



T&S Communications Co., Ltd.



Ceramic Ferrule | Patchcord | Connector | Attenuator | Adapter | Splitter | FBG Series

# Fiber Optic Components I

深圳太辰光通信股份有限公司

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201905版



Manufacture · Design · Integration

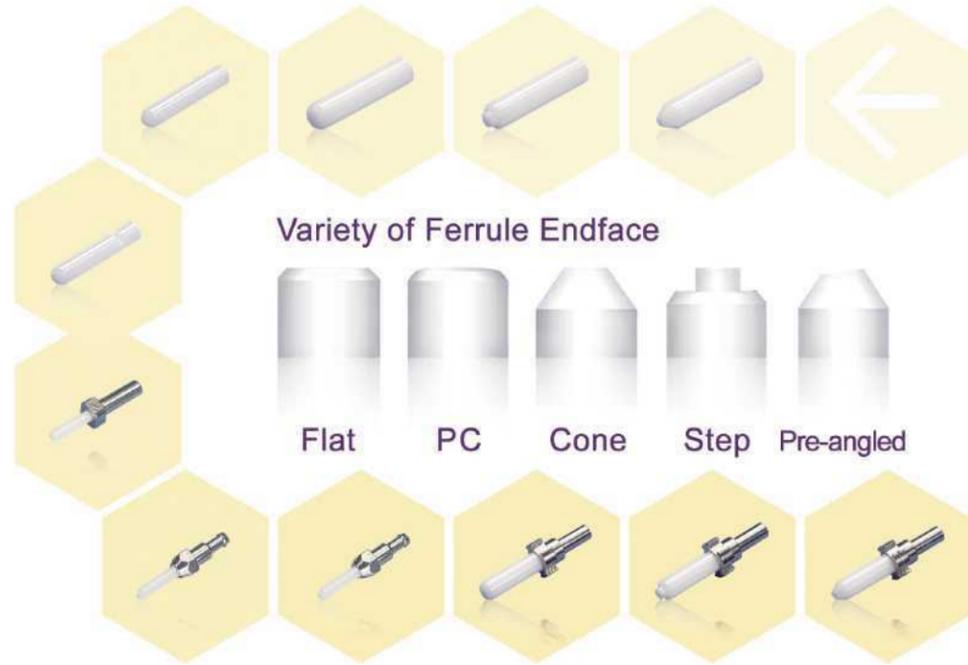


深圳太辰光通信股份有限公司 ( T&S Communications Co., Ltd. , SZSE: 300570 ) 成立于2000年。太辰光团队自1992年进入陶瓷插芯制造领域以来,矢志创新,勇于开拓,在光器件的设计研发及制造领域精耕细作,不懈探索。历经20余年的发展,太辰光业已成为全球无源光器件研发、制造和销售的知名企业。

T&S Communications Co., Ltd. or T&S (SZSE: 300570) was founded in 2000. The early technical experts started manufacturing precision ceramic ferrule in 1992, and have been exploring fiber optic components continuously with the development of fiber optic communication for more than 20 years. T&S today is a well-known player in developing, manufacturing and supplying fiber optic components worldwide.

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# 标准插芯 Standard Ferrule



## 特点 Feature

- 高精度和高可靠性 High precision and reliability
- 各种规格标准陶瓷插芯 Varieties of ferrule: SC, ST, LC, MU, SMA
- 多种插芯端面形式 Varieties of endface: Flat, PC, Cone, Step, Pre-angled

## 一般技术规格 General Ferrule Specification

### SC Ferrule

	Singlemode	Multimode	Grade B	*Master
外径 Outside Diameter (mm)	Φ2.4990			
外径公差 OD Tolerance (mm)	±0.0005	±0.001	±0.0003	
同芯度 Concentricity (mm)	≤0.001	≤0.004	≤0.0005	
内径 Inner Diameter (mm)	Φ0.125 ~ Φ0.127		Φ0.125	
内径公差 ID Tolerance (mm)	+0.001/0	+0.004/0	+0.0005/0	
插芯长度 Ferrule Length (mm)	SC: 10.50±0.05		ST: 12.70±0.05	
端面曲率半径 End Curve Radius (mm)	20+5/-10			

### LC Ferrule

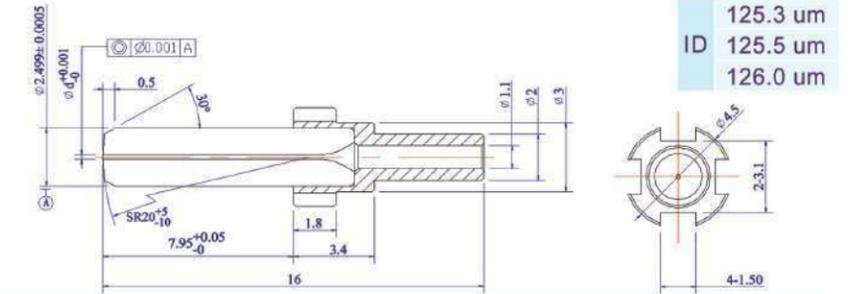
	Singlemode	Multimode	Grade B	*Master
外径 Outside Diameter (mm)	Φ1.2490			
外径公差 OD Tolerance (mm)	±0.0005	+0.0005/-0.0015	±0.0003	
同芯度 Concentricity (mm)	≤0.001	≤0.004	≤0.0005	
内径 Inner Diameter (mm)	Φ0.125 ~ Φ0.127		Φ0.125	
内径公差 ID Tolerance (mm)	+0.001/0	+0.004/0	+0.0005/0	
插芯长度 Ferrule Length (mm)	6.40±0.1/0			

# 标准插芯 Standard Ferrule

## SC/SM/PC



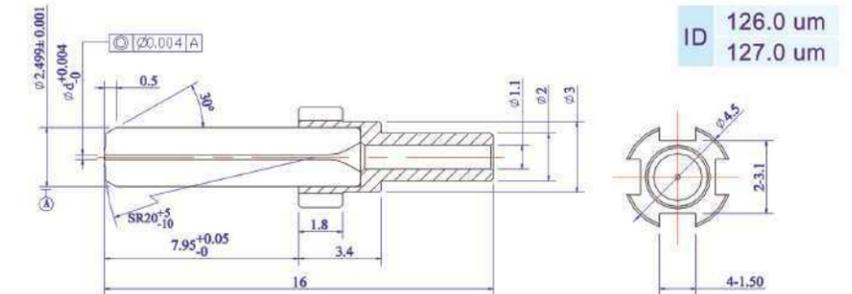
SC 单模球面插芯  
SC/PC Singlemode Ferrule



## SC/MM/PC



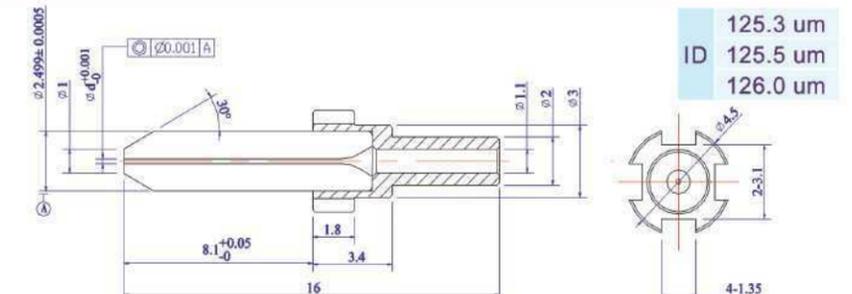
SC 多模球面插芯  
SC/PC Multimode Ferrule



## SC/SM/Cone



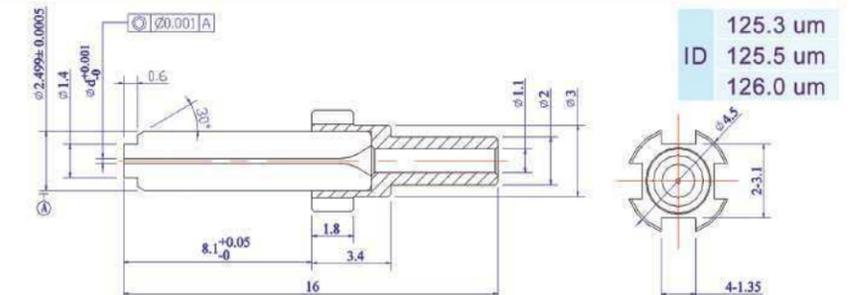
SC 单模大倒角插芯  
Cone Type SC APC Singlemode Ferrule



## SC/SM/Step



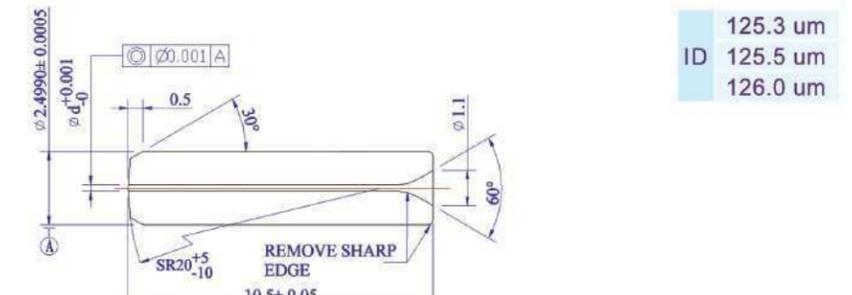
SC 单模台阶插芯  
Step Type SC APC Singlemode Ferrule



## SC/SM/PC



SC 单模插芯  
SC/PC Singlemode Ferrule

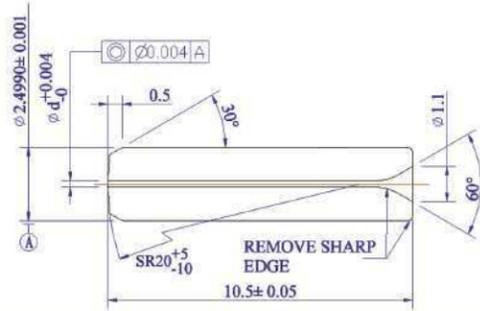


# 标准插芯 Standard Ferrule

## SC/MM/PC



SC 多模插芯  
SC/PC Multimode Ferrule

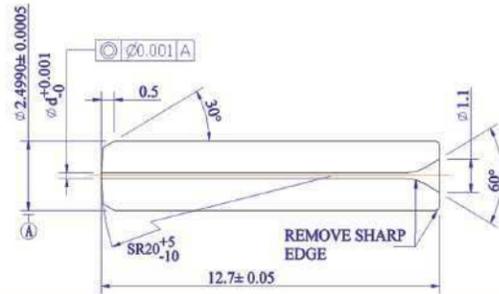


ID 126.0 um  
127.0 um

## ST/SM/PC



ST 单模球面插芯  
ST/PC Singlemode Ferrule

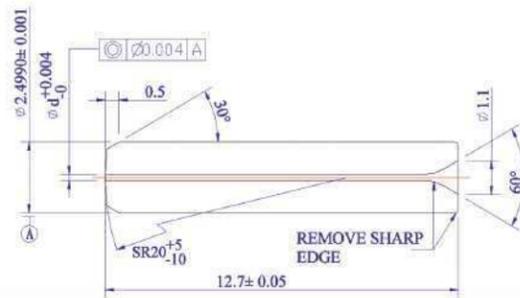


125.3 um  
ID 125.5 um  
126.0 um

## ST/MM/PC



ST 多模球面插芯  
ST/PC Multimode Ferrule

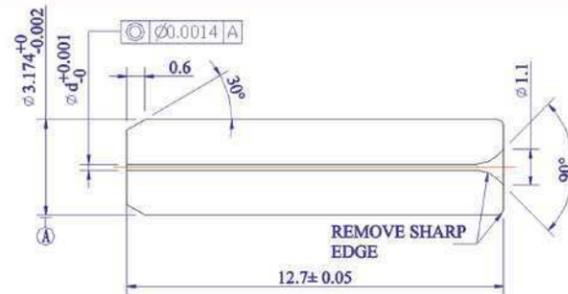


ID 126.0 um  
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## SMA/SM



SMA 单模插芯  
SMA Singlemode Ferrule

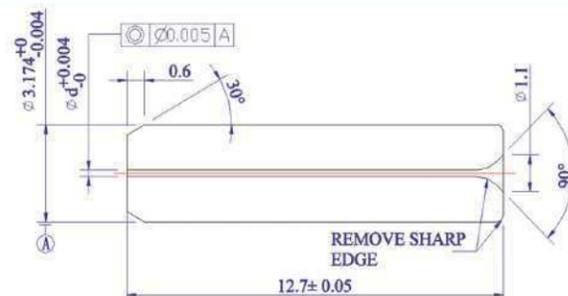


125.3 um  
ID 126.0 um  
127.0 um

## SMA/MM



SMA 多模插芯  
SMA Multimode Ferrule



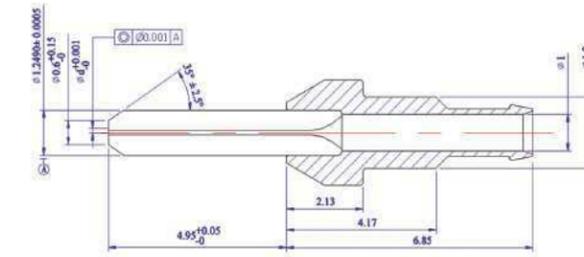
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# 标准插芯 Standard Ferrule

## LC/SM



LC 单模插芯  
LC Singlemode Ferrule



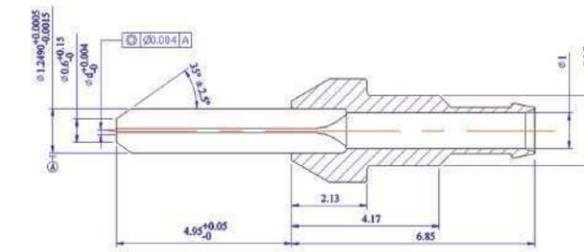
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ID 125.5 um  
126.0 um



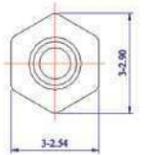
## LC/MM



LC 多模插芯  
LC Multimode Ferrule



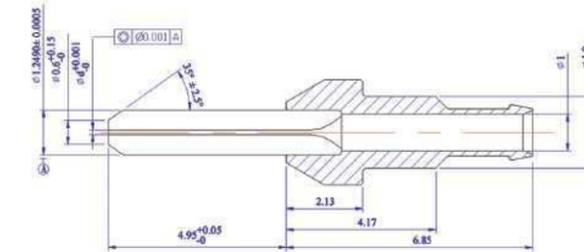
ID 126.0 um  
127.0 um



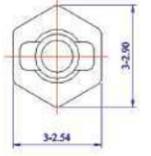
## LC/SM/APC



LC APC 单模插芯  
LC APC Singlemode Ferrule



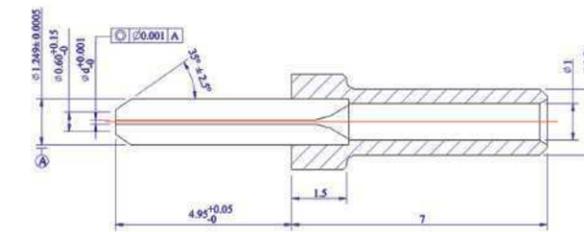
125.3 um  
ID 125.5 um  
126.0 um



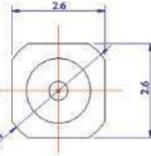
## MU/SM



MU 单模插芯  
MU Singlemode Ferrule



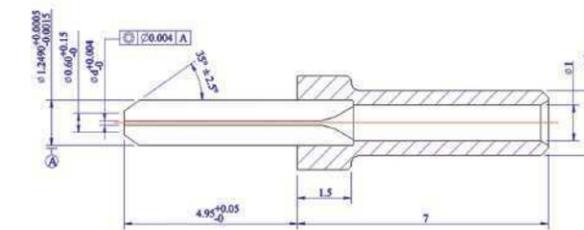
125.3 um  
ID 125.5 um  
126.0 um



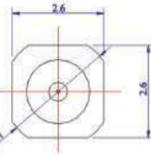
## MU/MM



MU 多模插芯  
MU Multimode Ferrule



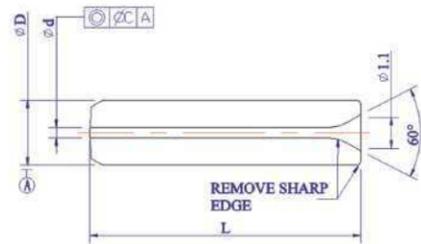
ID 126.0 um  
127.0 um



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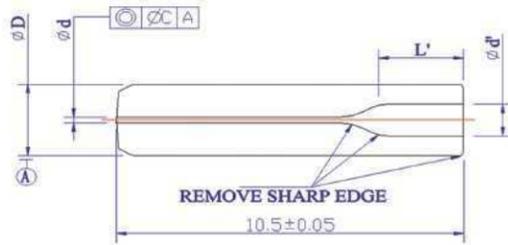
# 非标插芯 Non-standard Ferrule

## 大内孔插芯 Large Hole Ferrule



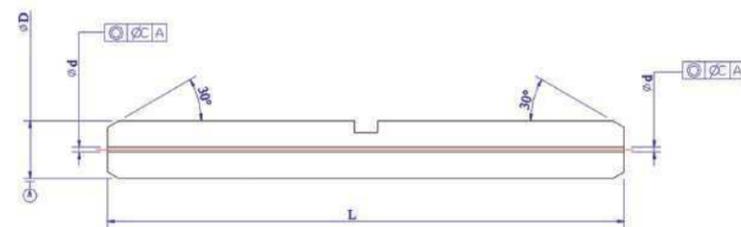
型号	Part No.	FEN-LH-SC	FEN-LH-LC	FEN-LH-SMA	FEN-LH-SDL
外径	Outside Diameter (mm)	$\Phi 2.4990$	$\Phi 1.2490$	$\Phi 3.1740$	$\Phi 1.1 \sim \Phi 3.2$
外径公差	OD Tolerance (mm)	$\pm 0.001$	$+0.005/-0.0015$	$+0/-0.004$	$\pm 0.001$
长度	Length (mm)	$10.50 \pm 0.05$	$6.40 + 0.1/-0$	$12.70 \pm 0.05$	$5 \sim 12.50$
内径区间	ID Range (um)	128 ~ 200	201 ~ 400		401 ~ 700
内径公差	ID Tolerance (um)	$\leq 5$		$\leq 10$	
同芯度	Concentricity (um)	$\leq 10$	$\leq 20$		$\leq 20$

## 长尾锥插芯 Funnel Ferrule



型号	Part No.	FEN-SC-Funnel -1	FEN-SC-Funnel -2
外径	Outside Diameter D (mm)	$\Phi 1.8 \sim \Phi 2.50$	$\Phi 1.00 \sim \Phi 1.40$
内径	Inner Diameter d (mm)	$\Phi 0.125 \sim \Phi 0.127$	
尾锥内孔	ID Range d' (mm)	$\Phi 1.00$	$\Phi 0.6$
同芯度	Concentricity C (mm)	$\leq 0.001$ (Single mode); $\leq 0.004$ (Multi mode)	
深孔长度	Inner Hole Length L' (mm)	0 ~ 5	

## 长插芯 Long Ferrule

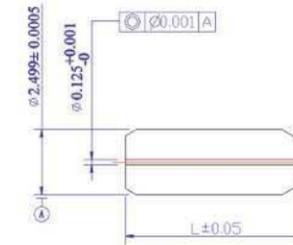


型号	Part No.	FEN-SC-L	FEN-LC-L
外径	Outside Diameter D (mm)	$\Phi 2.4990 \pm 0.0005$	$\Phi 1.2490 \pm 0.0005$
内径	Inner Diameter d (um)	$\Phi 0.125 \sim \Phi 0.127$	
同芯度	Concentricity C (um)	$\leq 0.0014$ (Concentricity Assurance at Both Ends)	
开槽	Slot	Slot or no Slot	
长度	Length L (mm)	5 ~ 22	

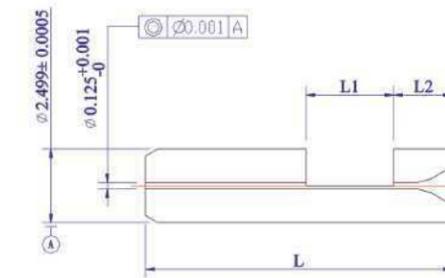
# 非标插芯 Non-standard Ferrule

## 其它非标插芯 Special Ferrule

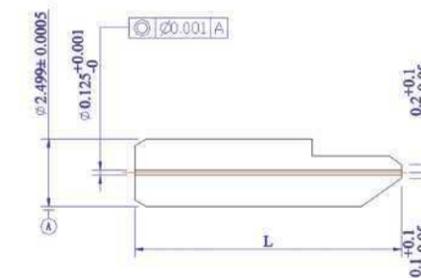
### FEN-SC-S1



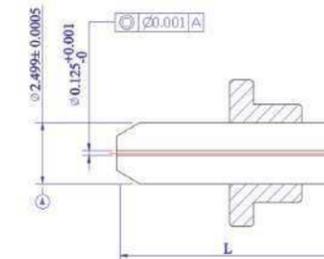
### FEN-SC-S2



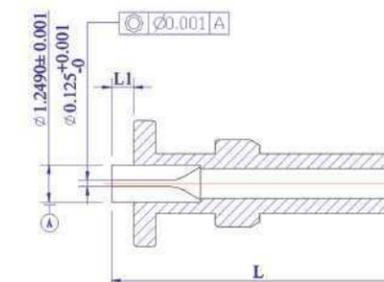
### FEN-SC-S3



### FEN-SC-S4



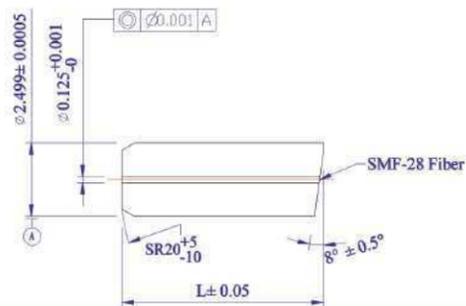
### FEN-SC-S5



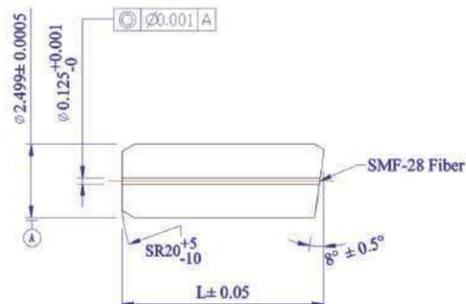
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# 穿纤插芯 Fiber Stub

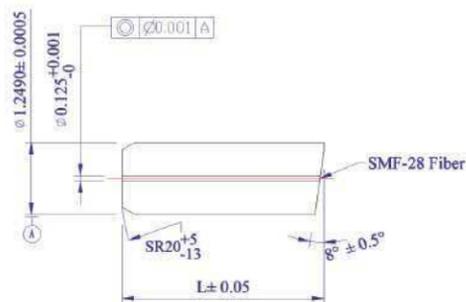
## FES-SC-PF



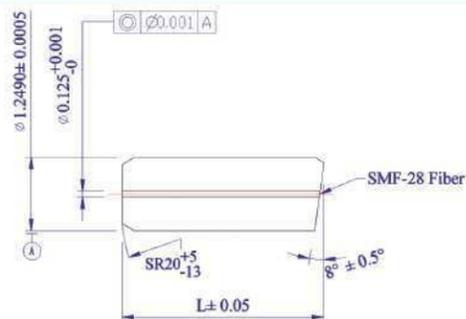
## FES-SC-PA



## FES-LC-PF



## FES-LC-PA

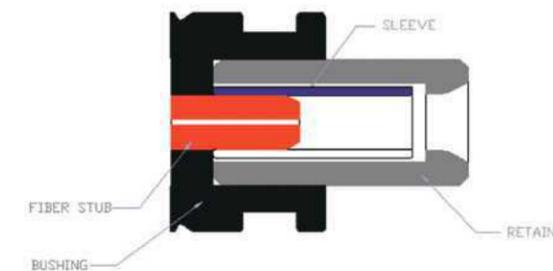


### 技术规格 Technical Specification

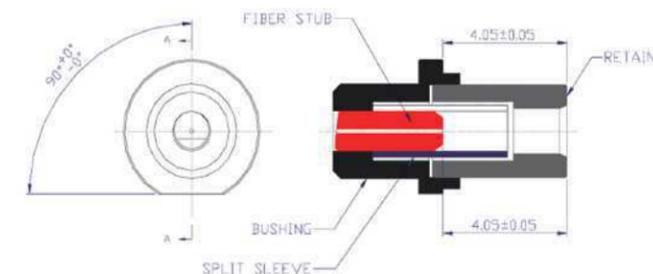
类型 Type	SC SM Stub	LC SM Stub
外径 Outside Diameter (mm)	Φ2.4990±0.0005	Φ1.2490±0.0005
内径 Inner Diameter (mm)	Φ0.125 <sup>+0.001</sup> <sub>-0</sub>	
同芯度 Concentricity (mm)	≤0.001	
长度 Length (mm)	5 ~ 22	

# 光收发用组件 ROSA & TOSA Receptacle

## 光接收用组件 ROSA LC Receptacle



## 光发射用组件 TOSA Receptacle



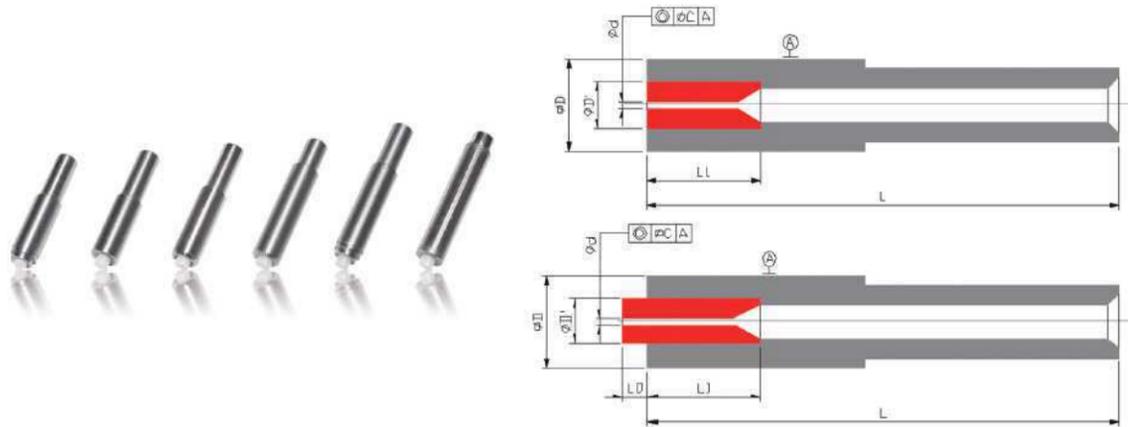
### 技术规格 Technical Specification

同芯度 Stub Concentricity (um)	≤ 0.7
插入损耗 Insertion Loss (dB)	≤ 0.2
回波损耗 Return Loss (dB)	≥ 30
开口套管 Split Sleeve	Ceramic
外套 Bushing	SUS 304
支承 Retainer	SUS 304 or SUS 303
良好的稳定性, 可靠性, 重复性和互换性 Excellent stability, Reliability, Repeatability and Exchangeability	
储存温度 Storage Temperature Range: -40°C ~ 85°C 可选SC和LC型组件 Both LC and SC Receptacle are available	
可按客户要求设计和制造 Special design and manufacture according to customer requirement	

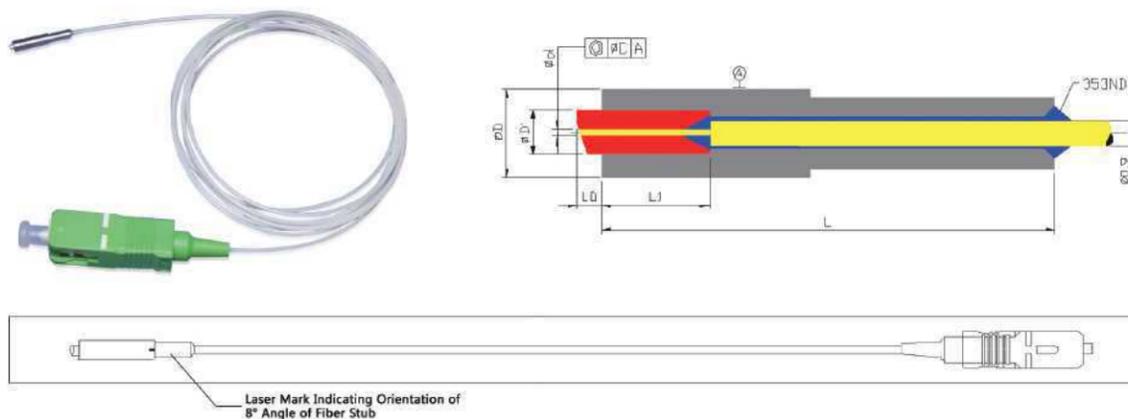
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# 模块插芯及尾纤 Module Ferrule & Module Pigtail

## 模块插芯 Module Ferrule



## 模块尾纤 Module Pigtail



## 技术规格 Technical Specification

模式 Mode	SM	MM
金属套管长度 Metal Holder L (mm)	Max. 14.0 for SUS304, Max. 15.0 for SUS303	
短插芯长度 Stub Length L1 (mm)	3.0 (Reference)	
插芯突出长度 Stub Protruding L0 (mm)	0.5 ± 0.1	
外径 OD: ΦD (mm)	Φ1.8 ~ 2.5	
公差 Tolerance (mm)	± 0.005	
同芯度 Concentricity ΦC (mm)	0.005	0.02
短插芯 Ferrule Stub	OD: ΦD' (mm)	1.25, 1.40
	ID: Φd (mm)	0.125, 0.126, 0.127
	ID Tolerance (mm)	+ 0.001/0
金属套管外型 Shape of metal	Customer Design	
材料 Material	SUS304, SUS303	
接头 Connector	SC, FC, LC, MU/PC or APC	

# 光纤连接器 Fiber Optic Cable Assembly

## 特点 Feature

- Telcordia IEC, TIA/EIA, GR326 Standard Compliant
- 100% 光学性能测试以及良好的插芯端面几何参数控制  
100% Optical performance inspection and endface geometric parameter control
- 低插入损耗和高回波损耗 Low insertion loss and high return loss
- 各类光纤连接器, 规格齐全 Varieties of Cable Assemblies
- 符合环境要求 RoHS Compliance

## 一般技术规格 General Technical Specification

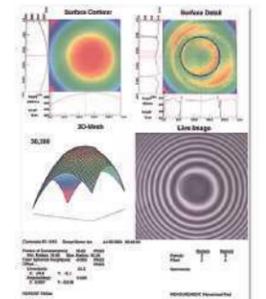
### 光学性能 Fiber Optic Performance

接头 Connector	FC, SC, ST, LC, MU, SMA			
模式 Mode	SM			MM
端面 Endface	PC	UPC	APC	PC
插入损耗 Insertion Loss (dB)	≤0.3	≤0.2	≤0.3	≤0.2
回波损耗 Return Loss (dB)	≥45	≥50	≥65	-----
光缆外径 Cable Dia (mm)	Φ3, Φ2, Φ0.9			

### 端面几何参数 Geometric Parameter of Endface

端面 Endface Polishing	PC	APC
曲率半径 Radius of Curvature (mm)	SC	5 ~ 30
	LC	5 ~ 30
顶点偏移 Apex Offset (um)	≤70	
光纤高度 Fiber Spherical Height (nm)	-125 (凹), +100 (凸)	
角度偏差 Angular Error (°)	-----	8 ± 0.5

\* Customer specification is available upon request.



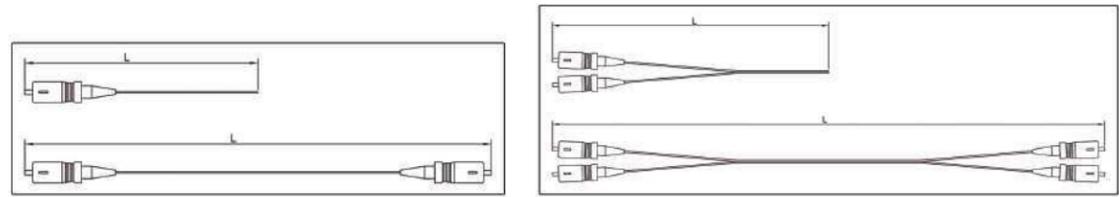
## 常用光缆类型 Normal Cable



## 常用接头 Normal Connector



# 单/双芯连接器 Simplex/Duplex Patchcord



单芯 Simplex Pigtail & Patchcord

双芯 Duplex Pigtail & Patchcord

## 定货信息 Ordering Information

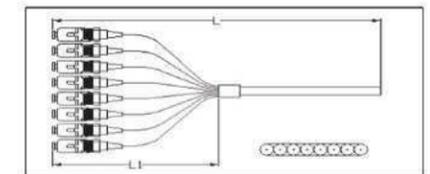
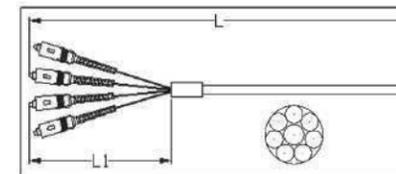
Patchcord - FC / APC - SC / UPC / SM /  $\Phi 3$  / LM / D  
(Pigtail) ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 接头型号	Connector Type 1#	FC, SC, ST, MU, LC, SMA, E2000
② 端面	Endface 1#	PC, UPC, APC
③ 接头型号	Connector Type 2#	FC, SC, ST, MU, LC, SMA, E2000
④ 端面	Endface 2#	PC, UPC, APC
⑤ 光纤模式	Fiber Mode	SM( OS1, OS2 ), MM( OM1, OM2, OM3, OM4 )
⑥ 光缆外径	Cable Diameter (mm)	$\Phi 3$ , $\Phi 2$ , $\Phi 1.6$ , $\Phi 0.9$
⑦ 光缆长度	Cable Length (M)	L=1, 2, 3, 4 ...
⑧ 光缆	Fiber Cable	S:Simplex ( Omitted ), D:Duplex

# 多芯扇出型连接器 Multi-Fiber Fanout Cable Assembly

## 束状连接器 Distribution Cable Fanout Cord

## 带状连接器 Ribbon Cable Fanout Cord



## 技术规格 Technical Specification

光纤模式	Fiber Mode	SM( OS1, OS2 ), MM( OM1, OM2, OM3, OM4 )
光纤芯数	Fiber Count	4, 6, 8, 12 & 24 Fiber
分支外径	Fanout Diameter (mm)	$\Phi 3$ , $\Phi 2$ , $\Phi 0.9$
接头规格	Applicable Connector	FC, SC, ST, MU, LC, E2000 / PC, UPC, APC

## 定货信息 Ordering Information

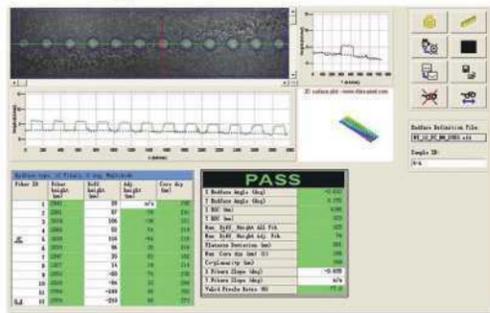
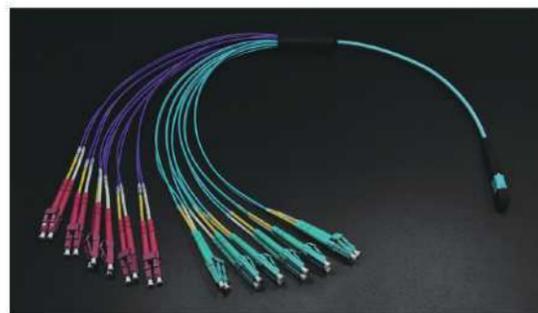
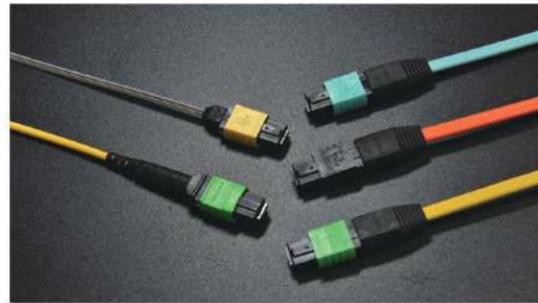
Fanout Cord - D 12F - SC / UPC / SM /  $\Phi 0.9$  / L / L1 M  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 光缆类型	Cable Type	D: 束状光缆 Distribution Cable RJ: 护套带状光缆 Jacket Ribbon Cable RB: 裸带状光缆 Bare Ribbon Cable
② 光纤芯数	Fiber Count	4, 6, 8, 12, 24 ... Fiber
③ 接头型号	Connector Type	FC, SC, ST, MU, LC, E2000
④ 端面	Endface	PC, UPC, APC
⑤ 光纤模式	Fiber Mode	SM( OS1, OS2 ), MM( OM1, OM2, OM3, OM4 )
⑥ 分支外径	Fanout Diameter (mm)	$\Phi 3$ , $\Phi 2$ , $\Phi 0.9$
⑦ 全长	Cable Length (M)	L=1, 2, 3, 4 ...
⑧ 分支长度	Pigtail Length (M)	L1=0.5, 0.6, 1.0, or as required

# MPO/MTP Multi-fiber Cable Assembly

## 特点 Feature

- 符合IEC, TIA系列  
Compliant with IEC and TIA requirements
- 多芯光纤接头  
Multi-fiber termination of 2f, 4f, 8f, 12f, 16f & 32f fibers
- 精密多芯插芯  
Precision Multi-fiber MT Ferrule
- 推拉锁紧  
Push-pull latching
- 可选用公/母接头  
Male and Female connector type
- 可选用带状光缆及微型圆缆  
Bare & Ruggedized Ribbon and Mini round cable



## 技术规格 Technical Specification

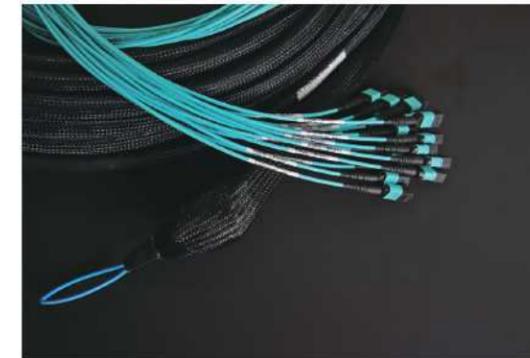
### 光学性能 Fiber Optic Performance

接头	MPO/MTP Connector	单模常规插芯 Standard SM MT Ferrule	单模低插损插芯 Low Loss(Elite) SM MT Ferrule	多模常规插芯 Standard MM MT Ferrule	多模低插损插芯 Low Loss MM MT Ferrule
插入损耗 Insertion Loss	Typical (dB)	0.35	0.20	0.35	0.20
	Maximum (dB)	0.75	0.35	0.60	0.35
回波损耗 Return Loss	(dB)	≥60 for APC (8° Polish)		≥20 for PC	
公 / 母	Male/Female	Male: With Pins , Female: Without Pins			

### 端面几何参数 Geometric Parameter of Endface

项 目	Item	Spec	
		SM	MM
X 轴曲率半径	RX (mm)	Min 2000	
Y 轴曲率半径	RY (mm)	Min 5	
光纤高度	Fiber Height (nm)	1000 ~ 3500	
总体光纤高度差	Max.Diff.Height All (nm)	MAX: 500	
相邻光纤高度差	Max.Diff.Height Adj. (nm)	MAX: 300	
X 轴角度	X Axis Angle (°)	-0.15 ~ 0.15	-0.20 ~ 0.20
Y 轴角度	Y Axis Angle (°)	APC: 7.80 ~ 8.20	-0.20 ~ 0.20
光纤凹陷	Core Dip (nm)	N/A	-100 ~ 200

# MPO/MTP Multi-fiber Cable Assembly



MPO/MTP Harness Fanout Cable Assemblies



MPO/MTP Trunk Cable Assemblies



MPO/MTP Shuffle Cable Assemblies



MPO/MTP Hydra Cable Assemblies

## 定货信息 Ordering Information

MPO-male / APC / 12F - FC / UPC / SM / Φ0.9 - L / L1 - RJ  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① 接头型号	Connector Type 1#	MPO-female*, MPO-male
② 端面	Endface 1#	PC, APC
③ 光纤芯数	Fiber Count	2, 4, 8, 12 & 24 MT Fibers
④ 接头型号	Connector Type 2#	MPO/female*, MPO-male, FC, SC, ST, MU, LC, E2000
⑤ 端面	Endface 2#	PC, UPC, APC
⑥ 光纤模式	Fiber Mode	SM( OS1, OS2 ), MM( OM1, OM2, OM3, OM4 )
⑦ 光缆外径	Cable Diameter (mm)	Φ2, Φ3, Φ4
⑧ 全长	Cable Length (M)	L=1, 2, 3, 4 ...
⑨ 尾纤长度	Pigtail Length (M)	L1=0.5, 0.6, 1.0
⑩ 光缆类型	Cable Type	RJ:Jacket Ribbon Cable, RB:Bare Ribbon Cable, MIC: 250um mini round cable

\* For female MPO Connector, female can be omitted in the ordering information

# MPO/MTP Multi-fiber Cable Assembly

## 16F/32F MTP/MPO 多芯连接器系列 16F/32F MTP/MPO Multi-fiber Cable Assembly

### 特点 Feature

- 符合最新TIA 604-18-A标准  
Compliant with emerging TIA-604-18-A FOCIS 18 standard
- 100%光学性能测试以及良好的插芯端面几何尺寸控制  
Optical performance 100% factory tested and endface geometry polishing controlled
- 插芯外形与传统12芯 MPO/MTP保持一致，但密度更高  
Same external ferrule footprint as existing traditional 12-fiber ferrule, but in a higher density, protocol supporting format
- 以8或者16芯光纤为增加数，用于下一代并行光传输  
Next generation parallel transmission protocols are arranged in increments of 8 or 16
- 符合RoHS要求  
RoHS Compliance



### 技术规格 Technical Specification

- IL≤0.35dB, RL≥20dB  
备注：1、其他端面、3D标准和12芯MPO/MTP产品保持一致；  
2、暂时只有MM光纤 Low Loss系列；
- Note: 1. Other standards are the same as those of 12F MPO/MTP products;  
2. Temporarily, only multimode fiber low loss series is available at T&S.

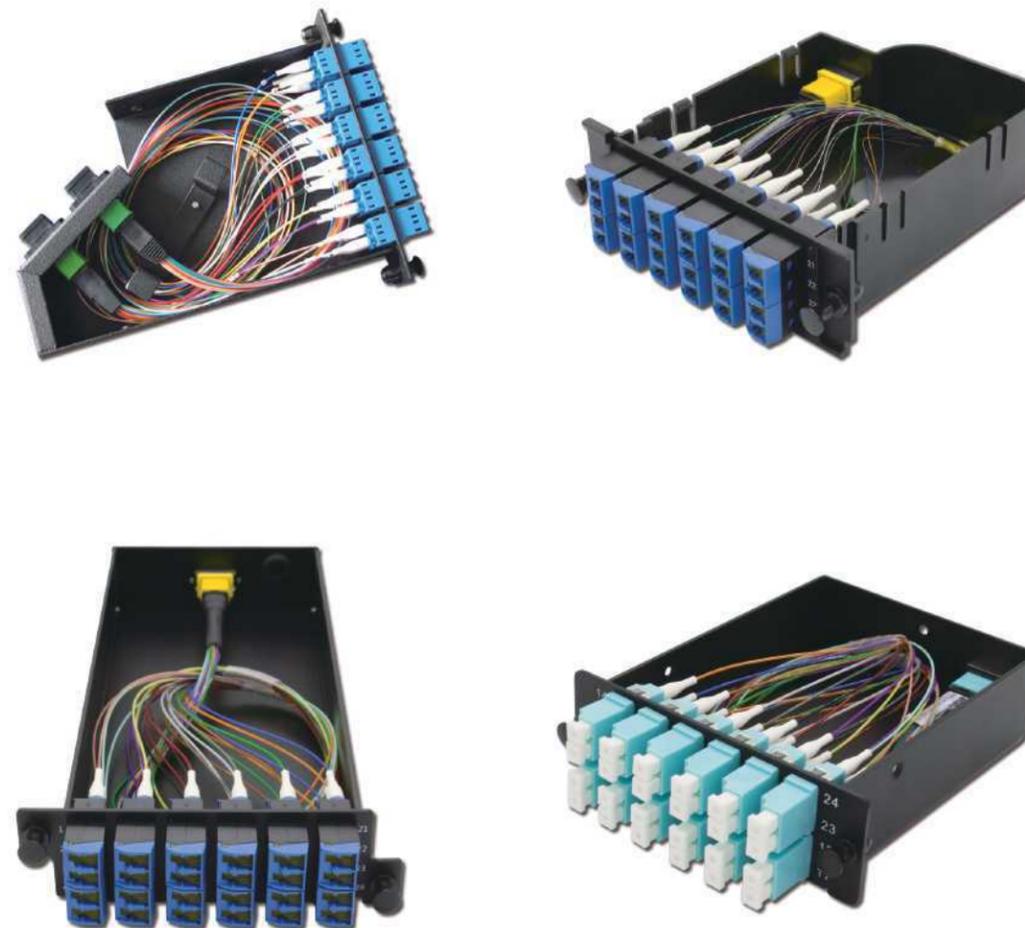
### 定货信息 Ordering Information

MTP Patchcord - ① M / ② 16f / ③ OM3 / PC - MTP - ④ F / PC / ⑤ Φ3.6 / ⑥ L M

① 接头型号	Connector Type	M- Male; F- Female
② 光纤芯数	Fiber Count	16f or 32f
③ 光纤模式	Fiber Mode	SM (OS1, OS2), MM (OM1, OM2, OM3, OM4)
④ 接头型号	Connector Type	M- Male; F- Female
⑤ 光缆外径	Cable Diameter (mm)	Φ3.6, Φ4.5... mini round cable
⑥ 产品长度	Product Length (M)	1, 2, 3, 4 ...

# MPO/MTP Multi-fiber Cable Assembly

## MPO/MTP 模块盒 MPO/MTP Cassettes



### 特点 Feature

- 多种规格MPO/MTP模块盒配置  
MPO/MTP Cassettes for SM/MM 8f, 12f, 16f & 24f Configuration
- 面板适配器  
Available for installing LC, SC, FC, ST Adapters

# 光模块及AOC跳线 Jumpers in Module and AOC

## 特点 Feature

- 符合IEC, TIA/EIA, GR326, GR1435 Series Standard Compliant  
Compliant with Telcordia IEC, TIA/EIA, GR326, GR1435 Standards.
- 100%光学性能测试以及良好的插芯端面几何尺寸控制  
Optical performance 100% factory tested and endface geometry polishing controlled
- 高精度、低损耗MT插芯配合小弯曲半径光纤完成低对接损耗  
Use high-precision and low loss MT Ferrule, small bending radius fiber to achieve low attenuation
- 完美配合有源光模块(SFP、CFP、QSFP、AOC等)的使用  
Good performance when works with SFP, CFP, QSFP and AOC
- 符合RoHS要求  
RoHS Compliance



QSFP+ MT-MT Jumper



SFP+AOC Jumper

## 技术规格 Technical Specification

连接头 模式	Connector Type Model	SC, LC			MT		
		SM	APC	MM	SM	A(LowLoss)	MM
端面	Endface	UPC	APC	PC	F(LowLoss)	A(LowLoss)	F(LowLoss)
插入损耗	Insertion Loss (dB)	≤0.2	≤0.3	≤0.2	≤0.35	≤0.35	≤0.35
回波损耗	Return Loss (dB)	≥50	≥65	--	≥50	≥60	--

## 定货信息 Ordering Information

Jumper - MT / APC - MT / APC / SM / Φ3 / L M  
① ② ③ ④ ⑤ ⑥ ⑦

① 接头型号	Connector Type	SC, LC, MT
② 端面 1#	Endface 1#	PC, UPC, APC
③ 接头型号	Connector Type	SC, LC, MT
④ 端面 2#	Endface 2#	Single Mode, Multi Mode ( Small bending radius fiber)
⑤ 光纤模式	Fiber Mode	Φ3.6mm, Φ4.5mm... mini round cable
⑥ 光缆外径	Cable Diameter (mm)	Φ3, Φ2, Φ1.8, Ribbon Fiber
⑦ 产品长度	Product Length (M)	1, 2, 3 ...

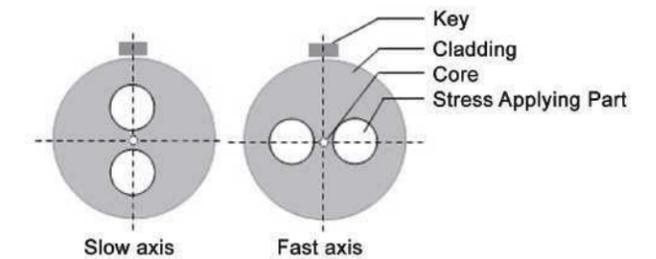
# 保偏连接器 PM Patchcord

## 特点 Feature

- 高消光比  
High extinction ratio
- 低插损, 高回损  
Low insertion loss and high return loss
- 端面UPC或APC研磨  
UPC and APC Polishing available
- 符合IEC连接器标准  
Meet IEC connector specifications

## 应用 Application

- 光纤陀螺仪  
Fiber Optic Gyroscope
- 激光多普勒仪  
Laser Doppler Velocimeter
- 光纤传感测量  
Measurement Sensors
- 测试和仪器系统  
Testing and instrument systems
- 相干通信  
Coherent Transmission



## 技术规格 Technical Specification

工作波长	Operating Wavelength (nm)	1550
接头类型	Connector Type	FC, SC
插入损耗	Insertion Loss (dB)	UPC or APC Polishing ≤0.2 (MAX 0.4) APC ≤0.3 (MAX 0.5)
回波损耗	Return Loss (dB)	UPC ≥50 APC ≥60
消光比	PER (dB)	Typically ≥ 25(MIN 23)
FC定位键类型	Key Type (mm)	R: 窄型 Reduced 1.97 ~ 2.02      N: 宽型 Wide 2.09 ~ 2.14
定位键相对位置	Key Position	慢轴 Slow Axis      快轴 Fast Axis
光纤类型	Fiber Type	PANDA Fiber
光缆外径	Cable Diameter (mm)	Φ0.9 Buffer, Φ2, Φ3
光纤长度公差	Fiber Length Tolerance (%)	±10
工作温度	Environmental Temperature (°C)	-25 ~ +70
储存温度	Storage Temperature (°C)	-40 ~ +85

## 定货信息 Ordering Information

PM - FC/UPC (N) - FC/UPC (N) / 1550 / Φ2 / L - SA  
① ② ③ ④ ⑤ ⑥ ⑦

①③ 接头型号	Connector Type	FC, SC/UPC, APC
② FC定位键类型	Key Type for FC	R型或N型 ( R型可省略 ) R or N ( R Omitted )
④ 工作波长	Wavelength (nm)	1550
⑤ 光缆外径	Cable Diameter (mm)	09=Φ0.9, 20=Φ2.0, 30=Φ3.0
⑥ 连接器长度	Patchcord Length (M)	1, 2 ...
⑦ 定位键位置	Key Position	SA=慢轴 Slow axis(默认定位 default), FA=快轴 Fast axis

# IEC Graded Patchcord

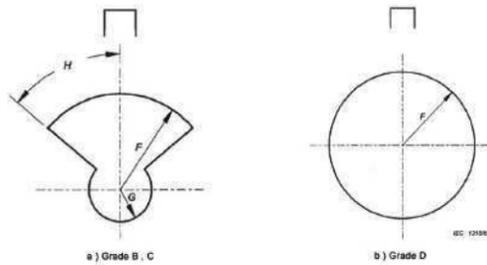
## 特点 Feature

- 符合IEC61753, 61755, 61300, 61754系列标准  
In accordance with IEC61753, 61755, 61300, 61754 standards
- 随机对接IL性能好, 回损高  
Good random mating IL performance & High return loss
- 高标准的端面几何参数  
Excellent endface geometry parameter
- 纤芯偏心检测与调点工艺  
Fiber Core Eccentricity Test & Tuning Process
- 各种规格接头 FC, SC, MU, LC  
Varieties of connectors FC, SC, MU, LC
- 可满足特别需求  
Special specification available upon custom request



## 技术规格 Technical Specification

Attenuation Grade	Attenuation Random Mated IEC 61300-3-34
Grade A	Not Defined Yet
Grade B	Not Defined Yet
Grade C	≤0.12dB Mean IL Max 0.25dB IL for >97% of samples
Grade D	≤0.25dB Mean IL Max 0.50dB IL for >97% of samples



Ref	Units	Grade A		Grade B		Grade C		Grade D	
		PC	APC	PC	APC	PC	APC	PC	APC
F	Um	0	0.6	0	1.2	0	1.5	0	1.5
G	Um	0	0.1	0	0.3	0	0.3	NA	NA
H	Degrees	0	50	0	50	0	50	NA	NA

## 定货信息 Ordering Information

GA-Grade A - FC / APC - FC / UPC / SM / Φ3 / L  
① ② ③ ④ ⑤ ⑥ ⑦

① 分级跳线	Graded Patchcord	GA-Grade A, GB-Grade B, GC-Grade C, GD-Grade D
② 接头型号	Connector Type 1#	FC, SC, MU, LC
③ 端面	Endface 1#	UPC, APC
④ 接头型号	Connector Type 2#	FC, SC, MU, LC
⑤ 端面	Endface 2#	UPC, APC
⑥ 光缆外径	Cable Diameter (mm)	Φ3, Φ2, Φ0.9
⑦ 光缆长度	Cable Length (M)	L = 1, 2, 3 ... i.e. 3M = 3

※ Note: MM patchcord grades need to be discussed.

# 标准测试线 Master Cord

## 特点 Feature

- 符合EN&ICE61754, ICE61755标准  
In accordance with EN&ICE61754 and ICE61755 standards
- 低插损, 高回损  
Low insertion loss and high return loss
- 高标准的端面几何参数  
Excellent endface geometry parameter
- 纤芯偏心检测与调点  
Fiber Core Eccentricity Test & Tuning
- 各种规格接头 FC, SC, MU, LC  
Varieties of connectors FC, SC, MU, LC
- 可满足特别需求  
Special specification available upon custom request



## 技术规格 Technical Specification

光学性能	规格 Specification		UPC	APC
	插入损耗 Insertion Loss SM & MM (dB)		≤0.10	≤0.10
回波损耗 Return Loss (dB)	SM	≥55	≥65	
	MM	≥40	----	
端面几何参数	曲率半径 Radius of Curvature (mm)	SC	10 ~ 25	6 ~ 11
		LC	7 ~ 20	6 ~ 11
	顶点偏移 Apex Offset (um)		≤30	≤30
	光纤凹陷 Fiber Height (Spherical) (nm)		±50	
调点参数 <sup>1</sup> Tuning Parameter	纤芯偏心量 Eccentricity (Fiber Core to Ferrule) (um)		≤0.3(P grade); ≤0.6(A grade)	
	调点角度 Fiber Core Polar Angular (°)		±50	8 ± 0.3

※ Note 1: MM need to be discussed.

## 定货信息 Ordering Information

MC - FC / APC - FC / UPC / SM / Φ3 / L  
① ② ③ ④ ⑤ ⑥ ⑦

① 接头型号	Connector Type 1#	FC, SC, MU, LC
② 端面	Endface 1#	UPC, APC
③ 接头型号	Connector Type 2#	FC, SC, MU, LC
④ 端面	Endface 2#	UPC, APC
⑤ 光纤模式	Fiber Mode	SM(OS1, OS2), MM(OM1, OM2, OM3, OM4)
⑥ 光缆外径	Cable Diameter (mm)	Φ3, Φ2, Φ0.9
⑦ 光缆长度	Cable Length (M)	L = 1, 2, 3 ... i.e. 3M = 3

# 光纤回路器 Fiber Optic Loopback

## 特点 Feature

- 符合Telcordia GR326, IEC61754-XX, TIA/EIA 标准  
Compliant with Telcordia GR326, IEC61754-XX, TIA/EIA Standards
- 低插入损耗和高反射衰减  
Low insertion loss and high return loss
- 可提供各种规格型号的光纤回路器：SC, LC, MU, MPO/MTP  
Loopback Fiber Patchcord: SC, LC, MU, MPO/MTP  
(\*Customer specification is available upon request)
- 符合环境要求  
RoHS Compliance



MTP Loopback



SC Loopback

## 技术规格 Technical Specification

连接头 模 式 端 面	Connector Type Model Endface	SC, LC, MU			SC, LC, MU		
		SM	MM	PC	F(LowLoss)	A(LowLoss)	F(LowLoss)
插入损耗	Insertion Loss (dB)	≤0.2	≤0.3	≤0.2	≤0.75(≤0.35)	≤0.75(≤0.35)	≤0.5(≤0.35)
回波损耗	Return Loss (dB)	≥50	≥65	--	≥40	≥50	--

## 定货信息 Ordering Information

Loopback - SC / APC / SM / Φ3 / L M  
① ② ③ ④ ⑤

① 接头型号	Connector Type	SC, MU, LC, MTP
② 端面	Endface	PC, UPC, APC
③ 光纤模式	Fiber Mode	Single Mode, Multi Mode ( Small bending radius fiber)
④ 光缆外径	Cable Diameter	Φ3, Φ2, Φ1.6, Φ0.9
⑤ 产品长度	Product Length	L

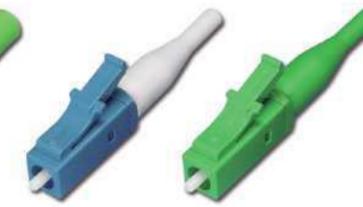
# 光纤终端器 Fiber Optic Terminator

## 特点 Feature

- TS提供的光纤终端器 ( SC型、LC型、FC型 ) IEC61754-XX系列之相关尺寸要求  
Dimension of optical fiber terminator (SC, LC, FC) supplied by T&S is compliant with requirements in IEC61754-XX
- 特殊工艺保障高的回波损耗要求  
Special craft makes high return loss fully attainable
- 可长时间承受高功率光信号的传输  
Capable for transmitting light signal under high power for long time
- 适用于1260nm~1640nm全带宽  
Complete bandwidth from 1260nm to 1640nm
- 符合环境要求  
RoHS Compliance



FC Type



LC Type



SC Type

## 技术规格 Technical Specification

连接头 模 式 端 面	Connector Type Model Endface	SC, LC	
		SM	APC
回波损耗	Return Loss (dB)	≥50	≥65
波 长	Insertion Loss (nm)	1260 ~ 1640	

## 定货信息 Ordering Information

FOT - SC / APC  
① ②

① 接头型号	Connector Type	SC, LC
② 端面	Endface	UPC, APC

# 衰减器 Attenuator

## 插头式固定衰减器 Fixed Plug-in Attenuator

### 特点 Feature

- 符合Bellcore ( GR-910-Core ) 标准  
In accordance with Bellcore ( GR-910-Core ) standard
- 采用薄层模压缩衰减光纤，具有良好的光学性能  
Adopting high attenuation fiber with the cladding mode suppression design, featuring the excellent optic performance
- 插头结构，易于安装  
Easy connection with plug-in type structure
- 误差小，回波损耗高  
Precise attenuation and high return loss



## 技术规格 Technical Specification

插头式 Plug-in Type Attenuator			
模式 Model		SM	MM ( 62.5 , 50 )
工作波长 Operating Wavelength (nm)		1310 & 1550	850 ( LED or Vcsel )
衰减值 Attenuation Value (dB)		0 ~ 25	
接头 Connector Type		SC, FC, ST, LC, MU	
		PC or APC Polishing	PC
衰减精度 Tolerance (dB)	0 ~ 5	±0.5	
	6 ~ 25	±10%A*	
回波损耗 Return Loss (dB)		≥50 (UPC) , ≥65 (APC)	----
工作温度 Operation Temperature (°C)		-25 ~ +70	
存储温度 Storage Temperature (°C)		-40 ~ +85	

\* A为衰减器标称衰减值 A is equal to specific attenuation value.

## 定货信息 Ordering Information

ATP - FC / APC / SM / 05  
① ② ③ ④

① 接头型号 Connector Type	FC, SC, LC, ST, MU
② 端面 Endface	PC, APC
③ 光纤模式 Fiber Mode	SM, MM( 50, 62.5 )
④ 衰减值 Attenuation Value	01:1dB, 02:2dB, 03:3dB...10:10dB, 15:15dB, 20:20dB, 25:25dB

# 衰减器 Attenuator

## 在线式固定衰减器 Fixed In-line Attenuator

### 特点 Feature

- 高衰减精度  
High precision
- 可带各种规格接头，易于连接  
Easy connection with various connectors



## 技术规格 Technical Specification

在线式 In-Line Type Attenuator			
模式 Model		SM	MM
工作波长 Operating Wavelength (nm)		1310 & 1550	850 ( LED or Vcsel )
衰减值 Attenuation Value (dB)		1 ~ 25 ( 1 step )	
接头 Connector Type		SC, FC, ST, LC, MU	
		PC or APC	PC
衰减精度 Tolerance (dB)	1 ~ 5	±0.15	
	6 ~ 19	±10%	
	20 ~ 25	±2.0	
回波损耗 Return Loss (dB)		≥50 (UPC) , ≥65 (APC)	----
封装形式 Package Type		钢管封装 Steel Pipe Package	非钢管封装 Non Pipe Package
光缆外径 Cable Diameter (mm)		Φ0.9, Φ2, Φ3	
总长度 Total Length		1 Meter or Required	
偏振相关损耗 Polarization Loss (dB)		≤0.2	
工作温度 Operation Temperature (°C)		-25 ~ +70	
存储温度 Storage Temperature (°C)		-40 ~ +85	

## 定货信息 Ordering Information

ATIL - FC / APC / SM / 05 / NP / L  
① ② ③ ④ ⑤ ⑥

① 接头型号 Connector Type	FC, SC, LC, ST, MU
② 端面 Endface	PC, APC
③ 光纤模式 Fiber Mode	SM, MM( OM1, OM2, OM3, OM4 )
④ 衰减值 Attenuation Value (dB)	01:1, 02:2, 03:3...10:10, 15:15, 20:20, 25:25
⑤ 封装形式 Package Type	SP:Steel Pipe, NP:No Pipe
⑥ 长度 Length	1 Meter or Required

# 连接头 Connector

## FC Connector



A	模 式 Mode	SM
		MM
B	端面类型 Endface	PC
		APC
d	插芯内径 Ferrule ID (um)	125.3, 125.5, 126, 127
		0.9
C	光缆外径 Cable Diameter (mm)	2.0
		3.0
D	尾套颜色 Boot Color	Blue, Green, Beige, Red, Black

## ST Connector



A	模 式 Mode	SM
		MM
B	端面类型 Endface	PC
		APC
d	插芯内径 Ferrule ID (um)	125.3, 125.5, 126, 127
		0.9
C	光缆外径 Cable Diameter (mm)	2.0
		3.0
D	尾套颜色 Boot Color	Blue, Black, Beige, White, Red, Yellow

## SC Connector



A	模 式 Mode	SM
		MM
B	端面类型 Endface	PC
		APC
d	插芯内径 Ferrule ID (um)	125.3, 125.5, 126, 127
		0.9
C	光缆外径 Cable Diameter (mm)	2.0
		3.0
D	尾套颜色 Boot Color	Blue, Green, Beige, Red, Black
E	光 缆 Cable Type	Simplex : S ,Duplex: D

## LC Connector



A	模 式 Mode	SM
		MM
B	端面类型 Endface	PC
		APC
d	插芯内径 Ferrule ID (um)	125.3, 125.5, 126, 127
		0.9
C	光缆外径 Cable Diameter (mm)	2.0
		3.0
D	尾套颜色 Boot Color	Blue, Green, Beige, Red, Black
E	光 缆 Cable Type	Simplex : S ,Duplex: D

# 适配器 Adapter

## SC Adapter



SC Simplex

SC Duplex

## FC Adapter



FC Square

FC D-Type

## LC & MU Adapter



LC Simplex

LC Duplex

## ST & SMA Adapter



ST Adapter



SMA Adapter



LC Duplex with SC Foot-print

MU Adapter

## MT-RJ & MPO Adapter



MT-RJ

MPO

## Hybrid Adapter



LC/SC

SC/ST

SC/FC

FC/ST

## 技术规格 Technical Specification

类 型 Type	SC, FC, ST, LC, MU, SMA, E2000, Hybrid
端 面 Endface	PC & APC
模 式 Mode	Single Mode & Multi Mode
套 管 Sleeve	Zirconia Ceramic, Phosphor Bronze
插入损耗 Insertion Loss (dB)	≤ 0.2 (Based on docking of two master connectors)
工作温度 Operation Temp (°C)	-40 ~ +85

特点 Feature

- 通过Telcordia GR-1221-CORE 可靠性试验，其中85°C、85%RH试验超过1500小时  
Passed Telcordia GR-1221-CORE, and 85°C, 85%RH test up to 1500 hours
- 高隔离度  
High isolation



技术规格 Technical Specification

类型 Type	980/1550 WDM		1480/1550 WDM		1310/1550 WDM	
带宽 Bandwidth (nm)	965~990/1527~1566		±5		±15	
等级 Grade	P	S	P	S	Normal	HI-WDM
插入损耗 Insertion Loss (dB) MAX	0.20	0.30	0.25	0.35	0.25	0.30 0.35 0.50
隔离度 Isolation (dB) MIN	18	17	16	14	18	17 34 32
偏振损耗 PDL (dB) MAX	0.15	0.20	0.15	0.20	0.20	0.30
回波损耗 Return Loss (dB)	≥55					
工作温度 Operating Temperature (°C)	-20 ~ 75					

类型 Type	1310/1490/1550nm WDM Module							
通道 Channel (nm)	1310		1490		1550			
带宽 Bandwidth (nm)	±5		±5		±5			
等级 Grade	P	S	P	S	P	S		
插入损耗 Insertion Loss (dB) MAX	0.6	0.8	0.8	1.0	0.8	1.0		
隔离度 Isolation (dB) MIN	20	18	20	18	20	18		
偏振损耗 PDL (dB) MAX	0.15	0.20	0.15	0.20	0.15	0.20		
回波损耗 Return Loss (dB)	≥55							
工作温度 Operating Temperature (°C)	-20 ~ 75							

定货信息 Ordering Information

WDM - P - 1×2 - 13/15 - FC/APC - 1 - G652D - Φ3×60  
① ② ③ ④ ⑤ ⑥ ⑦

① 等级 Grade	P=Premium, S=Standard
② 结构 Configuration	1 × 2, 1 × 3, and so on
③ 工作波长 Operating Wavelength (nm)	98/15=980/1550nm, 13/15=1310/1550nm, 13/14/15=1310/1490/1550nm or on Request
④ 输入/出形式 Input & Output Connector	N=None, FC/APC, FC/UPC, or Requirement
⑤ 尾纤类型 Pigtail Type	0=Φ250μm, 1=Φ900μm, 2=Φ2mm, 3=Φ3mm, 4=Other
⑥ 光纤类型 Fiber Type	G652D=Corning SMF-28e, 1060=Corning HI 1060 Flex, 6=OFS BF05635-02
⑦ 封装尺寸 Package (mm)	Φ3×55, Φ3×60, 100×80×10 or as Requirement



3端口粗波分复用器  
CWDM 3 Ports Device



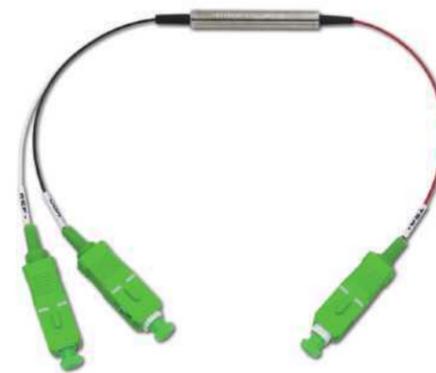
粗波分复用器模块  
CWDM Module



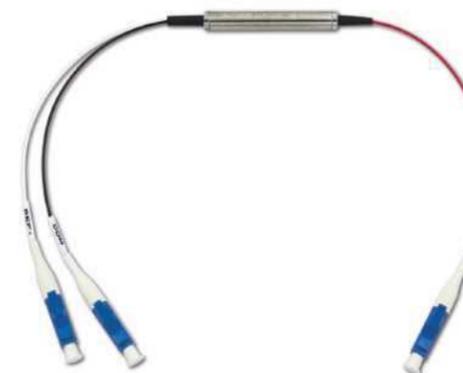
粗波分复用的光分插复用器模块  
CWDM OADM Module



密集波分复用模块  
100/200GHz DWDM Module



波分复用器  
1310/1550nm FWDM



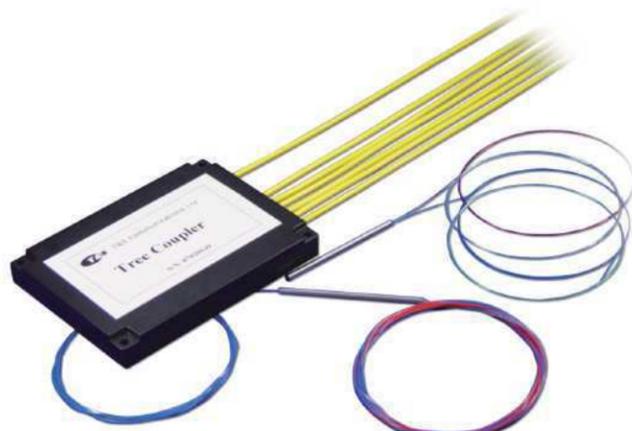
波分复用器  
1310/1490/1550/1625nm FWDM

T  
&  
S

## 1×N 单模耦合器 1×N Singlemode Coupler

### 特点 Feature

- 通过Telcordia GR-1221-CORE 可靠性试验, 其中85°C、85%RH 试验超过1500小时  
Passed Telcordia GR-1221-CORE, and 85°C85%RH test up to 1500 hours
- 低附加损耗  
Low extra loss



## 技术规格 Technical Specification

类型 Type	1 × 2 Single Mode Coupler ( SMC )									
工作波长 Wavelength (nm)	1310, 1550, 1310&1550									
带宽 Bandwidth (nm)	±20 ,±40									
分光比 Coupling Ratio	50/50		40/60		20/80		10/90			
等级 Grade	P	S	P	S	P	S	P	S	P	S
插入损耗 Insertion Loss (dB) MAX	3.4	3.6	4.4/2.6	4.6/2.8	7.5/1.2	8.0/1.3	11.0/0.65	12.0/0.8		
均匀性 Uniformity (dB) MAX	0.5	0.7	/	/	/	/	/	/	/	/
偏振损耗 PDL (dB) MAX	0.15	0.20	0.20	0.25	0.20	0.25	0.20	0.30		
回波损耗 Return Loss (dB)	≥50									
工作温度 Operating Temperature (°C)	-20 ~ 75									

类型 Type	1 × 2 Tap Coupler ( WTC )							
工作波长 Wavelength (nm)	1550 or on Request							
带宽 Bandwidth (nm)	±20							
分光比 Coupling Ratio	1/99		2/98		5/95			
等级 Grade	P	S	P	S	P	S	P	S
插入损耗 Insertion Loss (dB) MAX	21.5/0.22	22.0/0.3	18.5/0.25	19.5/0.35	14.0/0.4	14.8/0.5		
偏振损耗 PDL (dB) MAX	0.25/0.10	0.30/0.15	0.25/0.10	0.30/0.15	0.25/0.10	0.30/0.15		
回波损耗 Return Loss (dB)	≥50							
工作温度 Operating Temperature (°C)	-20 ~ 75							

类型 Type	Three-Windows Coupler ( TWC )									
工作波长 Wavelength (nm)	1310&1490&1550									
带宽 Bandwidth (nm)	1310±40 ,1490±10, 1550±40									
分光比 Coupling Ratio	50/50		40/60		20/80		10/90			
等级 Grade	P	S	P	S	P	S	P	S	P	S
插入损耗 Insertion Loss (dB) MAX	3.7	4.0	4.7/2.7	5.0/3.0	7.8/1.4	8.1/1.7	11.2/0.9	11.6/1.2		
均匀性 Uniformity (dB) MAX	0.5	0.7	/	/	/	/	/	/	/	/
偏振损耗 PDL (dB) MAX	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.30		
回波损耗 Return Loss (dB)	≥50									
工作温度 Operating Temperature (°C)	-20 ~ 75									

类型 Type	1 × N Monolithic Single Mode Coupler ( MSC )				
工作波长 Wavelength (nm)	1310, 1550 or on request				
带宽 Bandwidth (nm)	±20				
分光比 Coupling Ratio	1 × 3			1 × 4	
等级 Grade	P	S	P	S	S
插入损耗 Insertion Loss (dB) MAX	5.4	5.7	7.0	7.4	
均匀性 Uniformity (dB) MAX	0.8	1.2	1.2	1.5	
偏振损耗 PDL (dB) MAX	0.20	0.30	0.20	0.30	
回波损耗 Return Loss (dB)	≥50				
工作温度 Operating Temperature (°C)	-20 ~ 75				

## 定货信息 Ordering Information

SMC - P - 1×2 - 13/15 - 10/90 - FC/APC - 1 - G652D - Φ3×60

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

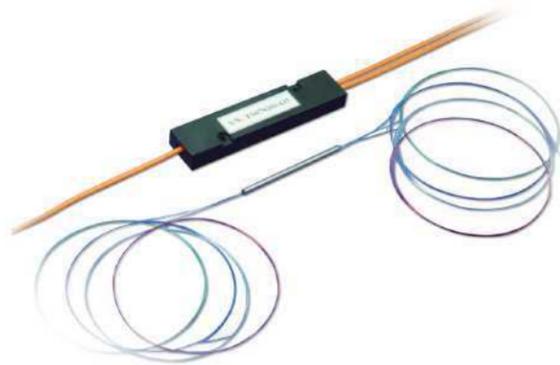
① 类型 Type	SMC, WTC, TWC, MSC
② 等级 Grade	P=Premium, S=Standard
③ 结构 Configuration	1 × 2, 2 × 2, 1 × 3, 1 × 4 and so on
④ 工作波长 Operating Wavelength (nm)	1310, 1550, 13/15(1310 & 1550), 13/14/15 or on request
⑤ 分光比 Coupling Ratio	01/99, 05/95 ... 50/50
⑥ 输入/出形式 Input & Output Connector	0=None, FC/APC, FC/UPC, or on Request
⑦ 尾纤类型 Pigtail Type	0=Φ250μm, 1=Φ900μm, 2=Φ2mm, 3=Φ3mm, 4=Other
⑧ 光纤类型 Fiber Type	G652D=Corning SMF-28e, 4=Other
⑨ 封装尺寸 Package (mm)	Φ3×55, Φ3×60, 90×20×10, 100×80×10 or as Requirement

# 耦合器 Coupler

## 1×N 多模耦合器 1×N Multimode Coupler

### 特点 Feature

- 通过Telcordia GR-1221-CORE 可靠性试验, 其中85°C、85%RH试验超过1500小时  
Passed Telcordia GR-1221-CORE, and 85°C, 85%RH test up to 1500 hours
- 低附加损耗  
Low extra loss



## 技术规格 Technical Specification

类型 Type	1 × 2 Multi Mode Coupler(MMC)									
工作波长 Wavelength (nm)	850 or on Request									
带宽 Bandwidth (nm)	±20									
分光比 Coupling Ratio	50/50		40/60		30/70		20/80			
等级 Grade	P	S	P	S	P	S	P	S	P	S
插入损耗 Insertion Loss (dB) MAX	3.7	4.0	4.7/2.7	5.0/3.0	6.0/2.1	6.3/2.4	7.8/1.4	8.1/1.7		
均匀性 Uniformity (dB) MAX	0.5	0.7	/	/	/	/	/	/	/	/
回波损耗 Return Loss (dB)	≥40									
工作温度 Operating Temperature (°C)	-20 ~ +75									

类型 Type	1 × N Monolithic Multi Mode Coupler ( MMC )							
工作波长 Wavelength (nm)	850 or on Request							
带宽 Bandwidth (nm)	±20							
结构 Configuration	1 × 3				1 × 4			
等级 Grade	P	S	P	S	P	S	P	S
插入损耗 Insertion Loss (dB) MAX	5.4	6.0	7.3	7.8				
均匀性 Uniformity (dB) MAX	0.9	1.2	1.2	1.5				
回波损耗 Return Loss (dB)	≥40							
工作温度 Operating Temperature (°C)	-20 ~ +75							

## 定货信息 Ordering Information

MMC - P - 1×2 - 850 - 10/90 - FC/APC - 0 - 50 - Φ3×60  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① 等级 Grade	P=Premium, S=Standard
② 结构 Configuration	1 × 2, 2 × 2, 1 × 3, 1 × 4, 1 × 8 and so on
③ 工作波长 Operating Wavelength (nm)	850 or on Request
④ 分光比 Coupling Ratio	01/99, 05/95 ... 50/50
⑤ 输入/出形式 Input & Output Connector	0=None, FC/APC, FC/UPC, or on Request
⑥ 尾纤类型 Pigtail Type	0=Φ250μm, 1=Φ900μm, 2=Φ2mm, 3=Φ3mm, 4=Other
⑦ 光纤类型 Fiber Type	50=50/125, 62.5=62.5/125, 4=Other
⑧ 封装尺寸 Package (mm)	Φ3×55, Φ3×60, 90×20×10, 100×80×10 or as Requirement

# PLC分路器 PLC Splitter

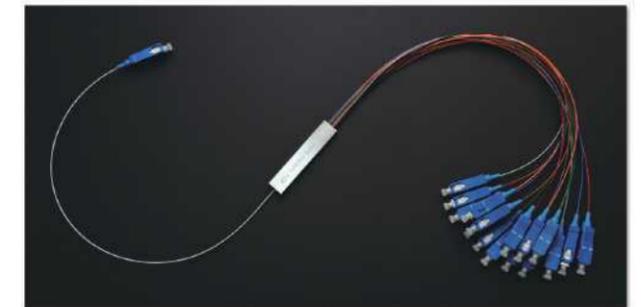
## 产品简介 Introduction

PLC光分路器 - 平面波导型光分路器是基于石英基板的集成波导型光功率分配器, 目前有1×N及2×N两种类型。1×N和2×N分路器将光信号均匀地从单个或两个进口均等地输入多个出口, 或反向工作将多个光信号汇入单根或双根光纤。

PLC - Planar Lightwave Circuit Splitter is a kind of power splitter based on the integrated quartz baseplate. Single Mode PLC 1×N and 2×N Splitter divide uniformly optical signals from one or two inputs to multiple outputs, and splitter can be operated in reverse direction to combine multiple signals into one fiber or two fibers.

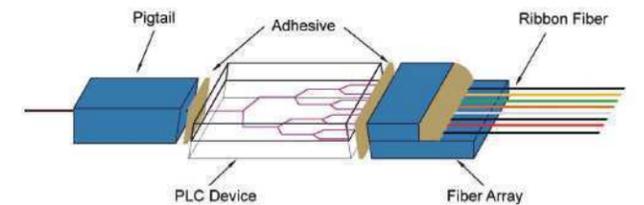
### 特点 Feature

- 工作波长宽  
Broadband Operation Wavelength
- 插入损耗低  
Low Insertion loss
- 偏振相关损耗低  
Low PDL
- 小型化设计  
Compact Design
- 通道间一致性良好  
Good channel-to-channel uniformity
- 高可靠性和稳定性  
High Reliability and Stability
- 通过GR-1209-CORE和GR-1221-CORE可靠性测试  
Passed Telcordia GR-1209-Core and GR-1221-Core Reliability Test
- 符合RoHS标准  
RoHS Compliance



### 应用 Applications

- Telecommunication sector
- PON System
- FTTH
- CATV
- Video Transmission



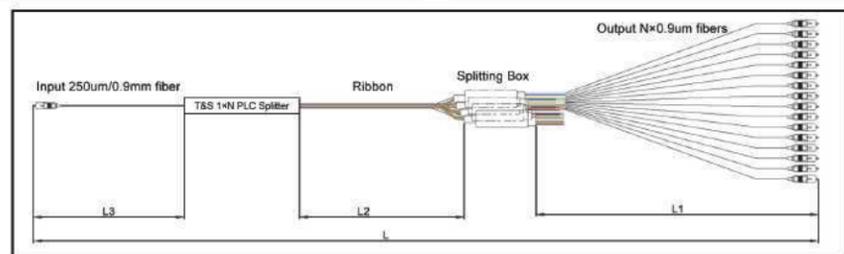
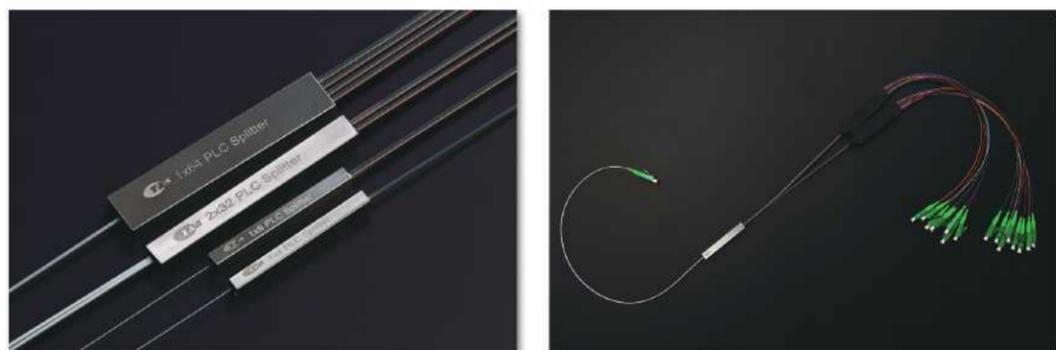
## 技术规格 Technical Specification

工作波长 Operating Wavelength(nm)	1260 ~ 1650							
1×N PLC Splitter	1×2	1×4	1×8	1×16	1×32	1×64	1×128	
插入损耗 Insertion Loss (dB) MAX (P/S)	3.8/4.0	7.0/7.4	10.5/10.7	13.6/13.9	16.6/16.9	21/21.5	24/24.5	
均匀性 Uniformity (dB) MAX (P/S)	0.6/0.6	0.6/0.7	0.8/1.0	0.9/1.2	1.2/1.4	1.7/1.9	2.2/2.5	
回波损耗 Return Loss (dB) MIN	55							
偏振相关损耗 PDL (dB) MAX (P/S)	0.15/0.25	0.15/0.25	0.2/0.25	0.2/0.3	0.25/0.3	0.25/0.35	0.4/0.45	
2×N PLC Splitter	2×2	2×4	2×8	2×16	2×32	2×64		
插入损耗 Insertion Loss (dB) MAX (P/S)	4.0/4.3	7.4/7.6	10.7/11.0	14/14.5	17.5/18	21.4/21.9		
均匀性 Uniformity (dB) MAX (P/S)	0.9/1.1	1.0/1.2	1.0/1.2	1.2/1.5	1.5/1.8	2.0/2.3		
回波损耗 Return Loss (dB) MIN	55							
偏振相关损耗 PDL (dB) MAX (P/S)	0.25/0.3	0.25/0.3	0.25/0.3	0.3/0.35	0.3/0.35	0.35/0.4		
光纤类型 Fiber Type	ITU-T G657A1, G657A2							
温度稳定性 Temperature Stability (-40 ~ 85°C) (dB) MAX	0.5 ( Typical 0.3 )							
工作温度 Operation Temperature (°C)	-40 ~ 85							
储存温度 Storage Temperature (°C)	-40 ~ 85							

\* 所有测试在室内进行, 不包含连接头损耗。  
All measurement are made at room temperature, and connectors not included.

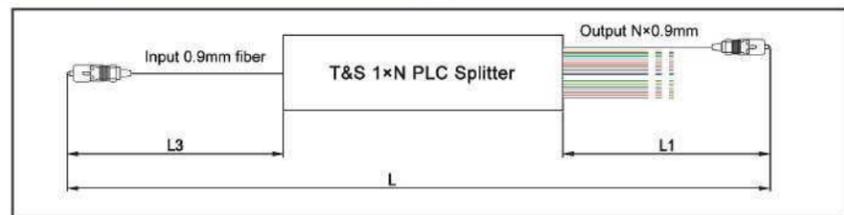
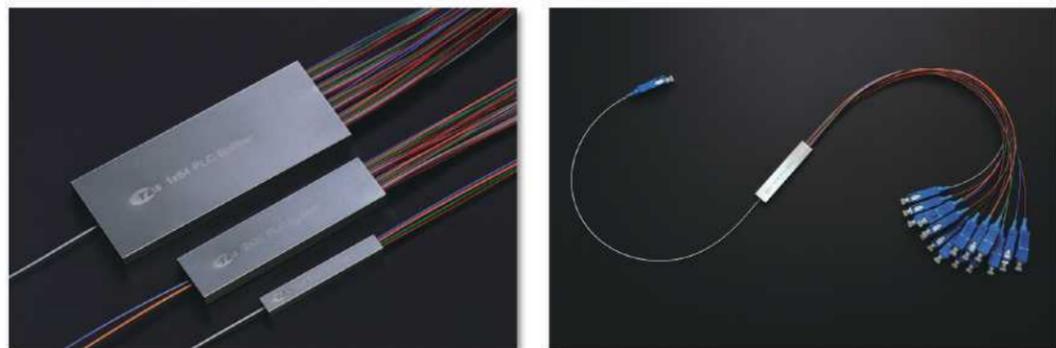
## PLC 分路器类型和封装 PLC Splitter Type and Packaging

### I - 裸纤型光分路器 Bare Type PLC Splitter



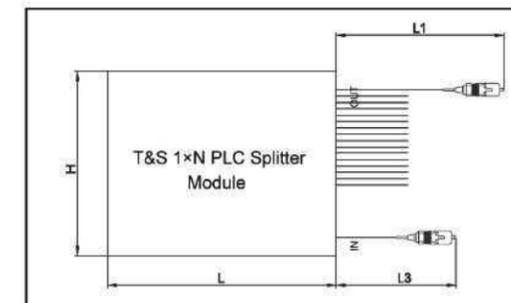
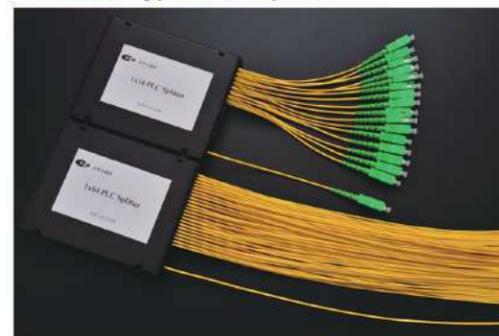
结构示意图 Structure Diagram

### II - 微型光分路器 Mini Type PLC Splitter



结构示意图 Structure Diagram

### III- 盒式光分路器 Module Type PLC Splitter



结构示意图 Structure Diagram

### PLC 分路器封装规格和尺寸 Splitter Packaging Type and Dimension

1xN Splitter		单位 Unit	1 x 2	1x4 & 1x8H	1 x 8F	1 x 16	1 x 32	1 x 64
封装类型及尺寸	Package Type & Size	mm x mm x mm						
I - 裸纤型光分路器	Bare Type PLC Splitter		40x4x4	40x4x4	45x5x4	45x5x4	55x7x4	60x12x4
II - 微型光分路器	Mini Type PLC Splitter	长x宽x高 L x W x H	60x7x4	60x7x4	60x12x4	60x12x4	80x20x6	100x40x6
III - 盒式分路器	Module Type PLC Splitter		90x20x10	100x80x10	100x80x10	120x80x18	120x80x18	140x114x18

2xN Splitter		单位 Unit	2 x 2	2 x 4	2 x 8H	2 x 16	2 x 32	2 x 64
封装类型及尺寸	Package Type & Size	mm x mm x mm						
I - 裸纤型光分路器	Bare Type PLC Splitter		50x5x4	50x5x4	50x5x4	55x7x4	60x7x4	65x12x4
II - 微型光分路器	Mini Type PLC Splitter	长x宽x高 L x W x H	65x7x4	65x7x4	65x7x4	80x20x6	80x20x6	100x40x6
III - 盒式分路器	Module Type PLC Splitter		90x20x10	100x80x10	100x80x10	120x80x18	140x114x18	140x114x18

### 定货信息 Ordering Information

PLC - ① x ② - A - ③/L① - LC/UPC - ④/L② - LC/UPC

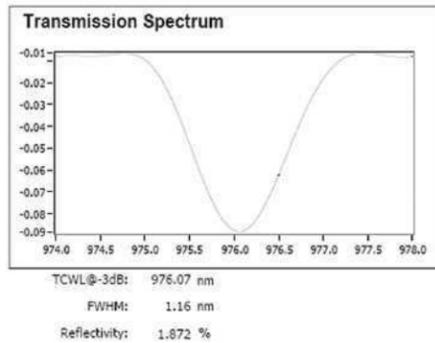
①	②	③	④	⑤	⑥	⑦
① 输入形式	Input Channel		1, 2 Channel			
② 输出形式	Output Channel		4, 8, 16, 32, 64 Channel			
③ 光纤类型	Fiber Type		N: G652D( omitted ), A: G657A, S: Other specified			
④ 输入光纤规格/长度	Input Fiber / Length		B=250um bare fiber, 09=900um loose tube, 2=2mm loose tube / L1			
⑤ 输入连接头规格	Connector Type / Polishing		SC, LC, MU, E2000, MPO/UPC, APC or N: no connector			
⑥ 输出光纤规格/长度	Output Fiber / Length		B=250um bare fiber, 09=900um loose tube, 2=2mm loose tube / L2			
⑦ 输出连接头规格	Connector Type / Polishing		SC, LC, MU, E2000, MPO/UPC, APC or N: no connector			

# 锁模光栅 FBG Wavelength Stabilizer

## 产品描述 Description

具有低反射的光栅能用来稳定泵浦激光器的波长和功率。太辰光通信能根据客户的要求定制具有不同波长、带宽和反射率的光纤光栅锁模器

The stabilizer based on FBG with low reflectivity can be used to stabilize the wavelength and intensity of optical amplifier pump laser. T&S can customize different center wavelength, bandwidth and reflectivity of the stabilizer.



### 特点 Features

- Telcordia 1221 认证  
Telcordia 1221 Qualified
- 高的抗拉性  
High Mechanical Strength
- 单光栅或双光栅  
Single Grating or Double Gratings

### 应用 Applications

- 泵浦激光器的稳频  
Pump Laser
- 波长锁定  
Wavelength Locking

## 技术规格 Technical Specification

中心波长	Center Wavelength	(nm)	974, 976, 980 or 1480
波长公差	Wavelength Tolerance	(nm)	±0.25
半高全宽	FWHM	(nm)	>0.02
反射率	Reflectivity	(%)	>1
涂覆	Recoating		Acrylate / Polyimide
抗拉力	Proof Test	(kpsi)	>150
光纤类型	Fiber Type		HI 1060, HI 980 or G652D

## 定货信息 Ordering Information

FBG - 974 / G652D / 1.5M

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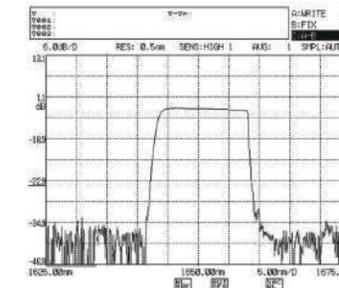
① 中心波长	Center Wavelength	(nm)	974, 976, 978, 980, 1480
② 光纤类型	Fiber Type		G652D=SMF-28Ultra, 980=Hi980, 1060=Hi 1060
③ 光纤长度	Fiber Length	(M)	1, 1.5 ... or Requirement

# 啁啾光栅 Chirped Grating

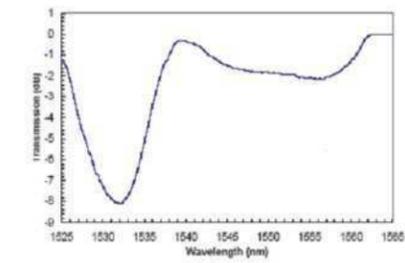
## 产品描述 Description

不均匀光栅周期(光栅折射率调制的周期和幅度)的布喇格光栅称之为啁啾光栅

Chirped fiber gratings can be designed and made by axially varying either the period of the grating, or the effective index of refraction of the fiber. T&S fabricates the chirped grating by non-periodic phase mask solution.



Reflective Spectrum For Typical Wideband Chirp FBG



Transmission Spectrum For Typical GFF

### 特点 Features

- 宽带宽  
Wide Bandwidth
- 低插入损耗  
Low Insertion Loss

### 应用 Applications

- 增益平均滤波器  
Gain Flattening Filter for EDFA and ASE light source
- 色散补偿  
Dispersion Compensation

## 技术规格 Technical Specification

中心波长	Center Wavelength		C Band or C+L Band
3dB带宽	Bandwidth at 3dB	(nm)	>2
反射率	Reflectivity	(%)	>90 or Customized
典型插损	Typical Insertion Loss	(dB)	0.5
接头	Fiber Termination		Bare Fiber, FC/UPC or FC/APC
光纤类型	Fiber Type		Customized

## 定货信息 Ordering Information

CG - XX / G652D / 1.5M

① ② ③

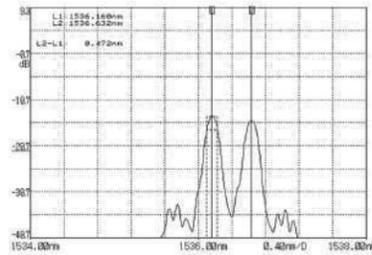
① 中心波长	Center Wavelength	(nm)	C Band or C+L Band
② 光纤类型	Fiber Type		G652D=SMF-28Ultra, 980=Hi980, 1060=Hi 1060
③ 光纤长度	Fiber Length	(M)	1, 1.5 ... or Requirement

# 保偏光栅 Polarization Maintaining Grating

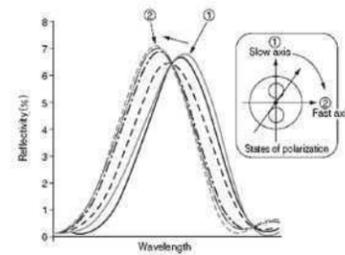
## 产品描述 Description

在保偏光纤中写入光栅，被广泛的用于特殊的场合。本公司能根据客户的要求特别定制保偏光纤光栅。

Fiber Bragg gratings written in polarization-maintaining fiber are used in special situations. T&S can customize the PM gratings.



Reflective Spectrum



Reflective Spectrum Change on Different State of Polarization

## 特点 Features

- 双中心波长  
Dual Center Wavelengths
- 两轴上不同的温度和应变敏感  
Different Sensitivity for Temperature and Strain on Dual-axis

## 应用 Applications

- 航空测量  
Airspace Measurement
- 泵浦激光锁模  
Pump Laser Locker

中心波长	Center Wavelength	(nm)	1510 ~ 1590
3dB 带宽	Bandwidth at 3dB		Customized
反射率	Reflectivity		Customized
边模抑制比	SLSR		>15
连接头	Fiber Termination		FC/APC, SC/APC
光纤类型	Fiber Type		Panda Fiber
光栅长度	FBG Length	(mm)	3, 5, 10, 15, 20
抗拉力	Proof Test	(kpsi)	>100
尾纤长度	Pigtail Length		1 Meter ( Typical )
工作温度	Operating Temperature	(°C)	-5 ~ 80
储存温度	Storage Temperature	(°C)	-40 ~ 85

## 定货信息 Ordering Information

PMG - 1510 / 1.5M / XX

① ② ③

① 中心波长	Center Wavelength	(nm)	1510, 1520 ~ 1590
② 尾纤长度	Fiber Length	(M)	1, 1.5 ... or Requirement
③ 连接头型号	Connector Type		FC/APC, SC/APC, or Requirement

# 光纤模块 Fiber Optic Transceivers



1.25G SFP SX  
MM 850nm 500m



1.25G SFP LX  
SM 1310nm 500m



Copper SFP-T  
10/100/1000Mb/s



1.25G SFP BIDI SFP  
Tx 1310nm/Rx1550nm



10G SFP+ LR  
SM 1310nm 20Km



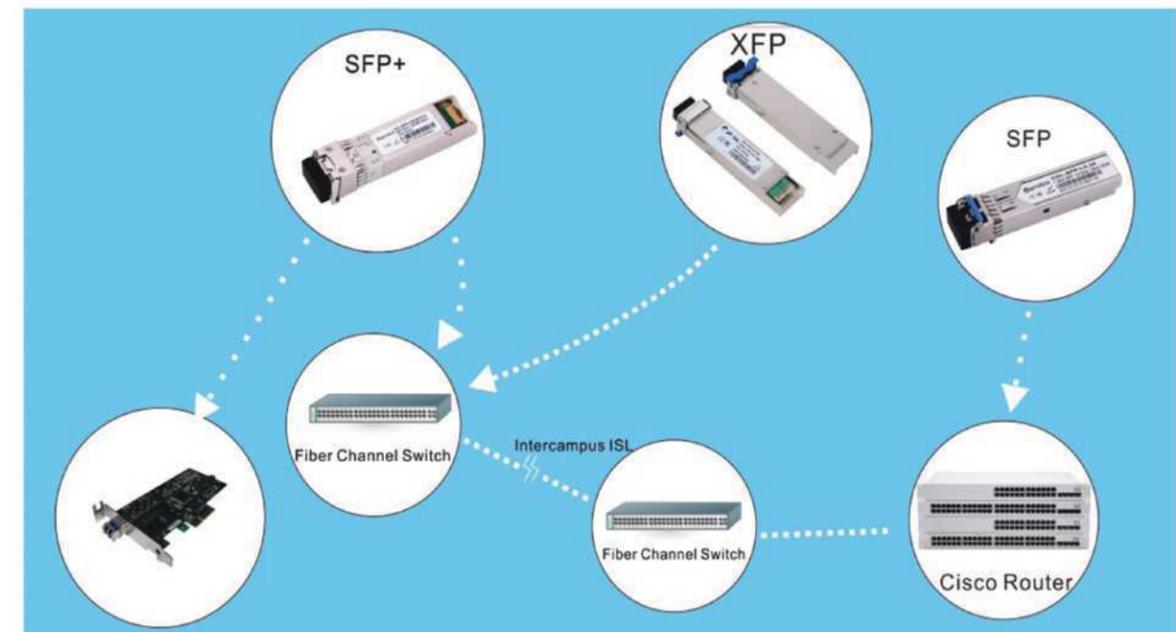
10G SFP+ SR  
MM 850nm 300m



10G XFP LR  
SM 1310nm 10Km



1.25G SFP BIDI SFP  
Tx 1550nm/Rx1310nm



# 有源光缆及有源电缆 AOC & DAC

## 有源光缆 Active Optical Cable

- 100G QSFP28 AOC
- 25G SFP28 AOC



- 40G QSFP+ AOC
- 10G SFP+ AOC



## 有源电缆 Direct Attach Cable

- 40G QSFP/100G QSFP28 Passive cable
- 10G SFP+/25G SFP28 Passive cable



### 应用 Applications

- 数据中心基础设施布线 Data center cabling infrastructure
- 高密度网络设备连接 High density connections between networking equipment
- 交换结构I/O, 如超高带宽交换机和路由器 Switched fabric I/O such as ultra-high bandwidth switches and routers
- 存储区域网络中的高容量 I/O High capacity I/O in Storage Area Networks
- 网络附加存储和存储服务器 Network Attached Storage, and Storage Servers

# Factory



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RESEARCH  
&  
DEVELOPMENT

QUALITY  
CONTROL SYSTEM

