Optical LAN Solution

Simplifying Enterprise Passive Optical Networks (PON)
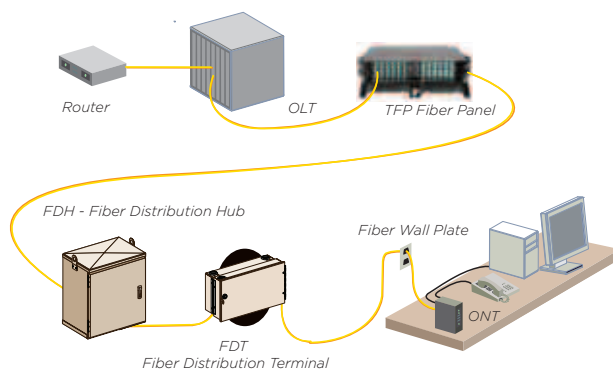
4th Edition
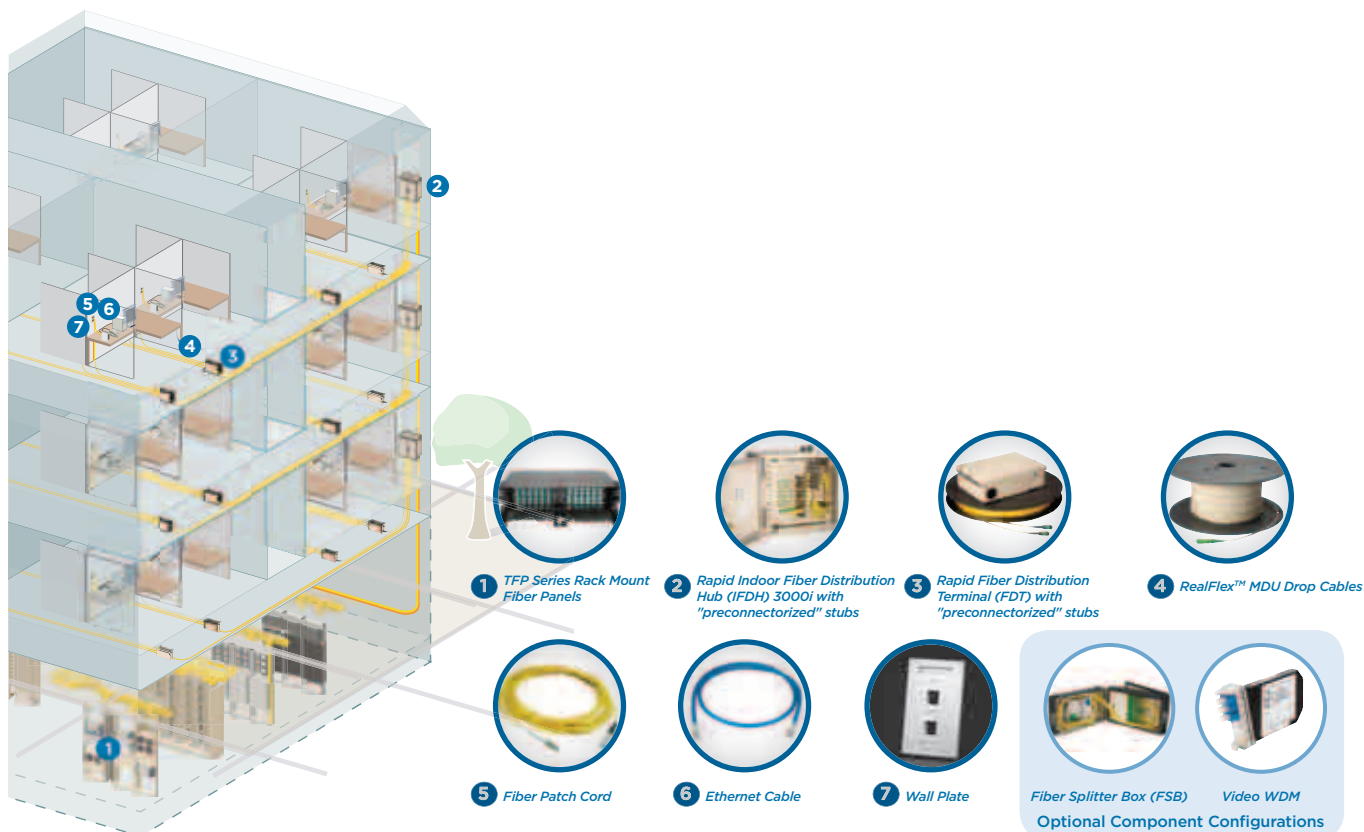
TE
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As optical fiber moves closer to end users, rapid changes are underway in both the data center and the equipment closet. As a result, new installation and maintenance techniques are being employed within enterprise applications. Passive Optical Network (PON) applications are now being deployed. Fiber is no longer limited to just access equipment. Fiber connectivity to a single user is a reality.

TE Connectivity offers complete, end-to-end PON infrastructure solutions called Optical LAN Solution (OLS). From the data center to the desktop, our customers have tapped the experience and innovation of TE to build their PON networks. TE's suite of end-to-end connectivity solutions is truly comprehensive. This ordering guide highlights the most commonly used components that feature field-proven attributes that can save time, money and help improve customer satisfaction.

The diagram below highlights a PON deployment using one of the TE OLS solutions. Each number corresponds to a specific innovative TE product which is described in more detail in this ordering guide.

Router *OLT* *TFP Fiber Panel*

FDH - Fiber Distribution Hub *Fiber Wall Plate*

FDT
Fiber Distribution Terminal *ONT*

End-to-End Network Infrastructure

① **TFP Series Rack Mount Fiber Panels**

② **Rapid Indoor Fiber Distribution Hub (IFDH) 3000i with "preconnectorized" stubs**

③ **Rapid Fiber Distribution Terminal (FDT) with "preconnectorized" stubs**

④ **RealFlex™ MDU Drop Cables**

⑤ **Fiber Patch Cord**

⑥ **Ethernet Cable**

⑦ **Wall Plate**

Fiber Splitter Box (FSB) **Video WDM**

Optional Component Configurations

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OLS By the Numbers

TE's Optical LAN Solution (OLS) is the end-to-end fiber optic infrastructure used for indoor Passive Optical Networks (PONs), that takes a single strand of singlemode fiber from the Data Center all the way to the individual desk or end device location.

This overview details some of the many features and benefits of Optical LAN Solution, highlighting the impressive numbers behind the OLS story.
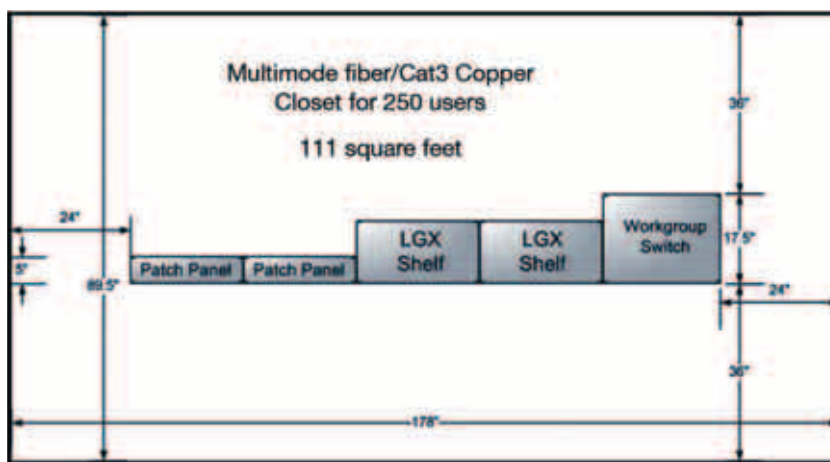

TE Connectivity PON Deployments – November 2012

- ● RBOC
- ● Independent Operating Co.
- ● Municipalities/CLEC/Utilities
- ● MSO
- ● Developer
- ● Other

The Environmental Impact of CAT 5e (voice), Multimode fiber (data), and OLS (voice, data)

Traditional data/voice deployments require approximately 111 square feet in the IDF based on 250 users. Workgroup switches, fiber termination shelves, and patch panels require multiple racks that occupy valuable, and often expensive, floor space. The Hub and Terminal Optical LAN Solution eliminates these racks of equipment thus freeing up floor space to be reallocated for other value added, and in some cases revenue generating, uses.

- Equipment is replaced by a single Fiber Distribution Hub (FDH) that can be wall mounted for significant space savings
- A wall mounted 72, 288, or even 432-user FDH requires just 12 square feet of space
- 12 square feet vs. 111 square feet = more than 15x user density

Multimode fiber/Cat3 Copper Closet for 250 users
111 square feet

Patch Panel | Patch Panel | LGX Shelf | LGX Shelf | Workgroup Switch

Converged Fiber to the Desktop Solution Closet for 250 users
12 square feet

FDH

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Power and Environmental Savings

OLS vs. Traditional LAN Architectures

- Once the equipment energy consumption is totaled, the following formula can be used to calculate cost savings for commercial power between traditional copper/fiber and OLS:
  - Equipment wattage x 1.1 x 2/1000 = KW
  - KW x 8760 hrs per year = KWH
  - KWH x $.16 (national average per KWH) = annual energy costs for the equipment

- Copper Solution example (700 users)
  - MDF has a router, servers, an analog gateway and a LAN switch
  - Each floor is equipped with multiple LAN switches and gateways

        Combined AMPS   =   229
        Combined Watts   =   82,368
        Combined BTU   =   52,948
        Combined weight =   4,635

- OLS Solution example (700 users)
  - MDF has the same level 3 WAN router, an Optical Line Terminal (OLT), an edge router, and DC power distribution units
  - Each floor is equipped with low power consumption Optical Network Terminals (ONTs) at each user and all other equipment is passive

        Combined AMPS   =   279
        Combined Watts   =   24,088
        Combined BTU   =   41,330
        Combined weight = 3,711 lbs

- The results – copper solution uses 50 AMPS less than OLS, however:
  - OLS saves 58,280 watts over copper solution (70%)
  - OLS saves 11,618 BTUs (22%)
  - OLS saves 924 lbs of cable weight over traditional copper solution

        Annual energy cost for copper solution: **$230,893**
        Annual energy cost for OLS solution: **$74,275**
   Projected Savings: **$156,618   year-over-year savings**

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Operational Savings

OLS vs. Traditional LAN Architectures

- Reduced Troubleshooting and Maintenance Costs
    - UTP/fiber networks require up to three sets of electronics vs. OLS with only two, the OLT and ONT

- Reduced Maintenance Costs
    - OLS, being a fiber-only system, is inherently more reliable due to the resistance to electromagnetic interference (EMI) and radio frequency interference (RFI) and crosstalk

- Reduced Installation Costs
    - OLS offers plug-and-play installation, no splicing or field termination
    - Fiber offers greater tensile/pull strength (100-200 lbf.) as compared to copper UTP (25 lbf.)
    - OLS incorporates bend insensitive singlemode fiber for greater installation flexibility

- Reduced Life Cycle Costs – Optical LANs have a longer usable lifetime because currently the bandwidth limitation of traditional singlemode fiber is not known. Because of this, the network electronics can be upgraded to the next generation to increase data without pulling new cable

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Traditional Architecture

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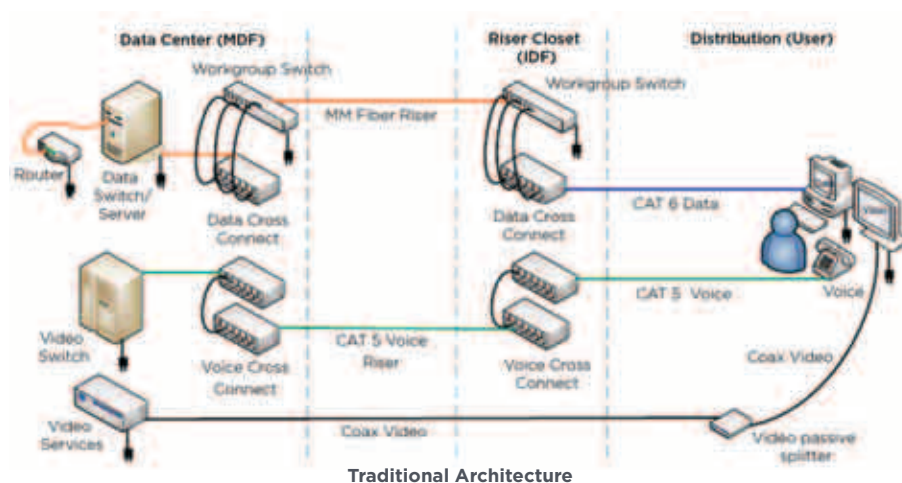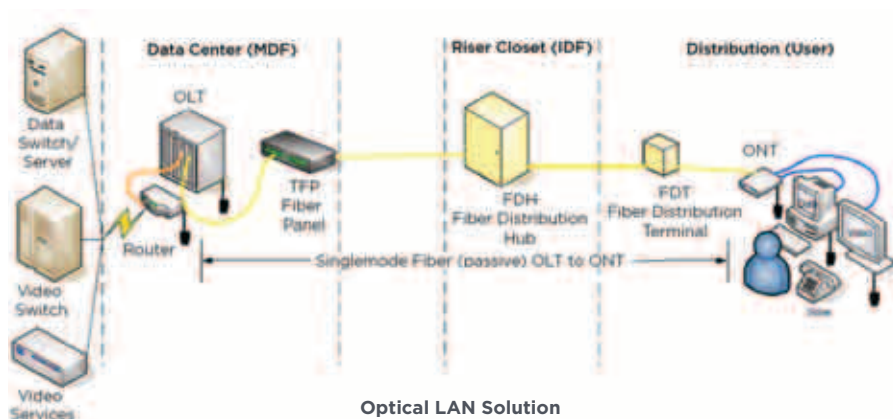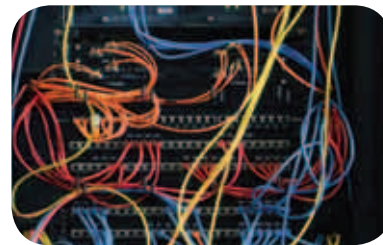
Cable Plant Savings

Contrasting the Environmental Impact of CAT 5e (voice), multimode fiber (data), and OLS (voice, data)

The environmental impact of choosing OLS over traditional alternatives can be significant. The following scenario compares the environmental impact of CAT 5e (voice), multimode fiber (data), and OLS (voice, data).

- Cable weight for 144 multimode fiber (MMF) cables for data delivery 55 meters (180 ft): 390 lbs
- 144 CAT 5e cables for voice 55 meters (180 ft): 494 lbs
- Total cable weight MMF/Cu: 884 lbs
- 144 singlemode fiber cables (OLS) converged voice, data 55 meters (180 ft): 182 lbs
- Total cable weight OLS: 182 lbs
- Total weight savings for 144 users: 79.4%

182 lbs

884 lbs

Comparing OLS Fiber Infrastructure to CAT 6 Copper

OLS offers horizontal material cost savings when compared to CAT 6.

CAT6 Plenum average cost per foot: **4 each CAT 6 horizontal cable runs 150 ft**	$0.350 **$210.00**
12 fiber Singlemode Reduced Bend Radius Plenum (OLS) per foot: Comparison to multimode 50/150 RBR single fiber plenum cost per foot: **4 each Horizontal runs (XMT, RCV)**	$0.244 $0.450 **$540.00**
Singlemode Reduced Bend Radius Plenum (OLS) cost per foot: **1 each SM RBR fiber cable supporting 1 each ONT with 4 each GigE outputs**	$0.089 **$13.35**

12 fiber SM RBR cable

The Results (total cost for 150 foot length of cable):

CAT 6	=	$210.00
Multimode RBR (XMT, RCV)	=	$540.00
Total traditional cabling cost =	**$750.00**	**vs. Singlemode RBR (OLS) = $13.35**

CAT6 Bundle

_TE_
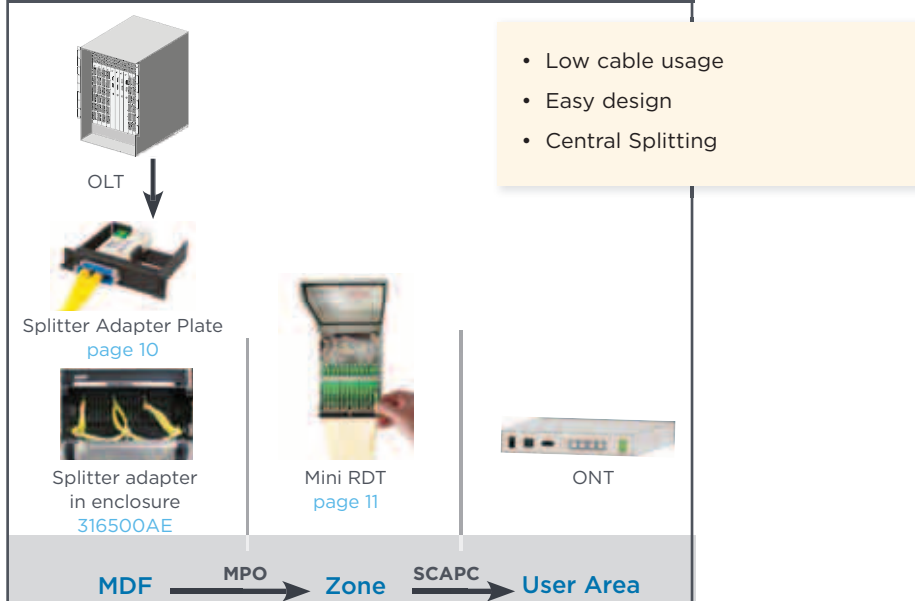connectivity

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Architectural Design Options

Just like traditional point-to-point networks, Passive Optical Networks (PON) can be varied depending upon network needs, architecture, building layout, and economics. TE offers a designer the widest variety of cabling solutions available for Passive Optical Networks. The following potential network designs are shown as guidelines for PON applications. They may be used alone, or in combination when added to the appropriate PON electronics. TE always suggests that a systems integrator be involved when designing a PON architecture to ensure the optimum performance of the network electronics and the optical network.
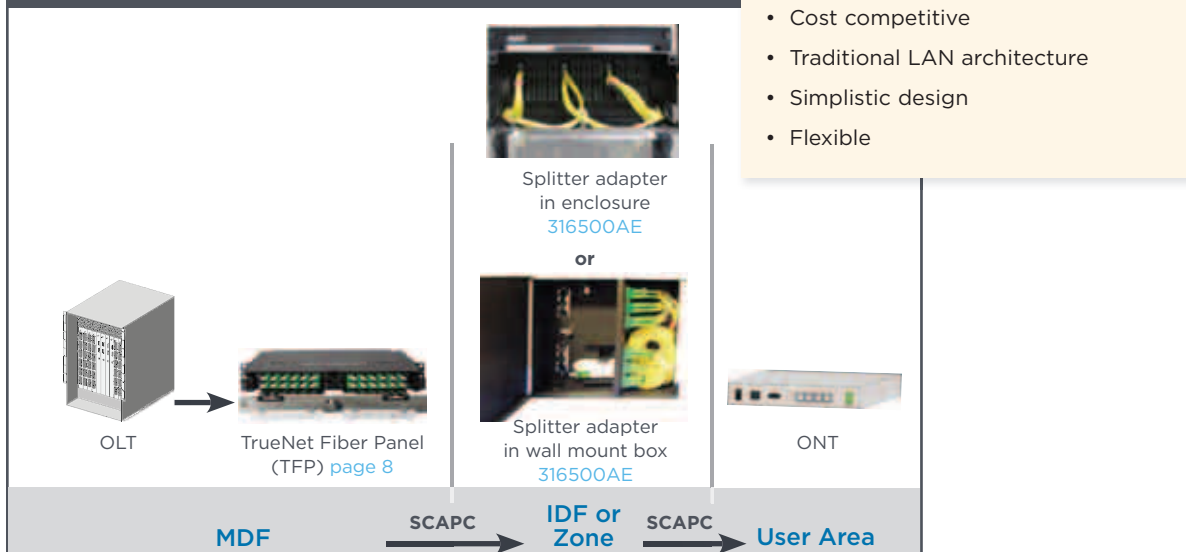
FDH/FDT Rapid Reel Solution – Option 1

- Least amount of floor space
- Least amount of cable
- Greatest overall building savings

OLT

Mini RDT RapidReel
Wall Mount page 11

or

| TrueNet Fiber Panel (TFP) page 8 | 72, 288, or 432 Fiber Hub page 9 | RDT RapidReel page 11 | ONT |

MDF →(MPO)→ IDF →(MPO)→ Zone →(SCAPC)→ User Area

TFP Cassette/FSB32 – Option 2

- Zone splitting
- Moderate floor space
- Less cable than home run solution

RDT RapidReel
page 11

OLT

or

| TrueNet Fiber Panel (TFP) page 8 | TrueNet Fiber Panel (TFP) page 8 | FSB-32 Indoor Enclosure page 12 | ONT |

MDF →(MPO)→ IDF →(SCAPC)→ Zone →(SCAPC)→ User Area

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Centralized Splitting – Option 3

OLT

Splitter Adapter Plate
page 10

Splitter adapter
in enclosure
316500AE

Mini RDT
page 11

ONT

- Low cable usage
- Easy design
- Central Splitting

| MDF | **MPO** → | Zone | **SCAPC** → | User Area |

Splitter Adapter Plate – Option 4

Splitter adapter
in enclosure
316500AE

or

Splitter adapter
in wall mount box
316500AE

OLT

TrueNet Fiber Panel
(TFP) page 8

ONT

- Cost competitive
- Traditional LAN architecture
- Simplistic design
- Flexible

| MDF | **SCAPC** → | IDF or Zone | **SCAPC** → | User Area |

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TFP Fiber Panels

TE's TrueNet Fiber Panels (TFP) combine the unique features of vertical cable guides, patented angle-left/angle-right adapters, and plug-and-play angled cassettes, which offer bend radius protection, intuitive routing, and easy connector access. The TFP series can be ordered in one, two, four, or five rack-unit sizes to fit your unique needs. Designed for rack mounting in the equipment distribution area, the TFP's modularity, functionality and density make it ideal for mounting in close proximity to the enterprise aggregation switch (OLT). The cassettes snap into place effortlessly and come from the factory pre-labeled with simple installation instructions.

The TFP panels are ideal for the interconnection points between the active OLT and the iFDH if it is co-located in the same building as the OLS deployment. The TFP cassettes are equipped with MPO adapters on the back allowing a simple plug-in from the feeder cable.

1RU TFP Panel

TFP Angled-Left Cassette

FEATURES

- Eliminates the need for on-site fiber terminations, which means more rapid deployments
- Incorporates angle left/angle right adapters to ensure proper bend radius
- Use the same 1, 2, 4 and 5 rack unit standard TFP chassis which simplifies ordering
- TFP cassettes equipped with MPO adapters on back allow simple plug-in from feeder cables

ORDERING INFORMATION

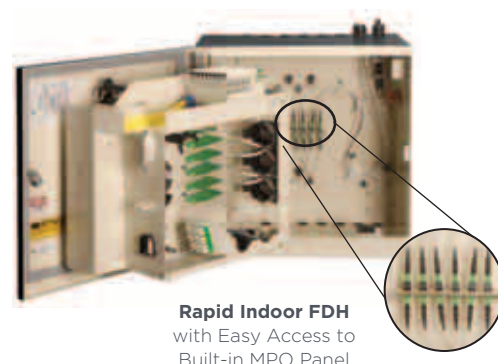| Description			Height	Part Number
Termination Only Rack- or Cabinet-Mount Panel; Black; T-handle latch close	1RU empty panel, Accommodates 2 plug-and-play cassettes		1.75"	TFP-1TT00-000B
	2RU empty panel, Accommodates 4 plug-and-play cassettes		3.50"	TFP-2TT00-000B
	4RU empty panel, Accommodates 8 plug-and-play cassettes		7.00"	TFP-4TT00-000B
	5RU empty panel, Accommodates 12 plug-and-play cassettes		8.75"	TFP-5TT00-000B
Plug-and-Play Cassettes **To maintain consistency with fiber distribution hubs and terminals order SC/APC cassettes for TFP panel.	12 fiber cassettes**; 12 SC/APC Singlemode Adapters	Angle LEFT cassette		TFP-12MPLSA1
		Angle RIGHT cassette		TFP-12MPRSA1
Recommended Accessories	3RU Horizontal Glide Cable Manager; with integrated slack storage spools			ADCCMHIBS-3U
Adapter plates	TFP Blank Plate			TFP-00AP00
	TFP SC/APC Adapter Plate Left			TFP-12APLA1
	TFP SC/APC Adapter Plate Right			TFP-12APRA1

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Rapid Fiber Distribution Hub (iFDH)

TE's Rapid Fiber Distribution Hub organizes and administers optical fiber cables and passive optical splitters for enterprise PON applications. The enclosures support plug-and-play termination with a cross-connect/interconnect interface that makes installation, maintenance, and changes faster and easier. The RapidReel feeder cable speeds up installation time and conveniently stores slack inside the iFDH.

Rapid Indoor FDH front panel

FEATURES

- Supports plug-and-play termination
- Can be either wall or rack mounted with the hardware provided
- Traditional swing-frame design allows superior rear access
- Includes RapidReel feeder cable
- Designed to meet NEMA-12 requirements
- UL 1863 Listed

Rapid Indoor FDH
with Easy Access to Built-in MPO Panel

ORDERING INFORMATION

Description	Feeder Cable Type	Distribution Type	Feeder Stub Length	Part Number
72-Port with 9 splitter ports	12-fiber plenum	6 MPO adapters	100'	OLH-MK072J00M0MKCA
			250'	OLH-MK072J00M0MKEA
			500'	OLH-MK072J00M0MKBA
72-Port Empty Hub	No feeder cable**			OLH-MK072J00M0M000
288-Port with 18 splitter ports	24-fiber plenum	24 MPO adapters	100'	OLH-MM288J00M0MKCB
			250'	OLH-MM288J00M0MKEB
			500'	OLH-MM288J00M0MKBB
288-Port Empty Hub	No feeder cable**			OLH-MM288J00M0M000
432-Port with 22 splitter ports	24-fiber plenum	36 MPO adapters	100'	OLH-MN432J00M0MKCB
			250'	OLH-MN432J00M0MKEB
			500'	OLH-MN432J00M0MKBB
432-Port Empty Hub	No feeder cable**			OLH-MN432J00M0M000

*Note: Splitters are purchased separately; ordering information on the following page.
** See page 16 for MPO-MPO cable assemblies.

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Mini Plug-and-Play Splitter Modules

TE's Mini Plug-and-Play Splitter Modules support centralized splitting architectures. The modules are available in a wide range of split ratios. The rugged packaging is built for high performance, while the true plug-and-play design reduces installation time.

FEATURES

- Bend-optimized fiber and ruggedized extreme temperature cabling
- Operating temperature range -55° to +85° C
- Wavelength range of 1260-1635 nm
- Easy to insert and remove without affecting adjacent splitters
- UL 1863 Listed

Plug and Play splitter

FMT Rack Mounted Splitter Panel

SPECIFICATIONS:

Splitter Type	Max Loss	Typical Loss	Uniformity	Return Loss	Directivity	PDL	Wavelength Range
1x16	13.5 dB	12.8 dB	1.0 dB	55 dB	60 dB	0.3 dB	1260-1635 nm
1x32	16.7 dB	16.0 dB	1.3 dB	55 dB	60 dB	0.3 dB	1260-1635 nm

ORDERING INFORMATION

Description		Part Number
Optical Splitter Module Angled SC Pigtails, Used with iFDH, FSB, Splitter drawer, and Splitter Panels	1 x 32 splitter	OLS-MPP13266
	1 x 16 splitter	OLS-MPP11666
	1 x 8 splitter	OLS-MPP10866
	2 x 16 splitter	OLS-MPP1P66
	2 x 32 WDM Splitter	OLS-MPP1E66
	2 x 32 splitter	OLS-MPP12A66
1RU FMT Rack Mount Splitter with Splitter	1 x 32 splitter	OPS-FMTSP-AJJ01
	2 x 32 splitter	OPS-FMTSP-GJJ01
1 RU Rack Mount Splitter Drawer Accommodates up to 4 mini Plug-and-Play Splitters (purchased separately)		OPS-MPPACCRMPNL
Splitter Adapter Plate	1 x 32 Splitter	2111684-1
	1 x 16 Splitter	2111684-2
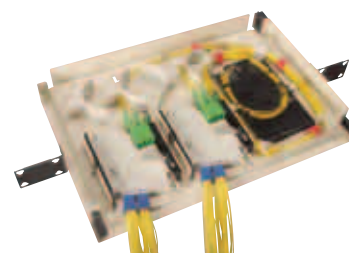
1RU Rack Mount Splitter Drawer

Splitter Adapter Plate
(LGX/LSX footprint)
See 316500AE for more details.

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Rapid Fiber Distribution Terminal

TE's Rapid Fiber Distribution Terminal (FDT) provides a compact, NEMA-12 rated solution for connecting optical fiber cables within enterprise environments and serves as a distribution/consolidation point. It eliminates the need for splice cases and separate cable assemblies by integrating the RapidReel cable payout system. Use of factory terminated and tested MPO connectors instead of splicing provide a plug-and-play environment that reduces labor costs and speeds project completion. The Rapid FDT provides a lockable consolidation point and localized patch field, allowing for precise cable length customization in the field, while reducing overall cable volume and simplifying routing from the FDH to the user area. The iFDT's compact footprint enables it to be placed under raised floors, above ceilings, or wall mounted.

Rapid FDT

FEATURES

- Built-in RapidReel technology allows for easy payoff of MPO stub
- Patented break-away spool flanges reduce slack storage size to within the enclosures footprint
- Utilizes reduced bend radius fiber
- UL 1863 listed

Rapid FDT
using slider adapter packs

ORDERING INFORMATION

Description	Stub	Feeder Stub Length	Part Number
12-fiber Loose tube plenum cable	MPO	100'	OLR-SJ12J00D1002A
		200'	OLR-SJ12J00D2002A
		300'	OLR-SJ12J00D3002A
24-fiber Loose tube plenum cable		100'	OLR-SJ24J00D1002A
		200'	OLR-SJ24J00D2002A
		300'	OLR-SJ24J00D3002A
		500'	OLR-SJ24J00D5002A
Mini-RDT 12-fiber : Lengths over 100 ft use external reel	MPO	100'	ODT-SM12J00P03090
		200'	ODT-SM12J00D0619A
		300'	ODT-SM12J00D0929A
		400'	ODT-SM12J00D1229A
		500'	ODT-SM12J00D1529A

*Note: Other cable lengths available. Contact your local TE sales engineer.

Mini RDT
12 Fiber

Mini RDT and Spool

Mini RDT Open and Pulling Rapid

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Fiber Splitter Boxes

TE's Fiber Splitter Boxes (FSB) are mini Fiber Distribution Hubs that can be used for plug-and-play (PNP) or fusion splice applications.

When used as a plug-and-play box, they are ideal for uses such as lower count floors or buildings, extra capacity requirements beyond the standard Fiber Distribution Hub (FDH), and when localized splitting or physical path redundancy (using a 2x32 split) is desired.

FSB-32 Indoor Enclosure

The same box can also be used to extend services beyond the primary building to other smaller buildings with limited users on the campus. In this type of application, the FSB is typically spliced to the OSP fiber cable connecting the buildings and would offer the optical splitting required to provide PON services to the second building.

These wall boxes provide a small footprint for splitting, terminating, and splicing. FSBs accept standard plug-and-play splitters and can be easily added after the wall box has been installed. FSBs accommodate 1x8, 1x16, 1x32, 2x16 and 2x32 splitters. Wall mounting provides significant space savings and the unique swing frame design allows for easy access to the back section of the wall box.

FEATURES AND BENEFITS

- Dual hinge design creates separation between rear splitter section and front patching access
- Splitters can be easily installed after wall box installation allowing for separate purchase
- Provides up to 32 customer access ports per splitter
  - Dual hinge provides small footprint on the wall while maintaining excellent hand access to connectors
- Accepts standard mini-PNP splitter modules (same as iFDH)
- UL 1863 Listed

ORDERING INFORMATION

Description		Part Number
FSB-32 Indoor Enclosure; with SC/APC adapters, 32-fiber distribution	No splitters, no splice trays	OSB-SBJ032000000
	No splitters, with heat shrink splice trays	OSB-SBJ232000000
	(1) 1x32 splitter installed, no splice trays	OSB-SBJ032A10000
	(1) 1x32 splitter installed, with heat shrink splice trays	OSB-SBJ232A10000
	2 x 32 splitter installed, no splice trays	OSB-SBJ032G10000
	2 x 32 splitter installed, with heat shrink splice trays	OSB-SBJ232G10000
Optical Splitter Module - Angled SC Pigtails	1x32 splitter	OLS-MPP13266
	1x16 splitter	OLS-MPP11666
	1x8 splitter	OLS-MPP10866
	2x16 splitter	OLS-MPP1P66
	2x32 splitter	OLS-MPP12A66

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Optical Fiber Cables

The TE reduced bend radius singlemode cable assemblies are used to connect the user area to the Rapid FDT or when connecting the ONT to the wall plate at the user end of the PON. With nearly 40 years of fiber cable manufacturing experience, TE offers a complete family of high performance cable and related products.
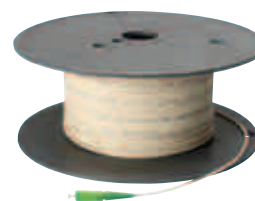
TE's singlemode reduced bend radius cable assemblies have a bend radius of 7.5 mm and are backwards compatible with standard singlemode fiber. TE offers ultra physical contact (UPC) or angled physical contact (APC) SC connector styles. TE maintains tight tolerances regarding the geometry and concentricity of the ferrule to maintain low insertion loss values. All cable assemblies undergo stringent testing for both insertion loss and return loss at the factory before shipment which ensures a high quality product is delivered.

SC Angled Polish

SC Ultra Polish

Simplex Drop Cables
ORDERING INFORMATION

Description	Length in Meters	Part Number
SCAPC-SCAPC Plenum Ivory	3 (10')	PAT-6C6C-PSIG003M
	8 (25')	PAT-6C6C-PSIG008M
	16 (50')	PAT-6C6C-PSIG016M
	23 (75')	PAT-6C6C-PSIG023M
	31 (100')	PAT-6C6C-PSIG031M
	38 (125')	PAT-6C6C-PSIG038M
	46 (150')	PAT-6C6C-PSIG046M
SCUPC-SCAPC Plenum Ivory	3 (10')	PAT-SC6C-PSIG003M
	8 (25')	PAT-SC6C-PSIG008M
	16 (50')	PAT-SC6C-PSIG016M
	23 (75')	PAT-SC6C-PSIG023M
	31 (100')	PAT-SC6C-PSIG031M
	38 (125')	PAT-SC6C-PSIG038M
	46 (150')	PAT-SC6C-PSIG046M

Stapled 3 mm Drop Cable

Additional configurations and lengths are available; contact TE for assistance.
Note: Reduced bend radius cable is used on all Drop Cables.

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Jumper Assemblies

ORDERING INFORMATION

Description	Length in Meters	Part Number
	3 (10')	PAT-6C6C-PS0G003M
	8 (25')	PAT-6C6C-PS0G008M
	16 (50')	PAT-6C6C-PS0G016M
SCAPC-SCAPC Plenum Yellow	23 (75')	PAT-6C6C-PS0G023M
	31 (100')	PAT-6C6C-PS0G031M
	38 (125')	PAT-6C6C-PS0G038M
	46 (150')	PAT-6C6C-PS0G046M
	3 (10')	PAT-SC6C-PS0G003M
	8 (25')	PAT-SC6C-PS0G008M
	16 (50')	PAT-SC6C-PS0G016M
SCUPC-SCAPC Plenum Yellow	23 (75')	PAT-SC6C-PS0G023M
	31 (100')	PAT-SC6C-PS0G031M
	38 (125')	PAT-SC6C-PS0G038M
	46 (150')	PAT-SC6C-PS0G046M

Additional configurations and lengths are available; contact TE for assistance.

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Singlemode Reduced Bend Radius Multifiber Cable Assemblies

ORDERING INFORMATION

Description

12-Fiber 3 mm Singlemode Reduced Bend Radius Plenum Cable	Length in Feet	Part Number
MPO to SC/APC	50'	MPA-NC6CJ50050F-NF
	100'	MPA-NC6CJ50100F-NF
	200'	MPA-NC6CJ50200F-NF
	300'	MPA-NC6CJ50300F-NF
MPO to SC/UPC	50'	MPA-NCSCJ50050F-NF
	100'	MPA-NCSCJ50100F-NF
	200'	MPA-NCSCJ50200F-NF
	300'	MPA-NCSCJ50300F-NF
MPO to ST/UPC	50'	MPA-NCTCJ50050F-NF
	100'	MPA-NCTCJ50100F-NF
	200'	MPA-NCTCJ50200F-NF
	300'	MPA-NCTCJ50300F-NF

Additional configurations and lengths are available; contact TE for assistance.

MPO-MPO Cable Assemblies

ORDERING INFORMATION

Description

12-Fiber 3 mm Singlemode Reduced Bend Radius Plenum Cable	Length in Feet	Part Number
12-Fiber MPO-MPO	100'	MPA-NCNCJ50100F-NN
	200'	MPA-NCNCJ50200F-NN
	300'	MPA-NCNCJ50300F-NN
	400'	MPA-NCNCJ50400F-NN
	500'	MPA-NCNCJ50500F-NN
	600'	MPA-NCNCJ50600F-NN
	750'	MPA-NCNCJ50750F-NN
	1000'	MPA-NCNCJ50305M-NN
24-Fiber Zip MPO-MPO	100'	MPA-NCNCZ50100F-NN
	200'	MPA-NCNCZ50200F-NN
	300'	MPA-NCNCZ50300F-NN
	400'	MPA-NCNCZ50400F-NN
	500'	MPA-NCNCZ50500F-NN
	600'	MPA-NCNCZ50600F-NN
	750'	MPA-NCNCZ50750F-NN
	1000'	MPA-NCNCZ50305M-NN

Additional configurations and lengths are available; contact TE for assistance.

Optical LAN Solution

Armored Cable

Our Secured Armored Optical LAN Solution allows high-security customers to have confidence that their optical network will be secure when deployed. The secured OLS platform uses TE's interlocking armored cable that provides a tamper-proof protection cable connecting to a secured junction box that can mounted on the ceiling or in a sub floor. The junction box allows up to four input cables with a maximum of 72 fibers. The drop side of the junction box will allow up to 72 armored fibers to be run to secured user facilities connecting to a user box that can be mounted either under or on top of the desktop. The ONT box offers access separation for authorized network personnel only and simple access from a locked door allowing approved user access with issued key.

Secure Data Center   **Junction Box**   **Junction Box on Desktop**

Color coding of armored plant is available
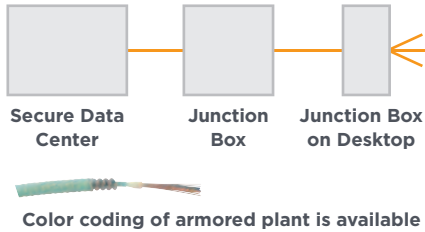
ORDERING INFORMATION

Description		Part Number
Armored cable	6-fiber, SM Interlocking Aluminum Armor	4-1777121-7
	12-fiber, SM Interlocking Aluminum Armor	4-1777117-7
	24-fiber, SM Interlocking Aluminum Armor	7-1553420-3
	72-fiber, SM Interlocking Aluminum Armor	4-1777124-7

Colored, keyed, secure cable assemblies and other armored configurations are available.
Contact your local TE Connectivity Sales Engineer

TE connectivity

Optical LAN Solution

Patch Cords

TE's TrueNet patch cord cables are available in Category 5e, 6, or augmented Cat 6 and in a variety of lengths and colors for interconnecting output of ONT to user's computer.

Category 5e Patch Cords

ORDERING INFORMATION

Category 5e Patch Cords

Description	Cable Color	Part Number
RJ45 plug to RJ45 plug, T568B Quantity: 1 Wired straight through RJ45 plug (T568B) — RJ45 plug (T568B)	White	TCPC-5ERUVB-WTxxF
	Red	TCPC-5ERUVB-RDxxF
	Blue	TCPC-5ERUVB-BLxxF
	Green	TCPC-5ERUVB-GNxxF
	Yellow	TCPC-5ERUVB-YLxxF
	Gray	TCPC-5ERUVB-GYxxF
RJ45 plug to RJ45 plug, T568A Quantity: 1 Wired straight through RJ45 plug (T568A) — RJ45 plug (T568A)	White	TCPC-5ERUVA-WTxxF
	Red	TCPC-5ERUVA-RDxxF
	Blue	TCPC-5ERUVA-BLxxF
	Green	TCPC-5ERUVAGNxxF
	Yellow	TCPC-5ERUVA-YLxxF
	Gray	TCPC-5ERUVA-GYxxF

*Replace xx with: 04 = 4' 10 = 10' 25 = 25'
07 = 7' 15 = 15' 50 = 50'

Contact TE for additional cable colors and lengths.
For more product information, reference literature #313948AE.

Category 6 Patch Cords

ORDERING INFORMATION

Description	Cable Color	Part Number
RJ45 plug to RJ45 plug, T568B Quantity: 1 Wired straight through RJ45 plug (T568B) — RJ45 plug (T568B)	Black	TCPC-6RUVB-BKxxF
	Blue	TCPC-6RUVB-BLxxF
	Green	TCPC-6RUVB-GNxxF
	Gray	TCPC-6RUVB-GYxxF
	Red	TCPC-6RUVB-RDxxF
	White	TCPC-6RUVB-WTxxF
	Yellow	TCPC-6RUVB-YLxxF
RJ45 plug to RJ45 plug, T568A Quantity: 1 Wired straight through RJ45 plug (T568A) — RJ45 plug (T568A)	Blue	TCPC-6RUVA-BLxxF
	Green	TCPC-6RUVA-GNxxF
	Gray	TCPC-6RUVA-GYxxF
	Red	TCPC-6RUVA-RDxxF
	White	TCPC-6RUVA-WTxxF
	Yellow	TCPC-6RUVA-YLxxF

Category 6 Patch Cord

*Replace xx with: 04 = 4' 10 = 10' 25 = 25'
07 = 7' 15 = 15' 50 = 50'

Contact TE for additional cable colors and lengths.
For more product information, reference literature #313948AE.

TE
connectivity

Optical LAN Solution

Category 6A Patch Cords

ORDERING INFORMATION

RJ45 to RJ45 Patch Cord	Color	Part Number
568B wiring RJ45 plug (T568B) — RJ45 plug (T568B)	White	TCPC-6ARFVB-WTxxF
	Red	TCPC-6ARFVB-RDxxF
	Blue	TCPC-6ARFVB-BLxxF
	Yellow	TCPC-6ARFVB-YLxxF
	Green	TCPC-6ARFVB-GNxxF
	Gray	TCPC-6ARFVB-GYxxF
568A wiring RJ45 plug (T568A) — RJ45 plug (T568A)	White	TCPC-6ARFVA-WTxxF
	Red	TCPC-6ARFVA-RDxxF
	Blue	TCPC-6ARFVA-BLxxF
	Yellow	TCPC-6ARFVA-YLxxF
	Green	TCPC-6ARFVA-GNxxF
	Gray	TCPC-6ARFVA-GYxxF

Category 6A Patch Cord

*Replace xx with: 04 = 4' 10 = 10' 25 = 25'
                   07 = 7' 15 = 15' 50 = 50'

Contact TE for additional cable colors and lengths.
For more product information, reference literature #313948AE.

Security Key Plug

FEATURES

- Works with standard RJ45 jacks
- Prevents unauthorized port connections
- Prevents disconnection from active devices
- Lock to RJ45 modular jacks
- Can be used in public areas or conference rooms
- 1871456-1 key/lock pairs are randomly selected from 100 different key numbers (numbered 800-899)
- 1871456-2, -3, and -4 use specific reserved key/lock pair number 456A
- RoHS compliant

Security Key Plug

TE connectivity

Optical LAN Solution

Security Key Patch Cord

FEATURES

- Works with standard RJ45 ports
- Prevents disconnection from active devices
- Prevents unauthorized disconnection
- Can be used for secure connections (e.g. server lines)
- Uses specific reserved key/lock pair number 456A (two keys included)
- RoHS compliant
- Category 6 patch cables are backward compatible with Category 5e components
- Security patch cord color:
    - Cat 6: black
    - Cat 6A F/UTP: blue

Cat 6 Patch Cord

Cat 6A Patch Cord

ORDERING INFORMATION

Category	Length	Locks on Both Ends	Locks on one End
Cat 6 Unshielded	1' (0.30 m)	2111179-1	2111225-1
	2' (0.61 m)	2111179-2	2111225-2
	3' (0.91 m)	2111179-3	2111225-3
	4' (1.22 m)	2111179-4	2111225-4
	5' (1.52 m)	2111179-5	2111225-5
	6' (1.83 m)	2111179-6	2111225-6
	7' (2.13 m)	2111179-7	2111225-7
	8' (2.44 m)	2111179-8	2111225-8
	9' (2.74 m)	2111179-9	2111225-9
	10' (3.05 m)	1-2111179-0	1-2111225-0
	12' (3.66 m)	1-2111179-2	1-2111225-2
	14' (4.27 m)	1-2111179-4	1-2111225-4
	16' (4.88 m)	1-2111179-6	1-2111225-6
	18' (5.49 m)	1-2111179-8	1-2111225-8
	20' (6.10 m)	2-2111179-0	2-2111225-0
Cat 6A Shielded	1' (0.30 m)	2111190-1	2111236-1
	2' (0.61 m)	2111190-2	2111236-2
	3' (0.91 m)	2111190-3	2111236-3
	4' (1.22 m)	2111190-4	2111236-4
	5' (1.52 m)	2111190-5	2111236-5
	6' (1.83 m)	2111190-6	2111236-6
	7' (2.13 m)	2111190-7	2111236-7
	8' (2.44 m)	2111190-8	2111236-8
	9' (2.74 m)	2111190-9	2111236-9
	10' (3.05 m)	1-2111190-0	1-2111236-0
	12' (3.66 m)	1-2111190-2	1-2111236-2
	14' (4.27 m)	1-2111190-4	1-2111236-4
	16' (4.88 m)	1-2111190-6	1-2111236-6
	18' (5.49 m)	1-2111190-8	1-2111236-8
	20' (6.10 m)	2-2111190-0	2-2111236-0

For more product information, reference literature #313948AE.

TE connectivity

Optical LAN Solution

Angled Faceplates

FEATURES

- Accepts all AMP-TWIST jacks, SL series jacks, and SL series inserts
- Angled connector exits
- Protects connections
- Allows closer furniture placement

ORDERING INFORMATION

Description		Figure	Color	Part Number
Angled Faceplates				
2-port		A	Almond	1375155-1
4-port		B	Almond	406185-1
Inserts				
LC Duplex couplers	Singlemode APC	C	Green	1933286-3
	Singlemode	D	Blue	1933286-4
SC Simplex coupler; singlemode		E	Green	1499836-9
F-Connector coupler, 2 GHz		F	Almond	1499855-1
Blank		G	Almond	1116412-1

For more product information, reference literature #313948AE.
Other colors are available, contact TE for additional options.

Figure A

Figure B

Figure C
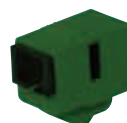
Figure D

Figure E
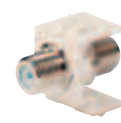
Figure F

Figure G

SL Series Faceplates

FEATURES

- Single gang and double gang, single-sided faceplates accept three 1 unit or two 1.5 unit SL series modules
- Double gang, double-sided faceplates accept three 1 unit or two 1.5 unit SL series modules on each side
- Front-loading modules eliminate need to remove faceplates from wall for changes or repairs
- Double gang, double-sided SL series faceplates:
  - Dimensions (DxWxH): 0.675″ x 4.490″ x 4.540″
  - For use with openings a minimum of 2.81″ x 3.59″ (not suitable for mud rings/device covers)

Figure A

Figure B

ORDERING INFORMATION

Description	Width		Figure	Part Number
SL Series Faceplates Almond	Single Gang	Single-sided	A	1339118-1
	Double Gang	Double-sided	B	1479486-1

Other colors are available, contact TE for additional options.

TE connectivity

Optical LAN Solution

HIDEAWAY Multimedia Outlets

FEATURES

- Accepts the following (see table for detailed load information):
    - Shielded and unshielded SL series jacks
    - AMP-TWIST jacks
    - SL series inserts
- Fits single and double gang electrical J-boxes
- Features "invisible" icon holes which remain hidden until used
- Features integral tabs for easy fiber loop management
- Breakaway tabs in duplex fiber coupler cut outs allow HIDEAWAY outlets to accept "flangless" SECURE LC duplex, standard LC duplex, or hybrid LC duplex couplers with retention clips (break out the tabs when using standard duplex couplers)
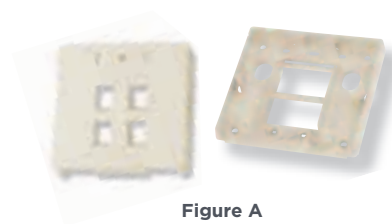
Figure A
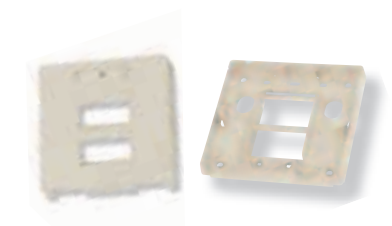
Figure B

ORDERING INFORMATION

Description	Figure	Part Number
4-Port	A	1479946-1
6-Port	B	1479815-1

For more product information, reference literature #313948AE.

HIDEOUT Outlets

FEATURES

- Double gang box with single gang cover recommended
- May not fit all single gang boxes
- Hides and protects cable connections
- Feeds from bottom to allow flush furniture placement
- Fits standard electrical boxes
- Each kit includes sub-plate, faceplate, adhesive labels, cable ties, and mounting screws. Media modules and icons must be ordered separately. Faceplates are plastic except for the stainless steel version
- Accepts the following (see table for detailed load information):
    - Shielded or unshielded SL Series jacks
    - Unshielded 110Connect jacks
    - SL Series inserts
- Shielded SL Series jacks work in bottom row of faceplate only

Snap-on Cover
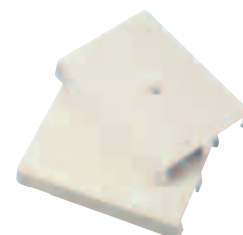
Screw-on Cover

ORDERING INFORMATION

Description	Included Faceplate	Part Number
HIDEOUT Outlet Kit Almond	Screw-on	503997-1
	Snap-on	503999-1

For more product information, reference literature #313948AE.
Note: Hideaway and Hide out Outlets use SCAPC adapter pn 2-5502776-3

TE
connectivity

Optical LAN Solution

Desktop Monuments

FEATURES

- Power Monuments:
  - Provide access to duplex power outlet at the desktop
  - Eliminates the need to feed power cables behind or through desks
  - Supplied with an 8' (2.4 m), 3-prong power cord for connection to existing electrical outlets
- Voice/Data Monuments:
  - Accepts standard FLEX-MODE faceplates
  - Horizontal cabling can be connected directly to SL series modular jacks (recommended for Category 5e applications)
- Attach to any desktop from 0.90" - 1.78" (22.9 mm - 45.2 mm)
- No special tools required to attach, simply place the monument onto the edge of the desktop and tighten the integrated thumb screw
- UL listed and CSA certified

Figure A

Figure B

Figure C

Figure D

ORDERING INFORMATION

Description	Figure	Color	Part Number
Power Monument; 15 Amp	A	Black	556222-3
Voice/Data Monument Empty Housing; requires FLEX-MODE faceplate	B	Black	1116360-3
Flex-Mode flush faceplace; 2-port	C	Black	558106-1
SL series; 4-port	D	Black	1933134-1

For more product information, reference literature #313948AE.

Consolidation Point Transition Cable Assemblies

FEATURES

- Ideal for shared ONT applications
- Form connections between remote/shared ONTs and the work area
- Compatible with all SL series faceplates
- Factory-assembled and tested
- Save time and money on moves, adds and changes
- Lead-free (no heavy metals)
- Gray cable jacket

**Transition Cable Assembly**

ORDERING INFORMATION

End A	End B	Length	Plenum (CMP) T568A	Plenum (CMP) T568B
Category 5e Modular Plug	SL Series Category 5e Modular Jack	20'	219174-1	219175-1
		30'	219174-2	219175-2
		40'	219174-3	219175-3
		50'	219174-4	219175-4
Category 6 Modular Plug	Un-terminated	50'	1499057-4	1499057-8
Category 6A Modular Plug			5-1499783-0	5-1933335-0

TE connectivity

Optical LAN Solution

Media Convergence Center

FEATURES

- 20 AWG steel with white powder coat
- Multiple knockouts on all surfaces
- Versatile mounting grid for multiple connectivity panels and modules
- Two (2) knockouts for duplex electrical boxes
- 20 AWG steel with white powder coat
- Beveled edge for safety & aesthetics
- Screw on cover
- Lock for added security

A

B

C

D

E

RCS14
Media Convergence Center

RCS28
Media Convergence Center
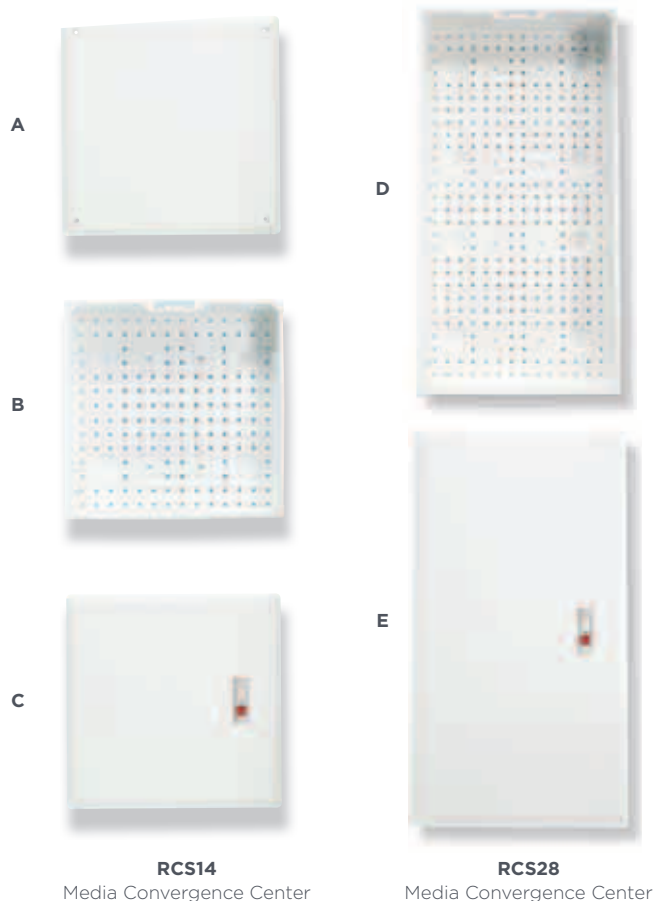
ORDERING INFORMATION

Description	Dimension	Figure	Part Number
RCS14 Enclosure with screw-on Cover		A	1933691-1
RCS14 Enclosure without Cover	14.3 in H x 14.3 in W x 3.6 in D	B	1933837-1
RCS 14 Hinged Lockable Cover		C	1933694-1
RCS28 Enclosure with screw on Cover			1933692-1
RCS28 Enclosure without Cover	28.0 in H x 14.3 in W x 3.6 in D	D	1933838-1
RCS28 Hinged, Lockable Cover		E	1933695-1

TE connectivity

Optical LAN Solution

Media Convergence Center Accessories

FEATURES

- Equipment Mounting Shelf accommodates network electronics such as Cable/DSL modems, routers, and switches (Recommended for RCS28)
- Velcro cable tie hold-down bracket is used to secure network electronics, such as Cable/DSL routers (sold separately)

A

ORDERING INFORMATION

Description	Figure	Part Number
Velcro Cable Tie Hold-Down Bracket	A	1479440-1
Network Shelf	B	1479437-1

B

Demarcation Jack Kit

FEATURES

- Demarcation Kit includes:
    - Demarcation jack bracket
    - Cat 5e SL 110 Jack, blue
- Cat 5e Patch Cable, blue, 2 ft
- Meets TIA/EIA-570-B requirements for Auxiliary Disconnect Outlet
- SL Series Bracket accepts (2) Cat 5e/6 SL Series Jacks for incoming data service demarcation
- Recommend blue jacks for voice and yellow for data

A

Description	Figure	Part Number
Demarcation Jack Kit	A	1479285-1
Demarcation Bracket (bracket only)	B	1479441-1

B
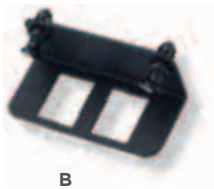
Optical LAN Solution

Video-WDM (Wavelength Division Multiplexer)

When RF video is required for OLS applications, wave-length division multiplexers (WDMs) support combining the analog or digital video with the voice and data from the OLT. TE's WDM modules and rack mounted shelves offer a compact solution for OLS deployments.

WDM Module

WDM FEATURES

- Integrated into traditional TE fiber management systems
- Qualified to GR-1209 and GR-1221
- Rugged package protects delicate splitters from installer handling or in harsh environments
- Industry-leading low loss
- Terminated with GR-326 certified connectors

12-Position FMT Drawer
(FMT-GVM000000-A72P)

VIDEO-WDM APPLICATION
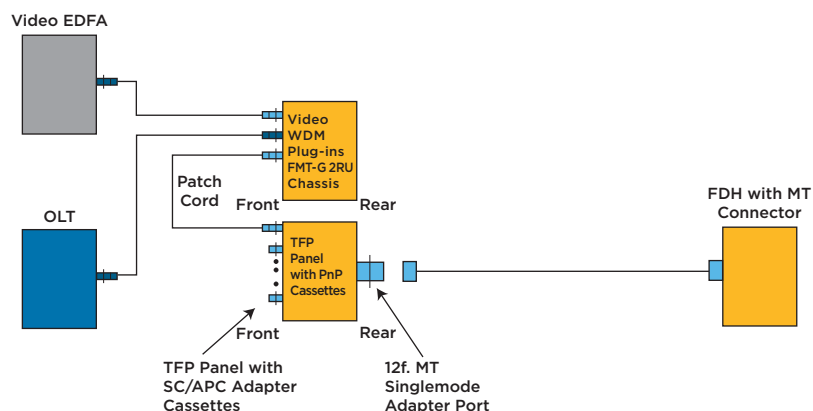
ORDERING INFORMATION

Description	Part Number
FMT MicroVAM Chassis 12-Position, accommodates up to 24 MicroVam modules. 2RU, 19/23" mounting, 12" deep	OMT-GVM000000-A72P
Dual MicroVAM Video-WDM Module 1310/1490 voice/data with 1550 video Dual circuit All front Input/output ports Input 1 (OLT) connectors SC/UPC Input 2 (EDFA) connectors SC/APC Output (common) connectors SC/APC Fits in FMT MicroVAM chassis listed above	OPM-HVJNJ02
Horizontal Glide Cable Manager 3RU with integrated slack storage spools	ODCCMHIBS-3U
Plug-and-play 2x32 WDM Splitter	OLS-MPP1E66

TE connectivity

Optical LAN Solution

Dual MicroVAM Video-WDM with integrated 1x2 splitter

For certain video RF applications, an additional split before the video WDM may be desired. The MicroVAM unit pictured below offers a compact solution for adding additional splits of the video signals prior to being combined at the video WDM device. The MicroVAM unit fits into a FMT MicroVAM chassis.
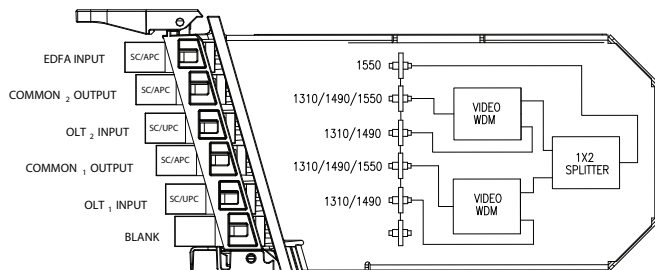
DUAL MICROVAM VIDEO-WDM WITH INTEGRATED 1X2 SPLITTER APPLICATION

ORDERING INFORMATION

Description	Part Number
Dual Micro-VAM Video-WDM 1310/1490 voice/data with 1550 video Dual circuit 1550 EDFA input integrated with 1x2 splitter All front Input/output ports Input 1 (OLT) connectors SC/UPC Input 2 (EDFA) connectors SC/APC Common (output) connectors SC/APC Fits in FMT MicroVAM chassis listed below	OPM-HVJNH02-000
FMT MicroVAM Chassis 12-Position, accommodates up to 12 MicroVam modules 2 RU, 19″ or 23″ mounting, 12″ deep	OMT-GVM000000-A72P

TE connectivity

CATALOG

connectivity