



// 专注特种光纤无源器件 //  
支持OEM/ODM定制

High-Performance

**Production Facilities | OEM |**

**TO CREAT CUSTOM SOLUTIONS FOR YOU**

**上海闵壹光电技术有限公司**  
Shanghai Minyi Optoelectronic Technology Co., Ltd.

For more information on custom solutions or to suggest a new fiber product, please contact Tech Support.

# Fiber Optic Manufacturing

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Bare Fiber on a Spool

We have extensive patch cable, and fiber optic component manufacturing capabilities. We purchase a range of fibers, which are a part of industry-leading selection of bare fiber that is kept in stock. Our broad selection of fiber coupled with our efficient patch cable manufacturing process allows us to provide same-day service on most custom patch cables. In addition to patch cables, we manufacture fiber components including optical isolators, couplers, WDMs, and over customized fiber optic solutions for customers through our broad manufacturing capabilities.



Inspecting a Fiber after Polishing



Components Manufacturing



- 
- Same-Day Turnaround on Most Custom Patch Cables
  - Passive Fiber Components
  - Largest Selection of Stocked Fibers in Industry
- 



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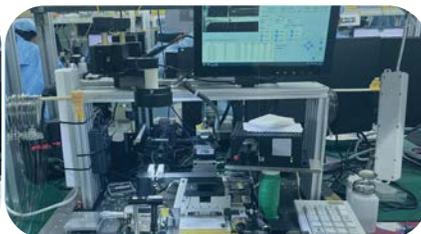
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# 01

## Fiber Optic Patch Cables

### Single Mode Patch Cables

AR-Coated (Available)

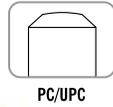
$$\text{Return Loss} = 10 \log \left( \frac{P_{\text{ref}}}{P_{\text{back}}} \right)$$

单模单芯跳线

#### FC/PC-FC/PC SM Simplex



SX SM Fiber Patch Cable,  
SENKO Connector, FC/PC-FC/PC,  
Nufern/Coherent 780-HP  
Single Mode Optical Fiber,  
φ3.0mm Black PVC Tube,  
1 Meter

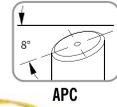


SX SM Fiber Patch Cable,  
Homemade Connector, FC/PC-FC/PC,  
Corning SMF-28e  
Single Mode Optical Fiber,  
φ0.9mm Blue Hytrel Tube,  
3 Meters

#### FC/APC-FC/APC SM Simplex



SX SM Fiber Patch Cable,  
SENKO Connector, FC/APC-FC/APC,  
Nufern/Coherent 780-HP  
Single Mode Optical Fiber,  
φ3.0mm Black PVC Tube,  
1 Meter



SX SM Fiber Patch Cable,  
Homemade Connector, FC/APC-FC/APC,  
Corning SMF-28e  
Single Mode Optical Fiber,  
φ3.0mm Yellow LSZH Tube,  
1 Meter

APC Ceramic Ferrule - Step (Default), Cone (Available)

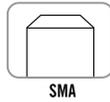
#### FC/PC-FC/APC & FC/PC-SMA905 Hybrid SM Simplex



SX SM Fiber Patch Cable,  
Homemade Connector, FC/PC-SMA905,  
Nufern/Coherent 780-HP  
Single Mode Optical Fiber,  
φ3.0mm Yellow LSZH Tube,  
3 Meters



SX SM Fiber Patch Cable,  
SENKO Connector, FC/PC-FC/APC,  
Nufern/Coherent 780-HP  
Single Mode Optical Fiber,  
φ3.0mm Black PVC Tube,  
1 Meter



SX SM Fiber Patch Cable,  
Homemade Connector, FC/PC-FC/APC,  
Nufern/Coherent 460-HP  
Single Mode Optical Fiber,  
φ3.0mm Yellow LSZH Tube,  
1 Meter



OTDR Launch Cable Box,  
PP + Glass Fiber Black Case,  
SC/APC-LC/APC, 1 Meter φ3.0mm  
Yellow LSZH Lead, G.657A1 SM  
Optical Fiber, 2000 Meters



Master Jumpers for Testing/  
OTDR Launch Cable  
- can be Customized

### Selected Single Mode Optical Fiber Options for Transmission from 305 to 2100 nm

常用特种单模跳线

(Typical Operating Wavelength: 488, 532, 633, 650, 780, 820, 850, 980; 1060; 1310; 1480; 1550 nm)

Nufern/Coherent Single Mode Fiber

- 405-HP
- 460-HP
- 630-HP
- 780-HP
- 980-HP
- 980-HP-80
- 980M-HP-80
- 1060-XP
- SMF-28 Ultra
- 1550B-HP
- SM1950

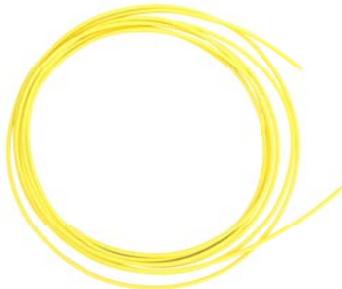


Corning Single Mode Fiber

- Hi780
- Hi1060

We act as an agent to sell Nufern/Coherent's full range of specialty fibers. In addition, we have a large number of fibers of other domestic and abroad well-known brands in store; Due to limited space, if you need to know the specifications of specialty fibers, please feel free to contact us.

### Popular Furcation Tubes 单模光纤常用松套保护管



#### Ordering Information

If you do not see patch cables suitable for your application here, please contact us.

Connector Brand  
End A-End B Type  
Fiber Type  
Furcation Tube  
Length

SENKO, SEIKOH GIKEN, Selected Homemade or Other Designated Brands;  
FC/PC, FC/APC, SMA905, SC/PC, SC/APC, LC/PC, LC/APC, ST/PC etc.;  
Nufern/Coherent, Corning Brand Single Mode Fiber or Other Designated Brands;  
φ0.9mm Hytrel Tube, φ2.0/3.0mm PVC/LSZH or Armored Tube (12-color available);  
0.5 Meter, 1 Meter, 2 Meters, 3 Meters, 5 Meters etc. (Customized).

Speical Requirements

(Tight-buffered cable is available for long meters, as it is hard to insert fiber into tube)  
Supporting OEM/ODM, Special Packages & Designated Dust Caps etc.

**Polarization-Maintaining Single Mode Patch Cables**

保偏型单模单芯跳线

**FC/PC-FC/PC PM SM Simplex**

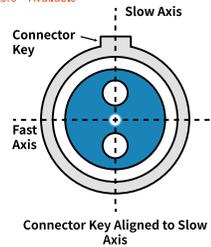


PM SX SM Fiber Patch Cable,  
PM Adjustable Connector, FC/PC-FC/PC,  
Nufern/Coherent PM780-HP  
PM Single Mode Optical Fiber,  
φ0.9mm Blue Hytrel Tube,  
5 Meters

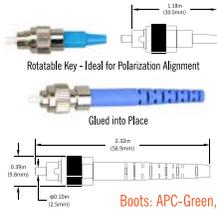


PM Adjustable Connector, FC/PC-FC/PC,  
Nufern/Coherent PM780-HP  
PM Single Mode Optical Fiber,  
φ3.0mm Blue PVC Tube,  
0.5 Meters

SENKO / SG Series  
FC/SC/LC/ST Connectors - Available



FC-High Precision PM Adjustable Connectors  
(0.9mm, 2.0mm & 3.0mm)



Designed for polarization-maintaining fibers, these FC/PC connectors have a key that is continuously adjustable, allowing for precise alignment with either the slow or fast axis of the PM fiber. Once aligned, the key can then be glued into place for easy reference.

**FC/APC-FC/APC PM SM Simplex**



PM SX SM Fiber Patch Cable,  
PM Adjustable Connector, FC/APC-FC/APC,  
Nufern/Coherent PM780-HP PM Single Mode Optical Fiber,  
φ0.9mm Blue Hytrel Tube,  
5 Meters



PM SX SM Fiber Patch Cable,  
PM Adjustable Connector, FC/APC-FC/APC,  
Nufern/Coherent PM780-HP PM Single Mode Optical Fiber,  
φ3.0mm Blue PVC Tube,  
1 Meter

APC Ceramic Ferrule - Step (Default), Cone (Available)

**FC/PC-FC/APC PM Hybrid SM Simplex**



PM Hybrid SX SM Fiber Patch Cable,  
PM Adjustable Connector, FC/PC-FC/APC,  
Nufern/Coherent PM780-HP PM Single Mode Optical Fiber,  
φ0.9mm Blue Hytrel Tube,  
5 Meters



PM Hybrid SX SM Fiber Patch Cable,  
PM Adjustable Connector, FC/PC-FC/APC,  
Nufern/Coherent PM780-HP PM Single Mode Optical Fiber,  
φ3.0mm Blue PVC Tube,  
3 Meters

**Selected PM Single Mode Optical Fiber**

Default Fiber Type - PANDA PM Fiber

常用特种保偏单模跳线

**Options for Transmission from 460 to 1625 nm**

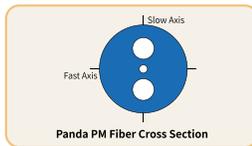
(Typical Operating Wavelength: 488, 633, 850, 980; 1300; 1550 nm)

Nufern/Coherent PM Single Mode Fiber

Corning PM Single Mode Fiber



- PM-S350-HP
- PM-S405-XP
- PM630-HP
- PM780-HP
- PM980-XP
- PM1300-XP
- PM1550-XP
- PM2000D



- PM1550
- PM1300
- PM980
- PM850

We act as an agent to sell Nufern/Coherent's full range of specialty fibers. In addition, we have a large number of fibers of other domestic and abroad well-known brands in store; Due to limited space, if you need to know the specifications of specialty fibers, please feel free to contact us.

**Popular Furcation Tubes for PM Patch Cables** 保偏光纤常用松套保护管



Ordering Information	订货信息
Connector Brand	PM Adjustable Connector, SENKO, SEIKOH GIKEN, Homemade or Other Designated Brands;
End A-End B Type	FC/PC, FC/APC, SC/PC, SC/APC, LC/PC, LC/APC, ST/PC, etc.
Fiber Type	Nufern/Coherent PM fiber, Corning PM fiber or Other Designated Brands;
Furcation Tube	φ0.9mm Hytrel Tube, φ2.0/3.0mm PVC/LSZH or Armored Tube (12-color available);
Length	0.5 Meter, 1 Meter, 2 Meters, 3 Meters, 5 Meters etc. (Customized); (Tight-buffered cable is available for long meters, as it is hard to insert fiber into tube)
Speical Requirements	Supporting OEM, Special Packages, Designated Dust Caps, etc.



能量传输型多模光纤跳线

**Power Delivery Multi-Mode Patch Cables**

**SMA905-SMA905 Step-Index MM Simplex**



Step-Index MM SX Fiber Patch Cable, SMA905-SMA905, Knurled Nut, Stainless-steel Ferrule, SI200/220/245-22 High OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters



Step-Index MM SX Fiber Patch Cable, SMA905-SMA905, Knurled Nut, Stainless-steel Ferrule, SI200/220/320-22 Low OH, Multi-Mode Fiber,  $\phi$ 6.0mm Stainless Steel Tube, 1 Meter



Step-Index MM SX Fiber Patch Cable, SMA905-SMA905, Hexagon Nut, Stainless-steel Ferrule, SI200/220/320-22 Low OH, Multi-Mode Fiber,  $\phi$ 6.0mm Stainless Steel Tubing with Black Plastic Sheath, 1 Meter

**FC/PC-FC/PC Step-Index MM Simplex**



Step-Index MM SX Fiber Patch Cable, FC/PC-FC/PC, Ceramic Ferrule, SI200/220/245-22 High OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters



Step-Index MM SX Fiber Patch Cable, FC/PC-FC/PC, Stainless-steel Ferrule, SI200/220/320-22 Low OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters

**FC/PC-SMA905 Hybrid Step-Index MM Simplex**

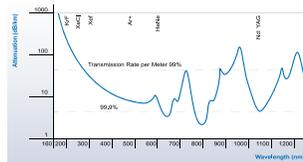


Hybrid Step-Index MM SX Fiber Patch Cable, FC/PC-SMA905, FC/PC Ceramic Ferrule, SMA905 Stainless-steel Ferrule, SI200/220/245-22 High OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters

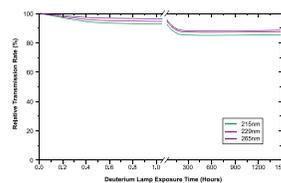


Hybrid Step-Index MM SX Fiber Patch Cable, FC/PC-SMA905, Stainless-steel Ferrule, SI200/220/320-22 Low OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters

**SMA905-SMA905 MM Simplex Solarization-Resistant**



Typical Attenuation Plot for Solarization (UV) - Resistant Fibers



**紫外优化石英光纤跳线**

MM Solarization-Resistant Fiber Patch Cable, SMA905-SMA905, Stainless-steel Ferrule, SI400/440/470-22 High OH, Multi-Mode Fiber,  $\phi$ 3.0mm Orange PVC Tube, 3 Meters

Our 0.22 NA solarization-resistant, multimode fiber exhibits impressive performance and transmission from UV to the NIR (190 to 1250nm). The polyimide buffer allows this fiber to be used at temperatures up to 300 C. The fibers maintain a higher level of transmission after prolonged exposure to UV light.

High-OH Fiber experiences significant transmission losses when exposed to UV radiation. In contrast, solarization-resistant fiber offers higher transmission. For optimal performance, expose the fiber to UV radiation for 5 minutes prior to use in your application to allow initial degradation. After this time, equilibrium is reached and the fiber can be used normally.

**Popular Furcation Tubes for MM Patch Cables**

多模光纤  
常用  
松套保护  
管



**Ordering Information**

Connector Brand	SENKO, SEIKOH GIKEN, Homemade or Other Designated Brands;
End A-End B Type	FC/PC, FC/APC, SMA905, SC/PC, SC/APC, LC/PC, LC/APC, ST/PC etc.;
Fiber Type	Nufern/Coherent, Corning Brand MM Fiber or Other Designated Brands;
Furcation Tube	Hytel Tube, PVC/LSZH or Armored Tube & Stainless-steel Tubing;
Length	0.5 Meter, 1 Meter, 2 Meters, 3 Meters, 5 Meters etc. (Customized); (Tight cable is available for long meters)
Speical Requirements	Supporting OEM, Special Packages, Designated Dust Caps etc.

Notes: 1. SMA905 Connector - Knurled Nut (Default), Hexagon Nut (Optional)  
2. SMA905 Ferrule - Stainless-steel Ferrule (Default), Ceramic Ferrule (Optional), and Customized Bore Size  
3. FC/PC Ferrule - Ceramic Ferrule (Default), Stainless-steel Ferrule (Optional), and Customized Bore Size

高功率型多模光纤跳线

**SMA905-SMA905 (350 to 2500 nm)**  
**High-Power MM Simplex**

Custom AR-Coated Fibers (Available)



Stainless-steel Air-Gap Ferrule (Epoxy Free)

High-Power Step-Index MM SX Fiber Patch Cable, SMA905-SMA905, Knurled Nut, Stainless-steel Air-Gap Ferrule, SI550/600/660-22 Low OH, Hard Plastic & Tefzel Buffer, Multi-Mode Fiber,  $\phi$ 6.0mm Silver Stainless-steel Furcation Tubing, 3 Meters



Cautions:

Do not use wiping paper to directly clean the end face. Ultrasonic or compressed gas will be okay. After cleaning, please use metal dust caps to protect.

**D80 Laser Cables Sapphire Chip & Air-Gap**

Hex Nut, Copper Ferrule, Air-Gap, SI600/750/960-22 Low OH,  $\phi$ 8.0mm Stainless Steel Tubing w/ Green Plastic Sheath, 3 Meters

- VIS-IR All-Silica Step-Index Fiber with NA=0.22, NA=0.12 on request, Graded-Index Fiber on request
- Transmission Rate:  $\geq$  90%
- No Epoxy on Optical-Path
- All Copper Alloy Parts for Improved Heat Removal
- Fiber Conctricity less than  $5\mu\text{m}$  Fiber Core to Ferrule
- Squarelock, Green PVC-coated Protection Tube
- Metal Connector Cuffs to Cable
- Electrical Isolation from end to end
- Average Laser Power up to 600 W



D80

**AQB Laser Cables Wind-Cooled**

- Operating Wavelength: 900nm to 1000nm (950nm), 1050nm to 1100nm (1064nm)
- Max. Handling Power (CW):  $\leq$  0.5kW, or Specify
- Max. Transmission Loss: 2%
- Typical Transmission Rate: 99%
- Fiber Type: Double Clad GDF Fibers, F-Doped Silica Core Triple Clad Fibers
- Fiber Core Diameter:  $10\mu\text{m}$  to  $1200\mu\text{m}$  or Specify
- Package Material: Stainless Steel, Aluminum, Copper
- Operating Temperature: +10 to +50 C
- Operating Temperature: -40 to +85 C



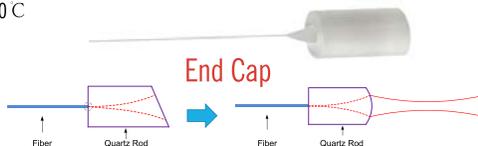
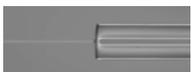
AQB



QBH

**QBH Laser Cables Liquid-Cooled, ModeStrip, End-Cap**

- Operating Wavelength: 900nm to 1000nm (950nm), 1050nm to 1100nm (1064nm)
- Max. Handling Power (CW): 1kW, 2kW, 4kW, 6kW, 8kW, or Specify
- Max. Transmission Loss: 2%
- Typical Transmission Rate: 99%
- Pulse Power: Max. 10kW@10ms, 50kW@1ms, 1MW@50ns
- Fiber Type: Double Clad GDF Fibers, F-Doped Silica Core Triple Clad Fibers
- Fiber Core Diameter:  $10\mu\text{m}$  to  $1200\mu\text{m}$  or Specify
- Package Material: Stainless Steel, Aluminum, Copper
- Operating Temperature: +10 to +50 C
- Operating Temperature: -10 to +70 C
- Max. Water Pressure: 4 Bar
- Flow of Water 1.5 to 2.5 L/min



End Cap

**End-Caps Built-in CPS Options 光纤端帽-可定制**

- Operating Wavelength: 1030nm, 1064nm
- Fiber Type: Nufern LMA-GDF-20/400-M
- NA: 0.065/0.46
- End Cap Material: Corning 7980
- AR Coating Range: AR@900nm~1100nm or Specify
- Max. Handling Power: >2kW (High Power), >500W (Low Power)
- Size:  $\phi$  8.0\*20 (High Power),  $\phi$  2.5\*10 (Low Power)
- Custom Configurations (SMA) Available

\* The actual communication information or drawings shall prevail for the specific product parameters.



05

**Fiber Optic Patch Cables**  
**Fiber Bundles**

Versions are available with either  
**Low-OH or High-OH Fibers**

多模光纤束

**Multi-Mode Fiber Bundles**

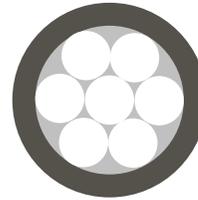
**SMA905-SMA905 & SMA905 to Customized Probe MM Round Fiber Optic Straight Bundle Cables**



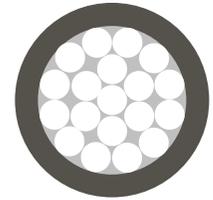
MM Round Fiber Optic Bundle Cables, SMA905-SMA905, Knurled Nut, Stainless-steel Ferrule, SI200/240/260-22 Low OH, Multi-Mode Fiber, 7 Fibers in a Round Configuration,  $\phi$ 6.0mm Silver Stainless Steel Tube, 3 Meters



MM Round Fiber Optic Bundle Cables, SMA905 to Customized Probe, Knurled Nut, Stainless-steel Ferrule, SI200/240/260-22 Low OH, Multi-Mode Fiber, 19 Fibers in a Round Configuration,  $\phi$ 6.0mm Silver Stainless Steel Tube, 3 Meters



Fibers with  $\phi$ 200 $\mu$ m cores are used in the bundles of 7 fibers and feature a 1.3mm bundle aperture.



Fibers with  $\phi$ 550 $\mu$ m cores are used in the bundles of 19 fibers and feature a 2.0mm bundle aperture.

- Customized Bore Sizes for SM or MM Fiber
- Stainless Steel or Ceramic Ferrules Optional
- Popular Fiber Count-1, 2, 3, 7, and 19 Fibers

**SMA905-SMA905, FC/PC-FC/PC or Customized Probe (Round) to FC/PC (Simplex) MM Round to SX Fan-out Bundle Cables**



MM Round to SX Fan-out Bundle Cables, SMA905-SMA905, Hexagon Nut, Ceramic Ferrule, SI105/125/250-22 Low OH, Multi-Mode Fiber, 7 Fibers in a Round Configuration to Simplex Fan-out, Rectangle Metal Linear Fan-out Kit,  $\phi$ 3.0mm Blue Armored Tube, Input/Output 0.5 Meters



MM Round to SX Fan-out Bundle Cables, FC/PC-FC/PC, Ceramic Ferrule, SI105/125/250-22 Low OH, Multi-Mode Fiber, 7 Fibers in a Round Configuration to Simplex Fan-out, Round Metal Fan-out Kit,  $\phi$ 3.0mm Blue Armored Tube, Input/Output 0.5 Meters



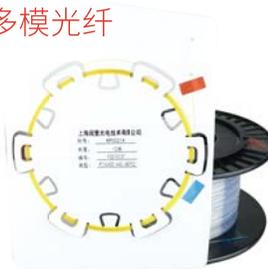
MM Round to SX Fan-out Bundle Cables, Customized Probe (Round)-FC/PC (Simplex), Ceramic Ferrule, SI105/125/250-22Low OH, Multi-Mode Fiber, 19 Fibers in a Round Configuration to Simplex Fan-out, Round Metal Fan-out Kit,  $\phi$ 6.0mm Silver Stainless Steel Tube (Trunk),  $\phi$ 3.0mm Red PVC Tube (Legs), Input/Output 1 Meter

**Selected MM Optical Fiber 常用多模光纤**

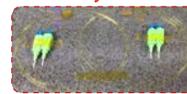
Nufern/Coherent NuBeam Series Available

- UV Optimized Quartz Fiber
- Ultraviolet Irradiated Quartz Fiber
- Near-Infrared Optimized Quartz Fiber
- Plastic Clad Silica Fiber
- Square-Core Multimode Fiber

Usually used to manufacture MM Patch Cables, Pigtails and Fiber Bundles, etc.



Polyimide



Order Information	订货信息
Configuration	Round Straight, Round Fan-out, etc.
Connector Brand	SENKO, SEIKOH GIKEN, China or Other Designated Brand
End A-End B Type	Customized Ferrules or Probes, FC/PC, FC/APC, SMA905, SC/PC, SC/APC, LC/PC, LC/APC and ST/PC, etc.
Fiber Type	Nufern/Coherent, Corning Brand Multi-Mode Fiber or Other Designated Brand
Fiber Count	1, 2, 3, 7, 19 Fibers, etc.
Fan-out Kit Type	Rectangular Metal Linear, Round Metal, Round Plastic (Customized)
Furcation Tube	$\phi$ 0.9mm Hytrel Tube, $\phi$ 2.0/ $\phi$ 3.0mm PVC/LSZH or Armored Tube (12 color available); $\phi$ 3.0/5.0/6.0mm Silver Stainless-steel Furcation Tubing, $\phi$ 6.0mm Stainless Steel Tubing with Plastic Sheath (Black, Yellow, Green-Optional)
Length	0.5 Meter, 1 Meter, 2 Meters, 3 Meters, 5 Meters etc.
Special Requirements	Supporting OEM, Special Package, Designated Dust Cap etc.

平面光纤阵列

**2D Fiber Arrays**

**Silicon-Based Orifice**

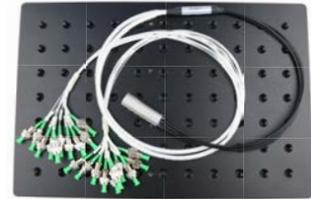
高精度定位硅基板  
(V槽、狭缝、限位片-光刻腐蚀加工)

- High Precision Positioning Substrate
- Arrangement Styles: Line, Square, Circle, Dispersive & Parabolic types
- Min. Channel Pitch: 70 $\mu$ m
- Min. Diameter of Fiber: 70 $\mu$ m
- Fiber Type: Single Mode, Multimode, PM & Double Cladding Fiber
- Pitch Error:  $\pm 1\mu$ m
- Core Position Error:  $\pm 1\mu$ m
- Accumulative Error: 0
- Transmission Rate:  $\geq 90\%$
- Wavelength Range: 200nm to 1800nm
- Numerical Aperture (NA): 0.12, 0.22

可定制-排列方式: 分散型、紧凑型、抛物线型、圆型、线型

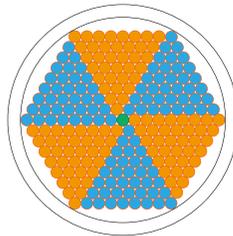


可输出高精度位置信息



Double Cladding Fiber Arrays  
双夹层光纤阵列

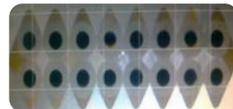
Fiber Array with Curved Surfaces  
曲面光纤阵列



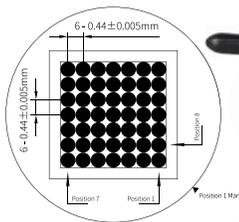
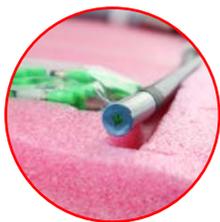
1x7 SMA905 Hexagonal Fiber Bundle (Fiber Type: 40/48/55, NA: 0.22)



2D PM Fiber Close-Packed Array with Lens  
带透镜保偏光纤密排阵列



2x6, 2x8, 3x8 Arrays Options



49-Channel Fiber Bundle (Fiber Type: 400/440, NA: 0.22)



可定制光纤金属探针/陶瓷插芯/玻璃毛细管-光纤束

**Fiber Probes** 耐高温光纤阵列探针

**Transmission Immersion**

**High Temperature Intrusive Thermostability**

- Arrangement Styles: Circle (others as requested)
- Min. Channel Pitch: Customization
- Min. Diameter of Fiber: 50 $\mu$ m
- Fiber Type: Single Mode, Multimode, PM & Double Cladding Fiber
- Transmission Rate:  $\geq 90\%$
- Length: 1M
- Wavelength Range: 200nm to 1800nm
- Numerical Aperture (NA): 0.12, 0.22
- Operating Temperature: -40 to +1000 $^{\circ}$ C
- Material of Protection Tube: Ceramic, Stainless Steel



陶瓷探针-耐高温-浸入式  
光谱在线观测

透射浸入式光纤探头



## Fiber Optic Patch Cables

### Plastic Fiber Patch Cables, Rotary Joints & Feedthrough Flanges

工控塑料光纤跳线

#### Plastic Optical Fiber Patch Cables

##### HFBR-4501/4511-Simplex & HFBR-4503/4513-Simplex Latching

- Connector End A & B: HFBR-4501 (Gray) to HFBR-4511 (Blue)
- Jacket Cable: Polyethylene (PE)
- Cable Diameter:  $2.2 \pm 0.1\text{mm}$
- Fiber Count: Simplex
- Fiber Type: PMMA
- Cable Length: 3 Meters



\* We also have high-performance plastic optical fiber cables of ESKA series (like SK-40) from MITSUBISHI in stock.

- Connector End A & B: HFBR-4503 (Gray) to HFBR-4513 (Blue)
- Jacket Cable: Polyethylene (PE)
- Cable Diameter:  $2.2 \pm 0.1\text{mm}$
- Fiber Count: Simplex
- Fiber Type: PMMA
- Cable Length: 3 Meters



\* HFBR-4506-Duplex, HFBR-4516-Duplex Latching, 4531 (4532-Simplex Latching), FC, SC, ST Connectors are also available.

##### Toslink Plastic Patch Cables 塑料音频传输线

- Connector End A & B: Toslink Types
- Jacket Cable: Polyethylene (PE)
- Cable Diameter:  $2.2 \pm 0.1\text{mm}$  (4.0 to 9.0mm Options)
- Fiber Diameter: 1.0mm (0.5mm, 0.75mm Options)
- Fiber Count: Simplex
- Fiber Type: PMMA
- Cable Length: 3 Meters



#### Fiber Optic Slip Rings (Rotary Joints) Single & Multi-Channel (1, 2, 4, 8, 12, 24-Channel)

光纤滑环-可定制



- Using optical signal transmission, no electromagnetic leakage
- Resistance to electromagnetic interference
- No contact transmission, no wear and tear
- Long life, can be up to 100 million
- No friction, can be used in inflammable and explosive environment
- Can be used in extreme natural environment
- Work normally within high magnetic current interference



Fiber Optic Rotary Joints (FORJs) is also called fiber optic slip ring or electro optical collector ring, uses fiber as transmission medium, offer best technique solutions for solving data transmission between the system parts of rotary joint especially suitable for application which needs transmitting large datas or signals from static device to rotary position when continuous or intermittent rotating. It could improve mechanical performance, simplify operation and avoid the damage due to rotating. It may compound with electrical slip ring to transmit power and high speed data as electro fiber optic slip ring.



\* Custom Fiber Optic Rotary Adapters Available

- Fiber types (SM or MM) options
- Power and Signal channel count (Single or Multi-Channel) options
- Shape of Slip Rings can be customized, shell material and drive connector optional

#### Ultra-High-Vacuum Fiber Feedthrough Flanges

##### FC Adapters on Both Sides (ST/SMA Options)

- Custom Fiber Feedthrough Flanges for Ultra-High Vacuum
- FC Adapters on Both Sides, other Connector Types Upon Request, Pre-terminated Options
- Available for 200 - 1200 nm, 400 - 2400 nm, or 0.3 - 5.5  $\mu\text{m}$
- Hermetically Sealed Multimode Step-Index Fiber (PM Fiber Options)
- ---  $\emptyset 100 \mu\text{m}$ ,  $\emptyset 200 \mu\text{m}$ ,  $\emptyset 400 \mu\text{m}$ , or  $\emptyset 600 \mu\text{m}$  Core
- --- High OH (200 - 1200 nm), Low OH (400 - 2400 nm), or InF<sub>3</sub> (310 nm - 5.5  $\mu\text{m}$ )
- Bake-Out can be Conducted at High Temperatures
- --- Up to 250 °C for High- and Low-OH Fiber
- --- Up to 90 °C for InF<sub>3</sub> Fiber

\* Custom Fiber Feedthrough Flanges Available



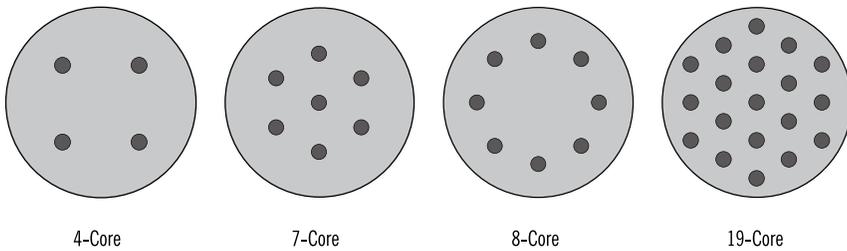
真空兼容-光纤馈通法兰

可定制-法兰、光纤、连接器

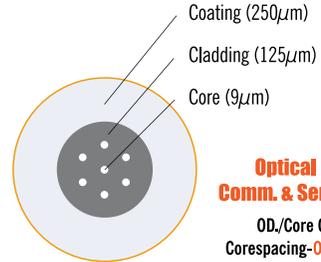
多芯光纤扇入扇出模块

**Pre-termination & Splicing Solutions**

**Structure of Multicore Fiber** (2, 3, 4, 7, 8 & 19-Core Options)



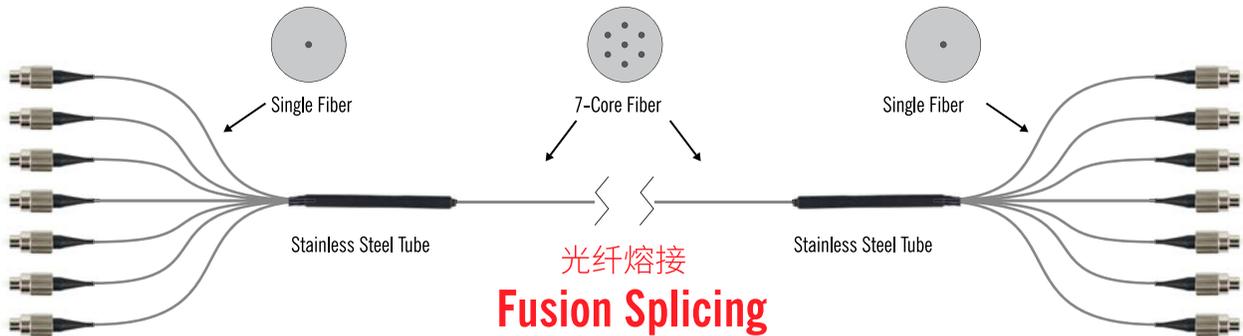
**7-core Fiber**



**Optical Fiber  
Comm. & Sensing**

OD/Core Counts/  
Corespacing-Optional

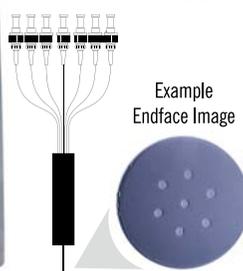
**Multicore Fiber Fanouts 7-core Fiber to Single Fiber (Simplex)**



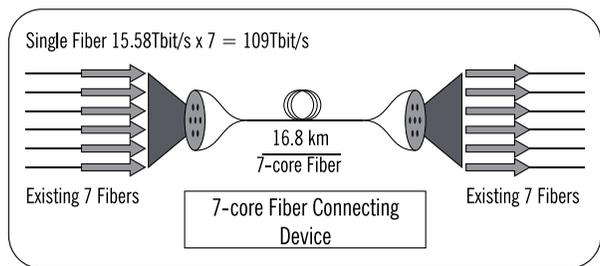
**FC/APC-FC/UPC 7-Core Fiber Fanout**



**Package, Connector Types  
- Customizable**



**Optical Space Division Multiplexing OSDM**



**Cost-Effective**

**Auto Multicore Fiber Splicer**

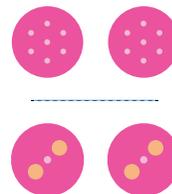


**80-125µm Cladding  
Multicore Fibers  
& PM Fibers  
Auto Axis Alignment**

**PM & Multicore Fiber Fusion Splicers**

**Ideal for 125 µm Cladding Fiber Splicing**

- Suitable for fusion splicing of multi-core optical fibers with a cladding diameter of 125-250µm
- Unique end face imaging system, with clear and visible fiber end faces, achieving precise core alignment
- The arc position is adjustable, and the arc size can be calibrated in real-time.
- Optional fully automatic, manual, and semi-automatic functions to improve work efficiency
- Software can be upgraded, data can be stored and exported.
- Pause function for convenient scientific research and teaching



# 09

## Fiber Optic Patch Cables

### Custom Patch Cables

单模光纤连接器散件

### Fiber Termination Supplies

#### Single Mode Connectors



SENKO Connectors 日本扇港散件-全系列可选



SEIKOH GIKEN Connectors 日本精工散件-全系列可选

Ferrule	Concentricity- < 0.3μm
	Inside Diameter-Customized
	Outside Size-Customized
	Material: Ceramic or
	Stainless Steel (Available)

#### Multimode Connectors 多模光纤连接器散件-可定制



SMA905  
Knurled Nut,  
Stainless Steel Ferrule,  
φ0.9mm Boot

SAM905  
Knurled Nut,  
Stainless Steel Ferrule,  
φ2.0/3.0mm Boot

SMA905  
Knurled/Hex Nut,  
Stainless Steel Ferrule,  
φ6.0mm Boot

FC/PC,  
Ceramic Ferrule,  
φ0.9mm Boot

FC/PC,  
Ceramic Ferrule,  
φ2.0/3.0mm Boot

FC/PC,  
Ceramic Ferrule,  
φ6.0mm Boot



ST/PC,  
Ceramic Ferrule,  
φ0.9mm Boot

ST/PC,  
Ceramic Ferrule,  
φ2.0/3.0mm Boot

ST/PC,  
Stainless Steel Ferrule,  
φ6.0mm Boot

FC/PC,  
Stainless Steel Ferrule,  
φ0.9mm Boot

FC/PC,  
Stainless Steel Ferrule,  
φ2.0/3.0mm Boot

FC/PC,  
Stainless Steel Ferrule,  
φ6.0mm Boot

#### Furcation Tubing & Sleeves 松套管&尾管-可选



φ0.9mm Hyrel Tube

φ2.0/3.0mm  
PVC/LSZH Tube

φ2.0/3.0mm  
Armored Tube



φ3.0/5.0/6.0mm  
Stainless Steel Tube

φ6.0/7.0/8.0mm  
Stainless Steel Tube  
with Yellow Plastic Sheath

φ6.0/7.0/8.0mm  
Stainless Steel Sleeves/Boots

#### Connector Caps 常用防尘帽类型-可选

\* Custom Kovar (4J29) & Invar (4J36) Materials Available



2.5mm Caps (FC, SC, ST)

FC Plastic Threaded Cap



FC Metal Threaded Cap

SMA Metal Cap

SMA Rubber Cap

Selected Specialty Optical Fibers

美国Nufem/COHERENT光纤-全系列可选

**Single Mode Fibers** 常用规格-常备库存

**Broad Wavelength Range: 350nm to 2200nm**

Maintain beam quality, and minimize attenuation and dispersion, using single mode fibers available from the visible through the infrared.

Select from a range of fiber configurations and options, including single and double clad, polarization maintaining, and radiation resistant, plus a wide range of cutoff wavelengths, operating wavelengths, and various coatings.

- RGB Fibers: 405-HP, S405-HP, 460-HP, S460-HP, 630-HP, S630-HP
- Special Wavelength Fibers: 460-HP, 630-HP, 780-HP, 980-HP, 1060-XP, 980C-HP, SM-1950 (PM-1950)-2μm
- Bend-Insensitive Fibers: 980M-HP-80, 1310M-HP, 1310B-HP, 1310B-HP-V0, 1550B-HP
- High NA (NuBridge) Fibers: UHNA series (0.28, 0.35 & 0.41), PWG1-XP (Planar Waveguide), SM2000D (PM2000D)-2μm
- Photosensitive Fibers (for writing FBGs): PS-PM980, PS-1060, CMF-Cladding Mode Free, CMF-P (High Temperatures up to 300 C), CMS2-Clad Mode Suppressed, GF1B (Low Loss), GF series, CMS-HP, CMF

**Laser & Amplifier Fibers**

Scale lasers to higher powers with a wide selection of rare earth doped Ytterbium, Erbium, Erbium/Ytterbium, and Thulium active fibers, plus matched passive fibers.

Eliminate SRS and TMI, and feature high mode quality, excellent pump light absorption, long lifetime, and exceptionally low photodarkening, for reliable, extended operation in even the most demanding applications.

Choose from numerous options in core and cladding structure and size, active and passive dopants, and coating materials.

**Matched Passive Fibers**

- for Er-Doped Fibers (PS-ESF-3/125 Photosensitive): PS-GSF-3/125 High NA Photosensitive Single Mode Fiber
- for Tm-Doped Fibers: SM1950 (PM1950), FUD-3793 MM-GDF-25/400-11FA Double Clad, FUD-3440 MM-GDF-25/250-11FA Double Clad, FUD-4070 SM-GDF-10/130-15FA Double Clad
- for Er/Yb-Doped Fibers: LMA-GDF-25/300 Double Clad, MM-GDF-12/130-M Double Clad, SM-GDF-1550 Double Clad
- for Yb-Doped Fibers: MM-GTF-34/460/530 Triple Clad, LMA-GDF-20/400-HP-M Double Clad, PLMA-GDF-20/250-09M Double Clad, SM-GDF-5/130 Double Clad, SM-GSF-8/130-M, SM-GDF-8/130-M Double Clad, LMA-GSF-10/125-M, PS-GDF-20/400-M Double Clad, LMD-GDF series Double Clad

**NuPOWER series Doped Fibers**

- Yb-Doped Fibers: LMA-YDF series, VIII LMA-YDF series, SM-YDF-5/130-VIII Double Clad, NuGEN LMA-YDF 9M series, SM-YSF-LO-HP (PM-YSF-LO-HP), SM-YSF-HI-HP
- Nd-Doped Fibers: PM-NDF-5/125 Double Clad

**EyeSafe series Doped Fibers**

- Er-Doped Fibers: PS-ESF-3/125 Photosensitive, SM-ESF-7/125 (PM-ESF-7/125), EDFL-980-HP (EDFL-980-HP-80), EDFL-1480-HP, EDFC-980-HP (EDFC-980-HP-80)
- Er/Yb-Doped Fibers: PLMA-EYDF-20P/250-XP, SM-EYDF-10P/125-XP, MM-EYDF-10/125-XP, SM-EYDF-6/125-XP, SM-EYDF-6/125-HE (PM-EYDF-6/125-HE), MM-EYDF-10/125-XP, MM-EYDF-12/130-HE (PM-EYDF-12/130-HE), PM-EYDF-17/200, LMA-EYDF-25P/300-HE (PLMA-EYDF-25P/300-HE)
- Tm-Doped Fibers: SM-TSF-9/125 (PM-TSF-9/125), SM-TSF-5/125, LMA-TDF-25P/400-M (PLMA-TDF-25P/400-HE), LMA-TDF-25P/250-M, LMA-TDF-25P/400-HE (PLMA-TDF-25P/400-HE), SM-TDF-10P/130-HE (PM-TDF-10P/130-HE), PM-TDF-40/400, MM-TDF-55/500 (PM-TDF-55/500), LMA-TDF-25P/250-HE
- Ho-Doped Fibers: LMA-HDF-40/400, LMA-HDF-25/250



**NuPANDA series Polarization Maintaining Fibers**

**Pure-Silica Core, Panda: 350nm to 2000nm**

Use single-mode and large-mode area polarization maintaining fibers in demanding network applications. These fibers are also ideal for use in lasers, amplifiers, FOGs, and sensing systems.

NuPANDA fibers offer the broadest operating wavelength range, highest birefringence and highest mode field uniformity.

Fibers are available for use from 350 nm to 2000 nm and feature custom and precision beat lengths, among other options. Leveraging high volume manufacturing, our fibers offer highly uniform optical and mechanical properties at low cost.

- PM Fibers for Low Loss Couplers: PM980C-HP, PM14xxC-HP
- UV-to-Visible PM Fibers: PM-S350-HP, PM-S460-HP, PM-S630-HP, PM-S405-XP, PM460-HP, PM630-HP
- UV-to-Visible PM Fibers: PM-S350-HP, PM-S460-HP, PM-S630-HP, PM-S405-XP, PM460-HP, PM630-HP
- Telecom PM Fibers: PM780-HP, PM980 series, PM1300 series, PM14xx series, PM1550 series

**NuBEAM series Power Delivery Fibers**

Transmit higher powers in solid-state, fiber, and diode lasers systems with Coherent NuBEAM low loss, high damage threshold, multi-mode, beam delivery fibers.

NuBEAM fibers are available in a large assortment of core and clad diameters and with biocompatible coatings to accommodate the widest range of applications including pump delivery, laser delivery, medical imaging, surgery, and more.

Choose from a large assortment of core and clad diameters, as well as options for silicone, transparent nylon, and tefzel buffers.

- NuBEAM series Beam Delivery Fibers: BD-S50/70/480-STN, BD-S100/120/360-STN, BD-S150/180/660-STN, BD-S200/240-STN, BD-S300/330/360-STN, BD-S400/440/660-STN, BD-S600/660/720-STN, BD-S1000/1100-STN
- NuBEAM Flat-Top series Beam Delivery Fibers: MMF-S105/125-22A
- Pump Power Delivery Fibers: MM-S105/125 series, MM-S200/220 series, MM-S400/440 series, MM-S600/660-22FA

**NuSENSOR series Sensing Fibers**

- NuGYRO FOG Fibers: PM850G-80 series, PME850G-40/100-5, PME1300G-80/170-5, PM1300G-80 series, PM1550G-80 series, PM-1550G-40
- NuVIEW OCT Fibers: 780-OCT, 1060-OCT, 1060-OCT-P
- NuWIRE Specialty Fibers: S1550-HTA (S1550-80-HTA) Radiation Hard SM Fibers, R1310-HTA, 1310M-HTA, GI50/125S (Temperatures up to 200 C) MM Fibers, GI62.5/125S (Temperatures up to 200 C) MM Fibers, GI100/140P (Temperatures up to 300 C) MM Fibers, GR-50/125-23HTA (Radiation Resistant) MM Fibers, GR-62.5/125-27HTA, GR-100/140-24HTA
- NuSENSOR Sensing Fibers: GR-50/125-20CMTA (Grade Index) MM Fibers, GR-S50/125-20 series, GR-HI50/125-20PI, R1550B-P Bend-Insensitive SM Fibers, S1310-P (S1310-CP) Pure-Silica Core SM Fibers

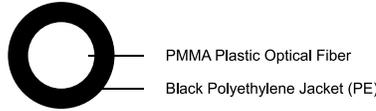


塑料光纤

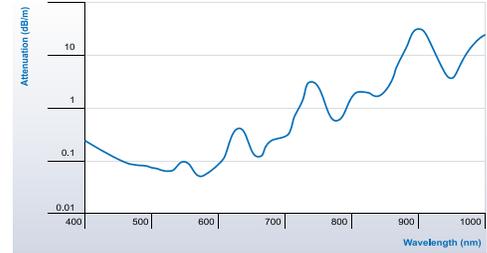
**PMMA Plastic (Polymer) Optical Fibers**

**Industrial Control Fibers**

Core Material: PMMA  
Outer Jacket: Fluorine Resin  
Numerical Aperture(NA): 0.5  
Spectral Range: 400nm to 700nm  
Loss:  $\leq 200\text{dB/km}$  (@570nm)  
Operating Temperature:  $-30$  to  $+70\text{ }^\circ\text{C}$



Typical Plastic Optical Cable



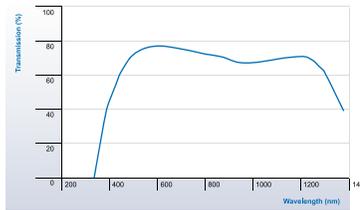
Typical Attenuation Plot for POF Fibers

玻璃光纤

**Glass Optical Fibers**

**Compound GOFs**

Numerical Aperture(NA): 0.56  
Transmission Rate:  $\geq 56\%$   
Spectral Range: 380nm to 1300nm  
Fiber Diameter:  $15\mu\text{m}$  to  $50\mu\text{m}$   
Operating Temperature:  $-40$  to  $+350\text{ }^\circ\text{C}$



Typical Spectral Curve of Compound Glass Optical Fiber



石英光纤

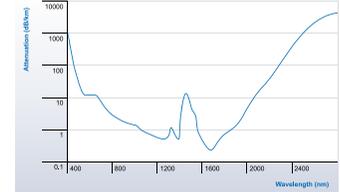
**Silica Optical Fibers**

**NAs, Gradeded & Step-Index, Core/Clads & Buffers**

Numerical Aperture(NA): 0.22, 0.37  
Transmission Rate:  $\geq 99\%$   
Spectral Range: 190nm to 2400nm  
Fiber Diameter:  $15\mu\text{m}$  to  $50\mu\text{m}$   
Operating Temperature:  $-40$  to  $+500\text{ }^\circ\text{C}$



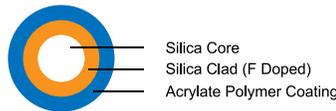
Typical Attenuation Plot for UV (High OH) Fibers



Typical Attenuation Plot for Power Delivery (Low OH) Fibers

**0.22 NA Step-Index MM Fibers**

Broad UV, VIS, and NIR Spectral Range  
\* High OH (UV-VIS): 250 to 1200nm  
\* Low OH (VIS-IR): 400 to 2400nm  
Low OH Versions Ideal for Holmium and Erbium Laser Delivery  
Applications including Spectroscopy, Medical Instrumentation, and Fiber-Coupled LEDs  
\* Solarization may occur if used in the spectral region below 300nm



**Acrylate Polymer Coating (Operating Temperature:  $-40$  to  $+85\text{ }^\circ\text{C}$ )**

Fiber Type (UV-VIS/VIS-IR)	Core Diameter	Cladding Diameter	Coating Diameter
<b>50/125/250AA22</b>	$50\mu\text{m}\pm 2\%$	$125\mu\text{m}$	$250\mu\text{m}\pm 5\%$
<b>60/125/250AA22</b>	$60\mu\text{m}\pm 2\%$	$125\mu\text{m}$	$250\mu\text{m}\pm 5\%$
<b>100/140/250AA22</b>	$100\mu\text{m}\pm 2\%$	$140\mu\text{m}$	$250\mu\text{m}\pm 5\%$
<b>105/125/250AA22</b>	$105\mu\text{m}\pm 2\%$	$125\mu\text{m}$	$250\mu\text{m}\pm 5\%$
<b>200/220/320AA22</b>	$200\mu\text{m}\pm 2\%$	$220\mu\text{m}$	$320\mu\text{m}\pm 5\%$
<b>400/440/730AA22</b>	$400\mu\text{m}\pm 2\%$	$440\mu\text{m}$	$730\mu\text{m}\pm 5\%$
<b>800/880/1000AA22</b>	$800\mu\text{m}\pm 2\%$	$880\mu\text{m}$	$1000\mu\text{m}\pm 5\%$
<b>1000/1100/1350AA22</b>	$1000\mu\text{m}\pm 2\%$	$1100\mu\text{m}$	$1350\mu\text{m}\pm 5\%$

**0.22 NA, Hard Polymer Buffer, Silica/Silica, Step-Index MM Fibers**

Broad UV, VIS, and NIR Spectral Range  
 \* High OH (Deep UV-VIS): 190 to 1200nm  
 \* Low OH (VIS-IR): 350 to 2500nm  
 High Laser Damage Resistance, High Core-to-Clad Ratio  
 Applications including Spectroscopy, Thomson Scattering, and Medical Diagnostics

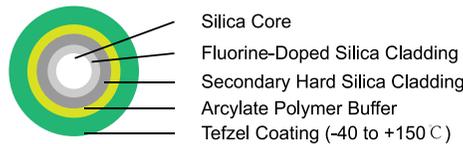


**Tefzel Coating (Operating Temperature: -40 to +150 °C)**

Fiber Type (UV-VIS/VIS-IR)	Core Diameter	Cladding Diameter	Coating Diameter
100/140/240/370XT22	100µm±2%	140µm	240µm±5%
200/220/320/480XT22	200µm±2%	220µm	320µm±5%
300/330/480/720XT22	300µm±2%	330µm	480µm±5%
400/440/590/880XT22	400µm±2%	440µm	590µm±5%
600/660/795/900XT22	600µm±2%	660µm	795µm±5%
600/660/810/1200XT22	600µm±2%	660µm	810µm±5%
800/880/1050/1280XT22	800µm±2%	880µm	1050µm±5%
1000/1100/1300/1800XT22	1000µm±2%	1100µm	1300µm±5%

**0.22 NA Step-Index MM Fibers, Hard Cladding Silica/Silica**

Broad UV, VIS, and NIR Spectral Range  
 \* High OH (Deep UV-VIS): 190 to 1200nm  
 \* Low OH (VIS-IR): 350 to 2500nm  
 Stability of Silica Cladding allows for High-Power Handling Capability  
 Low-Index Fluorine-Doped Silica Cladding Design provides Superior UV and NIR Transmission  
 Secondary Hard Cladding provides a Dual-Waveguide Design, resulting in Improved Bend Performance  
 Strong Bonding of Silica to Cladding prevents Pistoning and provides More Stable Terminations  
 High Laser Damage Resistance, High Core-to-Clad Ratio  
 Applications including Spectroscopy, Thomson Scattering, and Medical Diagnostics



**Tefzel Coating (Operating Temperature: -40 to +150 °C)**

Fiber Type (UV-VIS/VIS-IR)	Core Diameter	Cladding Diameter	Coating Diameter
50/360/460/650XT22	50µm±2%	360µm	460µm±5%
100/360/460/650XT22	100µm±2%	360µm	460µm±5%
200/360/460/650XT22	200µm±2%	360µm	460µm±5%
300/360/460/650XT22	300µm±2%	360µm	460µm±5%
400/480/590/880XT22	400µm±2%	480µm	590µm±5%

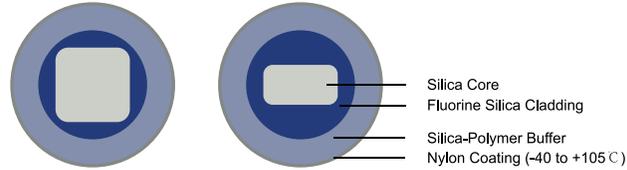


能量匀化矩形纤芯激光传输光纤

**Energy Homogenization Rectangular-Core Fibers**

Broad UV, VIS, and NIR Spectral Range  
\* Step-Index  
\* Low OH (VIS-IR): 400 to 2500nm  
Numerical Aperture(NA): 0.12, 0.22  
Applications including Beam/Power Delivery,  
Laser Transmission

If you do not see an bare fiber suitable for your application here, please contact us.

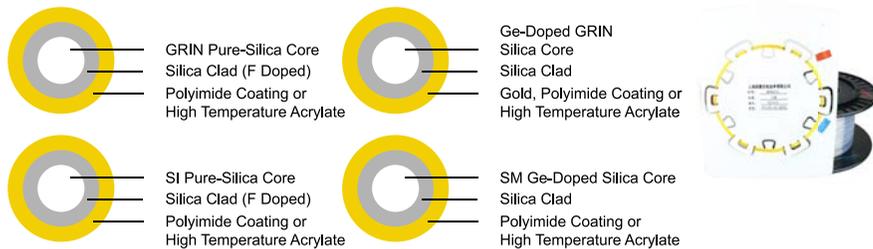


**Nylon Coating (Operating Temperature: -40 to +105 C)**

Fiber Type (VIS-IR)	Core Diameter	Cladding Diameter	Coating Diameter
100/145/350/650XN22	100x100µm	145µm	350µm
400/575/880/1300XN22	400x400µm	575µm	880µm

**High Temperature Fibers**

Pure Silica core, Ge-Doped Silica core  
Step-Index, Graded-Index  
Single Mode, Multimode Fibers  
Numerical Aperture(NA): 0.12, 0.20, 0.22, 0.27  
Coating: High Temperature Acrylate (-40 to +150 C),  
Polyimide (-60 to +300 C), Gold (-270 to +700 C)



**GRIN Pure-Silica Core Fibers**

Fiber Type	Core Diameter	Cladding Diameter	Coating Diameter
50/125/155P20	50µm	125µm	155µm
50/125/250XA20	50µm	125µm	250µm

**Step-Index Pure-Silica Core Fibers**

Fiber Type	Core Diameter	Cladding Diameter	Coating Diameter
105/125/155P22	105µm	125µm	155µm
200/220/250P22	200µm	220µm	250µm
300/330/360P22	300µm	330µm	360µm
400/440/470P22	400µm	440µm	470µm
600/660/690P22	600µm	660µm	690µm

**High Temperature Single Mode Fibers**

Fiber Type	Core Diameter	Cladding Diameter	Coating Diameter
1310P155	9µm	125µm	155µm
1310P100	9µm	80µm	100µm

熔融拉锥型光分路器

**Fused Biconic Taper (FBT) Splitters**

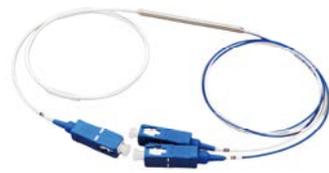
**Metal Tube FBT Couplers** (Wavelength: 400 to 2000nm SM, MM & PM)



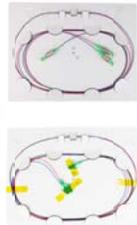
Miniature



Customized Package



1x2 Coupler



SENKO Connectors



3x3 Coupler

**Diameter x Length (ØxL)**

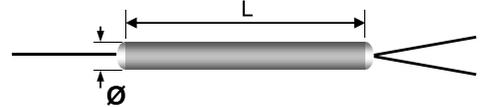
- 3x30mm
- 3x25mm (0.9mm Loose Tube)
- 2.4x25mm
- 2.0x15mm

\* Mini-Size Package for High Density & Flexibility Demands

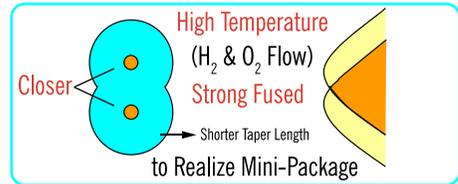
**Multiple Port Types**

- 1x2; 2x2; 2x4;
- 1x3; 3x3;
- 1x4;

\* Various Package Types: LGX Cassettes, Rack Modules, ABS Boxes, etc.



Parallel Taper 平行拉锥技术-性能更好



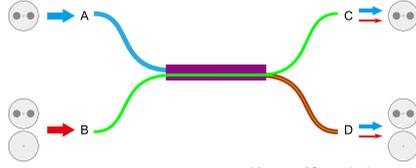
控制氢氧流量达到高温-强融方式-光纤靠的更近-耦合长度更短-小尺寸封装

**PM Fiber Splitters / Couplers**

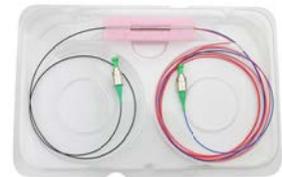
保偏光分路器



2x2 Fused PM Coupler



- Panda PM Fiber
- High Polarization Extinction Ratio (PER)
- 2.0mm Narrow Key FC Connectors



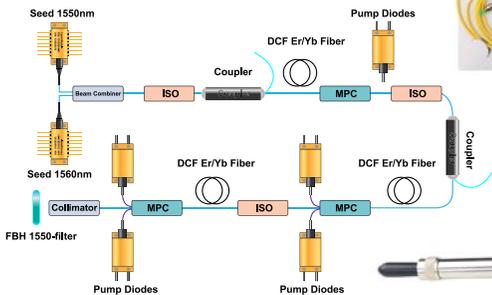
**Features**

- Can be used to both split and combine signals
- 1% : 99% ~ 50% : 50% Split Ratio
- Multiple Wavelength (532~2200nm), including: 633nm, 780nm, 850nm, 980nm, 1030nm, 1064nm, 1310nm, 1550nm & 2000nm, etc.
- Wide Band (±15~40nm)
- 1x2, 1x3, 1x4, 2x2 Configuration (1xN Cascading Options)
- Both Axis Working
- High Power Handling (up to 40W, Custom 100W PM Couplers Available)
- Customized Package Size (Miniature 80µm Fiber Options)
- Widely used in FOG, Fiber Sensing, Precision Measurement, Ultrafast Laser, EDFA, OCT, Interferometer, etc.

\* Custom OCT-Proven Broadband Couplers (2x2, 1310nm, 850nm) Available

**High Power Couplers** 高功率光分路器

- High Operating Power (1-10W), Custom 40-100W Available
- 1060nm / 1550nm Working Band Options
- Various Types of Split Ratio Options



400-1800nm (NIR), 1x4, Even, 200/220-22



Air-Gap

400-1800nm (NIR), 1x4, Even, 400/440-22



# 15

## Passive Fiber Components

### Splitters & Couplers

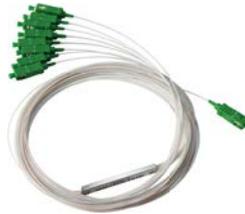
平面波导型光分路器

### Planar Lightwave Circuit (PLC) Splitters (Wavelength: 1260 to 1650nm)

#### Various Mini type Package Size

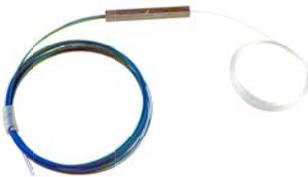
- || 40x4x4mm
- || 50x7x4mm, 50x4x4mm
- || 60x12x4mm, 60x7x4mm
- || 80x20x6mm, 80x12x4mm
- || 100x40x6mm, 100x20x6mm

Type		
1x2	2x4	1x16
2x2	1x8	2x16
1x4	2x8	1x32
2x32	1x128	
1x64	2x128	
2x64		



Custom PM PLC Splitters (Available)

### MM PLC Splitters (Wavelength: 650 to 1350nm, Fiber Type: OM1-62.5/12um, OM2, OM3, OM4-50/125um)

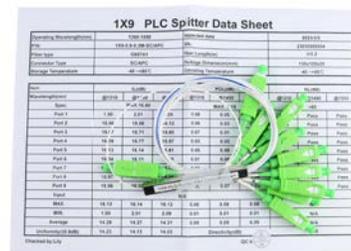


### Non-Standard PLC Splitters (Custom PM PLC Splitters Available)



### Quick-ODN Un-Even PLC Splitters The Next Generation Optical Distribution Networks (ODN)

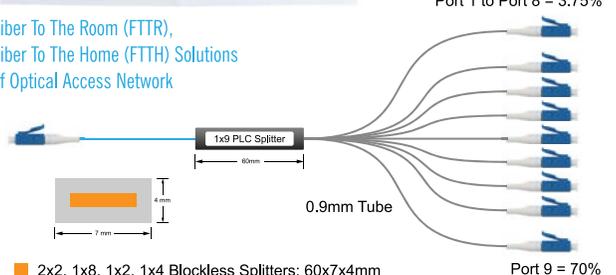
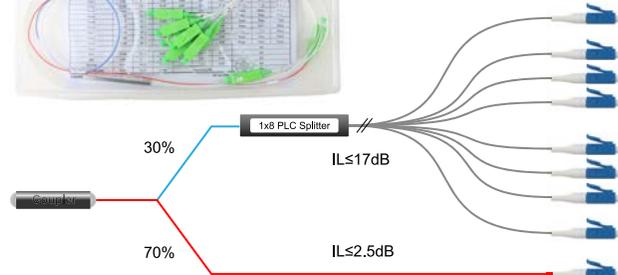
--- Plug & Play



Passive Optical LAN (POL) Solutions

Port 1 to Port 8 = 3.75%

Fiber To The Room (FTTR),  
Fiber To The Home (FTTH) Solutions  
of Optical Access Network



2x2, 1x8, 1x2, 1x4 Blockless Splitters: 60x7x4mm

Port 9 = 70%

微光学型光分路器

**Tap Filter Devices** (400-2000nm SM, MM, PM 1%:99% to 50%:50% Tap Devices)

**Thin Film Filter Couplers**



Mini Tap Filter

- 2.4\*25 mm    3.2\*25 mm
- 3.8\*25 mm    5.5\*25 mm

- Coating Technology
- Full Bandwidth Wavelength Range

COM 1  
REF 1  
COM 2  
REF 2



PASS 1  
PASS 2

2x4 Structure

**TAP-Filter Coupler**

Filter TAP Packaging Technology  
Hard-Coated Thin-Film Interference Filter

- Low Insertion Loss
- Excellent Uniformity
- Broad Wavelength Range
- Stable Operation

VS

**FBT Coupler**

Fused Biconical Taper Technology  
● Restricted to the Operating Wavelength

**Specifications of Tap Filter Splitters**

Items	Parameters				
Configuration	1x2, 2x2, 2x4				
Operating Wavelength (nm)	850, 1310nm, Others on Request				
Split Ratio (%)	50/50	10/90	20/80	30/70	40/60
Insertion Loss (dB)	≤3.7/3.7	≤11.2/0.9	≤7.8/1.4	≤6.0/2.1	≤4.7/2.7
Directivity (dB)	≥40				
Fiber Type	SM (OS1, OS2), MM (OM1, OM2, OM3, OM4)				
Operating Temperature	-40 to +85 °C				



微光学型光分路器-可定制各种极性MPO组合

**High Density Tap Cassette Module**

**MPO/MTP Thin Film Filter Couplers**



MPO-LC Module



MTP-LC Module

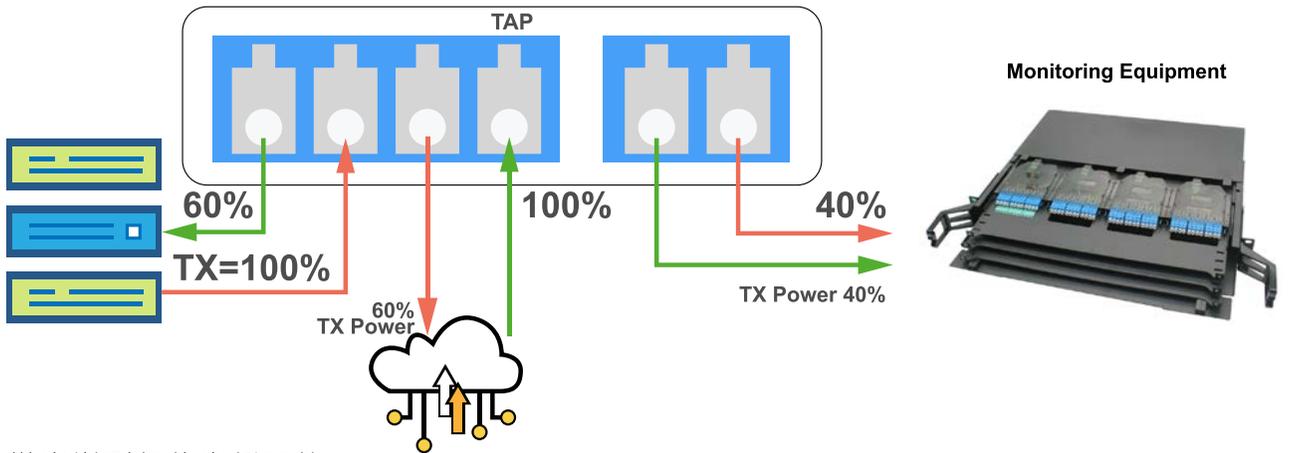


Tap Module Cassette in Chassis

**LGX or Customized Cassette for High Density Connectivity**

- MPO/MTP to LC Cassette with Rear Tap Ports
- Connect with 10G/25G/40G/100G200G Transceiver for Data Center Networks

**Working Diagram**



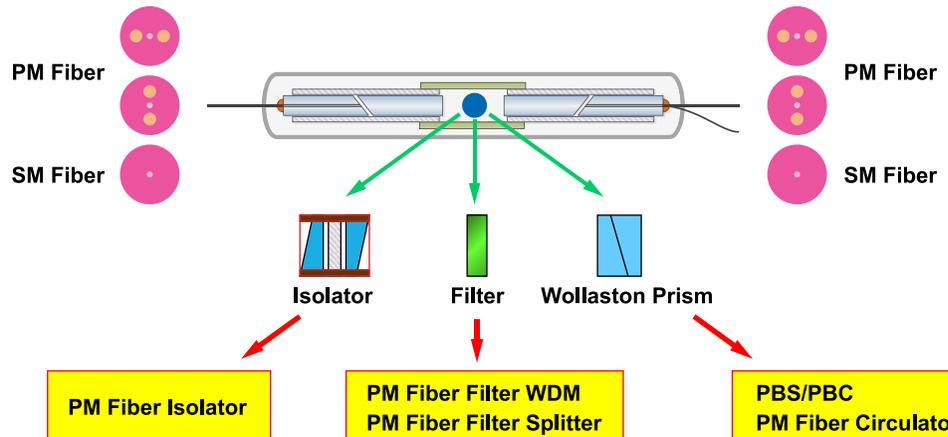
微光学型保偏光纤器件

**Micro-Optic Components (PM)**

Custom Hybrid Components (Available)

- Types**
- ILP
  - PMISO
  - PBS/PBC
  - PMFWDM
  - PM VOA
  - PM Circulator
  - PM Filter Splitter

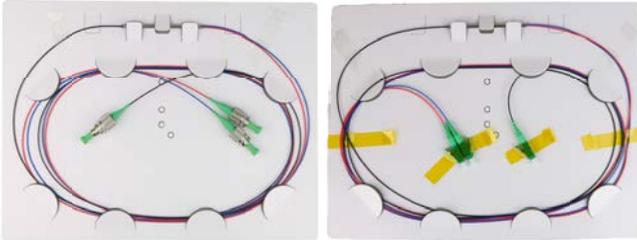
- Features**
- Wavelength Options
  - High-Power Options
  - 3.0x25mm Mini-Size Options
  - Widely Used in FOG, Fiber Sensing, PM-EDFA, PM Fiber Laser, etc.



熔融拉锥型波分复用器

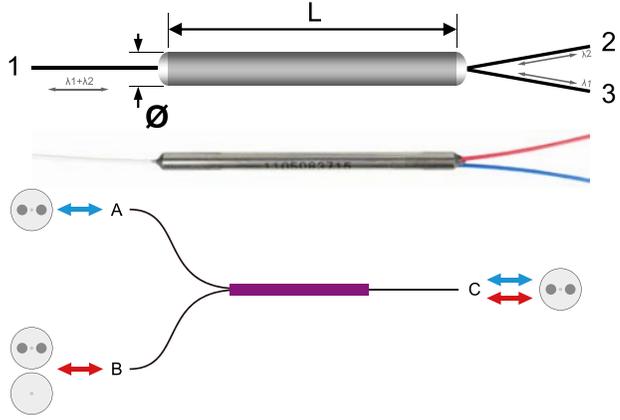
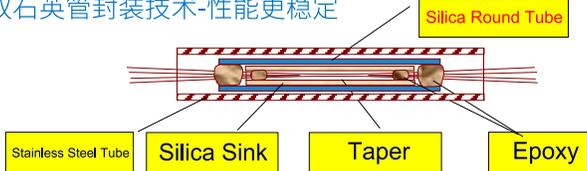
Fused WDMs

1x2 FBT (Fused Biconic Taper)



FBT - Double Silica Tubes Package

双石英管封装技术-性能更稳定

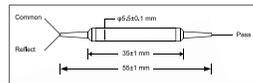


Features

- Can be Used to Combine (MUX) or Split (DEMUX) different wavelength Multiple Wavelength Combination (980/1550nm, 980/1064nm, 980/1030nm, 1064/1550nm, 1310/1550nm, 1480/1550nm, 1550/1625nm, 1550/2000nm, 660/1310nm, 1600/1960nm, 793/2000nm)
- 2x2 Configuration available upon request
- Mux & Demux Bidirectional Operation
- High Power Handling up to 40W
- Telcordia GR-1209 & GR-1221 Compliant
- Widely Used in PM EDFA, PM Fiber Laser, Ultrafast Laser

Filter WDMs

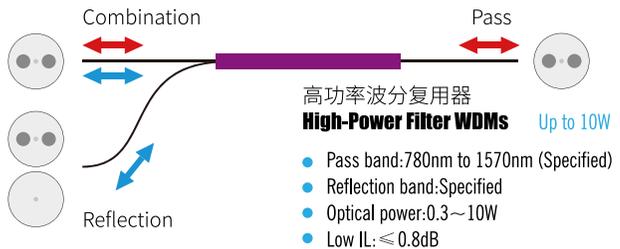
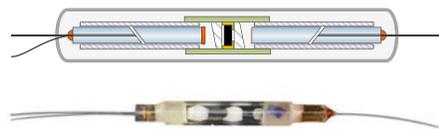
Micro-Optic Components



微光学型波分复用器

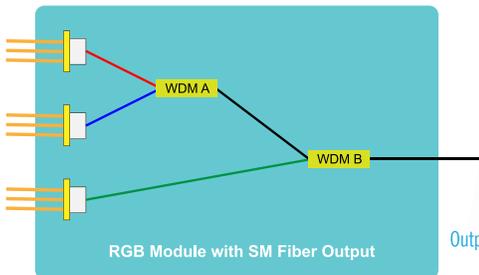
Features

- Can be Used to Combine (MUX) or Split (DEMUX) different wavelength Multiple Wavelength Combination (980/1550nm, 980/1064nm, 1480/1550nm, 1064/1550nm, etc.)
- 1x2 Configuration
- Mux & Demux Bidirectional Operation
- CWDM/DWDM/Tri-Plexer types Available
- High PER and Reliability
- Widely Used in FTTH, LAN and CATV Fiber Optic Networks

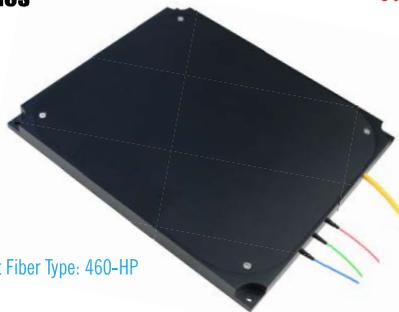


RGB Combiners Visible WDM

RGB Active Modules / RGB Passive WDM Modules



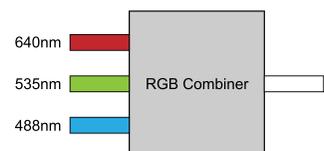
Output Fiber Type: 460-HP



Red, Green, Blue (RGB) lasers are aligned into one single output SM/MM fiber. The laser driver and control system are integrated. RGB combiners are used often to illuminate multiple fluorophores in confocal microscopy.

Other Wavelength Combinations (Available)

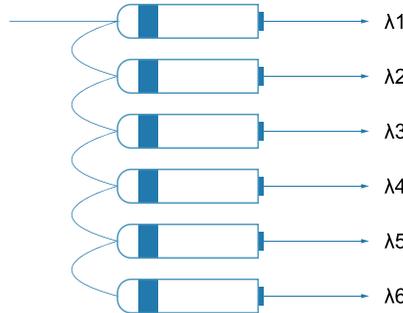
- RGB laser output through one single fiber SM or MM fiber options
- Customized center wavelength
- Control system & software available upon request
- Active diode laser module or passive WDM module options



光通信用波分复用器

Telecom WDM Technologies

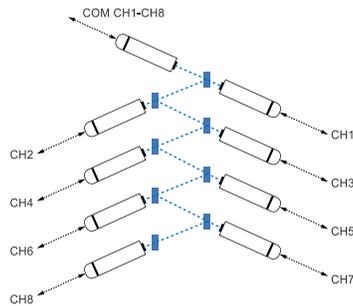
Thin-Film Filter (TFF)



2, 4, 8CH

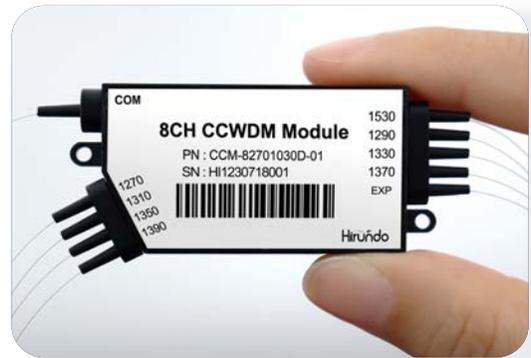
- Low Sensitivity to Temperature & Polarization
- Low Insertion Loss
- High Channel Isolation
- Wide Passband

Free Space Technology



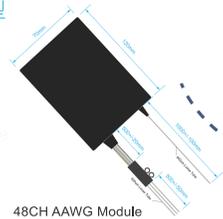
4, 8, 12, 18CH

- Compact Size
- Low Insertion Loss
- High Channel Isolation
- Wide Pass Band
- High Stability & Reliability
- Epoxy-free on Optical Path



紧凑型封装-可选

Arrayed Waveguide Gratings (AWG) Athermal AWGs (AAWG) 无热型

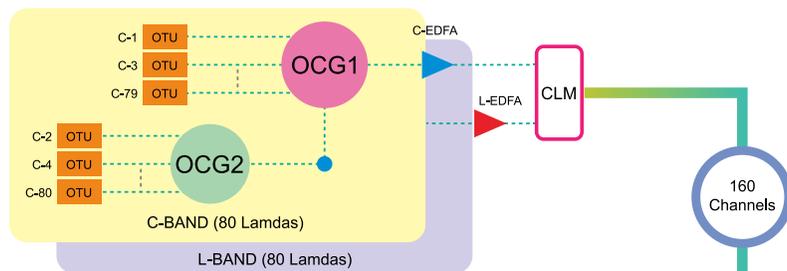


AAWG Rack Mount Chassis



16, 24, 32, 40, 44, 48, 80, 96CH

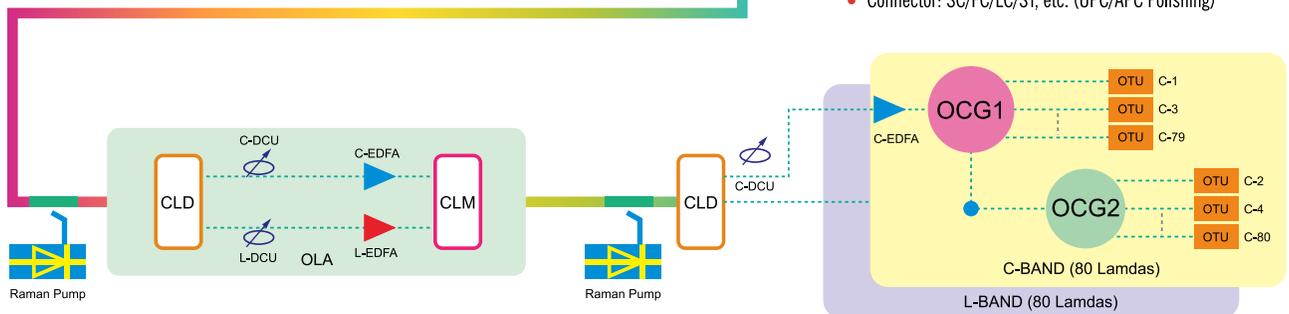
AWGs Working Diagram



Accurate Laser Dicing For AWG Chips



- Channel Spacing: 50GHz, 75GHz, 100GHz, 150GHz, 200GHz
- Chip Type: Gaussian or Flat-Top
- Package: ABS Box, 19" Rack, LGX, or Specify
- Fiber Diameter: 250μm, 900μm, 2.0mm, 3.0mm
- Fiber Length: 1m, 2, or Specify
- Connector: SC/FC/LC/ST, etc. (UPC/APC Polishing)



稀疏型(粗)&密集型-波分复用器

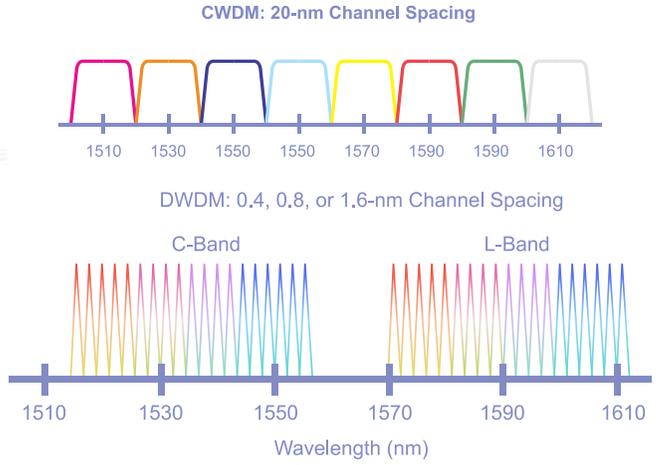
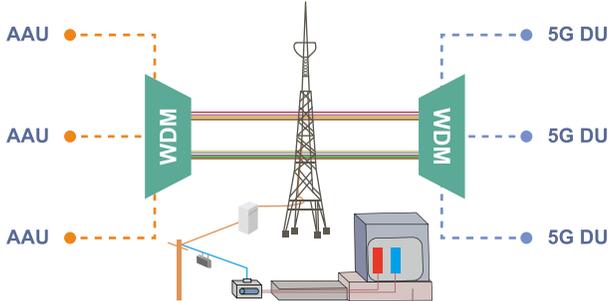
**CWDMs & DWDMs** Coarse & Dense WDMs

**Compact WDMs (CCWDMs & CDWDMs Mux/Demux)**



**CWDM:** 4, 8, 16, 18 CH (1270nm to 1610nm or 1271nm to 1611nm, 20nm Channel Spacing)

**DWDM:** 4, 8, 16 CH (ITU 100GHz or 200GHz Grid, C21 to C60, 0.4/0.8/1.6nm Channel Spacing)



- Package: Compact, ABS Box, 19" Rack, LGX, or Specify
- Fiber Diameter: 250 $\mu$ m, 900 $\mu$ m, 2.0mm, 3.0mm
- Fiber Length: 1m, 2, or Specify
- Connector: SC/FC/LC/ST, etc. (UPC/APC Polishing)
- Isolation:  $\geq$  30dB (Adjacent),  $\geq$  40dB (Non-adjacent)
- Compact Type: 1310nm/UPG (Upgrade) Port Options

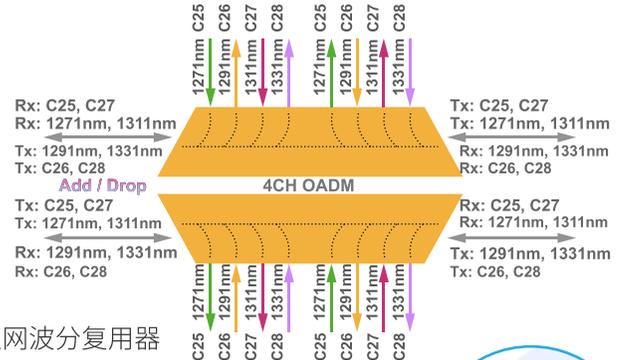


- \* We also have high-performance 12CH LWDMs, 12CH MWDMs, 4CH Lan-WDMs in stock.
- \* LWDM: for 5G Front Haul Solutions of China Telecom
- \* MWDM: for 5G Front Haul Solutions of China Mobile
- \* Front Haul means Active Antenna Unit (AAU) to Distribution Unit (DU)

**OADM** 光插分复用器

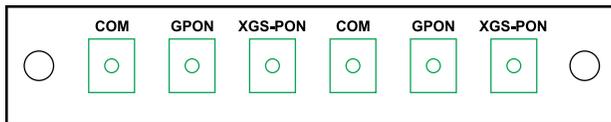
**CWDM & DWDM OADM**

- 1CH, 2CH, 4CH & 8CH
- Package: ABS Box, 19" Rack, LGX, or Specify
- Fiber Diameter: 250 $\mu$ m, 900 $\mu$ m, 2.0mm, 3.0mm
- Fiber Length: 1m, 2, or Specify
- Connector: SC/FC/LC/ST, etc. (UPC/APC Polishing)
- Isolation:  $\geq$  30dB (Adjacent),  $\geq$  40dB (Non-adjacent)
- Applications: 1000M & 10G Ethernet, SDH/SONET, ATM, OTN, FTTx & CATV



**G/EPON & XG(S)-PON CEx-WDM Modules** 无源光接入网波分复用器

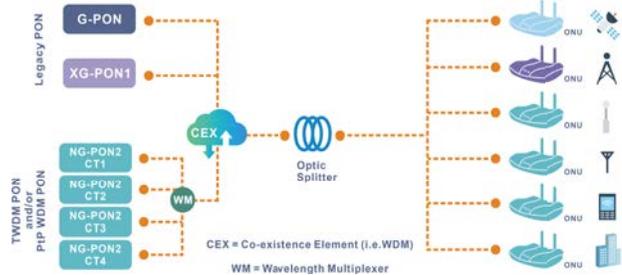
**GPON/XGPON/OTDR/NGPON2** FTTx Solutions: Fiber to the Building, Fiber to the Home, Fiber to the Room, etc. of Optical Access Network



\* Custom Configurations Available

Wavelength: 1260nm to 1650nm

下一代10G光接入网单纤多波传输方案



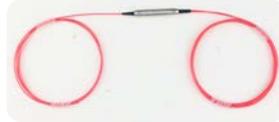
光环形器

3-Port Circulators

Faraday-Based Circulators

Features

- Faraday Based
- CWL: 1030nm to 1570nm (Specified)
- Optical Power: 50~300mW
- High Isolation: 22~40dB
- Package size: 5.5x35mm
- Can be Integrated with WDM, Tap, BPF

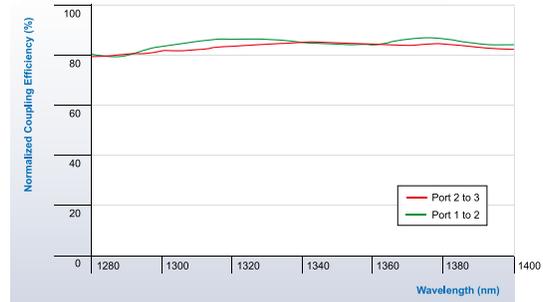


4-Port Version (Available)

Broadband SM Fiber Circulators 1280-1400nm

Each Broadband circulator has been tested for optimal application in imaging system designs. An important consideration in the design of an imaging system is the flat spectral response of the components in the system. The broadband circulator was chosen because of its flat spectral response over its operating range.

Normalized coupling efficiency versus wavelength for the two beam propagation paths of a typical 1310nm circulator. Port 1 to 2 shows a mean coupling efficiency of 88%. Port 2 to 3 shows a mean coupling efficiency of 86% and a standard deviation of 12%.



1310nm Circulator Spectral Transmission

Telecom Circulators 1310nm, 1550nm, 1310/1550nm

This fiber optic circulator is a non-reciprocating device that transports an optical signal one port to the next port but only in one direction (i.e., 1 to 2 or 2 to 3). They may be used to separate forward and backward propagating signals, typically with 45dB of isolation and a directivity (crosstalk) figure of better than 50dB. These circulators are available

Applications

- Add-Drop Multiplexers
- Fiber Sensors
- Bidirection Pumping
- Exceptional Environmental

Features

- Wavelength Range: 1525-1610nm
- Isolation: >40dB
- Insertion Loss: 0.8/1.0dB (Typical/Max)
- Directivity: >50dB
- Return Loss: ≥ 50dB
- Polarization-Dependent Loss (PDL): ≤ 0.1dB
- Polarization-Mode Dispersion (PMD): ≤ 0.05ps
- Optical Power: 500mW (Max)
- Operating Temperature: 0 to +70 °C
- Storage Temperature: -40 to +85 °C

TGG-Based Circulators



Features

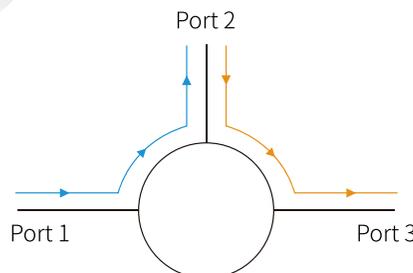
- Terbium-Gallium Garnet (TGG) based, Up to 30W
- CWL: 780nm to 1080nm (Specified)
- Isolation: 25~35dB
- Low IL: ≤1.5dB
- Package size: 66x30x26mm
- Can be Integrated with WDM, Tap, BPF

High-Power PM Circulators

Features

- Wavelength Range: 1053-1075nm (1064nm) or 1530-1570nm (1550nm)
- Optical Power: 3W or 5W
- Isolation: >30dB
- Insertion Loss: ≤ 1.5dB
- Directivity (1 to 3): 40dB
- Return Loss: ≥ 50dB

PM Circulators



Applications

- High-Power Fiber Lasers
- Fiber Sensors
- Bidirectional Pumping

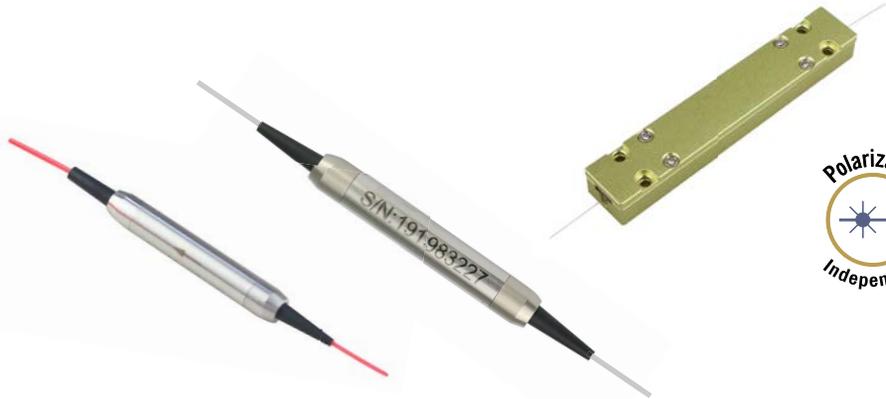
光隔离器

In-Line Isolators

Faraday-Based Fiber Isolators

Features

- Faraday Based
- CWL: 1030nm to 1570nm (Specified)
- Optical Power: 50mW, 80mW (1030nm), 300mW (1064nm, 1310/1480/1550nm), 1W, 3W, 5W, 10W (High Power)
- High Isolation: 25~40dB
- Package Size: 5.5x35mm
- Can be Integrated with WDM, Tap, BPF



TGG-Based Fiber Isolators



Features

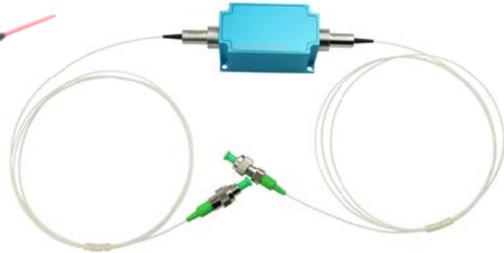
- Terbium-Gallium Garnet (TGG) Based, up to 30W
- CWL: 780nm to 1080nm (Specified)
- Isolation: 25~35dB
- Low IL: ≤0.8dB
- Package Size: 60x28x26mm
- Can be Integrated with WDM, Tap, BPF

Polarization-Dependent Fiber Isolators

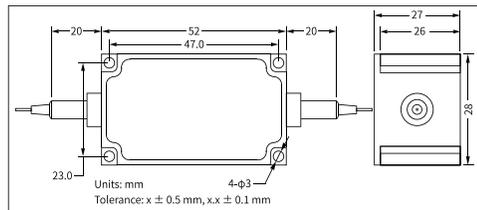
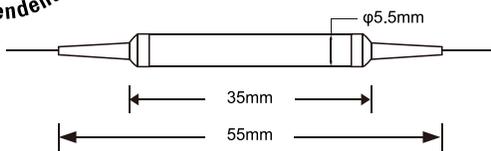
780nm, 980nm, 1064nm, 1310nm, 1550nm, 2000nm 300mW, 3W, 5W, 10W

Features

- High Power Polarization Maintaining
- Central Wavelength: 780nm
- Typ. Peak Isolation: 26dB
- Min. Extinction Ratio: 18dB
- Typ. Insertion Loss: 1.3dB
- Package Size: 52x28x27mm



In-Line PM Fiber Isolators



自由空间光隔离器

Free Space Isolators 1μm, Up to 200W



Features

- CWL: 780nm to 1080nm (Specified)
- Clear Aperture: ≤5.0mm
- Peak Transmission: 94~97%

在线式法拉第旋转镜

In-Line Faraday Rotator Mirrors

Epoxy-Free Optical Path



Features

- CWL: 780nm to 1570nm (Specified)
- Optical Power: 0.5~20W
- Rotation Angle: 45°, 90°



光衰减器-固定式(法兰式、阴阳式)、可调式(法兰式、在线式)

**Single Mode Optical Attenuators** 1240 - 1620nm

**Fixed (Adapter, Hybrid Female to Male) & Variable Types**

LC/APC(Female)-LC/APC(Male), Simplex, Fixed, 6dB	LC/APC(Female)-LC/APC(Male), Simplex, Fixed, 5dB	SC/APC(Female)-SC/APC(Male), Simplex, Fixed, 10dB	SC/APC(Female)-SC/APC(Male), Simplex, Fixed, 10dB
SC/APC(Female)-SC/APC(Female), Simplex, Fixed, 5dB	LC/APC(Female)-LC/APC(Female), Simplex, Fixed, 7dB	LC/APC(Female)-LC/APC(Female), Simplex, Adjustable, 1-30dB	SC/APC(Female)-SC/APC(Female), Simplex, Adjustable, 1-30dB

**Buildout Attenuators (M2F)**

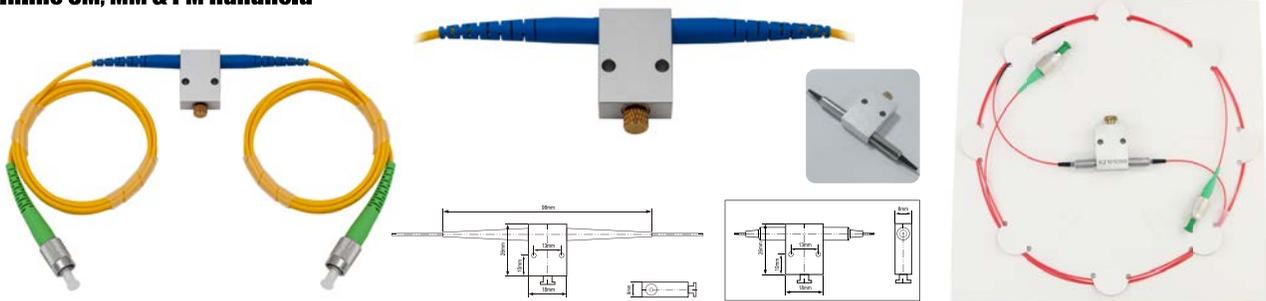


**Features**

- Threaded nut type
- Maximum stability and reliability
- Fixed Attenuation values from 1 to 30 dB (1dB increments)
- Polarization insensitive & Flat spectral response - doped fiber
- Convenience and ease of handling
- FC interface according to IEC 61754-13

**Manual Variable Optical Attenuators (VOA)**

**Inline SM, MM & PM Handheld**



**Features**

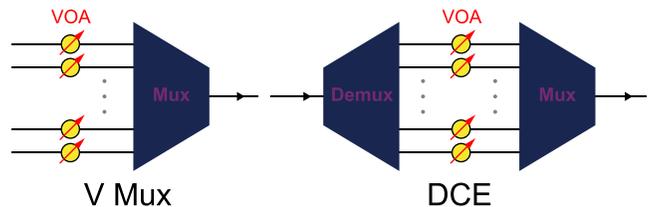
- CWL:480nm, 532nm, 633nm, 780nm to 1620nm (Specified)
- Attenuation:0.6~60dB
- Low IL:0.3~0.8dB

This manually adjustable, inline variable optical attenuator (VOA) is used to precisely balance the signal strengths in fiber circuits or to balance an optical signal when evaluating the dynamic range of the measurement system. The attenuation is adjusted using a screw on the side of the attenuator housing.

Polarization-maintaining inline variable optical attenuators (VOAs) have fiber pigtailed with a  $\varnothing 900\mu\text{m}$  jacket.

**Applications**

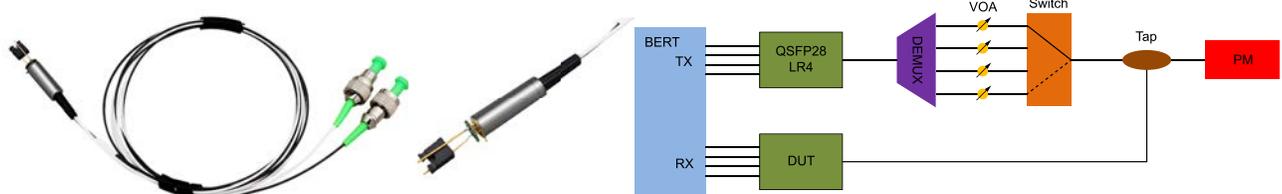
- Power Equalization in Multi-channels
- Optical Amplified Network
- Gain-tilt Control in EDFAs
- Dynamic Gain / Channel Equalizers (DGE/DCE) in WDM Networks
- OADM Power Balance
- Photo Receiver Trimming
- Receiver Protection / Switch during Transmitter Turn-on



\* Custom Hybrid VOAs and Fiber Optic Slip Rings (Rotary Joints) or High-Vacuum Fiber Feedthrough Flanges Available.

**MEMS VOAs**

**SM, MM & PM Handheld**



在线起偏器

**In-Line Polarizers**

**Polarization Measurement and Control**

**Features**

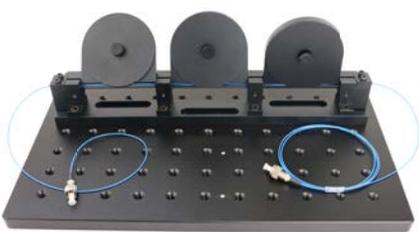
- CWL: 780nm to 1620nm (Specified)
- Optical Power: 0.5~10W
- High PER: 25~35dB
- Low IL: 0.3~0.8dB



**Manual Fiber Polarization Controllers** 手动偏振控制器

\* Controllers Available with Custom Preloaded Fibers & Connectors

**3-Paddle, 56mm Loops**



Preloaded with 780-HP Fiber, FC/PC, 900 $\mu$ m Tight Buffer Jacket



Empty Controller with 56mm Loops for Bend-Sensitive Fibers

**3-Paddle, 27mm Loops**



Preloaded with 780-HP Fiber, FC/PC, 900 $\mu$ m Tight Buffer Jacket



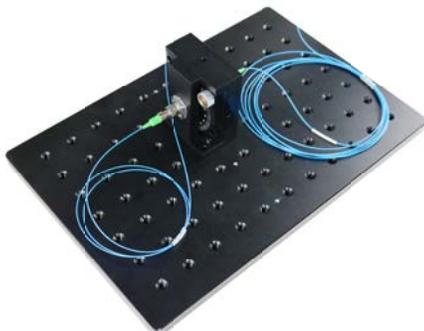
Empty Controller with 27mm Loops

If your application includes single mode fiber and requires linearly polarized light, the polarization controllers can be easily implemented to convert elliptically polarized light in a single mode fiber into another state of polarization (SOP), including linearly polarized light. This polarization conversion is achieved by loading the paddles with a prescribed number of fiber loops and adjusting their positions to control the output polarization state.

Note: The 27mm Controller works well with most of our single mode fibers. For fiber with higher bend loss, we recommend the 56mm Controller, which has larger paddles.

**Mechanical Adjustable Polarizers** 机械式可调光纤起偏器

**Corning Polarcor™-Based**



- 405/850/1310nm, 360° adjustable (X, Y axis)



手动可调光延迟线

Manual Adjustable Optical Delay Lines

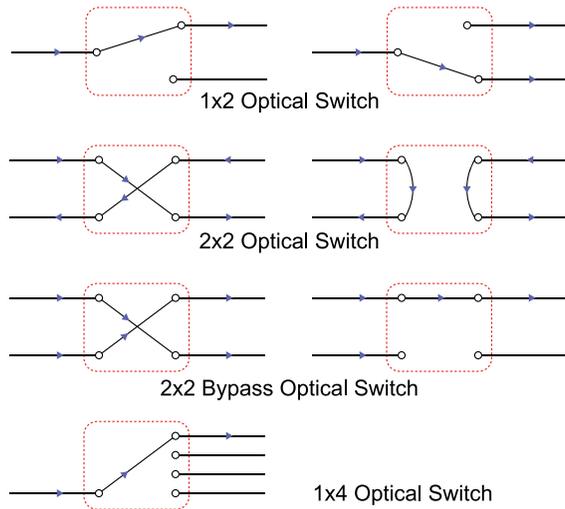
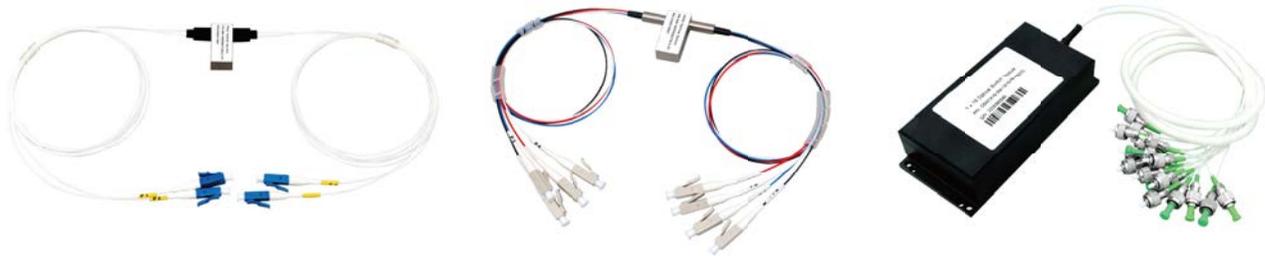
SM & PM

- Wavelength Range: 1260nm to 1650nm
- Optical Delay: 0 to 330ps, 0 to 700ps
- Delay Steps: 0.05ps
- Insertion Loss: 1.0dB (Typical)
- Return Loss: >55dB
- PER: >18dB
- Fiber Type: Corning SMF-28e or PM Panda
- Fiber Length: 1m or Specify
- Connector Type: FC/APC or Specify
- Power Handling: 500mW
- Operating Temperature: 0 to 50 °C
- Storage Temperature: -40 to +65 °C
- Package Size (LxWxH): 167.54x32x35.5mm



Mechanical Optical Switches 机械式光开关

2x2, 4x4 & 1xN



Features

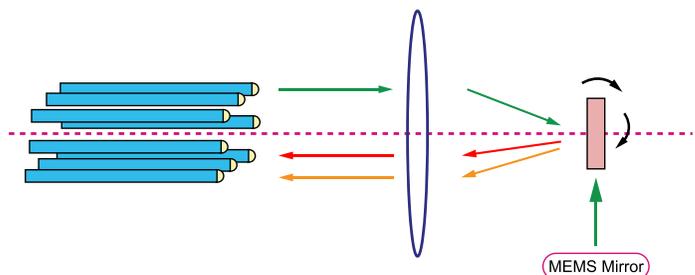
- Low insertion Loss
- High Channel Isolation
- High Stability, High Reliability
- Epoxy-free on Optical Path
- Latching or Non-latching

Applications

- R&D Laboratory
- OADM
- System Monitoring
- Fiber Sensor
- Route Protection

MEMS Optical Switches 480 - 1575 nm 微系统光开关

2x2 & 1xN



Collimators, GRIN Lens, PBS/Cs & Phase Shifters

光纤准直器

**Fiber Collimators**

**Far Field Collimators** (Up to 10W)

**Features**

- CWL: 780nm to 1620nm
- Beam Diameter: Specified
- Beam Roundness: >90%



镀膜-各种增可选

Collimator Surfaces are AR Coated

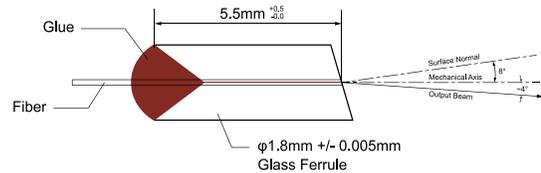
**Pigtailed Ferrules, AR Coated**

光纤头-可定制

The pigtailed glass ferrules feature 1.5 meters of single mode fiber and 0° or 8° angled face, which is AR coated to minimize back reflection (return loss), as well as insertion loss. Pigtailed ferrules are ideal for numerous applications, including the manufacture of optical switches, isolators, circulators, and couplers.

**Features**

- Ferrule Diameter: 1.800 mm ± 5 μm
- Ferrule Length: 5.5 mm +0.5/-0.0 mm
- Wedge Angles: 0.0°, 8.0°
- Wedge Tolerance: ±0.2°
- AR Coating: R < 0.25% @ 630, 830, 1060, 1310, or 1550nm
- Fiber Length: 1.5 m
- Wavelength Range: 450nm to 1550nm
- High Power type Options
- Single or Dual Fiber Pigtail Options
- Slow or Fast Axis Alignment Options



**PM Pigtailed Ferrules**

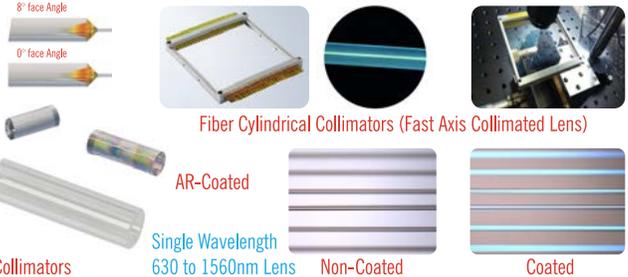
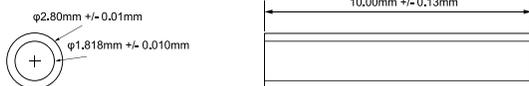
Single Fiber Pigtails

Dual Fiber Pigtails

**GRIN to Ferrule Sleeves**

透镜 & 石英管-可定制

The sleeve allows a GRIN lens to be integrated easily with the pigtailed ferrules. The glass material is transparent in the UV region for curing UV adhesives.



\* Custom Ferrules, Sleeves, GRIN Lenses Available.

Custom Collimators

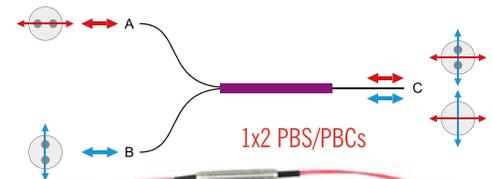
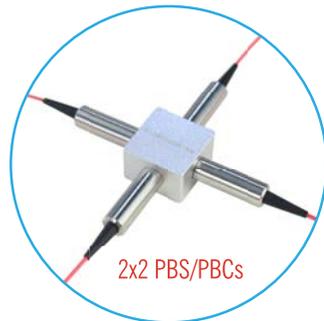
**Polarization Beam Splitter/Combiner**

偏振分(合)束器

**PBS/PBC (1x2/2x2)**

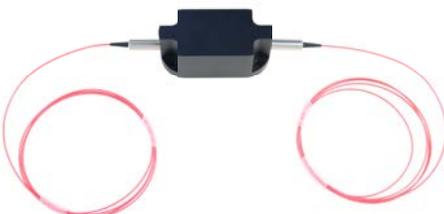
**Features**

- CWL: 780nm to 1570nm (Specified)
- Optical Power: 0.5~10W
- High PER: 25~35dB
- Low IL: 0.3~0.8dB



相移器

**Phase Shifters 1310nm, 1550nm**



**Features**

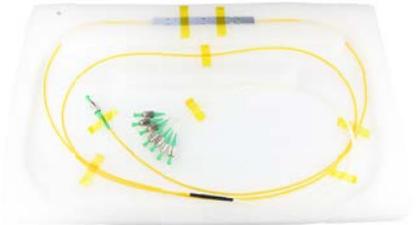
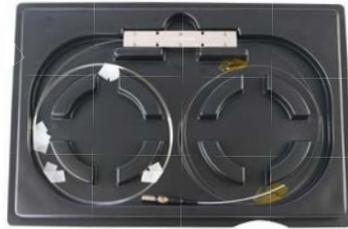
- CWL: 1030nm to 1080nm (1310nm, 1550nm)
- Phase Bias: π, 2/π
- Optical power: 0.3~20W
- Low IL: ≤0.8dB
- Package: 5.5x35mm, 60x28x26mm



合束器

**(N+1)x1 Pump and Signal High Power Combiners**

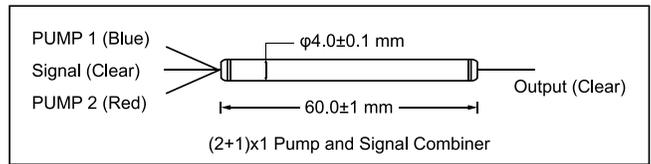
**(1+1)x1, (2+1)x1, (18+1)x1 & (60+1)x1**



300+ Combiner Variants Available

**PM(2+1)x1, PM(6+1)x1 & PM(18+1)x1 保偏合束器**

有效的散热与封装技术-关键技术



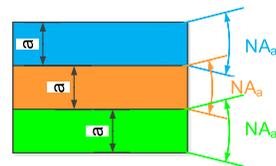
**Features**

- High Power Coupling Efficiency
- Preservation of Mode Content
- Wavelength Insensitive
- Built-in MFA Options
- N=1, 2, 4, 6, 18, 36 to 60
- Optical Power up to 10kW
- Custom Configurations Available

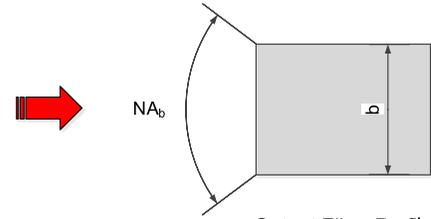
**Applications**

- Fiber Lasers
- Fiber Laser Seed Amplifiers
- Fiber Laser Power Amplifiers
- Industrial, Telecom & Research

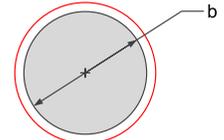
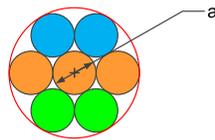
模场和亮度匹配-关键技术



N pcs Input Fiber Bundle Profile



Output Fiber Profile



Signal & Pump Fiber Matching  
对信号/泵浦光纤匹配

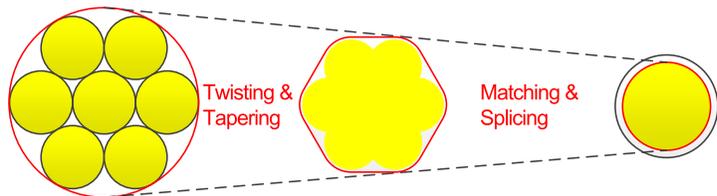
**Nx1 Combiners**

N=2, 3, 4, 7, 19, 37 to 61 Up to 10kW

**2x1, 7x1, 19x1 & 31x1**

**Typical Combiners**

- 2x1: 105/125 0.15NA to 105/125 0.22NA
- 7x1: 105/125 0.15NA to 200/220 0.22NA
- 7x1: 200/220 0.22NA to 20/400 DCF
- 19x1: 105/125 0.15NA to 400/480 0.22/0.46NA
- 19x1: 105/125 0.22NA to 20/400 DCF
- 37x1: 105/125 0.15NA to 20/400 DCF



Input Fiber Bundle

Tapered Fiber Bundle

Output Fiber

Fiber Bundle Processing 光纤束处理-关键技术

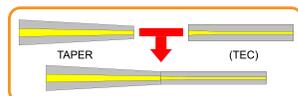
**Active Fiber Combiners**

有源光纤合束器

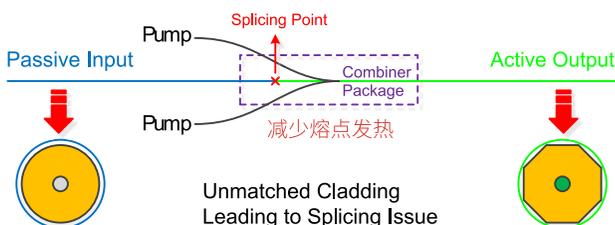
**(1+1)x1 & (2+1)x1**

**Features**

- Minimal Loss on Splicing Point
- High Signal Isolation



光纤束拉锥与熔接-关键技术



Unmatched Cladding Leading to Splicing Issue

**Signal Combiners**

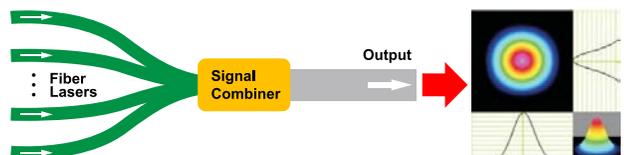
信号合束器

**4x1, (3+1)x1 & 7x1**

输入一般选用DCF光纤，  
输出一般选用纤芯较大的三包层光纤

**Features**

- Combine a few Sources (800~1500W) into One Output (3~10kW)
- Fused Fiber Design for Minimal Loss
- Power Handling up to 10KW 高功率输出可选用QBH水冷型连接器 方便实现高功率输出，合束后光束质量下降较小

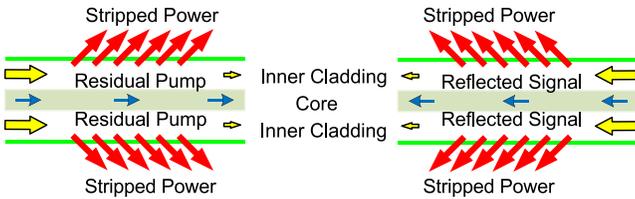


CPS/MFAs, Bandpass Filter/Pump Laser Protectors, and Hybrid Components

包层光剥除器

**Cladding Power Strippers (CPS)** 类似于合束器中包层泵浦光剥除技术

**Power Stripping up to 150W** 剥除包层中残余的泵浦光, 同时极少影响信号光传输



可双向工作  
标准封装可剥除达150W功率  
更高功率的剥除器(如800W)可定制

**Features**

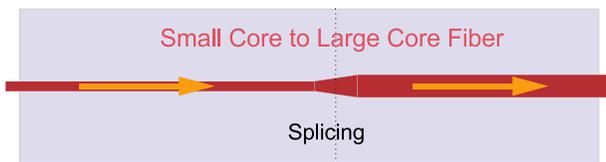
- Wavelength: 1030nm, 1064nm, 1080nm, 1550nm, 2000nm
- Standard Power Stripping: 10W to 150W (150W to 800W Options)
- PM and Non-PM are available
- Fiber can be customized
- Excellent Temperature Stability

**Applications**

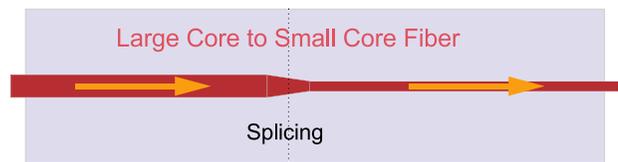
- Fiber Amplifier and Laser Systems
- Cladding-Mode-Free High Power Beam Delivery
- ASE Stripping
- Industrial, Biomedical, Telecom, Metrology
- Life Science, Imaging, Quantum optics

**Mode Field Adaptors (MFA)** 模式匹配器

**Power Handling up to 100W**



Forward MFA



Backward MFA

**Features**

- Wavelength: 1064nm, 1550nm, 2000nm
- Power Handling: 5W to 100W
- Custom Configurations Available

**Applications**

- Fiber Lasers
- Fiber Amplifiers
- Lab & Production Testing

**Bandpass Filters & Pump Laser Protectors**

**up to 30W**

**Features**

- Pass band: 780nm to 1570nm (Specified)
- Stop / Reflection band: Specified
- Optical power: 0.3~10W
- High Isolation: 30~50dB



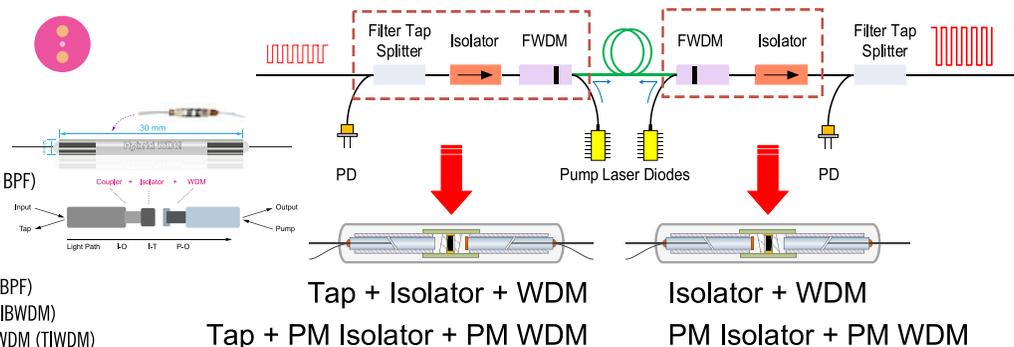
带通滤波器 & 泵浦保护器

**Hybrid Components** 混合功能器件

**for EDFAs & Fiber Lasers**

**Features**

- Isolator + WDM (IWDM)
- Isolator + Bandpass filter (IBPF)
- Isolator + PBS/PBC (IPBS/PIBC)
- Circulator + Bandpass filter (CIR + BPF)
- Isolator + Tap (TIS)
- Circulator + Tap (TCIR)
- Isolator + Tap + WDM (TIWDM)
- Isolator + Tap + Bandpass filter (TIBPF)
- Isolator + Bandpass filter + WDM (IBWDM)
- Isolator + Tap + Bandpass filter + WDM (TIWDM)



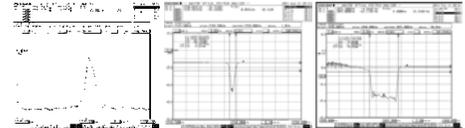
光纤光栅

### Uniform or Chirped FBGs

#### Power Handling up to 10W

##### Features

- Wavelength: 450nm to 2800nm
- Bandwidth: 0.01~4nm (Uniform), 0.5~100nm (Chirped)
- Reflectivity: 1% ~99.9%
- Power Handling: 500mW (Up to 10W w/ Low Index Coating)
- Fiber Type: SMF, PMF, Double Cladding, Active Fiber, ATN Fiber, LMA Fiber
- Package: None, Athermal, Stainless Steel
- Pigtail Type: Bare Fiber, 900 $\mu$ m Tubing, 3.0mm Tubing
- Side Lobe Suppression: 10~35dB
- Custom Fiber Length Available



### High-Power FBGs

Up to 3kW

#### Fiber Laser Mirrors (HR: High Reflector, LR: Low Reflector - OC: Output Coupler)

##### Features

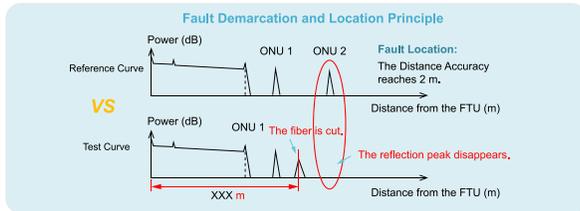
- Wavelength: 900nm to 2400nm (1064/1080nm)
- CWL Mismatch:  $\leq$  0.1nm
- Reflectivity: > 99.9% (HR), 5%~99% (OC)
- Signal Power Handling: 50W~3kW
- Fiber Type: SMF, PMF, DCF, LMA Fiber
- Package: High-Power

### FBG Reflectors 光纤光栅反射器

#### 1650nm OTDR

##### Features

- Fiber Bragg Grating (FBG) Technology
- Low insertion loss and reflectance at traffic wavelength
- High reflective power at testing wavelength
- SC, LC, FC or MU plug/jack, Pigtail types are optional, Easy to install
- Space-saving installation on patch panels and/or equipment interface
- Exceptional reliability and environmental stability
- Compatible with EPON, GEAPON, GPON, 10G-PON, NG-PON2
- Bidirectional type is optional

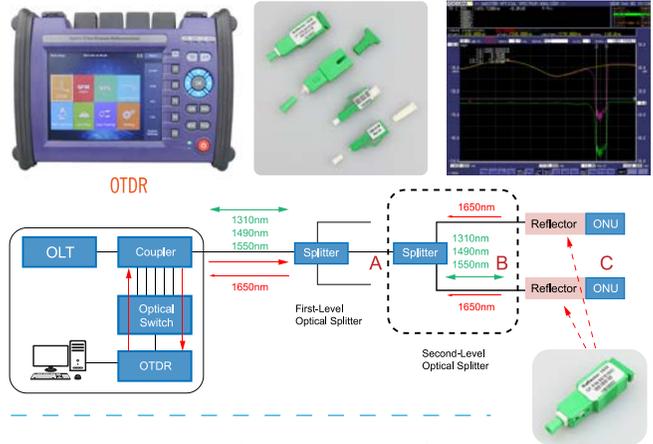


### Narrow Linewidth Passband FBG Filters

#### Wide blocking spectrum band

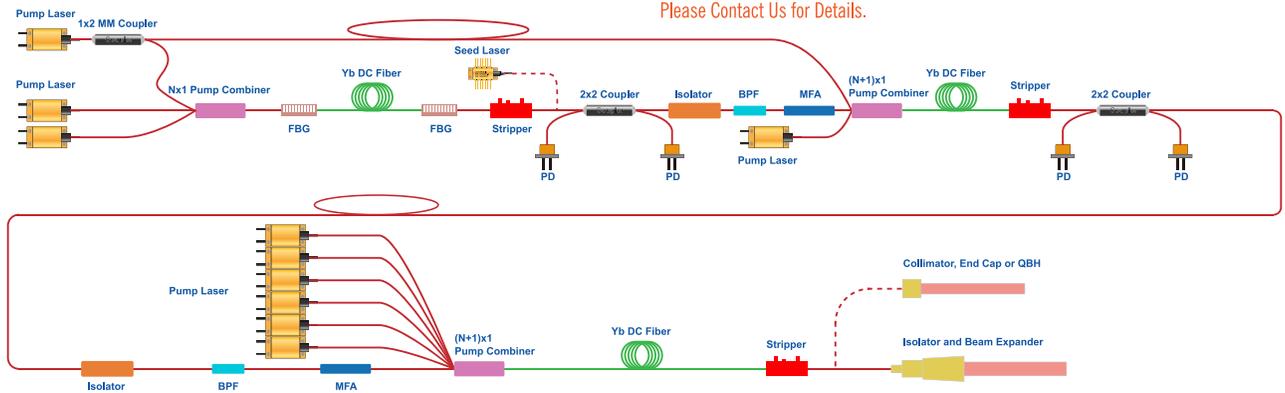
##### Features

- Wavelength: 1030nm, 1060nm, 1310nm, 1550nm, 2000nm
- Operating Mode: CW or Pulse
- Passband (FWHM): > 0.5nm
- Stopband: > 50nm (100nm options)
- Insertion Loss: < 0.6dB
- Isolation: > 20dB



### High-Power Components for Fiber Lasers

\* If you can see some components suitable for your application here, Please Contact Us for Details.



光纤法兰/适配器

**FC/PC to FC/PC Mating Sleeves**

**Panel Mount (D Hole) & Square Flange**

Wide Key: 2.2 mm



Square Flange (M2x5mm Screws)

Panel Mount (D Hole)

**FC/APC to FC/APC Mating Sleeves**

**Panel Mount (D Hole) & Square Flange**

Narrow Key: 2.0 mm



**FC to FC PM Mating Sleeves**

SEIKOH GIKEN Versions

保偏光纤法兰/适配器

日本精工

**Panel Mount (D Hole) & Square Flange**

PM FC Adapter Wide (2.1mm-Slot) Key

PM FC Adapter Narrow (2.0mm) Key



**SMA to SMA Mating Sleeves**

**SMA905 & SMA906**



**FC/PC to SMA Mating Sleeves**

**Panel Mount (D Hole)**



**FC to FC Mating Sleeves**

**Vacuum-Compatible**

真空兼容法兰

Custom High-Vacuum Fiber  
Feedthrough Flanges Available



**Various Mating Sleeves**

转接法兰-多种类型可选

**Universal & Hybrid**



镀膜光纤

**Bare Fiber Coating**

**AR, DR & HR Coating** 增透膜、分光膜和高反膜-可选

- Fiber Type: MM Large Diameter Fiber, SM Fiber, PM Fiber and PCF
- Fiber Tip Stripped Length: 1 to 20mm or Specify
- Fiber Length: 50 to 500cm or Specify
- Coating Parameter: AR Coating ( $R < 0.25\%$  @ 780 to 1000nm), DR Coating ( $R < 1\%$  @ 900 to 980nm &  $R > 99.5\%$  @ 1040 to 1100nm), HR Coating ( $T < 0.2\%$  @ CW=1310/1550nm), or Specify



**Angle-Polished Fiber Coating** 单斜面透镜光纤

**AR, DR & HR Coating**

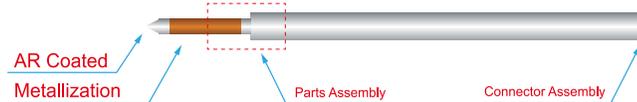
- Fiber Type: MM Large Diameter Fiber, SM Fiber, PM Fiber and PCF
- Fiber Tip Stripped Length: 1 to 20mm or Specify
- Polishing Facet to Fiber Axis:  $15^\circ$  to  $90^\circ$  or ( $30^\circ, 45^\circ, 60^\circ, 82^\circ$ )
- Fiber Length: 50 to 500cm or Specify
- Coating Parameter: AR Coating ( $R < 0.25\%$  @ 780 to 1000nm), or Specify



**Metalized Fiber Coating** 光纤侧面镀金(镍)

**AR, DR & HR Coating**

- Fiber Type: MM Large Diameter Fiber, SM Fiber, PM Fiber and PCF
- Lens Radius:  $7 \pm 1\mu\text{m}$ , or Specify
- Fiber Stripped Length:  $20 \pm 5\text{mm}$
- Taper Angle:  $75 \pm 5^\circ$
- Metallization: Chemical Plating Ni, Au
- Metalized Length: 20mm
  - The First Coating Layer: Nickel (to provide superior adhesion and stable soldering base)
  - The Second Plated Overcoated Layer: Gold (to provide resistance to oxidation)
- Multiple Angle-Polished Fiber Coating Options
- Custom Mid-Span Plating Available
- Coating Parameter: AR Coating ( $R < 0.25\%$  @ 780 to 1000nm), or Specify

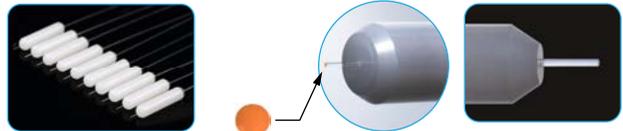


光纤凸出型镀膜尾纤

**Protruding Fiber Pigtaills**

**AR, DR & HR Coating**

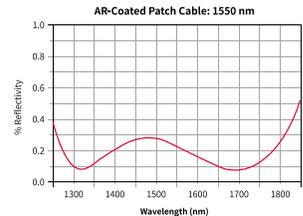
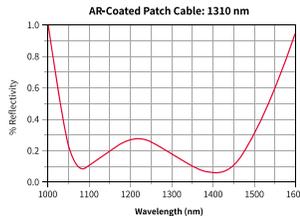
- Fiber Type: MM Large Diameter Fiber, SM Fiber, PM Fiber and PCF
- Fiber Ferrule Type: 2.5mm (SC/FC/ST) & 1.25mm (LC/MU) Standard Ceramic Ferrules or Non-Standard Ferrules
- Assembly Method: Insert Coated Bare Fiber into the Ceramic Ferrule, then keep the Fiber Tip Protruding from the Ferrule End
- Protruding Tip Length: 0.25 to 5mm, or Specify
- Fiber Pigtail Length: 50 to 500cm, or Specify
- Coating Parameter: AR Coating ( $R < 0.25\%$  @ 780 to 1000nm), DR Coating ( $R < 1\%$  @ 900 to 980nm &  $R > 99.5\%$  @ 1040 to 1100nm), or Specify



**Multiple Angle-Polished Fiber Coating**

**AR, DR & HR Coating** 多斜面透镜光纤

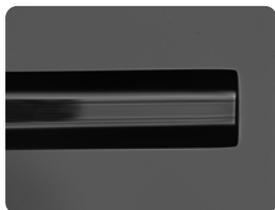
- Pinnacle Tip
  - Conical Angle:  $60^\circ$  to  $120^\circ$
  - Output Dough Nut Far Field
- Spherical Tip
  - Len Radius:  $8\mu\text{m} \leq R \leq 12\mu\text{m}$
  - Conical Angle:  $60^\circ$  to  $120^\circ$
  - Output Gauss Far Field
- Biconical Tip
  - Tapper Angle:  $60^\circ$  to  $120^\circ$
  - Output Ellipse Far Field
- Rectangular Tip
  - Tapper Angle:  $60^\circ$  to  $120^\circ$
  - Output Rectangular Far Field
- Wedge Spherical Tip
  - 8 Angle Cleaving
  - Len Radius:  $8\mu\text{m} \leq R \leq 12\mu\text{m}$
  - Conical Angle:  $60^\circ$  to  $120^\circ$
  - Output Gauss Far Field



**Photonic Crystal Fiber Processing** **PCF Fiber End-Sealing and Connectorization** Splicing and Interfacing Available

Long-term use of solid core fibers is often limited by end face damage due to the high intensity in the fiber core. This is especially the case when small-core, nonlinear fiber are pumped by high-peak-power femtosecond pulses.

We have developed an elegant fiber end treatment to increase the fiber end damage threshold and generally ease the coupling into the fiber. By collapsing/tapering the fiber end, we obtain the advantageous features listed below.



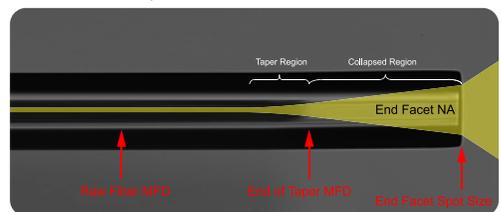
Photograph of Collapsed Fiber End

**Features** 光子晶体光纤处理

- Hermetically Sealed Fiber
- Very High Fiber End Damage Threshold due to Beam Expansion Such that the Spot Size at the End Face is 10X the Internal MFD
- Higher Coupling Efficiency and Stability due to Reduced NA and Increased MFD
- Can be Connectorized and Polished (FC/SC/LC/ST with Polished UPC or APC End face, SMA905 for High Power)



Example of Nonlinear Fiber End Treatment



\* The end of Photonic Crystal Fiber is heat treated to collapse the airholes.

光纤成端及连接器维修工具套装  
**Fiber Optic Termination and Repair Kits**  
for FC, SC, LC, ST and SMA Connectors

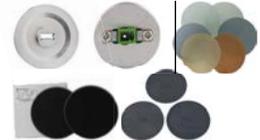
工具包-可选

产品内容、规格型号和海绵格的空间放置顺序  
均可以根据需要订制



**Contents**

- 24 Port Connector Oven, 220v or 110v
- (3) Syringes
- Universal 1.25mm & 2.5mm Polish Pucks/Discs
- Universal Microscope (200x or 400x) w/ 1.25mm & 2.5mm Adapters
- Low Lint Tissues
- (3) 353ND Epoxy
- (5) 0.3 $\mu$ m Polish Film Sheet
- (5) 1 $\mu$ m Polish Film Sheet
- (5) 9 $\mu$ m Polish Film Sheet
- Rubber Polish Pad



\* Custom Configurations (Polishing Discs, Polishing/Lapping Films, Glass/Rubber Pads, etc) Available



- 250ml Alcohol dispensing bottle with locked
- Safety Glasses
- Refillable Cassette Cleaner
- Splice Protector Sleeves
- PVC Electrical Tape
- Foam Swabs



- Fiber Stripper
- Connector Crimp Tool
- Round Cable Slitter
- Kevlar Scissors
- Tweezers
- Utility Knife
- Buffer Tube Stripper
- Tri-Hole Fiber Stripper
- Screwdriver
- Black Marker
- Fiber Optic Scribe

**Fiber Cleaning Kits** 光纤清洁工具套装  
for FC, SC, LC, ST, MPO/MTP and SMA Connectors

**Contents**

- Video Fiber Inspection Probe w/Hand-held Display
- LC/MU 1.25mm Pen One-Push Cleaner
- 2.5mm/ SC/FC/ST One-Click Cleaner
- Canned Air - Filtered (120ml/4.2oz)
- MTP/MPO One-Click Cleaner
- 1.25mm Fiber Optic Cleaning Swabs
- 2.5mm Precision Fiber Optic Swabs
- Fiber Cleanwipes Platform
- Optical Fiber Connector Cleaner



**Selected Fiber Cleaners**

**NTT-AT ATC series** 光纤清洁器



E1, E2 & E3, EZ Mini Series & Sticks Available →  
**MPO/MTP One-Click Cleaners**

Base-8 & Base-12 Series



Replacement Tape (ATC-RS-01)



**Features**

- High efficiency, simple operation
- Achieve high quality cleaning effect
- Simple operation, safe use
- Anti-static material
- 400 times Cleaning
- 6 reels per set for replacement tape
- Size: W120xH80xD37mm

**Specifications**

- OPTIPOP R1 (ATC-RE-01): Single Slot Window for SC, MU, LC, SC2, FC, MT, ST, SMA, MPO
- OPTIPOP R2 (ATC-RE-02): Double Slot Window for SC, MU, SC2, LC, FC, ST, SMA
- OPTIPOP R3 (ATC-RE-03): Single Slot Window for MT with Pins (Male), MPO with Pins (Male)
- OPTIPOP R4 (ATC-RE-04): Single Slot Window for MT-RJ with Pins (Male)

**Specifications**

- NEOCLEAN-M (ATC-NE-M1): for 2~8-Core, 12-Core, 24-Core ( $\phi$  0.7mm 4.6mm Pin-Spacing), MPO/MTP Connectors, Male or Female, PC or APC
- NEOCLEAN-M2 (ATC-NE-M2): for 16-Core, 32-Core ( $\phi$ 0.55mm 5.3mm Pin-Spacing), MPO/MTP Connectors, Male or Female, PC or APC
- 600 times Cleaning
- Size: L197xW15xH51mm



Full-Performance Testing

\* 品质保证 \*



Temperature Circulation Test & Humidity Chamber



PCT-Pressure Cooker Test Chamber



Industrial Oven



Tensile Testing Machine



Constant Temperature & Humidity Chamber



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