



深圳市嘉万光通信有限公司  
KOC Communication Co., Ltd.

# SHENZHEN · CHINA ODN & FTTx CABLING PRODUCTS PASSIVE OPTICAL COMPONENTS

## BROCHURE.2019



*Fiber optic components global supplier*

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# FIBER OPTIC COMPONENTS GLOBAL SUPPLIER

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### Passive Optical Components

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Module  
Mini CWDM Module

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Fiber Distribution Box  
Indoor Fiber Terminal Box  
Optical Collimator  
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Fiber Splice Enclosure

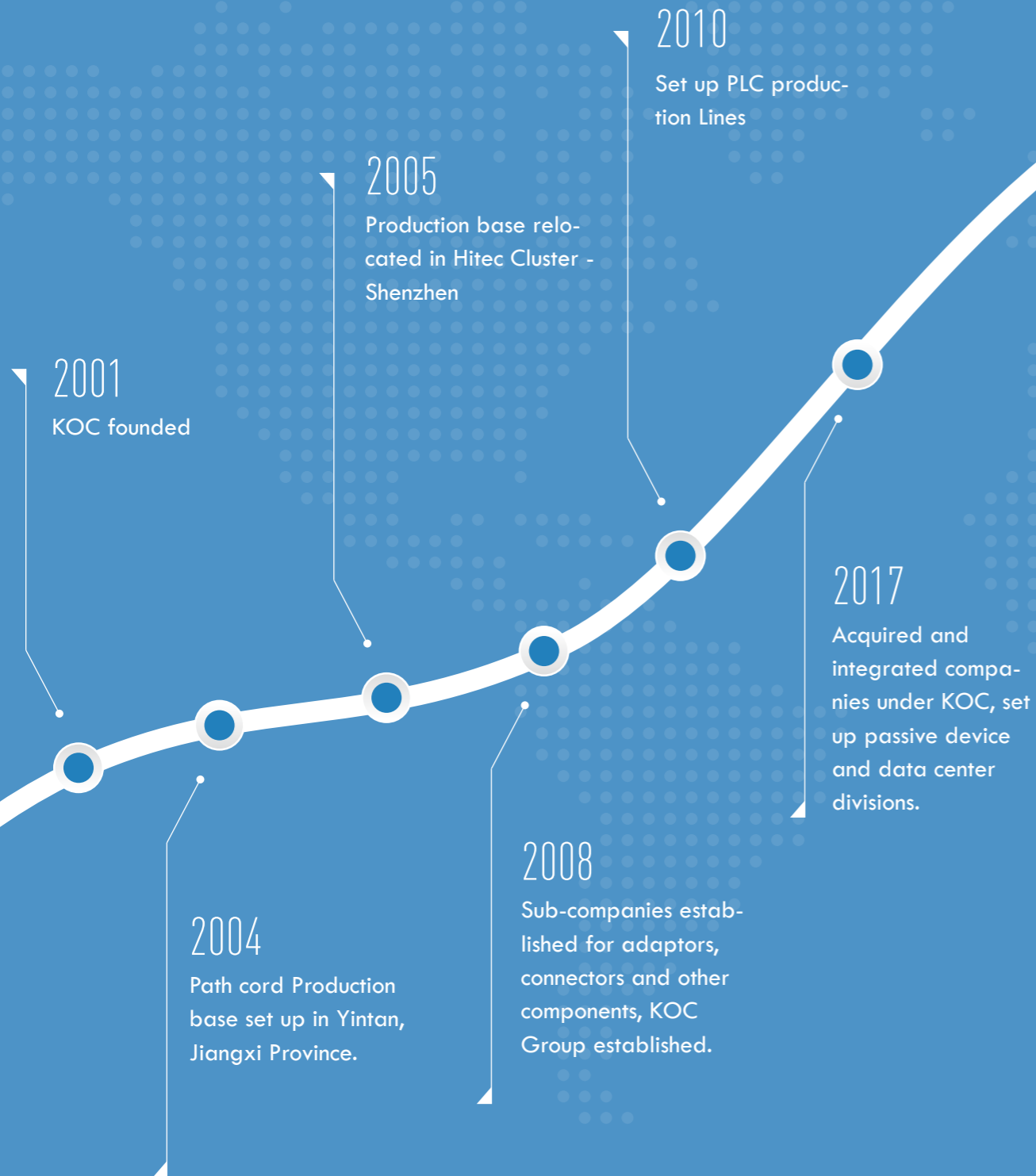
**40 Equipments and Tools**  
Fiber Interferometer  
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**51 VOA Series**  
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Isolator WDM Hybrid (IWDM)  
Collimator  
Mini TAP-PD Monitor



# History and Expansions



## About KOC

Established in 2001, KOC Group is a state and municipal level Hitech Company, located in Longhua District, Shenzhen, China. KOC started its fiber optic connection trading at its early stage. After more than 10-year's developments, it becomes a professional manufacturer specialized in telecom, fiber optic network connection, passive devices, data center cabling etc.

KOC products are extensively applicable to telecom operators, fiber optic engineering, CCTV, broadband networks, FTTH, data center in more than 80 countries worldwide.

KOC provides reliable products and services to customers under the concept of high quality orientation.





# ODN & FTTX CABLING PRODUCTS

*ODN (Optical Distribution Network) is an important part of FTTH (Fiber to the Home) system and xPON system. Its function is to provide high-quality optical transmission channel between central office and client sides so as to complete the connection, branching and convergence of optical signals, power and wavelength allocation, etc...*

*KOC provides customers with complete fiber cabling system products and solutions.*





## Fiber Optic Adapter ///

KOC adapters are manufactured with high-quality sleeves and are available in bulkhead, male-female and also hybrid versions. Metal and plastic housings where suitable and UL94-V0 flame retardant also supplied if required. Bare fiber adapter available.



### FEATURES

- Low insertion loss and back reflection loss
- High precision alignment
- Compact design
- With/Without flange
- Shuttered SC
- Choice of housing material and sleeve material
- Telcordia, ANSI, TIA/EIA, NTT and JIS compliance



### SPECIFICATIONS

Insertion Loss	< 0.20dB
Durability	< 0.20 dB typical change, 1000 matings
Operating Temperature	-40 to + 80°C

## LC SC One Piece Adapter ///

One Piece adapters with enhanced Rattle Free wings. Available in both flange and flangeless configurations. The One Piece design has proven increased side loading performance over conventional adapters.



### FEATURES

- One piece solid body
- Low insertion loss and back reflection loss
- High precision alignment
- Compact design
- With/Without flange
- Shuttered SC
- Choice of housing material and sleeve material
- Telcordia, ANSI, TIA/EIA, NTT and JIS compliance



### SPECIFICATIONS

Insertion Loss	< 0.20dB
Durability	< 0.20 dB typical change, 1000 matings
Operating Temperature	-40 to + 80°C

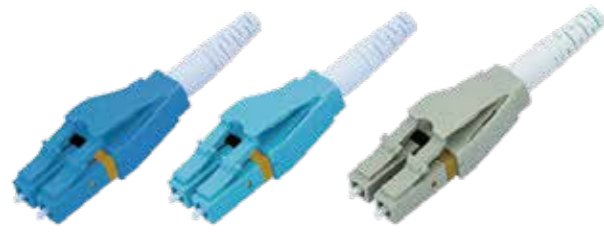
### ORDER GUIDE - LC

Type	Color	Sleeve Type	Shutter
Duplex with Flange	Blue	Zirconia	No Shutter
Duplex without Flange	Black	Metal	Internal Shutter
	Green		
	Violet		
	Beige		
	Aqua		

### ORDER GUIDE - LC

Flange	Type	Color	Sleeve Type	Hook Matial	Shutter
Flange	Simplex	Blue	Zirconia	High Tg	No Shutter
Flangeless	Duplex	Black	Metal		Internal Shutter
		Green			
		Violet			
		Beige			
		Aqua			

## LC Duplex Uniboot Connector ///



### FEATURES

- Have two dismount gap, easy to dismount
- Streamline design, good aesthetic
- Uniboot connector cable management
- Switchable Connector to change polarity
- MINI Boot & Flex angle boot available
- Right Angle Clip good for panel management

### APPLICATIONS

- Gigabit Ethernet
- Video
- Multimedia
- Active device termination
- Premise installations
- Telecommunication networks

### SPECIFICATIONS

Item	Single Mode	Multimode
Insertion Loss	≤ 0.30dB	≤ 0.30dB
Return Loss	≥ 50dB(PC) / ≥ 60dB(APC)	
Durability	< 0.20dB typical change, 10000 matings	
Operating Temperature	-40 to +85 °C	-40 to +85 °C
Ferrule Hole Size	125.0+1/-0μm, Concentricity: ≤ 1.0μm	126.0μm, Concentricity: ≤ 3.0μm
	125.5+1/-0μm, Concentricity: ≤ 1.0μm	127.0μm, Concentricity: ≤ 3.0μm
	126.0+1/-0μm, Concentricity: ≤ 1.0μm	128.0μm, Concentricity: ≤ 3.0μm

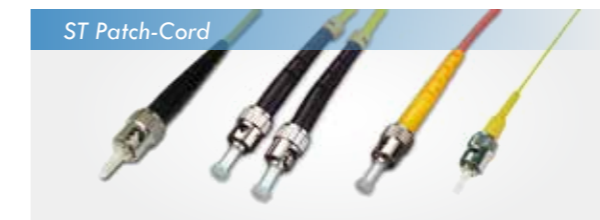


## Fiber Optic Patch Cord ///

From simple pigtail or patchcord assemblies to larger multi-core projects with pulling protection, KOC is the specialist in this sector. Capacity is 40k terminations / day and quality is excellent and consistent. All terminations and a wide range of cables available.

### FEATURES

- Low insertion loss and back reflection loss
- High exchangeability
- High Durability
- High temperature stability
- Standard: Telcordia GR-326-CORE



## High Performance IEC Grade B Patch Cord ///

For high-speed fiber-optic communications and data networks, high-performance fiber jumpers mean lower insertion loss and better random interchangeability. IEC Grade B-class patch-cord require higher processing technology and materials than ordinary products. We offer reliable and stable IEC Grade A / B / C grade patch-cord.



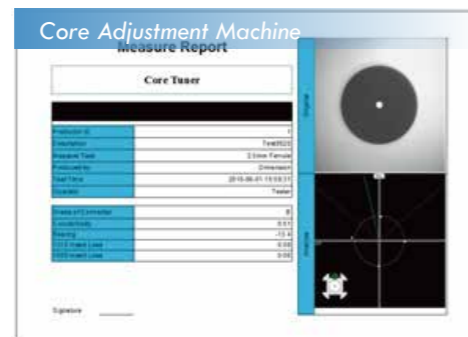
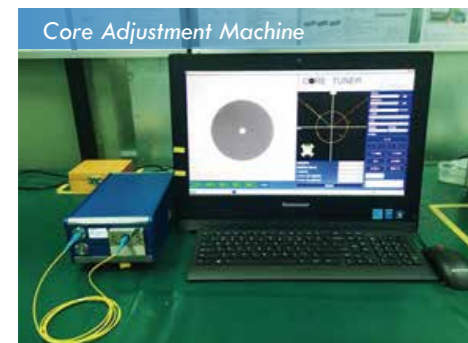
### FEATURES

- Conforms to IEC 61753-1 and IEC 61300-3-34
- Low insertion loss, low return loss
- Random test interchangeability is good
- High precision ferrule and connector material
- Products comply with Telcordia, IEC, RoHS, REACH

### SPECIFICATIONS

Beside using low concentricity ferrules for the products, all the Grade B connectors must be tuned by using the fiber core adjustment machine. This is a very important procedure to make high quality Grade B connectors. 100% connectors will be tuned in KOC factory.

Item	Unit	Parameters		
		Grade A	Grade B	Grade C
Relative Reference Insertion Loss	dB	≤ 0.10dB	≤ 0.10dB	≤ 0.10dB
Random Insertion Loss	dB	Typical ≤ 0.07dB	Typical ≤ 0.12dB	Typical ≤ 0.25dB
		Maximum ≤ 0.15dB	Maximum ≤ 0.25dB	Maximum ≤ 0.50dB
Return Loss	dB	UPC ≥ 55dB	UPC ≥ 50dB	UPC ≥ 50dB
		APC ≥ 65dB	APC ≥ 60dB	APC ≥ 60dB
		Multimodal ≥ 30dB	Multimodal ≥ 30dB	Multimodal ≥ 30dB
Mechanical Durability	dB	Change amount < 0.20 dB, 1000 repetitions		
Operating Temperature	°C	-40 to +85 °C		



## Fiber standard reference test line ///

Fiber standard reference test line as a fiber optic patch-cord insertion loss test standard reference line, with high reliability, high stability characteristics, widely used in optical testing equipment, research institutes, laboratory agencies, optical devices, manufacturers and other test areas.



### FEATURES

- High precision ceramic ferrule
- High precision connector
- High standard ferrule grinding geometric 3D control
- precise control of concentricity direction
- low insertion loss, low return loss
- SC, LC, FC, MU and other models

### SPECIFICATIONS

Item	Unit	Parameters	
		APC	UPC
Insertion loss	dB	≤ 0.10dB	≤ 0.10dB
Return loss	dB	APC ≥ 65dB	UPC ≥ 55dB
2.5mm Ferrule grinding radius ROC	mm	6~11mm	12~25mm
1.25mm ferrule end face radius ROC	mm	6~11mm	7~20mm
Vertex offset	um	≤ 30um	≤ 30um
Angle deviation	°	8±0.2	0±0.2
Fiber height	um	±50	
Concentricity offset angle	°	±45	
Mechanical durability	dB	Change amount < 0.20 dB, 1000 repetitions	
Operating temperature	°C	-40 to + 75 °C	



### FEATURES

- Optical performance 100% factory tested
- Customized assemblies available
- Precision ceramic ferrule with end-face geometry
- Environmentally stable

### APPLICATIONS

- Optical Module(LD,PD)
- Passive Device
- Active device termination
- Instrumentation

### SPECIFICATIONS

Characteristics	Conditions	Values
Insertion Loss	/	<0.2dB
Return Loss	SPC	>45dB
	UPC	>55dB
	APC	>65dB

### ORDER GUIDE

LD/PC Pigtaills	Fiber Type	Connector Type	Polishing Type	Lenght(M)	Cable Diameter(MM)
LPP	9-9/125 $\mu$ m	S-SC	P-PC	1-99	1-0.9
	5-50/125 $\mu$ m	F-FC	A-APC		2-2.0
	6-62.5/125 $\mu$ m	T-ST			
		L-LC			
		M-MU			
		E-E2000			

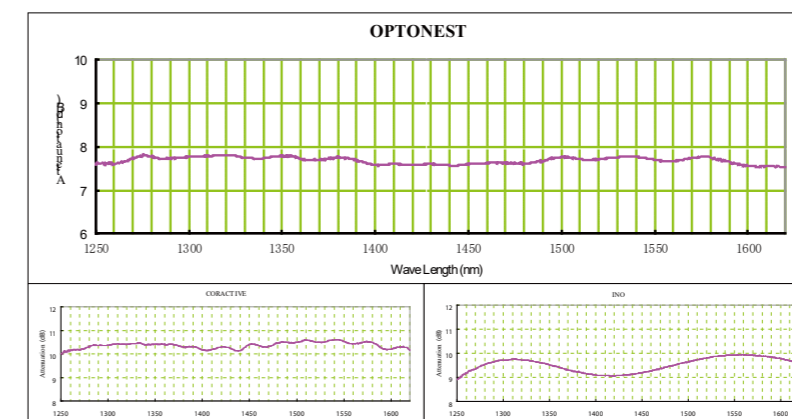


OPTONEST specialty optical fibers are fabricated for WDM attenuator application with flat attenuation properties. The attenuation fibers have the potential to offer high reliability and stable input power endurance. OPTONEST attenuation fibers are designed to be used for plug and in-line types attenuators covering from 1240nm to 1600nm with 0.1~30 dB

### SPECIFICATIONS

Characteristics	Conditions
Core Diameter( $\mu$ m)	8 ~ 9
Numerical Aperture(NA)	0.12 $\pm$ 0.01
Inner Cladding Diameter( $\mu$ m) *	40 ~ 50
Outer Cladding Diameter( $\mu$ m)	125 $\pm$ 0.5
Core to Cladding Concentricity Error( $\mu$ m)	$\leq$ 0.8
Attenuation 1310nm(dB/21 or 22.4mm)	0.1 to 30
Attenuation 1550nm(dB/21 or 22.4mm)	0.1 to 30
Attenuation Tolerance(%)	$\pm$ 7.5
Storage Temperature Range(-40 $^{\circ}$ C ~ 85 $^{\circ}$ C)	$\leq$ 0.2dB
Cut-off Wavelength(nm)	1200 ~ 1250
Operating Wavelength(nm)	1310/1550 (1200 ~ 1650)
Optical Power Endurance	$\leq$ 0.2dB (@200mw)

### COMPARISON DATA



Comparison of Measured Attenuation Data (dB) of Attenuation Fibers Manufactured by Optonest, Coractive, and INO

The measurement was carried out using the OSA by one of the attenuator manufacturers in Taiwan.



## Fiber Optic Attenuator ///

For high-speed fiber-optic communications and data networks, high-performance fiber jumpers mean lower insertion loss and better random interchangeability. IEC Grade B-class patch-cord require higher processing technology and materials than ordinary products. We offer reliable and stable IEC Grade A / B / C grade patch-cord.



### FEATURES

- Bellcore Compliant
- Durability (well over 100mw)
- Wavelength Independent (DWDM)
- Simple and Reliable Structure
- Customized attenuation available



### SPECIFICATIONS

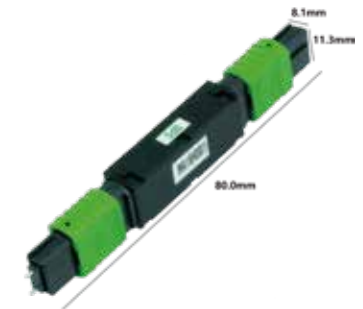
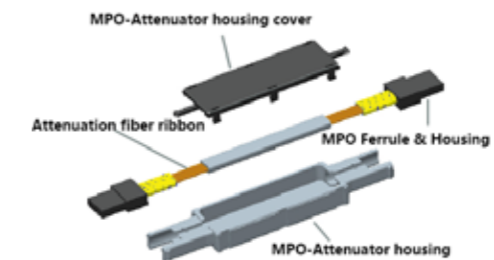
#### Adapter Type Fixed Attenuator

Attenuation Range	0-30dB
Available Wavelengths	1310nm or 1550nm
Fixed attenuation value	1,2,3,5,10,15,20dB or optional
Return Loss	≥50 dB (SPC) , ≥60 dB (APC)
Attenuation Accuracy	+/-0.5 (1-5) dB , +/-10% (6-30) dB
Polarization Dependent Loss	≤0.2dB
Temperature Range	-40° C-80°C
Humidity Range	+/- 0.2 dB Change in 10% to 90% relative Humidity Range.
Vibration	≤0.1 dB change between 10Hz to 55Hz.
Drop	+/- 0.2dB after 8 drops (3 axes) from 1.8 meters onto a hardsurface.

#### Plug-in Fixed Attenuator

Operating Wavelength	SM: 1200-1600nm or 1310nm, 1550nm . MM: 850nm, 1300nm
Return Loss	≥50 dB (UPC) , ≥60 dB (APC)
Attenuation Accuracy	+/-0.5 (1-5) dB , +/-10% (6-30) dB
Polarization Dependent Loss	≤0.2dB
Maximum Optical Input Power	200mW
Operating Temp. Range	-40 ~ 80° C

## MPO Attenuator ///



### FEATURES

- Small / Compact Housing Design
- QSFP Available
- RoHS Compliant
- Data Center Infrastructure
- Storage Area Network and Fiber Channel
- Various 40G and 100Gbps Protocols

### APPLICATIONS

- High Stability and High Durability
- Compact Housing Dimension
- QSFP Available
- RoHS Compliant
- Data Center Infrastructure
- Parallel Optics
- Storage Area Network and Fiber Channel
- 40G and 100Gbps Protocols

### SPECIFICATIONS

Parameter	Conditions
Operation Wavelength	1310/1550nm
Attenuation Tolerance	±1dB( at 2-10dB) , ±10%( at 11-20dB)
Return Loss	60dB(8°Polishing, SM)
Operating Temperature	-25°C~75°C
Attenuation	1~20dB
PDL	≤ 0.2dB
Maximum input optical power	200mW
Housing Dimension	Height 8.1mm/Length 80.0mm/Width 11.3mm

## Optical Loopback ///

Fiber Optic Loopbacks are designed to provide return patch for a fiber optic signal. They are used for fiber optic testing applications or network restorations. When it is used in testing applications, loopback signals are used for diagnosing problems. The best practice is to send a loopback test to network equipment, one at a time for isolating the problem.



### FEATURES

- MPO, LC, SC or other type available
- Insertion loss: Less than 0.3dB
- Exchangeability < 0.2dB
- Operating temperature range: -40 to +80°C
- LAN and Optical equipment testing

### ORDER GUIDE

#### Mini LC Multimode Loopback

Type	Fiber Type	Cable Type
MLB-LC	50/125	0.25
	62.5/125	0.9

#### Loop back patch-cord

Type	Connector Type	Mode Type	Cable Type
LB-A-B-C	MPO/SC/SCA/LC/ LCA/MTRJ...	9(SM)/6(MM62.5)/ 5(MM50)	3/2/09/25

## Mechanical Splicer ///

Mechanical splice is a tool for quick and easy operation of field fiber splice application. It employs the mature V-groove technology, can be widely applicable for different optical cable, optical fiber splicing in fiber distribution units. Not only for the splicing of the optical drop cables with the pigtails in multimedia boxes, but also applicable for repairing any damaged lines to realize firm and reliable splicing in optical fibers.

### FEATURES

- Precision metallic alloy components with co-axial self centering, excellent and durable optical property.
- Axially firm fitting of optical fibers, reducing any performance degradation due to loss in the matching gel
- Uninterrupted fitting and connecting technology, hence signals are free of impact from external force
- High success rate and easiness in installation.
- Typical IL<0.2dB



Fiber type	φ 0.25mm& φ 0.90 mm
Fiber diameter	125μm ( 657A& 657B )
Tight buffer diameter (μ m)	250μm & 900 μm
Mode	SM & MM
Average Insert loss	≤ 0.10dB(1310nm & 1550nm)
Return loss	≤ -40dB
Fastening strength of naked fiber	> 5 N
Fastening strength of naked fiber holder	> 8 N
Using temperature	-40 ~ 75°C
Repeatability(10 times)	Δ IL ≤ 0.2dB ΔRL ≤ 5dB

## Optical MPO Loopback Module ///

MPO Loopback used widely within testing environment especially within parallel optics 40 and 100G networks. Devices allow verification and testing of transceivers featuring MPO/MTP interface. Loopbacks are built to link Transceivers (TX) and Receivers (RX) positions of MPO/MTP transceivers interfaces.



### FEATURES

- SM, MM(OM2/OM3/OM4) available
- 12 or 24 Fiber for 40G and 100G
- Female and Male MPO/MTP option of Connectors
- MTP with pull-latch for high density system
- Polarity upon customer choice
- Factory Terminated and Tested
- MPO/MTP Interface feature superior optical and mechanical properties
- TIA/EIA-568-C.3 and IEC-61754-7 compliance
- RoHS and REACH complianc

### SPECIFICATIONS

\*MTP is the trademark of USCONEC.

Item	Unit	Parameter
Fiber Count	/	12 Fibers / 24 Fibers
Fiber Type	/	SM: G652D/G657A1, MM: OM1/OM2/OM3/OM4
Polishing Type	/	SM: APC, MM: PC
Housing	/	MPO / MTP
Housing Color	/	MM (Beige), OM3 (Aqua), OM4(Purple) SM (Green), SM Elite (Yellow)
Insertion loss	dB	SM(G652D)<1.5dB, SM(G657A1)<0.7dB, SM Elite<0.3dB, MM<1.0dB
Return Loss	dB	SM>55dB, MM>30dB
Operating Temperature	°C	-40°C ~85°C
Dimension	mm	60x20x6.5 (L x W x H)

### ORDER INFORMATION

Model	Polarity Type	Fiber Count	Fiber Type	Polishing	Housing	Housing Color
ML	A = Type A	12	9 = G652D	A =APC	O =MPO	G = Green
	B = Type B		1 = G657A1	P =PC		T =MTP
			2 =50/125			B = Beige
			3 =OM3			P = Purple
			4 =OM4			Y = Yellow



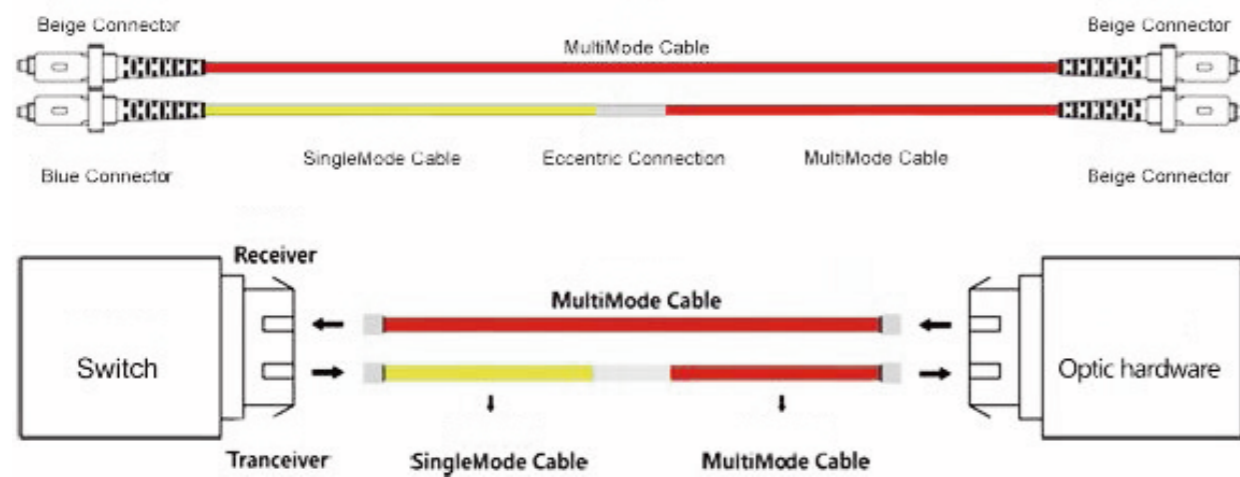
## Mode conversion patch-cord ///

Mode conversion patch-cord (also known as Gigabit transmission cable), designed for Gigabit Ethernet 000Base-LX network and other single-mode and multi-mode conversion transmission. As the Ethernet LX transceiver can use single-mode and multi-mode cable, when a single-mode transceiver is directly connected to a multimode cable, a differential mode delay (DMD) will occur. The generation of DMD will limit the transmission distance of the Gigabit Ethernet. When the mode switch patch-cord is used, The analog signal is accurately coupled into the multimode fiber for transmission to effectively suppress the generation of DMDs to improve the signal transmission capability of Gigabit Ethernet.



### FEATURES

- MPO, LC, SC or other type available
- Insertion loss: Less than 0.3dB
- Exchangeability < 0.2dB
- Operating temperature range: -40 to +80°C
- LAN and Optical equipment testing



## FIC Connector for FTTH Drop Cable ///

FTTH Drop Cable FIC Connector (Field Installable Connector) is specially for single fiber FTTH drop cable filed termination. It provides efficient assembly and high reliability connection to make it easy for the last meters optic cable termination for FTTH.

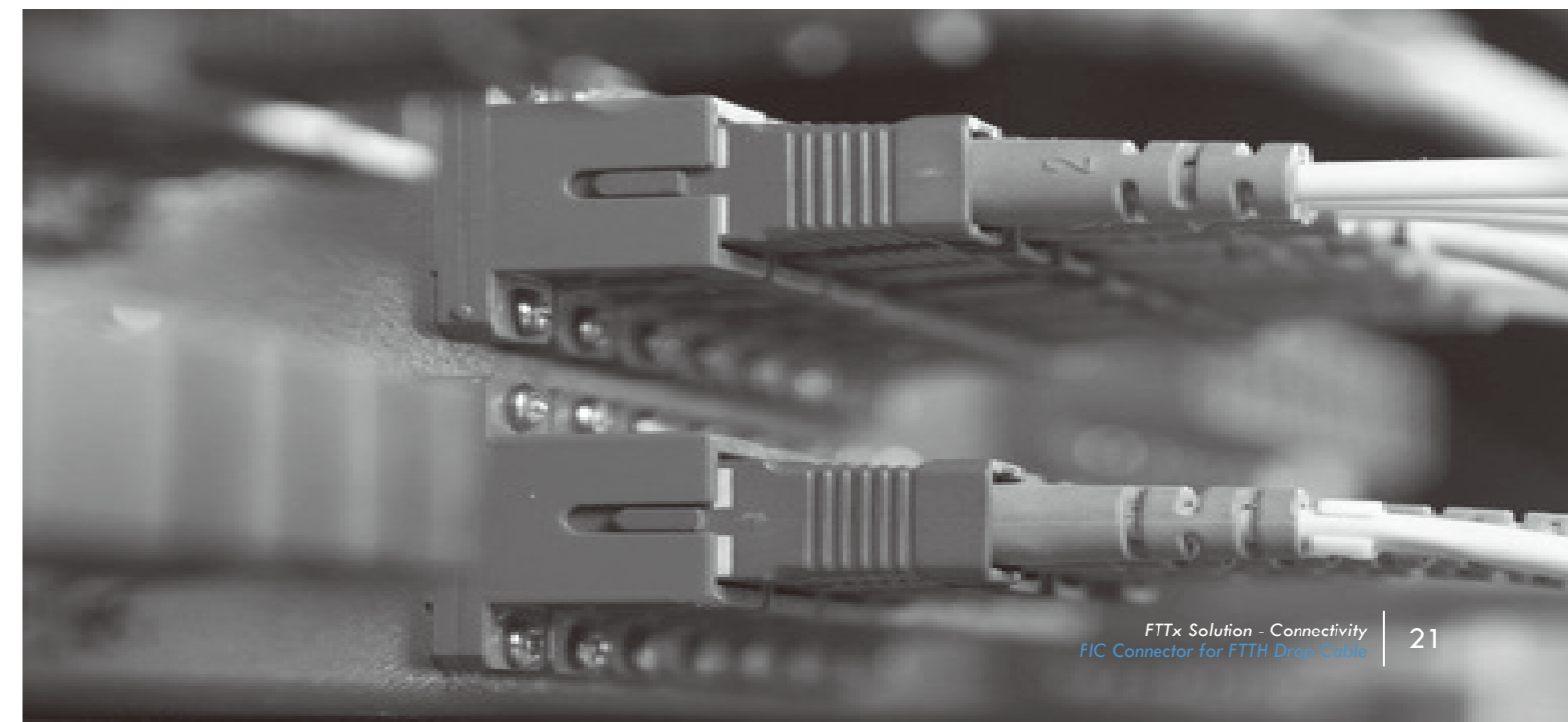


### FEATURES

- SC/FC/LC type available
- Field installable, cost effective, easy to operate
- About 2 mins to finish per termination
- Patent of precision ceramic U-groove alignment technology, average IL<0.2dB, reliable durable and superior optical performance
- Factory pre-polished, no electricity required

### SPECIFICATIONS

Item	Parameter
Insertion Loss	Average≤0.2dB, Max≤0.4dB
Return Loss	UPC: ≥40dB, APC: ≥55dB
One-time Assembly Rate	≥97%
Assembly Repeatability	≥5 times
Life time	≥10 years
Average Assembly Time	3 minutes
Tensile Resistance	≥30N
Operation Temperature	-40°C~+85°C



## LC/PC Field Installable Connector ///

Field Installable Connector (FIC) is a perfect solution for field working and FTTH connection. It is widely used for where need to quick connection, providing a quickly assembling and stable performance. When engineers work in field for installation, maintenance, repair of optical fiber, or FTTH indoor terminate, they can use it easily because it has no epoxy, no polishing. FIC is designed inside ferrule with fiber stuff and pre-polishing in the factory. It provides a perfect ferrule endface quality. This has great help to protect user's equipment interface and reduce the connector loss.



### FEATURES

- Patent fiber alignment technology
- High performance, high reliability
- No Polishing, no electricity needed
- Quick installation, easy for operation
- High one-time assembly success rate

### APPLICATIONS

- For 0.9mm indoor Cable field termination
- For emergency fiber path repair
- FTTH, LAN and other fiber optic system
- LC type available

### SPECIFICATIONS

Item	Technical Parameters
Applicable for	Indoor cable 0.9MM
Optical fiber diameter	125 $\mu$ m ( 657A1 & 657A2 )
Tight buffer diameter	250 $\mu$ m
Fiber mode	Single mode
Operation time	< 100s
Return loss	> -45dB
Fastening strength of naked fiber	>4 N
Fastening strength of naked fiber holder	>8 N
Tensile strength	>10 N
Using temperature	-40~+75 C
On-line tensile strength (20 N)	$\Delta$ IL $\leq$ 0.5dB $\Delta$ RL $\leq$ 5dB
Mechanical durability (500 times)	$\Delta$ IL $\leq$ 0.5dB $\Delta$ RL $\leq$ 5dB
Drop-off test (drop-off height 4m, once per direction, totally 3 times)	$\Delta$ IL $\leq$ 0.5dB $\Delta$ RL $\leq$ 5dB

## SC SM Simplex FTTH Fast Connector ///



### FEATURES

- Patent fiber alignment technology
- High performance, high reliability
- No Polish, no electricity needed
- Quick installation, easy for operation
- High one-time assembly success rate

### APPLICATIONS

- For FTTH Drop Cable field termination
- For emergency fiber path repair
- FTTH, LAN and other fiber optic system
- SC type available

### ADVANTAGES

- Ferrule hole V-groove alignment ensure the fiber core alignment error <0.5 $\mu$ m. This will reduce the connect loss.
- The V-groove has the advantage than V-groove when different fiber diameter are used. This will reduce core offset between customer and stuff fiber.
- Outdoor optical fiber temporary connection
- Flexible fiber connect, high pulling resistance

### SPECIFICATIONS

Item	Parameter
Insertion Loss	Average $\leq$ 0.2dB, Max $\leq$ 0.5dB
Return Loss	UPC: $\geq$ 40dB, APC: $\geq$ 55dB
One-time Assembly Rate	$\geq$ 97%
Assembly Repeatability	$\geq$ 5 times
Life time	$\geq$ 10 years
Average Assembly Time	3 minutes
Tensile Resistance	$\geq$ 30N
Operation Temperature	-40 $^{\circ}$ C~+85 $^{\circ}$ C



## Field Installable Connectors ///

Field Installable Connector(FIC) is new type optical connector to use in field and FTTX connection. When engineers work in field for installation, maintenance, repair of optical fiber, they use it easily because it has no epoxy, no polishing, and no tools are needed.



### FEATURES

- With pre-polished fiber
- Field installable, Cost effective, User friendly
- No Electricity required
- Less than 1 min, Field assembly time
- Reliable and superior optical performance
- Cable Tensile test complied with Telcordia GR-326-CORE

### SPECIFICATIONS

Item	Technical Parameters
Fiber Type	Single mode and Multimode
Insertion Loss	≤0.4dB(Typ)
Return Loss	≥50dB
Polishing Type	UPC and APC
Operation Temp	-40°C~+70°C
Connection Method	Push-On

## Outdoor Waterproof Connector Series ///



### FEATURES

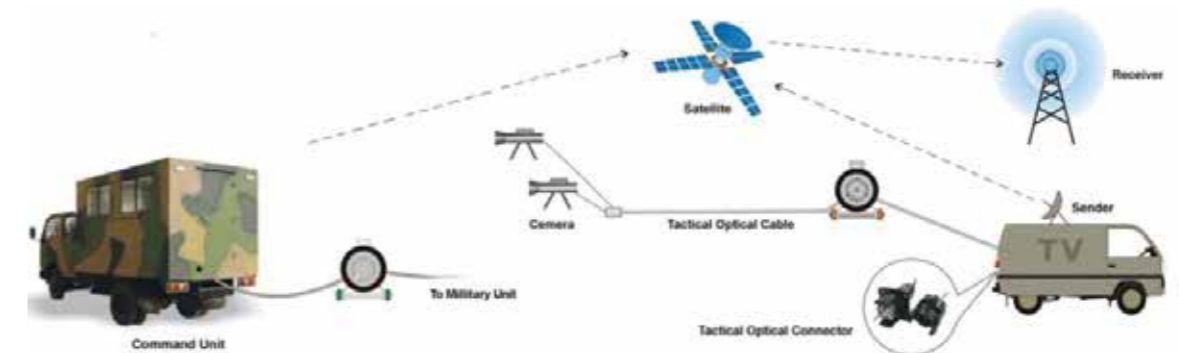
- Robust minicord-breakout or field cable
- UL OFNR or OFNP rated cables available
- High shock,vibration and mechanical resistance
- Blind insertion design,easy and cost effective installation
- Waterproof,dust proof and corrosion resistant
- Scoop and blind proof
- Additional alignment pins to gain better optical performance
- Broad temperature range and wide range of outdoor cable
- EMI protected and RoHS compliant

### APPLICATIONS

- CATV
- Data communication
- LAN&WAN
- Antenna to the box
- Broadband
- FTTP
- Mine
- Railway

### SPECIFICATIONS

Item	Parameters			
	APC	J599	J599MPO	
Insertion Loss	SM	≤0.7dB(typ.≤0.5dB)	≤1dB	≤0.75dB(Low loss ≤0.3dB)
	MM	≤0.6dB(typ.≤0.2dB)	≤0.75dB	≤0.6dB(typ. ≤0.2dB)
Return Loss	SM	≥50dB	≥50dB	≥50dB
Mechanical performance	Plug	≤500(Cable)	≤1000(Cable)	≤500(Cable)
	Branch	≤100N(Branch)	≤100N(Branch)	≤30N(Branch)
Cable OD	5.0mm/4.0mm/Customized	4.0mm/7.0mm/Customized	7.0mm/Customized	
Branch Connector	LC/FC/SC			
Operating Temperature	-40°C to + 85°C			
IP Rating	IP67			



## Waterproof Connector ///



### FEATURES

- Cost effective solution for in house termination
- Water proof, dust proof and corrosion resistant
- Wide range of operational temperature
- Wide range of cables to be used, 3-8mm OD cable with two 2.0mm to 3.0mm jacketed subunits
- Multimode and single mode
- Intermateable to other Industrial adaptor per IEC 61076-3-106
- Simple assembly requiring no special tools
- Durable mechanical mating, minimum of 500 mating

### APPLICATIONS

- Outdoor environment of optical fiber communication
- Outdoor communication equipment connection
- Optical fiber base station connection
- Field optical communication link temporary fast connection
- Broadband
- CATV
- FTTP

### SPECIFICATIONS

Parameter	FullLAXS-LC		Optitap-SC		MINI-SC		ODVA-SC		ODVA-LC		ODVA-MPO		ODVA-MPO Low Loss		PDL	
	SM	MM	SM	MM	SM	MM	SM	MM	SM	MM	SM	MM	SM	MM	SM	MM
Insertion Loss(dB)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.75	0.5	0.35	0.35	0.2	0.2
Return Loss(dB)	50	/	50	/	50	/	50	/	50	/	60	25	60	25	50	/
Cable outer Diameter(mm)	4.8 or 7.0		3 or 5		3 or 5		3 ~ 8		3 ~ 8		3 ~ 8		3 ~ 8		3 ~ 7	
IP Rating	IP67		IP67		IP67		IP68		IP68		IP68		IP68		IP67	
Durability	<0.2dB typical change 500 matings															
Operating Temperature	-40°C to +70°C															



## Fiber Optic PLC Splitter ///

The single-mode Planar Light wave Circuit Splitter (PLCS) is developed based on unique quartz glass waveguide and processes with reliable precision aligned fiber pigtail in a miniature package. It provides a low cost light distribution solution with small form factor and high reliability. The PLCS has the high performance in terms of low insertion loss, low PDL, high return loss and excellent uniformity over a wide wavelength range from 1260nm to 1620nm and working in temperature from -40°C to +85°C. KOC's PLCS has standard configurations of 1x4, 1x8, 1x16 and 1x32 configurations, as well as customized structures of 2x16, 2x32 and so on.



### FEATURES

- Low-cost solution with small form factor
- High reliability
- High performance in terms of low insertion - loss, low PDL, high return loss
- Excellent uniformity
- 1260nm to 1650nm

### SPECIFICATIONS

Port Configuration	1x2	1x4	2x4	1x8	2x8	1x16	2x16	1x32	2x32	1x64
Operating Wavelength(nm)	1260 ~ 1650									
PDL (dB)	< 0.2	< 0.3								< 0.2
Directivity (dB)	> 55									
Return Loss (dB)	> 55									
Operation Temperature (°C)	-40 ~ +85									
Storage Temperature (°C)	-40 ~ +85									
Fiber Type	G652D OR G657A									
Port Configuration	1x2	1x4	2x4	1x8	2x8	1x16	2x16	1x32	2x32	1x64
Insertion Loss (dB)	≤4.3	≤7.20	≤7.5	≤10.5	≤11.2	≤13.6	≤14.6	≤17.0	≤17.5	≤21
LOSS Uniformity (dB)	≤0.5	≤0.6	≤1.2	≤0.8	≤1.5	≤1.4	≤2.0	≤1.6	≤2.5	≤2.5
Ribbon Fiber Packaging Size (L×W×H) (mm)	40x4x4	40x4x4	45x4.5x4	40x4x4	45x4.5x4	45x4.5x4	60x7x4	50x7x4	65x7x4	60x12x4
0.9mm Loose Tube Packaging Size (L×W×H) (mm)	50x7x4	50x7x4	60x7x4	60x7x4	60x12x4	60x12x4	80x12x4	80x20x6	90x20x6	100x40x6



## Fiber Interconnect Carbinet ///

KOFDS-FIC series Fiber Interconnect Cabinets, for outdoor and indoor applications such as street distribution cabinet and building main distribution room. It provides fiber fusion splice, cross connect, optical signal split, fiber storage and management.



### FEATURES

- Outdoor and indoor application
- Anti-corrosive and water-proof
- Ease and safe fiber distribution management
- Max capacity up to 288 fibers
- Modular design for easily hardware upgrade.
- Customizable

### PRECAST CONCRETE BASE SIZE

Capacity (Core)	Size (Width*Height*Depth)	The foundation into the thread hole (mm)
144	530x290x200	310x170x200
288	730x350x200	510x230x200
576	730x550x200	510x430x200



### ORDER GUIDE

Parameter	Dimension (Width*Height*Depth)
KOFDS-GJ144-01	1030x550x310
KOFDS-GJ288-01	1450x750x320(360)
KOFDS-GJ288-02	1450x750x320(360)
KOFDS-GJ288-03	1450x750x320(360)
KOFDS-GJ288-04	1450x750x320(360)
KOFDS-GJ288-05	1450x750x320(360)
KOFDS-GJ288-06	1450x750x320(360)
KOFDS-GJ576-01	1450x750x550

## Fiber Distribution Fram ///

KOFDS series of Fiber Distribution Frames, designed for Central Data Office or the building MDF room, provides high-density fiber management and distribution. The modular design ensures the easily maintenance and efficient management for your fiber cabling systems.



### FEATURES

- Indoor cable distribution
- Fiber entries on top or bottom available
- High-density and modular design
- Max. capacity up to 792 fibers
- No tools are needed during operation
- Safety design in grounding and security door
- Customizable

### APPLICATIONS

- Connecting distribution network and equipment cable
- Connecting with indoor cable termination equipments
- Widely applied in the computer network project, building wiring, telecommunication, intelligent building, school and so on.



### ORDER GUIDE

Type	Net size (mm)	Products dimension(mm)	Products weight(kg)	Package dimension for out side carton (mm)	No of units per carton(pcs)	Total weight(kg)
KOFDS-FDF-C-12	480*250*1U	465*285*75	3.1	485*425*305	5	16.2
KOFDS-FDF-A-48	480*210*3U	450*255*145	6	530*480*340	4	25.6
KOFDS-FDF-A-72	480*210*4U	455*255*195	7.7	545*475*425	4	32.5

## Indoor/Outdoor Fiber Terminal Box ///

Indoor/Outdoor Fiber Terminal Boxes are environmentally sealed enclosures to distribute fibers for FTTx networks. They can be mounted on the wall or pole, for fiber fusion connect, termination, splitter and management.



### FEATURES

- Outdoor and indoor applications
- High quality engineering plastic construction
- IP55 for outdoor environment
- Max splicing capacity up to 72 fibers
- Max loading PLC splitter up to 2x16ch



### ORDER GUIDE

Module	Size A*B*C(mm)	Max Capacity			Installation Size		Cable-in way
		SC	LC	PLC	D*E(mm)	D*E(mm)	
FCS-2A	102*167*31	2	4	4	159*80		
FCS-4A	186*116*40	4	8	4/8		195	
FCS-4B	191*120*44	4	8	4/8	185*93		
FCS-2B	150*120*37	2	4			60	
FCS-6A	150*120*37	6	6				
FCS-8A	213*163*47	8	16	8/16	206*129		
FCS-8C	199*160*46	8	16	8/16	173*136		
FCS-8E	230*180*55	8	16	8/6	81*120		
FCS-12B	263*135*46.5	12	24			66	
FCS-8B	250*190*39	8	16	8/16	130*82		Cut free
FCS-12D	250*190*39	12	24	8/16	130*82		Cut free
FCS-16H	295*240*85	16	24	16	190*270		Cut free
		Splitting		Splicing			
FCS-8H	225*200*65	8	2		168*210		
FCS-12C	225*200*65	12	12		168*210		
FCS-16B	330*260*130	16	4		200*260		
FCS-16C	320*240*100	16	4		190*298		
FCS-16G	293*219*84	16	16		155*82		Cut free/With cut
FCS-24A	320*240*100	24	24		190*298		
FCS-24B	330*260*130	24	24		200*260		
FCS-32B	420*320*130	32	8		256*400		
FCS-36B	420*320*130	36	36		256*400		
FCS-48B	420*320*130	48	48		256*400		

## Fiber Distribution Box ///



### FEATURES

- Indoor application
- Fiber splice, optical splitter, cable storage
- Max capacity up to 72 fibers
- Customizable

### INTRODUCTIONS

- Available for small capacity communication system, wall mounting, reasonable and compact structure, harmonized with machine room.
- The cabinet is composed of two parts, one links with optical cables for fusion connection between optical cable and fiber pigtail and another links with patch cord.
- Provide fusion and storage appliance for optical cables.
- Reliable protection appliance of fixing, stripping and earthing for optical cables.
- Whole range protected design for fiber lay to ensure the bending radius  $\geq 40\text{mm}$
- Provide various accessories to avoid any unexpected damage to the fiber



### ORDER GUIDE

Type	Size(mm)	Max capacity(core)	Remark
KWMSB-D /A-24	455*405*80	24	The case body is made of cold rolled steel sheet, electrostatic spraying, outdoor wall mounting, provide 24-72 adaptors, available for SC/ST/LC
KWMSB-D /A-48	455*405*120	48	
KWMSB-D /A-72	455*405*150	72	
KWMSB-D /B-48	455*405*120	48	The case body is made of stainless steel, electrostatic spraying, outdoor wall mounting, provide 48-72 adaptors available for FC\SC\ST\LC
KWMSB-D /B-72	455*405*150	72	The case body is made of stainless steel, electrostatic spraying, outdoor wall mounting, provide 48-72 adaptors available for FC\SC\ST\LC
KWMSB-D /A-24A	350*350*80	24	The case body is made of cold rolled steel sheet, electrostatic spraying, wall mounting, provide 12-24 adaptors, available for SC\ST\LC
KWMSB-D /C-FC12	350*300*80	12	
KWMSB-D /C-SC12	350*300*80	12	
KWMSB-D /D-FC24	350*300*80	24	
KWMSB-D /D-SC24	350*300*80	24	
FSP-72A	550*480*120	72	
FSP-32B	360*345*100	32	
FSP-16C	400*385*110	16	
FSP-16B	320*270*100	16	
FSP-16A	360*345*100	16	



## Indoor Fiber Terminal Box ///

KWMSB-A/L series Indoor Fiber Terminal Boxes are wall-mounted small size distribution units. The boxes have two cable entries. Fibers are spliced inside and distribute to the optical signal point. The interface can be adapters or pigtails.



### FEATURES

- Indoor applications
- Capacity 8 - 48 fibers
- Output SC/FC/ST/LC connector available
- Splitter type is available, up to 2x32ch PLC splitter
- Customizable

### ORDER GUIDE

Type	Size(mm)	Max capacity(core)	Remark
KWMSB-A-FC12	330*183*70	12	The body is made from cold rolled steel plate, the surface use the technique of electrostatic spraying, 12 outlets for adaptors, available for FC/ST/SC adaptors.
KWMSB-A-SC12	330*183*70	12	The body is made from cold rolled steel plate, the surface use the technique of electrostatic spraying, 12 outlets for adaptors, available for FC/ST/SC adaptors.
KWMSB-A-ST12	330*183*70	12	The body is made from cold rolled steel plate, the surface use the technique of electrostatic spraying, 12 outlets for adaptors, available for FC/ST/SC adaptors.
KWMSB-A-FC24	330*183*100	24	The body is made from cold rolled steel plate, the surface use the technique of electrostatic spraying, 12 outlets for adaptors, available for FC/ST/SC adaptors.
KWMSB-A-CQ48	330*183*70	48	
KWMSB/G-24A	300*120*46	24	The body is made from cold rolled steel plate, the surface use the technique of electrostatic spraying, fiber pigtail outlet
KWMSB-L-FC8	260*140*40	8	The body is made from cold rolled steel sheet, and the surface use the technique of electrostatic spraying, 8 outlets for adaptors, Available for FC/SC/ST
KWMSB-L-SC8	260*140*40	8	The body is made from cold rolled steel sheet, and the surface use the technique of electrostatic spraying, 8 outlets for adaptors, Available for FC/SC/ST
KWMSB-L-ST8	260*140*40	8	The body is made from cold rolled steel sheet, and the surface use the technique of electrostatic spraying, 8 outlets for adaptors, Available for FC/SC/ST
KWMSB-L-CQ8	260*120*40	8	The body is made from cold rolled steel sheet, and the surface use the technique of electrostatic spraying, 8 outlets for fiber pigtail



## Optical Collimator ///

FCS series User Terminal Boxes are widely used in fiber to the home, fiber to the office and fiber to the desktop. KOC's last meter fiber terminal units provide different options for customer fiber access solutions.



### FEATURES

- High precision ceramic ferrule
- High precision connector
- High standard ferrule grinding geometric 3D control
- precise control of concentricity direction
- low insertion loss, low return loss
- SC, LC, FC, MU and other models

### SPECIFICATIONS

Application	3.0 x 2.0 mm drop cable or indoor cable
Fiber diameter	125μ m(652 & 657)
Tight cladding diameter	250μ m & 900μ m
Mode of application	MM or SM
Tensile strength	>50 N
End-use temperature	-40~+85°C
Adaptor	SC & FC
Insertion loss	≤0. 2dB(1310nm & 1550nm)
Output	2

### ORDER GUIDE

Module	Size A*B*C(mm)	Max Capacity		Installation Size	
		SC	LC	D*E(mm)	D*E(mm)
FCS-2H	84*130*24	2	4		85
FCS-2C	86*86*24	2	4		60
FCS-4C	149*110*33	4	8	132*50	



## Cable Management Accessories ///

Cable management accessories help to fiber distribution managing.



### FEATURES

- Splice tray (12 fibers, 24 fibers)
- 60mm and 40mm heatshrink protection sleeve
- Fiber bend radius limiter
- Other tools

### ACCESSORIES



## Fiber Splice Enclosure ///

FCS series User Terminal Boxes are widely used in fiber to the home, fiber to the office and fiber to the desktop. KOC's last meter fiber terminal units provide different options for customer fiber access solutions.



### FEATURES

- High precision ceramic ferrule
- High precision connector
- High standard ferrule grinding geometric 3D control
- precise control of concentricity direction
- low insertion loss, low return loss
- SC, LC, FC, MU and other models

### KPJM SERIES VERTICAL DOME FOSC



### KPJ SERIES HORIZONTAL





## Ethernet Fiber Switch ///

KOC's fiber switch products provide 10M/100M/1000M auto-sensing port, support for web-based IP address management, support for port speed, operating mode, flow control, priority, port security and others intelligent configuration. With the high performance, easy to operation and cost effective, our products provide a perfect solution for the broadband access network project.



### FEATURES

- Supports RJ45 LC or SFP sockets
- Easy installation
- Broadcast storm protection
- Supports VLAN and QoS
- Convert Optical Electric Ethernet signals
- UTP ports to auto 10/100/1000M and Full Duplex-/Half Duplex
- Fully complies with IEEE802.3 10Base-T, IEEE802.3u 100Base-TX, IEEE802.2ab 100Base-TX, IEEE802.3z 100Base-FX standard

### SPECIFICATIONS

Item	Parameter					
Standard Protocol	IEEE 802.3 10Base-T					
	IEEE 802.3u 100Base-TX					
	IEEE 802.3ab 1000Base-T					
	IEEE802.3z 1000Base-SX/LX					
	IEEE802.1q, IEEE802.1p QOS					
Band Width	RJ45	100M	1000M	Optical	100M	1000M
		10/100Mbps	10/100/1000Mbps		155Mbps	1.25Gbps
Operation Mode	Full/Half duplex mode					
Connectors	UTP	RJ-45	Fiber Connector	SC/ST/FC/LC		
Power Supply	External		AC110-250V/50Hz			
			DC 5V 2A			
	Power Consumption		≤5W			
Environmental Parameters	Work Temperature		0°C~50°C (32 °F ~ 122 °F )			
	Storage Temperature		-40°C~70°C (-40 °F ~ 158 °F )			
	Humidity		5%~90% non-condensing			
TP Cable	Cat5 UTP cable (the max distance up to 100m)					
Fiber Cable	8. 3/125, 8. 7/125, 9/125, 10/125μm(the max distance up to 20 -120km)					
	50/125, 62. 5/125μm(the max distance up to 2km or 5km)					
MTBF (Hours)	>60000					
Emission/Safety	FCC Part 15 , Class A, ROHS and CE Mark					

## Rack Mount Media Converter ///

Rack mount Media Converter is a 2U rack mount media converter combine for the equipments centralized management in the central office. It provides 16 slots to load various type of media transceivers. It is supporting to hot plugable and friendly user management.



### FEATURES

- 19" 2U rack panel
- 14 or 16 slots for media converter module
- 10M, 100M, 1000M media converter optional
- Independent controlling for each plug card
- Supporting to hot plug operation
- Centralized power supply
- SFP DMI function activate
- 850nm, 1310nm, 1550nm and DWDM/ CWDM wavelength ruled by ITUT
- Remote power off alarming
- Economical management function with
- Web management activate

### SPECIFICATIONS

Parameter	14-Slot	16-Slot
Access Method	1X10/100/1000M RJ45 1X1000Base-FX	
Color	Black or Silvery	
Standard	IEEE802.3, IEEE802.3u, IEEE802.3Z, IEEE802.3x	
Wavelength	850nm/1310nm/1550nm	
Connector	SC,FC,ST,LC	
Power Dissipation	<3W	
Power input	AC 100 ~ 260V, 50~60Hz; or DC48V	
Power output	DC +5V 12A(single power) or 24A(dual power)	
Power Protection	Circuit- breaker when over voltage, over current ,over flow and short circuit	
Operating Temperature	0 ~ 50°C	
Humidity	5%~90%	
Storage Temperature	-40~ 70°C	
Dimensions	485mm x 245mm x 90mm (Standard 19-Inch, 2U height)	156mm (W)×128mm(D)×32 mm(H) (standalone) 112.8mm (W)×77.2mm(D)×23 mm(H) (Card)



## Media Converter/Transceiver

This fiber media converter converts a copper RJ45 Ethernet connection to Gigabit fiber to extend your network over longer distances or connect workstations to switches. The converter provides a powerful extended networking solution for campuses, businesses, government facilities, stadiums, or other areas requiring network access.



### FEATURES

- MPO, LC, SC or other type available
- Insertion loss: Less than 0.3dB
- Exchangeability < 0.2dB
- Operating temperature range: -40 to +80°C
- LAN and Optical equipment testing

### SPECIFICATIONS

Item	Parameter	
Standard Protocol	IEEE802.3	
	IEEE802.3u	
	IEEE802.3x	
	10Base-T/SX/LX	
	100Base-T/SX/LX	
	IEEE802.1q, IEEE802.1p QoS	
	IEEE802.1d Spanning Tree	
	IEEE 802.3z standard.	
	IEEE 802.3ab standard.	
	Transfer rate	Power Consumption
10Mbps		
100Mbps		
1000Mbps		
Work Temperature	1.25G	
Interface	SC/FC/ST	
Operation mode	full duplex mode or half duplex mode	
Transfer fiber	multi-mode fiber	50/125, 62.5/125μm (up to 2 km)
	Single mode fiber	8.3/125, 8.7/125, 9/125 or 10/125μm (up to 120 km)
Power	External Power supply	AC180V ~ 260V; DC -48V; DC +24V
	Power consumption	≤3W
Dimension	Mini Type	95mm(W)×70mm(D)×26mm(H)
	Working temperature	-10°C ~ 50°C (14°F ~ 122°F)
Working Environment	Working Humidity	5%~95 % (no condensation)
	Storage temperature	-40°C ~ 80°C (-40°F ~ 176°F)
	Storage Humidity	5%~95 % (no condensation)

## Optical Network Unit (ONU)

ONU serie products are the last meter optical network unit for FTTx. It is located at the user end to provide the high speed fiber access. It is widely used in the home and office to provide data, voice, video and other businesses and family multi-media broadband accesses.

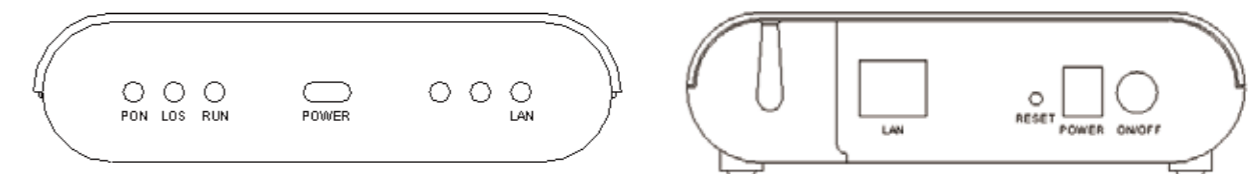


### FEATURES

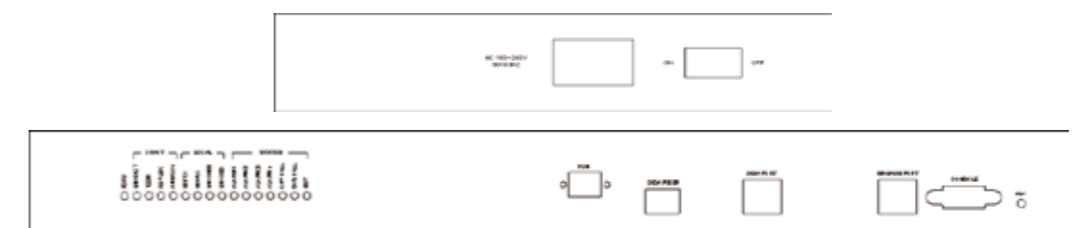
- Internet, CATV, and other multi-service applications
- IEEE802.3ah\IEEE802.1Q and more standard
- Support ethernet switch, frame filtering and suppression
- Support dynamic bandwidth allocation capabilities (DBA)
- Support single fiber WDM technology
- Support generally team broadcast function

### SPECIFICATIONS

Item	Parameters	
	KE8010U	KE8110T
Standard	IEEE 802.3ah, IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z, IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, IEEE 802.1x, RFC1155, RFC1112, RFC1113 and so on.	
Security	128 digit AES Encrypt	
Power supply	DC 12V	-48V distributing DC (wave range is -40V ~ -57V) or 100V~240 V AC
Band Width	10/100/1000M	
Frame	19inches, 1U height	
Weight	<500g	
Operating temperature	0°C~50°C (32 °F ~ 122 °F)	
Storage temperature	-30°C~60°C (-40 °F ~ 158 °F)	
Humidity	10~90% (no coagulation)	
Dimension	L130mm x W115mm x H35mm	L440mm x W207mm x H43mm



KE8010U



KE8110T



## Fiber Interferometer ///

KOC Fiber Interferometers are applicable for 3D measuring of fiber optic connector surface. KOC have the series equipments for single fiber and multi-fiber connector 3D measurement solution. The newly updated equipment provide more efficient and stable measuring.



### FEATURES

- 2.5mm and 1.25mm single fiber ferrule , APC and UPC application
- MT-RJ and MPO/MTP multi-fiber ferrule application
- Faster calibration operating
- High repeatability and precise accuracy
- Cost effective and high performance

## Fault Locator ///

635nm red light fault locator is one kind of link line inspector. It is used to locate the fault point of single mode or multi mode optic fiber. The red light will leak out from the cable or not come out from the other end of the line when the fiber broke. The faulted point can be checked out by naked eye.



### FEATURES

- High power 635nm red light
- Continuous and flashing mode lighting
- Long life light source
- 2.5mm and 1.25mm interface
- Battery power supply

## Polishing Films ///

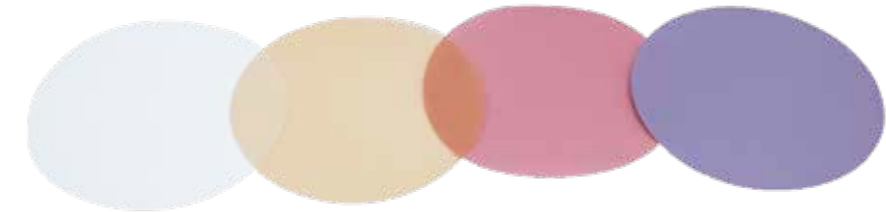
KOC offer a cost effective polishing solution for your fiber optic connector polish. Our polishing films were developed for both ceramic and plastic ferrule. For high performance products polishing, you can very easily to get the consistently polishing result of 3D geometry.



### FEATURES

- Long life and high-quality
- Materials: Diamond, aluminum oxide, silicon carbide, siliconoxide, cerium oxide and so on
- Standard size diameter 127mm
- High performance of removing scratch
- Perfect surface roughness control, high back reflection

### SPECIFICATIONS



Routine polishing films



MPO polishing films



# PASSIVE OPTICAL COMPONENTS

*KOC optical passive devices are mainly applicable to precise control and management of optical power and wavelength in optical fiber networks. They are the key devices in fiber optical networks. Our products are characterized in low insertion loss, high return loss, high reliability, high stability, easy for operation and so on. They are widely used in long-distance communication, MAN and FTTH, video and cable television transmission, optical fiber sensing and other fields.*





## CWDM (Coarse Wavelength Division Multiplexers) ///

CWDM (Coarse Wavelength Division Multiplexer) is based on thin-film filter technology and patented athermal platform systems for optical devices. The CWDM is used to combine or separate different optical wavelength signals. This device offers a very flat and wide passband, low insertion loss, and high isolation, which make it ideal for CWDM Network applications and Optical Amplification Systems. KOC CWDM devices are Bellcore GR-1221 qualification tested and are in compliance with industry green initiatives such as RoHS and WEEE. All KOC CWDM products are epoxy-free in the optical path.



### FEATURES

- Widely Operating Wavelength Range
- Low Insertion Loss
- High Channel Isolation
- High Stability and Reliability
- Insensitive to shock and vibration
- Ultra Flat Wide Pass band
- Epoxy Free Optical Path

### APPLICATIONS

- System Monitoring
- WDM System
- Transmitters and Fiber lasers
- Fiber Optical Amplifier
- Fiber optic instruments

### SPECIFICATIONS

Parameter		Specification	Unit
Channel Center Wavelength		1270~1610 or 1271~1611	nm
Channel Spacing		20	nm
Channel Clear Passband		ITU+7	nm
Transmission Insertion Loss	Max	0.8 (Typ 0.6)	dB
Reflection Insertion Loss	Max	0.6 (Typ 0.4)	dB
Passband Ripple	Max	0.3	dB
Transmission Isolation	Min	30	dB
Reflection Isolation	Min	12	dB
Return Loss	Min	45	dB
Directivity	Min	45	dB
Polarization Dependent Loss	Max	0.1	dB
Operating Temperature Range		0~ + 70	°C
Storage Temperature Range		-40~+85	°C
Maximum Power Handling		300	mW
Package Dimension (L" φ)		38*5.5	mm

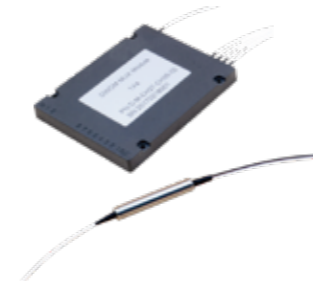
### ORDER GUIDE

CWDM-3P	Center wavelength	Fiber Type	Connector Type
	1271~1611; 1270~1610	1: 250μm bare fiber	0: Without connector
	Example: 1271 = 1271nm	2: 900μm tight buffer fiber	1: FC/ PC 2: FC/UPC 3: FC/APC
	other		4: SC/PC 5: SC/UPC 6: SC/APC
			7: ST 8: LC 9: MU X: Customized

## DWDM (Dense Wavelength Division Multiplexers) ///

DWDM (Dense Wavelength Division Multiplexer) is based on a patented athermal platform for optical devices. This multiplexer features ultra low insertion loss, superb thermal stability, and unparalleled reliability. The technology is a lead-free packaging platform and contains no epoxies in the optical path. KOC DWDM is Telcordia GR-1221 and GR-1209 tested, qualified for uncontrolled environment applications, and is in compliance with industry green initiatives such as RoHS and WEEE.

KOC can provide customized designs to meet specialized feature applications. KOC also offers modular assemblies that integrate other components to form a full function module or subsystem.



### FEATURES

- Widely Operating Wavelength Range
- Low Insertion Loss
- High Channel Isolation
- High Stability and Reliability
- Insensitive to shock and vibration
- Ultra Flat Wide Pass band
- Epoxy Free Optical Path

### APPLICATIONS

- System Monitoring
- WDM System
- Transmitters and Fiber lasers
- Fiber Optical Amplifier
- Fiber optic instruments

### SPECIFICATIONS

Parameter		Specification							Unit
Channel Wavelength		ITU 100GHz Grid			ITU 200GHz Grid				nm
Channel Spacing		100			200				GHz
Channel Count		Single	2	4	8	16	20	40	CH
Channel Passband (@-0.5dB bandwidth)	Min	0.125			0.25				nm
Insertion Loss	Max	<1.1 (add or drop) <0.8 (other)	1.3	2.2	3	4	4.2	4.5	dB
Isolation	Min.	>30 (add or drop) >12 (other)	30				40		dB
Passband Ripple	Max.	0.5							dB
Polarization Dependent Loss	Max.	0.1							dB
Polarization Mode dispersion	Max.	0.1							ps
Directivity	Min.	50							dB
Return Loss	Min	45							dB
Insertion Loss Temperature Stability	Max.	0.005							dB/°C
Temperature Wavelength Drift	Max.	0.003							nm/°C
Power Handling	Max.	300							mW
Tensile Load	Max.	5							N
Pigtail Type		white 0.9mm loose tube							
Fiber Type		SMF-28e							
Fiber length		≥1.0 or customer requirements.							m
Operating Temperature		-10 ~ 70							°C
Storage Temperature		-40 ~ 85							°C
Package Dimension		100X80×10 & 141X115X18&5.5*36							mm



## CWDM Module ///

CWDM Module is based on Thin-Film-Filter and Micro-Optics, this product features wide pass band, low insertion loss and high channel isolation, high stability and reliability.



### FEATURES

- Ultra-low Insertion Loss
- High Channel Isolation
- Super Thermal
- RoHS Compliance
- Optical Path Epoxy Free

### APPLICATIONS

- Metro CWDM system
- Access CWDM system
- Enterprise Network
- RoHS Compliance
- CATV Network

### SPECIFICATIONS

Parameter	Mux & Demux			
Channel Space (nm)	20			
Channel Number	2CH	4CH	8CH	16CH
Center Wavelength (nm)	1270~1610			
Channel Passband (@-0.5dB) (nm)	+/-7.5			
Fiber Type	ITU-T G652D with 0.9mm loose tube or customized			
IL (dB)	0.9	1.5	2.4	3.5
Passband Ripple (dB)	0.5			
Isolation (dB)	Adjacent Channel	30		
	Non-Adjacent Channel	40		
	Upgrade Port	13		
PDL (dB)	0.2			
PMD (ps)	0.1			
RL (dB)	45			
Directivity (dB)	50			
Maximum Optical Power (mw)	500			
Operating Temperature (°C)	-5~65			
Storage Temperature (°C)	-40~85			
Fiber Length (m)	0.6			
Connector type	SC/PC, LC/PC or customized			
BOX Package (mm)	Rack mount 1u 19" or customized			

### ORDER GUIDE

PD-CWDM	Channels	JUMPER TYPE	CONNECTOR	FIBER LENGTH	
	2CH	B: 250um	0: None	10: 1.0m	15: 1.5m
	4CH	9: 900um	1: SC/UPC	18: Other	3: FC/UPC
	8CH	8: Other	2: SC/APC	4: FC/APC	5: LC/UPC
	16CH			6: LC/SPC	7: MU/UPC
	Customed			16: Other	

## LAN WDM Module ///

KOC's LAN (Local Area Network) WDM is designed to meet industrial stringent size and loss requirement. Based on Thin-Film-Filter (TFF) and Micro-optics, this low loss LWDM features small form factor, ultra low insertion loss, high channel isolation, and unparallel reliability. The technology is a lead-free packaging platform and no epoxy in the optical path. The LAN-WDM is Telcordia GR-1221 and GR-1209 qualified, and RoHS compliant.



### FEATURES

- Ultra low insertion loss
- High isolation
- Mux & DeMux
- Compact size
- High Reliability
- Epoxy-Free Optical Path
- Telcordia GR 1221 and GR-1209 compliant

### APPLICATIONS

- WDM System for Local Area Network
- Optimized package for CFP transceiver modules
- Following 100Gbps IEEE 802.3 ba standard

### SPECIFICATIONS

Parameter	Specification		Unit
Optical Performance			
Channel Wavelength	1271, 1291, 1311, 1331 (or other CWDM wavelength)	1271, 1291, 1311, 1331 (or other CWDM wavelength)	nm
	0.5dB Passband	CW±6.5nm	nm
Insertion Loss	(max) 1.6dB, typical <1.0 dB		dB
Polarization Dependent Loss	≤0.30	≤0.30	dB
Adjacent Channel Isolation	≥30	≥30	dB
Non-adjacent Channel Isolation	≥40	≥40	dB
Return Loss	≥45		dB
Directivity	≥50		dB
Mechanical Performance			
Dimension	20x12.4x6.4		mm
Fiber	250 um Corning ClearCurve bare fiber, or 900um loose tube for protection (other protection tube is available)		
Environment Performance			
Operating Temperature Range	-5 to 70 (-40 to 85)		°C
Storage Temperature Range	-40 to 85		°C

### ORDER GUIDE

L-WDM	Channels	Wavelength	Type	Grade	Pigtail	Length	Connector
	4: 4CH	6: 1271~1331 1: 1259.56~1309.14	M: Mux D: DeMux	P: Premium S: Standard	1: 250um 2: 900um	1: 0.5m 2: 1m 3: 1.5m 4: 2m 5: 2.5m	1: None, 2: SCU 3: SCA, 4: LCU 5: LCA, 6: FCU 7: FCA

## 3-Port EDGE Filter WDM ///



### FEATURES

- low insertion loss & high isolation
- Excellent thermal stability
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- WDM system
- EDFA

### SPECIFICATIONS

Parameter		Specification				Unit
Operating Wavelength		1310/1550	1310/1550	1310/1550	1310/1550	
Transmission Wavelength Range		1270~1350	1270~1350	1270~1350	1270~1350	nm
Reflection Wavelength Range		1500~1600	1500~1600	1500~1600	1500~1600	nm
Transmission Insertion Loss	Max	0.8	0.8	0.8	0.8	dB
Reflection Insertion Loss	Max	0.6	0.6	0.6	0.6	dB
Passband Ripple	Max	0.3	0.3	0.3	0.3	dB
Transmission Isolation	Min	30	30	30	30	dB
Reflection Isolation	Min	15	15	15	15	dB
Return Loss	Min	45	45	45	45	dB
Directivity	Min	45	45	45	45	dB
Polarization Dependent Loss	Max	0.1	0.1	0.1	0.1	dB
Operating Temperature Range		0~+70				°C
Storage Temperature Range		-40~+85				°C
Maximum Power Handling		300				mW
Package Dimension (L * Ø)		38*5.5				mm

### ORDER GUIDE

PD-CWDM	Channels	JUMPER TYPE	CONNECTOR	FIBER LENGTH	
	1: T 1260-1360	B: 250um	0: None	10: 1.0m	15: 1.5m
	2: T1480-1500	9: 900um	1: SC/UPC	18: Other	3: FC/UPC
	3: T1540-1560	8: Other	2: SC/APC	4: FC/APC	5: LC/UPC
	4: 1550/980			6: LC/SPC	7: MU/UPC
	Customed			16: Other	

## Module ///

Module is in accordance with a certain structure, the components will be connected, to achieve specific functional products. (the number of components can be one, or more than one device)

### FEATURES

- Compact design
- Low insertion loss and low PDL
- High reliability
- High channel counts
- Wide operating temperature range
- Wide wavelength range
- Customized packaging & configuration

### APPLICATIONS

- FTTX Systems
- LAN, WAN and Metro Networks
- Analog/Digital Passive Optical Networks
- CATV Networks
- Other applications in fiber optic systems

### PRODUCT CATEGORY

Just show some products, for reference only



## Mini CWDM Module ///

CWDM Module is based on Thin-Film-Filter and Micro-Optics, this product features wide pass band, low insertion loss and high channel isolation, high stability and reliability.



### FEATURES

- low insertion loss & high isolation
- Compact size
- Optical path epoxy free
- Telcordia compliant

### APPLICATIONS

- CWDM system
- Metro/Access networks
- CATV network

### SPECIFICATIONS

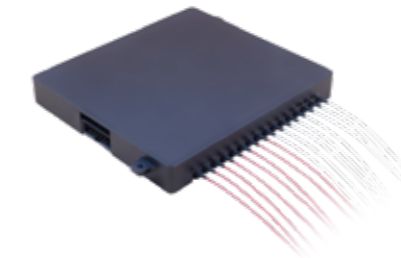
Parameter		Specification	Unit
Channel Center wavelength		1460~1610	nm
Channel Spacing		20	nm
Channel ClearPassband		ITU±035	nm
Number of Channels		4	8
Insertion Loss	Max	1	1.2
Passband Ripple	Max	0.5	0.5
Adjacent Channel Isolation	Min	30	30
Non-adjacent Channel Isolation	Min	15	15
Return Loss	Min	45	45
Directivity	Min	45	45
Polarization Dependent Loss	Max	0.2	0.2
Operating Temperature Range		0~+70	°C
Storage Temperature Range		-40~+85	°C
Maximum Power Handling		300	mW
Package Dimension (L * Ø)		46.5*30*8	mm

### ORDER GUIDE

Mini- CWDM	Channels	Starting Channel	Fiber Type	Connector Type
	04: 4 channels	1471: ch-1471	1: 900µm fiber	0: Without connector
	08: 8 channels	1470: ch-1470	2: 250m bare fiber	1: FC/PC 2: FC/UPC 3: FC/APC
		more		4: SC/PC 5:SC/UPC 6:SC/APC
				7: ST 8: LC 9: MU X: Customized

## 8-Channel MEMS VOA Array ///

8-Channel MEMS VOA Array is a VOA Module based on MEMS technology, featuring compacting design, simple construction, and excellent optical performance. The VOA Array is applied to the dynamic fiber optical modules, subsystems and networks.



### FEATURES

- Low insertion loss
- Low polarization dependent loss
- Fast response
- Low power consumption
- Compact packaged size
- Customized design available on request

### APPLICATIONS

- Dynamic gain equalization in DWDM systems
- Optical network power management
- MUX/DeMUX module
- OADM node
- Power equalization in VMUX
- Instrumentation

### SPECIFICATIONS

Parameter	Unit	Specification			
Configuration		Bright	Dark		
Wavelength Range	nm	C band 1525 - 1570	L band 1570 - 1610		
Attenuation Range	dB	25/30/40	25/30/40		
Return Loss	dB	45	45		
Insertion Loss	dB/ V	0.8	0.8		
Polarization Dependent Loss	0dB	0.1	0.1		
	0dB ~ 10dB	0.4	0.4		
	10dB ~ 20dB	0.8	0.8		
Flat-ness	Broad Application	Band	0dB	0.2	0.2
			0-10dB	0.6	0.6
	Narrow Application	Band	10-20dB	1.5	1.5
			0dB	0.2	0.2
			0-10dB	0.2	0.2
			10-20dB	0.4	0.4
Response Time	ms	5	5		
Optical Power Handling (per ch/wm1)	mW/ch	500	500		
Dimension	mm	60x50x11 (LxWxH)			
Fiber Type		Corning SMF-28(9/125µm)			
Fiber Marking		Input port: Red / Output port: Clear			
Operating Temperature	°C	-5~70			
Storage Temperature	°C	-40~85			
Power Consumption	mW	10			



## Variable Optical Attenuator ///

This product using the MEMS chip with a movable mirror on the silicon. The mirror attenuates the laser light power by coupling the input beam onto the output fiber. The applied voltage to the device controls the mirror tilt angle, thus the desired attenuation amount.



### FEATURES

- Low insertion loss
- Low polarization dependent loss
- Miniature design
- Low power consumption
- High shock & vibration immunity
- Telcordia 1209 & 1221 compliant

### APPLICATIONS

- Channel on/off switch
- Channel equalization
- Receiver protection
- Power equalization in OADM/ROADM
- Power equalization in VMUX
- EDFA GAIN-TILT control

### SPECIFICATIONS

Parameter	Unit	Specification			
Configuration		Bright	Dark		
Wavelength Range	nm	C band 1525 - 1570	L band 1570 - 1610		
Attenuation Range	dB	25/40	25/40		
Repeatability	dB	0.1	0.1		
Attenuation Slope	dB/V	20	20		
Insertion Loss	dB	1	1		
Return Loss	dB	45	45		
Polarization Dependent Loss	0dB	0.2	0.2		
	0dB ~ 10dB	0.4	0.4		
	10dB ~ 20dB	0.8	0.8		
Flat-ness	Broad Application	Band	0dB	0.2	0.2
			0-10dB	1.0	1.0
			10-20dB	2.0	2.0
	Narrow Application	Band	0dB	0.25	0.25
			0-10dB	0.5	0.5
			10-20dB	0.5	0.5
Wear-out	Cycle	10	10		
Response Time	ms	5	5		
Total Optical Power	mW	500	500		
Dimension	mm	16×Φ5.4 (L×D)			
Fiber Type		Corning SMF-28(9/125μm)			
Fiber Marking		Input port: Red / Output port: Clear			
Operating Temperature	°C	-5~70			
Storage Temperature	°C	-40~85			
Power Consumption	mW	10			

## Desktop Variable Optical Attenuator ///

Based on MEMS technology, the Desktop Variable Optical Attenuator is featured with smart structure, low consumption and stable performance. Due to the significant applications in engineering, laboratory and production lines, the Desktop Variable Optical Attenuator is widely appreciated by our customers over the years.



### FEATURES

- Low insertion loss \* Low PDL
- Wide attenuation range
- Fast response
- High resolution
- Remarkable reliability

### APPLICATIONS

- Sideband analysis
- System loss simulation
- Optical power calibration and verification
- Scientific laboratory equipment

### SPECIFICATIONS

Parameter		Specification	Unit
Operating Wavelength Range (Calibration)		1310&1550	nm
Attenuation Range	Max	60	dB
Accuracy		±0.3@.0-30dB / ±0.6@.30-60dB	dB
Attenuation Resolution	Max	0.1	dB
Attenuation Repeatability	Max	0.2	dB
Stability	Max	0.2	dB
Insertion Loss	Max	2	dB
Return Loss	Min	45	dB
Input Power	Max	500	m/W
Fiber Type		Coming SMF-28	
Connector Type		FCIUPC or FUIAPC (Customized)	
Power Consumption	Max	200	m/W
Supply Power		AC:100-240V 50/60Hz	
Communication Interface		RS232	
Operating Temperature		-5~50	°C
Storage Temperature		-25-70	°C
Dimension		210x200x100 (LxWxH)	mm

### ORDER GUIDE

D-VOA	Wavelength Range	Attenuation Range	Connector Type
	1 1310&1550nm	60 60dB	1 FC/UPC
	X Customized	X Customized	2 FC/APC
			X Customized

## Simple Variable Optical Attenuator ///

The Simple Variable Optical Attenuator is based on our MEMS VOA technology. It has high response speed, good linearity, high resolution and low IL. It is an ideal instrument for optical network system and optical engineering test.



### FEATURES

- Low insertion loss \* Low PDL
- Wide attenuation range
- Fast response
- High resolution
- Remarkable reliability

### APPLICATIONS

- System sideband analysis
- System loss simulation
- Optical power calibration and verification
- Scientific laboratory equipment

### SPECIFICATIONS

Parameter	JYVOA-30	JYVOA-60	Remarks
Attenuation Range(dB)	0dB ~ 30dB	0dB ~ 60dB	
Stability(dB)	≤0.1	≤0.2	
Insertion Loss(dB)	≤1.2	≤3.0	
Repeatability(dB)	≤0.1		
Calibration(nm)	1310/1550		
Return Loss(dB)	≥45		
Input Power(mW)	≤500		
Fiber Type	SMF-28		
Connector type	FC/UPC or FC/APC		Customized
Supply Power	DC:9V		
Power Consumption(mW)	<100		
Operating Temperature (°C)	-5 ~ 50		
Storage Temperature (°C)	-25 ~ 70		
Dimension( L×W×H )	120 * 190 * 60 (mm)		

### ORDER GUIDE

JYVOA	Attenuation Range	Connector Type
	30 30dB	1 FC/UPC
	60 60dB	2 FC/APC

## Hand-held Optical Attenuator ///

High-precision digital decay series is developed in accordance with optical communication equipment engineering requirements. The Hand-held Optical Attenuator is based on MEMS technology, simple construction, and stable optical performance. The portable design is easy to carry in engineering and maintenance.



### FEATURES

- Large screen LCD digital display
- 0.1dB Display resolution
- 0~60dB variable attenuation
- Low power consumption
- Return loss more than 50dB

### APPLICATIONS

- Communication engineering and maintenance
- CATV engineering and maintenance
- Optical device production and research

### SPECIFICATIONS

Parameter		Specification	Unit
Operating Wavelength Range		1310&1550	nm
Attenuation Range	Max	50      60	dB
Accuracy		±0.3@0~40dB / ±0.5@40~50dB      ±0.3@0~40dB / ±0.5@40~60dB	dB
Attenuation Resolution	Max	0.1	dB
Attenuation Repeatability	Max	0.05	dB
Insertion Loss	Max	2	dB
Return Loss	Min	50(APC) or 40(UPC)	dB
Fiber Type		Coming SMF-28	
Power Consumption	Max	100	m/W
Operating Temperature		-5~50	°C
Storage Temperature		-25-70	°C
Dimension		158×88×36 (L×W×H)	mm
weight		150	g

### ORDER GUIDE

D-VOA	Wavelength Range	Attenuation Range	Connector Type
	1 1310&1550nm	50 50dB	1 FC/UPC
	X Customized	60 60dB	2 FC/APC
		X Customized	X Customized

## 1×3/1×4 FBT Coupler ///

We use fused biconical taper technique to build a series of couplers. According to the different operating bandwidths, we have wide band couplers, dual window couplers, three-window couplers, and so on.



### FEATURES

- Low insertion loss and low PDL
- High reliability & High stability
- RoHS compliant

### APPLICATIONS

- EDFA
- CATV Passive network WAN
- FTTH

### SPECIFICATIONS

Parameter		Value		
		1×3 Dual-Window Coupler(DWC)	3×3 Single Window Coupler(WBC)	1×4 Dual-Window Coupler(DWC)
Operating Wavelength	nm	1310/1550	1310/1550	1310/1550
Operating Bandwidth	nm	1310/1550±40	1310/1550±40	1310/1550±40
Insertion Loss	dB	≤5.8	≤5.8	≤5.8
Polarization Dependent Loss	dB	≤0.25	≤0.25	≤0.25
Uniformity	dB	≤1.0	≤1.0	≤1.0
Temperature Dependent Loss	dB	≤0.25	≤0.25	≤0.25
Return Loss	dB	≥55	≥55	≥55
Operating Temperature	°C	-40~+85	-40~+85	-40~+85
Storage Temperature	°C	-40~+85	-40~+85	-40~+85
Fiber Type		SMF-28e	SMF-28e	SMF-28e

### ORDER GUIDE

Type	Package Dimension	Fiber Type	Connector Type
1: 1×3 Dual-Window	1:3*60mm	1: 250m bare fiber	0: without connector
2: 3×3 Single Window	2:3*54mm	2: 900m tight buffer fiber	1: FC/ PC 2: FC/UPC 3: FC/APC
3: 1×4 Dual-Window	3:3*40mm	X: Customized	4: SC/PC 5:SC/UPC 6: SC/APC
			7: ST 8: LC 9: MU X: Customized

## FBT Fiber Coupler ///

FBT Fiber Coupler is a kind of passive component that couple optical and realize the distribution of light power. It can divide a light signal from an optical fiber into several ones, realizing the separation or combination of light signal, or be used to extend the fiber link. It belongs to optical passive components, can be applied to the telecom network, CATV network, subscriber loop system, regional network.



### FEATURES

- Low excess loss
- High Isolation
- Compact size

### APPLICATIONS

- Long-haul telecommunications
- CATV systems & Fiber sensors
- Local area network

### SPECIFICATIONS

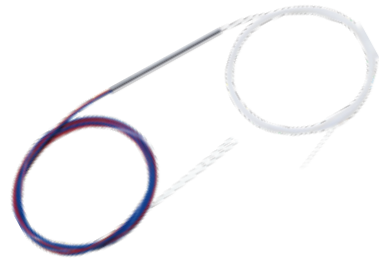
Parameter	Premium	A Grade
Port Configuration	1×2	
Operating Wavelength (nm)	1310/1550±15	
Maximum Insertion loss (dB)	≤ 0.3	≤ 0.5
Isolation (dB) (Typical)	>17	>16
Return Loss (dB)	>55	
Directivity (dB)	>55	
PDL(dB)	<0.1	
Storage Temperature	-40°C - 85°C	
Fiber Type	Corning SMF-28	
Package Dimension	Package A, B, C,S	

### ORDER GUIDE

FBT	Grade	Package Dimension	Fiber Type	Connector Type
	P: P-grade	1:3*60mm	1: 250m bare fiber	0: without connector
	A: A-grade	2:3*54mm	2: 900m tight buffer fiber	1: FC/ PC 2: FC/UPC 3: FC/APC
		3:3*40mm	X: Customized	4: SC/PC 5:SC/UPC 6: SC/APC
				7: ST 8: LC 9: MU X: Customized



## 1×2 980/1550 WDM ///



### FEATURES

- Wavelength on customer request
- Coupling ratio on customer request
- Low excess loss
- High stability and reliability

### APPLICATIONS

- Fiber sensors
- Optical communication systems
- Testing instruments

### SPECIFICATIONS

Parameter		Unit	Specifications	
Signal Working Wavelength Range (λ <sub>s</sub> )		nm	1527 ~ 1566	
Pump working wavelength range(λ <sub>p</sub> )		nm	960~990	
Insertion loss	signal~common@λ <sub>s</sub>	Max	dB	0.20
	pump~common@λ <sub>p</sub>	Max	dB	0.15
Isolation	signal~common@λ <sub>p</sub>	Min	dB	20
	pumpcommon@λ <sub>s</sub>	Min	dB	18
Wavelength dependent loss1 @ signal		Max	dB	0.10
Temperature dependent loss2		Max	dB	0.1
Polarization Dependent Loss		Max	dB	0.05
Directivity		Min	dB	55
Operating Temperature	°C	-5 ~ 75	Max. Optical Power	w 1
Storage Temperature	°C	-40 ~ 85	Operating Humidity	% 5 ~ 95
Reliability Requirement	Compliant with GR-1209-CORE and GR-1221-CORE			

### ORDER GUIDE

980/15 WDM	Package Dimension	Fiber Type	Connector Type
	1:3*60mm	1: 250m bare fiber	0: without connector
	2:3*54mm	2: 900m tight buffer fiber	1: FC/ PC 2: FC/UPC 3: FC/APC
	3:3*40mm	X: Customized	4: SC/PC 5:SC/UPC 6: SC/APC
			7: ST 8: LC 9: MU X: Customized

## Special WDM ///

Special wavelength WDM such as 980/1064nm, 1064/1550nm,1550/1625nm WDM. Raman Pump Combiner is designed for combining the multiple pumps with different wavelengths for Ramanamplifiers.



### FEATURES

- Wavelength on customer request
- Coupling ratio on customer request
- Low excess loss
- High stability and reliability

### APPLICATIONS

- Fiber sensors
- Optical communication systems
- Testing instruments

### SPECIFICATIONS

Parameter	Special WDM		
Operating wavelength (nm)	980 / 1064	980 / 1064	980 / 1064
Operating bandwidth (nm)	±5	±5	±5
Insertion loss (dB)	P	≤0.3	
	A	≤0.4	
Isolation (dB)	P	≥14	≥18
	A	≥13	≥17
PDL (dB)	P	≤0.10	
	A	≤0.15	
Directivity (dB)	≥55		
Operating temperature (°C)	-40 ~ +85		

Parameter	Raman Pump Combiner			
	15~ 20nm		>20nm	
Operating wavelength (nm)	Upon customer request			
Grade	P	A	P	A
Center insertion loss (dB)	≤0.5	≤0.6	≤0.4	≤0.5
Center isolation (dB)	≥14			
Directivity (dB)	≥55			
Operating temperature (°C)	-40 ~ +85			

### ORDER GUIDE

Wavelength	Grade	Package Dimension	Fiber Type	Connector Type
980 / 1064	P: P-grade	1:3*60mm	1: 250m bare fiber	0: without connector
1064 / 1550	A: A-grade	2:3*54mm	2: 900m tight buffer fiber	1: FC/ PC 2: FC/UPC 3: FC/APC
1550 /1625		3:3*40mm		4: SC/PC 5:SC/UPC 6: SC/APC
				7: ST 8: LC 9: MU X: Customized

## 1X2 Mechanical Optical Switch ///

Special wavelength WDM such as 980/1064nm, 1064/1550nm, 1550/1625nm WDM. Raman Pump Combiner is designed for combining the multiple pumps with different wavelengths for Raman amplifiers.



### FEATURES

- Wavelength on customer request
- Coupling ratio on customer request
- Low excess loss
- High stability and reliability

### APPLICATIONS

- Fiber sensors
- Optical communication systems
- Testing instruments

### SPECIFICATIONS

Parameter	Unit	1×2 Optical Switch
Wavelength Range	nm	1260 ~ 1650
Test Wavelength	nm	1310 and 1550
Insertion Loss 1, 2	dB	≤ 0.8 (typical: 0.6)
Wavelength Dependent Loss	dB	≤ 0.25
Return Loss 1	dB	≥ 50 (typical: 55)
Crosstalk	dB	≥ 55 (typical: 60)
Polarization Dependent Loss	dB	≤ 0.05 (typical: 0.03)
Temperature Dependent Loss	dB	≤ 0.2
Repeatability	dB	≤ ±0.02
Operating Voltage	VDC	5
Durability	Cycles	≥ 10 Million
Switching Time	ms	≤ 8
Optical Power	mW	≤ 500
Operating Temperature	°C	-20 ~ +70
Storage Temperature	°C	-40 ~ +85
Relative Humidity	%	≤ 85
Dimension	mm	(L)27.0×(W)12.6×(H)8.0 ±0.2

### ORDER GUIDE

Switch Type	Test Wavelength	Tube Type	Fiber Length	Connector Type
L: Latching	3: 1310nm	B: 250μm bare fiber	05: 0.5m	00: None FP: FC/PC
N: Non-latching	5: 1550nm	T: 900μm loose tube	10: 1.0m	FA: FC/APC SP: SC/PC
	D: 1310/1550nm		15: 1.5m	SA: SC/APC LP: LC/PC
				LA: LC/APC ST: ST
				MU: MU

## UNI-DIRECTIONAL TAP-PO MONITOR ///



### FEATURES

- Low Insertion Loss
- Unidirectional
- Customized tap ratio available
- Integrated devices, compact size

### APPLICATIONS

- WDM channel monitoring
- Gain monitoring for amplifiers
- Optical network switch/protection
- Monitoring

### SPECIFICATIONS

Parameter	Raman Pump Combiner			Unit
Operating Wavelength C/L band	C/L band			
Tap Ratio	1%	2%	5%	
Maximum Input Power	25	22	18	dBm
Responsivity	7~12	14~24	40~60	mA/W
Insertion Loss	Max 0.5	0.6	0.7	dB
Wavelength Dependent Loss	Max	0.3		dB
Temperature Dependent Loss	Max	0.3		dB
Return Loss	Min	40		dB
Directivity	Min	25		dB
Polarization Dependent Loss	Max	0.2		dB
Dark Current {at 25°C} Max	Max	1		nA
Reverse Voltage	Max	20 (Typ 5)		V
Operating Temperature Range	0~+70			°C
Storage Temperature Range	-40~+85			°C
Package Dimension (L * Ø)	27.5*5.6			mm

### ORDER GUIDE

UTPD	Standard/Mini Size	Tap Ratio	Fiber Type	Connector Type
	S: Standard size	01: 1%	1: 250m bare fiber	0: without connector
		02: 2%	2: 900m tight buffer fiber	1: FC/PC 2: FC/UPC 3: FC/APC
		05: 5%		4: SC/PC 5: SC/UPC 6: SC/APC
		More		7: ST 8: LC 9: MU X: Customized

## 1310/1550/1590nm In-Line Isolator ///



### FEATURES

- Low Insertion Loss and high isolation
- Low PDL & PMD
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- EDFA
- WDM system
- Fiber optic instruments

### SPECIFICATIONS

Parameter	Raman Pump Combiner				Unit
Center Wavelength ( $\lambda_c$ )	1310/1550/1590				nm
Standard	Standard Size / Mini Size				
Single/Dual Stage	Single(Grade P)	Single(Grade A)	Dual(Grade P)	Dual(Grade P)	
Isolation (at $\lambda_c \pm 15\text{nm}$ ) 1	Min	30	28	45	45
Isolation (at $\lambda_c \pm 15\text{nm}$ ) 2	Min	22	22	42	42
Insertion Loss (at $\lambda_c$ ) 1	Typ	0.4	0.5	0.5	0.5
Insertion Loss (at $\lambda_c \pm 15\text{nm}$ ) 2	Max	0.5	0.6	0.6	0.6
Return Loss (Input/Output)	Min	60/55	55/55	60/55	60/55
PDL	Max	0.05	0.08	0.08	0.08
PMD	Max	0.05	0.05	0.05	0.05
Operating Temperature Range	0~+70				ps
Storage Temperature Range	-40~+85				°C
Maximum Power Handling	500				°C
Package Dimension (L*Φ)	Standard Size		40*5.5		mW
	Mini Size		26*3.0		mm

### ORDER GUIDE

Single/Dual Stage	Grade	Standard/Mini Size	Fiber Type	Connector Type
S: Single stage without PMD	P: P-grade	31: 1310nm	1: 250 $\mu\text{m}$ bare fiber	0: Without connector
D: Dual stage	A: A-grade	55: 1550nm	2: 900 $\mu\text{m}$ tight buffer fiber	1: FC/PC
P: Single stage with PMD		59: 1590nm		2: FC/UPC
				3: FC/APC
				4: SC/PC
				5: SC/UPC
				6: SC/APC
				7: ST
				8: LC 9: MU
				X: Customized

## 2X2 Mechanical Optical Switch ///

2x2 Mechanical Optical Switch support all wavelength at 1260nm~1650nm, it offers ultra- high reliability, low insertion loss, fast switching speed as well as bi-directional performance. The optical switches are widely used for Optical Network, Protection, Transmitter and Receiver Protection, Network Test System and Instrumentations.



### FEATURES

- Low Insertion Loss
- High Reliability
- Compact Size
- Latching or Non-latching Configurations

### APPLICATIONS

- Network Switching
- Configurable optical Add/Drop multiplexing
- Network Protection and Monitoring
- Instrumentation, Testing and Measurement

### SPECIFICATIONS

Parameter	Unit	1×2 Optical Switch
Wavelength Range	nm	1260 ~ 1650
Test Wavelength	nm	1310 and 1550
Insertion Loss 1, 2	dB	≤ 0.8 (typical: 0.6)
Wavelength Dependent Loss	dB	≤ 0.25
Return Loss 1	dB	≥ 50 (typical: 55)
Crosstalk	dB	≥ 55 (typical: 60)
Polarization Dependent Loss	dB	≤ 0.05 (typical: 0.03)
Temperature Dependent Loss	dB	≤ 0.2
Repeatability	dB	≤ ±0.02
Operating Voltage	VDC	5
Durability	Cycles	≥ 10 Million
Switching Time	ms	≤ 8
Optical Power	mW	≤ 500
Operating Temperature	°C	-20 ~ +70
Storage Temperature	°C	-40 ~ +85
Relative Humidity	%	≤ 85
Dimension	mm	(L)27.0×(W)12.6×(H)8.0 ±0.2

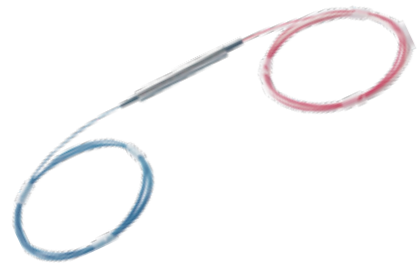
### ORDER GUIDE

Switch Type	Test Wavelength	Tube Type	Fiber Length	Connector Type
L: Latching	3: 1310nm	B: 250 $\mu\text{m}$ bare fiber	05: 0.5m	00: None FP: FC/PC
N: Non-latching	5: 1550nm	T: 900 $\mu\text{m}$ loose tube	10: 1.0m	FA: FC/APC SP: SC/PC
	D: 1310/1550nm		15: 1.5m	SA: SC/APC LP: LC/PC
				LA: LC/APC ST: ST
				MU: MU



## Circulator ///

1550nm 3port Circulator,0.9mm loose tube, with FC/APC connector, Fiber length  $\geq 0.5\text{m}$ , Package Dimension :  $\Phi 5.5 \times L50\text{mm}$ .



### FEATURES

- Low Insertion Loss and high isolation
- Low PDL & PMD
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- EDFA
- WDM system
- Fiber optic instruments

### SPECIFICATIONS

Parameter	Unit	Specifications
Configuration		Port 1 to Port2 to Port 3
Operating Wavelength	nm	1550 $\pm$ 30
Insertion Loss	Typical	1.00
	Maximum	1.20
Channel Peak Isolation	Min	50
Channel Minimum Isolation	Min	40
Channel Cross Talk	Min	50
Return Loss	Min	50
Polarization Dependent Loss	Max	0.15
Polarization Mode Dispersion	Max	0.10
Power Handling	Max	300
Pigtail and connector Type		0.9mm loose tube with FC/UPC connector
Fiber Type		SMF-28e
Fiber length	cm	$\geq 50$
Operating Temperature	$^{\circ}\text{C}$	0~ 70
Storage Temperature	$^{\circ}\text{C}$	-40 ~ 85
Package Dimension	mm	$\Phi 5.5 \times L50$

### ORDER GUIDE

Wavelength	Port	Fiber Type	Size	Connector Type
13A:1310nm(A Grade)	3: 3 port	1: 250 $\mu\text{m}$ bare fiber	1: 5.5 $\times$ L50(3 port)	0: Without connector
13P:1310nm(P Grade)	4: 4 port	2: 900 $\mu\text{m}$ tight buffer fiber	2: 5.5 $\times$ L70(4 port)	1: FC/PC 2: FC/UPC
15A:1550nm(A Grade)		X: Customized		3: FC/APC 4: SC/PC
15P:1550nm(P Grade)				5: SC/UPC 6: SC/APC
				7: ST 8: LC 9: MU
				X: Customized

## 1064nm In-Line Isolator ///



### FEATURES

- Low Insertion Loss and high isolation
- Low PDL & PMD
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- EDFA
- WDM system
- Fiber optic instruments

### SPECIFICATIONS

Parameter		Specification	Unit	
Center Wavelength ( $\lambda_c$ )		1064	nm	
Standard		Standard Size		
Single/Dual Stage		Single Stage	Dual Stage	
Isolation (at $\lambda_c \pm 15\text{nm}$ ) 1	Min	25	45	dB
Insertion Loss (at $\lambda_c$ ) 1	Typ	1.8	3.5	dB
Insertion Loss (at $\lambda_c \pm 15\text{nm}$ ) 2	Max	2.5	4.5	dB
Return Loss (Input/Output)	Min	55/55	55/55	dB
PDL	Max	0.1	0.1	dB
Operating Temperature Range		0~+70	$^{\circ}\text{C}$	
Storage Temperature Range		-40~+85	$^{\circ}\text{C}$	
Maximum Power Handling		150	mW	
Package Dimension (L* $\Phi$ )		40*5.5	mm	

### ORDER GUIDE

Single/Dual Stage	Grade	Standard/Mini Size	Fiber Type	Connector Type
S: Single stage without PMD	P: P-grade	31: 1310nm	1: 250 $\mu\text{m}$ bare fiber	0: Without connector
D: Dual stage	A: A-grade	55: 1550nm	2: 900 $\mu\text{m}$ tight buffer fiber	1: FC/PC
P: Single stage with PMD		59: 1590nm		2: FC/UPC
		64: 1064nm		3: FC/APC
				4: SC/PC
				5: SC/UPC
				6: SC/APC
				7: ST
				8: LC 9: MU
				X: Customized

## PD-WDM ///



### FEATURES

- Low Insertion Loss and high isolation
- Low PDL & PMD
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- EDFA
- WDM system
- Fiber optic instruments

### SPECIFICATIONS

Parameter	VALUE			Unit
Pass Channel Wavelength Range, $\lambda_P$	1260~1360			nm
Reflection Channel Wavelength	1540~1560 and 1480~1500			nm
Responsibility	min	Typ	max	1550nm
	0.90	0.95		
Bandwidth	2.5	3.2		GHz
IMD2	70			dBc
IMD3	80			dBc
Operating Voltage		5	20	V
Frequency Bandwidth	5	6		GHz
Frequency Response	-0.5		0.5	dB
Dark Current	1			nA
Capacitance	0.7			pF
Insertion Loss	Com-Reflection	$\leq 0.5$		dB
	Isolation	Com-Pass, $\lambda_R$	$\geq 25$	
	Com-Reflection, $\lambda_P$	$\geq 15$		dB
Return Loss	$\geq 45$			dB
Directivity	$\geq 50$			dB
PDL	$\leq 0.1$			dB
Fiber Type	SMF-28e, 250um bare fiber			
Fiber Color	Comport:Black Passport:Nature Ref port:Nature or customed			
Package Dimension	5.5mm( $\varnothing$ ) $\times$ 34(L)for bare fiber 5.5mm( $\varnothing$ ) $\times$ 40(L)for 900um Loss tube			mm
Operating Temperature	-10~+70			$^{\circ}$ C
Storage Temperature	-40~+85			$^{\circ}$ C

## Isolator WDM Hybrid (IWDM) ///



### FEATURES

- Low Insertion Loss and high isolation
- Low PDL & PMD
- Optical path epoxy free
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- EDFA
- WDM system
- Fiber optic instruments

### SPECIFICATIONS

Parameter		Specification				Unit	
		Single	Dual	Single	Dual		
Operating Wavelength		980/1550		1480/1550			
Single/Dual Stage		Single	Dual	Single	Dual		
Signal Port	Wavelength Range ( $\lambda_s$ )	1530~1565		1530~1565		nm	
	Insertion Loss@ $\lambda_s1$	Typ	0.8	0.9	0.7	0.8	dB
	Insertion Loss@ $\lambda_s2$	Max	1.1	1.2	1	1.1	dB
	Isolation@ $\lambda_s1$	Min	30	44	30	44	dB
	PDL	Max	0.1	0.1	0.1	0.1	dB
Signal Port	Wavelength Range ( $\lambda_p$ )	960~990		1460~1490		nm	
	Insertion Loss@ $\lambda_p1$	Typ	0.4	0.4	0.4	0.4	dB
	Insertion Loss@ $\lambda_p2$	Max	0.6	0.6	0.6	0.6	dB
	Isolation@ $\lambda_p1$	Min	15	15	15	15	dB
	PDL	Max	0.1	0.1	0.1	0.1	dB
Return Loss	Min	50	50	50	50	dB	
Directivity	Min	50	50	50	50	dB	
Operating Temperature Range		0~+70				$^{\circ}$ C	
Storage Temperature Range		-40~+85				$^{\circ}$ C	
Maximum Power Handling		300				mW	
Package Dimension (L* $\varnothing$ )		35*5.5				mm	

### ORDER GUIDE

Operating Wavelength	Single/Dual Stage	Forward/Backward Type	Fiber Type	Connector Type
95: 980/1550	P: Single stage with PMD	01: Forward Type	1: 250 $\mu$ m bare fiber	0: Without connector
45: 1480/1550	D: Dual stage	02: Backward Type	2: 900 $\mu$ m tight buffer fiber	1: FC/PC 2: FC/UPC
				3: FC/APC 4: SC/PC
				5: SC/UPC 6: SC/APC
				7: ST 8: LC 9: MU
				X: Customized

## Collimator ///

Based on MEMS technology, the Desktop Variable Optical Attenuator is featured with smart structure, low consumption and stable performance. Due to the significant applications in engineering, laboratory and production lines, the Desktop Variable Optical Attenuator is widely appreciated by our customers over the years.



### FEATURES

- Low insertion loss
- High return loss
- Epoxy-free in optical path

### APPLICATIONS

- WDM device and module
- Isolator
- Circulator
- Optical researching

### SPECIFICATIONS

Parameter	Single fiber		Dual fiber	
	Premium	A Grade	Premium	A Grade
Operating Wavelength (nm)	1310/1550, 1260~1620 or Customized		1310±20, 1550±20	
Insertion Loss (dB)	≤0.18	≤0.20	≤0.30	≤0.35
Return Loss (dB)	60			
Receive angle (degree)	±0.15			
Facula diameter(mm)	<0.5			
Optical Power Handling (mw)	≤500			
Operating Temperature (°C)	-10°C+70°C			
Storage Temperature (°C)	-40°C+85°C			
Fiber Type	SMF-28, MMF50/125um or MMF62.5/125			
Fiber Length (Min.)	1 Meter Each End 0.25mm or 0.9mm			
Package Dimension (mm)	φ 2.78*10mm or φ 3.2*10mm or customized			

### ORDER GUIDE

Type	Wavelength(nm)	Grade	Pigtail type	Fiber Length	In/Out Connector
SF=Single fiber	13=1310	P=Premium	1=Bare Fiber	1=1.0m	0=None
DF=Dual fiber	15=1550	A=Grade A	2=900um Tight Buffer	2=1.5m	1=FC/APC
	35=1310/1550		3=φ3mm Cable	3=other	2=FC/PC
	1216=1260~1620		4=2.0mm Cable		3=SC/APC
					4=SC/PC
					5=ST
					6=LC/PC
					7=LC/APC

## Mini TAP-PD Monitor ///



### FEATURES

- Low Insertion Loss & high isolation
- Customized tap ratio available
- Integrated devices, compact size
- Telcordia compliant
- RoHS compliant

### APPLICATIONS

- WDM channel monitoring
- Gain monitoring for amplifiers
- Optical network switch/protection monitoring

### SPECIFICATIONS

Parameter	Raman Pump Combiner			Unit	
Operating Wavelength	C/L band				
Tap Ratio	1%	2%	5%		
Maximum Input Power	25	22	18	dBm	
Responsivity	7~15	14~26	40~60	mA/W	
Insertion Loss	Max	0.5	0.6	0.7	dB
Wavelength Dependent Loss	Max	0.3	0.3	0.3	dB
Temperature Dependent Loss	Max	0.3	0.3	0.3	dB
Return Loss	Min	45	45	45	dB
Polarization Dependent Loss	Max	0.1	0.1	0.1	dB
Dark Current (at 25°C)	Max	1	1	1	nA
Reverse Voltage	Max	20 (Typ 5)		V	
Operating Temperature Range	0~+70			°C	
Storage Temperature Range	-40~+85			°C	
Package Dimension (L*Ø)	17*3.2			mm	

### ORDER GUIDE

TPD	Standard/Mini Size	Tap Ratio	Fiber Type	Connector Type
	M: Mini size	01: 1%	1: 250μm bare fiber	0: Without connector
		02: 2%	2: 900μm tight buffer fiber	1: FC/PC 2: FC/UPC 3: FC/APC
		05: 5%		4: SC/PC 5: SC/UPC 6: SC/APC
				7: ST 8: LC 9: MU X: Customized





## KOC Branches

### KOC-Sri Lanka

Address: Germain Wickramasinghe, 133/36/1, Lourds Lane, Tewatte Road, Ragama, Sri Lanka

Email: sales@koc.com.cn

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- The most rational and fast way of logistics
- Engineers: earliest entrants in fiber industry of China
- Sales: overseas working experiences
- Operation team: fortune global 500 working experience



**2,500** m<sup>2</sup>

Production Area

**1,000** m<sup>2</sup>

Office Area

**42** staff

Bachelor degree or higher

**90** staff

10+ years working experience