

Fiber Optic Technology Change the World

THE CHALLENGE OF

**HIGH**

**PERFORMANCE**

**FIBER OPTIC CONNECTIVITY PRODUCTS AND SOLUTIONS**

FOR YOUR FTTX PROJECT





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## Company Introduction

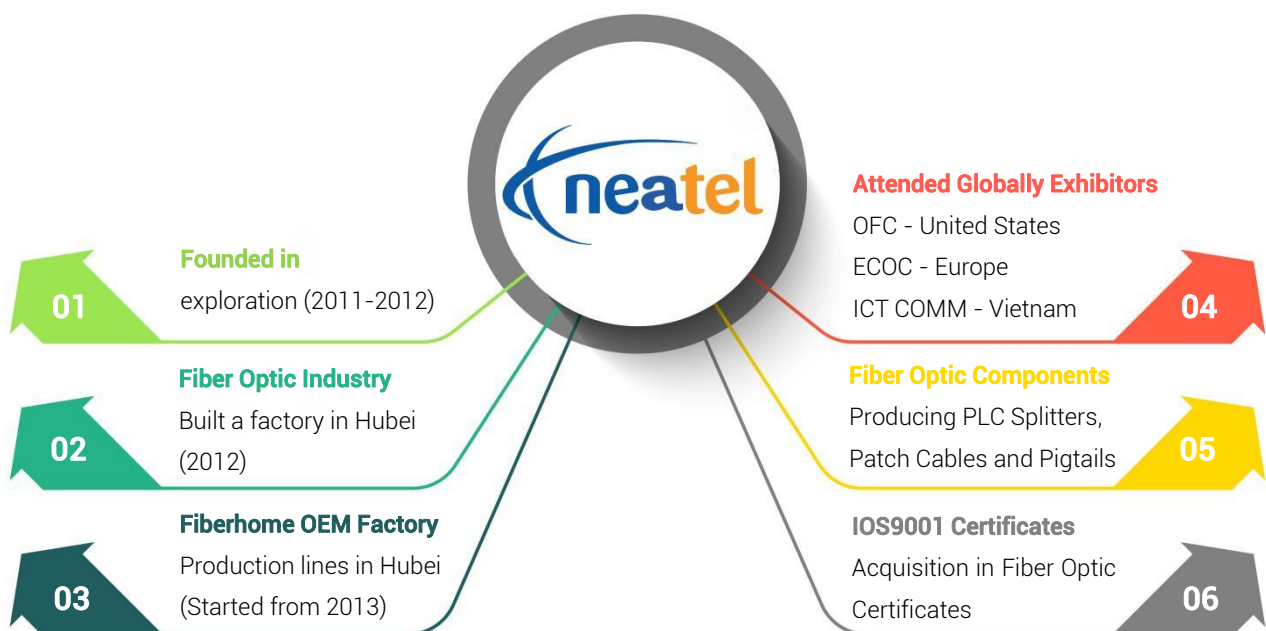
Strength, create greater glories



**NEATEL** is an industry-leading manufacturer of advanced optical fiber and copper structured cabling systems and products. Built on core values of quality, innovation and integrity, we are relentlessly customer-focused and dedicated to uncompromised customer satisfaction. From project planning, and system design, through network implementation and ongoing service and support, **NEATEL** operates in partnership with an extensive network of expert distributors, consultants and installers to provide customers with the best networking solutions and the best value in the industry today.

## Road of Growth

- In the past, we continued to explore;
- Today, we keep enterprising;
- In the future, we do drive ahead.



Elevate your fiber optic connectivity

## Fiber Optic Cables

A new era of network solutions

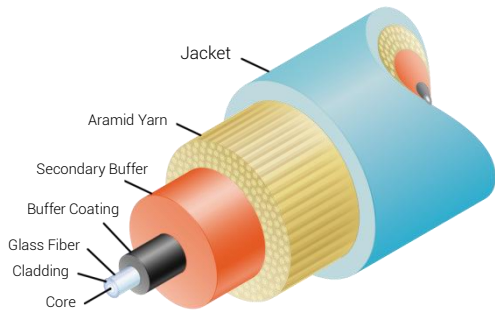
***We are professional  
service and customized***

- Indoor Fiber Optic Cables
- Outdoor Fiber Optic Cables
- ADSS Fiber Optic Cables



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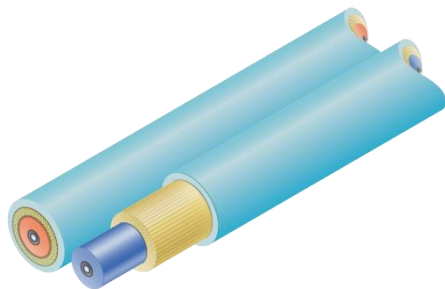


**Figure 1:** Simplex Fiber Optic Cable

### **Indoor Simplex and Duplex Cables**

#### **Cable Construction**

A simplex fiber optic cable, as shown in Figure 1, contains a single, tight buffered fiber surrounded by aramid yarn strength members. At the center of the cable the 125  $\mu\text{m}$  glass fiber is surrounded by a 250  $\mu\text{m}$  buffer coating. A 900  $\mu\text{m}$  secondary buffer is added for additional protection. The aramid yarn is made from Kevlar®, the same material used by law enforcement and the military for body armor. It provides additional protection and strength for pulling. A 2 mm to 3 mm outer jacket surrounds the yarn and buffered fiber for a final layer of protection.

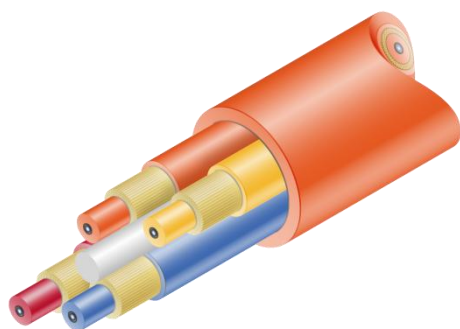


**Figure 2:** Duplex Zip-Cord

A duplex zip-cord fiber optic cable, as shown in Figure 2, consists of two simplex fibers that are bound together, and can be easily separated by pulling apart. Each buffered fiber is surrounded by aramid yarn strength members and a jacket. A thin strip of jacket material down the middle holds the two fibers together.

#### **Where They are Used**

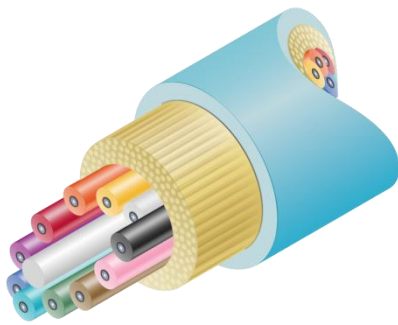
Since most AV signals travel along one or two fibers, simplex and duplex cables are the most common fiber optic cables used in AV systems. They are used as patch cords and are often installed in horizontal spaces between telecom or equipment rooms and work areas. Available in both riser and plenum rated varieties, they can be installed within walls, under raised floors, and in air-return spaces. The small size and light weight make these cables easy to pull. The individually jacketed and buffered fibers enable easy field termination, and provide durability for routine handling.



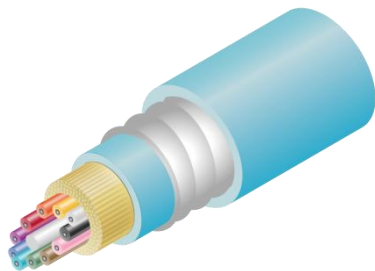
**Figure 3:** Breakout Cable

### **Indoor Multi-Fiber Cables**

A breakout fiber optic cable contains multiple simplex cables within a common outer jacket as shown in Figure 3. The simplex fibers are bundled around a central dielectric element for additional strength. The outer jacket can be stripped back using an integrated rip cord to expose the simplex fibers for stripping and termination. Once terminated, the individual fibers can be plugged directly into a patch panel or terminal equipment. The jacketing material can be riser or plenum rated for installing in walls or air return spaces.



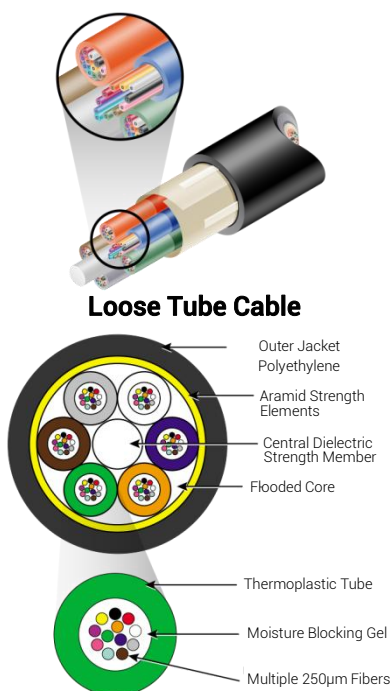
**Figure 4:** Distribution Cable



**Armored Tight Buffered Cable**



**Armored Loose Tube Cable**



### **Indoor Multi-Fiber Cables**

A distribution cable consists of multiple, tight buffered fibers bundled around a central strength member, which is surrounded by aramid yarn and an outer jacket as shown in Figure 4. Since the tight buffered fibers are not individually jacketed, distribution cable tend to be smaller and lighter than breakout cables with the same number of fibers. The outer jacketing material can be riser or plenum rated for installing in walls or air return spaces.

### **Armored Cables**

An armored cable includes an aluminum layer beneath the outer jacket to provide additional protection for the optical fibers. They are available as both tight buffered indoor cables and loose tube outdoor cables as shown in Figure 5. An armor layer provides additional protection for a cable that may be exposed to a unique hazard such as rodents.

### **Tactical Cables**

A tactical cable is an extremely rugged, tight buffered fiber optic cable built to military standards for harsh environments. The military uses tactical fiber cables in combat situations to provide a highly reliable communications link. Broadcasters use tactical fiber cables to provide a robust, high bandwidth link between cameras and the broadcast truck for sporting events and electronic news gathering. A durable outer jacket and aramid yarn strength members provide superior crush resistance, protecting the cable when run over by broadcast vehicles or military support equipment.

### **Outdoor Loose Tube Cables**

An outdoor cable is designed to withstand rough handling, adverse weather, and harsh environments. The typical outdoor fiber optic cable uses a loose tube construction as shown in Figure 6. Each bundle of 250 µm buffered fibers is protected by a loose tube buffer. The tube is filled with moisture blocking gel or a dry material to prevent water intrusion. Multiple loose tube buffers surround a central dielectric strength member. The buffer tubes, strength member, and outer jacket protect the fibers from damage and prevent excessive bending. The loose tube design allows cables to expand and contract over a wide temperature range without stressing the fibers.



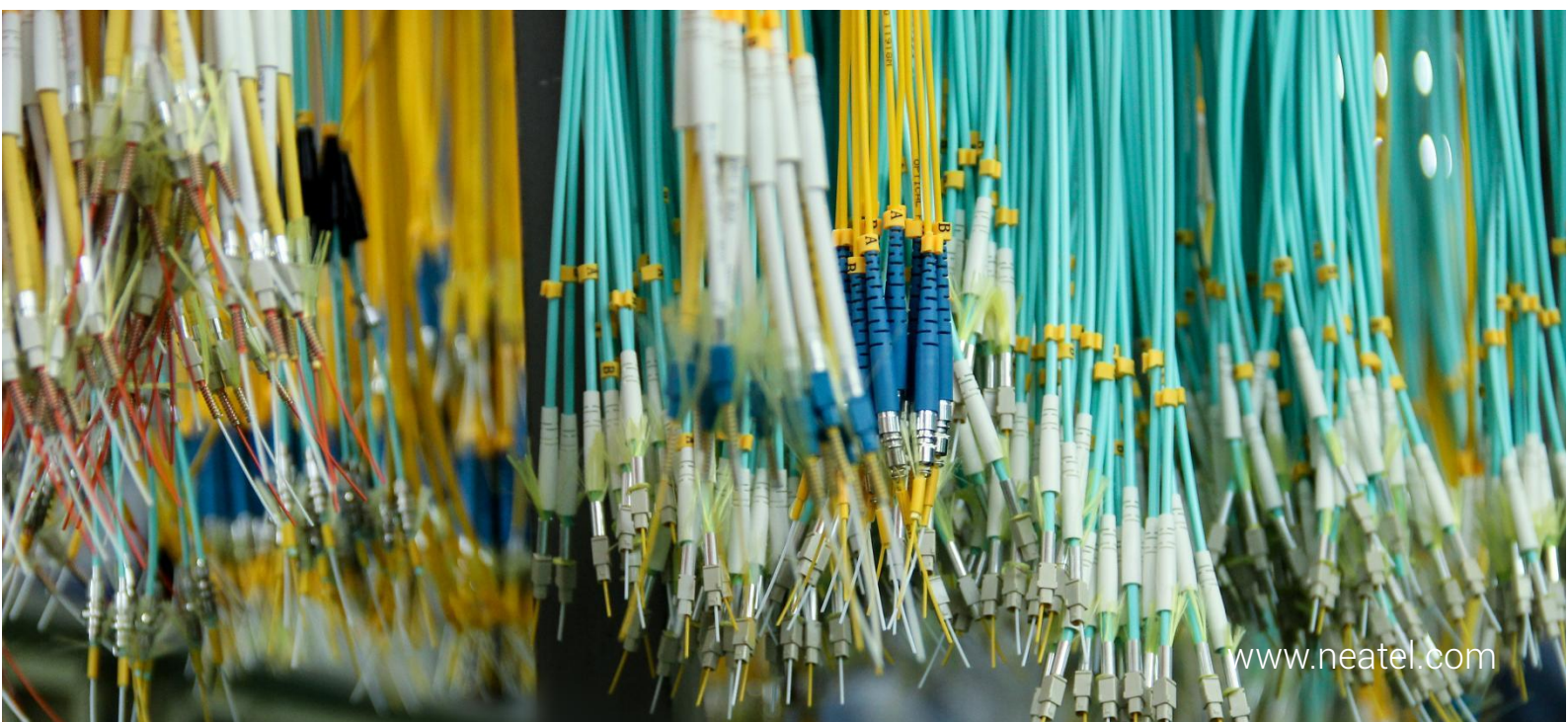
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## Fiber Optic Patch Cables & Pigtails

Fiber optic fostering innovation

***We service products and  
solutions for fiber optic  
connectivity project***

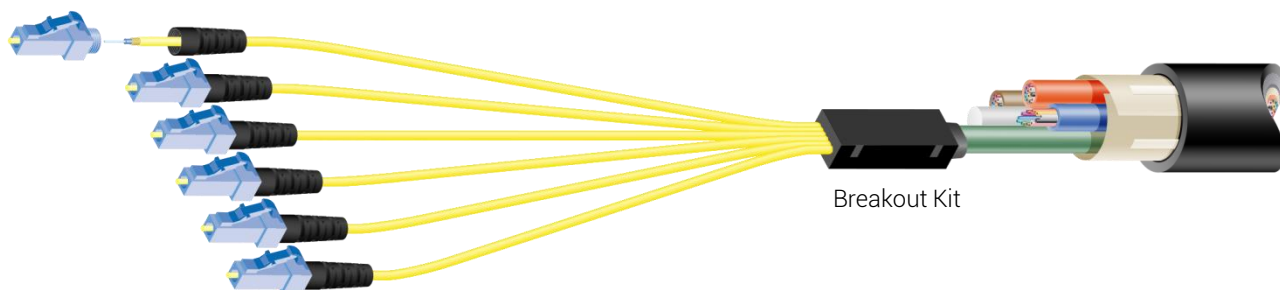
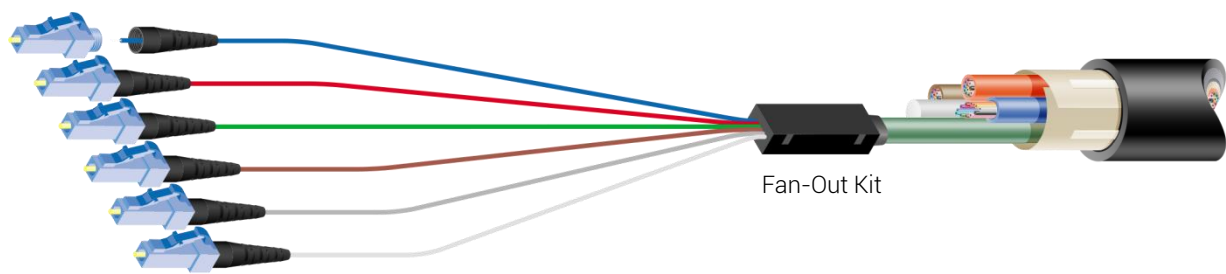
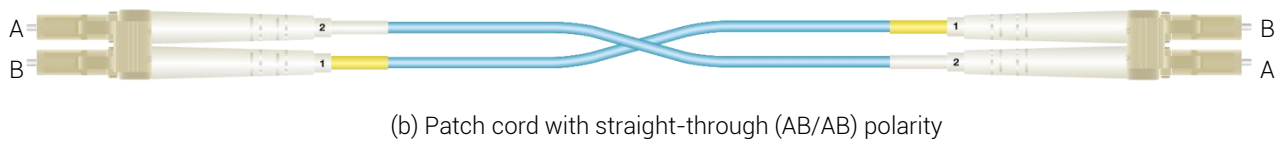
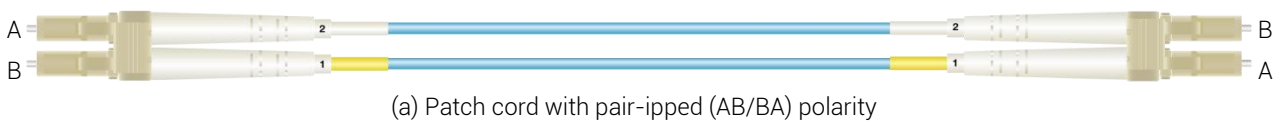
- Indoor Fiber Optic Patch Cables & Pigtails
- Standard Multicores Distribution Patch Cables
- FTTR Fiber Optic Invisible Clear Cables



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### **Fiber Optic Patch Cables & Pigtails**

Patch cords are factory-terminated simplex and duplex cables used within horizontal spaces, telecom rooms, and equipment rooms to make short connections, such as connecting rack-mounted equipment to a patch panel. Duplex patch cords are available as pair-flipped (AB/BA) or straight-through (AB/AB) polarity as shown in Figure 10. The TIA/EIA-568 standard specifies pair-flipped patch cords for bidirectional, duplex fiber optic signals to ensure that the output or transmit (Tx) at each end is connected to the input or receive (Rx) at the opposite end.





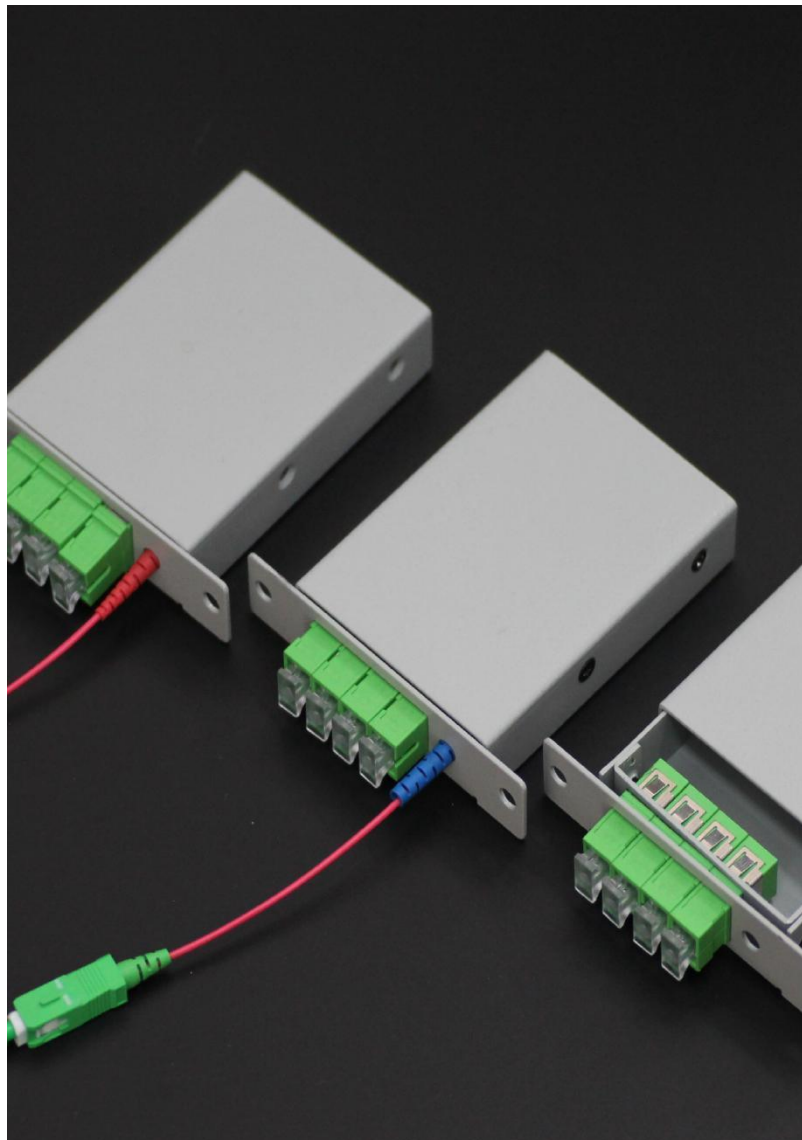
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## Fiber Optic PLC Splitters

Delivery what your care

***FTTH Solution, always  
here when you need us***

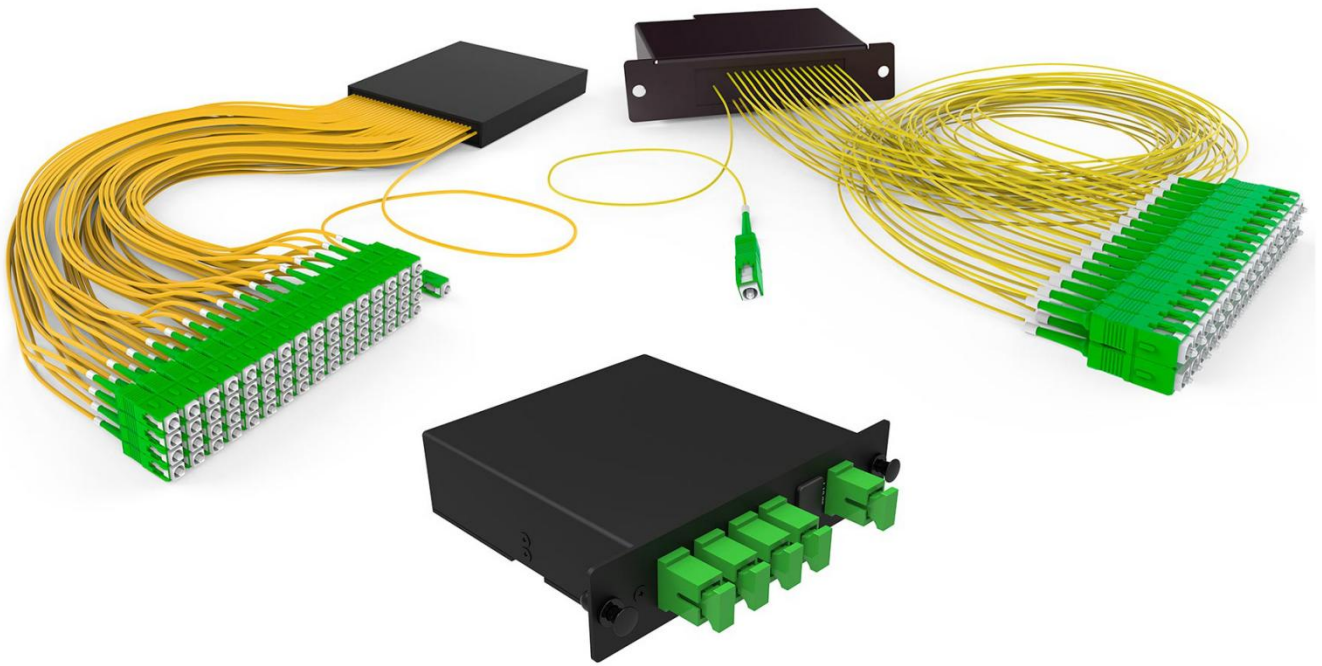
- Blockless Series
- LGX Series
- ABS Series
- ODF Series
- Wall-mounted Series



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### **Fiber Optic PLC Splitters**

A PLC (Planar Lightwave Circuit) fiber splitter is a passive optical component used in fiber optic networks to split an incoming optical signal into multiple output signals. It is designed to evenly distribute the optical power from the input fiber to the output fibers with minimal loss and uniform splitting ratio. PLC splitters are widely used in applications such as passive optical networks (PON), fiber to the home (FTTH) installations, and telecommunications systems to enable the sharing of a single optical signal among multiple end users or network components.



### **Applications**

- Telecommunications Systems
- Digital and Hybrid Video Systems
- Sensors
- Central Office

### **Features**

- Single-mode, multimode and PM fiber types
- Various coupling ratios 50:50 to 1:99
- PC, UPC and APC connector polish types
- Available with FC, SC, ST, LC and MU terminations

### **Benefits**

- Versatile, with multiple fiber types for a variety of applications
- Small size reduces physical space requirements
- Customizable packaging



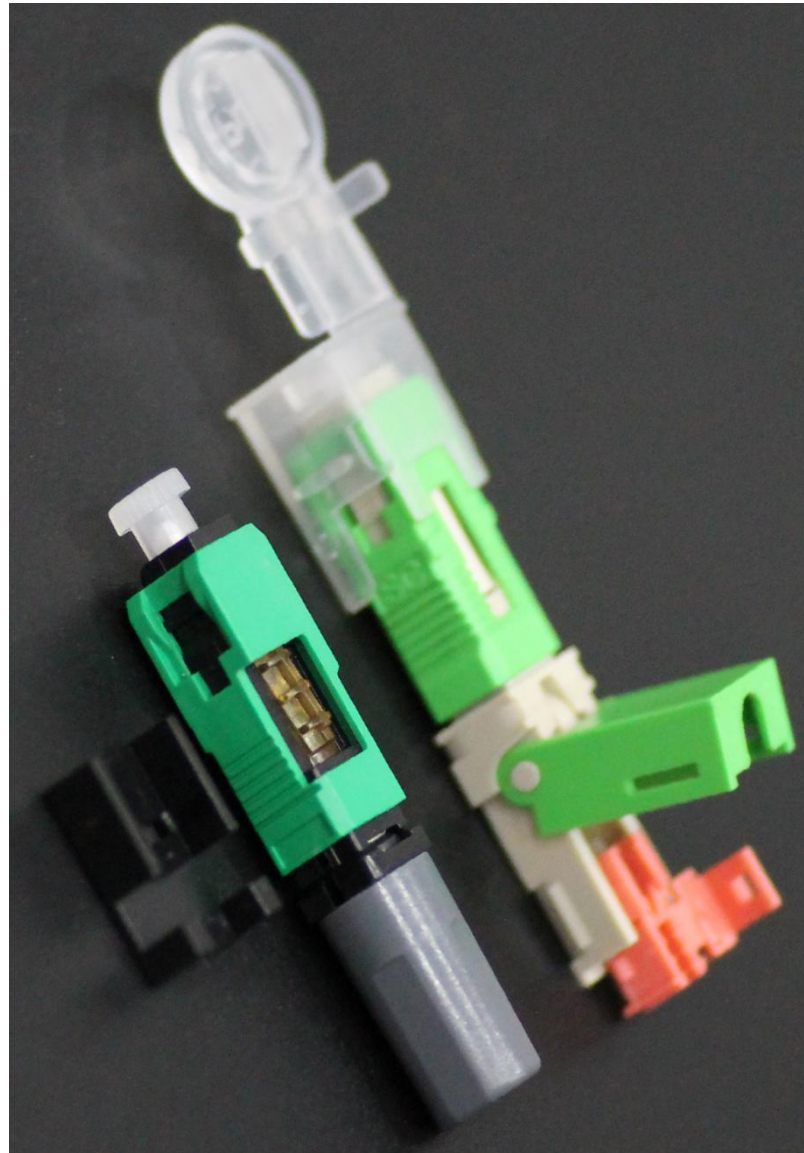
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## Field Assembly Connectors

Keeping clients as our focus

***We service products and solutions for fiber optic connectivity project***

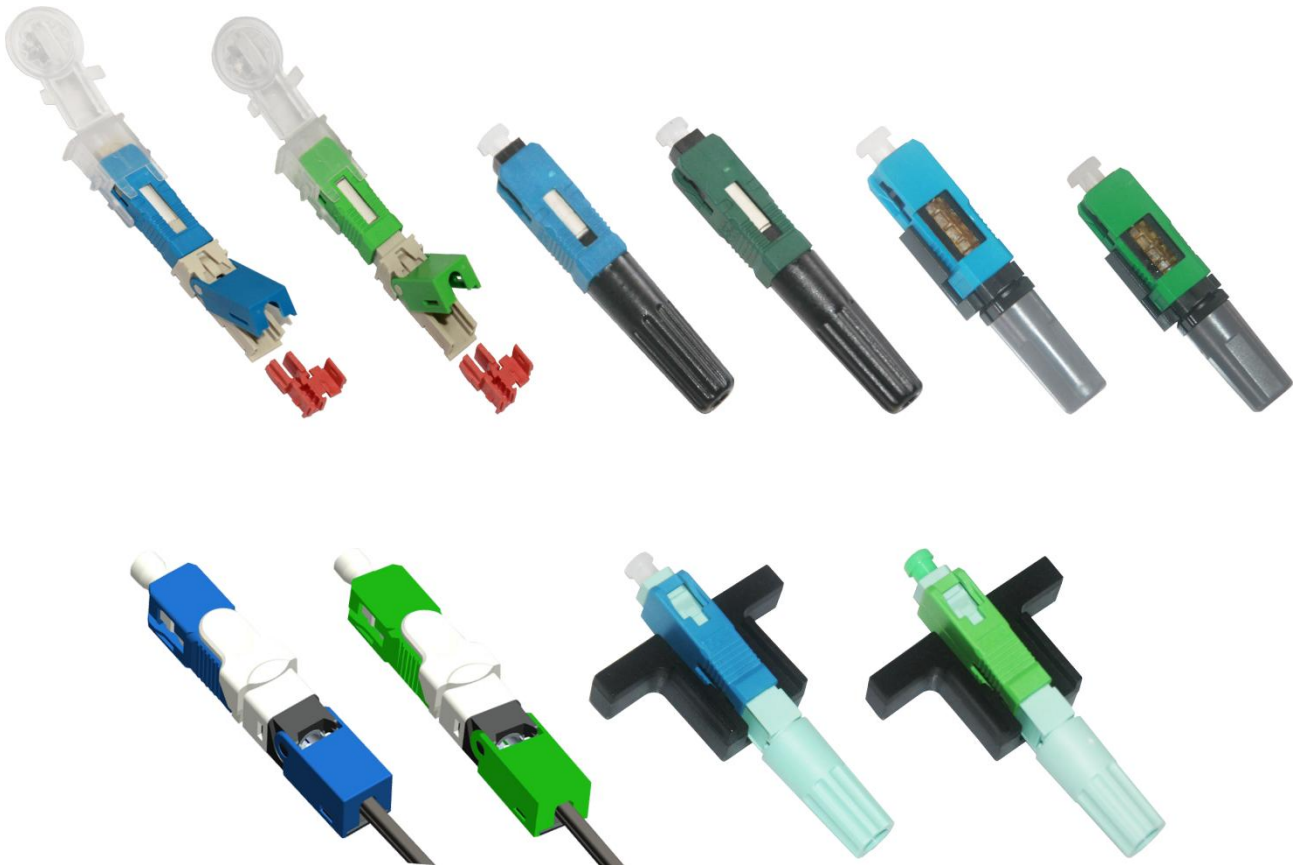
- SC Series
- LC Series
- Fusion Splice Series



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### **Field Assembly Connectors**

The Field Assembly Connector series are already a popular solution for optical wiring inside buildings and floors for LAN & CCTV applications and with the expansion of FTTH, is already proving itself to be the connector of choice by incumbents, municipalities, utilities & alternative carriers. Our Field Assembly Optical Connector series are now available in SC, LC, or FC variants, catering for 250um to 900um, and 2.0mm, 3.0mm diameter single mode and multimode fiber types, including Multi-mode 62.5/125um and Multi-mode 50/125um. The single-mode versions are available with UPC or APC ferrules.



### **Applications**

- All fiber interconnection
- Telecom Distribution and Local Area Networks
- FTTH and FTTx
- Passive optical networks [ATM, WDM, Ethernet]
- Broadband, Cable TV (CATV)

### **Features**

- Comply with TIA/EIA and IEC
- Quick and easy fiber termination
- Easy to deploy fiber solution
- Low Insertion & Back Reflection
- No special tools required

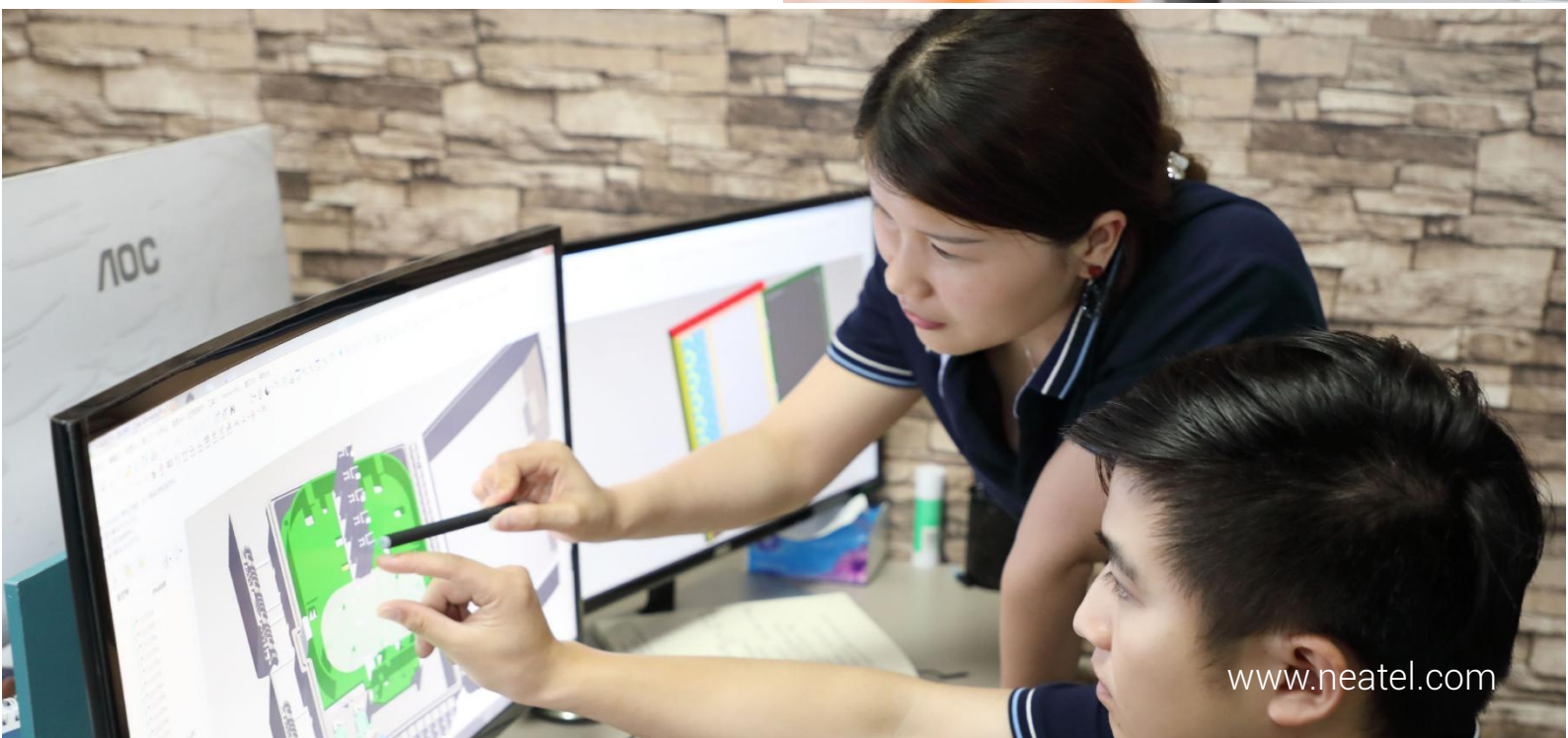
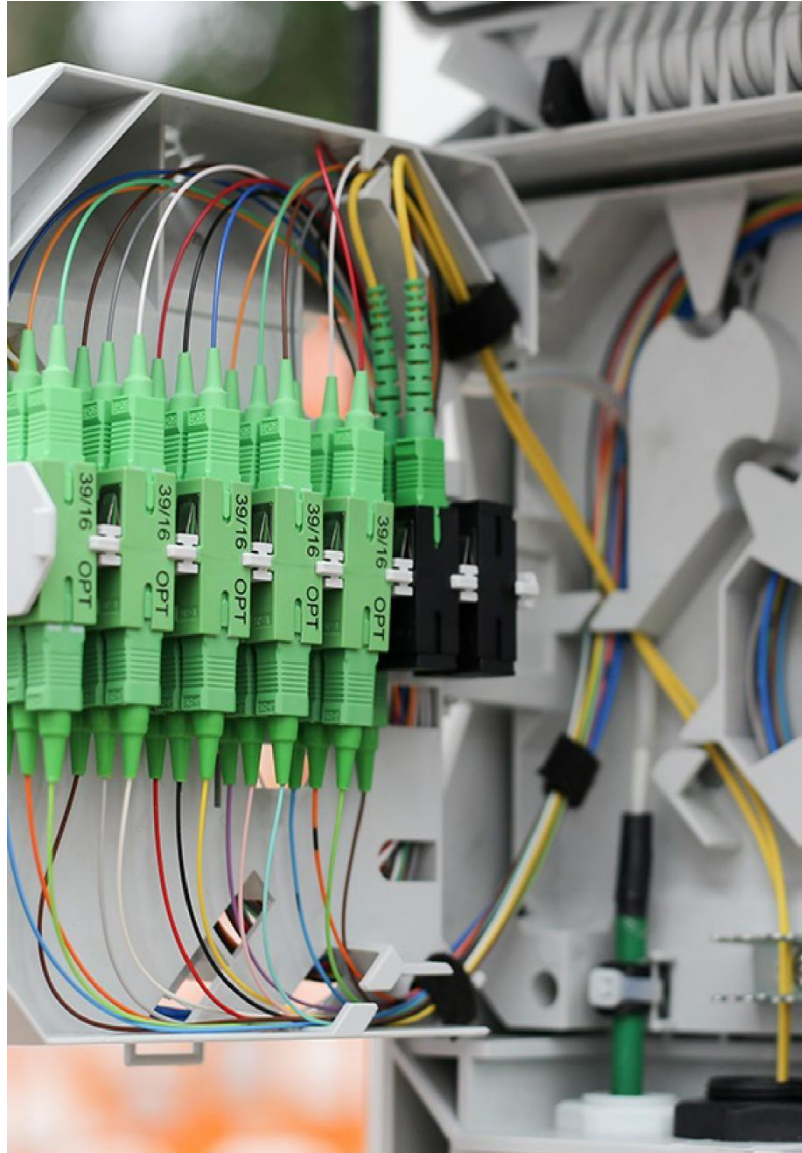


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## Fiber Optic Distribution Terminal Box

***We service products and solutions for fiber optic connectivity project***

- SC Series
- LC Series
- Fusion Splice Series



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### **Fiber Optic Distribution Terminal Box**

The Fiber Optic Boxes are used to connect fibers in various FTTx network points. The outdoor fiber distribution boxes can be mounted on walls or poles. Please contact us for more models and specification.



• NTHW016B



• NTHW016W



• NTHWD032B



• NTHWD016B



• NTHWD016W



• NTHWD08B



• NTHWED08W



• NTHWED24B



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## Fiber Optic Splice Closures

***We provide a versatile and functional cost-effective solution for FTTH network connections***



### **Fiber Optic Splice Closures**

NEATEL Fiber Optic Dome Closures provide a versatile solution for splicing and protecting outdoor fiber connections in a familiar dome form factor. FODC units can be deployed to support a variety of topologies including strand or pole mountings, as well as below grade vault placements. These closures use compression grommet sealing technology to provide a robust and easy to use economical IP68 rated solution. Charles offers two sizes of FODC that accommodate up to 144 (FODC-A) or 288 (FODC-B) fiber splices. Please be advised us for more models and datasheet we can provided.

#### **• Dome Splice Closure**



#### **• Inline Splice Closure**

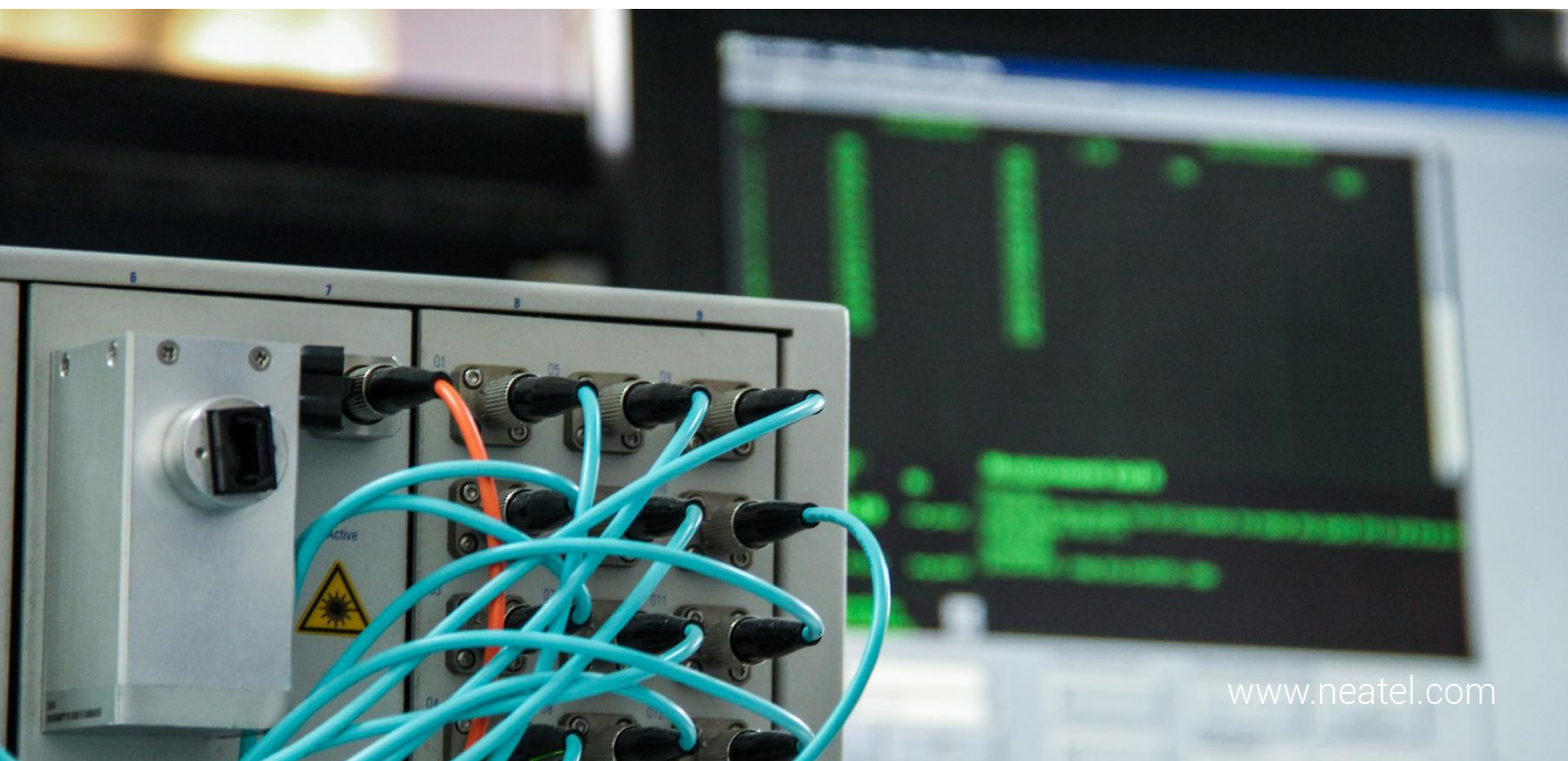
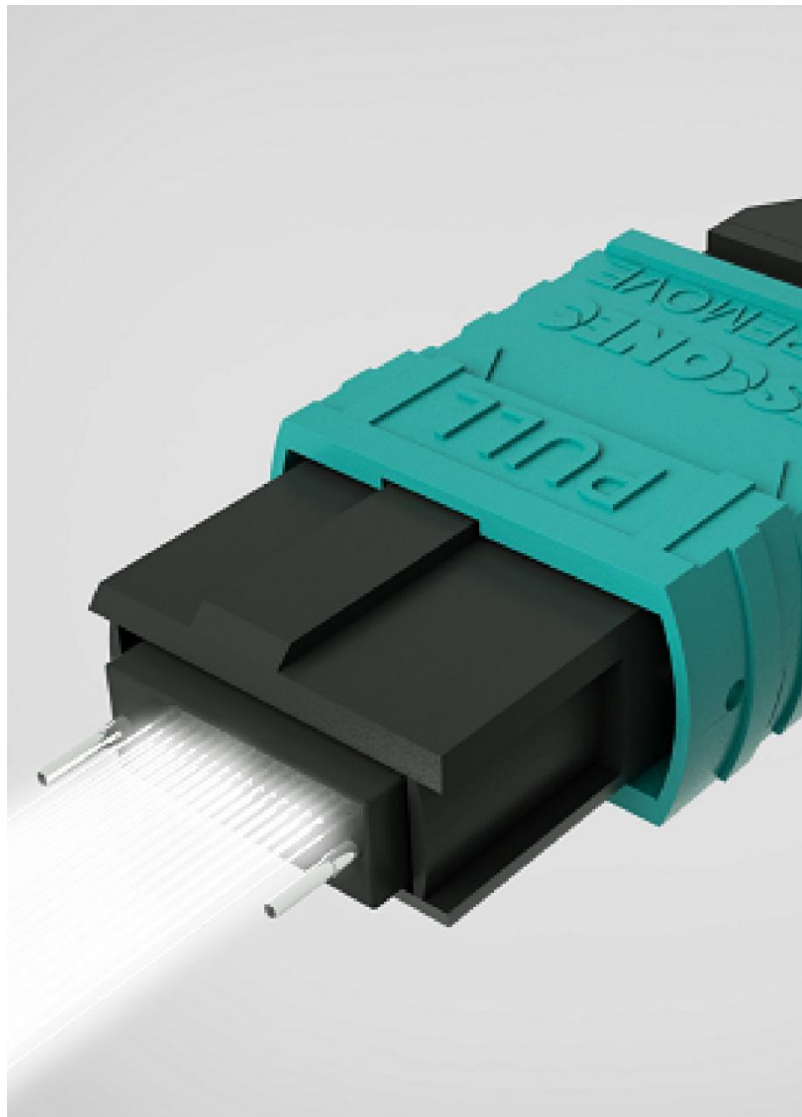




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**MTP®/MPO HD  
Multi-fiber  
Cabling Solutions**

***We provide a versatile and functional cost-effective solution for FTTH network connections***

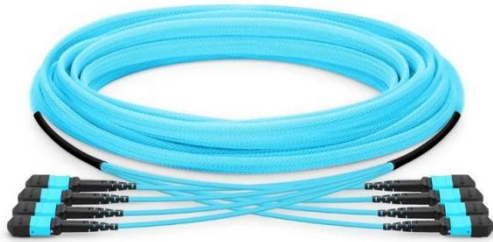


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### **MTP®/MPO HD Multi-fiber Cabling Solutions**

MPO/MTP® solutions are modular and flexible, allowing for easy and quick network expansion and upgrade. MPO/MTP® solutions can also support rate migration, such as from 10G to 40G, 100G, or 400G, by using different types of MPO/MTP® cables, such as trunk cables, breakout cables, and conversion cables.

#### **• Trunk Cables**



#### **• Fanout Cables**



#### **• MPO Harness Cables**



#### **• MPO LGX Cassette**



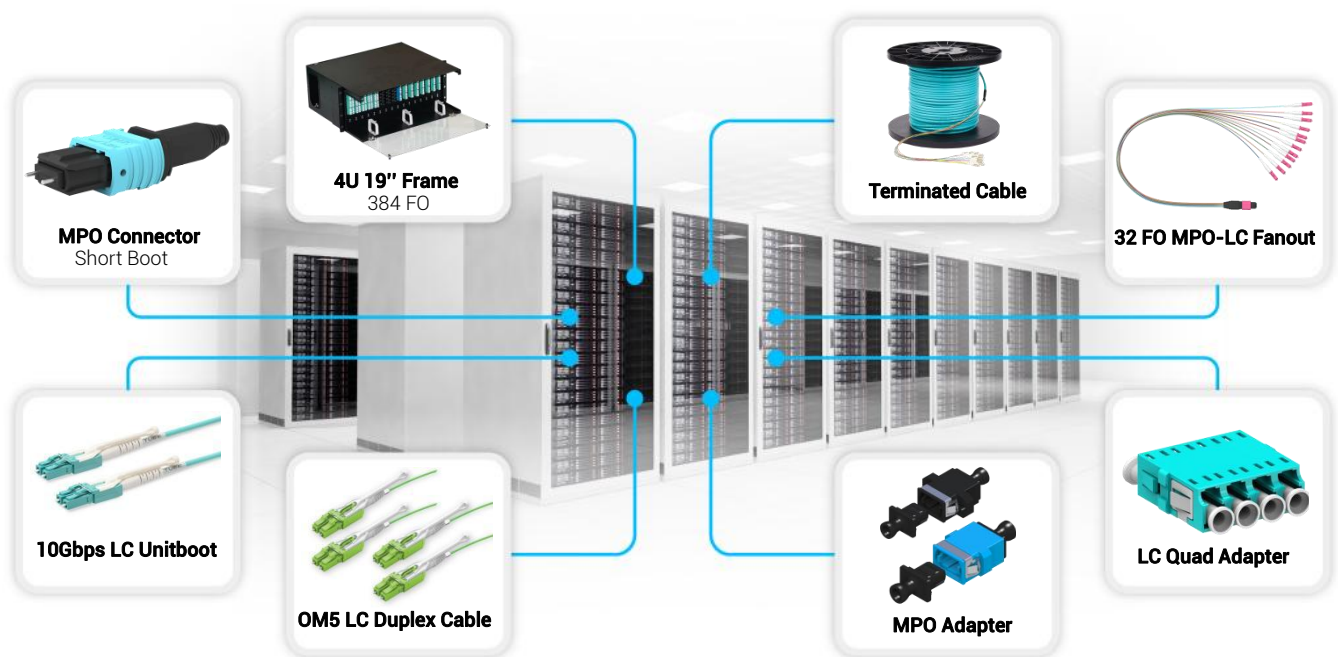


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### **MTP®/MPO HD Data Center Connectivity and Cabling Solutions**

The need for data center to support businesses is evolving rapidly. New infrastructures and systems are changing rapidly.

NEATEL offers extensive range of connectivity and cabling products and solutions helping data centers around the world to meet these challenges. For those with special needs, we can also offer customized solutions.



### **5 Reasons to invest in MPO/MTP® cable systems**

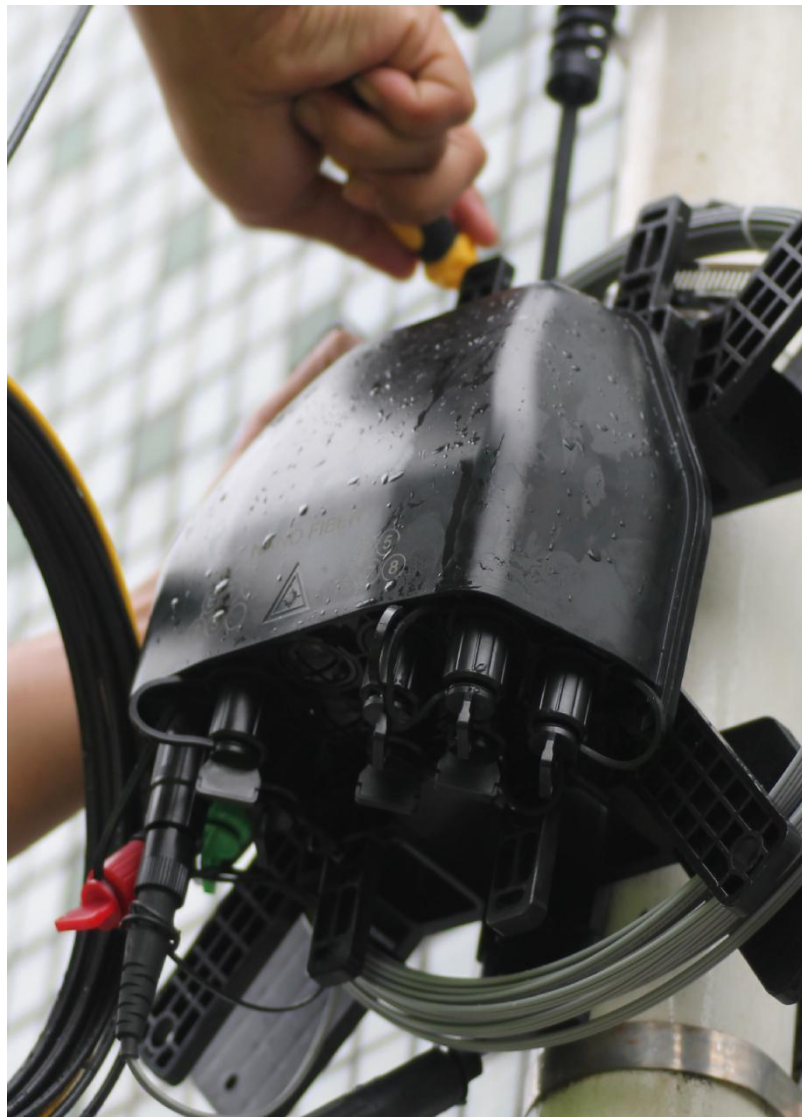
01. Increase cabling density with MPO/MTP® cable systems
02. Simply bridge the gap between existing 10G or 25G systems to newer 40 / 100G
03. Drastically reduce the amount of cabling in your data center
04. Modular pre-manufactured / terminated systems save a lot of time (no onsite splicing!)
05. Reduce signal offset for super high fiber optic performance

**Notes:** MPO/MTP® cable systems are definitely the way forward, with key advantages in organizing, managing and structuring the data center, simplifying upgrades and installations, integrating old with new, as well as reducing precious resource time and improving network performance.

Elevate your fiber optic connectivity

**Outdoor  
Preconnectorized  
FTTH Network  
Accessories**

***We delivery the fiber optic  
solutions help you win the  
marketing***





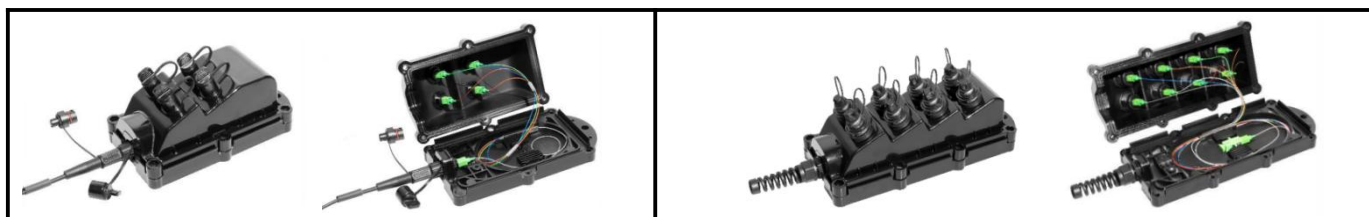
Elevate your fiber optic connectivity

### **Outdoor Preconnectorized FTTH Network Accessories**

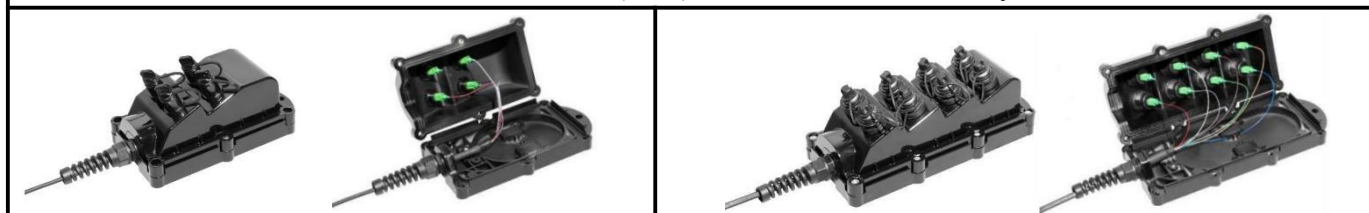
The Multi Service Terminal (MST) is a new economic fiber optic distributed solution for outdoor application, compare traditional products, FTTX Enclosure is easy to operate and has high compatibility. It can be used for wall-mounting, aerial installation or holding pole installation, based on different situation. FTTX enclosure not only used in FTTH Field, but also used in FTTA or other harsh environment.

### **Configuration**

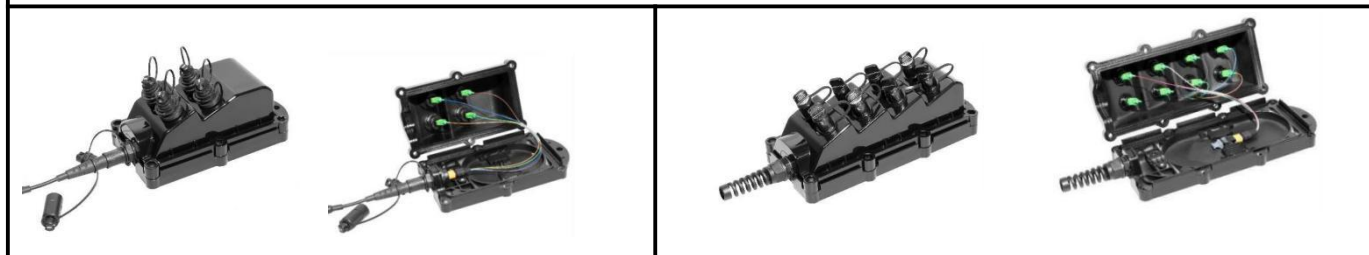
|             | Standard             | Optional  |
|-------------|----------------------|---|
| Input Hole  | PG13.5               | MINI SC, H connector (Optional), MINI IPMPO, ODVA or Customized |
| Output Hole | MINI SC, H connector | MINI SC, H connector (Optional), MINI IPMPO, ODVA or Customized |
| Extend Hole | Closed               | MINI SC, H connector (Optional), MINI IPMPO, ODVA or Customized |



Multi Service Terminal (MST) with PLC Connection Project



Multi Service Terminal (MST) with Bundle Connection Project



Multi Service Terminal (MST) with MPO Connection Project

### **WHY CHOOSE NEATEL?**

#### **• Quality Control**

We strongly believe that product quality and performance are the key success factors of a company.



#### **• Excellent Technology**



We always learn new technology by investing in production facilities, engineering process control systems, and talent development to maintain our status as a leading fiber optic connection solutions.



#### **• High Standard**

We believe a high standard of professionalism towards our product and service offerings combined with our superior engineering solution serve to satisfy the unique needs of our customers.

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| Outdoor FTTX Waterproof Field Assembly Connector - FastConnect Series |   |   |
|---|---|---|
| Picture   |  |  |
| Part No.  | NTHW250   | NTHW300   |
| Configuration   | 1FO   | 1FO   |
| Application   | 2.0 x 3.0 / 2.0 x 5.0mm Flat Drop Cable   | 3.0mm Round Drop Cable  |
| Connect Adapter   | NTFA9012 FastConnect Reinforced   |   |
| Note: Please contact us for more details on specification             |   |   |




| Outdoor FTTX Waterproof Field Assembly Connector - OptiTap Series |  |  |
|---|--|--|
| Picture   |  |  |
| Part No.  | NTOPT250   | NTOPT300   |
| Configuration   | 1FO  | 1FO  |
| Application   | 2.0 x 3.0 / 2.0 x 5.0mm Flat Drop Cable  | 3.0mm Round Drop Cable   |
| Connect Adapter   | NTCN28 OptiTap Reinforced  |  |
| Note: Please contact us for more details on specification         |  |  |




| Outdoor FTTX Waterproof Field Assembly Connector - ZTE Series |   |   |
|---|---|---|
| Picture   |  |  |
| Part No.  | NTZTE250  | NTZTE300  |
| Configuration   | 1FO   | 1FO   |
| Application   | 2.0 x 3.0 / 2.0 x 5.0mm Flat Drop Cable   | 3.0mm Round Drop Cable  |
| Connect Adapter   | NTZTE30 OptiTap Reinforced  |   |
| Note: Please contact us for more details on specification     |   |   |






Elevate your fiber optic connectivity




| FastNet System Universal Hardened FastConnect SC Precon Single Connector |   |  |   |
|--|---|--|---|
| Picture  |  |  |  |
| Part No.   | NTHW82  |  |   |
| Configuration  | 1FO   | 1FO  | 1FO   |
| Application  | 5.0mm Round Cable   | 3.0mm Round Cable  | 2.0 x 5.0mm Drop Cable  |
| Connect Adapter  | NTFA9012 FastConnect Reinforced   |  |   |
| Note: Please contact us for more details on specification                |   |  |   |





| FastNet System NEATEL Hardened FastConnect SC Precon Single Connector |   |  |   |
|---|---|--|---|
| Picture   |  |  |  |
| Part No.  | NTHW820   |  |   |
| Configuration   | 1FO   | 1FO  | 1FO   |
| Application   | 5.0mm Round Cable   | 3.0mm Round Cable  | 2.0 x 5.0mm Drop Cable  |
| Connect Adapter   | NTFA9012 FastConnect Reinforced   |  |   |
| Note: Please contact us for more details on specification             |   |  |   |

| FastNet System Universal Hardened OptiTap SC Precon Single Connector |   |  |   |
|--|---|--|---|
| Picture  |  |  |  |
| Part No.   | NTOPT28   |  |   |
| Configuration  | 1FO   | 1FO  | 1FO   |
| Application  | 5.0mm Round Cable   | 3.0mm Round Cable  | 2.0 x 5.0mm Drop Cable  |
| Connect Adapter  | NTCN28 OptiTap Reinforced   |  |   |
| Note: Please contact us for more details on specification            |   |  |   |

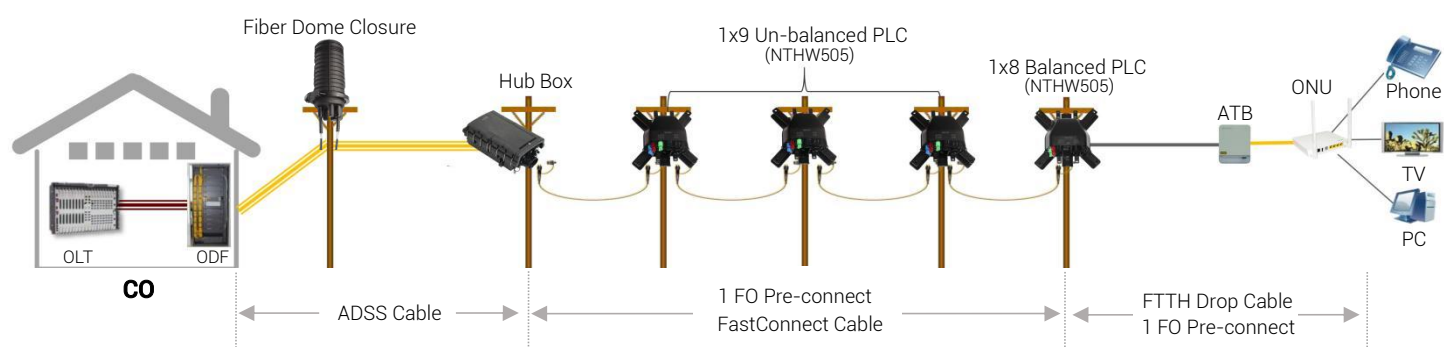
| FastNet System NEATEL Hardened OptiTap SC Precon Single Connector |   |  |   |
|---|---|--|---|
| Picture   |  |  |  |
| Part No.  | NTOPT280  |  |   |
| Configuration   | 1FO   | 1FO  | 1FO   |
| Application   | 5.0mm Round Cable   | 3.0mm Round Cable  | 2.0 x 5.0mm Drop Cable  |
| Connect Adapter   | NTCN28 OptiTap Reinforced   |  |   |
| Note: Please contact us for more details on specification         |   |  |   |

Elevate your fiber optic connectivity

| NEATEL  | NEATEL FastNet System   |  |   |
|---|---|--|---|
|   | OptiTap/FastConnect/Slim  | OptiTap/FastConnect/Slim   | OptiTap/FastConnect/Slim  |
| <b>Fiber Terminated Access Boxes</b>                      |  |  |  |
| <b>Part No.</b>   | NTFTB-10F-1   | NTFTB-16F-1  | NTHW505   |
| <b>Application</b>  | FTTH, FTTA, Trunk, Cable Connecting   |  |   |
| <b>Capacity Ports</b>                                     | 10  | 16   | 10  |
| <b>Installation Options</b>                               | Strand Mounting, Aerial Mounting, Pole Mounting, Wall Mounting                    |  |   |
| <b>Cable Type</b>   | Round and Flat Drop Cable   |  |   |
| <b>Connector Type</b>                                     | OptiTap / FastConnect / Slim  |  |   |
| <b>Accommodate Splitters</b>                              | 1 x 8, 1 x 9, 1 x 17  |  |   |
| <b>Color</b>  | Black and White   |  |   |
| <b>Preconnectorized</b>                                   | Yes, for terminals and drops  | Yes, for terminals and drops   | Yes, for subscriber drops   |
| <b>Harden Adapter Type</b>                                | OptiTap / Slim / FastConnect  |  |   |
| <b>Compatible for</b>                                     | Corning / Furrakawa / Huawei  |  |   |
| <b>Waterproof</b>   | IP65  | IP65   | IP68  |
| Note: Please contact us for more details on specification |   |  |   |

| NEATEL  | Outdoor Harden Optical Adapter  |   |  |   |
|---|---|---|--|---|
|   | OptiTap   | Slim  | FastConnect  | Fiber Home  |
| <b>Products</b>   |  |  |  |  |
| <b>Part No.</b>   | NTCN28  | NTFA09  | NTFA9012   | NTFA9070  |
| Note: Please contact us for more details on specification |   |   |  |   |

## NEATEL Pre-connectorized based ODN Network Construction





Elevate your fiber optic connectivity

## EL Salvador builds 150,000 ports with NEATEL FastNet System solution

### ■ EL Salvador, Honduras, Guatemala Goals

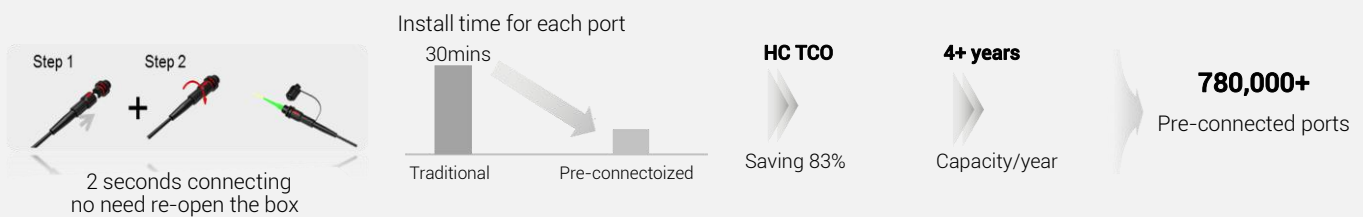
- Be the potential marketing in South America for FTTx deployment.
- FTTx cost < \$350/household.
- Over 200 thousand home users per year.

### ■ NEATEL FastNet System Solution

- Ariel, Pole and Wall Mounted FAT.
- Pre-connected drop cables, plug and play.



### ■ Advantages



Elevate your fiber optic connectivity

FTTH GPON

***Aerial Solution With  
NEATEL Splitter Plug and  
Play***





Elevate your fiber optic connectivity

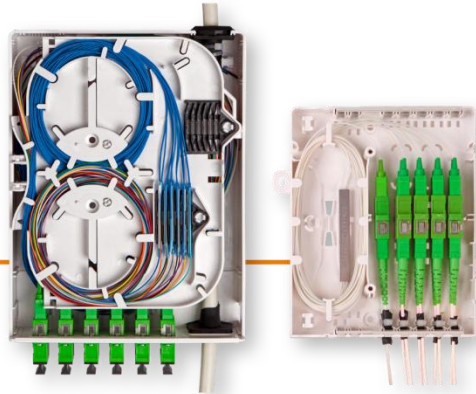
### **FTTH GPON Spliceless Solution**

FTTH indoor solution for GPON offers a way to quickly and easily build an optical infrastructure in buildings of varying sizes. The primary cable is spliced into the main distribution box, where it is terminated or passes through.



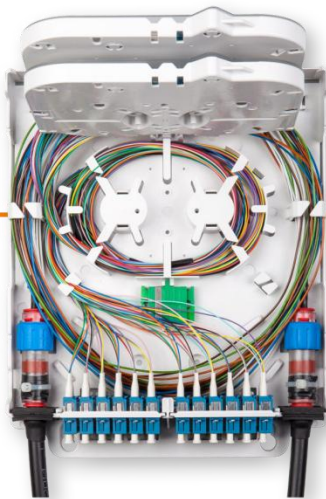
**Access Terminal Box**

1/2 FO Configuration



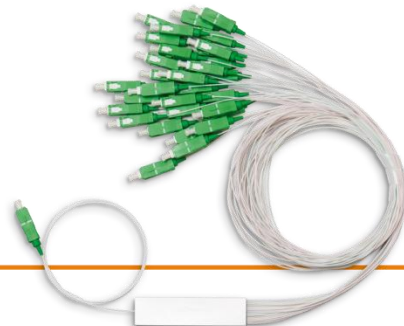
**Optical Distribution Box**

8/16FO Splicing Configuration



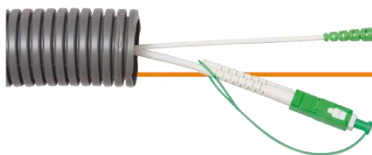
**Fiber Distribution Box**

12/24FO Splice with PG11



**Optical PLC Splitter**

1xN and 2xN Splitting

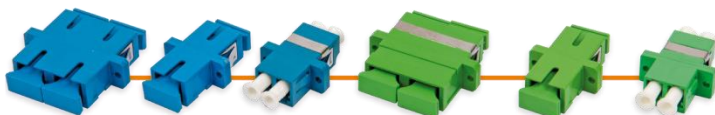
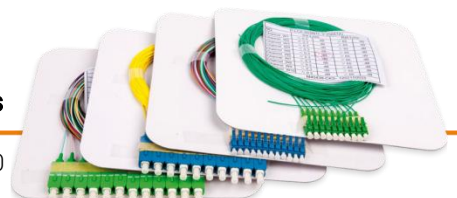


**Patch Cables**

SM & MM

**12 Colored Bundle Pigtails**

LC/SC/ST/FC/E2000



**Optical Universal Adapters**

LC/SC/ST/E2000/MPO

From a single fiber to millions of

# Fiber Optic Users Worldwide



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