

# FC/APC Patchcord

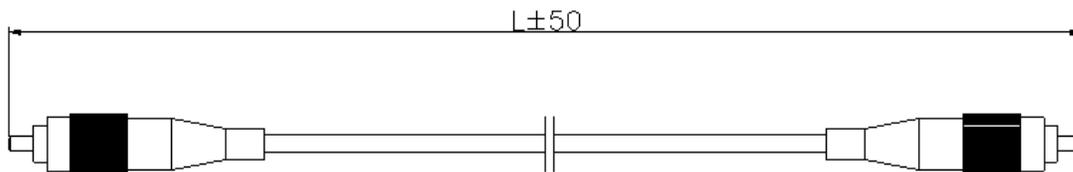
FC/APC patchcord are mainly used in telecom network, especially in CATV, Local Area Networks (LAN) or FTTX networks.

The requirement of insertion loss and return loss requirement was maintained at a high level to ensure a future proof network.

FC/APC patchcord series is produced in a cost-effective and rigid production process under controlled processes to ensure long-term stability and reliability.

## 1.0. General design

### 1.1. PATCHCORD SIZE AND DRAWING



- ① TOLERANCES OF LENGTH (mm)  $L \leq 50000 + 50 / - 50 50000$
- ② Standard lengths for patch cords and pigtails are 1, 2, 3, 5, 10 meters and customized.
- ③ The diameters ( $\Phi D$ ) of the cable are 0.9, 2.0, 3.0mm.

### 1.1 CONNECTOR

Color scheme		
Connector FC/APC	House silvery	Boot green
Material		
House Phosphor bronze	Spring Stainless steel	Ferrule Phosphor bronze and Zirconia

- ① The materials of connector are all in accordance with RoHS-directive.
- ② Connector and hood Plastic, non flammable (UL94-V-0)
- ③ The dimension meet IEC 60874-14

### 1.2 CABLE

The preferred cable color is yellow, other colors can be customized.  $\phi$  0.9/2.0/3.0mm, tight secondary coating and jacket are made of flame retardant material.

## 2.0 Optical performance

### OPTICAL PERFORMANCE

Insertion Loss measurement test against reference connectors are intended to be used when quality conformance is required. Random mating attenuation test shall be used during qualification to ensure that the optical performance requirements are met.

FC/APC	
Insertion Loss(Reference plug)	$\leq 0.30\text{dB}$
Insertion Loss (Random mated)	$\leq 0.50\text{dB}$
Return Loss	$\geq 60\text{dB}$

### 3.0 Ferrule end-face geometry

Connectors are manufactured in a controlled process to ensure ferrule endface geometry after termination and polishing. All geometrical parameters are defined in IEC 61753-3-1 to meet specific requirement for fiber-to-fiber interconnection and ensure a stable optical performance.

FC/APC	
Radius of Curvature	5~15mm
Apex Offset	≤50μm
Fiber Height(Spherical)	-100~+50nm
Angular Offset	8°±0.2°

### 4.0. Mechanical and Environmental performance

FC/APC			
Item		Test condition	Loss
Mechanical feature	Interchangeability	Free interconnection	ΔIL<0.2db
	Vibration	5-50Hz, 1.55mm amplitude	ΔIL<0.2db
Environmental characteristics	High temperature	+70°C for continuous 96 hours	ΔIL<0.2db
	Low temperature	-25 °C for continuous 96 hours	ΔIL<0.2db
	Temperature cycle	-10°C~+60°C, 5 cycles	ΔIL<0.2db
	Humidity	+25 °C ~+65 °C , 93%R.H, 96 hours	ΔIL<0.2db

### 5.0 Environment

#### 5.1 Transport

FC/APC	
Temperature	-40...+80° C
Relative humidity	5 - 100%

#### 5.2 Storage

FC/APC	
Temperature	-40...+70° C
Relative humidity	5 - 95%
Time	12 month

#### 5.3 Operation

FC/APC	
Temperature	-25...+70° C
Relative humidity	10 - 90%

## FC/UPC Patchcord

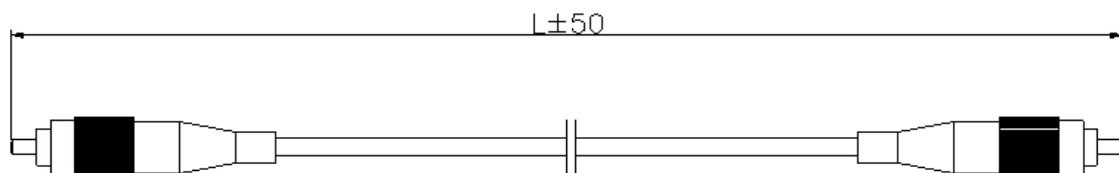
FC/UPC patchcord are mainly used in telecom network, especially in CATV, Local Area Networks (LAN) or FTTX networks.

The requirement of insertion loss and return loss requirement was maintained at a high level to ensure a future proof network.

FC/UPC patchcord series is produced in a cost-effective and rigid production process under controlled processes to ensure long-term stability and reliability.

### 1.0 General design

#### 1.1 PATCHCORD SIZE AND DRAWING



- ① TOLERANCES OF LENGTH (mm)  $L \leq 50000$  + 50 / - 50
- ② Standard lengths for patch cords and pigtailed are 1, 2, 3, 5, 10 meters and customized.
- ③ The diameters( $\Phi$ D) of the cable are 0.9/2.0/3.0mm.

#### 1.2 CONNECTOR

Color scheme		
Connector FC/UPC	House silvery	Boot black
Material		
House Phosphor bronze	Spring Stainless steel	Ferrule Phosphor bronze and Zirconia

- ① The materials of connector are all in accordance with RoHS-directive.
- ② Connector and hood Plastic, nonflammable (UL94-V-0)
- ③ The dimension meet IEC 60874-14

#### 1.3 CABLE

The preferred cable color is yellow, other colors can be customized.  $\varnothing$  0.9/2.0/3.0mm, tight secondary coating and jacket are made of flame retardant material.

### 2.0 Optical performance

Insertion Loss measurement test against reference connectors are intended to be used when quality conformance is required. Random mating attenuation test shall be used during qualification to ensure that the optical performance requirements are met.

FC/UPC	
Insertion Loss(Reference plug)	$\leq 0.30\text{dB}$
Insertion Loss (Random mated)	$\leq 0.50\text{dB}$
Return Loss	$\geq 50\text{dB}$

### 3.0 Ferrule end-face geometry

Connectors are manufactured in a controlled process to ensure ferrule end face geometry after termination and polishing. All geometrical parameters are defined in IEC 61753-3-1 to meet specific requirement for fiber-to-fiber interconnection and ensure a stable optical performance.

FC/UPC	
Radius of Curvature	10~25mm
Apex Offset	≤50μm
Fiber Height(Spherical)	-50~+50nm
Angular Offset	N/A

### 4.0 Mechanical and Environmental performance

FC/UPC			
Item		Test condition	Loss
Mechanical feature	Interchangeability	Free interconnection	ΔIL<0.2db
	Vibration	5-50Hz, 1.55mm amplitude	ΔIL<0.2db
Environmental characteristics	High temperature	+70°C for continuous 96 hours	ΔIL<0.2db
	Low temperature	-25°C for continuous 96 hours	ΔIL<0.2db
	Temperature cycle	-10°C-+60°C, 5 cycles	ΔIL<0.2db
	Humidity	+25°C-+65°C, 93%R.H, 96 hours	ΔIL<0.2db

### 5.0 Environment

#### 5.1 Transport

FC/UPC	
Temperature	-40...+80° C
Relative humidity	5 - 100%

#### 5.2 Storage

FC/UPC	
Temperature	-40...+70° C
Relative humidity	5 - 95%
Time	12 month

#### 5.3 Operation

FC/UPC	
Temperature	-25...+70° C
Relative humidity	10 - 90%

## LC-SC SM Duplex Patchcord

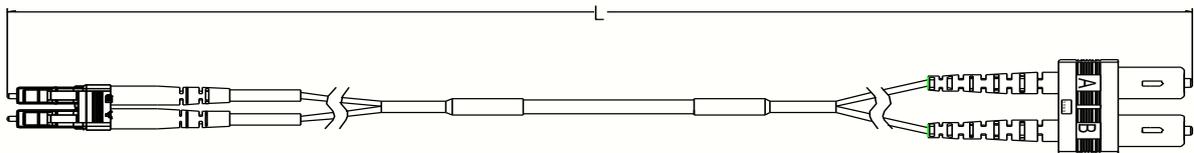
LC-SC Duplex patchcord are mainly used in telecom network, especially in CATV, Local Area Networks (LAN) or FTTX networks.

The requirement of insertion loss and return loss requirement was maintained at a high level to ensure a future proof network.

LC-SC Duplex patchcord series is produced in a cost-effective and rigid production process under controlled processes to ensure long-term stability and reliability.

### 1.0 General design

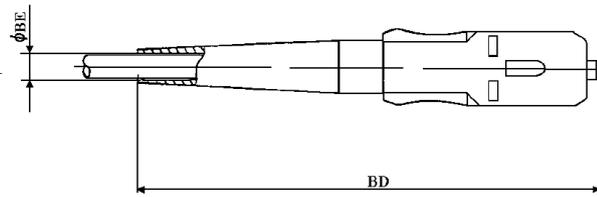
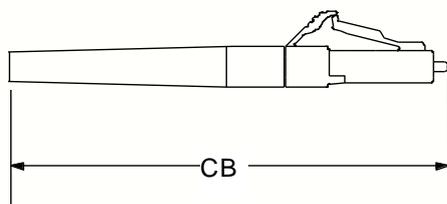
#### 1.1 Patchcord Exploded Assembly View



Connector 1 (LC)

Connector 2 (SC)

- ① TOLERANCES OF LENGTH (mm)  $L \leq 15000$  + 150 / -1 50
- ② Standard lengths for patch cords and Patch cords are 1, 2, 3, 5 and 10 meters.
- ③ PLUG DIMENSION (mm)



REF.	MIN.	MAX.
CB		51
BD		60
BE	2.0	2.2

#### 1.2 Connector

Color scheme			
Connector	House	Boot	
LC/UPC	blue	White	
SC/UPC	blue	blue	
Material			
House	Spring	Ferrule	
Plastic	Stainless steel	Phosphor bronze and Zirconia	

- ① The materials of connector are all in accordance with RoHS-directive.
- ② Connector and hood Plastic, non flammable (UL94-V-0)
- ③ The dimension meet IEC 61754-20 (LC) or IEC 61754-4(SC)

**1.3 Fiber**

The fiber type: single-mode fiber G652D, G657A/B, and customized.

**1.4 Cable**

The preferred cable color is yellow other colors can be customized. 2.4×4.0mm, tight secondary coating. It's made of flame retardant material.

**2.0 Optical performance**

**OPTICAL PERFORMANCE**

Insertion Loss measurement test against reference connectors are intended to be used when quality conformance is required. Random mating attenuation test shall be used during qualification to ensure that the optical performance requirements are met.

LC/UPC	
Insertion Loss(Reference plug)	≤0.30dB
Insertion Loss (Random mated)	≤0.50dB
Return Loss	≥20dB
SC/UPC	
Insertion Loss(Reference plug)	≤0.30dB
Insertion Loss (Random mated)	≤0.50dB
Return Loss	≥50dB

**3.0 Ferrule end-face geometry**

Connectors are manufactured in a controlled process to ensure ferrule end face geometry after termination and polishing. Ensure a stable optical performance.

SC/UPC	
Radius of Curvature	10~25mm
Apex Offset	≤50µm
Fiber Height(Spherical)	-100~+50nm
Angular Offset	N/A
LC/UPC	
Radius of Curvature	7~25mm
Apex Offset	≤50µm
Fiber Height(Spherical)	-100~+50nm
Angular Offset	N/A

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**Mechanical and Environmental performance**

LC/UPC and SC/UPC			
Item		Test condition	Loss
Mechanical feature	Interchangeability	Free interconnection	$\Delta IL < 0.2 \text{db}$
	Vibration	5-50Hz, 1.55mm amplitude	$\Delta IL < 0.2 \text{db}$
Environmental characteristics	High temperature	+70 °C for continuous 96 hours	$\Delta IL < 0.2 \text{db}$
	Low temperature	-25°C for continuous 96 hours	$\Delta IL < 0.2 \text{db}$
	Temperature cycle	-10°C +60°C, 5 cycles	$\Delta IL < 0.2 \text{db}$
	Humidity	+25 °C -+65 °C , 93%R.H, 96 hours	$\Delta IL < 0.2 \text{db}$

**4.0 Environment**

**5.1 Transport**

LC/UPC and SC/UPC	
Temperature	-40...+80° C
Relative humidity	5 - 100%

**5.2 Storage**

LC/UPC and SC/UPC	
Temperature	-40...+70° C
Relative humidity	5 - 95%
Time	12 month

**5.3 Operation**

LC/PC and SC/UPC	
Temperature	-25...+70° C
Relative humidity	10 - 90%

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## LC/UPC Patch cord

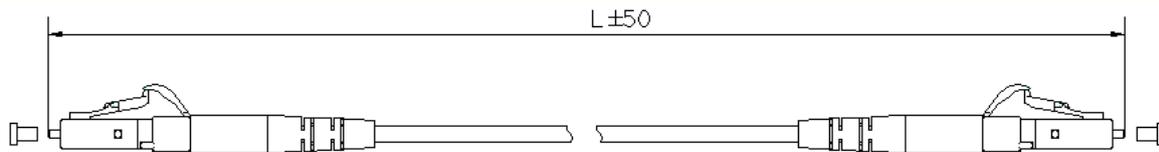
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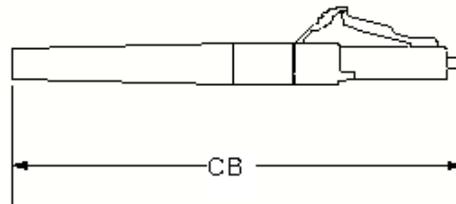
LC/UPC patchcord series is produced in a cost-effective and rigid production process under controlled processes to ensure long-term stability and reliability.

### 1.0 General design

#### 1.1 PATCH CORD SIZE AND DRAWING



- ① TOLERANCES OF LENGTH (mm)  
 $L \leq 10000 \quad + 50 / - 50$
- ② Standard lengths for patch cords and Patch cords are 1, 2, 3, 5 and 10 meters.
- ③ PLUG DIMENSION (mm)



REF.	MIN.	MAX.
CB		51

#### 1.2 CONNECTOR

Color scheme		
Connector LC/UPC	House Blue	Boot White
Material		
House Plastic	Spring Stainless steel	Ferrule Phosphor bronze and Zirconia

- ① The materials of connector are all in accordance with ROHS-directive.
- ② Connector and hood Plastic, nonflammable (UL94-V-0)
- ③ The dimension meet IEC 60874-14

#### 1.3 FIBER

The fiber type: single-mode fiber G652D, G655, G657A/B, and customized.

**1.4 CABLE**

The preferred cable color is yellow other colors can be customized.  $\varnothing$  0.9/2.0/3.0mm, tight secondary coating. It is made of flame retardant material.

**2.0 Optical performance**

**OPTICAL PERFORMANCE**

Insertion Loss measurement test against reference connectors are intended to be used when quality conformance is required. Random mating attenuation test shall be used during qualification to ensure that the optical performance requirements are met.

LC/UPC	
Insertion Loss(Reference plug)	$\leq 0.30\text{dB}$
Insertion Loss (Random mated)	$\leq 0.50\text{dB}$
Return Loss	$\geq 50\text{dB}$

**3.0 Ferrule end-face geometry**

Connectors are manufactured in a controlled process to ensure ferrule end face, geometry after termination and polishing. All geometrical parameters are defined in IEC 61753-3-1 to meet specific requirement for fiber-to-fiber interconnection and ensure a stable optical performance.

LC/UPC	
Radius of Curvature	5~12mm
Apex Offset	$\leq 50\mu\text{m}$
Fiber Height	-100~+50nm
Angular Offset	-

**4.0 Mechanical and Environmental performance**

LC/UP			
Mechanical feature	Interchangeability	Free interconnection	$\Delta\text{IL} < 0.2\text{db}$
	Vibration	5-50Hz, 1.55mm amplitude	$\Delta\text{IL} < 0.2\text{db}$
Environmental characteristics	High temperature	+70 °C for continuous 96 hours	$\Delta\text{IL} < 0.2\text{db}$
	Low temperature	-25 °C for continuous 96 hours	$\Delta\text{IL} < 0.2\text{db}$
	Temperature cycle	-10°C-+60°C, 5 cycles	$\Delta\text{IL} < 0.2\text{db}$
	Humidity	+25 °C -+65 °C , 93%R.H, 96 hours	$\Delta\text{IL} < 0.2\text{db}$

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**5.0 Environment**

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**5.1 Transport**

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LC/UPC

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Temperature	-40...+80° C
Relative humidity	5 - 100%

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**5.2 Storage**

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LC/UPC

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Temperature	-40...+70° C
Relative humidity	5 - 95%
Time	12 month

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**5.3 Operation**

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LC/UPC

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Temperature	-25...+70° C
Relative humidity	10 - 90%

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## SC/UPC Patchcord

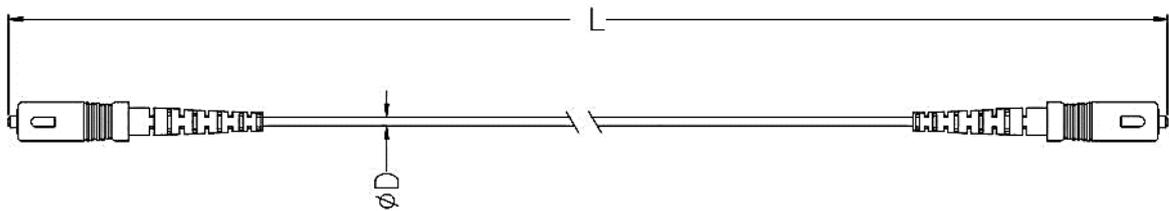
SC/UPC patchcord are mainly used in telecom network, especially in CATV. Local Area Networks (LAN) or FTTX networks.

The requirement of insertion loss and return loss requirement was maintained at a high level to ensure a future proof network.

SC/UPC patchcord series is produced in a cost-effective and rigid production process under controlled processes to ensure long-term stability and reliability.

### 1.0 General design

#### 1.1 PATCHCORD SIZE AND DRAWING



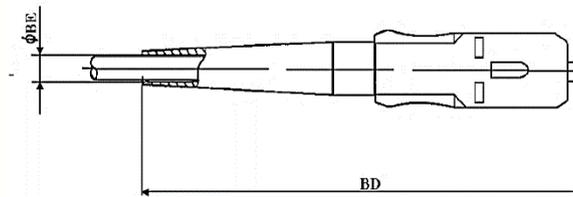
① TOLERANCES OF LENGTH (mm)

L ≤ 10000	+ 100 / - 50
10000 < L ≤ 50000	+ 200 / - 100
L > 50000	+ 400 / - 100

② Standard lengths for patch cords and pigtails are 1, 2, 3, 5, 10 meters and customized.

③ The diameters(ΦD) of the cable are 0.9,2.0,3.0mm.

④ PLUG DIMENSION (mm)



REF.	MIN.	MAX.
BD		60
BE	D+0.1	D+0.3

#### 1.2 CONNECTOR

Color scheme		
Connector	House	Boot
SC/UPC	blue	blue
Material		
House	Spring	Ferrule
Plastic	Stainless steel	Phosphor bronze and Zirconia

① The materials of connector are all in accordance with RoHS-directive.

② Connector and hood Plastic, nonflammable (UL94-V-0).

③ The dimension meet IEC 60874-14

**1.3 FIBRE**

The fiber type: single-mode fiber G652D, G657A/B, and customized.

**1.4 CABLE**

The preferred cable color is yellow, other colors can be customized.  $\varnothing$  0.9/2.0/3.0mm, tight secondary coating. It is made of flame retardant or LSZH material.

**2.0 Optical performance**

**OPTICAL PERFORMANCE**

Insertion Loss measurement test against reference connectors are intended to be used when quality conformance is required. Random mating attenuation test shall be used during qualification to ensure that the optical performance requirements are met.

SC/UPC	
Insertion Loss(Reference plug)	$\leq 0.30\text{dB}$
Insertion Loss (Random mated)	$\leq 0.50\text{dB}$
Return Loss	$\geq 50\text{dB}$

**3.0 Ferrule end-face geometry**

Connectors are manufactured in a controlled process to ensure ferrule end face geometry after termination and polishing. All geometrical parameters are defined in IEC 61753-3-1 to meet specific requirement for fiber-to-fiber interconnection and ensure a stable optical performance.

Radius of Curvature	10~25mm
Apex Offset	$\leq 50\mu\text{m}$
Fiber Height	-50~+50nm
Angular Offset	N/A

**4.0 Mechanical and Environmental performance**

SC/UPC			
Item		Test condition	Loss
Mechanical feature	Interchangeability	Free interconnection	$\Delta\text{IL} < 0.2\text{db}$
	Vibration	5-50Hz, 1.55mm amplitude	$\Delta\text{IL} < 0.2\text{db}$
Environmental characteristics	High temperature	+70 °C for continuous 96 hours	$\Delta\text{IL} < 0.2\text{db}$
	Low temperature	-25 °C for continuous 96 hours	$\Delta\text{IL} < 0.2\text{db}$
	Temperature cycle	-10°C-+60°C, 5 cycles	$\Delta\text{IL} < 0.2\text{db}$
	Humidity	+25 °C -+65 °C , 93%R.H, 96 hours	$\Delta\text{IL} < 0.2\text{db}$

**5.0 Environment**

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**5.1 Transport**

SC/UPC	
Temperature	-40...+80° C
Relative humidity	5 - 100%

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**5.2 Storage**

SC/UPC	
Temperature	-40...+70° C
Relative humidity	5 - 95%
Time	12 month

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**5.3 Operation**

SC/UPC	
Temperature	-25...+70° C
Relative humidity	10 - 90%

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