



# Information Security Network Solutions

COMMScope®

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Organizations today face the challenges of maintaining data security throughout the enterprise. Physical layer security is an important part of a comprehensive security strategy. Network managers must guard against not only unauthorized access, physical intrusion or tapping of cables, but also non-contact eavesdropping. Any of these security threats can result in stolen data, network degradation or unscheduled downtime. CommScope Information Security Network Solutions provide fiber and copper solutions to help you protect your organization's data resources against potential theft, intrusion and interference. CommScope, your first line of defense in securing your critical communications infrastructure.

Because of specific speed and bandwidth security requirements, many network managers prefer fiber optic cabling for the Local Area Network (LAN). CommScope's secure fiber and copper solutions provide the maximum performance and data protection for your network. We offer premise and indoor/outdoor fiber optic cables, connectors, patch cords, faceplates, and shelves to fit the needs of your network – all color-coded for easy identification. In addition, we provide fiber cable with interlocking armor for the highest level of protection against damage and intrusion. Our keyed LC adapters and connectors provide the security necessary to limit authorized physical access to the network and prevent inadvertent or malicious access.

As security requirements can vary by network and application, CommScope offers multiple physical layer security solutions:

1. **Keyed Fiber Solutions:** consisting of color-coded LC connectors, adapters and modules with molded keys, which prevent network access using standard LC cords. Available for use in SD fiber panels.
2. **Secure Port Blockers and locking patch cords:** prevent unauthorized access to LC fiber and copper ports at the work outlet, patch panel and switches through color-coded locking mechanism inserted in port. Once secure ports are unlocked for use, secure LC fiber and RJ45 patch cords can be used. Available for LC and RJ45 ports, with common key which unlocks both.
3. **Color-Coded Fiber Connectivity:** for non-secure fiber connectivity that requires color coding for identification, available with standard SYSTIMAX HD and UD fiber panels.
4. **Interlocking Armored Fiber solution:** For networks needing extra protection of an armored fiber as well as those implementing Alarmed Carrier, hardened Protective Distribution System (PDS) to secure communications pathways.

In addition to highly engineered systems, CommScope also provides the convenience of ordering cables and connectivity from a single source, a single warranty for all solution components, excellent quality control, and step-by-step guidance and assistance in choosing the right solution for your needs.

The following diagram represents a typical network that has a combination of secure and color coded elements to match security requirements in different parts of the network. As physical layer security requirements can vary widely based on application and environment, these modular elements offer the flexibility to be configured to meet the particular needs of a given network.

## CommScope's secure fiber and copper solutions



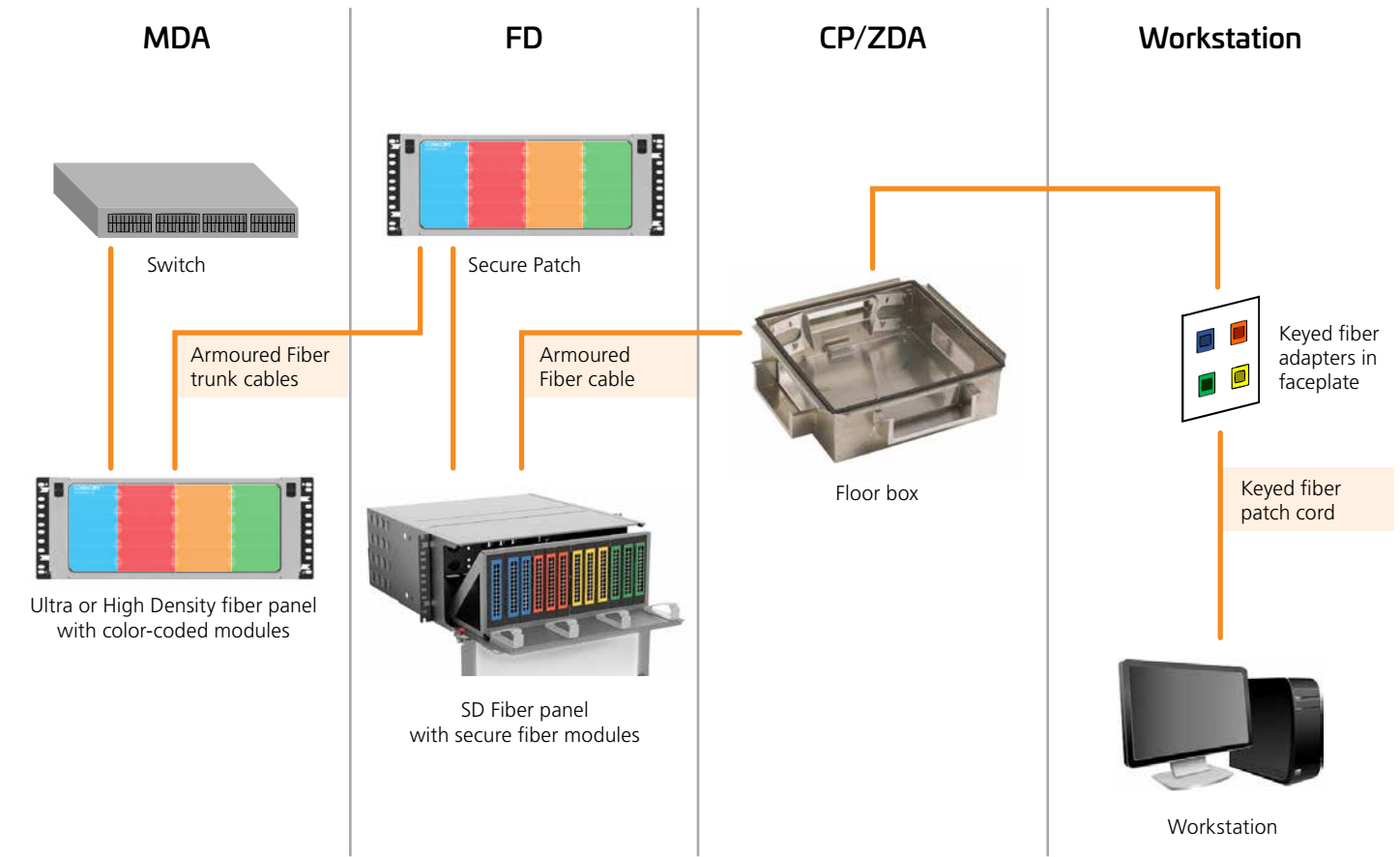


Figure 1A - Optical Fiber Channel with Secure and Non-Secure Components

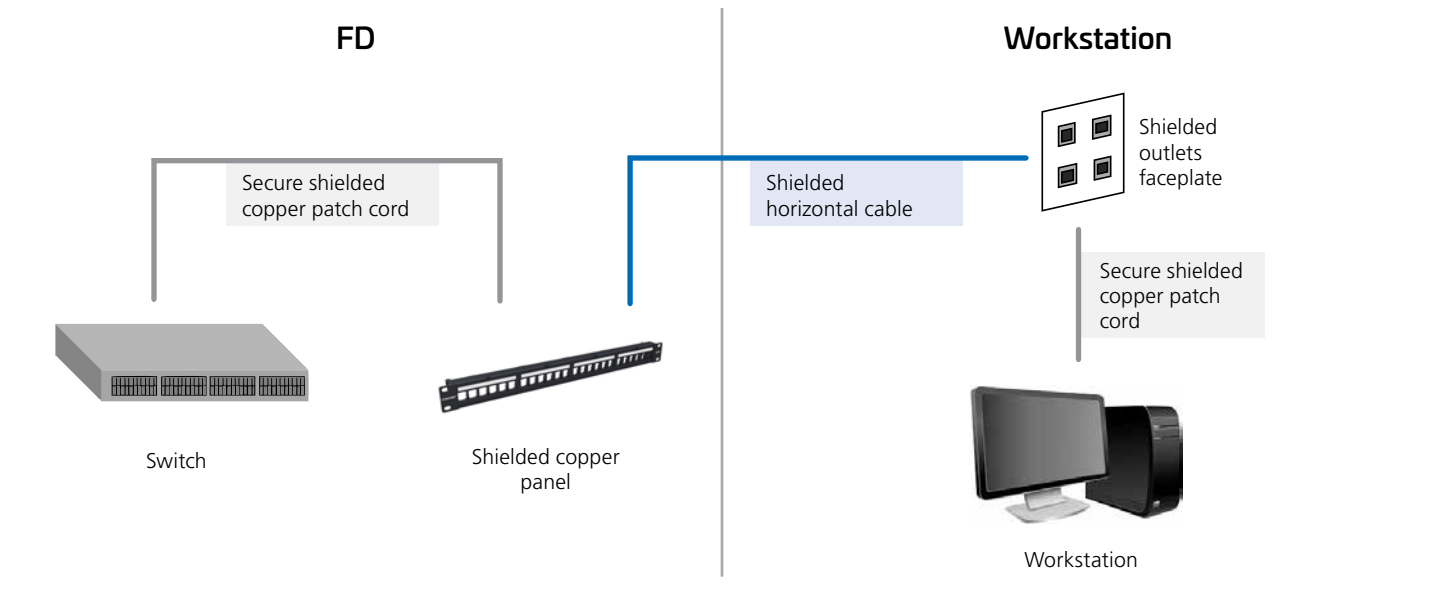


Figure 1B: F/UTP Channel

As shown in figure 1a, the typical secure fiber LAN can be categorized into 4 areas: Main Distributor Area (MDA), Floor Distributor (FD), Consolidation Point (CP) or Zone Distribution Area (ZDA) and finally the Work Area Outlet. The following provides detailed descriptions of the solutions available in each of these areas.

## (1) MDA: High Density Fiber shelves for non-keyed solutions



The SYSTIMAX HD (High Density) and UD (Ultra Density) fiber shelves accommodate standard 360G2 fiber modules as well as colored, non-keyed fiber modules as shown in the section below. They are available in 1U, 2U and 4U designs and are an ideal solution for the MDA, where high density is required.

### KEY FEATURES AND BENEFITS

- Simplifies moves, adds and changes
- Same footprint for simple migration from 10G serial to 40/100G parallel transmission
- Modular design offers more flexibility
- Available in LazrSPEED® and TeraSPEED® to support high performance applications
- Utilizes same footprint for duplex LC and MPO connections
- Intuitive, flexible labeling solutions for easy port identification
- Large, translucent window provides clear view of the patching field
- Supports imVision® automated infrastructure management (AIM) solution
- Split tray design provides easy installation while minimizing network downtime
- Tool-less install of rear trunk cables significantly reduces trunk deployment time
- Utilizes same modules as the current generation of panels

## Color-coded Fiber Modules



### KEY FEATURES AND BENEFITS

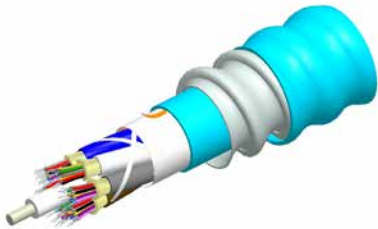
- Cassette modules have one MPO connection (12-fiber) or two MPO connections (2 x 12-fiber) on the back
- Modules available in 12 different colors, enabling support for multiple secure networks
- 360G2-style footprint compatible with CommScope® HD and UD fiber optic panel solutions
- Factory tested and ready for installation
- For use with standard (non-secure) MPO trunk assemblies

## Fiber Trunk Connectivity – interconnecting the MDA and FD

Fiber connectivity between the MDA and FDs, IDFs or CP/ Zone boxes can be deployed as standard pre-terminated MPO-MPO trunks and array cord with or without interlocking armor, or as bulk fiber with or without interlocking armor. are available with OM3 and OM4 multimode, and OS2 singlemode fibers.



## Armored Fiber Cable and MPO Trunks



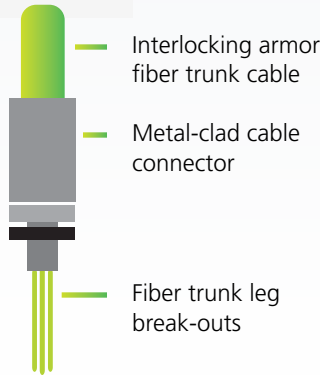
### KEY FEATURES AND BENEFITS

- Ideal for applications needing extra protection of an armored fiber such as Alarmed Carrier or hardened Protective Distribution System (PDS)
- Outstanding mechanical protection for sensitive cables combined with excellent flexibility
- Reduces the potential of data transmission loss/failures caused by accidental cut through, crushing, mechanical vibration and rub through damage via adjacent cables or other objects
- Available in aluminum interlocking armor with an outer jacket
- Flame Rating: NEC and CEC compliant for OFCR, OFCP and OFCR-LS (Limited Smoke)
- Outer jacket colored for easy identification with sequential length marking in feet or meters
- Custom printing available on outer jacket for ease of identification (minimum order quantities may apply)
- Indoor and Indoor/Outdoor cable constructions

For installations where conduit or innerduct are typically installed, CommScope offers premise and indoor/outdoor fiber optic cables inside an interlocking armor that provides protection against damage due to extreme conditions. This construction eliminates the need for installing conventional conduit or innerduct and then pulling in the fiber optic cable, thus reducing the overall time and cost of the installation.



Secure mounting and grounding of hardened alarm carrier fiber cable with interlocking armor can be achieved by products such as the metal-clad cable connector shown to the left.



Cross-sectional view of panel mounting hardware



Interlocking armor fiber cables installed in cabinet

## (2) and (3) FD and CP/ZDA: Fiber Enclosures for Secure Keyed Fiber Applications



SD 4U Fiber Panel

### KEY FEATURES AND BENEFITS

- Available in 1U, 2U and 4U
- Heavy gauge steel
- Internal wire management included
- Works with 23" and 19" racks
- Spaces available on the sides of the shelf for routing cable or buffered fiber internally between shelves
- Port identification label behind front door
- Ergonomic design
- Locking option available
- Accepts 1000-style module and adapter plates (different from the 360G2 style modules and adapter plates shown on page 5.)

The SD fiber panel uses include anything from updating or expanding telecommunications closets to risers to small data centers in intelligent buildings, education and government structures. This modular concept enables users to adopt new technologies and fiber architectures over time by simply replacing modular components in previously deployed panels and wall mount units. Simplifying initial installation while enabling easy network upgrades, the SD panel's modular design provides a future-ready platform for all fiber deployments.

Supporting LazrSPEED® OM4 and OM3 multimode, OptiSPEED® OM1 multimode and TeraSPEED® single-mode fiber technologies, this fiber solution is ideal for a variety of applications and networking environments.

Available in 1U, 2U and 4U Configurations, these panels hold three 1000-style fiber panels or pre-terminated modules per 1U of rack space and can support up to 36 duplex LC (72 fibers) or 24 MPO pass through adapters (288 fibers) in each 1U of space.

CommScope offers several fiber management shelves for splicing, termination, and cable and patch cord management.

## WBE-EMT



Wall Mount WBE-EMT Enclosure

## KEY FEATURES AND BENEFITS

- Three models available in 2-4-8 adapter panels
- Security covers for BTW and patch side
- Secure with padlock (not included)
- Mounts on wall at 4 different orientations
- Cable mounting with cable glands
- Protection on patch side
- Splice clip available as 3 or 6 tray
- Cable clamp compatible (not included)
- Accommodates 1000-style fiber modules and adapter plates

The WBE-EMT is a wall-mount fiber enclosure used for a combination of splicing and termination of fiber optic building cable or outside plant cables. The enclosure can be configured for multiple adapter applications and is designed to accommodate termination of up to 96 LC connections. The enclosures can also be used as splice units to store 96 Single Fusion Splices, 72 Mechanical Splices or 36 Mass Fusion Splices with the addition of the appropriate splice holders.

## Keyed Fiber Adapters



## KEY FEATURES AND BENEFITS

- Pre-loaded with either six (6) or twelve (12) duplex LC secure adapters
- Panels available in 10 different colors
- Adapters suitable for use with multimode or single mode LC secure connectors
- 1000-style footprint compatible with CommScope® SD fiber optic panel solutions

## Keyed Fiber Modules



## KEY FEATURES AND BENEFITS

- Cassette modules have one MPO connection (12-fiber) or two MPO connections (2 x 12-fiber) on the back
- Modules available in 10 different colors
- 1000-style footprint compatible with CommScope® SD fiber optic panel solutions
- Factory tested and ready for installation
- For use with standard (non-secure) MPO trunk assemblies

## (4) Work Area: Keyed Fiber connectors at the desktop

### KEYED FIBER SOLUTIONS

#### KEYED FIBER LC ADAPTERS AND CONNECTORS



#### KEY FEATURES AND BENEFITS

- Duplex LC adapter mounts in the same footprint as a simplex SC adapter
- Single-fiber ferrule for maintaining proper polarity
- Pull-proof for jumper
- UPC finish
- Anti-snag latch for jumper
- Minimal polish
- Standards compliant
- Standard CommScope installation procedure
- Ten unique colored and keyed connector adapter combinations
- Adapters come standard with ceramic sleeves
- Available in Behind the Wall version
- Universal Key available for use while testing
- disengages easily in dense spaces

Today's facilities often employ more than one network and need mechanical security to limit access and prevent inadvertent cross-connection. The CommScope Keyed LC products have special molded features in the LC connector and molded keys in the adapter to reduce the chance of unauthorized connections.

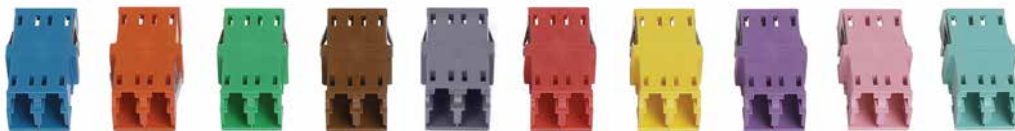
Ten connector-adapter combinations exist, identified by color, and in order for a connection to be possible, the connector and adapter colors must match. If the colors do not match, the keying features will prevent the connector from carrying the signal. CommScope Keyed LC connectors will not mate with standard LC adapters, only with matching, same-color adapters.



## KEYED FIBER SOLUTIONS

### KEYED LC ADAPTERS

When designing secure fiber channels out to the faceplate, it is important to ensure that the correct adapter collar is used to match the appropriate connector opening profile in the faceplate. Mounting collars are currently available that support the SL-series and M-series profiles.



**LazrSPEED®, OptiSPEED®,  
TeraSPEED® LC Duplex Keyed  
Adapter**  
Available in 10 Colors  
Also available as Hybrid Adapter

Low profile duplex LC adapter	Mounting collar
Keyed LC Adapter – SL Series	SL Series Adapter Collar
Keyed LC Adapter – M-Series	M-Series Adapter Collar



SL-Series



M-Series

## KEYED FIBER SOLUTIONS

### KEYED LC PATCH CORDS

A critical component of the Keyed LC Fiber Solution, CommScope Keyed LC Patch Cords are available in a variety of key colors, fiber types and lengths. Keyed LC Patch Cords are made with the same keying features as the Keyed LC Adapters, preventing accidental connection and ensuring physical network security.

### KEY FEATURES AND BENEFITS

- High-quality factory termination
- Variety of fiber types and connector types
- 100% termination tested with test data included
- Available in multiple key colors
- Universal plug available for testing
- Lowest possible loss, providing improved system performance
- Maintains optical contact under load and helps prevent accidental disconnects
- Reduces maintenance and ensures consistent optical performance
- Available in ten colors



# Secure Port Blockers and Locking Patch Cords

Secure port blockers prevent unauthorized access to fiber and copper ports at the work outlet, patch panel and switches while secure patch cords prevent accidental or unauthorized disconnects during operation.

## KEY FEATURES AND BENEFITS

- Duplex LC fiber and RJ45 copper port blockers guard against cyber physical layer threats or accidental patching of secure networks
- Same color unlocking key for fiber and RJ45 copper ports and cords
- Universal for use in other manufacturers LC fiber and RJ45 copper apparatus
- Slim line profile provides clearance which may not be available in other secure products
- Locking patch cords are factory assembled
- Patch cords ship in unlocked position
- \*\*\* MOQs may apply – check customer service

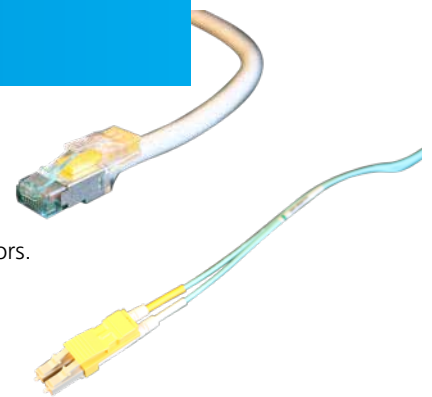


Color offer	Color options	Unlocking key
Primary 6 Colors	Orange	Orange Key
	Green	Green Key
	Red	Red Key
	Yellow	Yellow Key
	Violet	Violet key
	Rose	Rose Key
Secondary 6 colors	Blue	Black Key
	Brown	
	Gray	
	White	
	Aqua	
	Lime Green	

## Locking patch cords

### KEY FEATURES AND BENEFITS

- LC and RJ45 locking patch cords
- Duplex LC fiber patch cords have matching LC clip, lock insert and cordage jacket for primary colors.
- Innovative RJ45 clear boot design allows cable color to be easily displayed.
- Compact design is ideal for high density applications.
- Extractor keys large diameter opening design makes it easy to keep all color keys together on one common key ring.
- Factory pre-installed lockable connector ends.



## F/UTP INFORMATION OUTLETS

To accommodate the existing installed base of shielded cabling, CommScope offers two best-in-class solutions for shielded copper information outlets: the HD series and the SL series.

### HD style outlet



#### KEY FEATURES AND BENEFITS

- Allows for multiple size cable terminations
- 0.270 inches up to 0.300 inches diameter over jacket and flame ratings
- Universal design and label supports both
- T568A and T568B wiring
- Black icons provided in strip of three: VOICE, DATA and BLANK and are also sold separately in bulk packs, available in green, blue, red, black, white and yellow
- Termination time decreased when using the HGS-TT-S termination tool
- Flexible mounting system enables a single connector to mount in three separate openings: HD (High density), M-Series and Keystone
- Rugged, full-metal construction
- IDC connector terminations on rear of base allow quick and easy installation of 22 to 24 AWG cables
- UL® listed
- Category 6A and Category 6 options

### SL style outlets



#### KEY FEATURES AND BENEFITS

- Slim profile design - compatible with SL Series style faceplates
- Orderable with integral hinged dust cover or without dust cover
- Supports both back (180°) or side (90°) cable entry options
- Universal wiring labels permit termination to either T568A or T568B wiring patterns
- Contain integrated cutting blades allowing all four pairs of a four pair cable to be terminated at one time
- Termination technology provides for a quick and reliable termination.
- Accommodate cable with a maximum O.D. of 9.00 mm.
- Capable of terminating 24-22 AWG solid or 26-24 AWG stranded conductors with a maximum insulation diameter of 1.60 mm.
- Category 6A or Category 6 options

The HFTP Shielded Outlets can be mounted directly to the HFTP Shielded Modular Panels. HFTP Shielded Outlets can be mounted to the M3200 FTP Modular Panel, M-Series Faceplates and Surface Mount boxes with the addition of the HgS-A-MS M-Series Adapter. The HFTP Shielded Outlets can also be mounted into keystone openings with the addition of the HgS-A-KS Keystone Adapter. The M-Series and Keystone Adapters are sold separately.

## F/UTP MODULAR PATCH PANELS

### KEY FEATURES AND BENEFITS

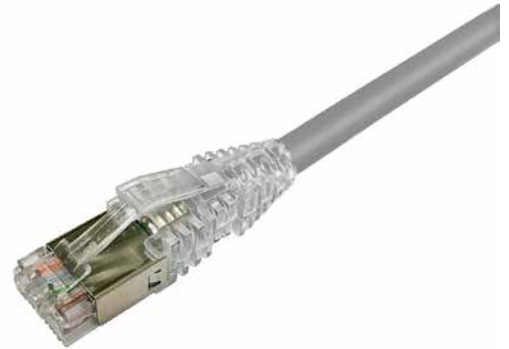
- Shielded Modular Panels are available in 24 Port 1U and 48 Port 2U, flat and angled configurations.
- Panels available for SL-style or HD-style outlets
- Simple grounding procedures



## F/UTP MODULAR PATCH CORDS

### KEY FEATURES AND BENEFITS

- Enhanced plug design, improved
- 24-gauge cordage and a unique manufacturing process assures extremely high electrical performance with low variability
- Improved anti-snag feature provides maximum protection from snagging during moves, adds and changes
- Available in gray solid conductor cordage
- UL listed
- Can support high bandwidth applications up to 10GBASE-T
- Lengths in feet: 3,5,7,9,15,25

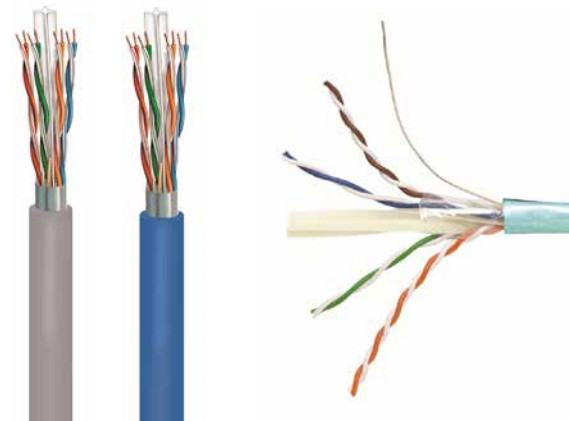


F/UTP Modular Patch Cords consist of high quality components designed to assure high performance in Category 6A and Category 6 applications. These products meet the specifications as specified in ANSI/TIA-568-C.2, IEC 60603-7-5 and ISO/IEC 11801. F/UTP Modular Patch Cords are designed to mate with HD- and SL-style shielded information outlets.

## F/UTP CABLES

### KEY FEATURES AND BENEFITS

- Test report available online at [www.commscopewebtrak.com](http://www.commscopewebtrak.com)
- Flexible jacket strips cleanly and resists kinking
- Co-extruded color striped pairs for easy identification
- 1,000 to 0 footage markers every two feet
- Available in reels
- Qualifies for a F/UTP Solutions 25-Year Extended Product Warranty when included in a certified CommScope F/UTP channel

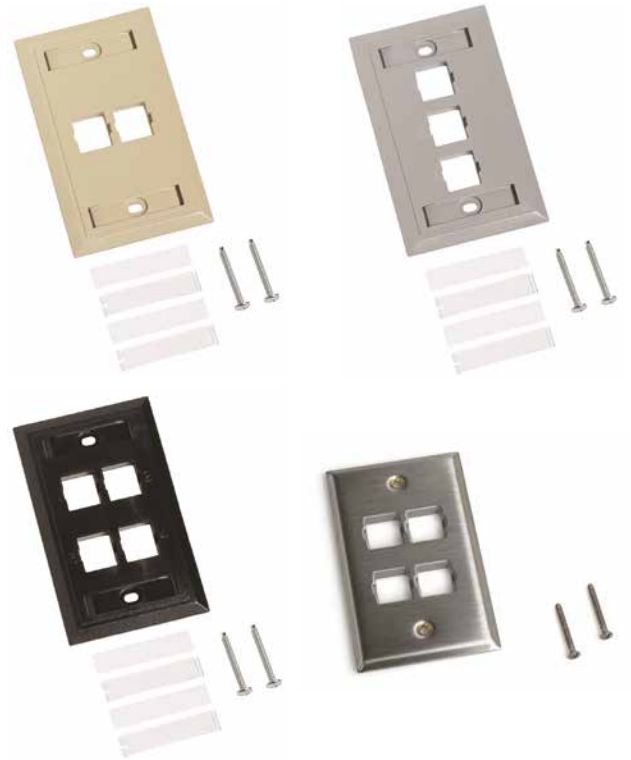


F/UTP cables exhibit excellent cross-talk performance, enabled via optimized twist and strand schemes, dramatically enhancing high-frequency performance using the latest in cable technology. These cables are manufactured with a patented pair isolator which further provides separation of the pairs and enhanced cross-talk performance.

## FACEPLATES

The angled outlet faceplates are flush-mounted US standard. They are designed to be used with all of our M- and SL-series and keystone outlets, fiber faceplate mounting modules, and other adapters and couplers. Outlets and adapters installed in the angled faceplates are angled downward 40 degrees to reduce the strain on cords and connectors. The faceplates are available in two styles and four colors: single gang 4-port and double gang 8-port black, gray, white and stainless steel. They include labels, label holders and mounting screws (2 of each with the single gang faceplate and 4 of each with the double gang faceplate).

CommScope offers an extensive range of faceplates, including designer and modular flush-mount styles. For a complete product listing, please check out [www.commscope.com](http://www.commscope.com).



CommScope (NASDAQ: COMM) helps design, build and manage wired and wireless networks around the world. As a communications infrastructure leader, we shape the always-on networks of tomorrow. For more than 40 years, our global team of greater than 20,000 employees, innovators and technologists has empowered customers in all regions of the world to anticipate what's next and push the boundaries of what's possible. Discover more at [commscope.com](https://www.commscope.com)

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