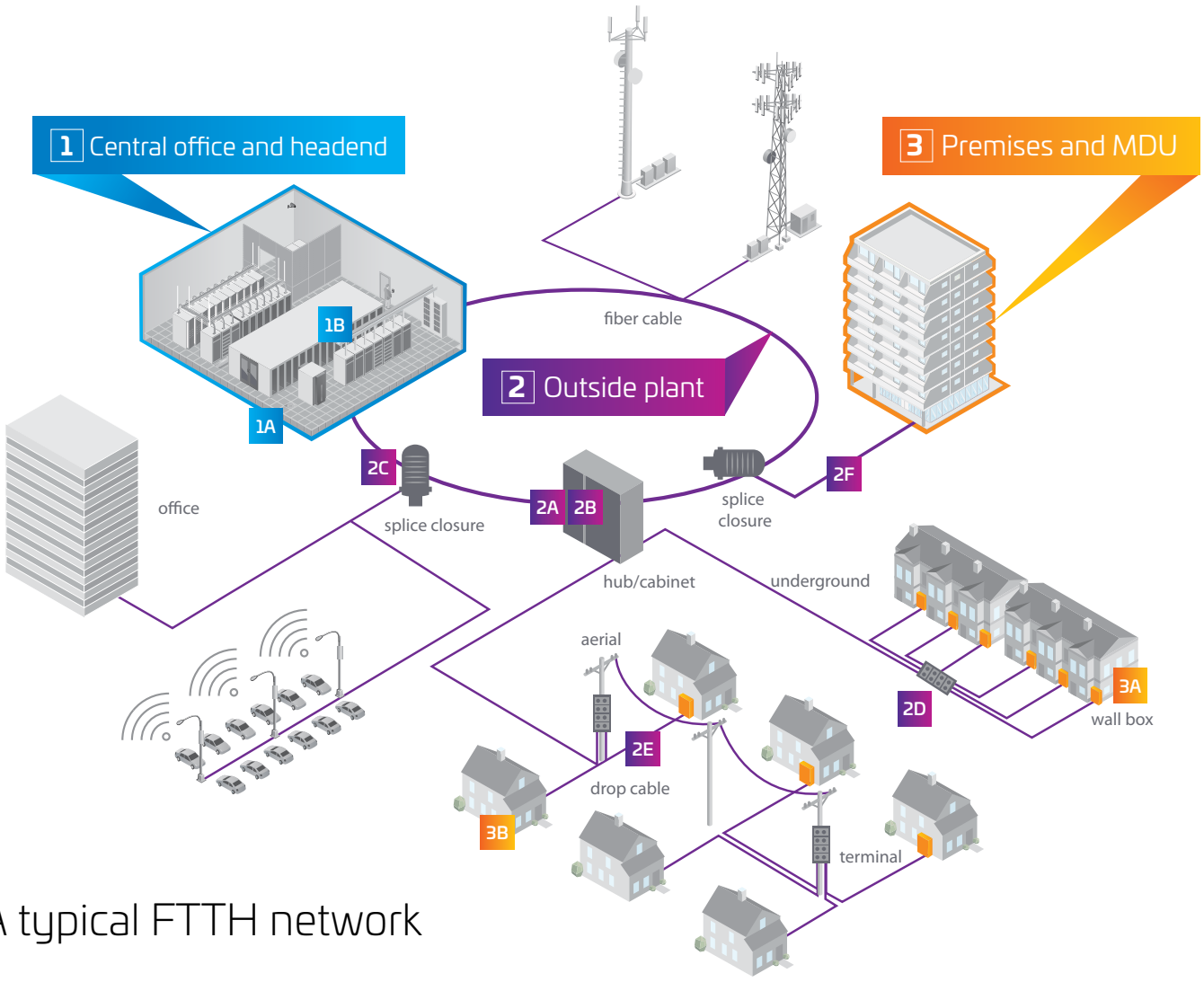
We offer solutions for:

1 Central office and headend

2 Fiber outside plant

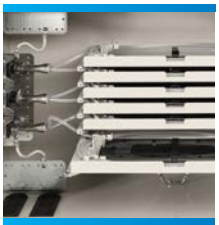
3 Premises and multidwelling units

866.287.7830 | info@mtpllc.us | www.mymillennium.us



A typical FTTH network

1

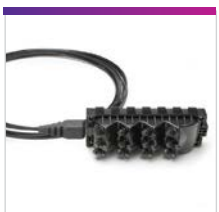


1A Fiber entrance cabinet

1B Fiber termination blocks & panels

2

2A Fiber distribution hub



2D Multiport service terminals

2B Plug-and-play splitters

2E Hardened drop cables

2C FOSC® splice closures

2F Fiber cables

3

3A Outdoor wall box

3B Indoor/outdoor drop cable

1 Central office and headend

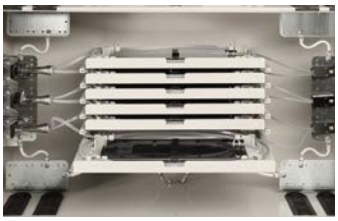
The central office or headend is where service providers must often make changes.

As FTTH, DOCSIS 3.1, and G.fast gain momentum, new fiber is constantly added both at the outside plant and in the central office/headend (CO/HE). Furthermore, emerging trends and technologies are expected to have an important impact on the evolution of the CO/HE.

- Network functions virtualization (NFV) replaces traditional network equipment with virtualized software
- Software defined networking (SDN) shifts traffic to meet rapidly changing demands
- Edge computing spreads formerly centralized computing functions across a broad network, and, like NFV, can reduce the need for traditional equipment

Density and agility are key for today's central office and headend, in order to meet the challenges of technology migration and evolution.

1A Fiber Entrance Cabinet (FEC)



The Fiber Entrance Cabinet (FEC) provides splicing, administration and storage for outside plant and intra-facility cables (IFC). The cabinets are designed for deployment in a building equipment area. The FEC offers a cost-effective, space-saving alternative to splicing on the fiber frame.

Part Number	Description
FEC-864	Fiber optic entrance cabinet, up to 1728 stranded fibers and 2592 ribbon fibers, 36 splice drawers
FST-D-MT	Fiber optic ribbon splice tray, up to 72 fibers (6 x 12 fiber ribbon)
FST-HS-48	Fiber optic stranded splice tray, 48 fiber capacity
OSP-CLPFEC-LG	Large cable clamp kit, 3 positions
BLK-RCT-B09D0	Fiber optic ribbon breakout kit, 24F ribbon, 2 ribbon per tube, 11-15 mm central tube OD, 9 tubes, up to 432 OSP cable
BLK-RCT-B18D0	Fiber optic ribbon breakout kit, 24F, 2 ribbon per tube, 11-15 mm central tube OD, 18 tubes, up to 864 OSP cable
SMOUV-1120-R2/12-02	SMOUV Splice heat shrink protective sleeves, ribbon, 1000-pack 42mm (757849-000)
SMOUV-1120-01	SMOUV Splice heat shrink protective sleeves, single, 1000-pack 61mm (369305-000)

For more FEC configurations, visit goo.gl/XbtP8F

1B 288 LSX Fiber Distribution Termination Panels

The 288 LSX panel provides a physical interface between fiber optic cables (terminated on the rear side of the bulkhead) and patch cords (terminated on the front). 288 LSX panels are pre-terminated and fit into 23" rack mounting.

Part Number	Description
LSX Fiber termination panel with IFC cable, 11 in x 23 in, 288 SC/APC, singlemode, STRANDED indoor cable, stub tail at far end	
LSX-LL/0WB031	31 meters (100ft)
LSX-LL/0WB046	46 meters (150ft)
LSX-LL0WB061	61 meters (200ft)

LSX Fiber termination panel with IFC cable, 11 in x 23 in, 288 SC/APC, singlemode, RIBBON indoor cable, stub tail at far end	
LSX-LL/0WA023	23 meters (75ft)
LSX-LL/0WA031	31 meters (100ft)
LSX-LL/0WA046	46 meters (150ft)

Alternate Term and Splice (On-Frame Splice) Application	
LSX Fiber termination panel, 288 SC/APC, singlemode, 11 in x 23 in, pigtails and splice trays loaded, 12 fiber	
LSX-LL5243-A-SPL	RIBBON
LSX-LL1242-A-SPL	STRANDED LOOSE TUBE

For more LSX configurations, visit goo.gl/PnhLnd
For NG4acccess and high-density frame solutions, visit goo.gl/6AqEZp

2 Fiber outside plant

Service providers are deploying more and more fiber in the outside plant for residential broadband, business customers, and wireless backhaul (or fronthaul) services.

Cabinets and hubs connect the last-mile access network to the distribution network, and thus have to be operationally efficient and scalable in order to achieve this flexibility.

Closures are used at the fiber splice points to house and protect the fibers and value add modules like passive splitters and C/DWDM. To ensure long-term profitability of the network, our closures are designed to address the following needs:

Service providers need flexible fiber networks that can grow and adapt with the demands of the market.

2A Fiber Distribution Hub (FDH 3000)

The FDH 3000 promotes rapid connections between fiber optic cables and passive optical splitters. This outdoor passive optical network and fiber cross-connect cabinet is available in 144, 288, 432 and 864 fiber sizes.

FDH 3000

Part Number	Description
FD3-AC144J00JBBP2	FDH 3000 Fiber distribution extra small cabinet, 144F, SC/APC, no splitters, dielectric loose tube, 100 ft, 24F
FD3-AE288J00JGBP2	FDH 3000 Small fiber distribution cabinet, 288F, SC/APC, no splitters, dielectric loose tube, 100 ft, 24F
FD3-AG432J00JBBP4	FDH 3000 Fiber distribution medium cabinet, 432F, SC/APC, no splitters, dielectric loose tube, 100 ft, 48F
FD3-AJ576J00JGBP4	FDH 3000 Fiber distribution large cabinet, 576F, SC/APC, no splitters, single armor loose tube, 100 ft, 48F
FD3-AJ864J00JGBP7	FDH 3000 Fiber distribution large cabinet, 864F, SC/APC, no splitters, single armor loose tube, 100 ft, 72F
FD3-AB096J00AKBP1	FDH 3000 mini hub 96 port, I/O dielectric ribbon, 96F dist., SC/APC, no splitters, 12F feeder, 100 ft. stub
FD3-PA096J00U4220	FDH 3000 fiber distribution hub in a pedestal, 96F, SC/APC, no splitters, stranded pigtails, 96 splice cap., 21F feeder
FD4S-B144J00JBB2	FDH 4000 sealed fiber distribution hub, 144F, SC/APC, no splitters, dielectric stranded, 24F feeder, 100 ft. stub

Mini FDH

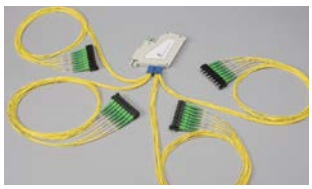
Hub in a Ped

Sealed FDH 4000

Hand Hole Kits	
FMS-ACE100-KIT-A	FDH 3000 30 in x 60 in hand hole and cover kit for extra small (24-144 fibers), small (72-288 fibers) and medium (72-432 fibers) cabinets
FMS-FD3J-KIT-A	FDH 3000 48 in x 60 in hand hole and cover kit for large (72-864 fibers) cabinets

2B Splitters for the FDH 3000

Plug-and-play splitters are value added modules that can be placed in an FDH 3000 to implement point-to-multipoint passive optical network (PON) architectures for FTTH networks.



Part Number	Description
FPS-MPP1AJJ	1x32 plug-and-play splitter for FDH
FPS-MPP1CJJ	1x16 plug-and-play splitter for FDH

For more information on the FDH 3000 and splitter options, visit goo.gl/MXPlWE
For more information on the mini FDH 3000, visit goo.gl/QwKx2B
For more information on the sealed FDH 4000, visit goo.gl/dd6HPL

2C FOSC® 450 Fiber Optic Splice Closure

FOSC 450 fiber optic splice closures are a family of closures for use in all outside plant fiber splicing applications. Utilizing compressed gel cable sealing and a quick release dome-to-base clamp for fast access to the splicing area, there are a variety of sizes to choose from. Each closure is capable of handling a range of cable styles and sizes and incorporates such features as hinging splice trays. FOSC closures are accompanied by a full line of accessories as well.

Part Number	Description
FOSC450-A4-4-NT-0-A1V	FOSC 450 A4 Fiber optic splice closure, gel cable sealing, no pre-installed tray, 4 cable attach., one ground feedthrough lug, with test valve (A08617-000)
FOSC450-B6-6-NT-0-B3V	FOSC 450 B6 Fiber optic splice closure, gel cable sealing, no pre-installed tray, 6 cable attach., three ground feedthrough lugs, with test valve (058514-000)
FOSC450-C6-6-NT-0-C6V	FOSC 450 C6 Fiber optic splice closure, gel cable sealing, no pre-installed tray, 6 cable attach., six ground feedthrough lugs, with test valve (JI945R-000)
FOSC450-D6-6-NT-0-D6V	FOSC 450 D6 Fiber optic splice closure, gel cable sealing, no pre-installed tray, 6 cable attach., six ground feedthrough lugs, with test valve (931866-000)

FOSC-ACC-A-TRAY-12-KIT	FOSC Fiber optic splice tray kit for 12 fibers (497817-000)
FOSC-ACC-A-TRAY-24-KIT	FOSC Fiber optic splice tray kit for 24 fibers (429567-000)
FOSC-ACC-B-TRAY-12-KIT	FOSC Splice tray and cover kit, 12-splices (898849-000)
FOSC-ACC-B-TRAY-24-KIT	FOSC B Splice tray with two SM-12 splice modules (863927-000)
FOSC-ACC-C-TRAY-12	FOSC Fiber optic splice tray, 12 fibers (RH0198-000)
FOSC-ACC-C-TRAY-24	FOSC Fiber optic splice tray, 24 fibers (RH0202-000)
FOSC-ACC-D-TRAY-36-KIT	FOSC Splice tray kit, clear cover with 6 SM-6 splice modules, tie-wraps (426579-000)
FOSC-ACC-D-TRAY-72-KIT	FOSC D Splice tray, 6 splice modules, 72-splice capacity (915167-000)
FOSC-ACC-TTUBE-SMLL-16IN	FOSC Transportation tubing, small, 16 in (526767-000)
FOSC-ACC-TTUBE-SMLL-50FT	FOSC Transportation tubing, small, 50 ft (829333-000)
FAK-MULDRP-45-BASIC-4W	FOSC Gel wrap, 4 cables, 10 pcs (B48230-000)
FAK-MULDRP-45-4W-DRP	FOSC Gel tape wrap, all FOSC450 closures - 2 or 4 cable capacity, no cable attachments (41606V-000)
FAK-MULDRP-45-SEAL-FLAT4	FOSC Gel drop seal for adding flat drop cables, FOSC450 B, BS, C, D closures (CZ3388-000)
SMOUV-1120-01	SMOUV Fiber optic splice heat shrink protective sleeves, 100-pack (369305-000)

For more FOSC configurations, visit goo.gl/emmoqs

2C Gator 12F Splice Closure

Gator splice closure is a small butt splice closure primarily designed for splicing two loose tube “flat drop” style cables of 1 to 12 fibers in above grade, below grade, and direct buried applications.

FDSC-GATOR-12F-T	12F splice closure, 10/pk. 7.5” x 5.8” x 1.2” (MR3919-000)

For Gator accessories, visit: goo.gl/1iIAQD

2D Multiport Service Terminals (MST)

Multiport Service Terminals (MST) feature full-sized hardened adapters in an environmentally sealed enclosure. Terminated at the factory, the MST is designed for use in a variety of drop cable applications. The no-splice, plug-and-play cables and connectors make it quick and simple to install.

MST-□□MH00-□□□□□□□

Terminal Model

02	2-Port
04	4-Port
06	6-Port
08	8-Port

Mounting Style*

U	Universal: Terminal is on top of the spool, stub deploys first
A	Reverse Spool: Terminal is on the bottom of the spool, terminal deploys first

*0 - 300' length of cable is utomatically coiled (option U), greater than 300' cable length, chose U or A option.

Cable Type

A	Dielectric – Flat – Loose Tube
B	Locatable – Flat – Loose Tube
C	Armored – Round – Loose Tube

Cable Stub Length

0050	50 Feet
0100	100 Feet
0250	250 Feet
0500	500 Feet
0750	750 Feet
1000	1000 Feet
1500	1500 Feet
2000	2000 Feet

Standard lengths shown.

For more information on multiport service terminals, visit: goo.gl/2Jmb77

2D Mini Multiport Service Terminals (MST)

The mini MST incorporates DLX® hardened adapters resulting in a much smaller terminal package than available with previous generations. Mini MSTs are environmentally sealed terminals that withstand all the rigors of the OSP environment. The terminals are factory-terminated with individual connectors and provided with a stub cable for splicing in the field.

MST- □□ XX - □□ □ □ □□□□ □

Terminal Model

04	4-Port
06	6-Port
08	8-Port
12	12-port
0N	1x4 Splitter
0J	1x8 Splitter

Cable Termination

00	Pigtail (No connector)
X0	DLX connector (only available on splitter modules)

Cable Type

A	Dielectric – flat – loose tube
B	Locatable/tonable – flat – loose tube

Mounting Style*

U	Universal: Terminal is on top of the spool, stub deploys first
A	Reverse Spool: Terminal is on the bottom of the spool, terminal deploys first

* 0 - 300' length of cable is utomatically coiled (option U), greater than 300' cable length, chose U or A option.

Cable Stub Length

0050	50 Feet
0100	100 Feet
0250	250 Feet
0500	500 Feet
0750	750 Feet
1000	1000 Feet
1500	1500 Feet
2000	2000 Feet

Cable lengths shown are for example; additional cable lengths are available in feet or meters upon request

For more information on the mini MST with DLX, visit: goo.gl/Z26WV0

2D Optical Termination Enclosures (OTE)

NEW

CommScope's next generation Optical Termination Enclosure (OTE) portfolio was specifically designed to streamline and speed the deployment of fiber while delivering long-lasting reliability, and ultimately peace of mind.

Composed of four OTE series, this portfolio was designed with almost limitless choice for sizes, styles and configurations to accommodate nearly every unique deployment need.

For more information on the OTE portfolio, visit: goo.gl/U2Vdjq

2E Hardened Drop Cables

Hardened drop cables are environmentally robust to provide a reliable interface for fiber drop cables in the outside plant environment. 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.

FDH - H □ 1 □ - □□□□□ F □

Connector 2

H	Hardened ASC
O	Stub end/none
J	SC/APC Connector
P	SC/APC Connector with pulling sock

Cable Type

A	Dielectric/Flat
B	Locatable/Flat
C	Universal flat drop dielectric
D	Universal flat locatable/toneable

Universal drop cable

For more information on hardened drop cables, visit: goo.gl/2Jmb77

Special Request*

	Coiled
L	Spooled: Connector 1 deploys first from spool
R	Spooled: Connector 2 deploys first from spool

* Cable length 0 - 1000 FT is automatically coiled unless the code "L" or "R" is specified.

Length*

0050	50 Feet
0100	100 Feet
0200	200 Feet
0250	250 Feet
0300	300 Feet
0350	350 Feet
0400	400 Feet
0450	450 Feet
0500	500 Feet
0600	600 Feet
0700	700 Feet
0800	800 Feet
0900	900 Feet
1000	1000 Feet
1100	1100 Feet
1200	1200 Feet
1300	1300 Feet
1400	1400 Feet
1500	1500 Feet
1600	1600 Feet
1700	1700 Feet
1800	1800 Feet
1900	1900 Feet
2000	2000 Feet

* Cable lengths shown are for example; additional cable8 lengths are available in feet or meters upon request

2E Hardened Drop Cables with DLX®

DLX® drop cable utilizes miniature fiber optic connectors to speed deployment of outside plant fiber cabling networks. The compact, DLX connector design allows the drop cable to be installed in tight conduit space, and requires smaller, less intrusive holes in buildings. This minimizes the need for construction and ensures more cost savings when service turn up is required. The miniature connectors also allow the use of smaller enclosures and service terminals—allowing more flexibility for installing on poles, hand holes and other space limited environments.

FHD - X □ 1 □ - □□□□ F □

Connector 2

O	Stub
X	DLX Connector
J	SC/APC Connector
P	SC/APC Connector with pulling sock

Cable Type

A	Dielectric/Flat
B	Locatable/Flat
C	Universal flat drop dielectric
D	Universal flat locatable/toneable

Universal drop cable

For more information on DLX drop cables, visit: goo.gl/Z26WV0

Special Request*

	Coiled
L	Spooled: Connector 1 deploys first from spool
R	Spooled: Connector 2 deploys first from spool

* Cable length 0 - 1000 FT is automatically coiled unless the code "L" or "R" is specified.

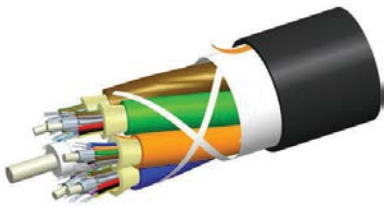
Length*

0050	50 Feet
0100	100 Feet
0200	200 Feet
0250	250 Feet
0300	300 Feet
0350	350 Feet
0400	400 Feet
0450	450 Feet
0500	500 Feet
0600	600 Feet
0700	700 Feet
0800	800 Feet
0900	900 Feet
1000	1000 Feet
1100	1100 Feet
1200	1200 Feet
1300	1300 Feet
1400	1400 Feet
1500	1500 Feet
1600	1600 Feet
1700	1700 Feet
1800	1800 Feet
1900	1900 Feet
2000	2000 Feet

* Cable lengths shown are for example; additional cable lengths are available in feet or meters upon request

2F Fiber Cables

Outside plant fiber-optic cables that are suitable for applications such as direct burial in trenches, preinstalled in conduit, lashed to aerial utility poles and messenger options for self-supporting features or installation in pavement.



Part Number	Description
R-001-DN-8G-F01BE/SP18/RNB1	All-dielectric indoor/outdoor drop cable, 1 fiber tight buffer construction, riser, drop all-dielectric, reel in box, 1000 FT (810009225/DB)
R-001-SP-8G-F29IV/WB/RNB1	All-dielectric indoor/outdoor riser simplex cable, reel in box, 1000 FT (900003177/DB)
R-001-DN-8G-F49IV/SP29/RNB1	All-dielectric indoor/outdoor drop cable, 1 fiber tight buffer construction, riser, drop all-dielectric (810009230/DB)
Self-supporting all-dielectric outdoor drop cable, arid core construction, central loose tube	
O-001-DF-8W-F01NS	Sing fiber,
O-012-DF-8W-F12NS	12 Fiber
Single jacket/single armor, gel-free, outdoor stranded loose tube cable	
D-012-LA-8W-F12NS	12 Fiber
D-024-LA-8W-F12NS	24 Fiber
D-048-LA-8W-F12NS	48 Fiber
D-096-LA-8W-F12NS	96 Fiber
D-144-LA-8W-F12NS	144 Fiber
D-288-LA-8W-F12NS	288 Fiber
Single jacket all-dielectric, gel-free, outdoor stranded loose tube cable	
D-012-LN-8W-F12NS	12 Fiber
D-024-LN-8W-F12NS	24 Fiber
D-048-LN-8W-F12NS	48 Fiber
D-096-LN-8W-F12NS	96 Fiber
D-144-LN-8W-F12NS	144 Fiber
D-288-LN-8W-F12NS	288 Fiber
Blown micro single jacket all-dielectric outdoor stranded loose tube Arid-Core® construction cable	
B-012-LN-8W-F12NS/16G	12 Fiber
B-024-LN-8W-F12NS/16G	24 Fiber
B-048-LN-8W-F12NS/16G	48 Fiber
B-096-LN-8W-F12NS/16G	96 Fiber
B-144-LN-8W-F12NS/16G	144 Fiber

For more OSP fiber cables, visit goo.gl/quPGbK

3 Premises and multidwelling units

Multidwelling units (MDUs) present many challenges for service providers deploying FTTH networks.

They must deal with complex layouts, architectural obstacles, and local regulations. Access to customer apartments and the telecoms room can sometimes be difficult, so installers need to get the job done quickly. Our innovative solutions help you:

- Deploy fiber throughout the building quickly and efficiently
- Reduce the time needed for service activation, and
- Ensure high quality and performance despite the high customer churn common in MDUs

A wide variety of distribution hubs are available to fit any kind of MDU. We also design and manufacture fiber-optic wall-mount enclosures and distribution terminals, as well as faceplates and outlets.

3A Outdoor Wall Box

OWB-S Fiber Optic Wall Box

OWB-S provides environmental and mechanical protection for the fiber management system in a small, wall-mountable fiber box. It includes functions for storage, splicing, patching and passive component integration. Designed for wall mount locations, the OWB-S is typically used as a premises connection device in FTTH network, but can also be used in other above-ground applications. A variety of possible configurations are accommodated.

Part Number	Description
OWB-S-S0-S24-NN-W-L-US	OWB Fiber optic wall mount fiber box, 4 SC/APC adapters, fusing splice, no fuse splice protectors, no splitters

For more wall box configurations, visit goo.gl/WLFz8r

3B RealFlex® 3 Indoor/Outdoor Cable

RealFlex® 3 drop cables allow for a fiber bend radius as small as 7.5 mm without increasing optical loss, and improve insertion loss (IL) performance for 90 degree bends. They are ruggedly designed for maximum flexibility, handling and performance. RealFlex 3 drop cables are available in Indoor/Outdoor, Riser and Plenum cable types for use in residential, business and multiple dwelling unit (MDU) structures.

Part Number	Description
Final Jumper OWB to ONT	
MDC-JJ1F-0010F0	RealFlex 3 Fiber optic drop cable, SC/APC to SC/APC, RBR indoor/outdoor, ivory, 10 ft
MDC-JJ1F-0015F0	RealFlex 3 fiber optic drop cable, SC/APC to SC/APC, RBR indoor/outdoor, ivory, 15 ft
MDC-JJ1F-0020F0	RealFlex 3 fiber optic drop cable, SC/APC to SC/APC, RBR indoor/outdoor, ivory, 20 ft

For more indoor/outdoor cable configurations, visit goo.gl/O0893G

MILLENNIUM

Our vision supplies yours

LOCAL INVENTORY | **FLEXIBLE FINANCING** | **PERSONALIZED SERVICE**

END-TO-END SOLUTIONS.

From Development to Deployment...
we've got you covered.

MILLENNIUM GEOSPATIAL

MILLENNIUM
Our vision supplies yours

MILLENNIUM LEASING

- **FEASIBILITY** STUDIES & ANALYSIS GEOSPATIAL DESIGN & **ENGINEERING**
- CONSTRUCTION SUPERVISION CONTRACTOR **REFERRAL** SERVICES
- **MATERIALS** & MATERIAL MANAGEMENT FLEXIBLE FINANCING
- MANAGING NETWORK ASSETS CAPITAL EQUIPMENT & **LEASING** OPTIONS

LOCATIONS

PACIFIC NORTHWEST
17804 Shank Road, Hubbard, OR 97032
971-209-3968

ARIZONA
4850 West Watkins Ave. Phoenix, AZ 85043
602-857-7534

WISCONSIN
2295 Sachs Ct., Green Bay, WI 54313
920-471-1967

ILLINOIS
9610 West 194th., Mokena, IL 60448
708-675-7160

INDIANA
3601 N. Arlington Ave., Indianapolis, IN 46218
317-559-1111

OHIO
5831 Center Rd., Valley City, OH 44280
216-282-3700

SALT LAKE CITY
3215 S. Eldredge St., South Salt Lake City, UT 84115
801-657-4567

TEXAS
2629 Blue Mound Road W, Haslet, TX 76052
469-444-1860

CORPORATE OFFICE
WISCONSIN
120 S. Wright St, Delavan, WI 53115
262-249-8705

MICHIGAN
10825 Bennett Dr., Morrice, MI 48857
810-936-5251

TENNESSEE
200 Easy St., La Vergne, TN 37086
615-843-4339

866.287.7830 | info@mtpllc.us | www.mymillennium.us