PRODUCT CATALOGUE

FIBRAIN®

# Connectivity fiber

# CONNECTIVITY FIBRAIN

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# Fiber Optic
## Adapters

# One-Piece Evolution

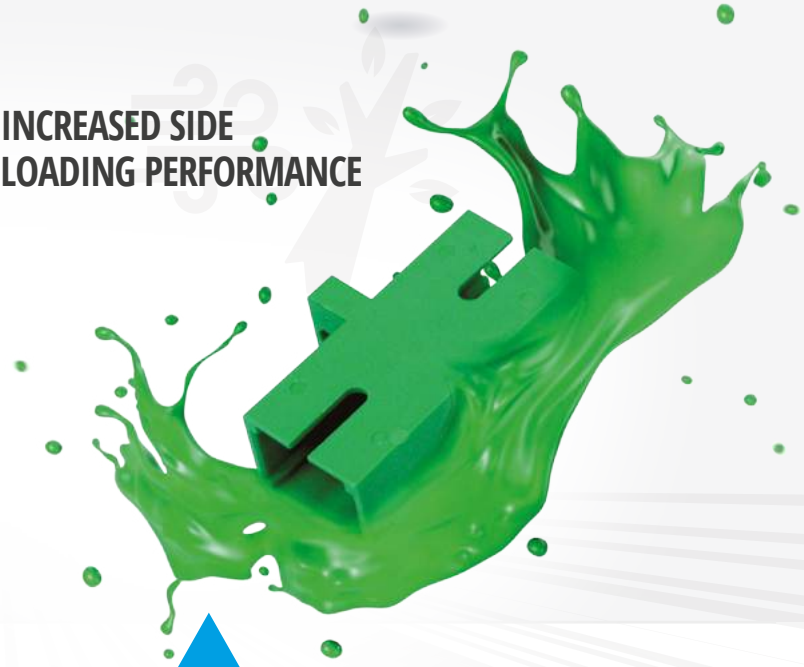
**HIGHEST QUALITY AND DURABILITY**

1992
**WELDED PIECE**

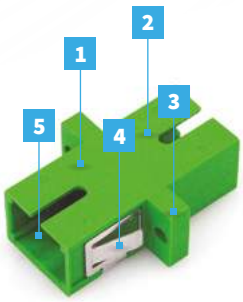
2000

2014

**INCREASED SIDE LOADING PERFORMANCE**

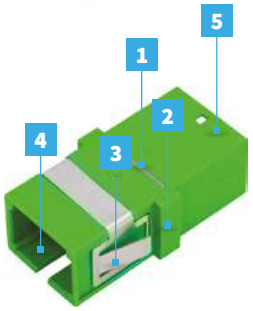


**ONE-PIECE TECHNOLOGY**



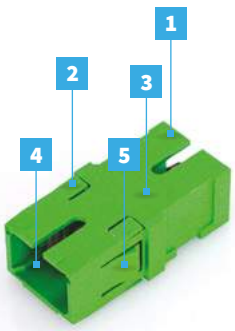

## SC Standard *One-Piece*

1. "One-Piece Design" technology
2. Housing available in 5 colors
3. Flange or flangeless configuration
4. Metal mounting clip
5. Ceramic alignment sleeve for SM and MM application




## SC Premium *One-Piece*

1. Metal reinforcing element
2. Flange or flangeless configuration
3. Metal mounting clip
4. Optional shutter (outer or inner)
5. One-Piece solid body




## SC Premium *Super One-Piece*

1. Anti-fungus plastic
2. Anti-rattle wings
3. Super One-Piece solid body
4. Optional shutter (inner)
5. Integrated non metallic panel clip

## Available colors

SM APC

SM PC/UPC

MM OM2

MM OM3

MM OM4

**METAL WINGS 2D**

**PLASTIC WINGS 4D**

# SC FIBER OPTIC ADAPTERS

SC fiber optic adapters are divided into three distinct series: Standard One-Piece, Premium One-Piece and Premium Super One-Piece, which can be characterized by various optical and mechanical parameters. SC fiber optic adapters are constructed in the "one-piece design" technology. The external housing is one solid body, thus the adapters are more durable than the typical ultrasonic welded type ones. SC fiber optic adapters are available in various options and colors. Optical and mechanical parameters as well as types of adapters are presented in the tables below.

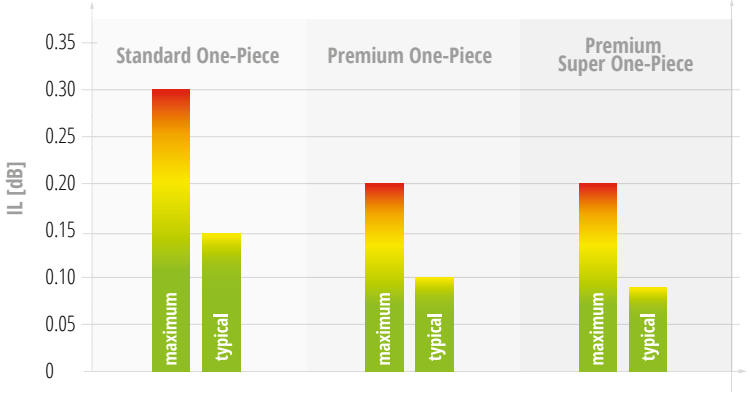
### Technical specifications

| Parameter | Standard *One-Piece* | Premium *One-Piece* | Premium *Super One-Piece* |
|---|---|---|---|
| Insertion Loss (IL) | max 0.30 dB<br>typ. 0.15 dB | max 0.20 dB<br>typ. 0.10 dB | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0.10 dB | ± 0.08 dB | ± 0. 08 dB |
| Durability | 500 matings/<0.20 dB typical change | 1000 matings/<0.15 dB typical change | 1000 matings/<0.15 dB typical change |
| Strength of coupling mechanism | 40N | 80N | 80N |
| Operating temperature | -40 up to +85°C | | |
| Alignment sleeve | ceramic | ceramic/metal | ceramic/metal |
| Mounting | metal wings | metal wings 2D | plastic wings 4D |
| External shutter | - | ✓ | - |
| Internal shutter | - | ✓ | ✓ |
| GR326 TG100 requirements | - | ◐ | ✓ |
| Anti-fungus plastic | - | - | ✓ |
| Colors | | | |

### Types of adapters in each series

| Parameter | Standard *One-Piece* | Premium *One-Piece* | Premium *Super One-Piece* |
|---|---|---|---|
| SIMPLEX | ✓ | ✓ | ✓ |
| DUPLEX | ✓ | ✓ | ✓ |
| FLANGE | ✓ | ✓ | ✓ |
| NO FLANGE | ✓ | ✓ | ✓ |
| METAL MOUNTING CLIP | ✓ | ✓ | - |
| PLASTIC MOUNTING CLIP | - | - | ✓ |
| EXTERNAL SHUTTER | - | ✓ | - |
| INTERNAL SHUTTER | - | ✓ | ✓ |

### SC Adapters - Insertion Loss




## Standard *One-Piece*

The standard series of SC adapter family is available in a simplex and duplex configuration with a metal mounting clip and an optional flange. The main characteristic of Fibrain Standard One-Piece adapters is a ceramic sleeve for a single-mode and multimode application. Adapters are available in 5 colors. Adapters can be fitted with a transparent or semi-transparent dust cup.

## Premium *One-Piece*

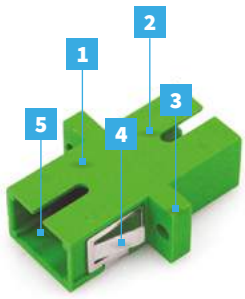
Series of SC fiber optic adapters with improved optical and mechanical performance. The external housing has been reinforced with a metal element, thus adapters exceed the IEC requirements of the strength of coupling mechanism. Adapters are available in a simplex and duplex configuration with an optional flange in 3 colors. The design has proved increased side loading performance over conventional adapters. The Premium One-Piece series can offer adapters with an external or internal shutter.

## Premium *Super One-Piece*

Series of SC adapter family with the highest optical and mechanical parameters. The 'super one-piece design' of housing includes integrated non metallic panel clips and 4 anti-rattle wings, which significantly reduce movement when snapped into a panel. Adapters are available in a simplex and duplex configuration, in both flange and no flange version. The Premium Super One-Piece series is constructed from anti-fungus material with the UL94-V0 flammability index. Adapters are available in 4 colors. There is also version with an inner shutter.

# SC FIBER OPTIC ADAPTERS

The basic series of SC fiber optic adapters with standard optical and mechanical parameters, which comply with PN, IEC and EIA/TIA requirements. Adapters in Standard One-Piece series are available in a simplex and duplex configuration, with an optional flange. A fully ceramic alignment sleeve, for both SM and MM applications, is a unique and characteristic feature of SC adapters. Adapters are constructed as one solid body, thus the adapters are more durable than the typical ultrasonic welded type ones.




## SC Standard *One-Piece*

1. "One-Piece Design" technology
2. Housing available in 5 colors
3. Flange or flangeless configuration
4. Metal mounting clip
5. Ceramic alignment sleeve for SM and MM application

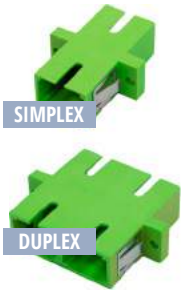
METAL WINGS

### Technical specifications

| Parameter | Standard *One-Piece* |
|---|---|
| Insertion Loss (IL) | max. 0.30 dB<br>typ. 0.15 dB |
| Repeatability ΔIL/mating cycle | ±0.10 dB |
| Durability | 500 matings/<0.20 dB typical change |
| Strength of coupling mechanism | 40N |
| Operating temperature | -40 do +850C |
| Alignment sleeve | ceramic |
| Mounting | metal wings |
| GR326 TG100 requirements | - |
| Anti-fungus plastic | - |
| Colors | |

### Available colors

### Available options




### Features

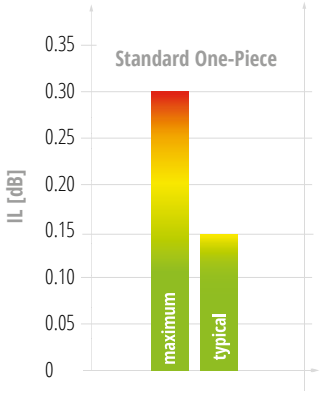
- Innovative technology "One-Piece Design" – increased side loading performance,
- Equipped with a metal mounting clip,
- Possibility to choose a transparent or semi-transparent dust cover,
- High quality and durability,
- Wide range of colors - 5 colors available.

### Reference scheme

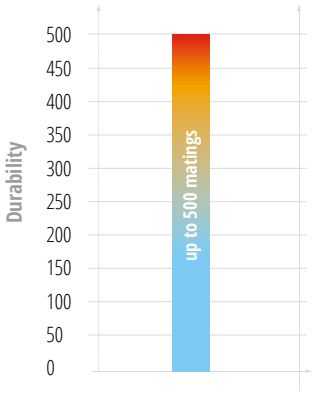
| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| A101 | SC | SX | 1 flange | 1 ceramic | 1 green | 3 black |
| | SCA | DX | 2 no flange | | 2 blue | T transparent |
| | | | | | 5 beige | S semi-transparent |
| | | | | | 6 aqua | |
| | | | | | 7 violet | |

**A101-SC-SX-1123** Fibrain SC PC SM adapter, SX, Standard One-Piece, with flange, ceramic sleeve, blue housing, black dust cover.

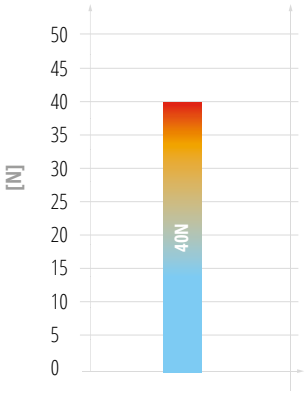
### Insertion Loss




### Durability



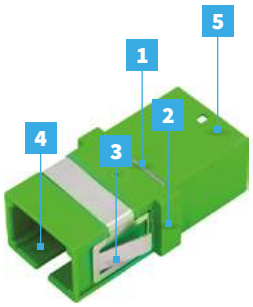

### Strength of coupling mechanism



# SC FIBER OPTIC ADAPTERS

The Premium One-Piece series of SC adapters with high optical and mechanical parameters, in accordance with PN, IEC and EIA/TIA standards. An external housing is constructed as one-solid body and reinforced by a metal element, thus the adapters exceed the IEC 61300-2-6 requirements for strength of the coupling mechanism. High quality, excellent optical and mechanical parameters and high repeatability are characteristic features of the series.

Adapters are available for both applications: singlemode with a ceramic alignment sleeve and multimode with a phosphor bronze alignment sleeve.




## SC Premium *One-Piece*

1. Metal reinforcing element
2. Flange or flangeless configuration
3. Metal mounting clip
4. Optional shutter (outer or inner)
5. One-Piece solid body

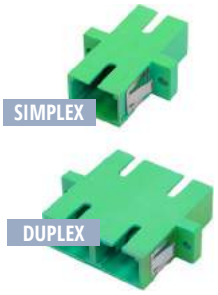
METAL WINGS **2D**

### Technical specifications

| Parameter | Premium *One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.10 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings /<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | metal wings 2D |
| GR326 TG100 requirements | ◐ |
| Anti-fungus plastic | - |
| Colors | |

### Available colors

### Available options




### Reference scheme

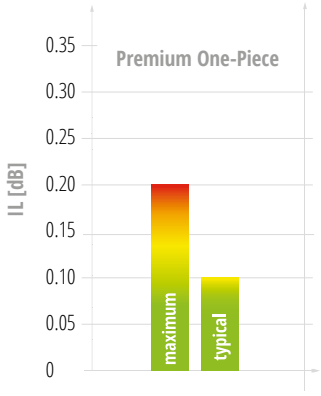
| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| A120 | SC | SX | 1 flange | 1 ceramic | 1 green | 3 black |
| | SCA | DX | 2 no flange | 2 metal | 2 blue | |
| | | | | | 5 beige | |

**A120-SC-DX-1123** Fibrain SC PC SM adapter, DX, Premium One-Piece, with flange, ceramic sleeve, blue housing, black dust cover.

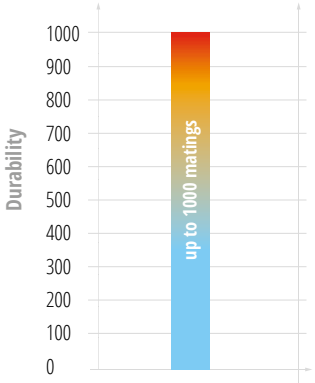
### Features

- Innovative technology "One-Piece Design" – increased side loading performance over conventional adapters,
- Available in a simplex or duplex version, in flange or no flange configuration,
- External body is strengthened by metal elements – the adapters exceed the IEC 61300-2-6 requirements for strength of coupling mechanism,
- Excellent optical parameters $IL_{TYPICAL}$ 0.10 dB,
- High quality,
- Equipped with a metal mounting clip – possibility of mounting without screws.

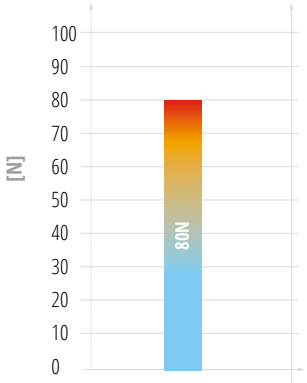
### Insertion Loss




### Durability



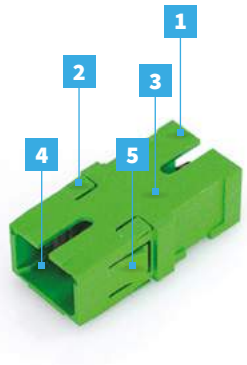

### Strength of coupling mechanism



# SC FIBER OPTIC ADAPTERS

Series of SC adapters family with the highest optical and mechanical parameters in accordance with PN, IEC and EIA/TIA standards. The 'Super One-Piece' technology includes integrated non metallic panel clips and 4 anti-rattle wings, which significantly reduce movement when snapped into a panel. Adapters are available in a simplex and duplex version, with an optional flange.

Adapters exceed the IEC 61200-2-6 requirements for strength of coupling mechanism. Adapters are constructed as one solid body with more durable design over the conventional, ultrasonic welded ones. Premium Super One-Piece series meets the GR326 TG100 requirements.




## SC Premium *Super One-Piece*

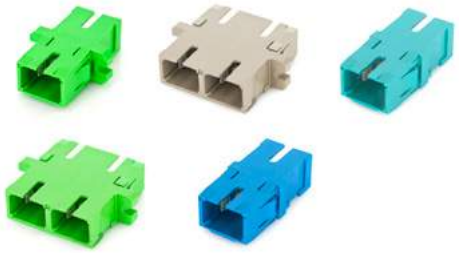
1. Anti-fungus plastic
2. Anti-rattle wings
3. Super One-Piece solid body
4. Optional shutter (inner)
5. Integrated non metallic panel clip

**PLASTIC WINGS 4D**

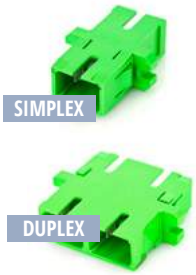
### Technical specifications

| Parameter | Premium *Super One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings /<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | plastic wings 4D |
| GR326 TG100 requirements | ✓ |
| Anti-fungus plastic | ✓ |
| Colors | |

### Available colors



### Available options




### Features

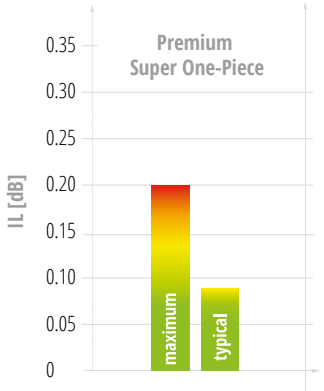
- Innovative technology "Super One-Piece design" provides more durable construction and increased side loading performance,
- 4 anti-rattle wings significantly reduce movement when snapped into a panel,
- Built-in panel mounting plate,
- Constructed from anti-fungus plastic with the UL94-VO flammability index,
- Typical value of Insertion Loss $IL_{TYP.} \leq 0.08$ dB.

### Reference scheme

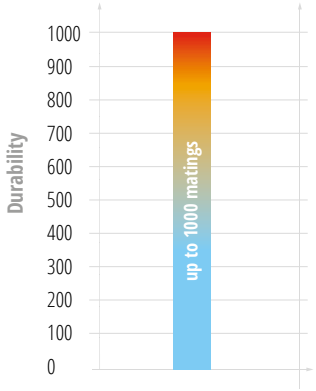
| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| A123 | SC | SX | 1 flange | 1 ceramic | 1 green | 3 black |
| | SCA | DX | 2 no flange | 2 metal | 2 blue | |
| | | | | | 5 beige | |
| | | | | | 6 aqua | |

**A123-SCA-SX-1113** Fibrain SC APC SM adapter, SX, Premium Super One-Piece, with flange, ceramic sleeve, green housing, black dust cover.

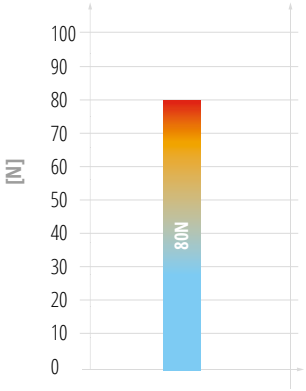
### Insertion Loss




### Durability




### Strength of coupling mechanism



# SC FIBER OPTIC ADAPTERS WITH SHUTTERS

Premium One-Piece fiber optic adapters are equipped with external or internal shutters, which guarantee protection for the eyes. Therefore, the external housing is one solid body, strengthened by a metal element. Premium One-Piece adapters with shutters are available in a simplex or duplex version, with an optional flange. Adapters for singlemode applications are equipped with a ceramic alignment sleeve and multimode with a phosphor bronze alignment sleeve.

METAL WINGS **2D**

## Available colors

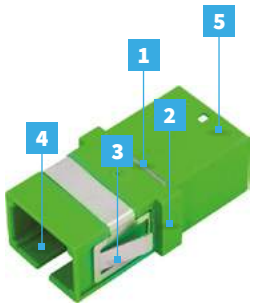
## Technical specifications

| Parameter | Premium *One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.10 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings /<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | metal wings 2D |
| External shutter | ✓ |
| Internal shutter | ✓ |
| GR326 TG100 requirements | ◐ |
| Anti-fungus plastic | - |
| Colors | |

## Reference scheme

| Series | Adapter type | Type | Shutter | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|---|
| AS20 | SC | SX | 1 internal | 1 flange | 1 ceramic | 1 green | 3 black |
| | SCA | DX | 2 external | 2 no flange | 2 metal | 2 blue | |
| | | | | | | 5 beige | |

**AS20-SCA-DX-21113** Fibrain SC APC SM adapter, DX, Premium Super One-Piece, external shutter, with flange, ceramic sleeve, green housing, black dust cover.



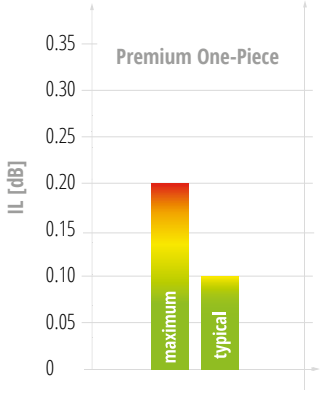

## SC Premium *One-Piece*

1. Metal reinforcing element
2. Flange or flangeless configuration
3. Metal mounting clip
4. Optional shutter (outer or inner)
5. One-Piece solid body

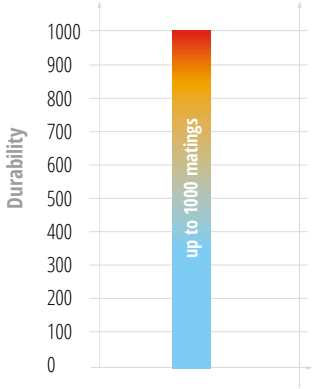
### Features

- Innovative technology "One-Piece Design" – increased side loading performance over conventional adapters,
- Available in a simplex or duplex version, in flange or no flange configuration,
- Internal or external shutter ready for eye safety,
- External body is strengthened by metal elements – the adapters exceed the IEC 61300-2-6 requirements for strength of coupling mechanism,
- Excellent optical parameters ILTYPICAL 0.10 dB,
- Equipped with a metal mounting clip – possibility of mounting without screw.

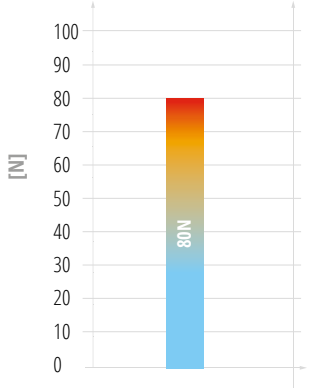
### Insertion Loss




### Durability



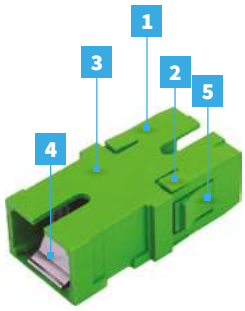

### Strength of coupling mechanism



# SC FIBER OPTIC ADAPTERS WITH SHUTTERS

Premium Super One-Piece fiber optic adapters are equipped with inner, metal shutters, which guarantee protection for the eyes. Adapters in the Premium Super One-Piece series are constructed as one solid body with non metallic panel clips and 4 anti- rattle wings, which protect against the movement and limit the spaces when snapped into a panel. Fiber optic adapters are designed from high quality and anti-fungus plastic with the UL94-V0 flammability index.

PLASTIC WINGS 4D




## SC Premium *Super One-Piece*

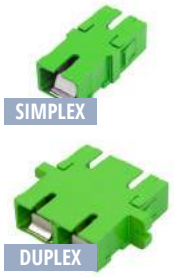
1. Anti-fungus plastic
2. Anti-rattle wings significantly reduce movement when snapped into panel
3. 'Super One-Piece' solid body,
4. Internal shutter ready for eye safety
5. Integrated, non metallic panel clip

### Technical specifications

| Parameter | Premium *Super One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0. 08 dB |
| Durability | 1000 matings/<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | plastic wings 4D |
| External shutter | - |
| Internal shutter | ✓ |
| GR326 TG100 requirements | ✓ |
| Anti-fungus plastic | ✓ |
| Colors | |

### Available colors

### Available options




### Reference scheme

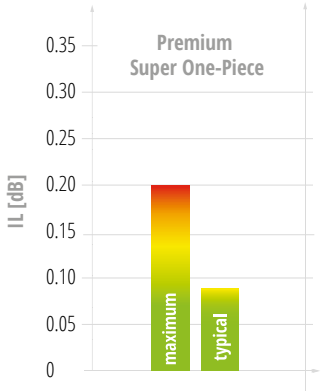
| Series | Adapter type | Type | Shutter | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|---|
| AS23 | SC | SX | 1 internal | 1 flange | 1 ceramic | 1 green | 3 black |
| | SCA | DX | | 2 no flange | 2 metal | 2 blue | |
| | | | | | | 5 beige | |
| | | | | | | 6 aqua | |

**AS23-SCA-SX-11113** Fibrain SC APC SM adapter, SX, Premium Super One-Piece, inner shutter, with flange, ceramic sleeve, green housing, black dust cover.

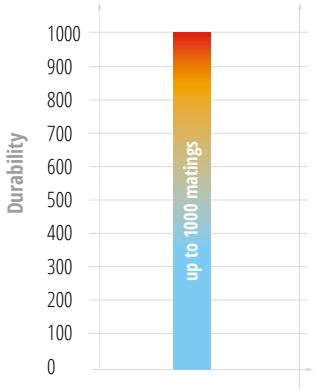
### Features

- Innovative technology "Super One-Piece design" provides more durable construction and increased side loading performance,
- 4 anti-rattle wings significantly reduce movement when snapped into panel,
- Built-in a panel mounting plate,
- Constructed from anti-fungus plastic with the UL94-VO flammability index,
- Typical value of Insertion Loss ILTYP.≤ 0.08 dB,
- Equipped with internal, metal shutter.

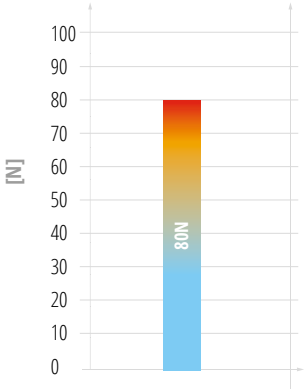
### Insertion Loss




### Durability



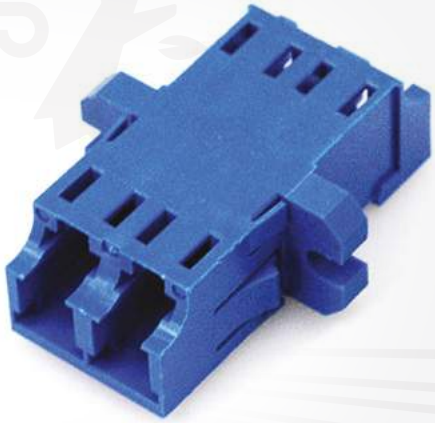

### Strength of coupling mechanism



# LC Fiber Optic Adapters

HIGHEST QUALITY AND DURABILITY

INCREASED SIDE LOADING PERFORMANCE

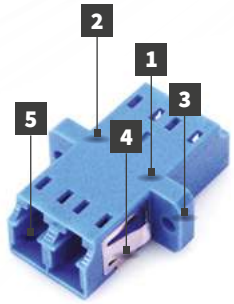


1992
**WELDED PIECE**

2000

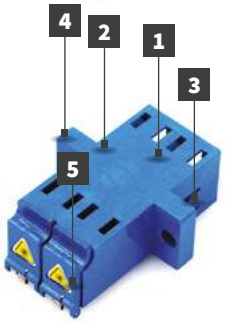
**2014**

## ONE-PIECE TECHNOLOGY



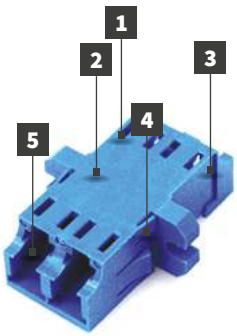

### LC Standard *One-Piece*

1. "One-Piece Design" technology
2. Housing available in 5 colors
3. Optional flange
4. Metal mounting clip
5. Ceramic alignment sleeve for SM and MM aplication




### LC Premium *One-Piece*

1. One-Piece solid body
2. Housing available in 3 colors
3. Integrated non metallic panel clip
4. Optional flange
5. External or internal shutter




### LC Premium *Super One-Piece*

1. "Super One-Piece Design" of housing
2. Anti-fungus material with the UL94-V0 flammability index
3. Housing available in 5 colors
4. Anti-rattle wings
5. Optional shutter (inner)

## Available colors

SM APC

SM PC/UPC

MM OM2

MM OM3

MM OM4

PLASTIC WINGS 2D

PLASTIC WINGS 4D

# LC FIBER OPTIC ADAPTERS

LC adapters are divided into three distinct series: Standard One-Piece, Premium One-Piece and Premium Super One-Piece, which can be characterized by various optical and mechanical parameters. LC fiber optic adapters are constructed in the "one-piece-design". The external housing is one-solid body, which guarantees improved side loading performance in comparison to welded adapters. LC adapters are available in various options and colors. Optical and mechanical parameters as well as types of adapters are presented in the table below.

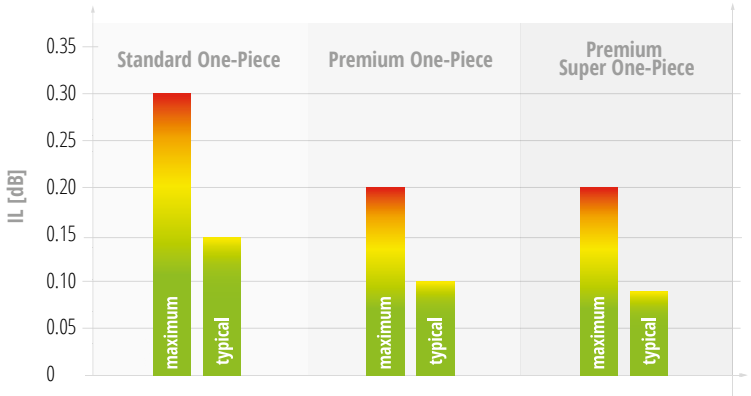
**Technical specifications**

| Parameter | Standard *One-Piece* | Premium *One-Piece* | Premium *Super One-Piece* |
|---|---|---|---|
| Insertion Loss (IL) | max 0.30dB<br>typ. 0.15dB | max 0.20 dB<br>typ. 0.10 dB | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0.10 dB | ± 0.08 dB | ± 0.08 dB |
| Durability | 500 matings/<0.20 dB typical change | 1000 matings/<0.15 dB typical change | 1000 matings/<0.15 dB typical change |
| Strength of coupling mechanism | 40N | 80N | 80N |
| Operating temperature | -40 up to +85°C | | |
| Alignment sleeve | ceramic | ceramic/metal | ceramic/metal |
| Mounting | metal wings | plastic wings 2D | plastic wings 4D |
| External shutter | - | ✓ | - |
| Internal shutter | - | ✓ | ✓ |
| GR326 TG100 requirements | - | ◐ | ✓ |
| Anti-fungus plastic | - | - | ✓ |
| Colors | | | |

**Types of adapters in each series**

| Parameter | Standard *One-Piece* | Premium *One-Piece* | Premium *Super One-Piece* |
|---|---|---|---|
| DUPLEX | ✓ | ✓ | ✓ |
| QUAD | ✓ | ✓ | - |
| FLANGE | ✓ | ✓ | ✓ |
| NO FLANGE | ✓ | ✓ | ✓ |
| METAL MOUNTING CLIP | ✓ | - | - |
| PLASTIC MOUNTING CLIP | - | ✓ | ✓ |
| EXTERNAL SHUTTER | - | ✓ | - |
| INTERNAL SHUTTER | - | ✓ | ✓ |

**LC Adapters - Insertion Loss**




## Standard *One-Piece*

The basic series of LC adapters in a duplex and quad configuration with an optional flange. A ceramic alignment sleeve, which is used in singlemode and multimode adapters, is a characteristic feature of Standard One–Piece series. Adapters are available in 5 colors with metal mounting clips. Adapters are constructed as one solid body, which provides a more durable design over the typical ultrasonic welded type ones.

## Premium *One-Piece*

Series of LC fiber optic adapters equipped with external or internal shutters, which guarantee protection for the eyes. The adapters are available in a duplex or quad design, with flange or no flange configuration. The Premium One-Piece series has an integrated, non-metallic clips. Therefore, the adapters are available in 3 colors. Characteristic features of the series are excellent optical and mechanical parameters as well as high quality.

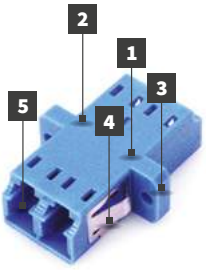
## Premium *Super One-Piece*

LC Premium Super One-Piece adapters with the highest optical and mechanical parameters. The "super one-piece design" includes integrated non-metallic clips and 4 anti-rattle wings, which significantly reduce movement when snapped into a panel.

Adapters are available in 5 colors in a duplex design, with an optional flange. Therefore, the adapters are constructed from anti-fungus plastic with the UL94-V0 flammability index. The version is available with an inner shutter.

# LC FIBER OPTIC ADAPTERS

The series of LC fiber optic adapters with standard optical and mechanical parameters, in accordance with PN, IEC and EIA/TIA standards. The adapters are constructed in one-piece technology, without any welded points, which guarantees more durable design and increased side loading performance. A fully ceramic sleeve, also in multimode adapters, is a characteristic feature of Standard One-Piece LC adapters. Therefore, they are equipped with a metal mounting clip providing assembly without a screw. The adapters have good optical parameters. High quality alignment sleeve guarantees repeatability of IL value as well as a stable connection.




## LC Standard *One-Piece*

1. "One-Piece Design" technology
2. Housing available in 5 colors
3. Optional flange
4. Metal mounting clip
5. Ceramic alignment sleeve for SM and MM aplication

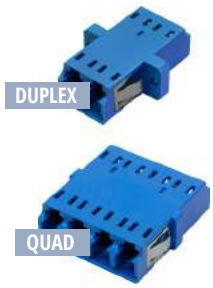
METAL WINGS

### Technical specifications

| Parameter | Standard *One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.30 dB<br>typ. 0.15 dB |
| Repeatability ΔIL/mating cycle | ± 0.1 dB |
| Durability | 500 matings /<0.20 dB typical change |
| Strength of coupling mechanism | 40N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic |
| Mounting | metal wings |
| GR326 TG100 requirements | - |
| Anti-fungus plastic | - |
| Colors | |

### Available colors

### Available options




### Features

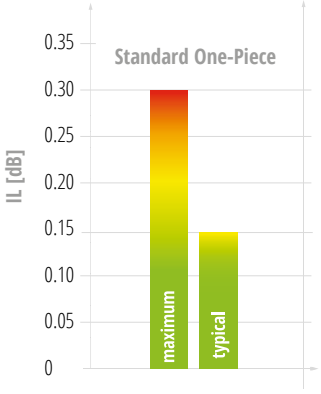
- Housing constructed as one solid body,
- Good optical and mechanical parameters,
- Metal mounting clips providing the assembly without screws,
- Ceramic alignment sleeve for both application: singlemode as well as multimode,
- Wide color range - available in 5 colors,
- Available in a duplex and quad configuration with an optional flange.

### Reference scheme

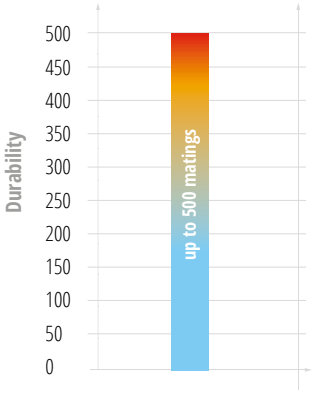
| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| A001 | LC | DX | 1 flange | 1 ceramic | 1 green | 8 white |
| | LCA | 4X | 2 no flange | | 2 blue | |
| | | | | | 5 beige | |
| | | | | | 6 aqua | |
| | | | | | 7 violet | |

**A001-LC-DX-1128** Fibrain LC PC SM adapter, DX, Standard One-Piece, with flange, ceramic sleeve, blue housing, white dust cover.

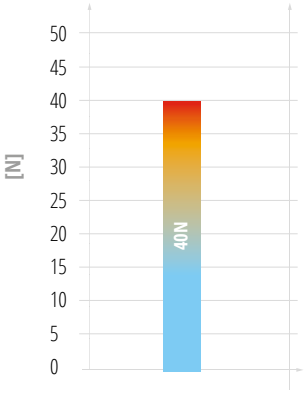
### Insertion Loss




### Durability

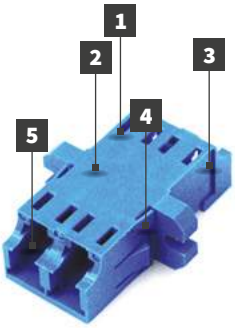



### Strength of coupling mechanism



# LC FIBER OPTIC ADAPTERS

Series of LC fiber optic adapters with the highest optical and mechanical parameters, in accordance with PN, IEC and EIA/TIA standard. Adapters in the Premium Super One-Piece are designed as one solid body with integrated non-metallic mounting clips and 4 anti-rattle wings, which significantly reduce movement when snapped into a panel. Fiber optic adapters of Premium Super One-Piece series are constructed from high quality and anti-fungus materials with the UL94-V0 flammability index. Adapters are available in flange or no flange duplex configuration in 5 colors. Adapters comply with GR326 TG100 requirements.




## LC Premium *Super One-Piece*

1. "Super One-Piece Design" technology
2. Anti-fungus material with the UL94-V0 flammability index
3. Housing available in 5 colors
4. Anti-rattle wings
5. Optional shutter (inner)

**Available colors**

**Available options**

PLASTIC WINGS 4D

**Technical specifications**

| Parameter | Premium *Super One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings /<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | plastic wings 4D |
| GR326 TG100 requirements | ✓ |
| Anti-fungus plastic | ✓ |
| Colors | |

**Features**

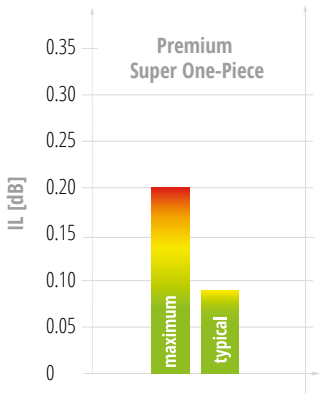
- Super one-piece solid body,
- Equipped with 4 anti- rattle wings limiting the spaces in the panel and protecting against movement,
- Built-in a panel clip,
- Increased side loading performance over the conventional welded type adapters,
- Exceed the IEC 61300-2-6 requirements for- strength of the coupling mechanism,
- Constructed from anti-fungus plastic with the UL94-V0 flammability index,
- Excellent optical and mechanical parameters,
- Available with internal metal shutter, which guarantees protection for the eyes.

**Reference scheme**

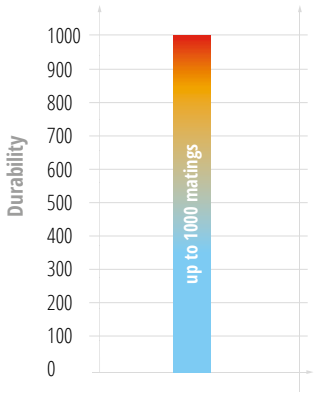
| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| A031 | LC | DX | 1 flange | 1 ceramic | 1 green | 8 white |
| | LCA | | 2 no flange | 2 metal | 2 blue | |
| | | | | | 5 beige | |
| | | | | | 6 aqua | |
| | | | | | 7 violet | |

**A031-LCA-DX-1118** Fibrain LC APC SM adapter, DX, Premium Super One-Piece adapter, with flange, ceramic sleeve, green housing, white dust cover.

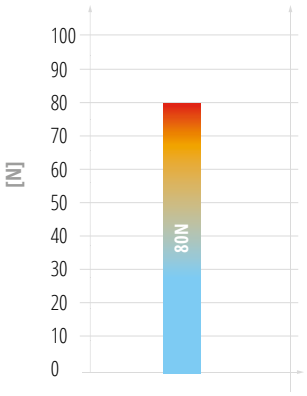
**Insertion Loss**




**Durability**




**Strength of coupling mechanism**



# LC FIBER OPTIC ADAPTERS WITH SHUTTERS

Premium One-Piece is a series of LC adapters equipped with external or internal shutters, which guarantee protection for the eyes. Adapters are constructed as one solid body with integrated, non-metallic mounting clips. Adapters are available in a duplex and quad configuration with an optional flange in 3 colors. Adapters designed for singlemode application are equipped with a fully ceramic alignment sleeve, and the multimode adapters with a phosphor bronze sleeve. Adapters in Premium One-Piece have excellent optical and mechanical parameters.

PLASTIC WINGS 2D

### Available colors *LC adapters with inner shutters*

### Reference scheme

| Series | Adapter type | Type | Shutter | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|---|
| **AS01** | LC | DX | 1 internal | 1 flange | 1 ceramic | 1 green | 8 white |
| | LCA | 4X | | 2 no flange | 2 metal | 2 blue | |
| | | | | | | 5 beige | |

**AS01-LC-DX-11128** Fibrain LC PC SM adapter, DX, Premium One-Piece, internal shutter, with flange, ceramic sleeve, blue housing, white dust cover.

### Available colors *LC adapters with outer shutters*

### Reference scheme

| Series | Adapter type | Type | Shutter | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|---|
| **AS02** | LC | DX | 2 external | 1 flange | 1 ceramic | 1 green | 8 white |
| | LCA | 4X | | 2 no flange | 2 metal | 2 blue | |
| | | | | | | 5 beige | |

**AS02-LCA-DX-21118** Fibrain LC APC SM adapter, DX, Premium One-Piece, external shutter, with flange, ceramic sleeve, green housing, white dust cover.

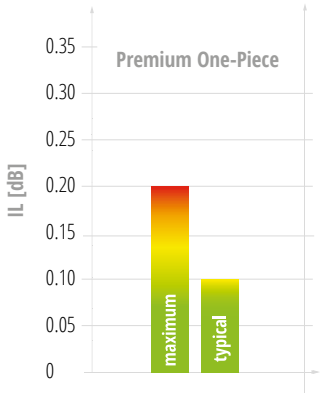
### Technical specifications

| Parameter | Premium *One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.10 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings /<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | plastic wings 2D |
| External shutter | ✓ |
| Internal shutter | ✓ |
| GR326 TG100 requirements | ◐ |
| Anti-fungus plastic | - |
| Colors | |

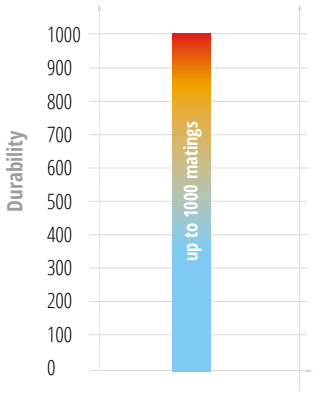
### Features

- Innovative technology "One-Piece Design" – increased side loading performance over conventional adapters,
- Available in a duplex and quad version, in flange or no flange configuration,
- Internal or external shutter ready for eye safety,
- Excellent optical parameters $IL_{TYP}$ ≤ 0.10 dB,
- High quality,
- Built-in a panel mounting plate,
- Excellent optical and mechanical parameters,
- Shutters protect against laser radiation and guarantee protection for the eyes.

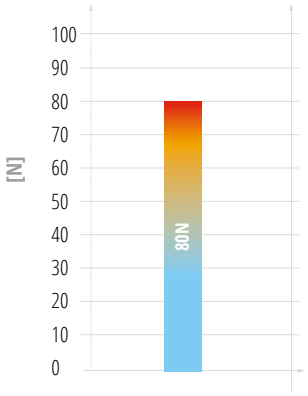
### Insertion Loss




### Durability

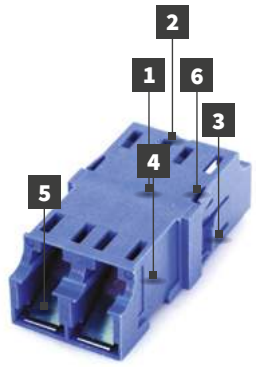



### Strength of coupling mechanism



# LC FIBER OPTIC ADAPTERS WITH SHUTTERS

Premium Super One-Piece adapters are equipped with inner, metal shutters which protect against laser radiation and guarantee protection for the eyes. Adapters in the Premium Super One-Piece are designed as one solid body with non-metallic clips and 4 anti-rattle wings, which protect against the movement and limit the spaces in a panel. Fiber optic adapters are constructed from high quality and anti-fungus materials with the UL94-V0 flammability index. The adapters are available in a duplex version with an optional flange in 5 colors. They comply with GR326 TG100, PN, IEC, EIA/TIA requirements.




## LC Premium *Super One-Piece*

1. "Super One-Piece Design" technology
2. Anti-fungus plastic with the UL94-V0 flammability index
3. Integrated, non-metal clips
4. Housing available in 5 colors
5. Inner metal shutter
6. Anti-rattle wings

**PLASTIC WINGS 4D**

### Technical specifications

| Parameter | Premium *One-Piece* |
|---|---|
| Insertion Loss (IL) | max 0.20 dB<br>typ. 0.08 dB |
| Repeatability ΔIL/mating cycle | ± 0.08 dB |
| Durability | 1000 matings/<0.15 dB typical change |
| Strength of coupling mechanism | 80N |
| Operating temperature | -40 up to +85°C |
| Alignment sleeve | ceramic/metal |
| Mounting | plastic wings 4D |
| External shutter | - |
| Internal shutter | ✓ |
| GR326 TG100 requirements | ✓ |
| Anti-fungus plastic | ✓ |
| Colors | |

### Available colors *LC Super One-Piece with shutters*

### Reference scheme

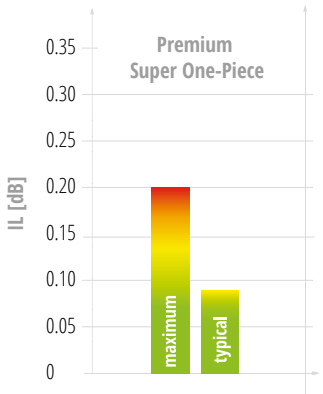
| Series | Adapter type | Type | Shutter | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|---|
| AS31 | LC | DX | 1 internal | 1 flange | 1 ceramic | 1 green | 8 white |
| | LCA | | | 2 no flange | 2 metal | 2 blue | |
| | | | | | | 5 beige | |
| | | | | | | 6 aqua | |
| | | | | | | 7 violet | |

**AS31-LCA-DX-11118** Fibrain LC APC SM adapter, DX, Premium Super One-Piece, internal shutter, with flange, ceramic sleeve, green housing, white dust cover.

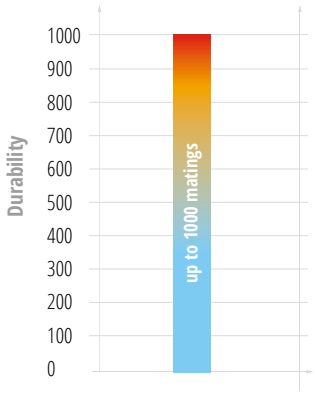
### Features

- „Super one-piece design" technology,
- Equipped with 4 anti-rattle wings limiting the spaces in the panel and protecting against movement,
- Integrated, non-metallic clip,
- Higher resistance to pressure,
- Excellent optical and mechanical parameters,
- Comply and exceed IEC requirements for Strength of coupling mechanism,
- Constructed from anti-fungus plastic with the UL94-V0 flammability index,
- Equipped with an inner metal shutter, which guarantees protection for the eyes.

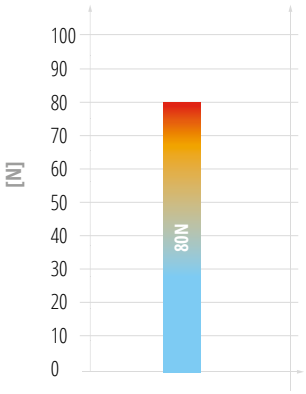
### Insertion Loss




### Durability




### Strength of coupling mechanism



# E2000™ FIBER OPTIC ADAPTERS

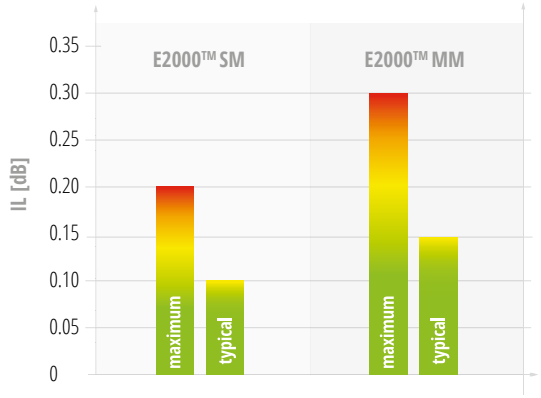
Fiber optic adapters are designed to combine E2000™ connectors with a push&pull mechanism, which provides fast and stable connection, and prevents accidental disconnects. The E-2000™ adapter features injection-molded PBT housing, rated to the UL94-V0 flammability index. Spring-loaded laser protection shutters protect against dust and scratching as well as guarantee protection for the eyes. A high quality ceramic alignment sleeve ensures high performance over 1000 mating cycles. Adapters are equipped with a semi-transparent plastic dust cover, providing optical testing with test lasers without removing the cover. The adapters comply with PN/IEC 61754 and DIN/EN 186270 standards.

### Available colors *E2000™ Adapters*

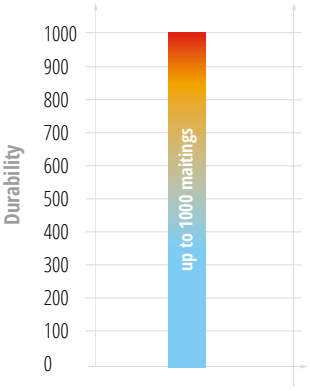
### Type of E2000™ adapters

| Code | Adapter type |
|---|---|
| **R504511** | E2000 SM PC, blue housing, flange, ceramic sleeve |
| **R504541** | E2000 SM APC, green housing, flange, ceramic sleeve |
| **R504562** | E2000 SM APC, green housing, no flange, ceramic sleeve |
| **R508019** | E2000 MM PC, black housing, flange, ceramic sleeve |

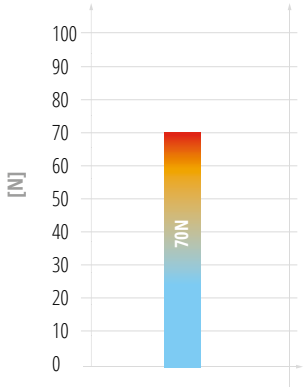
### Insertion Loss




### Durability




### Strength of coupling mechanism




### Technical specifications

| Parameter | E2000™ SM | E2000™ MM |
|---|---|---|
| **Insertion Loss $IL_{MAX}$** | 0.20 dB | 0.30 dB |
| **Insertion Loss $IL_{TYP}$** | 0.10 dB | 0.15 dB |
| **Alignment sleeve** | aceramic | ceramic |
| **Durability** | 1000 matings | |
| **Operating temperature** | -40 up to +85°C | |
| **Strength of coupling mechanism** | 70N | |
| **Inner shutter** | ✓ | ✓ |

### Features

- Equipped with integral self-closing metal laser protection internal shutter, which guarantees protection for the eyes and against dust,
- Excellent optical parameters,
- Mounting with the use of M2 screws or quick mounting by integrated clip (possibility of flangeless adapters),
- Constructed from highly resistant and durable PBT material with UL94-V0 flammability index,
- High quality ceramic alignment sleeve ensures high performance over 1000 mating cycles.

# FC&ST FIBER OPTIC ADAPTERS

## FC Adapters

FC connection elements are specifically designed for telecommunication elements, where stable connection is necessary and performed with the use of a thread mechanism. The FC connector is screwed in, which eliminates the possibility of an accidental disconnect. Therefore, the FC Fibrain optic fiber adapters have excellent optical and mechanical parameters as they are constructed from high quality materials. The FC adapters are designed for single- and multimode application with high quality of alignment sleeve.

*FC Adapters*

### Reference scheme

| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| **A151-Standard** | FC | SX | 3 d-hole | 1 ceramic | 0 - metal | 1 green |
| **A161-Premium** | FCA | | | 2 metal | | 3 black |
| | | | | | | 4 red |

**A151-FCA-SX-3101** Fibrain FC APC SM adapter, SX, Standard Series, d-hole mounting, ceramic sleeve, metal housing, green dust cover.

## ST Adapters

ST Fibrain optic adapters are the elements of the fiber optic system, which are used to connect ST connectors using a bayonet mechanism. The ST adapters are characterized by the high quality of the external non-metal housing and alignment sleeve. Adapters are available for singlmode and multimode applications.

Adapters are precision-made items with excellent optical and mechanical parameters.

*ST Adapters*

### Reference scheme

| Series | Adapter type | Type | Mounting | Sleeve | Housing color | Dust cover color |
|---|---|---|---|---|---|---|
| **A181-Standard** | ST | SX | 3 d-hole | 1 ceramic | 0 - metal | 3 black |
| **A191-Premium** | | | | 2 metal | | 4 red |
| | | | | | | |

**A181-ST-SX-3103** Fibrain ST PC SM adapter, SX, Standard Series, d-hole mounting, ceramic sleeve, metal housing, black dust cover.

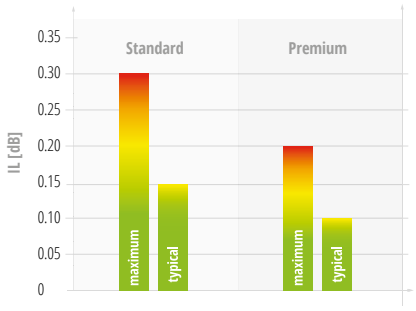
### Technical specifications

| Parameter | Standard Series | Premium Series |
|---|---|---|
| **Insertion Loss $IL_{MAX}$** | 0.30 dB | 0.20 dB |
| **Insertion Loss $IL_{TYP}$** | 0.15 dB | 0.10 dB |
| **Repeatability ΔIL/mating cycle** | ± 0.10 dB | ± 0.08 dB |
| **Durability** | 500 matings/ <0.20 dB typical change | 1000 matings/ <0.15 dB typical change |
| **Aligment sleeve** | ceramic/metal | |
| **Operating temperature** | -40 up to +85°C | |
| **Mounting** | d-hole | |

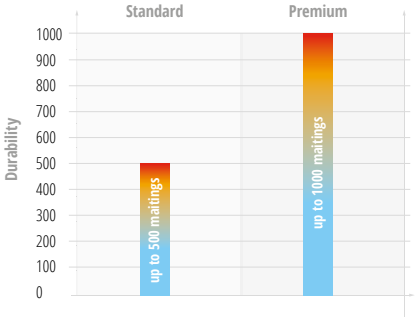
### Features

- Excellent optical and mechanical parameters,
- High quality,
- Thread or bayonet mount mechanism providing constant and stable connection,
- High quality ceramic sleeve for singlemode and phosphor-metal sleeve for multimode applications,
- Constructed from material resistant to corrosion.

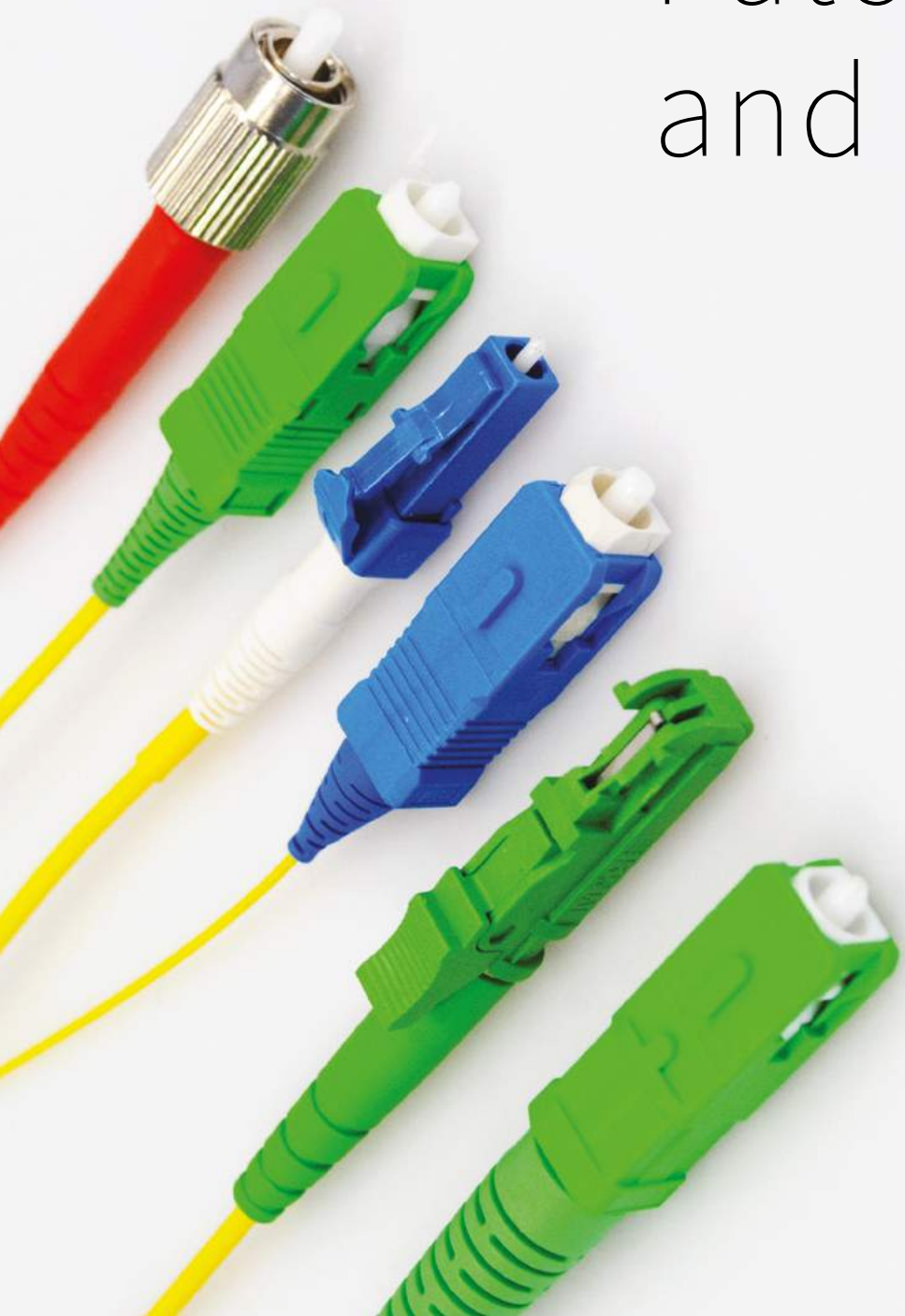
**Insertion Loss**




**Durability**



# Patchcords and pigtails



# SILVER GRADE PATCHCORDS & PIGTAILS

Fibrain optical connection components are specifically designed and based on connectors, which comply with IEC/ PN-EN 61754 and IEC/PN –EN 61755. Patchcords & Pigtails of Silver Grade are available in a singlemode and multimode configuration with various types of connectors, cables and optical fibers. Fully automated preparation and polishing process ensure the highest quality and reliability. Therefore, detailed selection of the manufacturing components ensures the highest quality of the component.

| Series | Connector | | Boot type | Length | Cable | Fiber | Cable diameter | Color | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | | | | | | | |
| **S-Silver** | SC | SC | S-standard | 001.0 | SX patchcord simplex | A SMF G.652D | 09 0.9 mm | OR* | |
| | SCA | SCA | | | DX patchcord duplex | B SMF G655 | 16 1.6 mm | Y* | |
| | LC | LC | | | P9 pigtail 900 µm | C SMF G656 | 18 1.8 mm | GR | |
| | LCA | LCA | | | PS pigtail simplex cable | D SMF G657A1 | 28 2.8 mm | GY | |
| | FC | FC | | | PD pigtail duplex cable | E SMF G657A2 | | BL | |
| | FCA | FCA | | | | F SMF G657B2 | | BK | |
| | E2 | E2 | | | | G SMF G657B3 | | V | |
| | E2A | E2A | | | | H MMF OM1 | | R | |
| | ST | ST | | | | I MMF OM2 | | W | |
| | MU | MU | | | | J MMF OM2+ | | AQ | |
| | DIN | DIN | | | | K MMF OM3 | | BR | |
| | | XX | | | | L MMF OM4 | | P | |

*Standard colors of external tube for 1.6-2.8mm cables, other colors can be ordered by a customer on request. Colors in the table concern 0.9mm tube.

**S-SCA-SCA-S-002.0-SX-A-18-Y** Fibrain Silver Grade Patchcord, with SC APC connectors at both side, simplex, 2m length, G.652D, 1.8 mm cable diameter, yellow coat.

### Available connectors for Silver Grade patchcords and pigtails:

- SC PC/APC,
- FC PC/APC,
- E2000 PC/APC,
- LC PC/APC,
- ST PC,
- DIN,
- MU.

### Available fibers:

- G652D,
- G655,
- G657A,
- G657B,
- 50/125 OM2,
- 50/125 OM2+,
- 50/125 OM3/OM4,
- 62.5/125 OM1

### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- Connectors are constructed from high quality plastic, resistant to corrosion and high temperatures with UL94-V0 flammability index or the high quality metal resistant to corrosion,
- Good value for money,
- Wide range of available fibers and connectors.

### Applications

- Telecommunication networks,
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions,
- CWDM networks.

### Technical specifications

| Parameter | Connectors | | |
|---|---|---|---|
| | SM PC | SM APC | MM PC |
| **Insertion Loss $IL_{MAX}$ against MASTER Acc. IEC 61300-3-4** | ≤ 0.35 dB | ≤ 0.35 dB | ≤ 0.35 dB |
| **Insertion Loss $IL_{TYP}$ against MASTER Acc. IEC 61300-3-4** | ≤ 0.28 dB | ≤ 0.28 dB | ≤ 0.25 dB |
| **Return Loss Acc. IEC 61300-3-6** | ≥ 50 dB | ≥ 60 dB | ≥ 30 dB |

# GOLD GRADE PATCHCORDS & PIGTAILS

Fibrain optical components are specifically designed and based on connectors, which comply with IEC/ PN-EN 61754 and IEC/PN –EN 61755 requirements. Patchcords & Pigtails of Gold Grade are available in singlemode and multimode option with various type of connectors, cables and optical fibers. Fully automated preparation and polishing process ensure the highest quality and reliability. Therefore, detailed selection of the manufacturing components ensures the highest quality of the product. Patchcords & Pigtails of Gold Grade are available with 3 different designs of boots, which protect the bend radius of the optical fibers. Apart from standard boots, there are mini and flexi-angle available. The boot in the mini option limits the total length of a connector and boot, whereas the flexi-angle boot is designed to bend in a 0-90° angle range. Available options of the boots are given in the table below. There is no possibility to mix various types of boots on a patchcord- as from the both sides a patchcord is terminated with the same type of boots.

| Series | Connector | | Boot type | Length | Cable | Fiber | Cable diameter | Color | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | | | | | | | |
| G-Gold | SC | SC | S-Standard | 001.0 | SX patchcord simplex | A SMF G.652D | 09 0.9 mm | OR* | |
| | SCA | SCA | M-Mini | | DX patchcord duplex | B SMF G655 | 16 1.6 mm | Y* | |
| | LC | LC | F-Flex-angled | | P9 pigtail 900 µm | C SMF G656 | 18 1.8 mm | GR | |
| | LCA | LCA | | | PS pigtail simplex cable | D SMF G657A1 | 28 2.8 mm | GY | |
| | FC | FC | | | PD pigtail duplex cable | E SMF G657A2 | | BL | |
| | FCA | FCA | | | | F SMF G657B2 | | BK | |
| | E2 | E2 | | | | G SMF 657B3 | | V | |
| | E2A | E2A | | | | H MMF OM1 | | R | |
| | ST | ST | | | | I MMF OM2 | | W | |
| | MU | MU | | | | J MMF OM2+ | | AQ | |
| | DIN | DIN | | | | K MMF OM3 | | BR | |
| | | XX | | | | L MMF OM4 | | P | |

*Standard colors of external tube for 1.6-2.8mm cables, other colors can be ordered by a customer on request. Colors in the table concern 0.9mm tube.

**G-SCA-SCA-S-002.0-SX-A-18-Y** Fibrain Gold Grade Patchcord, with SC APC connectors at both side, simplex, 2m length, G.652D, 1.8 mm cable diameter, yellow coat.

### Available boots

| Parameter | Boot type** | | |
|---|---|---|---|
| | Standard boots 0.9/2.0/3.0 mm | Mini boots 0.9/2.0/3.0 mm | Flex-Angled boots 2.0/3.0 mm |
| SC PC | ✓ | ✓ | ✓ |
| SC APC | ✓ | ✓ | ✓ |
| LC PC | ✓ | ✓ | ✓ |
| LC APC | ✓ | ✓ | ✓ |
| FC PC | ✓ | ✓ | - |
| FC APC | ✓ | ✓ | - |
| ST PC | ✓ | ✓ | - |
| E2000 PC | ✓ | - | - |
| E2000 APC | ✓ | - | - |
| DIN | ✓ | - | - |
| MU | ✓ | - | - |

**There is no possibility to mix various type of boots on a patchcord- as from the both sides a patchcord is terminated with the same type of boots.

### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- Connectors are constructed from high quality plastic, resistant to corrosion and high temperatures with UL94-V0 flammability index or the high quality metal resistant to corrosion,
- Good value for money,
- Wide range of available connectors and optical fibers.

### Applications

- Telecommunication networks,
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions,
- CWDM networks.

### Technical specifications

| Parameter | Connectors | | |
|---|---|---|---|
| | SM PC | SM APC | MM PC |
| Insertion Loss $IL_{MAX}$ against MASTER Acc. IEC 61300-3-4 | ≤ 0.17 dB | ≤ 0.20 dB | ≤ 0.20 dB |
| Insertion Loss $IL_{TYP}$ against MASTER Acc. IEC 61300-3-4 | ≤ 0.15 dB | ≤ 0.16 dB | ≤ 0.12 dB |
| Return Loss Acc. IEC 61300-3-6 | ≥ 55 dB | ≥ 65 dB | ≥ 35 dB |

# TITANIUM GRADE PATCHCORDS & PIGTAILS

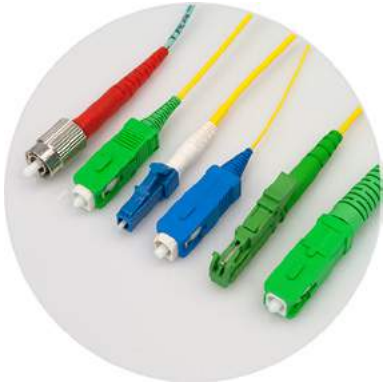
Fibrain Titanium series of patchcords and pigtails is intended for the most demanding customers. High optical parameters, premium quality and precise selection of the components are the characteristic features of the Titanium Grade. Fibrain optical components are specifically designed and based on connectors, which comply with IEC/ PN-EN 61754 and IEC/PN –EN 61755 requirements. Patchcords and pigtails of Titanium Grade are available in singlemode option with various type of connectors, cables and optical fibers. Fully automated preparation and polishing process ensure the highest quality and reliability. Therefore, detailed selection of the manufacturing components ensures the highest quality of the final component.

Patchcords and pigtails of Titanium Grade are available 3 different designs of boots, which protect a bend radius of the optical fibers. Apart from standard boots there are mini and flexi-angles available. The boot in the mini option limits the total length of a connector and boot, whereas the flexi-angle boot is designed to bend in a 0-90° angle range. Available options of the boots are given in the table below. There is no possibility to mix various type of boots on a patchcord- as from the both sides a patchcord is terminated with the same type of boots.

| Series | Connector | | Boot type | Length | Cable | Fiber | Cable diameter | Color | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | | | | | | | |
| **T-Titanium** | SC | SC | S-Standard | 001.0 | SX patchcord simplex | A SMF G.652D | 09 0.9 mm | OR* | |
| | SCA | SCA | M-Mini | | DX patchcord duplex | B SMF G655 | 16 1.6 mm | Y* | |
| | LC | LC | F-Flex-angled | | P9 pigtail 900 µm | C SMF G656 | 18 1.8 mm | GR | |
| | LCA | LCA | | | PS pigtail simplex cable | D SMF G657A1 | 24 2.4 mm | GY | |
| | FC | FC | | | PD pigtail duplex cable | E SMF G657A2 | 28 2.8 mm | BL | |
| | FCA | FCA | | | | F SMF G657B2 | | BK | |
| | E2 | E2 | | | | G SMF 657B3 | | V | |
| | E2A | E2A | | | | | | R | |
| | | XX | | | | | | W | |
| | | | | | | | | AQ | |
| | | | | | | | | BR | |
| | | | | | | | | P | |

*Standard colors of a tube for 1.6-2.8 mm cables, other colors available on customer's request. The rest of colors concern a 0.9 mm tube.

**T-SCA-SCA-S-002.0-SX-D-28-Y** Fibrain Titanium Grade Patchcord, with SC APC connectors at both side, simplex, 2m length, G.657A1, 2.8 mm cable diameter, yellow coat.



### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- Connectors are constructed from high quality plastic, resistant to corrosion and high temperatures with flammability index UL94-V0 or the high quality metal resistant to corrosion,
- Good value for money,
- High quality ceramic ferrules,
- Low attenuation and high reflectance,
- Wide range of available connectors and optical fibers.

### Applications

- Telecommunication networks,
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions,
- CWDM networks,
- Low voltage networks,
- Measuring devices.

### Technical specifications

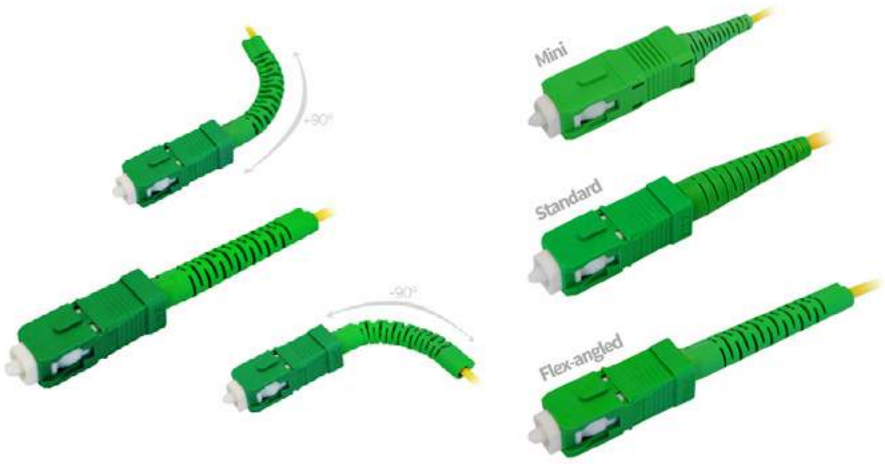
| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| **Insertion Loss $IL_{MAX}$ against MASTER Acc. IEC 61300-3-4** | ≤ 0.12 dB | ≤ 0.15 dB |
| **Insertion Loss $IL_{TYP}$ against MASTER Acc. IEC 61300-3-4** | ≤ 0.10 dB | ≤ 0.12 dB |
| **Return Loss Acc. IEC 61300-3-6** | ≥ 55 dB | ≥ 65 dB |

### Available boots

| Parameter | Boot type** | | |
|---|---|---|---|
| | Standard boots 0.9/2.0/3.0 mm | Mini boots 0.9/2.0/3.0 mm | Flex-Angled boots 2.0/3.0 mm |
| SC PC | ✓ | ✓ | ✓ |
| SC APC | ✓ | ✓ | ✓ |
| LC PC | ✓ | ✓ | ✓ |
| LC APC | ✓ | ✓ | ✓ |
| FC PC | ✓ | ✓ | - |
| FC APC | ✓ | ✓ | - |
| ST PC | ✓ | ✓ | - |
| E2000 PC | ✓ | - | - |
| E2000 APC | ✓ | - | - |
| DIN | ✓ | - | - |
| MU | ✓ | - | - |

** There is no possibility to mix various type of boots on a patchcord- as from the both sides a patchcord is terminated with the same type of boots.

### Available boots types




**Available connectors for Titanium Grade patchcords and pigtails:**

- SC PC/APC,
- FC PC/APC,
- E2000 PC/APC,
- LC PC/APC,

**Available fibers:**

- G652D,
- G655,
- G657A,
- G657B.

Detailed interferometric reports containing ferrule end face geometry parameters can be obtained by customer on request.

### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- Connectors are constructed from high quality plastics, resistant to corrosion and high temperatures with flammability index UL94-V0 or the high quality metal resistant to corrosion,
- Good value for money,
- High quality ceramic ferrules,
- Low attenuation and high reflectance,
- Wide range of available connectors and optical fibers.

### Applications

- Telecommunication networks,
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions,
- CWDM networks,
- Low voltage networks,
- Measuring devices.

### Technical specifications

| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| Insertion Loss $IL_{MAX}$ against MASTER Acc. IEC 61300-3-4 | ≤ 0.12 dB | ≤ 0.15 dB |
| Insertion Loss $IL_{TYP}$ against MASTER Acc. IEC 61300-3-4 | ≤ 0.10 dB | ≤ 0.12 dB |
| Return Loss Acc. IEC 61300-3-6 | ≥ 55 dB | ≥ 65 dB |

# MASTER CLASS PATCHCORDS

Master Class fiber optic patchcords are specifically designed to measure and test telecommunication networks and optical elements. The Master Patchcord is equipped with the highest quality master connector of tightly controlled concentricity and bore angle as well as the end face geometric parameters, which determine very low Insertion Loss and high connection repeatability.

Optical measurements, in accordance with PN-EN 61280-4-2/-4-1, PN-ISO/IEC 14763-3, ITU-T G.650.3 require the use of the Master Class patchcord. Patchcords can be terminated with two connectors of Master Class or a mixed option: a connector of the Master Class - a standard connector, polished of the Gold Grade. Fibrain Master Class of fiber optic connectors can be characterized by very low Insertion Loss and increased control of the ferrule's and face geometry. The control over the end face geometry after polishing process of a fiber optic termination provides the following benefits: guarantees optical performance, minimizes IL, and minimizes back reflection.

### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- High quality ceramic ferrules with tightly controlled concentricity and bore angle,
- Very low IL value, $IL_{TYP} \leq 0.05$ dB,
- Connectors are constructed from high quality plastic, resistant to corrosion and high temperatures with UL94-V0 flammability index.

### Applications

- Measurements concerning telecommunication networks,
- Testing optical devices,
- Measuring equipment,
- CWDM networks
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions.

| Series | Connector A | | Connector B | | Length [m] | Cable | Fiber | Diameter | Color | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Class | Type | Class | Type | | | | | | |
| MP | M Master | SC | M Master* | SC | 001.0 | SX patchcord simplex | A SMF G.652D | 18 1.8mm | Y | |
| | | SCA | G Gold | SCA | | | D G657A1 | | | |
| | | LC | | LC | | | | | | |
| | | LCA | | LCA | | | | | | |
| | | FC | | FC | | | | | | |
| | | FCA | | FCA | | | | | | |
| | | | | E2 | | | | | | |
| | | | | E2A | | | | | | |
| | | | | ST | | | | | | |
| | | | | MU | | | | | | |
| | | | | DIN | | | | | | |
| | | | | | | | | | | |

* Master Connectors in accordance with the table of availability

**MP-MSCA-MSCA-002.0-SX-A-18-Y** Fibrain Master Class Patchcord, with SC APC Master class Connectors at both side, simplex, 2m length, G.652D, cable diameter 1.8mm, yellow coat.

### Technical specifications

| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| Insertion Loss $_{MAX}$ Acc. IEC 61300-3-34 | ≤ 0.10 dB | ≤ 0.10 dB |
| Insertion Loss $_{97\%}$ Acc. IEC 61300-3-34 | ≤ 0.07 dB | ≤ 0.07 dB |
| Insertion Loss $_{MEAN}$ Acc. IEC 61300-3-34 | ≤ 0.05 dB | ≤ 0.05 dB |
| Return Loss Acc. IEC 61300-3-6 | ≥ 55 dB | ≥ 65 dB |

### Master Connector End Face Geometry

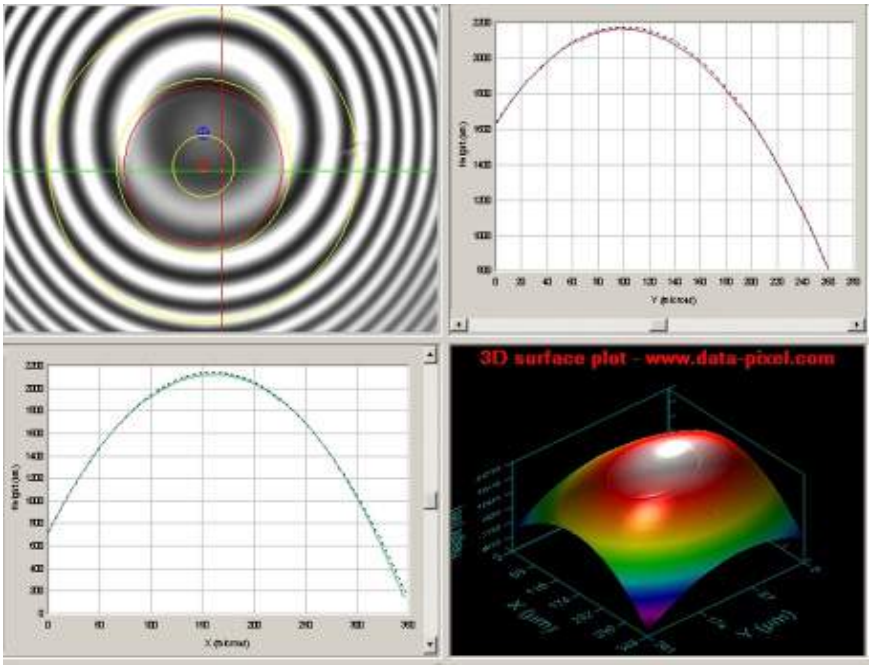
| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| Concentricity | ≤ 0.30 µm | ≤ 0.30 µm |
| Bore angle | ≤ 0.20 degree | ≤ 0.20 degree |
| Apex Offset (AO) | ≤ 30 µm | ≤ 30 µm |
| Radius of Curvature (ROC) | 10 ≤ ROC ≤ 20 mm @ SC<br>7 ≤ ROC ≤ 25 mm @ LC | 7 ≤ ROC ≤ 12 mm |
| Fiber Height (FH) | -30.0 ≤ FH ≤ +30.0 nm | -30.0 ≤ FH ≤ +30.0 nm |
| Angle (AN) | - | 7.7 ≤ AN ≤8.3 degree |

# MASTER CLASS PATCHCORDS & PIGTAILS

### Available connectors

| Connector type | Master Class | Gold Grade |
|---|---|---|
| SC PC | ✓ | ✓ |
| SC APC | ✓ | ✓ |
| LC PC | ✓ | ✓ |
| LC APC | ✓ | ✓ |
| FC PC | ✓ | ✓ |
| FC APC | ✓ | ✓ |
| ST PC | - | ✓ |
| E2000 PC | - | ✓ |
| E2000 APC | - | ✓ |
| DIN | - | ✓ |
| MU | - | ✓ |

Detailed reports containing test results with individual measurements of Insertion Loss (IL) and Return Loss (RL) as well as end face geometry are attached with Master Class Patchcords.




### Features

- Comply with IEC, TIA/EIA requirements,
- High quality and repeatability of the transmission parameters,
- High quality ceramic ferrules with tightly controlled concentricity and bore angle,
- Very low IL value, $IL_{TYP} \leq 0.05$ dB,
- Connectors are constructed from high quality plastic, resistant to corrosion and high temperatures with UL94-V0 flammability index.

### Applications

- Measurements concerning telecommunication networks,
- Testing optical devices,
- Measuring equipment,
- CWDM networks
- Local area network (LAN),
- FTTx, FTTD, FTTB, FTTH networks,
- CATV solutions.

### Technical specifications

| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| Insertion Loss $_{MAX}$ Acc. IEC 61300-3-34 | ≤ 0.10 dB | ≤ 0.10 dB |
| Insertion Loss $_{97\%}$ Acc. IEC 61300-3-34 | ≤ 0.07 dB | ≤ 0.07 dB |
| Insertion Loss $_{MEAN}$ Acc. IEC 61300-3-34 | ≤ 0.05 dB | ≤ 0.05 dB |
| Return Loss Acc. IEC 61300-3-6 | ≥ 55 dB | ≥ 65 dB |

### Master Connector End Face Geometry

| Parameter | SM PC Connectors | SM APC Connectors |
|---|---|---|
| Concentricity | ≤ 0.30 µm | ≤ 0.30 µm |
| Bore angle | ≤ 0.20 degree | ≤ 0.20 degree |
| Apex Offset (AO) | ≤ 30 µm | ≤ 30 µm |
| Radius of Curvature (ROC) | 10 ≤ ROC ≤ 20 mm @ SC<br>7 ≤ ROC ≤ 25 mm @ LC | 7 ≤ ROC ≤ 12 mm |
| Fiber Height (FH) | -30.0 ≤ FH ≤ +30.0 nm | -30.0 ≤ FH ≤ +30.0 nm |
| Angle (AN) | - | 7.7 ≤ AN ≤8.3 degree |

# PIGTAIL SET

The set of 12 fiber optic pigtails polished in the Silver grade. This set is available in two versions: 12 pigtails in yellow protection tube 0.9mm or a set of 12 pigtails with multicolor 0.9mm protection tubes. The set of pigtails facilitates the assembly and identification of fiber optic splices, which saves installation time and lower the costs substantially. The tubes are available in the following colors: red, green, blue, yellow, white, grey, brown, purple, orange, black, pink, aqua.

**The set of 12 Fibrain fiber optic pigtails with a standard 900 µm colorful protection tube.**

**The sets are delivered with tubes in 12 colors:**

| Available colors of tubes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| red | green | blue | yellow | white | grey | brown | violet | orange | black | pink | aqua |

| Series | Connector | | Boot type | Length | Cable | Fiber | Cable diameter | Color |
|---|---|---|---|---|---|---|---|---|
| | A | B | | | | | | |
| **S-SET12** | SC | XX | S-Standard | 001.0 | P9 pigtail 900 µm | A SMF G.652D | 09 0.9 mm | 12 multicolor |
| | SCA | | | | | I MMF OM2 | | |
| | LC | | | | | | | |
| | LCA | | | | | | | |
| | FC | | | | | | | |
| | FCA | | | | | | | |
| | E2 | | | | | | | |
| | E2A | | | | | | | |
| | ST | | | | | | | |

**S-SET12-SCA-XX-S-002.0-P9-A-09-12** Fibrain Pigtail Silver, SET 12 pieces, SC APC connector, G.652D, 2m length, 0.9mm tube in 12 colors.

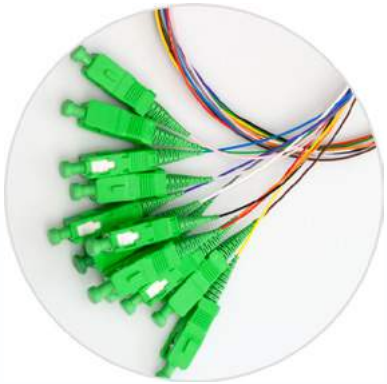
**The set of 12 Fibrain fiber optic pigtails with a standard 900 µm yellow protection tube**

| Series | Connector | | Boot type | Length | Cable | Fiber | Cable diameter | Color | |
|---|---|---|---|---|---|---|---|---|---|
| | A | B | | | | | | | |
| **S-SET12** | SC | XX | S-Standard | 001.0 | P9 pigtail 900 µm | A SMF G.652D | 09 0.9 mm | Y | |
| | SCA | | | | | I MMF OM2 | | | |
| | LC | | | | | | | | |
| | LCA | | | | | | | | |
| | FC | | | | | | | | |
| | FCA | | | | | | | | |
| | E2 | | | | | | | | |
| | E2A | | | | | | | | |
| | ST | | | | | | | | |

**S-SET12-SCA-XX-S-002.0-P9-A-09-Y** Fibrain Pigtail Silver, SET 12 pieces, SC APC connector, G.652D, 2m length, 0.9mm yellow tube.

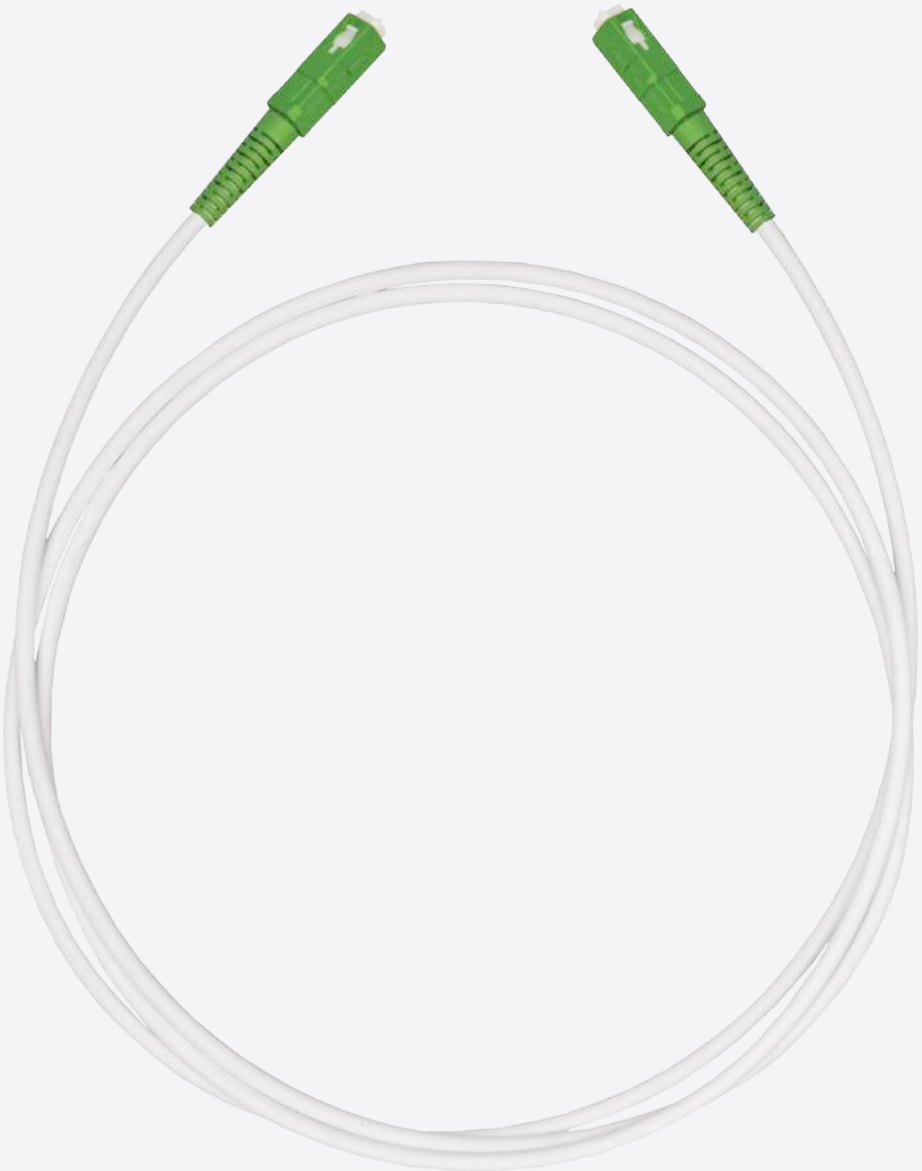
**Technical specifications**

| Parameter | Connectors | | |
|---|---|---|---|
| | SM PC | SM APC | MM PC |
| Insertion Loss $IL_{MAX}$ against Master Acc. IEC 61300-3-4 | ≤ 0.35 dB | ≤ 0.35 dB | ≤ 0.35 dB |
| Insertion Loss $IL_{TYP}$ against Master Acc. IEC 61300-3-4 | ≤ 0.28 dB | ≤ 0.28 dB | ≤ 0.25 dB |
| Return Loss Acc. IEC 61300-3-6 | ≥ 50 dB | ≥ 60 dB | ≥ 30 dB |



NEW

# Cross-connect drop cables



# CROSS-CONNECT DROP CABLES

NEW

Drop cable patchcords and pigtails are specifically designed to be used in FTTH networks, between a customer outlet and an ONT equipment. Fibrain patchcords are strengthened, thus they are resistant to mechanical damages, contrary to ordinary patchcords. Therefore, each cable is constructed from flame-retardant materials, which do not emit any poisonous substances and toxic smoke (LSOH). Depending on a number of terminated fibers and a cable, the connector is clamped directly on the cable's sheath or performed as a short fanout. There are different constructions, fibers, and fiber optic connectors available. Accurate and precise manufacturing process, detailed quality control process, interferometric measurements as well as the control of IL and RL parameters make our patchcords and pigtails reliable components of fiber optic networks.

| Technical specification | |
|---|---|
| **Cable** | VC-D20, VC-D30, VC-D30R, VC-D30RP, VC-D40, VC-DCY |
| **Fiber** | G.657A1, G.657A2, G.G57A3/B2, G.657B3 |
| **Fiber optic connector** | SC/SCA/LC/LCA/FC/FCA/E2000/E2000 APC |
| **$IL_{MAX}$ (61300-3-4)** | ≤ 0.20 dB |
| **$IL_{TYP}$ (61300-3-4)** | ≤ 0.15 dB |
| **RL (61300-3-6)** | ≥ 55 dB @ PC / ≥ 65 dB @ APC |

### Features

- In accordance with IEC, TIA/EIA
- High quality and repeatability of transmission parameters
- High quality plastic connectors, corrosion and high temperatures resistant, UL 94-V0 material or other metal resistant to corrosion
- 300-1000N bending resistant (depending on a cable type)
- Wide range of connectors and optical fibers.
- Safe and proper to be used in houses and office buildings between a customer outlet and ONT

### Applications

- FTTH networks
- Last mile connections

### Ordering information

| Type* | Connectors side A | | Connectors side B | | Length [m] | Cable type | Fiber type | Fiber qty in a cable |
|---|---|---|---|---|---|---|---|---|
| | qty | type | qty | type | | | | |
| **PA0** | 01 | SC | 01 | SC | 001.0 | 01 VC-D20 | A G.652D | 1 - 1F |
| **PA1** | 02 | SCA | 02 | SCA | | 02 VC-D30 | D G.657A1 | 2 - 2F |
| **PA2** | 04 | LC | 04 | LC | | 03 VC-D30R (Resibend) | E G.657A2 | 4 - 4F |
| **PA3** | | LCA | | LCA | | 04 VC-D30RP | F G.657A3/B2 | |
| | | FC | | FC | | (Resibend Plus) | G G.657B3 | |
| | | FCA | | FCA | | 05 VC-D40 | | |
| | | E2 | | E2 | | 06 VC-DCY | | |
| | | E2A | | E2A | | 07 VC-DCS | | |

*** PA0** – drop patchcord without fanout, connectors terminated directly on a cable

**PA1** – drop patchcord with 0.9 mm fanout

**PA2** – drop patchcord with 1.8 mm fanout

**PA3** – drop patchcord with 2.8 mm fanout

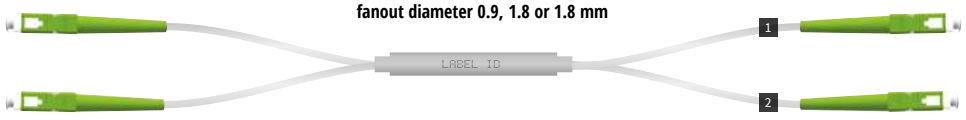
**Example: PA0-01SCA-01SCA-001.0-03F-1** Fibrain VC-D30 Resibend drop patchcord cable with single LSOH 1m 1J 09/125 coat, G.657A3/B2 SC APC/ SC APC

### Construction

For **VC-D20, VC-D30, VC-D30R, VC-D30RP, VC-DCS, VC-D40** cables terminated with a single fiber optic connectors on both sides:

**total length**

For **VC-DCS 2F, VC-D40 2F** cables (in case of terminating both fibers with connectors), **VC-DCY 1-4F**:




**fanout 15 cm**

**total length**

NEW

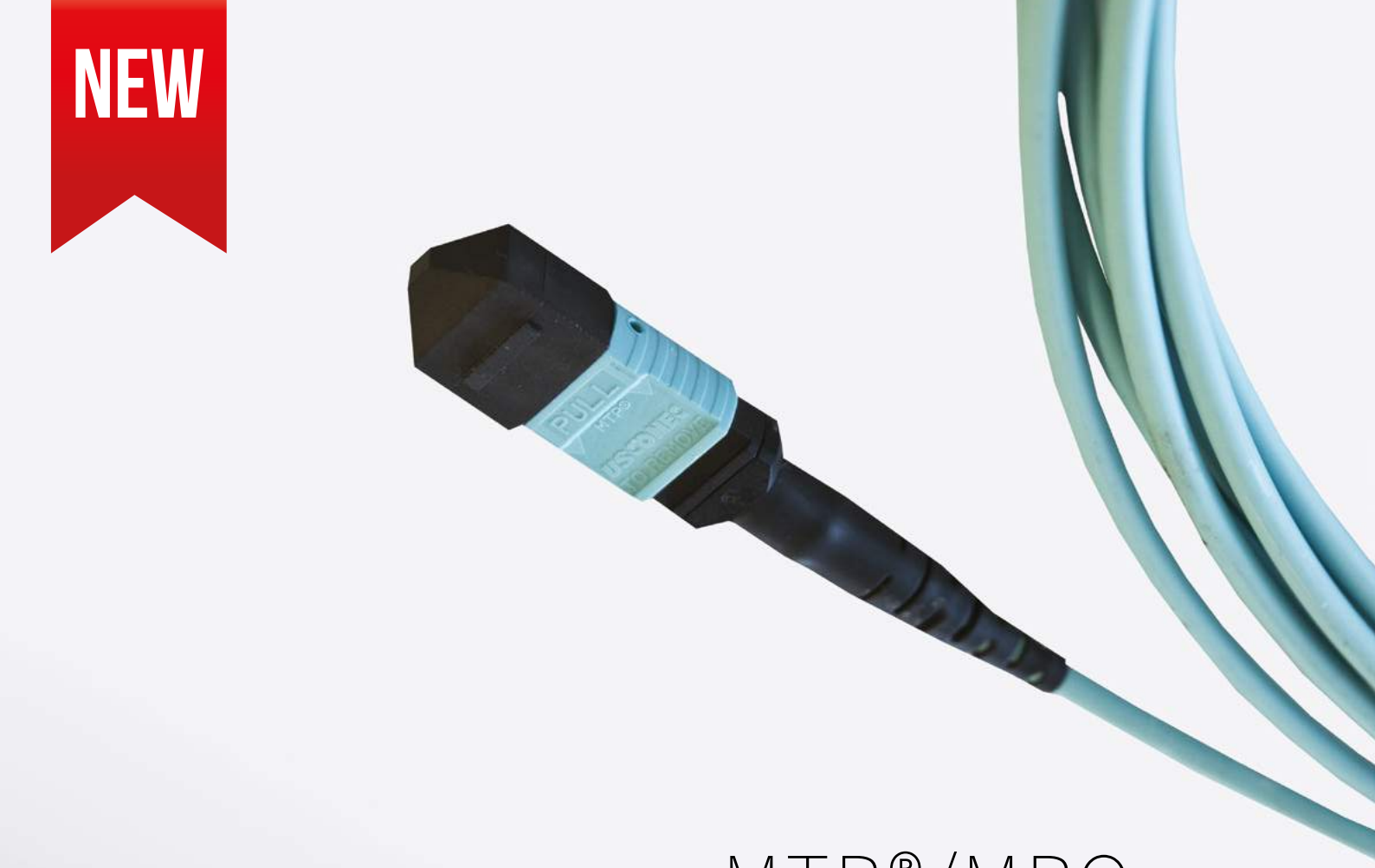
Crushproof

Bendproof

Knotproof

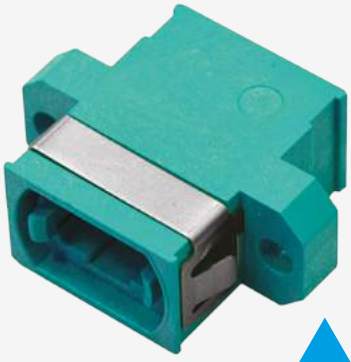
# RESIBEND® CABLES

NEW




# MTP®/MPO solution

# MTP® Fiber Optic Adapters



**ONE-PIECE TECHNOLOGY**

- Adapters provide quick connection of MTP®/MPO connectors – connection integrity is provided by adapter latches which are locked into place on the connectors by a spring loaded sliding mechanism
- One-piece design of adapter body – increased side loading performance
- Available in black, aqua, beige, violet magenta and green
- Flange or flangeless configuration
- Opposed key orientation - TIA 604-5D (on request aligned key orientation in gray housing color)
- Standard MTP footprint type (on request MTP adapters in SC footprint type available)

**HIGH DENSITY APPLICATION**

## Applications

- Data Center Systems
- Array trunk cabling
- Dense interconnect for data center and telecommunication system
- Chassis-to-chassis connections
- Structured cabling per TIA-568-C

## Features

- Low insertion loss
- Meets IEC Standard 61754-7
- Meets TIA/EIA 604-5 Type MPO
- Push-pull mechanism provides quick connections

## Available colors

SM APC

MM OM1

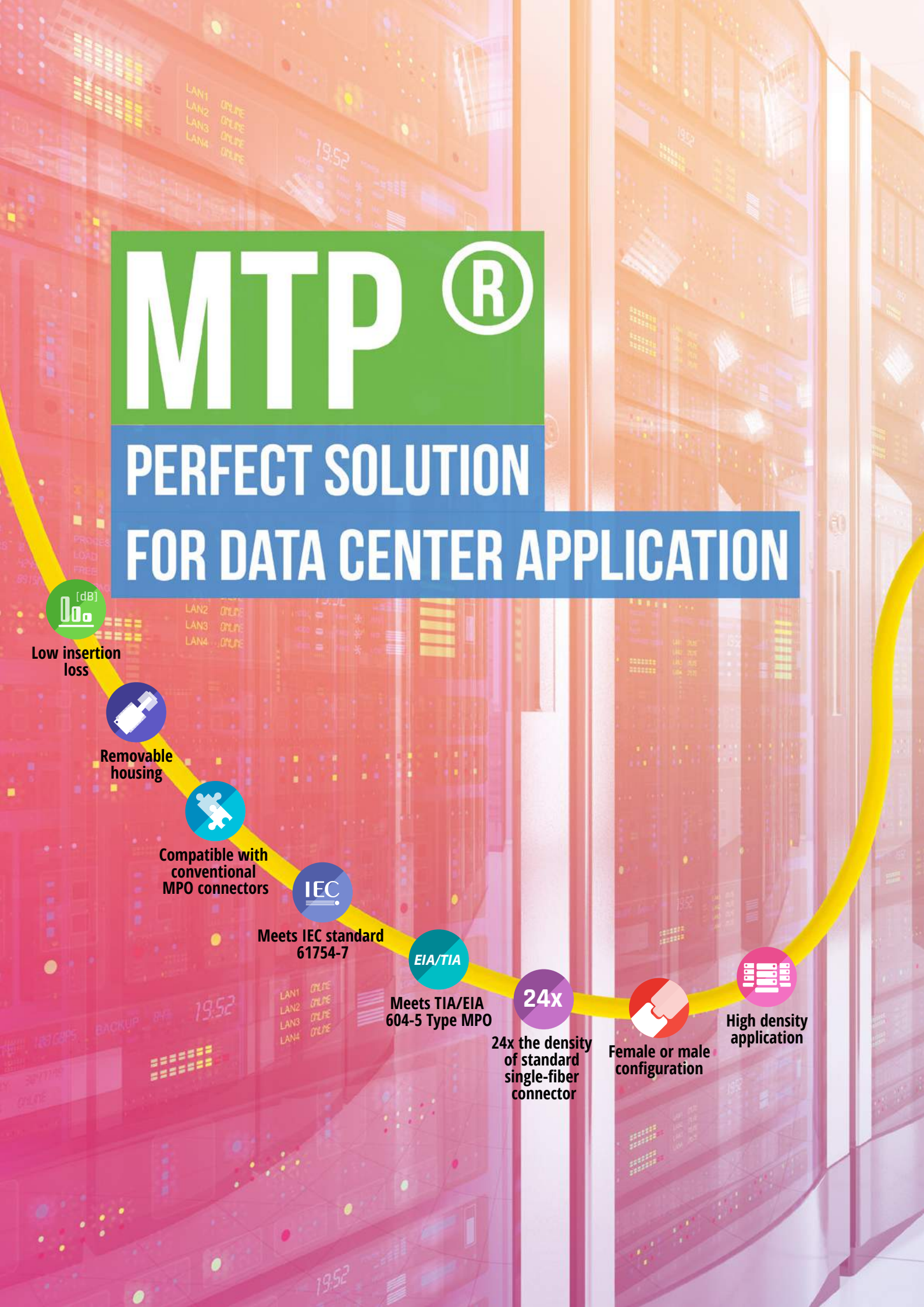
MM OM2

MM OM3

MM OM4

## Ordering information

| | |
|---|---|
| **AD-MTP-SM-GR-F** | FIBRAIN MTP SM adapter, flange, green housing, opposed key |
| **AD-MTP-OM1-BG-F** | FIBRAIN MTP OM1 adapter, flange, beige housing, opposed key |
| **AD-MTP-OM2-BK-F** | FIBRAIN MTP OM2 adapter, flange, black housing, opposed key |
| **AD-MTP-OM3-AQ-F** | FIBRAIN MTP OM3 adapter, flange, aqua housing, opposed key |
| **AD-MTP-OM4-V-F** | FIBRAIN MTP OM4 adapter, flange, violet housing, opposed key |


MTP ®
PERFECT SOLUTION
FOR DATA CENTER APPLICATION
[dB]
Low insertion loss
Removable housing
Compatible with conventional MPO connectors
IEC
Meets IEC standard 61754-7
EIA/TIA
Meets TIA/EIA 604-5 Type MPO
24x
24x the density of standard single-fiber connector
Female or male configuration
High density application

NEW
HIGH DENSITY
APPLICATION

NEW

## MTP® Fanouts – Direct Split

- 12 or 24 fibers in one connector
- Designed for SM and MM application
- Small diameter of ruggedized round cables
  - 12F → Ø 3.0 mm cable diameter
  - 24F → Ø 3.5 mm cable diameter
- Provide quick connection for up to 24 optical fiber
- Color coded housings available to differentiate fiber type
- Removable housing for quick gender change
- Female and male configuration available
- Polarization version A, B or C
- Alignment achieved with high precision quide pins with elliptical shape to minimize ferrule debris
- Low insertion Loss
- 100% optical measurements
- 100% interferometric measurements
- Ideal solution for high fiber count, multi-row applictions in array trunking, breakout modules

HIGH DENSITY APPLICATION

## Available colors of connector housing

## MTP® Fanouts – Direct Split

- This solution combine MTP® multi-fiber connectors with standard, single-fiber optic connectors
- Fanouting is made directly in the MTP® connector – without any additional furcation point
- Designed for SM and MM application, typically used in a 3U modular patch panel
- Wide range of single-fiber optic connectors, for example: LC, SC, E2000 with PC or APC polishing type
- Provide compact, cost effective solution for multi-fiber which require the MTP® hardware to be integrated with single-fiber connector assemblies
- Female or male configuration of MTP® connectors
- Low insertion loss
- Good value for money, the best price-quality ratio,
- Different type of optical fiber available (G.652D, G.657, OM1, OM2, OM3 or OM4)

# MTP® TRUNK/CONNECTING CABLES

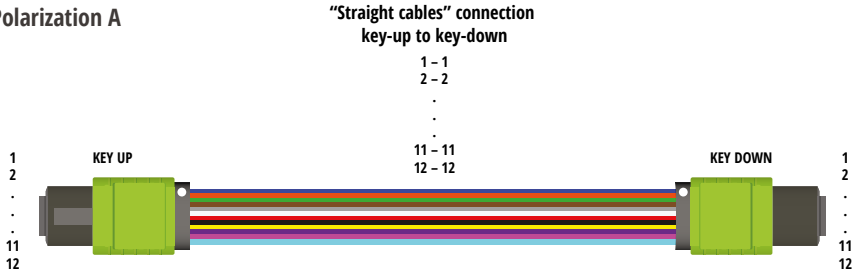
NEW

Fiber optic patchcords terminated with MTP® connectors are specifically designed for Data Center system. MTP® connectors, using the MT ferrule, can increase the density of 4 to 72x compared to traditional, single-fiber optic connectors. MTP® patchcords and pigtails are specifically designed to be used in both single- and multimode transmission. Modern and repeatable production process, detailed quality control, interferometric as well as IL & RL parameters control measurement make Fibrain patchcords and pigtails reliable elements of tracks and fiber optic networks. Connecting elements terminated with MTP® connectors are popular and willingly used solution for Data Center cabling, backbone networks and local broadcast of bandwidth 40/100 Gb /s bandwidth.

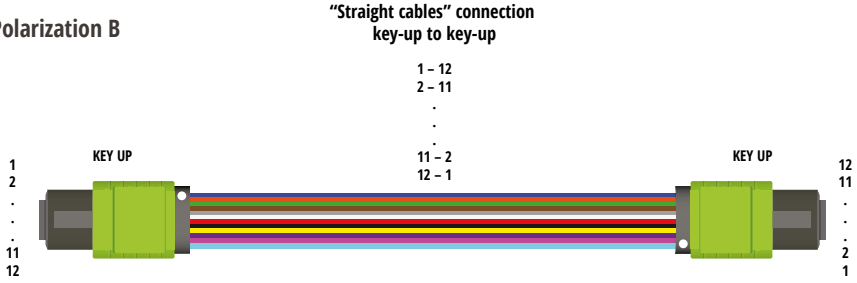
HIGH DENSITY APPLICATION

## FIBER IDENTIFICATION AND POLARIZATION CLASSIFICATION:

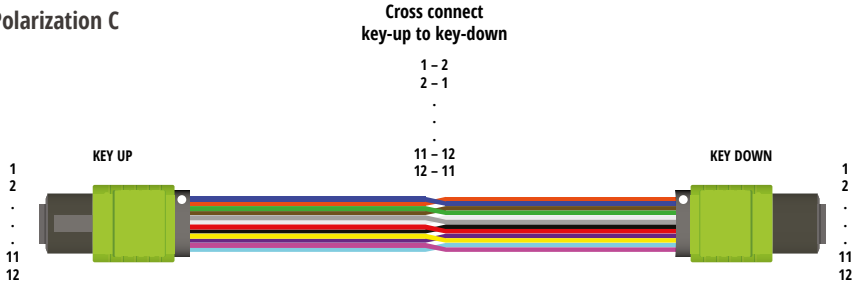
### Polarization A




### Polarization B




### Polarization C




## Technical specifications

| Parameter | MTP APC SM | MM PC |
|---|---|---|
| Max. Insertion Loss $IL_{MAX}$ Acc. IEC 61300-3-4 | ≤ 0.40 dB | ≤ 0.40 dB |
| Typical Insertion Loss $IL_{TYP}$ Acc. IEC 61300-3-4 | ≤ 0.20 dB | ≤ 0.20 dB |
| Return Loss RL Acc. IEC 61300-3-6 | ≥ 65 dB | ≥ 35 dB |

## Ordering information

| Class | Fiber qty | Connector | | Boot type | Cable diameter | Length [m] | Cable type | Fiber type | Polarization |
|---|---|---|---|---|---|---|---|---|---|
| | | A | B | | | | | | |
| G-Gold | 12-12 | MTPA.F – MTP female APC | MTPA.F – MTP female APC | S - standard | R30 – round 3.0 mm | 001.0 | 1 – DC PRIM | A – G652D | A |
| | | MTPA.M – MTP male APC | MTPA.M – MTP male APC | | | | | D – G657A1 | B |
| | | MTP.F – MTP female | MTP.F – MTP female | | | | | E – G657A2 | C |
| | | MTP.M – MTP male | MTP.M – MTP male | | | | | H – OM1 | |
| | | | | | | | | I – OM2 | |
| | | | | | | | | K – OM3 | |
| | | | | | | | | L – OM4 | |
| | | | | | | | | | |

### Features

- In accordance with IEC 61754-7, TIA/EIA 568-C,
- High quality and repeatability of transmission parameters,
- Connectors made of high quality plastics,
- MTP connectors compatible with MPO connectors,
- Good value for money, the best price-quality,
- High quality MT ferrule provides placing a lot of optical fibers in one connector.

### Applications

- Telecommunication networks,
- Data Center SYSTEMS,
- FTTx, FTTD, FTTB, FTTH networks

NEW

# MTP® FANOUTS DIRECT SPLIT

Fibrain MTP® Fanouts of Direct Split type connect MTP® multi-fiber connectors with standard, single-fiber optic connectors. This solution is specifically designed to be used in singlemode and multimode transmission. Therefore, in our product portfolio, there is a wide range of fiber optic connectors. The side terminated with MTP® connectors includes male or female connectors- depending on customer's needs.

HIGH DENSITY APPLICATION

## TECHNICAL SPECIFICATIONS

### Multi-fiber MTP connectors

| Parameter | MTP APC SM | MM PC |
|---|---|---|
| Max. Insertion Loss $IL_{MAX}$ Acc. IEC 61300-3-4 | ≤ 0.40 dB | ≤ 0.40 dB |
| Typical Insertion Loss $IL_{TYP}$ Acc. IEC 61300-3-4 | ≤ 0.20 dB | ≤ 0.20 dB |
| Return Loss RL Acc. IEC 61300-3-6 | ≥ 65 dB | ≥ 35 dB |

### Single-fiber standard optical connectors

| Parameter (connectors) | SM PC | SM APC | MM |
|---|---|---|---|
| Max. Insertion Loss $IL_{MAX}$ Acc. IEC 61300-3-4 | ≤ 0.17 dB | ≤ 0.20 dB | ≤ 0.20 dB |
| Typical Insertion Loss $IL_{TYP}$ Acc. IEC 61300-3-4 | ≤ 0.15 dB | ≤ 0.16 dB | ≤ 0.12 dB |
| Return Loss RL Acc. IEC 61300-3-6 | ≥ 55 dB | ≥ 65 dB | ≥ 35 dB |

### Fiber identification - fiber color (outer transparent tube)

| 1-12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | | | | | | | | | | | | |
| Color | blue | orange | green | brown | grey | white | red | black | yellow | violet | pink | aqua |

### Ordering information

| Class | Fiber qty | Connector A | Connector B | Boot type | Cable diameter | Length [m] | Cable type | Fiber |
|---|---|---|---|---|---|---|---|---|
| G-Gold | 12-12 | MTPA.F – MTP female APC | SC | S - standard | 09 - 900µm | 001.0 | DS – Direct Split | A – G652D |
| | | MTPA.M – MTP male APC | SCA | | | | | D – G657A1 |
| | | MTP.F – MTP female | LC | | | | | E – G657A2 |
| | | MTP.M – MTP male | LCA | | | | | H – OM1 |
| | | | FC | | | | | I – OM2 |
| | | | FCA | | | | | K – OM3 |
| | | | E2 | | | | | L – OM4 |
| | | | E2A | | | | | |

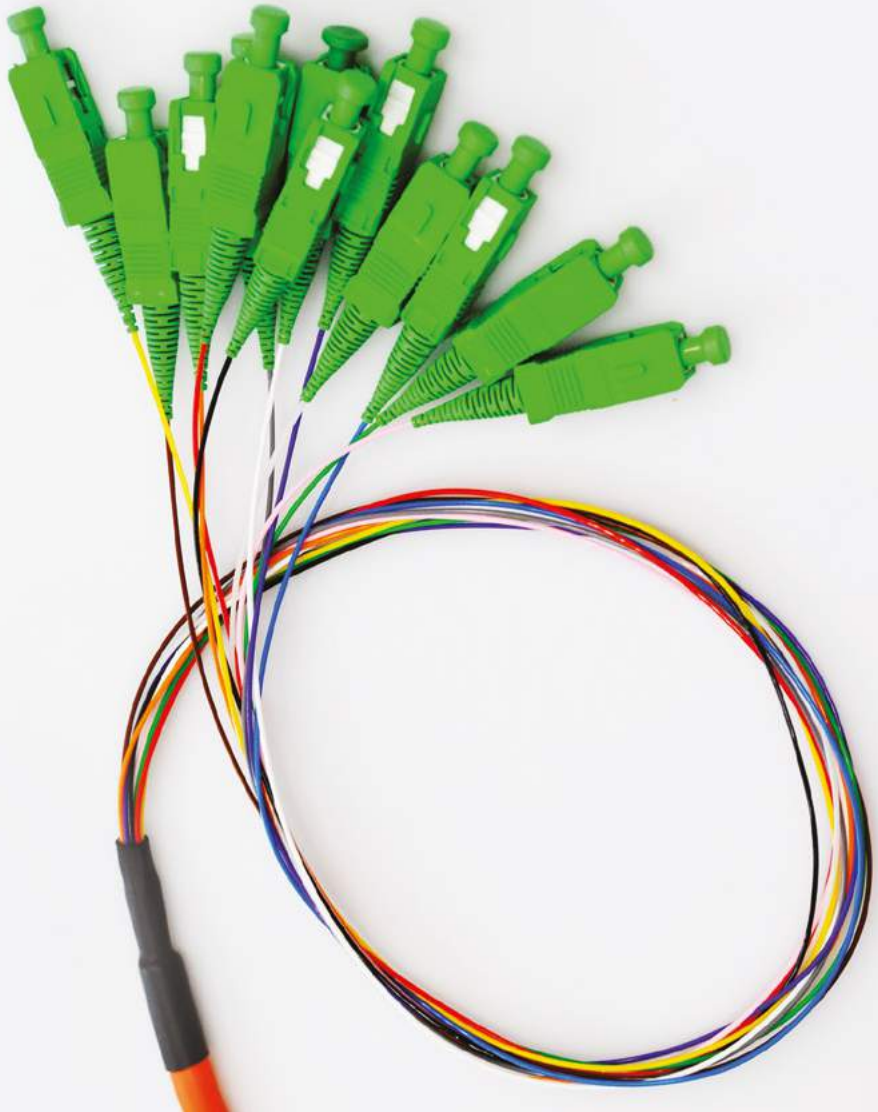
### Features

- In accordance with IEC, TIA/EIA standards ,
- High quality and repeatability of transmission parameters,
- Connectors made of high quality plastics,
- Good value for money, the best price-quality ratio,
- High quality MT ferrule, provides placing a lot optical fibers in one connector.

### Applications

- Telecommunication networks,
- Data Center SYSTEMS,
- FTTx, FTTD, FTTB, FTTH networks

# Pre-connectorized multi-fiber cables



# PRE-CONNECTORIZED MULTI-FIBER CABLES /MULTIPATCHCORDS

Pre-connectorized multi -fiber cables referred to as multipatchcords are ideal solution for fast and easy connection of N fibers with single cable. Therefore, no extra and expensive equipment is necessary to perform the fiber optic splices. Additional benefits are given in the "Features" section.

The cables producers put a lot of effort into meeting all demanding, mechanical and environmental requirements, but even the advanced cable construction may not guarantee the proper transmission, if the fanout and connectorization are performed improperly. It may only seem that stripping the jacket, fibers separation and placing protection tubes is easy, but in reality, it often causes difficulties. Thus, Fibrain company pays special attention to design the products with premium quality parameters. The product range, which is being constantly widened, is based on mechanical and climate tests in climatic chamber and strict regulations concerning manufacturing and quality. As a result, Fibrain multipatchcords comply and often exceed the IEC requirements, Telcord and telecommunication operator's specifications. As an example, pre-connectorized cables of Safebranch series have the high mechanical and thermic resistance, and therefore can be used in FTTA applications.

### Features

- Time-saving solution and proper protection of connections - for pulling Easylink2,
- Producer's warranty for connectors,
- Reduced use of space,
- Possibility to order a cable of selected length,
- Room saving in telecommunication cabinets,
- No mistakes in performing splices.

### Available furcations

| | Furcation | | | | | | |
|---|---|---|---|---|---|---|---|
| Cable | TCF | TEF | TEFM | TEFM9 | TEFC9 | PTF | HF |
| Aero AD | - | ✓ | - | - | ✓ | - | - |
| Aero AS | - | ✓ | - | - | ✓ | - | - |
| Aero DF | - | ✓ | - | - | - | - | - |
| BDC CO | ✓ | ✓ | - | - | ✓ | - | - |
| BDC CI | ✓ | ✓ | - | - | ✓ | - | - |
| BDC S0 | ✓ | ✓ | - | - | ✓ | ✓ | - |
| BDC SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| BDC SI | ✓ | ✓ | - | - | ✓ | - | - |
| DAC | ✓ | ✓ | ✓ | ✓ | ✓ | - | - |
| DDC-C0 | ✓ | ✓ | - | - | ✓ | - | - |
| DDC-C0A | ✓ | ✓ | - | - | ✓ | - | - |
| EXO-C0 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| EXO-CI | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| EXO-CK | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| EXO-CS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| EXO-CU | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |
| MK-DX | - | - | ✓ | ✓ | ✓ | - | - |
| MK-LX4 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - |
| MK-LX6 | ✓ | ✓ | ✓ | ✓ | ✓ | - | - |
| MK-LX7 | ✓ | ✓ | - | ✓ | ✓ | - | - |
| MK-LX8 | ✓ | ✓ | - | ✓ | ✓ | - | - |
| CDIR-M | ✓ | ✓ | - | ✓ | - | - | ✓ |
| CDI | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CDI-M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CDAD | ✓ | ✓ | - | - | ✓ | ✓ | ✓ |
| CDG | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Legend:**

outdoor

outdoor/indoor

indoor

✓ - possible

✓ - recommended

# HF MULTIPATCHCORDS

## Pre-connectorized multi-fiber cables Minibreakout&Breakout

HF pre-connectorized multi-fiber cables are specifically designed to serve as general-purpose products. The solution is based on breakout or minibreakout cable solutions, protected by heatshrink sleeves. Then, fibers with 0.9mm diameter buffer tubes or in kevlar reinforced fanouts (diameter: 1.6mm-2.8mm, depending on a cable type) are terminated with connectors in accordance with customer's needs and requirements. Each connector is easily identified thanks to clear color coding of tubes and numerical markings.

In addition, from an economic point of view HF cables provide cost-effective solutions, thus they are popular in the structured cabling systems, where are used as links between distribution points. It is a Plug and Play solution, which facilitates fast and easy installation, with no extra equipment, as in traditional installation with splices.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| **Max.tensile load** | IEC 61753-2-1 | 80N-fanout 1.6mm/2.8mm<br>7N-tuba 900 µm |
| **Crush resistance- furcation point** | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 50N |
| **Temperature range for installation** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| **Operation** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -30... +70 [°C] |
| **Transport & Storage** | | -30... +70 [°C] |
| **Max. Insertion Loss of connector** | IEC 61300-3-4 | ≤ 0.3dB |
| **Return Loss** | IEC 61300-3-6 | RL≥65 dB(APC); RL≥50 dB(SM UPC); RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

| Parameter | |
|---|---|
| **Furcation point length [mm]** | 40-60 |
| **Number of fibers** | 1-72* |
| **Connector type** | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST |

* There is a possibility of performing pre-connectorized cables with more fibers after the consultancy with our sales department.

### Technical specification

| Furcation | Number and connector type (A side) | Number and connector type (B side) | Cable/fiber type | | Cable length between furcation points | Furcation (A side) | | Furcation (B side) | |
|---|---|---|---|---|---|---|---|---|---|
| **HF** | **-12SCA** | **-12SCA** | **-01A** | • **Two digits:** cable type<br>• **Letter:** fiber type | -0097.6 | **-01200** | • **First digit** - Furcation type of A side;<br>• **Three following digits** - max. output length on A side [cm]<br>• **Last digit** - diameter of A side | **-01200** | • **First digit** - furcation type of A side<br>• **Three following digits** - max. output length on B side [cm]<br>• **Last digit** - diameter of B side |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 0400 - furcation without connectors | 17-MINI-CDIR | A SMF G.652D |
| 0000 - no furcation | 18-CDIR | B SMF G655 |
| SC-SC UPC | 25-CDI-M | C SMF G656 |
| SCA-SC APC | 27-CDI | D SMF G657A1 |
| E2-E2000 | 33-CDAD | E SMF G657A2 |
| E2A-E2000 APC | 26-CDIR-AD | F SMF G657B2 |
| LC-LC UPC | 36-CDG | G SMF G657B3 |
| LCA-LC APC | 37-CDIR-M | H MMF OM1 |
| FC-FC UPC | | I MMF OM2 |
| FCA-FC APC | | J MMF OM2+ |
| ST-ST UPC | | K MMF OM3 |
| | | L MMF OM4 |

| Furcation type: | Fanout type: |
|---|---|
| 0-equal length of outputs | 0-tube 900µm |
| 1-single cascade | 1-fanout 1.8mm |
| 2-double cascade | 2-fanout 2.8mm |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

| Available cascades |
|---|
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**HF-12SCA-12SCA-51A-0097.6-01200-01200**

CDI pre-connectorized cable with G.652D fibers, 100m length with 12 SC APC connectors on both sides of 900 µm tubes. Equal length of furcation legs- 120cm.

# TCF EASYLINK 1 MULTIPATCHCORDS

## Pre-connectorized multi-fiber cables Easylink 1

Easylink 1 pre-connectorized multi-fiber cables are specifically designed to serve as general-purpose products. The solution provides termination of loose tube cables as well as other cable types. The fibers are inserted into 0.9mm tube or fanouts, strengthened by Kevlar fibers, with 1.6mm or 2.8mm (depending on a cable type). Therefore, the furcation point is protected by a heatshrink sleeve. Then, fibers are terminated with connectors in accordance with customer's needs and requirements.

In addition, from an economic point of view TCF cables provide cost-effective solutions, thus are popular in the structured cabling systems, where they are used as links between distribution points. It is a Plug and Play solution, which facilitates fast and easy installation, with no extra equipment, as in traditional installation with splices.

### Features

- Furcation point is protected by plastic tube and a heatshrink sleeve,
- High quality,
- Easy and fast installation,
- Plug & Play solution,
- Common in structured cable systems,
- Wide range of fiber optic connectors.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| Max. tensile load | IEC 61753-2-1 | 80N-fanout 1.6mm/2.8mm<br>7N-tuba 900µm |
| Crush performance | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 100N |
| Installation temperature range | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| Operation* | | -30... +70 [°C] |
| Transport & Storage | | -30... +70 [°C] |
| Max. Insertion Loss | IEC 61300-3-4 | ≤ 0.3dB |
| Return Loss (RL) | IEC 61300-3-6 | RL≥65 dB(APC);<br>RL≥50 dB(SM UPC);<br>RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

### Technical specification

| Parameter | | | | | |
|---|---|---|---|---|---|
| Max. outer diameter of furcation point [mm] | Ø 15 | Ø 18 | Ø 22* | Ø 24* | Ø 27* |
| Length of furcation point [mm] | 55 | 65 | 65 | 70 | 80 |
| Number of fibers in 0.9mm tubes | 4-48 | 49-96** | | | |
| Number of fibers in 1.8 mm fanouts | 4-16 | 17-32 | 33-48 | 49-60 | 61-96** |
| Number of fibers in 2.8mm fanouts | 4-10 | 11-18 | 19-26 | 27-32 | 33-48** |
| Connector type | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST | | | | |

*Ø 22 - Ø 27 adapted to 1.8 - 2.8mm fanouts
** There is a possibility of performing pre-connectorized cables with more fibers after consulting with our sales department.

# TCF EASYLINK 1 MULTIPATCHCORDS

## Pre-connectorized multi-fiber cables Easylink 1

### Reference scheme

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TCF | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | -01201 | • **First digit** - Furcation type of A side;<br>• **Three following digits** - max. output length on A side [cm]<br>• **Last digit** -fanout diameter of A side; | -11200 | • **First digit** - Furcation type of B side;<br>• **Three following digits** - max. output length on B side [cm]<br>• **Last digit** -fanout diameter of B side; |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 0400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 05-BDC-C0 PE | E SMF G657A2 |
| E2A-E2000 APC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LC-LC UPC | 07-BDC-CI PE | G SMF G657B3 |
| LCA-LC APC | 08-BDC-CI LSZH | H MMF OM1 |
| FC-FC UPC | 24-BURRY DAC | I MMF OM2 |
| FCA-FC APC | 28-AERO DF 03 | J MMF OM2+ |
| ST-ST UPC | 35-FTTA DAC | K MMF OM3 |
| | | L MMF OM4 |

| Furcation type | Fanout type |
|---|---|
| 0-equal length of outputs | 0-tube 900µm |
| 1-single cascade | 1-fanout 1.8mm |
| 2-double cascade | 2-fanout 2.8mm |

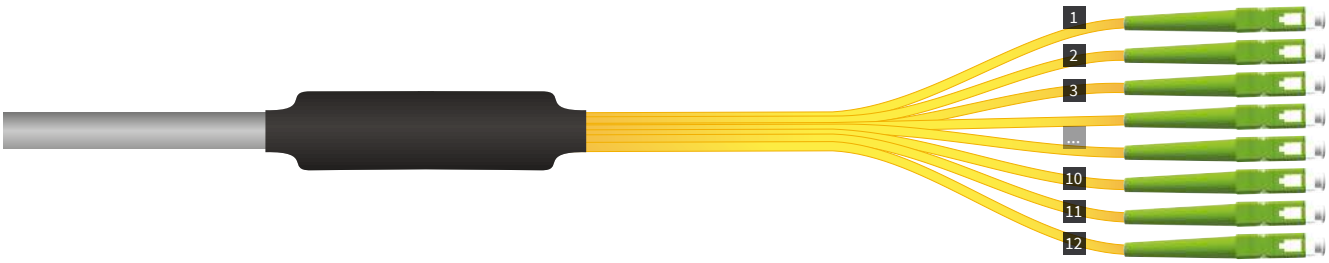
Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

| Available cascades |
|---|
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

### Example:

**TCF-12SCA-12SCA-01A-0097.6-01201-11200** EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 12 SC APC connectors on both sides, equal length of 1.8mm furcation legs on A side -120cm, single cascade on 900 mm tubes for B side, maximal output length of B side 120cm, Easylink 1.

### TCF Easylink 1



# PTF EASYLINK 2 MULTIPATCHCORDS

## PTF-Easylink 2 pre-connectorized multi-fiber cables

Easylink 2 pre-connectorized multi-fiber cables are specifically designed to serve as general-purpose products. The solution provides termination of loose tube cables as well as other cable types. The fibers are inserted into 0.9mm tube or furcation, strengthened by Kevlar fibers, with 1.6mm or 2.8mm (depending on a cable type). Therefore, the furcation point is protected by a metal sleeve with a boot protecting from moving and bending. Then, fibers are terminated with connectors in accordance with customer's needs and requirements. Moreover, output legs are placed inside a reusable protection tube, which is fixed to a bushing and may be used as a pulling grip.

In addition, from an economic point of view PTF-Easylink2 cables provide cost-effective solutions, thus they are popular in the structured cabling systems, where they are used as links between distribution points. It is a Plug and Play solution, which facilitates fast and easy installation, with no extra equipment, as in traditional installation with splices.

### Features

- Furcation point is protected by a metal sleeve with a boot,
- Protection tube may be used as a pulling grip,
- Easy and fast installation,
- Plug & Play solution,
- Common in structured cable systems,
- Wide range of fiber optic connectors.
- High quality.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| Max. tensile load | IEC 61753-2-1 | 100N |
| Crush performance | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 1000N |
| Installation temperature range | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| Operation | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -30... +70 [°C] |
| Transport & Storage | | -30... +70 [°C] |
| Max. Insertion Loss | IEC 61300-3-4 | ≤ 0.3dB |
| Return Loss (RL) | IEC 61300-3-6 | RL≥65 dB(APC); RL≥50 dB(SM UPC); RL≥30 dB(MM PC) |

* Temperature range varies from the cable type.

### Technical specification

| Parameter | | |
|---|---|---|
| Max. outer diameter of furcation point [mm] | Ø 18 | Ø 21 |
| Length of furcation point | 90 | 100 |
| Number of fibers in fanouts | 1-12 | 1-24 |
| Connector type | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST | |

### Protection tubes

# PTF EASYLINK 2 MULTIPATCHCORDS

## Pre-connectorized multi-fiber cables PTF-Easylink 2

### Reference scheme

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| PTF | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0098.1 | -1095M | • **First digit** - Furcation type of A side;<br>• **Three following digits** - max. output length on A side [cm]<br>• **Last letter** -fanout diameter of A side ; | -1095N | • **First digit** - Furcation type of B side;<br>• **Three following digits** - max. output length on B side [cm]<br>• **Last letter** -fanout diameter of B side; |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 1200-furcation without connectors | 01-Exo-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-Exo-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 05-BDC-C0 PE | E SMF G657A2 |
| E2A-E2000 APC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LC-LC UPC | 07-BDC-CI PE | G SMF G657B3 |
| LCA-LC APC | 08-BDC-CI LSZH | H MMF OM1 |
| FC-FC UPC | | I MMF OM2 |
| FCA-FC APC | | J MMF OM2+ |
| ST-ST UPC | | K MMF OM3 |
| | | L MMF OM4 |
| | | |

| Furcation type | Protection tube type |
|---|---|
| 0-equal length of outputs* | N- no tube |
| 1-single cascade | M - protection tube with a metal end |
| 2-double cascade | P - protection tube with a plastic end |

*in case of no protection tube

| Max. output length | Min. output length |
|---|---|
| 70cm – For cables with up to 8 fibers and protection tube | 10 cm |
| 95cm – For cables with 9 to 24 fibers and protection tube | |
| 200cm – For cables with up to 24 fibers without protection tube | |

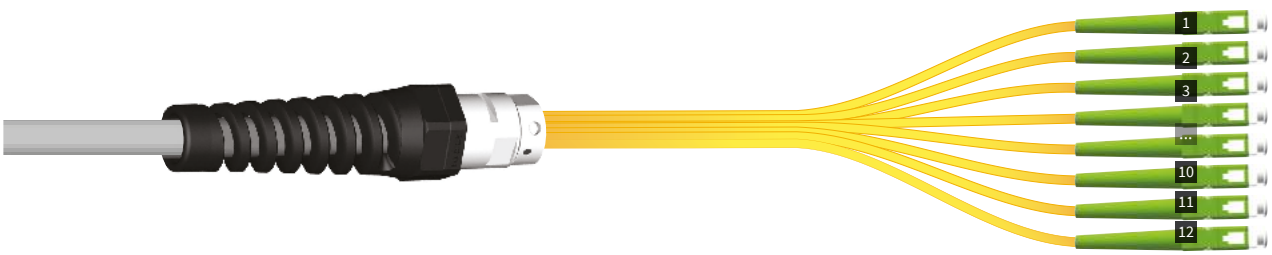
| Available cascades |
|---|
| For cables with up to 8 fibers and protection tube only single cascade possible |
| For cables with 9 to 14 fibers and protection tube - single and double cascade possible |
| For cables with 15 to 24 fibers and protection tube - only single cascade possible |
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**PTF-12SCA-12SCA-01A-0098.1-1095M-1095M**

EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 12 SC APC connectors on both sides, single cascade on A and B, max. output length on A and B side- 95cm, a protection tube with a metal end on both sides, Easylink 2.

**PTF Easylink 2**



# TEF SAFEBRANCH 1 MULTIPATCHCORDS

## TEF SafeBranch 1 pre-connectorized multi-fiber cables

TEF SafeBranch pre-connectorized multi-fiber cables are specifically designed to be used in various indoor and outdoor FTTX applications. Therefore, furcation point construction based on epoxy filler provides extra protection, thus the product withstands outdoor conditions without attenation increase

Safebranch fiber optic multipatchcords with 1.8mm and 2.8mm fanouts have premium parameters in tension tests (fanout in regard to a furcation point) and a version with 900mm tubes provides routing fibers in already dense assembled cabinets/racks. A spiral wrap at the output of furcation point prevents 900µm tubes from kinking. What is more, cable ties can be used for installation of these cables.  Product is available with SM and MM fibers and with various connector types.

### Features

- Furcation point construction based on epoxy filler provides extra protection,
- Stable attenuation,
- Wide range of fiber optic connectors,
- Crush resistance,
- A spiral wrap prevents 900 µm from kinking,
- High quality,
- Common in structured cable systems,
- Perfect solution for FTTX applications.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| **Max. tensile load** | IEC 61753-2-1 | 7N-tuba 900µm<br>150N - fanout 1.8-2.8mm |
| **Crush performance** | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 1000N |
| **Installation temperature range** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| **Operation*** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -25... +70 [°C] |
| **Transport & Storage** | | -25... +70 [°C] |
| **Max. Insertion Loss** | IEC 61300-3-4 | ≤ 0.3dB |
| **Return Loss (RL)** | IEC 61300-3-6 | RL≥65 dB(APC);<br>RL≥50 dB(SM UPC);<br>RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

### Technical specification

| Parameter | | | | | |
|---|---|---|---|---|---|
| **Max. outer diameter of furcation point [mm]** | Ø 15 | Ø 18 | Ø 22* | Ø 24* | Ø 27* |
| **Length of furcation point [mm]** | 40 - (0.9mm)<br>55 - (1.8-2.8mm) | 55 (0.9mm)<br>65 (1.8-2.8mm) | 65 | 70 | 80 |
| **Number of fibers in  0.9mm tubes** | 1-48 | 49-96** | | | |
| **Number of fibers in 1.8 mm fanouts** | 1-14 | 15-18 | 19-24 | 25-36 | 37-48** |
| **Number of fibers in 2.8mm fanouts** | 1-10 | 11-16 | 17-22 | 23-32 | 33-48** |
| **Connector type** | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST | | | | |

* Ø22  - Ø27 adapted to 1.8-2.8 mm fanouts

**There is a possibility of performing pre-connectorized cables with more fibers after consulting with our sales department.

# TEF SAFEBRANCH 1 MULTIPATCHCORDS

## TEF SafeBranch 1 pre-connectorized multi-fiber cables

### Reference scheme

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TEF | -24SCA | -24SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | -01201 | • **First digit**-Furcation type of A side;<br>• **Three following digits**-max. output length on A side [cm]<br>• **Last digit** -fanout diameter of A side; | -11200 | • **First digit** - Furcation type of B side;<br>• **Three following digits** - max. output length on B side [cm]<br>• **Last digit** -fanout diameter of B side; |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 2400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 05-BDC-C0 PE | E SMF G657A2 |
| E2A-E2000 APC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LC-LC UPC | 07-BDC-CI PE | G SMF G657B3 |
| LCA-LC APC | 08-BDC-CI LSZH | H MMF OM1 |
| FC-FC UPC | 24-BURRY DAC | I MMF OM2 |
| FCA-FC APC | 25-CDI-M | J MMF OM2+ |
| ST-ST UPC | 27-CDI | K MMF OM3 |
| | 28-AERO DF 03 | L MMF OM4 |
| | 33-CDAD | |
| | 35-FTTA DAC | |
| | 41-MK-LX4 | |
| | 42-MK-LX6 | |
| | | |

| Furcation type | Fanout type |
|---|---|
| 0-equal length of outputs | 0-tube 900µm |
| 1-single cascade | 1-fanout 1.8mm |
| 2-double cascade | 2-fanout 2.8mm |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

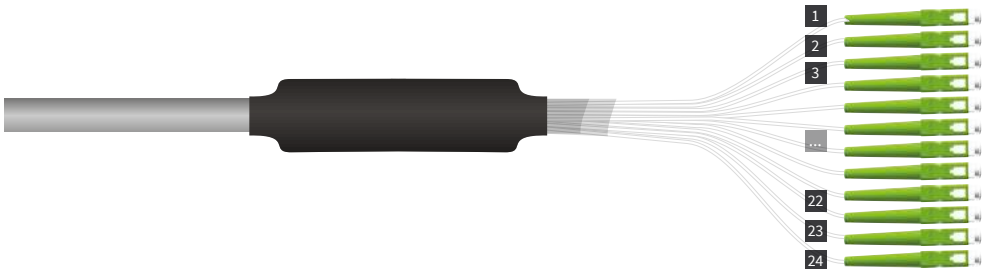
| Available cascades |
|---|
| Singe cascade- each furcation leg is shorter by 3cm than a previous one |
| Double cascade- Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**TEF-24SCA-24SCA-01A-0097.6-01201-11200**

EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 12 SC APC connectors on both sides, equal length of 1.8mm furcation legs on A side -120cm, single cascade on 900 mm tubes for B side, max. output length for B side- 120cm, SafeBranch 1.

### TEF SafeBranch 1



# TEFM9 SAFEBRANCH 2 MULTIPATCHCORDS

## TEFM9 SafeBranch 2 pre-connectorized multi-fiber cables

TEF SafeBranch 2 pre-connectorized multi-fiber cables are specifically designed to serve in various indoor and outdoor FTTX applications. The use of 900mm tubes provides routing fibers in already dense assembled cabinets/racks. Therefore, special epoxy filter construction provides extra protection, thus the product withstands outdoor conditions and the attenuation does not change its value. A spiral wrap at the output of furcation point prevents 900 µm tubes from kinking and metal furcation tubes allows for installation with the use of cable ties. A product is available with SM and MM fibers and with various connector types.

### Features

- Furcation point construction based on epoxy filler provides extra protection,
- Stable attenuation,
- Wide range of fiber optic connectors,
- Crush resistance,
- A spiral wrap prevents 900 µm from kinking,
- High quality,
- Common in structured cable systems,
- Perfect solution for FTTX applications.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| **Max. tensile load** | IEC 61753-2-1 | 7N |
| **Crush performance** | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 1000N |
| **Installation temperature range** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| **Operation*** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -25... +70 [°C] |
| **Transport & Storage** | | -25... +70 [°C] |
| **Max. Insertion Loss** | IEC 61300-3-4 | ≤ 0.3dB |
| **Return Loss (RL)** | IEC 61300-3-6 | RL≥65 dB(APC); RL≥50 dB(SM UPC); RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

### Technical specification

| Parameter | |
|---|---|
| **Max. outer diameter of furcation point [mm]** | Ø 10 |
| **Length of furcation point [mm]** | 30 |
| **Number of fibers** | 1-12 |
| **Connector type** | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST |

# TEFM9 SAFEBRANCH 2 MULTIPATCHCORDS

## TEFM9 SafeBranch 2 pre-connectorized multi-fiber cables

**Reference scheme**

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TEFM9 | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | -0120 | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length of A side [cm] | -1120 | • **First digit** – Furcation type of B side<br>• **Last three digits** - maximal output length of B side [cm] |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 0400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 24-BURRY DAC | E SMF G657A2 |
| E2A-E2000 APC | 35-FTTA DAC | F SMF G657B2 |
| LC-LC UPC | 39-MK-CX | G SMF G657B3 |
| LCA-LC APC | 40-MK-DX | H MMF OM1 |
| FC-FC UPC | | I MMF OM2 |
| FCA-FC APC | | J MMF OM2+ |
| ST-ST UPC | | K MMF OM3 |
| | | L MMF OM4 |
| | | |

| Furcation type |
|---|
| 0-equal length of outputs |
| 1-single cascade |
| 2-double cascade |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

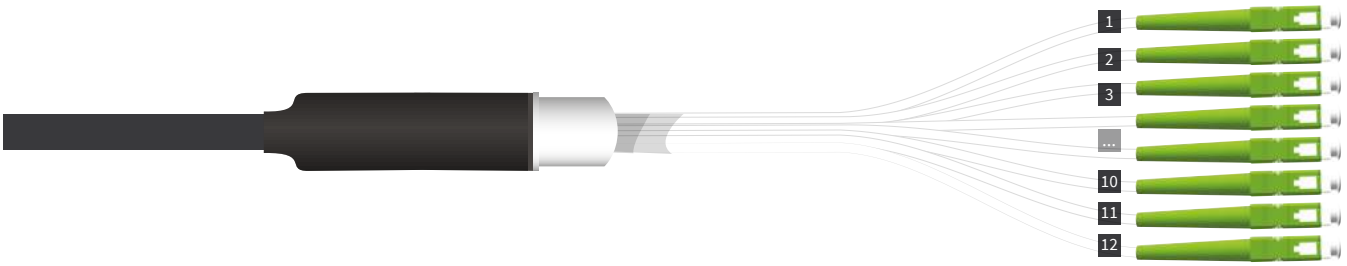
| Available cascades |
|---|
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**TEFM9-12SCA-12SCA-01A-0097.6-0120-1120**

EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 12 SC APC connectors on both sides, equal length of furcation legs on A side -120cm, single cascade on B side, max. output length for B side- 120cm, SafeBranch 2.

**TEFM9 SafeBranch 2**



# TEFM SAFEBRANCH 3 MULTIPATCHCORDS

## TEFM SafeBranch 3 pre-connectorized multi-fiber cables

TEFM SafeBranch 3 pre-connectorized multi-fiber cables are specifically designed to serve in various indoor and outdoor FTTA applications. Therefore, the cables establish optical direct connection between the remote radio unit (RRU) and the base transceiver station (BTS).

Special epoxy filter construction provides extra protection, thus the product withstands environmental factors, which are characteristic features of FTTA deployments. A product is available with SM and MM fibers and with various connector types.

Thanks to high mechanical durability and resistance to outdoor conditions, the TEFM multipatchcords can be used in FTTA applications as well as demanding environments. Moreover, the connectors, which are factory installed and tested, facilitate the on-site installation. Therefore, the product can be applied in severe conditions as it has high crash resistance.

### Features

- Furcation point filled with epoxy,
- Product resistant to outdoor conditions,
- Stable attenuation,
- Perfect solution for FTTX applications.
- High mechanical resistance,
- High quality,
- Wide range of fiber optic connectors,

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| **Max. tensile load** | IEC 61753-2-1 | 150N |
| **Crush performance** | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 1000N |
| **Installation temperature range** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| **Operation*** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -40... +70 [°C]* |
| **Transport & Storage** | | -40... +70 [°C] |
| **Max. Insertion Loss** | IEC 61300-3-4 | ≤ 0.3dB |
| **Return Loss (RL)** | IEC 61300-3-6 | RL≥65 dB(APC); RL≥50 dB(SM UPC); RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

### Technical specification

| Parameter | | |
|---|---|---|
| **Max. outer diameter of furcation point [mm]** | Ø 10 | Ø 12 |
| **Length of furcation point [mm]** | 30 | 30 |
| **Number of fibers in 1.8 mm fanouts** | 1-2 | 3-4 |
| **Number of fibers in 2.8 mm fanouts** | 1-2 | 3-4 |
| **Connector type** | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST | |

## TEFM SafeBranch 3 pre-connectorized multi-fiber cables

**Reference scheme**

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TEFM | -02SCA | -02SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | -1120 | • **First digit** - Fanout type of A side<br>• **Three following digits** - maximal output length of A side [cm] | -1120 | • **First digit** – Fanout type of B side<br>• **Last three digits** - maximal output lengthof B side [cm] |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 0400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 24-BURRY DAC | E SMF G657A2 |
| E2A-E2000 APC | 35-FTTA DAC | F SMF G657B2 |
| LC-LC UPC | 39-MK-CX | G SMF G657B3 |
| LCA-LC APC | 40-MK-DX | H MMF OM1 |
| FC-FC UPC | | I MMF OM2 |
| FCA-FC APC | | J MMF OM2+ |
| ST-ST UPC | | K MMF OM3 |
| | | L MMF OM4 |
| | | |

| Fanout type |
|---|
| 1-fanout 1.8mm |
| 2-fanout 2.8mm |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

**Example:**

**TEFM-2SCA-2SCA-01A-0097.6-1120-1120**

EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 2 SC APC connectors on both 1.8mm fanout sides, equal length of A and B side -120cm, SafeBranch 3.

**TEFM SafeBranch 3**

# TEFC9 SAFEBRANCH 4 MULTIPATCHCORDS

## TEFC9 SafeBranch 4 pre-connectorized multi-fiber cables

TCEF9 SafeBranch 4 pre-connectorized multi-fiber cables are specifically designed for use in FTXX applications, where space is limited. The use of 900 µm and microcables provides proper assembly of cabinets and saves space for the future applications. Therefore, special epoxy filler construction provides extra protection, thus the product withstands outdoor conditions.

Corrugated tube at the output of furcation point prevents from fiber damage at the sharp edges of subrack/ patchpanel entries. Product is available with SM and MM fibers and with various connector types.

### Features

- Furcation point filled with epoxy,
- Product resistant to outdoor conditions,
- Stable attenuation,
- Perfect solution for FTTX applications,
- High mechanical resistance,
- High quality,
- Room saving solution thanks to 900um tubes and microcables,
- Wide range of fiber optic connectors.

### Mechanical and environmental characteristics

| Parameter | Standard | |
|---|---|---|
| **Max. tensile load** | IEC 61753-2-1 | 7N |
| **Crush performance** | EN 187101, IEC 60794-1-2-E3, no attenuation increase | 1000N |
| **Installation temperature range** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -10... +50 [°C] |
| **Operation*** | EN 187101, IEC 60794-1-2-F1, no attenuation increase | -25... +70 [°C] |
| **Transport & Storage** | | -25... +70 [°C] |
| **Max. Insertion Loss (IL)** | IEC 61300-3-4 | ≤ 0.3dB |
| **Return Loss (RL)** | IEC 61300-3-6 | RL≥65 dB(APC); RL≥50 dB(SM UPC); RL≥30 dB(MM PC) |

*Temperature range varies from the cable type.

### Technical specification

| Parameter | | |
|---|---|---|
| **Max. outer diameter of furcation point** | Ø13 | Ø18 |
| **Length of furcation point** | 65 | 65 |
| **Number of fibers** | 13-48 | 49-96* |
| **Connector type** | SC/SCA/E2/E2A/LC/LCA/FC/FCA/ST | |

In order to design design pre-connectorized cables with higher number of fibers please contact with our sales department.

# TEFC9 SAFEBRANCH 4 MULTIPATCHCORDS

## TEFC9 SafeBranch 4 pre-connectorized multi-fiber cables

### Reference scheme

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TEFC9 | -24SCA | -24SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | 0120 | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length of A side [cm] | 1120 | • **First digit** – Furcation type of B side<br>• **Last three digits** - maximal output length of B side [cm] |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 0400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| E2-E2000 | 05-BDC-C0 PE | E SMF G657A2 |
| E2A-E2000 APC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LC-LC UPC | 07-BDC-CI PE | G SMF G657B3 |
| LCA-LC APC | 08-BDC-CI LSZH | H MMF OM1 |
| FC-FC UPC | 24-BURRY DAC | I MMF OM2 |
| FCA-FC APC | 28-AERO DF 03 | J MMF OM2+ |
| ST-ST UPC | 35-FTTA DAC | K MMF OM3 |
| | 41-MK-LX4 | L MMF OM4 |
| | 42-MK-LX6 | |
| | | |

| Furcation type |
|---|
| 0-equal length of outputs |
| 1-single cascade |
| 2-double cascade |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

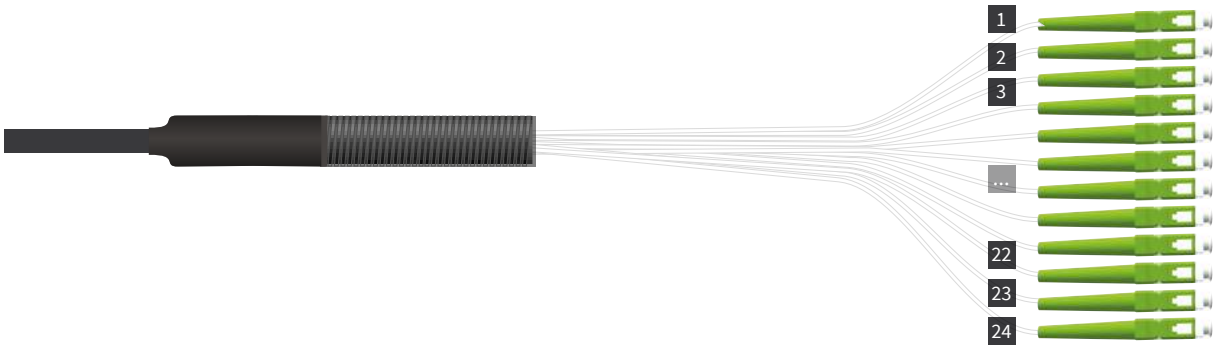
| Available cascades |
|---|
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**TEFC9-24SCA-24SCA-01A-0097.6-0120-1120**

EXO CO PE pre-connectorized cable with G.652D fibers, 100m length with 24 SC APC connectors on both sides, equal length on A side -120cm, single cascade on B side, max. output length for B side- 120cm, SafeBranch 4.

### TEFC9 SafeBranch 4



# MULTIPATCHCORDS IN CORRUGATED TUBES

## Pre-connectorized multi-fiber cables in corrugated tubes

Pre-connectorized cables in a corrugated tube provides easy and fast cable installation in teletechnical floors or in the concrete. A corrugated tube placed on an optical fiber guarantees additional protection especially from mechanical damages and crushes. Therefore, the tubes are very often used in new buildings, where the network is being installed, and then cables might be easily changed.

It is a Plug&Play solution which does not require any expensive equipment, and thus significantly reduce the total costs in comparison to fusion spliced fibers.

### Reference scheme

| Furcation | Furcation type | Number and connector type | | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | (Side A) | (Side B) | | | | | | | |
| C16* | -1 | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | 01201 | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length of A side [cm]<br>• **Last digit** -maximal output length of A side | 11200 | • **First digit** – Furcation type of B side<br>• **Last three digits** - maximal output length of B side [cm]<br>• **Last digit** -maximal output length of B side |

*__Letter__ - cable in corrugated tube, **two digits** - external diameter of corrugated tube

| Available diamater of corrugated tube | Furcation type | Available connectors | Available cables | Fiber type |
|---|---|---|---|---|
| 7mm | 1-TCF | 0400-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| 10mm | 2-TEF | 0000-no furcation | 02-EXO-C0 LSZH | B SMF G655 |
| 11mm | 3-PTF | SC-SC UPC | 03-EXO-CI PE | C SMF G656 |
| 12mm | 4-TEFM | SCA-SC APC | 04-EXO-CI LSZH | D SMF G657A1 |
| 14mm | 5-TEFM9 | E2-E2000 | 05-BDC-C0 PE | E SMF G657A2 |
| 16mm | 6-HF | E2A-E2000 APC | 06-BDC-C0 LSZH | F SMF G657B2 |
| 18mm | | LC-LC UPC | 07-BDC-CI PE | G SMF G657B3 |
| 20mm | | LCA-LC APC | 08-BDC-CI LSZH | H MMF OM1 |
| 22mm | | FC-FC UPC | 24-BURRY DAC | I MMF OM2 |
| 25mm | | FCA-FC APC | 25-CDI-M | J MMF OM2+ |
| 32mm | | | 27-CDI | K MMF OM3 |
| | | | 28-AERO DF 03 | L MMF OM4 |
| | | | 33-CDAD | |
| | | | 35-FTTA DAC | |
| | | | 41-MK-LX4 | |
| | | | 42-MK-LX6 | |

The length of a corrugated pipe equals the length between the furcations reduced by 0.5 m (one-side terminated cable) or 1m (a cable terminated on-both sides).

| Furcation type | Fanout type |
|---|---|
| 0-equal length of outputs | 0-tube 900µm |
| 1-single cascade | 1-fanout 1.8mm |
| 2-double cascade | 2-fanout 2.8mm |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

| Available cascades |
|---|
| Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| Double cascade - Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**C16-1-12SCA-12SCA-01A-0097.6-01201-11200**

EXO CO PE pre-connectorized cable protected by corrugated tube of 16mm outer diameter, with G.652D fibers, 100m length with 12 SC APC connectors on both sides, equal length of 1.8mm furcation legs on A side -120cm, single cascade on 900 µm tubes for B side, max. output length for B side- 120cm, Easylink 1.

# TCEF MULTIPATCHCORDS

## Hybrid Furcation

TCEF pre-connectorized multi-fiber cables with a furcation of TCF on A side and TEF on B side. Technical specification and mechanical as well as environmental parameters are given on the proper pages in the catalogue.

**Reference scheme**

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TCEF | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.6 | 01201 | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length[cm]<br>• **Last digit** -fanout diameter of A side | 11200 | • **First digit** – Furcation type of B side<br>• **Last three digits** - maximal output length of B side [cm]<br>• **Last digit** -fanout diameter of B side |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 1200-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| SC-SC UPC | 02-EXO-C0 LSZH | B SMF G655 |
| SCA-SC APC | 03-EXO-CI PE | C SMF G656 |
| E2-E2000 | 04-EXO-CI LSZH | D SMF G657A1 |
| E2A-E2000 APC | 05-BDC-C0 PE | E SMF G657A2 |
| LC-LC UPC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LCA-LC APC | 07-BDC-CI PE | G SMF G657B3 |
| FC-FC UPC | 08-BDC-CI LSZH | H MMF OM1 |
| FCA-FC APC | 24-BURRY DAC | I MMF OM2 |
| ST-ST UPC | 25-CDI-M | J MMF OM2+ |
| | 27-CDI | K MMF OM3 |
| | 28-AERO DF 03 | L MMF OM4 |
| | 33-CDAD | |
| | 35-FTTA DAC | |
| | 41-MK-LX4 | |
| | 42-MK-LX6 | |

| Furcation type | Fanout type |
|---|---|
| 0-equal length of outputs | 0-tube 900µm |
| 1-single cascade | 1-fanout 1.8mm |
| 2-double cascade | 2-fanout 2.8mm |

Maximal outputs length in a standard configuration: 200 cm, minimal: 10 cm; for other outputs length please contact with our sales department.

| Available cascades |
|---|
| Singe cascade- each furcation leg is shorter by 3cm than a previous one |
| Double cascade- Pair of furcation legs is shorter by 3cm than a previous one |

**Example:**

**TCEF-12SCA-12SCA-01A-0097.6-01201-11200**

EXO CO PE pre-connectorized cable protected by corrugated pipe of 16mm outer diameter, with G.652D fibers, 100m length with 12 SC APC connectors on both sides, equal length of 1.8mm furcation legs on A side -120cm, single cascade on 900 mm tubes for B side, max. output length for B side- 120cm, Easylink 1 – SafeBranch 1.

**Furcation TEF**

**Furcation TCF**

# TPEF MULTIPATCHCORDS

## Hybrid Furcation

TPEF pre-connectorized multi-fiber cables with a furcation of PTF on A side and TEF on B side. Technical specification and mechanical as well as environmental parameters are given on the proper pages in the catalogue.

**Reference scheme**

| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TPEF | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.8 | 1095M | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length of A side [cm]<br>• **Last letter** - Protection tube type on A side | 11201 | • **First digit** – Furcation type of B side<br>• **Last three digits** -maximal output length of B side [cm]<br>• **Last digit** -fanout diameter of B side |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 1200-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| SC-SC UPC | 02-EXO-C0 LSZH | B SMF G655 |
| SCA-SC APC | 03-EXO-CI PE | C SMF G656 |
| E2-E2000 | 04-EXO-CI LSZH | D SMF G657A1 |
| E2A-E2000 APC | 05-BDC-C0 PE | E SMF G657A2 |
| LC-LC UPC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LCA-LC APC | 07-BDC-CI PE | G SMF G657B3 |
| FC-FC UPC | 08-BDC-CI LSZH | H MMF OM1 |
| FCA-FC APC | | I MMF OM2 |
| ST-ST UPC | | J MMF OM2+ |
| | | K MMF OM3 |
| | | L MMF OM4 |
| | | |

**Example:**

**TPEF-12SCA-12SCA-01A-0097.8-1095M-11201**

EXO CO PE pre-connectorized cable, with G.652D fibers, 100m length with 12 SC APC connectors on both sides,a single cascade on A side, max. output length on A side: 95 cm, a protection tube with a metal end, a single cascade on 1.8mm furcation legs on B side, max. output length for B side- 120cm, Easylink 2 – SafeBranch 1.

| Furcation type | | Options | |
|---|---|---|---|
| A Side (PTF) | B Side (TEF) | Protection tube type (PTF) | Fanout type(TEF) |
| 0-Equal length of furcation output legs | 0-Equal length of furcation output legs | N-no tube | 0-900µm tube |
| 1-Single cascade | 1-Single cascade | M- tube with a metal end | 1-fanout 1.8mm |
| 2-Double cascade | 2-Double cascade | P- tube with a plastic end | 2-fanout 2.8mm |

*in case of no protection tube.

| Maximal length of output leg | | Minimal length of output leg | |
|---|---|---|---|
| A Side (PTF) | B Side (TEF) | Protection tube type (PTF) | Fanout type(TEF) |
| 70 cm – up to 8 fibers with a protection tube | 200cm | 10 cm | |
| 95 cm – from 9 up to 24 fibers with a protection tube | | | |
| 200cm- up to 24 fibers without a protection tube | | | |

In order to design longer output legs - please contact with our sales department.

| Available cascades | |
|---|---|
| A Side (PTF) | B Side (TEF) |
| For cables with up to 8 fibers and protection tube - only single cascade possible | Singe cascade- each furcation leg is shorter by 3cm than a previous one |
| For cables with 9 to 14 fibers and protection tube - single and double cascade possible | Double cascade- pair of furcation legs is shorter by 3cm than a previous one |
| For cables with 15 to 24 fibers and protection tube - only single cascade possible | |
| Singe cascade- each furcation leg is shorter by 3cm than a previous one | |
| Double cascade- Pair of furcation legs is shorter by 3cm than a previous one | |

# TPCF MULTIPATCHCORDS

## Hybrid Furcation

TPCF pre-connectorized multi-fiber cables with a furcation of PTF on A side and TCF on B side. Technical specification and mechanical as well as environmental parameters are given on the proper pages in the catalogue.

**Reference scheme**

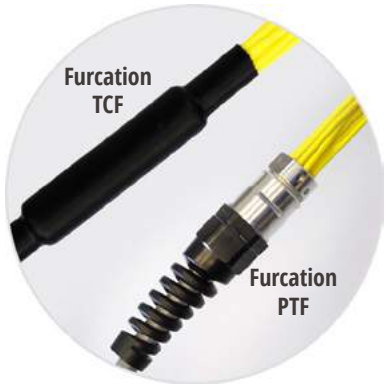
| Furcation | Number and connector type (Side A) | Number and connector type (Side B) | Cable/fiber type | | Cable length between furcation points [m] | Furcation (Side A) | | Furcation (Side B) | |
|---|---|---|---|---|---|---|---|---|---|
| TPCF | -12SCA | -12SCA | -01A | • **Two digits:** Cable type<br>• **Letter:** Fiber type | -0097.8 | 1095M | • **First digit** - Furcation type of A side<br>• **Three following digits** - maximal output length of A side [cm]<br>• **Last letter** - Protection tube type on A side | 11201 | • **First digit** – Furcation type of B side<br>• **Last three digits** - maximal output length of B side [cm]<br>• **Last digit** -fanout diameter of B side |

| Available connectors | Available cables | Fiber type |
|---|---|---|
| 1200-furcation without connectors | 01-EXO-C0 PE | A SMF G.652D |
| SC-SC UPC | 02-EXO-C0 LSZH | B SMF G655 |
| SCA-SC APC | 03-EXO-CI PE | C SMF G656 |
| E2-E2000 | 04-EXO-CI LSZH | D SMF G657A1 |
| E2A-E2000 APC | 05-BDC-C0 PE | E SMF G657A2 |
| LC-LC UPC | 06-BDC-C0 LSZH | F SMF G657B2 |
| LCA-LC APC | 07-BDC-CI PE | G SMF G657B3 |
| FC-FC UPC | 08-BDC-CI LSZH | H MMF OM1 |
| FCA-FC APC | | I MMF OM2 |
| ST-ST UPC | | J MMF OM2+ |
| | | K MMF OM3 |
| | | L MMF OM4 |
| | | |

**Example:**

**TPCF-12SCA-12SCA-01A-0097.8-1095M-11201**

EXO CO PE pre-connectorized cable, with G.652D fibers, 100m length with 12 SC APC connectors on both sides, a single cascade on A side, max. output length on A side: 95 cm, a protection tube with a metal end, a single cascade on 1.8mm furcation legs on B side, max. output length for B side- 120cm, Easylink 2 – Safe-Branch 1.




| Furcation type | | Options | |
|---|---|---|---|
| A Side (PTF) | B Side (TCF) | Protection tube type (PTF) | Fanout type(TCF) |
| 0-Equal length of furcation output legs | 0-Equal length of furcation output legs | N-no tube | 0-900µm tube |
| 1-Single cascade | 1-Single cascade | M- tube with a metal end | 1-fanout 1.8mm |
| 2-Double cascade | 2-Double cascade | P- tube with a plastic end | 2-fanout 2.8mm |

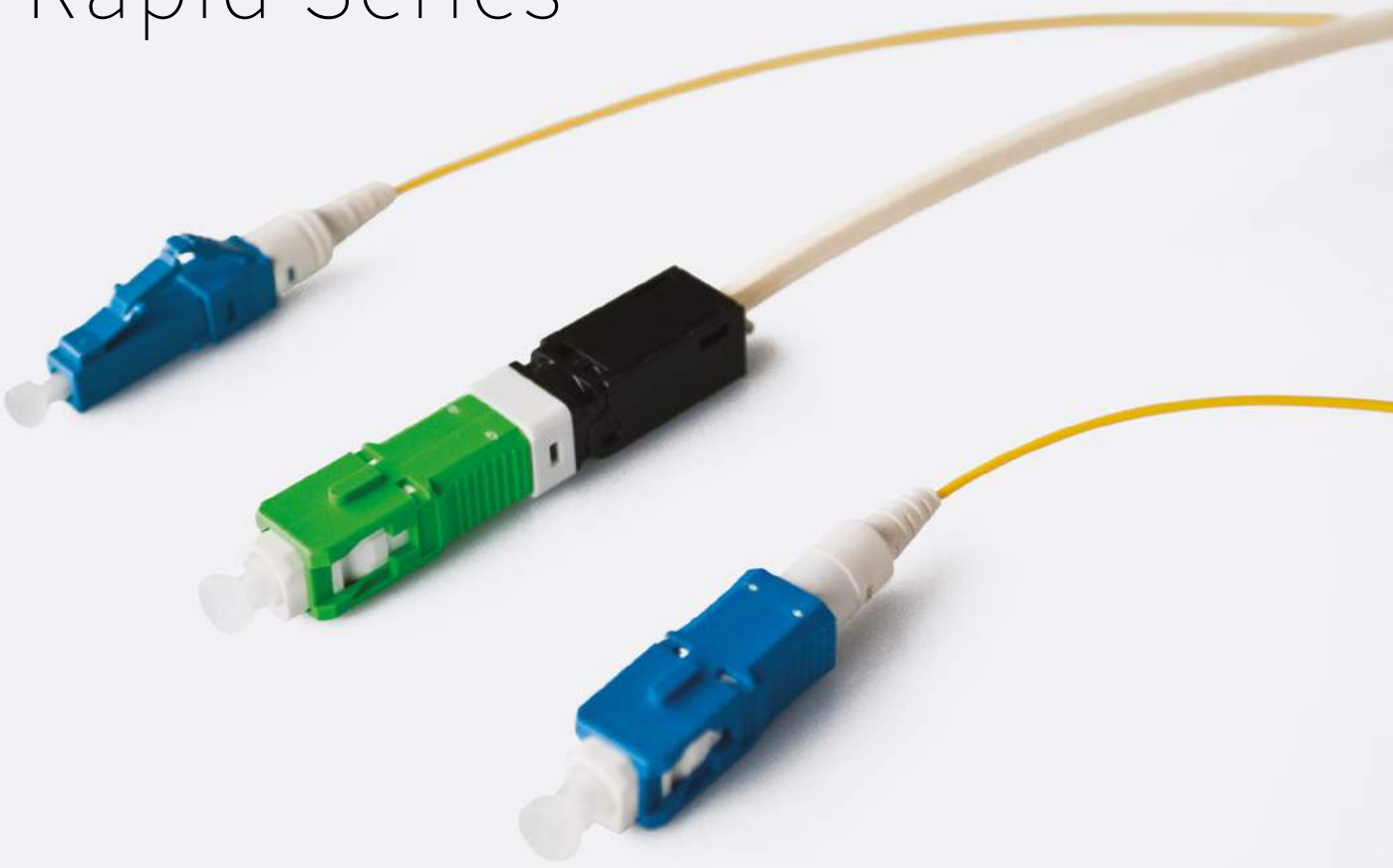
*in case of no protection tube.

| Maximal length of output leg | | Minimal length of output leg | |
|---|---|---|---|
| A Side (PTF) | B Side (TCF) | Protection tube type (PTF) | Fanout type(TCF) |
| 70 cm – up to 8 fibers with a protection tube | 200cm | 10 cm | |
| 95 cm – from 9 up to 24 fibers with a protection tube | | | |
| 200cm- up to 24 fibers without a protection tube | | | |

In order to design longer output legs - please contact with our sales department.

| Available cascades | |
|---|---|
| A Side (PTF) | B Side (TCF) |
| For cables with up to 8 fibers and protection tube - only single cascade possible | Singe cascade - each furcation leg is shorter by 3cm than a previous one |
| For cables with 9 to 14 fibers and protection tube - single and double cascade possible | Double cascade - pair of furcation legs is shorter by 3cm than a previous one |
| For cables with 15 to 24 fibers and protection tube - only single cascade possible | |
| Singe cascade- each furcation leg is shorter by 3cm than a previous one | |
| Double cascade- Pair of furcation legs is shorter by 3cm than a previous one | |

# Mechanical connectors&splices Rapid Series



# RAPID CONNECTOR

Fibrain Rapid Connectors are specifically designed to terminate optical fibers in installation place. The Rapid Connector is a pre-polished, pre-assembled connector compatibile with the standard LC&SC connectors. Total assembly time together with fiber preparation do not exceeds 120 seconds, and requires no extra tools. The ferrules are factory polished, thus no extra polishing materials are necessary. Also the clamp system in the V-grooves, where immersion gel is placed, eliminates the necessity to use other adhesives or epoxy gel and improves the transmission parameters. High quality index matching gel, whose refractive index is close to refractive index of the core of optical fiber, significantly improves Return Loss.

The Fibrain Rapid Connector series includes the connectors which can be used to terminate singlemode and multimode optical fibers in 250 µm and 900 µm coating. Moreover, the series is equipped with a special connector construction specifically designed for VC-DCY Drop cables, which are used in FTTH systems. The connectors are mounted on an external cable sheath, not only on a fiber in 250 µm covering, which guarantees higher protection of a connection and eliminate possibility of breaking the fiber.

Excellent transmission parameters, easy assembly in installation place and time saving, are only some benefits of the new series of Fibrain Rapid Connector.

### Reference scheme

| Series | Connector type | | Fiber type | | Cable type | |
|---|---|---|---|---|---|---|
| **RC01** | 1 | SC PC | 1 | SM 9/125 µm | 1 | 250/900 µm |
| | 2 | SC APC | 2 | MM 50/125 µm OM2 | 2 | Drop cable VC-DCY |
| | 3 | LC PC | 3 | MM 62.5/125 µm OM1 | | |
| | | | 4 | MM 62.5/125 µm OM3 | | |

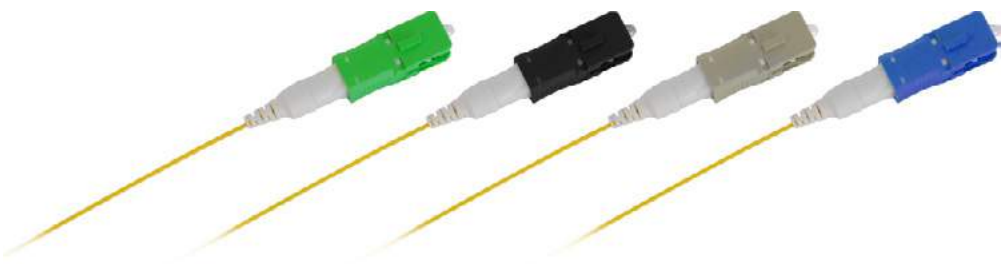
**RC01-212** Fibrain Rapid Connector SC APC for VC-DCY Drop cables.

### Additional accessories

**RC01- J Assembly Adapter**

Provides proper stripping length during Rapid Connector's assembly on VC-DCY Drop cables.

**Available colors** *Rapid Connectors SC PC/APC 250/900 µm*



### Features

- Termination time does not exceed 120 s,
- Easy and fast assembly,
- Excellent transmission parameters,
- High quality materials,
- A ferrule polished in a Premium Class has excellent ferrule end face geometry parameters,
- A termination is performed with a use of standard equipment,
- Durability and resistance of the matching gel for even 25 years,
- Exceeds TIA/EIA-568-B.3 standards.

### Applications

- LAN networks,
- WAN networks,
- FTTH networks,
- Telecommunication networks,
- CATV networks,
- Intra-building.

### Technical specifications

| Parameter | Connectors | | |
|---|---|---|---|
| | SM PC | SM APC | MM PC |
| **Insertion Loss $IL_{TYP}$** | 0.20 dB | 0.30 dB | 0.10 dB |
| **Return Loss RL** | 55 dB | 60 dB | 35 dB |
| **Durability** | < 0.10 dB / 500 matings | | |
| **Operating temperature** | -40 to +75°C | | |
| **Connector type** | SC, SCA, LC | | |

# RAPID SPLICE

Fibrain Rapid Splice mechanic splices provide high quality fiber optic connections. They can be characterized by short termination time.

Mechanical splice connection makes use of mechanical splice unit where 2 fibers are first inserted into the unit (fibers are set to the V-groove of the mechanical splice). The fibers are next aligned and then held in position by clamping parts. s. Index matching gel is added to the center of the mechanical splice ( at the supposed connection point of the two fibers) to ensure good Insertion and Return Loss.

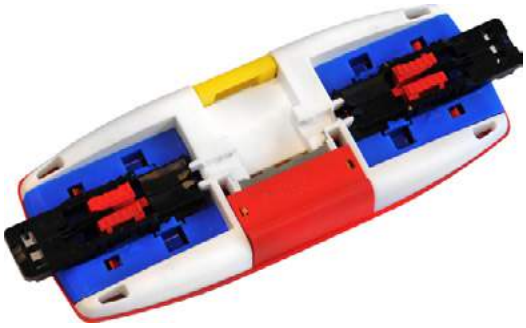
### Reference scheme

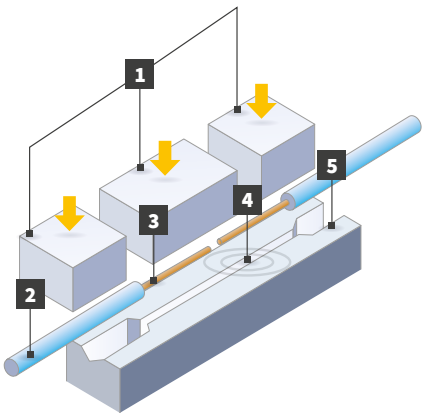
| Product code | Description |
|---|---|
| FB7195 | Fibrain Rapid Splice |

### Additional accessories

**FB7197.1 Assembly tool for mechanical splicer with additional holder**

(FB7197.21 - Holder for 900 µm tube or FB7197.31 Holder for 250 µm fiber)





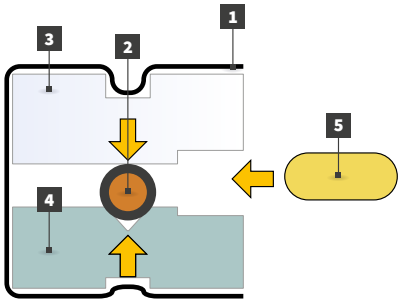

**1.** Clamping part (3 sections, which guarantee high quality connection)

**2.** Optical fiber (250µm or 900µm coating)

**3.** Optical fiber (outercoat stripped, 125 µm outer diameter)

**4.** Index matching gel

**5.** V-groove substrate




**1.** Metal clip closing splice

**2.** Optical fiber

**3.** Clamping part

**4.** V-groove positioning fiber

**5.** Wedge (When wedge is inserted into mechanical splice, the space at the V-groov substrate is enlarged, allowing fiber to be inserted into the mechanical splice)

### Features

- Universal construction providing fibers connection in 250 µm and 900 µm,
- 3 sections, which guarantee high quality connection),
- High quality of V-grooves providing connection of multimode and singlemode fibers,
- Small dimensions: 4x4x40 mm,
- Termination time is shorter than 120 s,
- Possibility of performing one splice again,
- Connection of optical fiber is performed without any fusion splices,
- High quality immersion gel determine excellent Insertion and Return Loss,
- Much faster compared to fushion splicing method,
- Fast and easy splicing of 250 or 900 µm SM/MM fibers.

### Applications

- LAN networks,
- WAN networks,
- FTTH networks,
- Telecommunication networks,
- CATV networks.

### Technical specifications

| Parameter | |
|---|---|
| Insertion Loss $IL_{TYP}$ | ≤ 0.15 dB |
| Insertion Loss $IL_{MAX}$ | ≤ 0.50 dB |
| Return Loss RL | ≥ 40 dB |
| Operating temperature | -30 to 60°C |
| Dimensions | 4x4x40mm |

# NOTES

# Contact

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