

# Introduction to Fiber Cable Assemblies

## *FiberDeep® and Cable Assemblies*

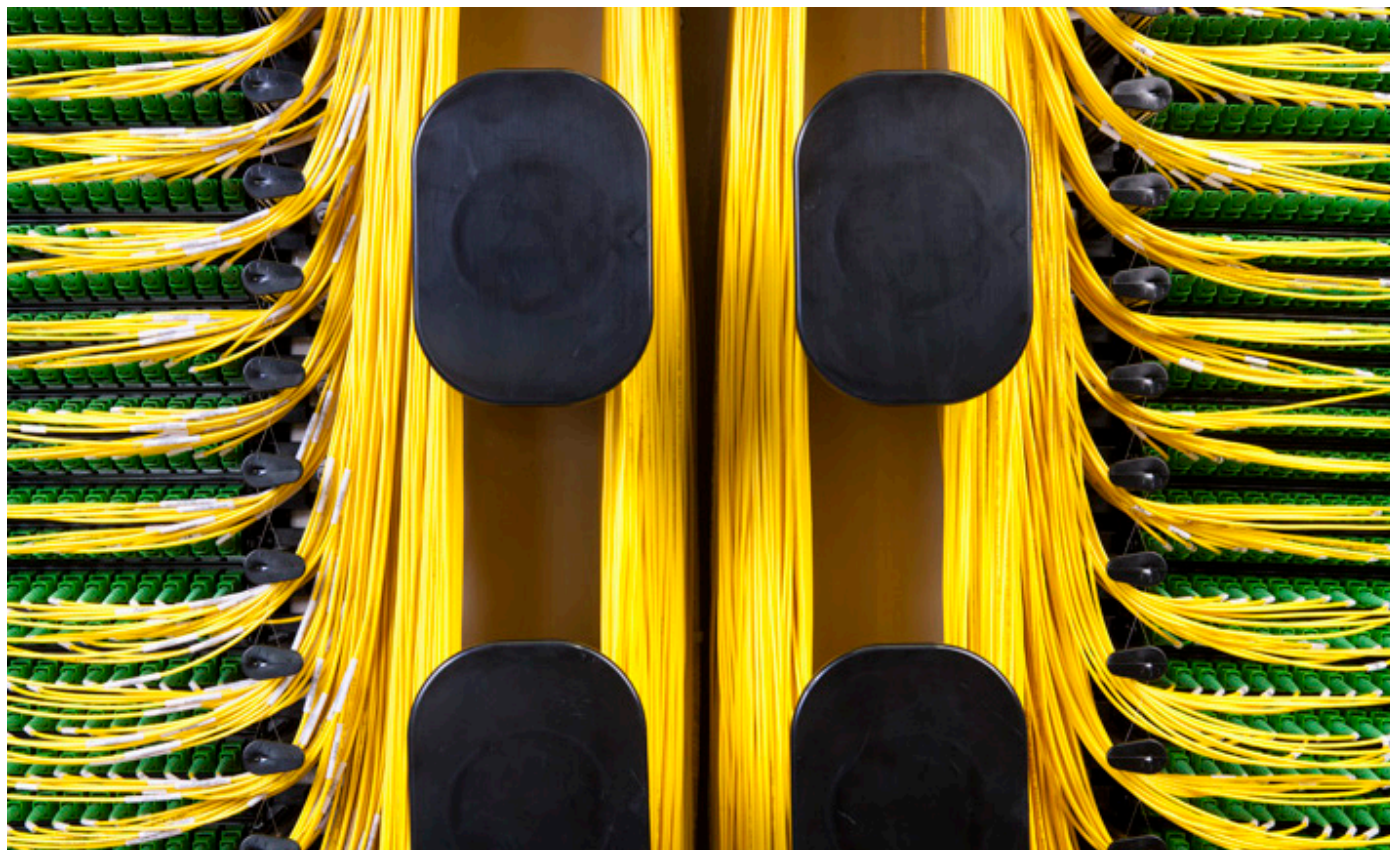


Combining 40+ years of experience from its founding members, Clearfield® designs and manufactures fiber optic cable assemblies for virtually any application. Our connectivity expertise, coupled with a personalized approach, gives our customers a level of service and quality that outperforms all other manufactures.

FiberDeep®, a guaranteed 0.2 dB loss, half that of the industry standard, is available on every singlemode simplex and duplex fiber optic patch cord and ribbon fan-outs deployed within the Clearview® Cassette. Our FiberDeep cable assemblies improve your fiber network's performance while reducing the cost of deployment. No matter what kind of traffic your network carries, the success of your business comes down to the quality of your cable plant.

Simply the best patch cords around, Clearfield offers cable assemblies in custom and standard lengths, ranging from simple multimode and singlemode patch cords, to some of the most complex assemblies for inside and outside plant environments, including distribution cable, OSP breakout-style, drop cable and drop node assemblies. Automated polishing processes ensure precise control of polish radius, apex offset and fiber undercut. Our process engineers have perfected termination techniques for all types of specialty cable designs, including ribbon fiber, high-fiber counts and ruggedized cables. We support all industry standard connector types, including the industry's latest hardened fiber optic connectors (HFOC).

Clearfield cable assemblies are used in the most demanding environments, from global manufacturing to emerging communications. Clearfield fiber optic cable assemblies exceed industry standards for insertion loss and return loss performance. Our controlled design processes pay strict attention to cable prep, termination and epoxy curing along with tight end-face geometries. Our cleanliness is second to none. We can design and manufacture fiber optic cable assemblies for almost any application, meeting your requirements for cost, performance, reliability and rapid delivery.



Patch Cords



Assemblies

***Inspect and clean EVERY connector BEFORE inserting into adapter. See page 161 for Cleaning Kits.***

# Fiber Cable Assemblies

## Indoor Fiber Jumper Cables

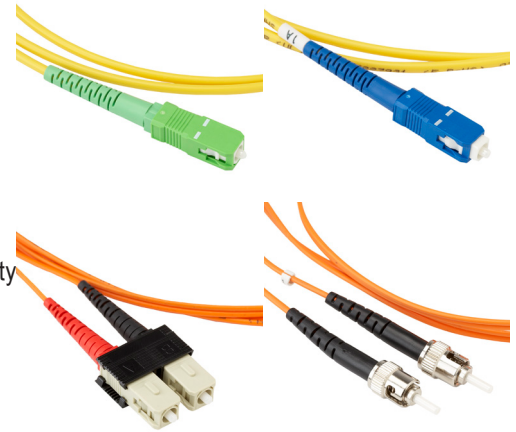


### Application

A fiber jumper, sometimes called a fiber patch cord, is a length of fiber cabling fitted with connectors at each end. They are used to connect end devices or network hardware.

### Description

Clearfield® offers singlemode and multimode, simplex and duplex Indoor Fiber Jumper Cables manufactured to tight internal specifications that exceed industry-accepted standards. Fiber assemblies are used in a variety of carrier networks and private network environments. The key to manufacturing high-performance fiber assemblies is controlling polish radius, apex offset and fiber undercut. Clearfield monitors its automated polishing process to exceed industry specifications for insertion and return loss, ensuring a top-quality product.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode and multimode connectors
- Singlemode and multimode and hybrid cables available

#### Protection

- Each fiber is individually covered with an outer jacket for added protection
- Wide variety of jacket sizes for all applications, 3 mm, 2 mm, 1.6 mm, 1.2 mm, 900 µm
- Riser and Plenum rated jacket options available
- Available in simplex, dual-round and dual zip-cord configurations

#### Access

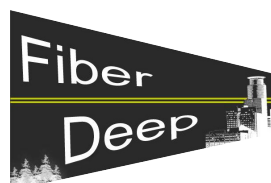
- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)

#### Investment

- Indoor Jumper Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

### Technical Specifications

Indoor Fiber Jumper Cables	
Core Size and Type	Singlemode and multimode
Fiber Count	Simplex (1-fiber) and duplex (2-fiber)
Jacket O.D.	900 µm, 1.6 mm, 2.0 mm, 3.0 mm
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)



# Fiber Cable Assemblies

## Indoor Fiber Jumper Cables



### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

### Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

## Configured Part Numbers

P  -  -  -  -  -  -  -  -  -  XXXM or XXXF

1  2  3  4  5  6  7  8  9

**1** Select Cable Construction

A = Indoor, riser rated  
 C = Indoor, plenum  
 F = 900 μm tight buffer

**4** Select Connector # 2

A = SC/UPC      G = LC/APC  
 B = SC/UPC DX      H = LC/APC DX  
 C = SC/APC      J = FC/UPC  
 D = SC/APC DX      K = FC/APC  
 E = LC/UPC      M = ST/UPC  
 F = LC/UPC DX

**7** Select Connector # 1

A = SC/UPC      H = LC/APC DX  
 B = SC/UPC DX      G = LC/APC  
 C = SC/APC      J = FC/UPC  
 D = SC/APC DX      K = FC/APC  
 E = LC /UPC      M = ST/UPC  
 F = LC/UPC DX      Z = Pigtail

**2** Select Mode / Type

1 = Singlemode  
 3 = Multimode (62.5)  
 5 = Multimode (50) – non-ribbon  
 7 = Multimode (50) laser opt– non-ribbon OM  
 9 = Multimode (50) OM4

**5** Select Boot

Y = Short  
 Z = Standard

**8** Select Boot

Y = Short  
 Z = Standard

**3** Select Fiber Count

001 = Simplex  
 002 = Duplex

**6** Select Jacket Size

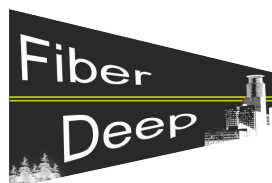
A = 900 μm      D = 3 mm  
 B = 2 mm      E = 1.6 mm

**9** Select Jacket Size

A = 900 μm      D = 3 mm  
 B = 2 mm      E = 1.6 mm  
 (must match the # 6 option)

XXXM or XXXF

XXXM = Length in meters  
 XXXF = Length in feet



# Fiber Cable Assemblies

## Indoor Bend-Insensitive Fiber Jumper Cables



### Application

A fiber jumper, sometimes called a fiber patch cord, is a length of fiber cabling fitted with connectors at each end. They are used to connect end devices or network hardware.

### Description

Indoor Bend-Insensitive Fiber Jumper Cables are used in a variety of carrier networks and private network environments. The key to manufacturing high-performance fiber assemblies is controlling polish radius, apex offset and fiber undercut. Clearfield® monitors its automated polishing process to exceed industry specifications for insertion and return loss, ensuring a top-quality product.

### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode connectors
- Singlemode G.657.A1 and A2 bend-insensitive glass fiber

#### Protection

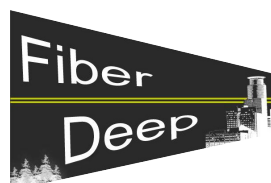
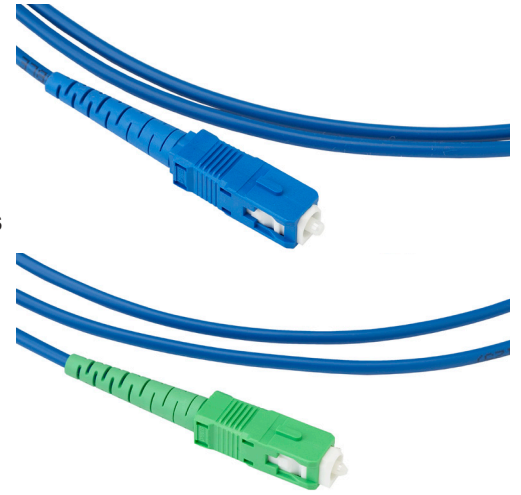
- Riser and Plenum rated bend-insensitive jacket options available
- Available in simplex, dual-round and dual zip-cord configurations

#### Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)

#### Investment

- Indoor Bend-Insensitive Fiber Jumper Cables offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested



# Fiber Cable Assemblies

## Indoor Bend-Insensitive Fiber Jumper Cables



### Technical Specifications

Indoor Bend-Insensitive Fiber Jumper Cables	
Core Size and Type	Singlemode (G.657.A1 and G.657.A2)
Fiber Count	Simplex (1-fiber) and duplex (2-fiber)
Jacket O.D.	2.0 mm
Cable Types	Indoor Riser
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

### Configured Part Numbers

P A A - - - - - XXXM or XXXF

1 2 3 4 5 6 7

**1** Select Fiber Count

001 = Simplex  
002 = Duplex

**3** Select Boot Length

Y = Short boot  
Z = Standard boot

**6** Select Boot Length

Y = Short boot  
Z = Standard boot or pigtail

**2** Select Connector # 1

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC

**4** Select Jacket Size

B = 2 mm

**7** Select Jacket Size\*

B = 2 mm

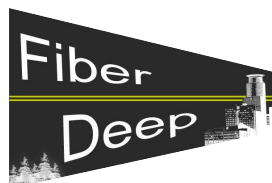
**5** Select Connector # 2

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC      Z = Pigtail

**XXXM or XXXF**

XXXM = Length in meters  
XXXF = Length in feet

\* must match the # 4 option



# Fiber Cable Assemblies

## Indoor Traceable Fiber Jumper Cables



### Application

The Indoor Traceable Fiber Jumper Cable is an effective solution for eliminating interconnect errors in dense interconnect environments. The traceable light identification will eliminate accidentally unplugging or moving the wrong jumper. Whether it is coming from the back of the equipment rack to the front or from one cross-connect panel to another, the Traceable Jumper Cable uses a positive light indication to quickly identify the opposite end of the assembly. The added value of eliminating the outages, due to incorrectly identifying jumpers and the time saved being able to quickly find the correct jumper, is important in today's demanding market.

### Description

The traceability of the jumper gives a value-add functionality for simple fiber patch cord jumpers. Having the ability to trace the other end of the assembly with an easy to find highly visible red LED eliminates the chance of accidentally unplugging or moving the wrong jumper. This is a must in high density environments like central offices, CATV head ends, and cellular sites, anywhere cable congestion can create a challenge when identifying and tracing patch cords.



### Features and Benefits

#### Integrity

- Terminations are designed to Telcordia GR-326
- Insertion loss and back reflection meets or exceeds industry standards
- Supports industry standard Singlemode and Multimode connectors
- Available for Singlemode and Multimode Simplex and Duplex Cables

#### Protection

- Each fiber is individually covered with an outer jacket for added protection
- Wide variety of jacket sizes for all applications: 3 mm, 2 mm
- Riser and plenum rated jacket options available
- Individually packaged and labeled

#### Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include SC/UPC, SC/APC, LC/UPC, LC/APC
- High intensity red LED light source used for identification

#### Investment

- Offers a sound solution for reducing unexpected outages due to human error and reduces labor costs by quickly identifying the correct assembly right away the first time
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are tested 100%

# Fiber Cable Assemblies

## Indoor Traceable Fiber Jumper Cables



### Technical Specifications

Indoor Traceable Fiber Jumper Cables	
Core Size	Singlemode, Multimode
Fiber Count	Simplex (1-fiber) and Duplex (2-fiber)
Jacket Outer Diameter	2.0 mm, 3.0 mm
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC
Operating Temperature	-20°C to 70°C (-4°F to 158°F)

### Minimum Performance Specifications for Terminated Singlemode Traceable Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
SC	Ceramic	UPC	0.20 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.20 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Minimum Performance Specifications for Terminated Multimode Traceable Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
SC	Ceramic	UPC	0.25 dB	0.50 dB
LC	Ceramic	UPC	0.25 dB	0.50 dB

### Configured Part Numbers

P 2 \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Z \_\_\_\_\_ - \_\_\_\_\_ Z \_\_\_\_\_ XXXM, XXXF or XXXI

1      2      3      4      5      6

**1** Select Mode and Type

1 = Singlemode  
A = BI Singlemode  
3 = 62.5 μm OM1  
5 = 50 μm LO OM2  
7 = 50 μm LO OM3  
9 = 50 μm OM4

**2** Select Fiber Count

001 = 1  
002 = 2

**3** Select Connector #1

A = SC/UPC      E = LC/UPC  
B = SC/UPC DX      F = LC/UPC DX  
C = SC/APC      G = LC/APC  
D = SC/APC DX      H = LC/APC DX

**4** Select Upjacketing

B = 2 mm  
D = 3 mm

**5** Select Connector #2

A = SC/UPC      E = LC/UPC  
B = SC/UPC DX      F = LC/UPC DX  
C = SC/APC      G = LC/APC  
D = SC/APC DX      H = LC/APC DX

**6** Select Upjacketing

B = 2 mm  
D = 3 mm

XXXM, XXXF or XXXI

XXXM = Length in meters  
XXXF = Length in feet  
XXXI = Length in inches

A TRACE-LITE-01 power source is required to power the LED traceable lights. Power source can be used for all Traceable jumpers. Power source is sold separately.

### Pre-Configured Part Numbers

Part Number	Description
TRACE-LITE-01	Power lite source with extension cord for traceable fiber patchcords

# Fiber Cable Assemblies

## Outdoor Ruggedized Fiber Jumper Cables



### Application

These jumpers are ideal when splicing FTTH drops in the ONT/NID. Indoor cordage stiffens and retains cable memory in cold weather. These jumpers remain flexible even in extreme conditions. These assemblies use bend-insensitive fiber to help eliminate bend-radius issues inside the NID. These patch cords also work well in outside plant cross-connect cabinets.

### Description

Clearfield® Outdoor Ruggedized Fiber Jumper Cables can be ordered in any industry standard connector type. Any length in feet or meters is available.

### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode connectors
- Singlemode bend-insensitive ITU standard G.657.A glass fiber

#### Protection

- Uses Ruggedized OSP rated 2 mm black jacketed cable
- Patch cords remain flexible and durable in extreme temperatures of -55°C to 85°C (-67°F to 185°F)

#### Access

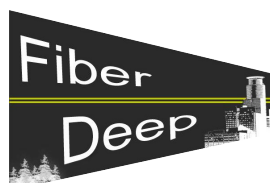
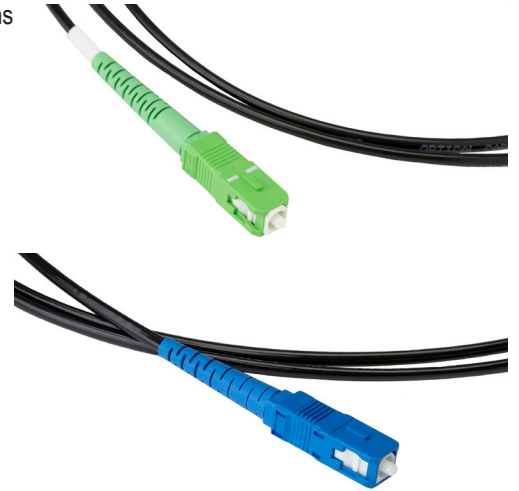
- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other available connectors)

#### Investment

- Outdoor Ruggedized Fiber Jumper Cables offer an economical solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

### Recommendation

Clearfield recommends the use of Ruggedized Outside Plant Jumpers when splicing in the NID or ONT. We also suggest two meter jumpers for use in FieldSmart® cabinet applications. Clearfield stocks common length SC/APC Ruggedized Jumpers for customer convenience. For non-standard lengths, lead times will apply.





# Fiber Cable Assemblies

## Outdoor Ruggedized Fiber Jumper Cables



### Technical Specifications

Outdoor Ruggedized Fiber Jumper Cables	
Core Size and Type	Singlemode (G.657.A1)
Fiber Count	Simplex (1-fiber)
Jacket O.D.	2.0 mm
Cable Types	Outdoor - Ruggedized Polyurethane
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

### Configured Part Numbers

P E A - 0 0 1 - 1 Z 2 - 3 Z 4 XXXM or XXXF

**1** Select Connector # 1

A = SC/UPC      J = FC/UPC  
 C = SC/APC      K = FC/APC  
 E = LC/UPC      M = ST/UPC  
 G = LC/APC

**2** Select Jacket Size \*

B = 2 mm

**3** Select Connector # 2

A = SC/UPC      J = FC/UPC  
 C = SC/APC      K = FC/APC  
 E = LC/UPC      M = ST/UPC  
 G = LC/APC      Z = Pigtail

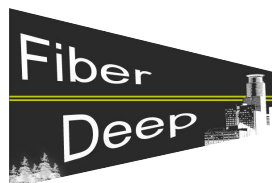
**4** Select Jacket Size \*

B = 2 mm  
 Z = Pigtail

XXXM or XXXF

XXXM = Length in meters  
 XXXF = Length in feet

\* Options 2 and 4 must be the same unless the assembly is a pigtail.  
 NOTE: OSP, ruggedized patchcords and pigtails come standard with bend insensitive fiber.



# Fiber Cable Assemblies

## Indoor-Outdoor Bend-Insensitive Fiber Jumper Cables



### Application

A fiber jumper, sometimes called a fiber patch cord, is a length of fiber cabling fitted with connectors at each end. They are used to connect end devices or network hardware.

### Description

Indoor-Outdoor Bend-Insensitive Fiber Jumper Cables are used in a variety of carrier networks and private network environments. The key to manufacturing high-performance fiber assemblies is using high quality connector components and controlling the termination and polishing process. Clearfield® monitors its automated polishing process to exceed industry specifications for insertion and return loss, ensuring a top-quality product.

### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Clearfield® FiberDeep® Guarantee: 0.2 dB insertion loss or less, exceeding industry standards
- Supports industry standard singlemode connectors
- Singlemode G.657B bend-insensitive glass fiber

#### Protection

- Indoor-Outdoor rated bend-insensitive jacket options available
- Available in simplex 3mm and 4.8mm jacket

#### Access

- Compact jacket design minimizes cable pile up
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)

#### Investment

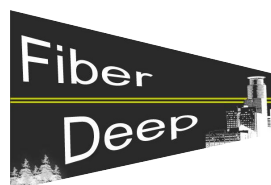
- Indoor Bend-Insensitive Fiber Jumper Cables offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested



3mm



4.8mm



# Fiber Cable Assemblies

## Indoor-Outdoor Bend-Insensitive Fiber Jumper Cables



### Technical Specifications

Indoor-Outdoor Bend-Insensitive Fiber Jumper Cables	
Core Size and Type	Singlemode G.657.B
Fiber Count	Simplex Fiber Only
Jacket O.D.	3mm, 4.8mm
Cable Types	Indoor/Outdoor Riser
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.20 dB	55.00 dB
SC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.20 dB	65.00 dB

### Pre-Configured Part Numbers

Part Number	Description
PX1-001-CZD-CZD-11 XXXX	Patchcord, Indoor/Outdoor Fiber, SC/APC to SC/APC, Standard Boots, Simplex SM Riser Rated Bend Insensitive 3MM White Jacket
PX1-001-AZD-AZD-04 XXXX	Patchcord, Indoor/Outdoor Fiber, SC/UPC to SC/UPC, Standard Boots, Simplex SM Riser Rated Bend Insensitive 3MM Black Jacket
PEA-001-AZX-CZX-01 XXXX	Patchcord, Indoor/Outdoor Fiber, SC/UPC to SC/APC, Standard Boots, Simplex SM Bend Insensitive OSP Rated 4.8MM White Jacket
PEA-001-AZX-AZX-02 XXXX	Patchcord, Indoor/Outdoor Fiber, SC/UPC to SC/UPC, Standard Boots, Simplex SM Bend Insensitive OSP Rated 4.8MM Black Jacket

# Fiber Cable Assemblies

## MPO Assemblies



### Application

MPO Assemblies are multi-fiber cables terminated into multi-fiber connectors. These cables can be used in indoor or outdoor applications. MPO terminations offer great plug-and-play solutions. Using MPO multi-fiber assemblies can eliminate termination and splicing in the field, which in turn reduces the expense of deployment. MPO assemblies offer a very high density solution that reduces your network's overall footprint, which is especially beneficial in central office, headend and data center locations.

### Description

Clearfield® offers singlemode and multimode MPO fiber assemblies that are manufactured to tight specifications that exceed industry standards. MPO Assemblies are used in a variety of carrier networks, private networks and data center environments. Clearfield's manufacturing process and quality control ensures a top-quality product for insertion loss and return loss.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to meet TIA/EIA and IEC intermateability standards
- Supports Singlemode and Multimode cables and connectors
- 4, 8, 12 and 24 fiber terminations available (custom configurations available)
- Assemblies terminated MPO to MPO, MPO to non-terminated stub and MPO to multi-fiber breakout terminated with industry standard SC, LC, FC and ST
- RoHS compliant

#### Protection

- Using outdoor and indoor plenum and riser rated fiber cables MPO assemblies can be installed just about anywhere
- MPO connectors can be terminated directly to bare fiber ribbon, loose-tube and up-jacketed cable
- Pulling-eye kits available to protect the terminated ends and will reduce deployment time and cost

#### Access

- Compact multi-fiber connectors reduce cabinet and panel size
- Factory terminated MPO assemblies eliminate the need for termination and splicing in the field
- Custom fiber pin-out configurations available upon request

#### Investment

- MPO Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

# Fiber Cable Assemblies

## MPO Assemblies



### Technical Specifications

MPO Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	4, 6, 8, 12 and 24-fiber MPO terminations on multi-fiber cables
Jacket O.D.	Bare ribbon, flat and round jacketed ribbon or loose tube
Cable Types	Indoor (Riser/Plenum), Outdoor (Riser/Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO (male and female)
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

### Minimum Performance Specifications for Terminated MPO Connectors

Fiber	Connector Type	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
Singlemode	MPO 12 Fiber	Angled	0.25 dB	0.35 dB	55.00 dB
Singlemode	MPO 24 Fiber	Angled	0.75 dB	1.00 dB	55.00 dB
Multimode	MPO 12 Fiber	Flat	0.40 dB	0.50 dB	25.00 dB
Multimode	MPO 24 Fiber	Flat	0.75 dB	1.00 dB	25.00 dB

### Configured Part Numbers

D \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Z - \_\_\_\_\_ XXXM or XXXF

**1** Select Jacket Construction

A = Indoor, riser rated (IFC)  
C = Indoor, plenum (IFC)

**4** Select Connector #1

5 = MPO male  
6 = MPO female  
N = Pushable MPO male  
P = Pushable MPO female

**7** Select Breakout #2

B = 1 meter  
C = 0.5 meter  
Z = None

**2** Select Mode / Type

1 = Singlemode  
A = Singlemode – bend insensitive  
3 = Multimode (62.5 μm)  
5 = Multimode (50 μm)  
7 = Multimode (50 μm) laser opt.  
9 = Multimode (50 μm) OM4

**5** Select Breakout #1

C = 0.5 meters  
Z = None

**8** Select Upjacketing #2

A = 900 μm  
B = 2 mm  
Z = Pigtail

**3** Select Fiber Count

004 = 4                      006 = 6  
008 = 8                      012 = 12  
024 = 24

**6** Select Connector #2

5 = MPO male                      6 = MPO female  
A = SC/UPC                      C = SC/APC  
E = LC/UPC                      G = LC/APC  
J = FC/UPC                      K = FC/APC  
M = ST/UPC                      N = Pushable MPO male  
P = Pushable MPO female      Z = Pigtail

**XXXXM or XXXF**

XXXXM = Length in meters  
XXXXF = Length in feet

# Fiber Cable Assemblies

## Outside Plant Fiber Assemblies

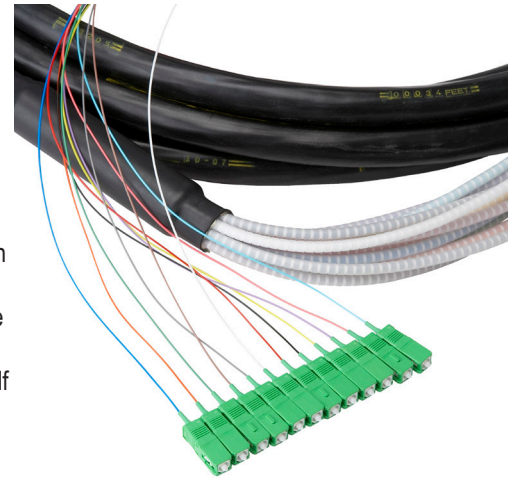


### Application

Clearfield® Outside Plant Fiber Assemblies are used in a variety of applications including DLC cabinets, PON cabinets, cross-connect cabinets and fiber termination panels. Standard OSP cable is used and the terminated end of the assembly is up-jacketed with either 900 µm or 2 mm tubing. The assembly is then terminated with the required connectors. Fiber counts can be from 2 to 288 fibers.

### Description

Clearfield OSP Fiber Assemblies are designed to perform flawlessly in even the most harsh environments. Our process and design directly addresses failure prone areas such as the transition (where the fiber is broken out into individual units) and at the termination. We use a patented process in the fiber transition that not only protects the fiber but also ensures that no lateral movement occurs due to temperature variations. Standard breakouts are half meter and one meter. Clearfield can also do custom breakouts to meet your unique panel needs.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Specialty cable designs available including ribbon fiber, loose-tube and ADSS (All-Dielectric Self-Supporting)
- Supports industry standard singlemode and multimode fiber

#### Protection

- Rugged cable design protects against harsh outdoor environment
- Wide variety of up-jacket sizes for all applications, ruggedized 3 mm, 2 mm, 1.6 mm and 900 µm
- Loose tube available in a gel-filled design for full water-block or gel-free
- All dielectric design (except armored cable)
- Pulling-eye available to ease installation and for added protection

#### Access

- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other connector availability)
- Versatile cable designs well suited for in-conduit, lashed aerial and direct buried applications
- Fiber counts from two to 288 in loose tube or ribbon cables (higher fiber counts available)

#### Investment

- Outside Plant Fiber Assemblies offer a rugged solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

### Recommendation

When designing a patch cord (double-ended assembly) that will be pulled through conduit a pulling eye may be a good solution. Any assembly with 24 fibers or less can be fitted with a pulling eye.

### Technical Specifications

Outside Plant Fiber Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 288-fiber
Jacket O.D.	900 µm, 2.0 mm (48-fiber max)
Cable Types	Outdoor (Riser/Non-Rated), Outdoor Armored (Riser/Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

# Fiber Cable Assemblies

## Outside Plant Fiber Assemblies



### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

## Configured Part Numbers

0 \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ XXXM or XXXF

1 2 3 4 5 6 7 8 9

**1 Select Cable Construction**

B = OSP, riser rated  
E = OSP, non-rated  
M = OSP, armored, non-rated

**2 Select Mode / Type**

1 = Singlemode, loose tube  
2 = Singlemode, ribbon  
3 = Multimode (62.5) loose tube  
4 = Multimode (62.5) ribbon  
5 = Multimode (50 μm) loose tube  
6 = Multimode (50 μm) ribbon  
7 = Multimode (50 μm LO) loose tube  
8 = Multimode (50 μm LO) ribbon

**3 Select Fiber Count \***

XX X = port count in increments of 12

\* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable (i.e. – A 60-fiber assembly may be built using a 72-count fiber where the 1<sup>st</sup> 60 fiber will be terminated and the final 12 fibers will be cut off at the breakout point.

**4 Select Connector # 1**

A = SC/UPC      K = FC/APC  
C = SC/APC      M = ST/UPC  
E = LC/UPC      5 = MPO male  
G = LC/APC      6 = MPO female  
J = FC/UPC

**5 Select Breakout # 1**

B = 1 meter  
C = 0.5 meter

**6 Select Upjacketing # 1**

A = 900 μm  
B = 2 mm (only up to 24 fiber)

**7 Select Connector # 2**

A = SC/UPC      K = FC/APC  
C = SC/APC      M = ST/UPC  
E = LC/UPC      5 = MPO male  
G = LC/APC      6 = MPO female  
J = FC/UPC      Z = Pigtail

**8 Select Breakout # 2**

B = 1 meter  
C = 0.5 meter  
Z = Pigtail

**9 Select Upjacketing # 2**

A = 900 μm  
B = 2 mm (only up to 48 fiber)  
Z = Pigtail

**XXXM or XXXF**

XXXM = Length in meters  
XXXF = Length in feet

# Fiber Cable Assemblies

## Distribution Assemblies

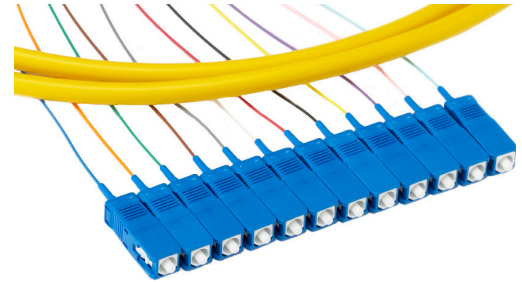


### Application

Distribution assemblies are used for applications inside buildings and central offices. These cables utilize a 900  $\mu\text{m}$  tight buffer jacket and are available in plenum and riser versions.

### Description

Clearfield® Distribution Assemblies are used where multi-fiber tight buffered constructions are required for density. These assemblies combine the bandwidth capacity of individual cable assemblies in one easy-to-use assembly, and can be used in OSP patch and splice (Clearfield's in-cassette splicing solution) applications.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports Industry standard singlemode and multimode connectors
- Singlemode and multimode and hybrid cables available

#### Protection

- Each fiber is individually jacketed then covered with an outer jacket for added protection
- All fibers are color coded using industry fiber color code
- Pulling-eye kits available to speed installation

#### Access

- Compact jacket design keeps cable pile up minimal
- Industry standard terminations include ST, SC, FC, LC (Ask a Clearfield representative for other connector availability)

#### Investment

- Distribution Assemblies offer an economical solution for deploying fiber in any optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

### Technical Specifications

Distribution Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 144-fiber
Jacket O.D.	900 $\mu\text{m}$
Cable Types	Indoor Riser, Indoor Plenum
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC, MPO
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom



# Fiber Cable Assemblies

## Distribution Assemblies



### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

## Configured Part Numbers

D  -  -  A -  A XXXM or XXXF

**1** Select Cable Construction

A = Indoor, riser rated  
C = Indoor, plenum rated

**2** Select Mode/Type

1 = Singlemode, tight buffer  
2 = Singlemode, ribbon  
3 = Multimode (62.5), tight buffer  
5 = Multimode (50), tight buffer  
7 = Multimode (50) laser opt – tight buffer OM3

**3** Select Fiber Count \*

XXX = Fiber count

**4** Select Connector #1

A = SC/UPC      K = FC/APC  
C = SC/APC      M = ST/UPC  
E = LC/UPC      5 = MPO male  
G = LC/APC      6 = MPO female  
J = FC/UPC

**5** Select Breakout #1

B = 1 meter  
C = 0.5 meter

**6** Select Connector #2

A = SC/UPC      K = FC/APC  
C = SC/APC      M = ST/UPC  
E = LC/UPC      5 = MPO male  
G = LC/APC      6 = MPO female  
J = FC/UPC      Z = None

**7** Select Breakout # 2

B = 1 meter  
C = 0.5 meter  
P = Pulling eye \*\*  
Z = Pigtail

**XXXM or XXXF**

XXXM = Length in Meters  
XXXF = Length in Feet

\* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable. (i.e. – a 60-fiber assembly may be built using a 72-count fiber where the 1<sup>st</sup> 60 fibers will be terminated and the final 12 fibers will cut off at the breakout point).

\*\* Pulling eyes can be installed on fiber assemblies up to a 24-fiber count.

# Fiber Cable Assemblies

## Breakout Assemblies

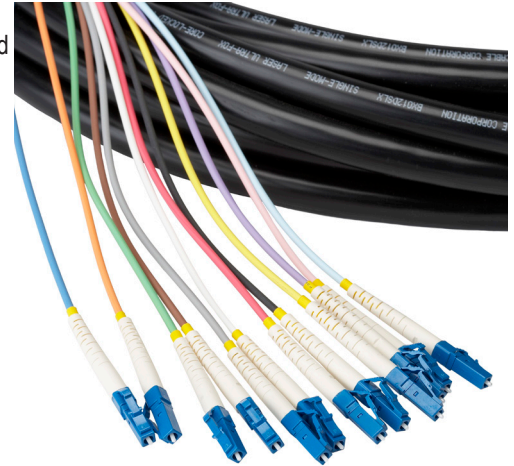


### Application

Breakout Assemblies are appropriate for low to mid-fiber count applications in demanding indoor and outdoor environments. Common uses include manufacturing areas, unprotected communication closets and small central offices.

### Description

Breakout style assemblies are easy to install and simple to terminate without the need for fan-out kits. The indoor/outdoor version of this cable is durable and OFNR rated. While it can be used indoors, it also has a -40°C to 85°C operating temperature range and the benefits of fungus, water and UV protection making it perfect for outdoor applications. The indoor/outdoor versions come standard with 2.5 mm sub units. The indoor only cable is standard with 2 mm sub units.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Specialty rugged cable designs
- Supports industry standard singlemode and multimode fiber

#### Protection

- Rugged cable design protects against harsh indoor and outdoor environments
- Wide variety of jacket sizes for all applications, ruggedized 3 mm, 2.5 mm and 2 mm
- Riser and Plenum and fire retardant rated cable jackets available
- Pulling-eye available to ease installation and for added protection

#### Access

- Industry standard terminations include ST, SC, FC, LC (Ask a Clearfield® representative for other available connectors)
- Versatile cable designs well suited for in-conduit, lashed aerial and direct buried applications
- Fiber counts from 2 to 48

#### Investment

- Breakout Fiber Assemblies offer a rugged solution for deploying fiber in any indoor/outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

### Recommendation

Consider using indoor/outdoor versions for use in DLC cabinets or outside plant electronic cabinets as a “tip” cable. The blunt end will be spliced in a splice vault and the other end will be plugged into the electronics inside the cabinet.

The 2 mm indoor version is ideal for use in cross-connect solutions. One end is loaded into the rear of a patch panel and the other end can be staggered to match any active gear blade.

### Technical Specifications

Breakout Assemblies	
Core Size and Type	Singlemode and multimode
Fiber Count	2-fiber to 48-fiber
Jacket O.D.	2.0 mm (indoor), 2.5 mm (indoor/outdoor)
Cable Types	Indoor Riser, Indoor/Outdoor (Riser)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

# Fiber Cable Assemblies

## Breakout Assemblies



### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Minimum Performance Specifications for Terminated Multimode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss
ST	Ceramic	PC	0.25 dB	≤ 0.50 dB
SC	Ceramic	PC	0.25 dB	≤ 0.50 dB
FC	Ceramic	PC	0.25 dB	≤ 0.50 dB
LC	Ceramic	PC	0.25 dB	≤ 0.50 dB

## Configured Part Numbers

B \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ XXXM or XXXF

1 2 3 4 5 6 7 8 9

**1** Select Cable Construction

A = Indoor, riser rated  
B = Outdoor, riser rated

**5** Select Breakout # 1

B = 1 meter  
C = 0.5 meter

**8** Select Breakout # 2

B = 1 meter  
C = 0.5 meter  
P = Pulling eye  
Z = Pigtail

**2** Select Mode / Type

1 = Singlemode  
3 = Multimode (62.5)  
5 = Multimode (50 μm)

**6** Select Upjacketing # 1

B = 2 mm  
C = 2.5 mm

**9** Select Upjacketing # 2

B = 2 mm  
C = 2.5 mm  
Z = Pigtail

**3** Select Fiber Count \*

X X X = port count in increments of 12  
Max = 48

**7** Select Connector # 2

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC      Z = Pigtail

XXXXM or XXXXF

XXXXM = Length in meters  
XXXXF = Length in feet

\* Some fiber counts including fiber quantities not divisible by 12 may be built with the next highest fiber count cable (i.e. – A 60-fiber assembly may be built using a 72-count fiber where the 1<sup>st</sup> 60 fiber will be terminated and the final 12 fibers will be cut off at the breakout point).

# Fiber Cable Assemblies

## Drop Node Assemblies

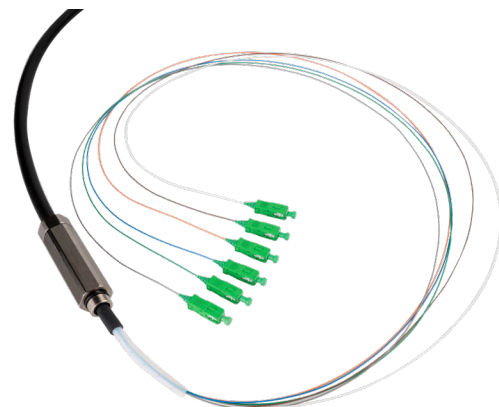


### Application

Drop Node Assemblies are designed to connect the optical distribution node to the optical drop cable in a CATV network.

### Description

Clearfield® ensures the quality of its Drop Node Assemblies by utilizing factory terminated connectors, a fully water-blocked entry connector, loose tube, gel-filled cable (on most assemblies) and a GR-326 compliant 900 µm fiber termination process. This provides exceptional performance and stability over a full range of outdoor temperatures and environmental conditions. The end-user gains complete control over drop access and reconfiguration.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Drop Node Assemblies make ease of installation into Optical Distribution Node (ODN)
- Supports industry standard singlemode fiber

#### Protection

- Rugged cable design protects against harsh outdoor environments
- Fibers up-jacketed using materials which can endure temperatures from -40°C to 200°C
- Cables using loose tube gel-filled OSP cable are sealed to eliminate water penetration
- Feed Through Fitting (FTF) strain relief guarantees that movement does not occur at the transition into the ODN
- Strain relief matches cable load rating

#### Access

- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield representative for other available connectors)
- Provides maximum cable management inside ODN using 900 µm or 2 mm up-jacket

#### Investment

- Drop Node Assemblies offer a rugged solution for deploying fiber in any outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

# Fiber Cable Assemblies

## Drop Node Assemblies



### Technical Specifications

Drop Node Assemblies	
Core Size and Type	Singlemode
Fiber Count	2-fiber, 4-fiber, 6-fiber (Riser) 4-fiber, 6-fiber, 8-fiber (Armored)
Jacket O.D.	900 μm, 2.0 mm
Cable Types	Outdoor (Riser), Outdoor Armored (Non-Rated)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, FC/UPC, FC/APC, ST/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, one meter, pulling eye, custom

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Configured Part Numbers

N \_\_\_\_\_ 1 - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ XXXM or XXXF

**1** Select Cable Construction

B = OSP, riser rated  
M = OSP, armored, (non-rated) gel filled

**4** Select Breakout # 1

B = 1 meter  
C = 0.5 meter

**7** Select Breakout # 2

B = 1 meter  
C = 0.5 meter  
Z = Pigtail

**2** Select Fiber Count \*

002 = 2 fiber      006 = 6 fiber  
004 = 4 fiber      008 = 8 fiber

**5** Select Upjacketing # 1

A = 900 μm  
B = 2 mm

**8** Select Upjacketing # 2

A = 900 μm  
B = 2 mm  
Z = Pigtail

**3** Select Connector # 1

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC

**6** Select Connector # 2

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC      Z = Pigtail

**XXXXM or XXXF**

XXXXM = Length in meters  
XXXF = Length in feet

# Fiber Cable Assemblies

## 90 Degree Drop Node Assemblies



### Application

The 90 Degree Drop Node Assembly provides a 90 degree pathway and fiber optical connection from a distribution node to the optical drop cable in a Cable TV network. It is ideal for space limited environments such as pedestals and below grade fiber node installations.

### Description

Clearfield® ensures the quality of its 90 Degree Drop Node Assemblies by utilizing factory-terminated connectors, a fully water-blocked entry connector, loose tube, gel-filled cable (on most assemblies) and a GR-326 complaint 900 µm fiber termination process. This provides exceptional performance and stability over a full range of outdoor temperatures and environmental conditions. The end-user gains complete control over drop access and reconfiguration.



### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- 90 Degree Drop Node Assemblies make ease of installation into Optical Distribution Node (ODN)
- Supports industry standard singlemode fiber

#### Protection

- Rugged cable design protects against harsh outdoor environments
- Fibers up-jacketed using materials which can endure temperatures from -40°C to 200°C
- Cables using loose tube gel-filled OSP cable are sealed to eliminate water penetration
- Feed Through Fitting (FTF) strain relief guarantees that movement does not occur at the transition into the ODN
- Strain relief matches cable load rating

#### Access

- Industry standard terminations include SC or LC (ask a Clearfield representative for other available connectors)
- Provides maximum cable management inside ODN using 900 µm or 2 mm up-jacket
- The 90 degree water-tight fitting allows for a better fit in close quarters

#### Investment

- 90 Degree Drop Node Assemblies offer a rugged solution for deploying fiber in any outdoor optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested

# Fiber Cable Assemblies

## 90 Degree Drop Node Assemblies



### Technical Specifications

90 Degree Drop Node Assemblies	
Core Size and Type	Singlemode ITU-T G.652 D
Fiber Count	6-fiber, 8-fiber, 12-fiber
Jacket OD	900 μm up-jacketed
Cable Types	Outdoor (Riser), Outdoor Armored (Non-Rated)
Connector Types	SC/APC, LC/UPC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	65.00 dB
SC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.15 dB	0.30 dB	65.00 dB

### Configured Part Numbers

N 1 - 2 - 3 4 5 6 7 8 XXXM or XXXF

**1** Select Cable Construction

B = OSP, riser rated  
M = OSP, armored, (non-rated) gel filled

**4** Select Breakout # 1

B = 1 meter  
C = 0.5 meter  
D = 90 degree 1 meter  
E = 90 degree 0.5 meter  
F = 90 degree 47 inch

**7** Select Breakout # 2

B = 1 meter  
C = 0.5 meter  
D = 90 degree 1 meter  
E = 90 degree 0.5 meter  
F = 90 degree 47 inch  
Z = Pigtail

**2** Select Fiber Count

002 = 2 fiber      006 = 6 fiber  
004 = 4 fiber      008 = 8 fiber

**5** Select Upjacketing # 1

A = 900 μm  
B = 2 mm

**8** Select Upjacketing # 2

A = 900 μm  
B = 2 mm  
Z = Pigtail

**3** Select Connector # 1

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC

**6** Select Connector # 2

A = SC/UPC      J = FC/UPC  
C = SC/APC      K = FC/APC  
E = LC/UPC      M = ST/UPC  
G = LC/APC      Z = Pigtail

**XXXXM or XXXF**

XXXXM = Length in meters  
XXXXF = Length in feet

# Fiber Cable Assemblies

## FTTH Drop Cable Assemblies



### Application

Our FTTH Drop Cable Assemblies are designed to connect the fiber access point (hand hole, pedestal or aerial) to the ONT on the home in a FTTH network.

### Description

Clearfield's proven ruggedized drop cable solutions include HFOC, ruggedized flat drop and ruggedized pigtail for splicing.

### Features and Benefits

#### Integrity

- Terminations are designed and tested to Telcordia GR-326
- Supports industry standard singlemode connectors
- Singlemode and multimode cable available

#### Protection

- Uses ruggedized OSP rated flat drop cable
- Single loose-tube is gel-filled for ultimate water blocking protection
- FLATdrop peel-and-play cable allows for the outer jacket to be stripped back to expose the more flexible 3mm sub-unit, easing storage of terminated ends
- Rugged black UV resistant jacket with two fiberglass strength members gives it the strength needed for all harsh environments
- All-dielectric option allows deployment near power lines and utilities

#### Access

- Flat drop cable construction allows for installation in buried or aerial applications
- Industry standard terminations include ST, SC, FC, LC (ask a Clearfield® representative for other available connectors)
- Toneable cables allow for traceability throughout the network

#### Investment

- Ruggedized flat drop assemblies offer an economical solution for deploying fiber in any OSP optical network
- Environmentally stable, low-insertion loss, minimal back reflection
- All assemblies are 100% tested





# Fiber Cable Assemblies

## FTTH Drop Cable Assemblies



### Technical Specifications

FTTH Drop Cable Assemblies	
Core Size and Type	Singlemode
Fiber Count	Single Fiber
Jacket O.D.	2.0 mm Ruggedized, 3.0 mm Peel-and-Play
Cable Types	Flat Drop Loose Tube Cable, Flat Drop Peel-and-Play 3 mm (Dielectric/Toneable)
Connector Types	SC/UPC, SC/APC, LC/UPC, LC/APC, HFOC/APC
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Breakout Length	Half meter, One Meter, Custom

### Minimum Performance Specifications for Terminated Singlemode Connectors

Connector Type	Ferrule Material	Polish Type	Ins. Loss, Typical	Max. Ins. Loss	Min. Ret. Loss
ST	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
FC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
LC	Ceramic	UPC	0.15 dB	0.30 dB	55.00 dB
SC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
FC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB
LC	Ceramic	APC	0.20 dB	0.30 dB	65.00 dB

### Configured Part Numbers

H    1 - 0 0 1 -          -                   XXXM or XXXF

1     
 2   
 3   
 4   
 5   
 6   
 7

**1 Select Cable**

E = OSP, non-toneable, non-rated  
 M = OSP, toneable, non-rated  
 T = Peelable FLATdrop Non-Toneable (Non-rated)  
 U = Peelable FLATdrop Toneable (Non-rated)

**4 Select Upjacketing # 1**

B = 2 mm Ruggedized  
 K = 3mm Peel-and-Play  
 Z = Use if a HFOC

**6 Select Breakout # 2**

B = 1 Meter  
 C = 0.5 Meter  
 Z = Use if a HFOC or pigtail

**2 Select Connector # 1**

A = SC/UPC      G = LC/APC  
 C = SC/APC      W = HFOC SC/APC  
 E = LC/UPC

**5 Select Connector # 2**

A = SC /UPC      G = LC/APC  
 C = SC/APC      W = HFOC SC/APC  
 E = LC/UPC      Z = Pigtail

**7 Select Upjacketing # 2**

B = 2 mm Ruggedized  
 K = 3 mm Peel-and-Play  
 Z = Use if a HFOC or Pigtail

**3 Select Breakout # 1**

B = 1 Meter  
 C = 0.5 Meter  
 Z = Use if a HFOC

**XXXM or XXXF**

XXXM = Length in meters  
 XXXF = Length in feet

# Fiber Cable Assemblies

## High Fiber Ribbon Breakout Kit



### Application

A High Fiber Ribbon Breakout Kit is used for fiber management and routing for fusion and mechanical splicing field termination of multi-fiber ribbon cable applications in both inside and outside plant environments.

### Description

Clearfield® FieldSmart® Ribbon Fan Out Kits are designed to breakout and manage high fiber count ribbon cables. Each 12-fiber ribbon in cable is routed into individual color-coded tubes for protection and transport into Clearview® optimized products. The kit includes the cable body, breakout body and adhesive shrink tubing.

When ribbon fiber in excess of 144 is required, the High Fiber Ribbon Breakout Box is used in conjunction with the Ribbon Fan Out Kit for up to 864 fibers.



010475

### Features and Benefits

#### Integrity

- Fits any manufacturer's cable

#### Protection

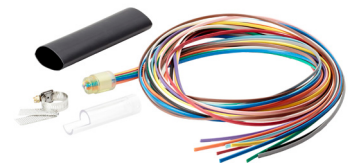
- Furcation tubing protects and manages bare ribbon fiber

#### Access

- No special tools required
- Simple and easy breakout installs in minutes
- Easily identified individual color-coded tubing

#### Investment

- Fan Out Kit provides protected transport path for ribbon cable to Clearview Cassettes



FMA-MZZ

### Technical Specifications

High Fiber Ribbon Breakout Kit	
Fan Out Kit Diameter	144-Fiber Fan Out Kit: 19.10 mm (0.75")
Fan Out Kit Length	Cable Body: 76.32 mm (3") Breakout Body: 31.80 mm (1.25") Combined: 108.12 mm (4.25")
Fan Out Tubing Length	2 meters (78.60"); Custom Lengths Available
Maximum Tube Diameter	144-Fiber Fan Out Kit: 2.59 mm (0.495")
Breakout Box Dimensions	6.25" H x 4.75" W x 2.25" D

### Pre-Configured Part Numbers

Part Number	Description	Quantity Needed of Each Part Number Per Fiber Count					
		144	288	432	576	720	864
FMA-MZZ	Ribbon Fan Out Kit, for up to 144 fibers	1	2	3	4	5	6
FMA-MZZ-SB	Ribbon Fan Out Kit, for up to 144 fibers, for use with slack basket applications	1	2	3	4	5	6
010475	High Density Ribbon Breakout Box	0	1	1	1	1	1