



Specialty Optical Assemblies and Modules



Yangtze Optical Fibre and Cable Joint Stock Limited Company (also known as 'YOFC') was established in Wuhan, Hubei Province in May 1988. It's an innovative technology-driven enterprise specialized in manufacturing optical fibre preforms, optical fibres, optical fibre cables and providing integrated solution services.

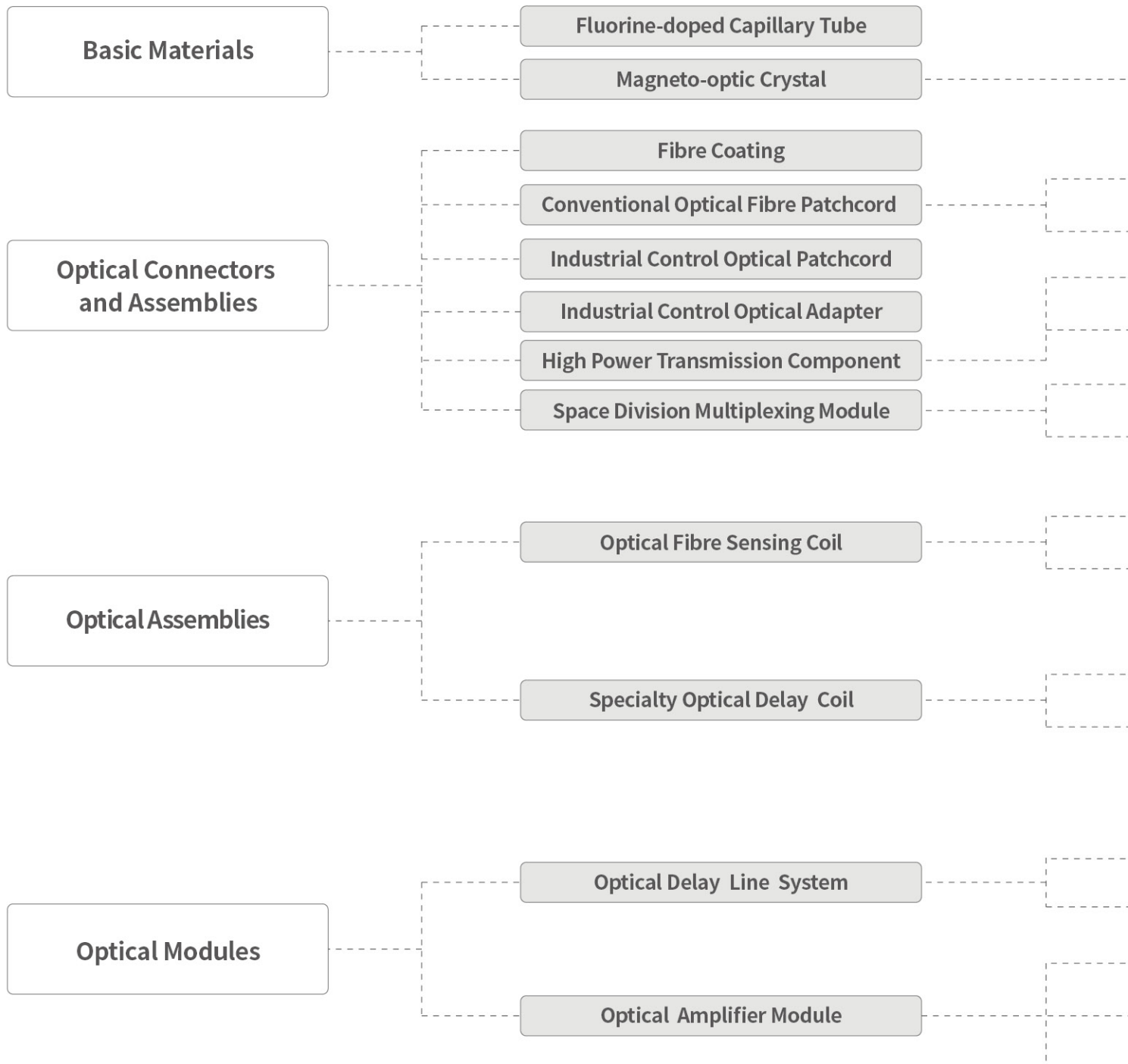
YOFC was listed on the Main Board of Hong Kong Stock Exchange on December 10, 2014 (Stock Code: 06869.HK), and listed on the Main Board of Shanghai Stock Exchange on July 20, 2018 (Stock Code: 601869.SH), which made YOFC the only A&H shares dual-listed company in China's optical fibre and cable industry and the first one in Hubei Province.

YOFC mainly produces and sells different types of optical fibre preforms, optical fibres and optical fibre cables that are widely applied in telecommunications industry, customized optical modules, specialty optical fibres, active optical cables, submarine cables, RF coaxial cables and accessories, etc. YOFC is also equipped with some solutions and services such as system integration and communication engineering design. Providing a variety of different products and solutions for world's telecommunications industry and other industries (e.g. Public utility, Transportation, Oil & Chemistry, Medication etc.), YOFC has offered its products and services to over 70 countries and regions around the world.

It has made the great strides from the initial technology cooperation to the current self-innovation since its inception to contribute to revitalizing national industry. YOFC masters 3 major preform manufacturing techniques: PCVD/OVD/VAD, and has been honored with many awards & reputations such as National Enterprise Technical Center, National First Batch Smart Manufacturing Pilot Enterprise, Industrial Internet Platform Integrated Innovative Application Pilot Demonstration Project, the Second Class National Science and Technology Progress Award (3 times), the China Quality Award, the European Quality Award, etc. In addition, YOFC has obtained over 600 national-granted patents and several foreign invention patents from Europe, US and Japan, and boasted State Key Laboratory of Optical Fibre and Cable Manufacture Technology. It's also one of the members in ITU-T and IEC in setting international standards.

Guided by the mission of 'Smart Link Better Life', YOFC devotes itself to becoming the leader in information transmission and smart link with its core values 'Client Focus Accountability Innovation Stakeholder Benefits' in the center of everything it does. YOFC builds its strategies in the following 5 aspects: Organic growth of the preform, optical fibre and cable business, technological innovation and smart manufacturing, internationalization, relevant diversification and capital optimization.

Specialty Optical Assemblies and Modules



Terbium Gallium Garnet Crystal (TGG)

Communication Fibre Patchcord

Polarization-maintaining Fibre Patchcord

Fibre Bundles Patchcord

High Power Transmission Fibre Patchcord

Multi-core Fibre Fan-in & Fan-out Module

Photonic Lantern

Polarization-maintaining Fibre Coil

FOCT Sensing Coil

Optical Fibre Delay Coil

Delay Coil for Current Transformer

Radiation-resistant Optical Fibre Delay Lines

Modular RF Optical Delay Line System

Polarization Maintaining EDFA Module

Mobile EYDFA Module

Semiconductor Optical Amplifier Module



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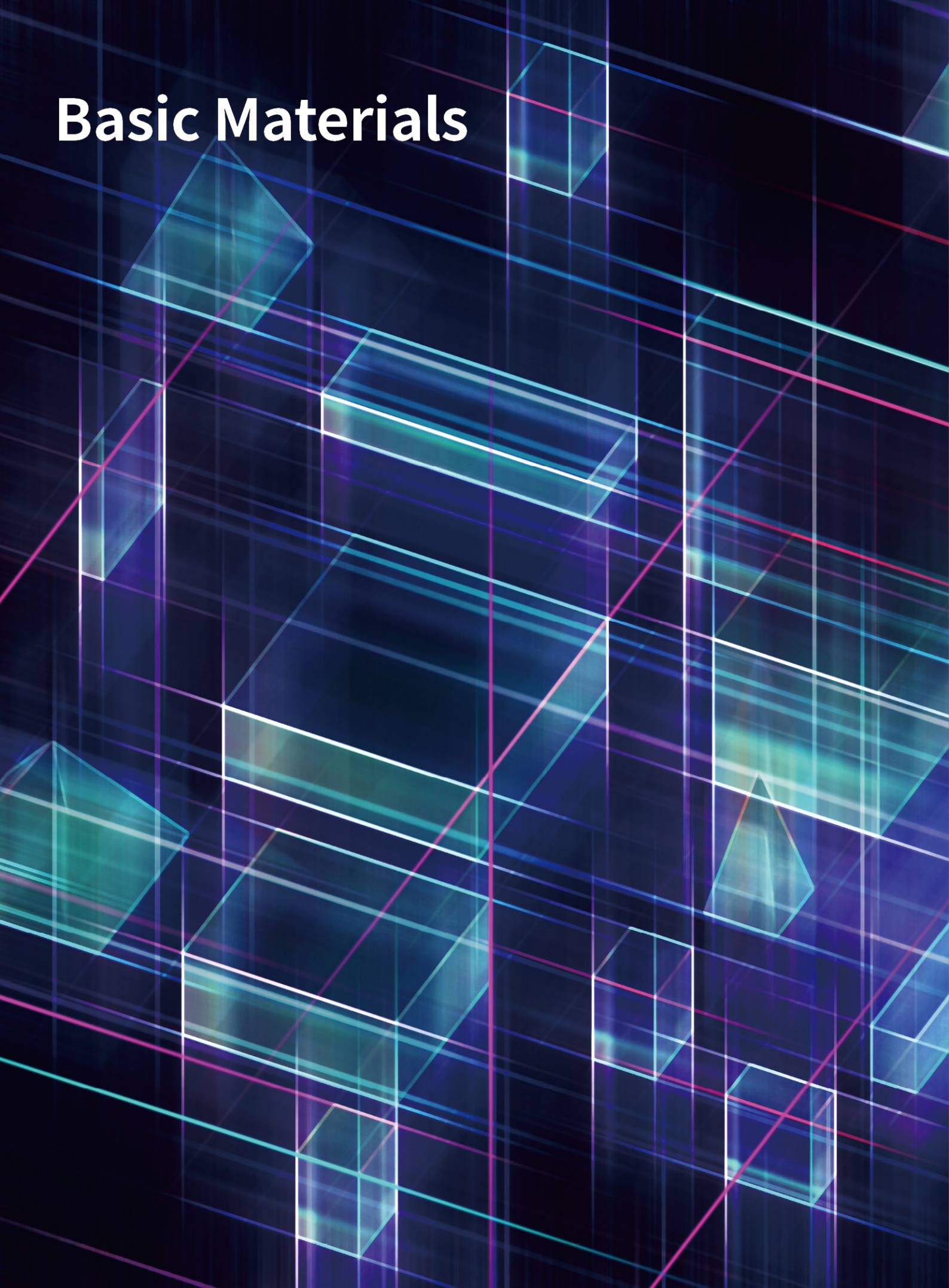
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Basic Materials



Fluorine-doped Capillary Tube

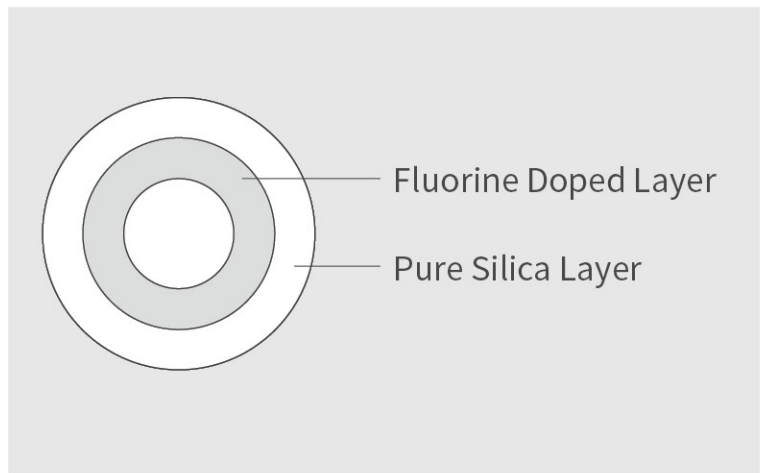
YOFCA can provide multi-layer fluorine-doped capillary tube with low internal refractive index and high external refractive index based on PCVD process and equipment, which is suitable for high-power beam combiner and photon lantern, and meets various application requirements.

Characteristics

- Good optical performance
- Good dimensional uniformity
- Good temperature resistance

Applications

- High-power beam combiner
- Photonic lantern



Specifications

Product Type	DFT0.75/0.4-150-0.22	DFT1.5/0.8-150-0.22	DFT1.1/0.85-150-0.22
*Length (mm)	150 ± 0.1		150 ± 0.3
Typical Value of NA	0.22		
Material	F-doped SiO ₂		
Outside Diameter (mm)	0.75 ± 0.05	1.5 ± 0.05	1.1 ± 0.05
Internal Diameter (mm)	0.4 ± 0.05	0.8 ± 0.05	0.85 ± 0.05
Ratio of Outer Diameter to Inner Diameter of Fluorine-doped Layer	>1.1		

*The length can be customized within 150 mm

Magneto-optic Crystal

Terbium Gallium Garnet Crystal (TGG)

YOFC TGG crystal is manufactured by advanced crystal pulling (CZ) technology, with series of superior characteristics such as high magneto-optical merit value, low light absorption, good thermal conductivity, and high laser damage threshold. It is the best magneto-optical material used for Faraday rotators and isolators. The suitable wavelength is 400nm~1100 nm (not including 470nm~500 nm). The size of TGG product can be customized according to customer's special needs.

Characteristics

- High Verdet constant
- High laser damage threshold
- High extinction ratio

Applications

- Isolator
- Faraday rotator



Specifications

Product Type	TGG $\Phi 5 \times 15$, TGG $3.5 \times 8 \times 5$		
Basic Performance		Optical Performance	
Chemical Formula	$Tb_3Ga_5O_{12}$	Refractive Index	1.954@1064 nm
Structure	Cubic Garnet	Laser Damage Threshold (W/cm ²)	>1G
Lattice Constant (Å)	a = 12.355	Verdet Constant (Rad/T·m)	35@1064 nm
Orientation	<111>	Extinction Ratio (dB)	≥ 35
Density (g/cm ³)	7.13	Optical Losses(%/cm)	<0.1
Moh's Hardness	8.0	Antireflection Coating(%@1064 ± 30 nm)	AR:R<0.2
Processing Quality			
Directional (')	± 15	Diameter (mm)	+ 0.00/- 0.05
Length (mm)	± 0.1	Cleanliness	10/5
Flatness	< λ / 8@633 nm	Parallelism (")	<30
Verticality (')	<10	Chipping (mm)	<0.1

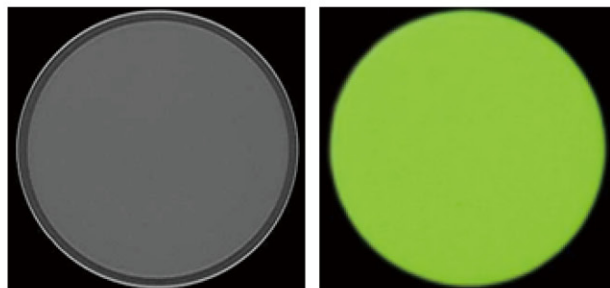
Optical Connectors and Assemblies

Fibre Coating

YOFC fibre coating is based on the large-core power delivery fibre manufactured with PCVD process. By using special precision polishing process, efficient cleaning and professional coating technology, the characteristics of high-efficiency coupling and high-power transmission are achieved. With high cleanliness of the fibre end face and high coating reliability, it is suitable for industrial laser pump source, medical cosmetology, military laser radar, optical fibre sensor, and so on.

Characteristics

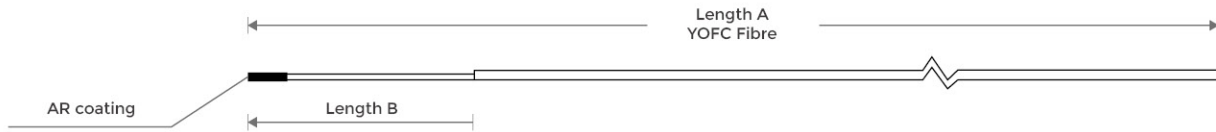
- Polishing: Special polishing technology, without scratches and chipping on the fibre core and cladding
- Cleaning: High-efficiency cleaning technology, eliminating liquid residues and reducing contamination on end surface
- Coating: Professional coating design to reduce reflection and improve light transmission efficiency



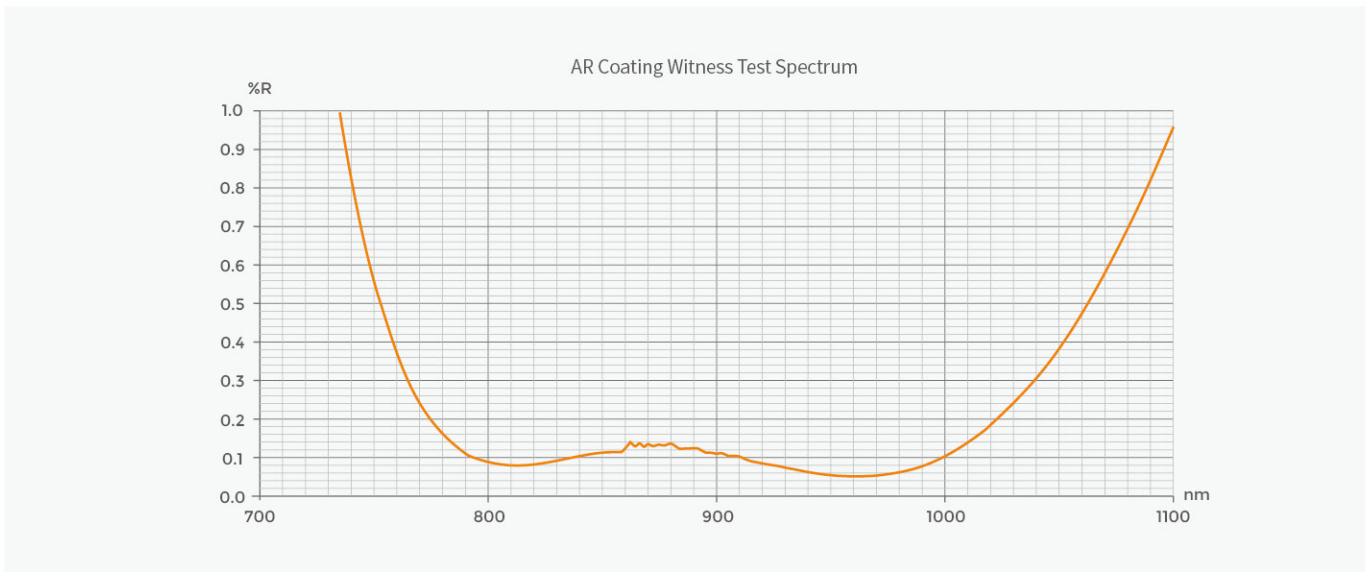
Applications

- Pigtail output of laser pump source
- Flexible transmission of industrial laser
- Medical laser equipment coupling transmission
- Laser radar transmission
- Optical fibre sensor

Specifications



Performance parameters	Specifications
Fibre Model	YOFC SI105/125, SI135/155, SI200/220, SI220/242, etc. Customer Specified
Length of the fibre (A)	355±5mm; 200±10cm; 235±10cm; 320±10cm, etc. Customize
Fibre tip Stripped length (B)	6±0.5mm; 14±0.5mm, etc. Customize
Coating parameters	AR Coating, R<0.5%@780-1000nm; Customer Specified



Conventional Optical Fibre Patchcord

Communication Fibre Patchcord

Optical fibre patchcord can connect the two ends of the optical fibre to achieve flexible optical path communication. It's mainly used to connect optical transceivers. YOFC can provide a full series of optical fibre patchcord for communication, which can be customized to fulfill widespread use in fibre communication system, fibre access network, local area network and so on.

Characteristics

- Low insertion loss and high return loss
- High reliability, high stability
- High repeatability and good interchangeability
- Three types of fibre end face: PC, UPC, APC
- Various connector forms
- Full series of communication fibres are available for selection
- Cable diameter: $\phi 0.9\text{mm}$, $\phi 2.0\text{ mm}$, and $\phi 3.0\text{mm}$ are optional and can be externally armored
- The length of optical cable can be customized according to customer's requirements

Applications

- Local network, wide area network, cable TV
- FTTx
- DWDM system
- Test equipment and active device terminal

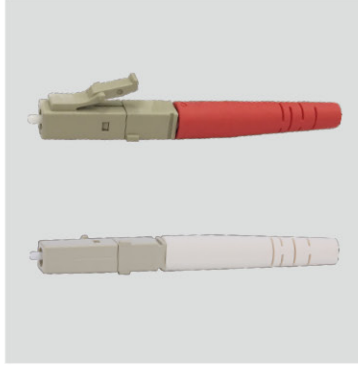
Specifications

Connector Type	FC/PC, FC/APC, LC/PC, LC/APC, SC/PC, SC/APC, ST/PC, SMA905, MT-RJ, MPO/MTP, E2000
Fiber Type	Singlemode (G.652, G.654, G.655, G.657, etc.) Multimode (50/125, 62.5/125, OM2/OM3/OM4/OM5, etc.) Special Wavelength Fibre, Coupling Fibre
Protective Layer	$\phi 0.9\text{mm}$, $\phi 2.0\text{mm}$, $\phi 3.0\text{mm}$ Loose Flange, $\phi 0.9\text{mm}$ Tight Tube, etc.
Sheath	PVC, LSZH, ETFE, TPU

FC



LC



Polarization-maintaining Fibre Patchcord

YOFC polarization maintaining fibre patchcord adopts the excellent self-produced polarization maintaining fibre . Relying on the mature production platform of the fibre patchcord, the grinding performance and optical axis control can be ensured, leading to high polarization extinction ratio and low insertion loss.

Applications

- Fibre laser
- Fibre amplifiers
- Testing instrument
- Fibre optic gyroscope

Characteristics

- High polarization extinction ratio
- Low insertion loss
- Small axis angle
- Good compatibility with standard connectors
- Optional FC/APC high return loss connector
- Axis angle can be customized according to customer requirements: fast axis, slow axis, adjustable, others can be customized according to requirements
- 850nm, 980nm, 1310nm, 1550nm and other types of polarization-maintaining fibres are optional

Polarization Axis

Name	Adjustable F (Free)	Fast Axis Alignment X	Slow Axis Alignment Y(Slow)	Customer Specified Angle O(Other)
End Face Diagram				
Description	The positioning key on the connector is not fixedly assembled, so it can rotate freely when it matches the equipment. It is especially suitable for laboratory or scientific research applications.	The connecting line formed by the centers of the two stress regions and the fiber core is perpendicular to the center line of the positioning key.	The connecting line formed by the centers of the two stress regions and the fiber core is parallel to the center line of the positioning key. The polarization direction of most polarized light source devices is also along this direction.	The angle between the connecting line formed by the center of the stress zone and the center of the fiber core and the center line of the positioning key is specified by the customer.

Specifications

Connector Type		FC/PC, FC/APC, LC/PC, LC/APC, SC/PC, SC/APC		
Fiber Parameters	Operating Wavelength (nm)	980	1310	1550
	Cladding Diameter (μm)	125.0±1.0	80.0±1.0, 125.0±1.0	80.0±1.0, 125.0±1.0
	Mode Field Diameter (μm)	6.5±1.0	6.0±1.0, 9.0±1.0	6.5±1.0, 10.5±1.0
Extinction Ratio (dB)		-20 to -30 (1m)		
Insert Loss (dB)		≤0.3 - 1.5 (Determined by cladding diameter and MFD)		
Axis Deviation (°)		±3		
Application Environment (°C)		-10 to +70		
Optical Cable (mm)		φ0.9, φ2.0, φ3.0 Loose Tube, φ0.9 Tight Tube, Armored		

Industrial Control Optical Patchcord

YOFC can provide a series of industrial control fibre connectors, which are suitable for detachable connection between various industrial control fibres and optical fibres. The output optical energy can be coupled into the receiving fibre to the maximum extent to meet various application requirements.

Characteristics

- Good optical performance and low insertion loss
- Good interchangeability and repeatability
- Wide temperature range
- Frequent plugging and unplugging

Applications

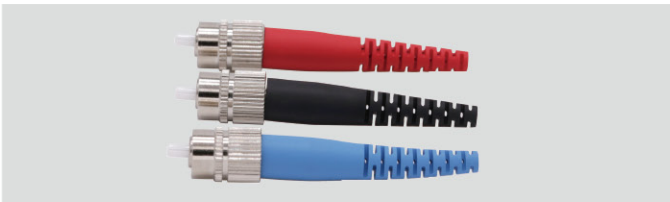
- Optical fibre communication equipment, instruments, etc
- Cable TV network
- Local area network, wide area network

ST Connector



Model	ST/PC
Optical Cladding Diameter (μm)	125, 126, 230, etc
Cable Diameter (mm)	0.9, 2.0, 3.0
Assembly Mode	Crimping/Bonding/Grinding
Ferrule	Ceramics
Parts	Including crimping ring, tail pipe and dust cap
Installation Mode	Insert push and twist

FC Connector



Model	FC/PC, FC/APC		
Optical Cladding Diameter (μm)	125, 126, 230, etc	125, 126, 230, etc	125, 126, 230, etc
Cable Diameter (mm)	0.9, 2.0, 3.0	0.9, 2.0, 3.0	0.9, 2.0, 3.0
Assembly Mode	Crimping/Bonding/Grinding	Crimping/Bonding/Grinding	Crimping/Bonding/Grinding
Ferrule	Ceramics	Ceramics	Ceramics
Parts	Including crimping ring, tail pipe and dust cap	Including crimping ring, tail pipe and dust cap	Including crimping ring, tail pipe and dust cap
Installation Mode	Thread Rotation	Thread Rotation	Thread Rotation

SC Connector



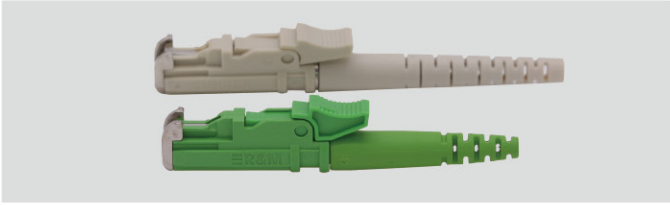
Model	SC/PC	SC/APC
Optical Cladding Diameter (μm)	125, 126, 230, etc	125, 126, 230, etc
Cable Diameter (mm)	0.9, 2.0, 3.0	0.9, 2.0, 3.0
Assembly Mode	Crimping/Bonding/Grinding	Crimping/Bonding/Grinding
Ferrule	Ceramics	Ceramics
Parts	Including crimping ring, tail pipe and dust cap	Including crimping ring, tail pipe and dust cap
Installation Mode	Push and Pull	Push and Pull

LC Connector



Model	LC/PC	LC/APC
Optical Cladding Diameter (μm)	125, 126, 230, etc	125, 126, 230, etc
Cable Diameter (mm)	0.9, 2.0, 3.0	0.9, 2.0, 3.0
Assembly Mode	Crimping/Bonding/Grinding	Crimping/Bonding/Grinding
Ferrule	Ceramics	Ceramics
Parts	Including crimping ring, tail pipe and dust cap	Including crimping ring, tail pipe and dust cap
Installation Mode	Push and Pull	Push and Pull

E2000 Connector



V-PIN



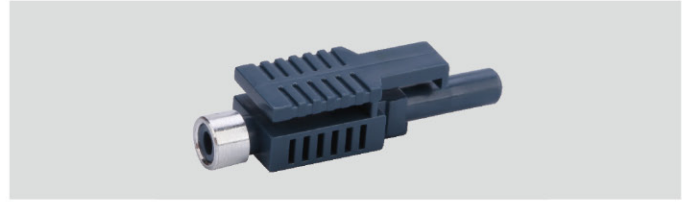
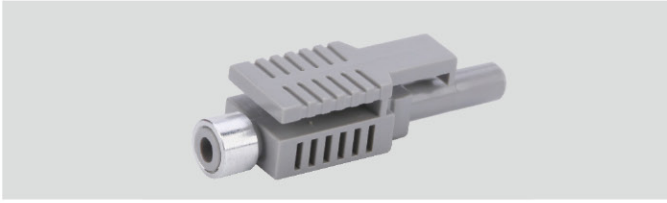
Model	E2000/PC,E2000/APC	V-PIN
Optical Cladding Diameter (μm)	125, 126	230
Cable Diameter (mm)	0.9, 2.0, 3.0	7.5
Assembly Mode	Crimping/Bonding	Crimping/Bonding
Ferrule	Ceramics	Plastic
Parts	Tail Pipe	Full Metal Jacket
Installation Mode	Push and Pull	Push and Pull

HFBR Series



Model	HFBR4521Z	HFBR4531Z
Optical Cladding Diameter (μm)	230	1000
Cable Diameter (mm)	2.2	2.2
Assembly Mode	Crimping/Bonding	Crimping/Bonding
Ferrule	Plastic	Plastic
Parts	Including Crimp Ring, Tailpipe and Dust Cap	Including tailpipe and dust cap
Installation Mode	Push and Pull	Push and Pull

HFBR Series



Model	HFBR4503Z	HFBR4513Z
Optical Cladding Diameter (μm)	1000	1000
Cable Diameter (mm)	2.2	2.2
Assembly Mode	Crimping/Bonding	Crimping/Bonding
Ferrule	Plastic	Plastic
Parts	Including crimp ring, tailpipe and dust cap	Including crimp ring, tailpipe and dust cap
Installation Mode	Push and Pull	Push and Pull

mini-ST Connector

ABB-230

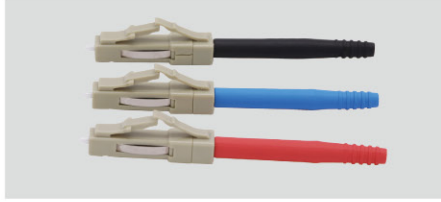


Model	mini ST-230	ABB-230
Optical Cladding Diameter (μm)	230	126, 230
Cable Diameter (mm)	2.2	2.2
Assembly Mode	Crimping/Bonding	Bonding
Ferrule	SUS303	SUS303
Installation Mode	Push and Pull	Push and Pull

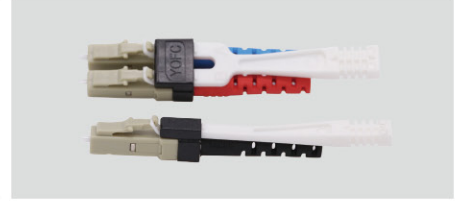
OP200 Connector



mini LC-230-NR mini LC-126-NR



mini LC-230-PR mini LC-126-PR



Model	OP200-230	mini LC
Core/Cladding Diameter (μm)	230	126, 230
Cable Diameter (mm)	2.2	1.8, 2.2, 3.0
Assembly Mode	Bonding	Crimping/Bonding/Grinding
Ferrule	SUS303	Ceramics
Parts	Including Tail Pipe	Tailpipe, dust cap
Installation Mode	Push and Pull, Self-locking	Push and Pull

Industrial Control Optical Adapter

YOFC can provide a full series of industrial control optical adapters. Fibre optic connectors of different interface types can be plugged into both ends of fibre optic adapter to realize the conversion between different interfaces such as FC, SC, ST, LC, E2000, etc. With superior performance, stability and reliability, it can meet various application requirements.

Characteristics

- Low insertion loss
- Good interchangeability
- Good repeatability

Applications

- Optical distribution frame (ODF)
- Optical communication equipment, instruments, etc
- Cable TV network
- Local area network, wide area network

FC-SC Adapter



Ceramic sleeve embedded in metal shell

LC Duplex Adapter



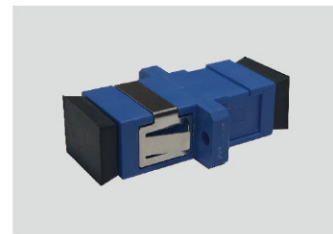
Ceramic sleeve embedded in plastic casing

ST-LC Adapter



Ceramic sleeve embedded in plastic and metal shell

SC-SC Adapter



Ceramic sleeve embedded in plastic casing

FC Adapter



Ceramic sleeve embedded in metal shell

ST Adapter



Ceramic sleeve embedded in metal shell

SMA Adapter



Metal shell

HFBR Adapter



Plastic shell



High Power Transmission Component

Fibre Bundles Patchcord

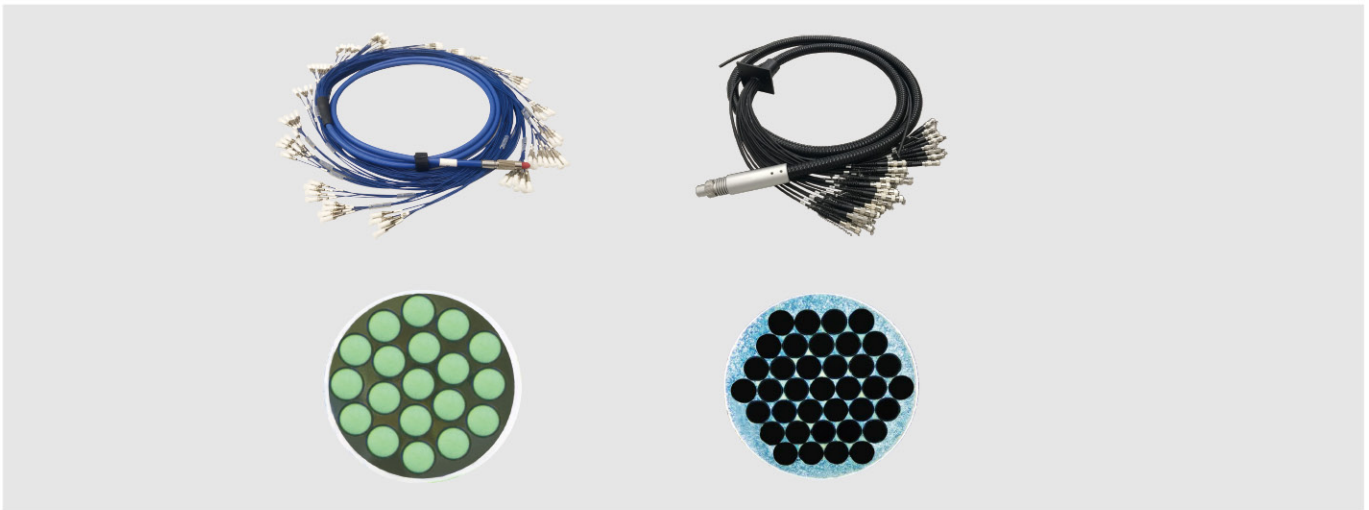
Fibre bundles patchcord is fabricated with specially designed optical fibres in visible band. With high geometric accuracy, low loss and high reliability, it's suitable for medical, premium laser projection and ultraviolet printing. The high quality laser transmission can be realized by precise design of the patchcord as well as excellent energy delivery fibre from YOFC. In order to meet customer's expectation, we optimize the product from many aspects such as fibre diameter, numerical aperture, core-cladding structure, optical transmission efficiency, connector packaging, optical fibre end polishing and so on. The design of fibre bundles patchcord is flexible: the branch can be SMA905 or SC ferrule, and the combiner end can be FC or SMA905 ferrule, or customized.

Characteristics

- Multiple cores in one, 2~200cores
- Splitter connector type: SMA905 or SC ferrule
- Customized combiner connector

Applications

- Laser projection
- Laser printing
- Laser lighting
- Spectroscopy
- Photolithography
- Fluorescence excitation
- Photodynamic therapy



Specifications

Product Type	FB-UV-Nx1		FB-VS-Nx1			
Fibre Type	UV Fibre		Step Index Fibre			
Wavelength (nm)	300 ~ 1200		450 ~ 2200			
Core Diameter (μm)	105.0±3.0	200.0±3.0	200.0±5.0	400.0±8.0	600.0±10.0	800.0±10.0
Cladding Diameter (μm)	124.7±1.0	220.0±5.0	220.0±5.0	420.0±8.0	660.0±10.0	840.0±10.0
Coating Diameter (μm)	242.0±5.0	500.0±25.0	500.0±20.0	730.0±30.0	960.0±30.0	1100.0±50.0
Numerical Aperture	0.22±0.02					
Proof Test Level (Kpsi)	100					
Transmission Efficiency (%)	>95@405nm, 3.5m		>95@450nm, 4m			
Temperature Resistance at The Combiner End (°C)	>200		>1000			

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This datasheet can only be a reference, but not a supplement to the contract. Please contact our sales people for more detailed information

High Power Transmission Fibre Patchcord

YOFC high power transmission fibre patchcord is manufactured with special cladding and large-core power delivery fibre. By optimizing the diameter of fibre core and cladding, combining with the connection process of connector and energy transmission cable, as well as precision polishing process of optical fibre end face, the characteristics of high-efficiency coupling and high power transmission are achieved.

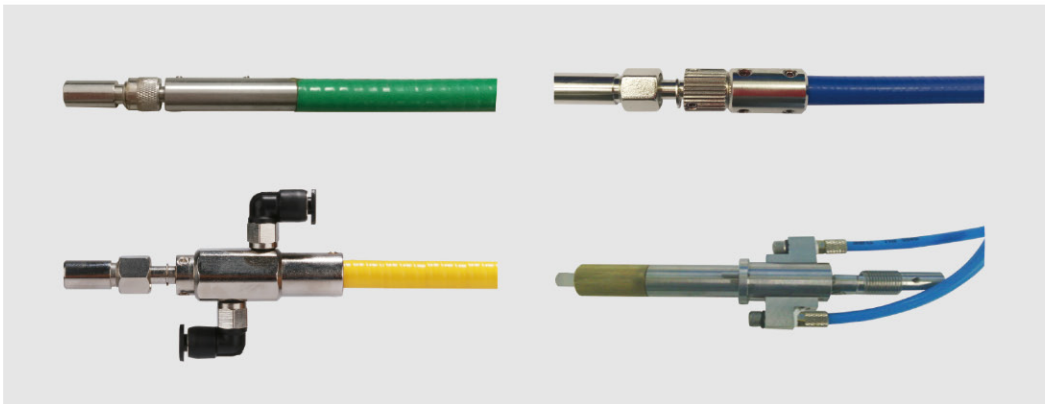
Based on standard applications of various industry, YOFC can provide high power components which have high concentricity, high-quality stainless steel hose protective layer and excellent characteristics of YLD80/SMA905 connector. And the product can support different power levels and has stable transmission efficiency. To satisfy customer demand to the most extent, a series of fibres can be customized with different fibre designs.

Characteristics

- Clamping in the center of fibre, good concentricity
- Excellent soft stainless steel tube for protection
- High core NA 0.22
- High laser damage threshold
- Stable and higher than 90% transmission efficiency @ 1064 nm
- Excellent large core power delivery fibre SI200/SI400/SI600 for selection
- Adhesive-free product available for option
- D80/SMA905 connector for option
- Water-cooling for option

Applications

- High power transmission
- Laser precision machining
- Atmospheric spectral measurement
- Laser lithotripsy

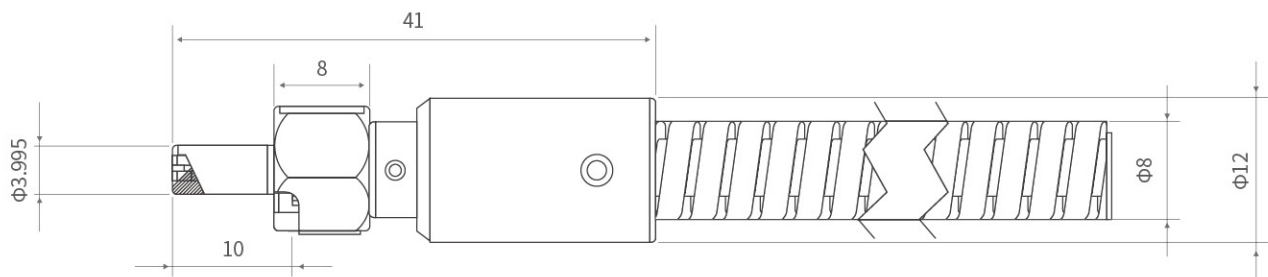


Specifications

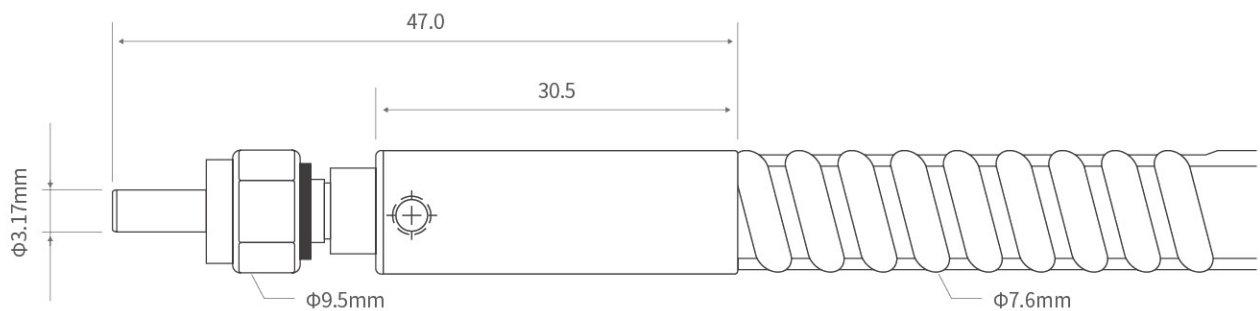
Product Type	D80-D80-SI200/500-22/1400E(DC)-1×A80-5m	D80-D80-SI600/750-22/1700E(DC)-1×A80-5m	SMA905-SMA905-SI400/440-22/730-1×A30-5m
Optical Parameters			
Operating Wavelength (nm)	400 - 2400		
NA	0.22 ± 0.02		
Fibre Type	Step Index		
Geometric Parameters			
Core Diameter (μm)	200.0 ± 5.0	600.0 ± 10.0	400.0 ± 8.0
Cladding Diameter (μm)	500.0 ± 5.0	750.0 ± 10.0	440.0 ± 8.0
Jacket Diameter (μm)	1400.0 ± 50.0	1700.0 ± 50.0	730.0 ± 30.0
Material			
Core Material	Low OH fused silica		
Jacket Material	ETFE		Acrylate or ETFE
Patch Cord Performances			
Transmission Efficiency (%)	>90@1.06μm, length 5m		>90@0.98μm, length 5m
Laser Resistance (CW) (W)	150@1.06μm	600@1.06μm	150@0.98μm

*Fibre geometric ,numerical aperture and fibre length can be customized, SMA905 high power hanging / flat head is optional, and water-cooled connector is also optional

Dimension Drawing for Connector Structure



D80 Connector

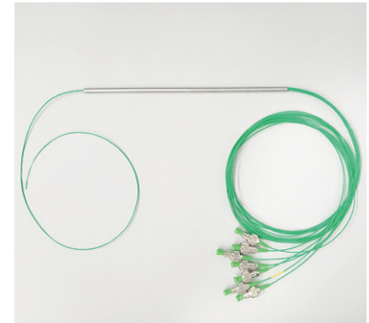


SMA 905 Connector

Space Division Multiplexing Module

Multi-core Fibre Fan-in & Fan-out Module

Multi-core fibre fan-in and fan-out module is a module to realize the high coupling efficiency between the multi-core fibre and single-mode fibres, to realize the channel space division multiplexing and demultiplexing function in the applications. The optical fibre tapering technology is used to realize the optical power coupling between multi-core fibre and single mode fibres with low insertion loss, low core crosstalk and high return loss. YOFC multi-core fibre fan-in and fan-out module adopts seven channel structure, with YOFC's multi-core fibre(MCF), a complete communication and sensor system can be built, which means a broad application prospect.



Characteristics

- Encapsulated in metal tube
- Low and consistent insertion loss
- Ultra low crosstalk
- FC/PC, FC/APC or bare fibre

Specifications

Module Type	FAN-7-42	
Type Description	Seven Cores Fibre Fan-in & Fan-out Module	
Optical Properties	Value	Typical
Average Insertion Loss@1550nm (dB)	< 1.5	1.0
Max.Insertion Loss@1550nm (dB)	< 2.0	1.5
Return Loss (dB)	> 45	50
Crosstalk Index-Adjacent Core (dB)	< -50	-55
Geometrical Properties		
Multi-core Pigtail Length (m)	> 1.0	1.5
Single-mode Pigtail Length (Bare Fibre) (m)	> 1.0	2.0
Single-mode Pigtail Length (Patch-cord) (m)	> 0.5	1.0
Encapsulation Box Description		
Box Size (mm)	Φ4×180	
Operating Temperature (°C)	-40 to +70	

Photonic Lantern

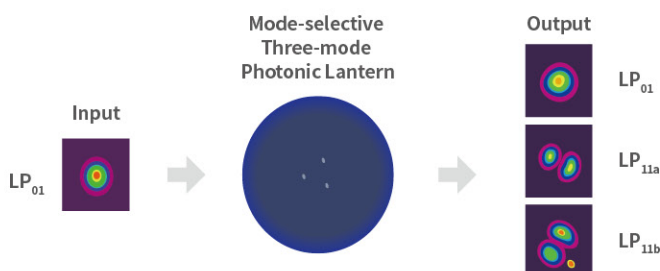
The photonic lantern is a mode multiplexer/ demultiplexer used to improve the transmission capacity. The SMF cluster is embedded into a low refractive index capillary for adiabatic tapering, and then the tapered end is spliced with a few-mode fibre, fundamental mode in SMF is converted into the specific modes in FMF to realize a mode conversion and multiplexing ,The photonic lantern utilizes the orthogonality among various modes arising in few-mode fibres to greatly increase the number of data transmission channels and improve the transmission capacity.

Characteristics

- Low insertion loss
- Small crosstalk
- Excellent electromagnetic interference free characteristics

Applications

- Space division multiplexing optical transmission system
- Mode division multiplexer/demultiplexer



Transmission Matrix

Input (dBm) \ Output (dBm)	LP_{01}	LP_{11a}	LP_{11b}
LP_{01}	1.08	-13.36	-17.42
LP_{11a}	-10.3	-1.7	-22.8
LP_{11b}	-28.8	-17.5	-1.85

Specifications

Product Type	Mode-selective Three-mode Photonic Lantern
Number of Input SMF	3
Operating Wavelength (nm)	1530 - 1600
Fibre Type	
Typical Input Fibre	PH 1010-A (G.652)
Typical Output Fibre	FM2010-A or FM SI-2-ULL
Optical Properties	
Insertion Loss (dB)	<5.0
Mode-dependent Loss (dB)	<3.0
Polarization-dependent Loss (dB)	<0.5
Appearance	
Dimensions (mm)	200.0×10.0×7.5
Pigtail Length (m)	1.0 or Customized

Optical Assemblies

Optical Fibre Sensing Coil

Polarization-maintaining Fibre Coil

Fiber optic gyroscope (FOG) is an all-solid-state gyroscope which uses Sagnac effect to measure the rotating angular velocity. It has the characteristics of simple structure and wide dynamic range, and has become one of the main instruments in the field of inertial measurement and guidance technology. The core sensing element of FOG is polarization maintaining fiber coil, which mainly includes polarization maintaining fiber and curing adhesive. YOFC's polarization-maintaining fiber coil selects polarization-maintaining fiber with excellent performance and special curing adhesive, adopts multi-pole (monopole, quadrupole, octupole, and hexapole) symmetric winding method to form an all-solid fiber coil., which has the characteristics of high symmetry, high extinction ratio, low loss, etc.

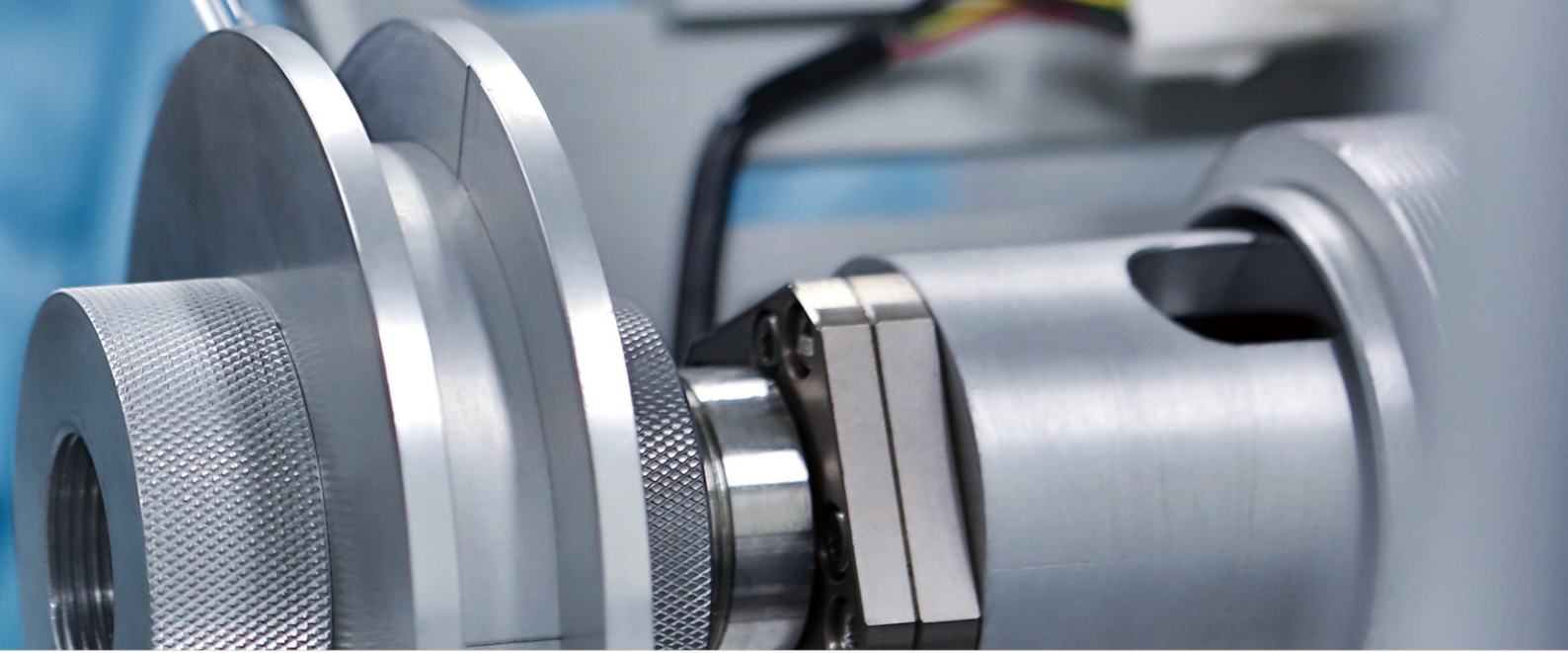
Characteristics

- High symmetry, high extinction ratio, minimum Shupe effect

Applications

- Closed-loop fiber optic gyroscope





Customized Information

- The size, length, performance and whether to remove bone can be customized according to customer requirements
- The solution of full frameless coil can be provided
- The whole system solution of FOG can be provided

Product Classification

- $\phi 50$ PM coil without skeleton
- $\phi 70$ PM coil without skeleton
- $\phi 98$ PM coil without skeleton
- $\phi 120$ PM coil without skeleton

Specifications

$\phi 50$ PM coil without skeleton

Product Type	CQ1-I29/12-PMa2-b* ^①	CQ1-I29/12-PMa3-b* ^①
Coil Internal Diameter (mm)	29 - 35	29 - 35
Coil External Diameter (mm)	≤ 45	≤ 45
Coil Height (mm)	8 - 12	8 - 12
Coil Layers	40 - 60	32 - 52
Coil Length (m)	290 - 600	190 - 430
Crosstalk at 25°C (dB)	≤ -25	≤ -25
Full Temperature Crosstalk (dB)	≤ -20	≤ -20
Insertion Loss (dB)	≤ 0.2	≤ 0.2
10s Full Temperature Drift (°/h)	≤ 0.5	≤ 0.6
10s Peak Value of Full Temperature (°/h)	≤ 2	≤ 2.2
Temperature Range (°C)	-45 to +85	-45 to +85

*^① Product type:CQ1-I29/12-PMa2-b,CQ1-I29/12-PMa3-b, 'a' represents the operating wavelength and 'b' represents the fibre coil length

φ70 PM coil without skeleton

Product Type	CQ1-I52/12-PMa2-b* ^①	CQ1-I52/12-PMa3-b* ^①
Coil Internal Diameter (mm)	52 - 53	52 - 53
Coil External Diameter (mm)	≤ 64	≤ 64
Coil Height (mm)	11 - 12	11 - 12
Coil Layers	28 - 60	32 - 56
Coil Length (m)	440 - 980	390 - 470
Crosstalk at 25°C (dB)	≤ -25	≤ -25
Full Temperature Crosstalk (dB)	≤ -20	≤ -20
Insertion Loss (dB)	≤ 0.4	≤ 0.4
10s Full Temperature Drift (°/h)	≤ 0.2	≤ 0.3
10s Peak Value of Full Temperature (°/h)	≤ 1	≤ 1.2
Temperature Range (°C)	-45 to +85	-45 to +85

*^① Product type:CQ1-I52/12-PMa2-b,CQ1-I52/12-PMa3-b, 'a' represents the operating wavelength and 'b' represents the fibre coil length

φ98 PM coil without skeleton

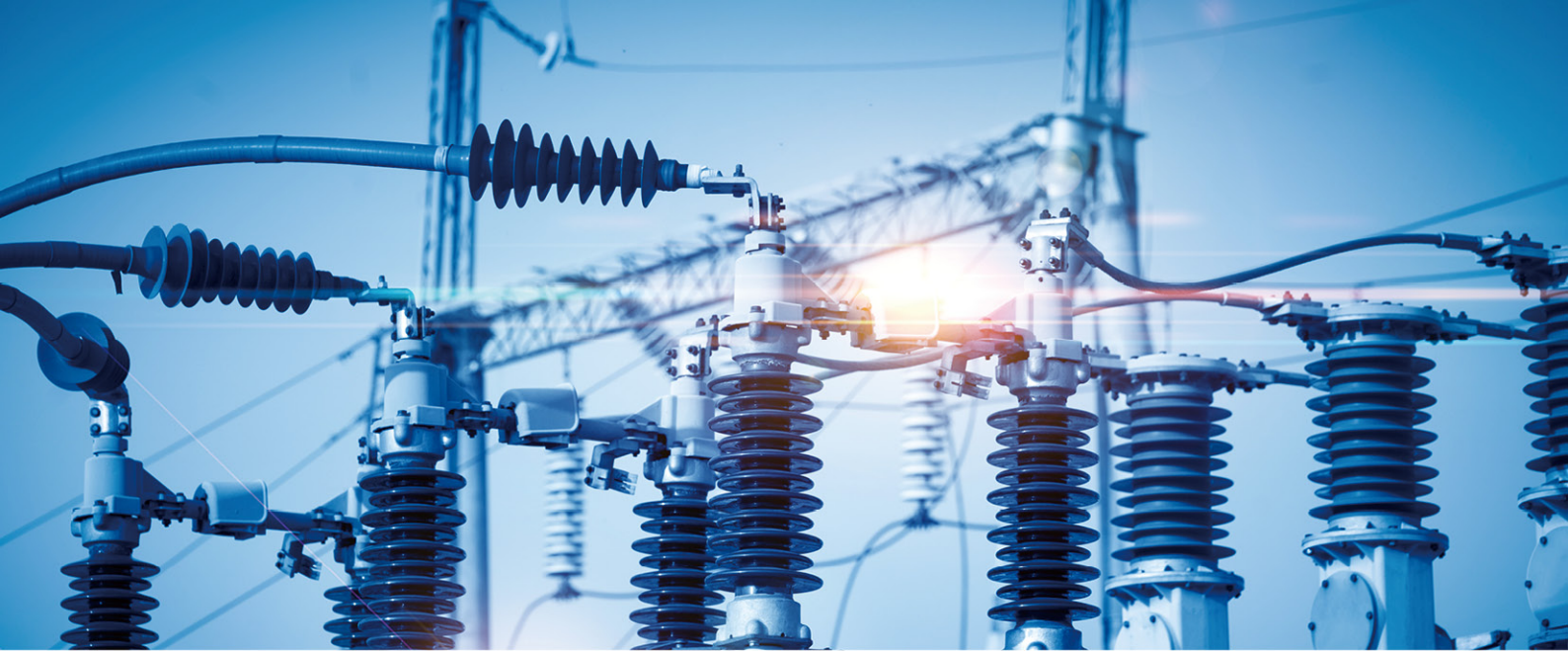
Product Type	CO1-I75/12-PMa2-b* ^①	CO1-I75/12-PMa3-b* ^①
Coil Internal Diameter (mm)	75 - 76	75 - 76
Coil External Diameter (mm)	≤ 93	≤ 93
Coil Height (mm)	12 - 13	12 - 13
Coil Layers	48 - 68	52 - 56
Coil Length (m)	1200 - 1600	990 - 1150
Crosstalk at 25°C (dB)	≤ -20	≤ -20
Full Temperature Crosstalk (dB)	≤ -18	≤ -18
Insertion Loss (dB)	≤ -0.8	≤ -0.8
100s Full Temperature Drift (°/h)	≤ 0.01	≤ 0.03
100s Peak Value of Full Temperature (°/h)	≤ 0.15	≤ 0.25
Temperature Range (°C)	-45 to +85	-45 to +85

*^① Product type:CO1-I75/12-PMa2-b,CO1-I75/12-PMa3-b, 'a' represents the operating wavelength and 'b' represents the fibre coil length

φ120 PM coil without skeleton

Product Type	CH1-I93/14-PM22-a* ^①
Coil Internal Diameter (mm)	93 - 94
Coil External Diameter (mm)	≤ 112
Coil Height (mm)	13 - 14
Coil Layers	64
Coil Length (m)	2120 - 2200
Crosstalk at 25°C (dB)	≤ -18
Full Temperature Crosstalk (dB)	≤ -15
Insertion Loss (dB)	≤ -1.5
100s Full Temperature Drift (°/h)	≤ 0.005
100s Peak Value of Full Temperature (°/h)	≤ 0.10
Temperature Range (°C)	-45 to +85

*^① Product type:CH1-I93/14-PM22-a, 'a' represents the operating wavelength



FOCT Sensing Coil

FOCT sensing coil is composed of quarter wave plate, spun Hi-Bi fibre and fibre mirror, Excellent environmental immunity are obtained by temperature error compensation and encapsulation process to meet the requirement of applications, such as fibre optic current transformer (FOCT) .

Characteristics

- Customizable size
- Reduced sensitivity to vibration
- Low temperature sensitivity
- High stability

Applications

- All fibre optic current transformer
- High precision current sensor
- Faraday effect sensor



Specifications

Product Type	FSH-01
Installation	Fixed Installation
Operating Wavelength (nm)	1310 ± 20
Additional Loss (dB)	≤ 3.8
Ratio Error at Full Temperature (%)	< 0.8
Pigtail Mode Field Diameter @1310nm (μm)	6.0 ± 1.0
Operating Temperature (°C)	-40 to +70

Specialty Optical Delay Coil

Optical Fibre Delay Coil

Optical signal can not only transmit signal through optical fibre delay coil, but also obtain optical signal with delay. The delay of optical fibre delay line is determined by the length of the optical fibre and the propagation speed of the light in the optical fibre. Optical fibre delay coil of YOFC is wound by precision winding machine, which has high delay precision, compact structure, anti-seismic and anti-radiation design. We can customize different types and lengths of optical fibre delay coil according to customers' requirements.

Characteristics

- Customized delay length
- Various models of optical fibre
- Broad-spectrum respond
- Low vibration sensitivity
- Low additional loss

Applications

- Optical buffer in photosystems
- Time delay of photoelectric oscilloscope
- Phased array radar
- Switching, buffering and routing of optical packets



Specifications

Product Type	DA-a-b/b-c/c-d*①
Wavelength (nm)	850, 1310, 1550
Delay Time Range (μs)	0.1 - 300
Delay Time Accuracy	±0.01μs@0.1 - 10μs
	±0.1%@10 - 300μs
Insertion Loss (dB)	0.1 (dB/μs) × Delay(μs) + 1.0
Relative Variation of Delay with Temperature (ppm/°C)	≤6.5
Return Loss (dB)	55.0
Extinction Ratio (PMF)(dB)	≤ -30 @0.1 μs
Operating Temperature Range (°C)	-40 to +85
Storage Temperature Range (°C)	-60 to +85

*①DA-a-b/b-c/c-d, a means delay time, b/b means connector type, c/c means skeleton and shell type, and d means fibre type

Delay Coil for Current Transformer

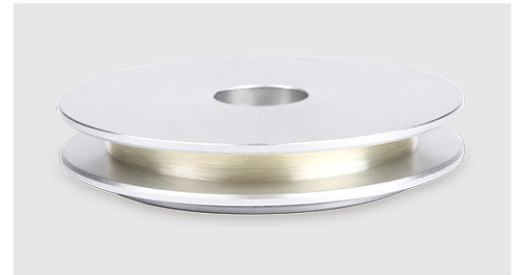
High birefringence polarization-maintaining fibre is selected as the delay coils for YOFC current transformer. The whole winding process is controlled by low tension and special solidified adhesive to ensures the overall polarization-maintaining performance of the delay coil. The full-temperature crosstalk has less fluctuation, and it has excellent temperature characteristics and environmental stability. It can be used in optical fibre current sensor and other fields. The size of this series of delay coils can be customized according to the special needs of customers.

Characteristics

- Low polarization crosstalk
- Small temperature error
- High long reliability
- Customized size

Applications

- All-fibre-optical current transducer
- Current transformers for high accuracy



Specifications

Product Type	CN1-a/a-PMb-c* ^①
Geometric Parameter	
Optical Fibre Length (m)	80 - 500
Optical Fibre Coil I.D. (mm)	15 - 250
Optical Fibre Coil O.D. (mm)	25 - 260
Optical Fibre O.D. (μm)	135, 165, 250
Optical Parameter	
Wavelength (nm)	1310 or 1550
Polarization Crosstalk (dB)	≤ -30
Full-temperature Crosstalk Change (dB)	≤ 1.0
Loss (dB/km)	≤ 1.0
Operating Temperature Range (°C)	-45 to +85

*^①CN1-a/a-PMb-c, a/a means skeleton type, b means PM fibre type, and c means coil length

Optical Modules



Optical Delay Line System

Radiation-resistant Optical Fibre Delay Lines

Taking advantage of optical fibre and fibre process technology, YOFC's radiation-resistant optical fibre delay lines feature high-precision true time delay, and different levels of radiation resistant can be achieved. The experienced design have been proved with a high mechanical performance and environmental reliability. Small diameter fibre can be selected to reduce the volume for special application. Optical fibre and connector is customized.

Characteristics

- Large delay range
- Smooth phase change
- Compact structure
- High stability
- Strong vibration resistance

Applications

- Radar monitoring/calibration
- Signal processing
- Phased array antenna
- Phase noise processing



Specifications

Product Type	FOD652-a-b-c* ^①
Fibre Type	Radiation-resistant Fibre
Delay Range (μs)	0.1 - 280
Delay Accuracy	±0.01μs@0.1 - 10μs
	±0.1%@10 - 280μs
Insertion Loss (dB)	0.1 (dB/μs) × Delay(μs) + 1.0
Relative Delay Time with Temperature (ppm/°C)	≤ 6.5
Dimensions (mm)	Typ. 152.4 × 152.4 × 100 or can be customized
Operating Temperature (°C)	-40 to +85
Storage Temperature (°C)	-60 to +85

*^①FOD652-a-b-c, a means delay time, b means connector type, and c means sheath type

Modular RF Optical Delay Line System

YOFC modular RF optical delay line system is capable of achieving true-time delay of broadband microwave signals with high precision, tunability, and scalability. Comparing with the conventional microwave coaxial or waveguide based solutions, the system possesses multiple advantages, such as wide frequency range, high consistency over frequency, good repeatability, low loss dependence on delay values, and flexible scalability. The system adopts pluggable blade modular design, which mainly consists of a 3U 19" rack chassis, RF optical transceiver module, multiple fibre-optic delay module, optical amplifier module (optional), and control module. The true-time delay figures can be configured onsite or remotely.

Characteristics

- High accuracy progressive delay
- Blade modular design
- Easy scalability of rf frequency range and delay
- Optional optical amplifier
- External auxiliary delay options
- Standard 19" rack-mount
- Remote status monitor and control

Applications

- Radar system testing
- Phased array antennas
- Phase noise testing
- Signal processing
- Test & calibration labs



Specifications

Product Type	AFODa-b-c-d-e/e* ^①	
Operational Frequency (Hz)	100M - 18G	-
Delay Range (μs)	2 - 128	Customizable
Delay Step (μs)	2.0	Customizable
Delay Accuracy (%)	1.0	-
Progressive Delay Number (Blade Module Number)	6	Customizable
Switching Time (ms)	< 2.0	-
RF Gain (at 128μs delay) (dB)	≥ -20	Higher gain is available
Dynamic Range (dB · Hz ^{2/3})	98	-
Amplitude Flatness (dB)	≤ ±3.0	-
Noise Figure (dB)	≤ 48	Lower is available
1dB Input Compression (dBm)	≥ 15	-
Optical Wavelength (nm)	1310 Band	-
Communication	RS232	Ethernet is available
Auxiliary Delay Connectors	FC/APC	Customizable
RF Connectors	SMA	RF Frequency Dependent
Dimensions	3U Standard	-
Power Supply (V AC)	220	-

*^①Product type AFODa-b-c-d-e/e, a means operating wavelength, b means maximum delay time, c means delay step, d means delay switching time, and e means connector type

Optical Amplifier Module

Polarization Maintaining EDFA Module

The polarization maintaining (PM) EDFA product has been widely used in the fields of optical fibre sensing and optical fibre communication. PM EDFA uses 980 nm pump laser to provide energy with all polarization maintaining passive components, it has a high output extinction ratio. The product can be operated in AGC, APC or ACC operating mode. The high-performance devices and precise temperature control technology ensure the product excellent operating performance in a wide temperature flow range.

Characteristics

- Up to 23 dBm output power
- ACC/APC/AGC control mode
- Low noise figure and power consumption
- High stability and reliability
- Customized

Applications

- Optical fibre sensing
- PM optical communication system
- Universities and institutes



Specifications

Product Type	ERA-S-PC-90*70*25-XX/XX-1-1/1* ^①		
Parameters	Minimum	Typical	Maximum
Wavelength (nm)	1528.77	-	1565.05
Bandwidth (nm)	-	100	-
Input Power (dBm)	-16	-12	-10
Output Power (dBm)	-	23.0	23.5
Extinction Ratio (dB)	-	20	-
Noise Figure (dB)	-	5.5	6
Return Loss (dB)		≤ -45	
Operating Temperature (°C)	-40	-	65
Storage Temperature (°C)	-40	-	85
Power Supply (V)	4.75	5.00	5.25
Power Consumption (W)	-	-	20
Communication Protocol		RS232	
Electrical Connector		TEM-115-02-03.0-FG-D-L1 or Customized	
Optical Connector		FC/APC or Customized	
Pigtail Length (cm)		> 50	
Dimensions (mm)		90(L)×70(W)×25(H)	

*^① ERA-S-PC-90*70*25-XX/XX-1-1/1, the first XX means output power, and the second XX means gain

Mobile EYDFA Module

Mobile EYDFA module can realize low noise figure and high output power based on the optimized optical design. The maximum output power can approach 33 dBm. It has been widely utilized in Lidar and laser ranging system. The control mode is ACC/APC/AGC. The high reliability temperature controlling techniques ensures the product excellent thermal performance under a wide temperature range.

Characteristics

- Control mode ACC/APC/AGC
- Low noise figure and power consumption
- High stability and reliability
- Customized

Applications

- Vehicle, airborne laser ranging and sensing system
- Universities and institutes



Specifications

Product Type	EYA-S-CC-90*70*25-XX/XX-1-1/1*①		
Parameters	Minimum	Typical	Maximum
Wavelength (nm)	1532	1550	1569
Input Power (dBm)	-10	-	10
Output Power (dBm)	30	-	33
Output Power Stability (dB)		± 0.1	
Gain (dB)	-	37	-
Noise Figure (dB)	-	5.5	6.0
Return Loss (dB)		≤ -45	
Operating Temperature (°C)	-40	-	65
Storage Temperature (°C)	-40	-	85
Power Supply (V)	4.75	5.00	5.25
Power Consumption (W)	-	-	40
Communication Protocol	RS232		
Electrical Connector	TEM-115-02-03.0-FG-D-L1 or Customized		
Optical Connector	FC/APC or Customized		
Pigtail Length (cm)	> 50		
Dimensions (mm)	90(L)×70(W)×25(H)		

*① EYA-S-CC-90*70*25-XX/XX-1-1/1, the first XX means output gain, and the second XX means gain

Semiconductor Optical Amplifier Module

Semiconductor optical amplifier module(SOA) is an optical gain module specially designed for O band. It can be widely utilized in 10G/40G/100G communication system with 10dBm maximum optical power. The product can work in ACC/APC/AGC mode.

Characteristics

- Bandwidth 1260nm - 1340nm
- Maximum optical power 10dBm
- Control mode ACC/APC/AGC
- Customized

Applications

- Communication system
- 10G/40G/100G system



Specifications

Product Type	SOA-S-O-130*100*15-XX/XX-1-1/1*①		
Parameters	Minimum	Typical	Maximum
Wavelength (nm)	1260	-	1340
Input Power (dBm)	-20.0	-	3.5
Saturated Power (dBm)	-	7	10
Gain (dB)	14	16	20
Gain Flatness (dB)	-	-	2
Noise Figure (dB)	-	7.5	-
Polarization Dependent Gain (dB)	-	-	2
Operating Temperature (°C)	-5	-	55
Storage Temperature (°C)	-40	-	85
Power Supply (V)	4.75	5.00	5.25
Dimensions (mm)	130(L)×100(W)×15(H)		

*① SOA-S-O-130*100*15-XX/XX-1-1/1, the first XX means output gain, and the second XX means gain



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