


Optical Passive Product Brochure

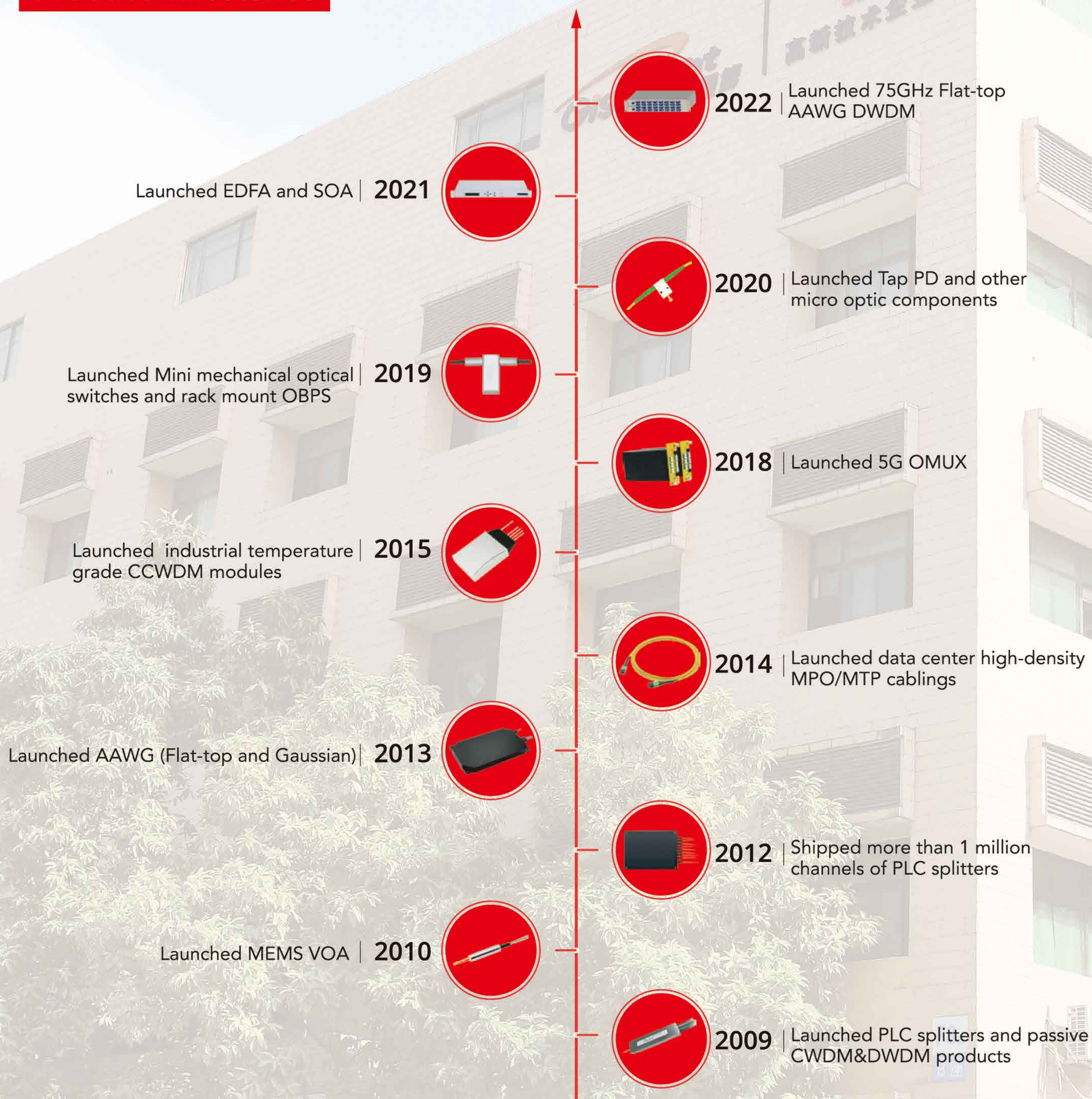
- 
- ▶ Passive WDM Systems
 - ▶ Mechanical Optical Switches
 - ▶ High-Density Optical Connectivity
 - ▶ Micro Optics
 - ▶ Fiber Optic Splitters
 - ▶ Fast Fiber Connectors

Company Profile

Founded in 2006, GIGALIGHT is an enterprise with outstanding brand influence in the field of global optical communications, positioned as a technology innovator and market explorer in the field of open optical networks.

GIGALIGHT's business focuses on developing decoupled optical network modules and subsystems to reduce CAPEX and OPEX for data centers and telecom operators. Since its establishment, the company has actively cooperated with global operators to realize the interconnection of optical networks, and has been widely recognized as a veritable advocate and leader of open optical interconnection middleware.

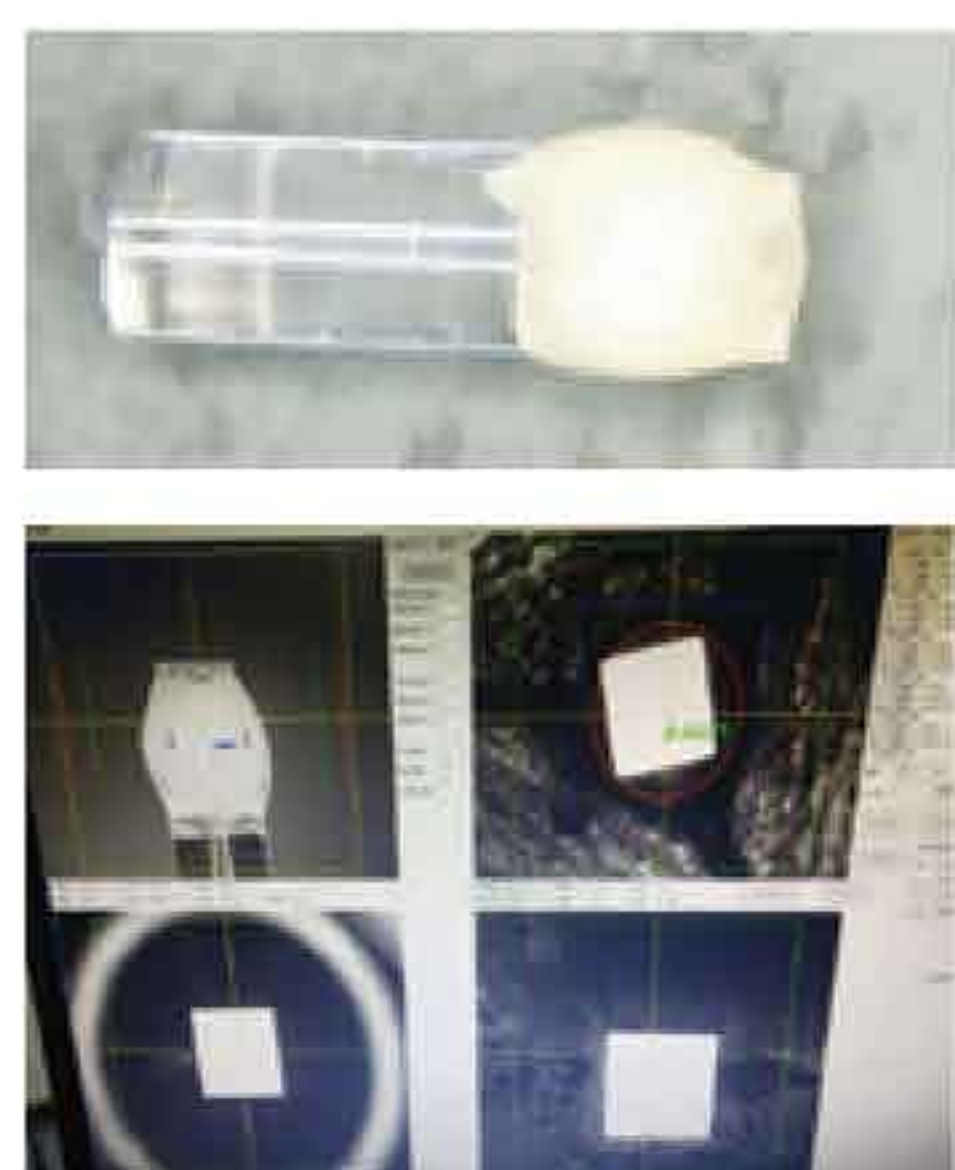
Product Milestones



Manufacturing & Quality System

Automatic packaging technology for TFF 3-port WDM passive optics (50K pcs/month)

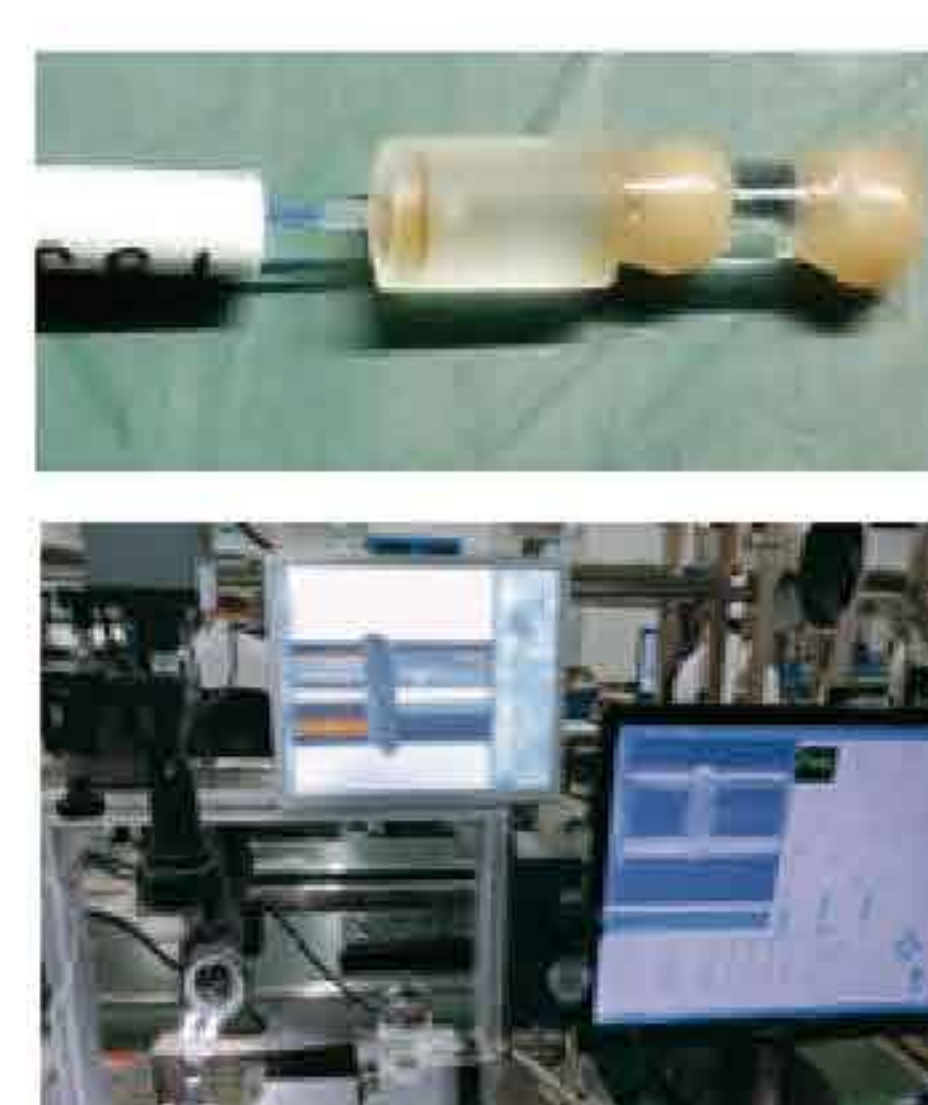
Automated placement and sizing of TFF film



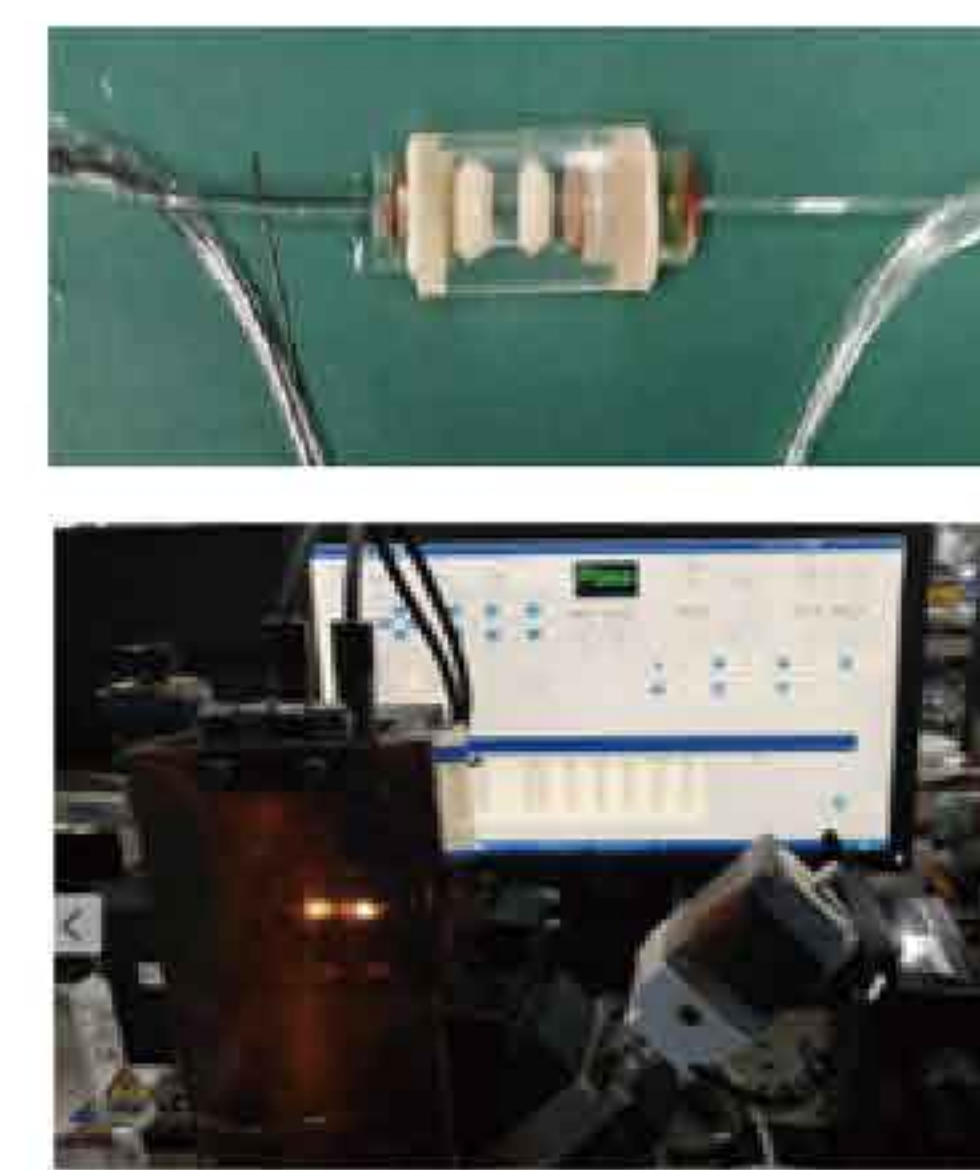
Single fiber pigtail coupling



Dual fiber pigtail coupling



Automated assembly



- ✓ Automated production line: TFF film automatic placement, automatic dispensing, and automatic coupling
- ✓ 50k pcs/month production capacity (efficiency increased by 3 times)

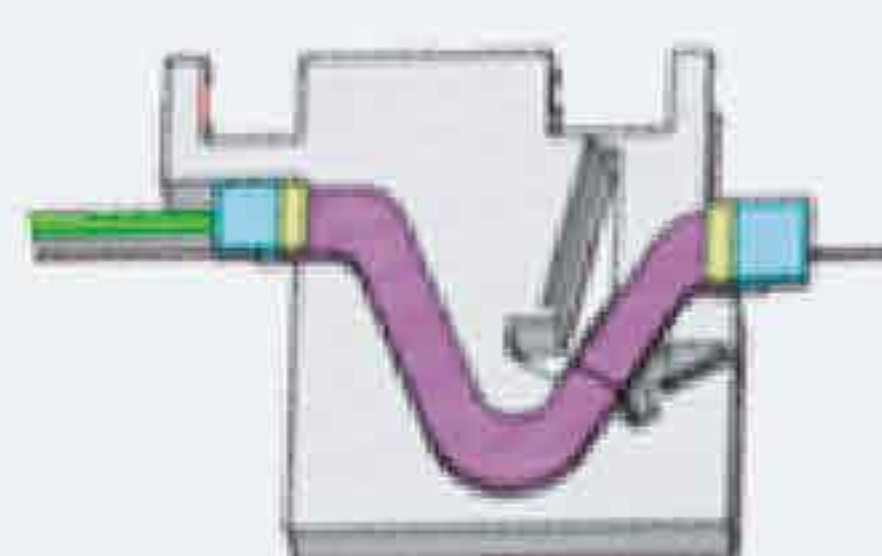


Advantages:

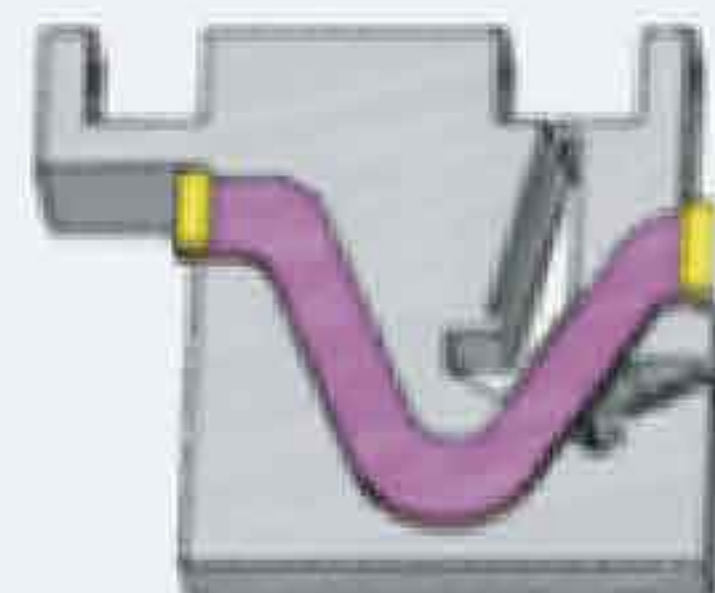
Fully automatic testing, precise placement of TFF, sizing, coupling and assembly, without manual operation, to ensure minimal the insertion loss and loss uniformity, and greatly improve the reliability and productivity.

Rich experience in using glue for passive devices

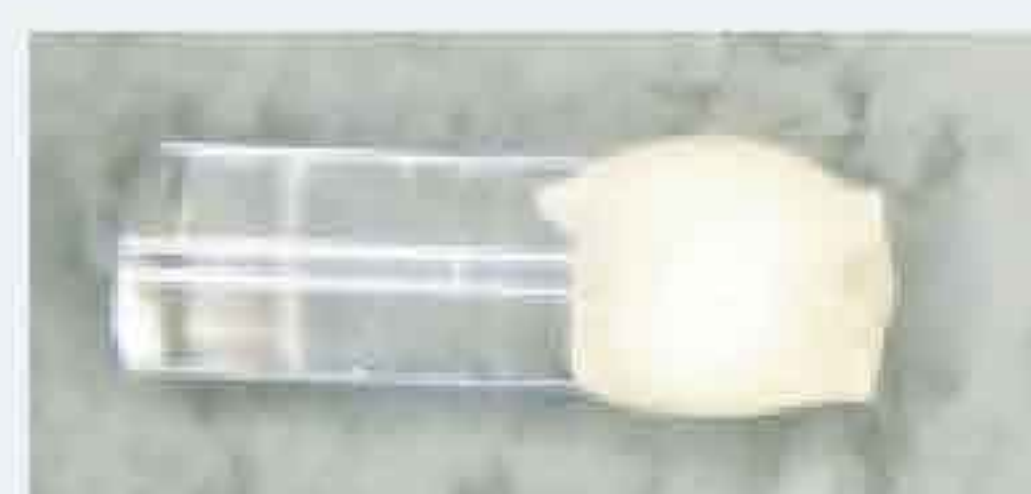
- Adhesive process, the key factor for performance and reliability
- Uses only the best brand adhesives
- Research the bonding process by 10+ years



Fiber array alignment



Mounting AWG chip



TFF mount



Single/dual fiber pigtail coupling

Airtight Packaging and Airtight Testing Equipment

Airtight Packaging Equipment

Automatic sealing and welding machine, which can realize automatic sealing of TO56/TO46 and automatic parallel welding technology of BOX-type integrated devices



TO sealing machine FHJ-1B



Parallel sealing machine
POLARIS VENUS III

Airtight Testing Equipment

Among the many leak detection methods, Helium mass spectrometer leak detector is the best choice for detecting high vacuum. The minimum detectable leak rate (for He): Pa.m³/s, Ensure the air tightness and reliability requirements of TO devices and special BOX products



Air tightness test Helium mass spectrometer leak detector
ZQJ-2000

System Certifications & Product Compliance Certifications



Passed ISO 9001 certification for the first time in 2007
Completed the ISO 9001:2015 version change in 2018

QMS



Passed ISO 14001 certification for the first time in 2011
Completed the ISO 14001:2015 version change in 2018

EMS



Passed ISO 45001 certification in 2019

OH&SMS

✓ Environment



All products comply with EU 2011/65/EU and additional directives (EU) 2015/863



TUV certification
Comply with EN60950-1 EN 60825-1

✓ Electromagnetic Radiation



Active products comply with EU Directive 2014/30/EU
Test standard EN 55032 and EN 55035



Active products comply with U.S. FCC Part15, Subpart B, ANSI C63.4-2014

✓ Safety



Product FDA registration



UL certification, Comply with UL 60950-1

■ Reliability Test Equipment

Internal reliability test



Salt spray test chamber



Temperature shock box



Temperature cycle test chamber



PCT test chamber



Constant temperature & humidity chamber



Single axis motion control system



ESD static generator



Insulation withstand voltage resistance tester



High temperature box

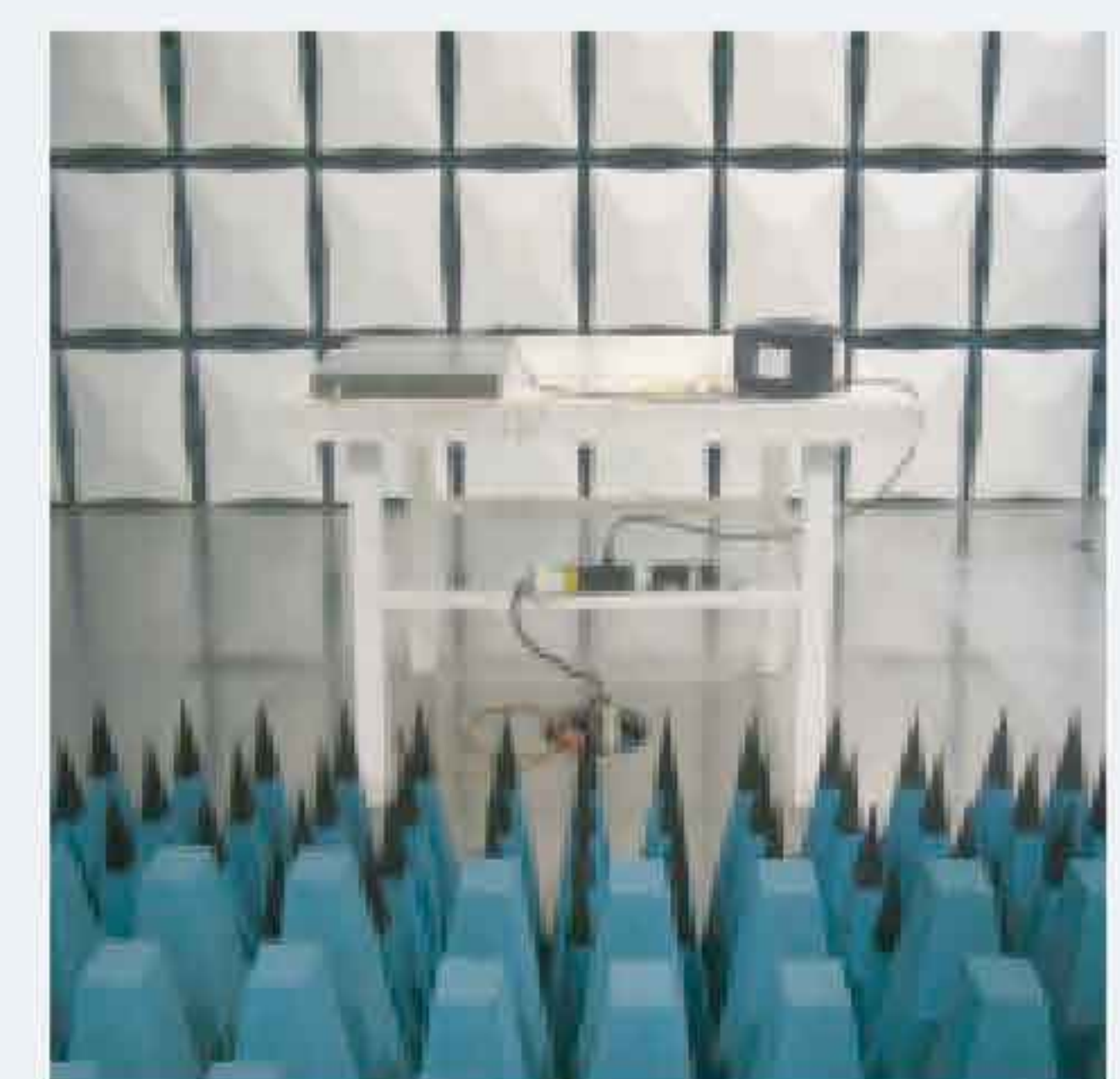
Outsourcing reliability test



Mechanical shock



Sinusoidal vibration



EMC

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Passive WDM Systems

5G OMUX

GIGALIGHT's 5G OMUX products are specially designed for 5G fronthaul. These modules are based on the thin-film filter (TFF) technology, and are compliant with telecommunication standards, providing a high-capacity and low-cost transmission solution for 5G operators. The 5G OMUX series include 4 types of CWDM, LWDM, MWDM and DWDM, with 6- or 12-wavelength optional, and support single fiber bidirectional transmission for 3 or 6 channel services. In addition, a variety of packages can be customized, such as blade type and Mini LGX cassette.

Highlights

- Highly Cost-effective—highest performance at the lowest cost for 6- and 12-wavelength bidirectional transmission
- Customized for Operators—optimal size according to the actual deployment scenario
- Excellent Performance—ultra-low insertion loss and PDL, as well as ultra-high isolation and thermal stability
- Carrier-grade Reliability—compliant with GR-1209-CORE-2001 and GR-1221-CORE-1999



CWDM6/12* China Mobile/Telecom Custom Models

Parameter	CWDM6	CWDM12
Center Wavelength (nm)	1271~1371	1271~1371、1471~1571
Center Wavelength Deviation (nm)		±1.5
1dB Passband Width (nm)		≥13
Pass Band Flatness (dB)		≤0.5
Channel Insertion Loss (dB)	≤2.1	≤2.5
Adjacent Channel Isolation (dB)		≥25
Non-adjacent Channel Isolation (dB)		≥30
Wavelength Thermal Stability (nm/°C)		≤0.002
Insertion Loss Thermal Stability (dB/°C)		≤0.007
Package		Blade

*Note: Other wavelength combinations (up to 18 wavelengths) and package forms are available for customization.

DWDM6/12* Korean Operators' Custom Models

Parameter	DWDM6	DWDM12
Center Wavelength (nm)	1542.94~1546.92	1547.72~1556.55
Channel Spacing (nm)		0.8
0.5dB Passband Width (nm)		ITU±0.11
Passband Flatness (dB)		≤0.5
Link Loss (dB)	≤4.3	≤4.7
Adjacent Channel Isolation (dB)		≥25
Non-adjacent Channel Isolation (dB)		≥35
Wavelength Thermal Stability (nm/°C)		≤0.002
Insertion Loss Thermal Stability (dB/°C)		≤0.007
Package		Mini LGX

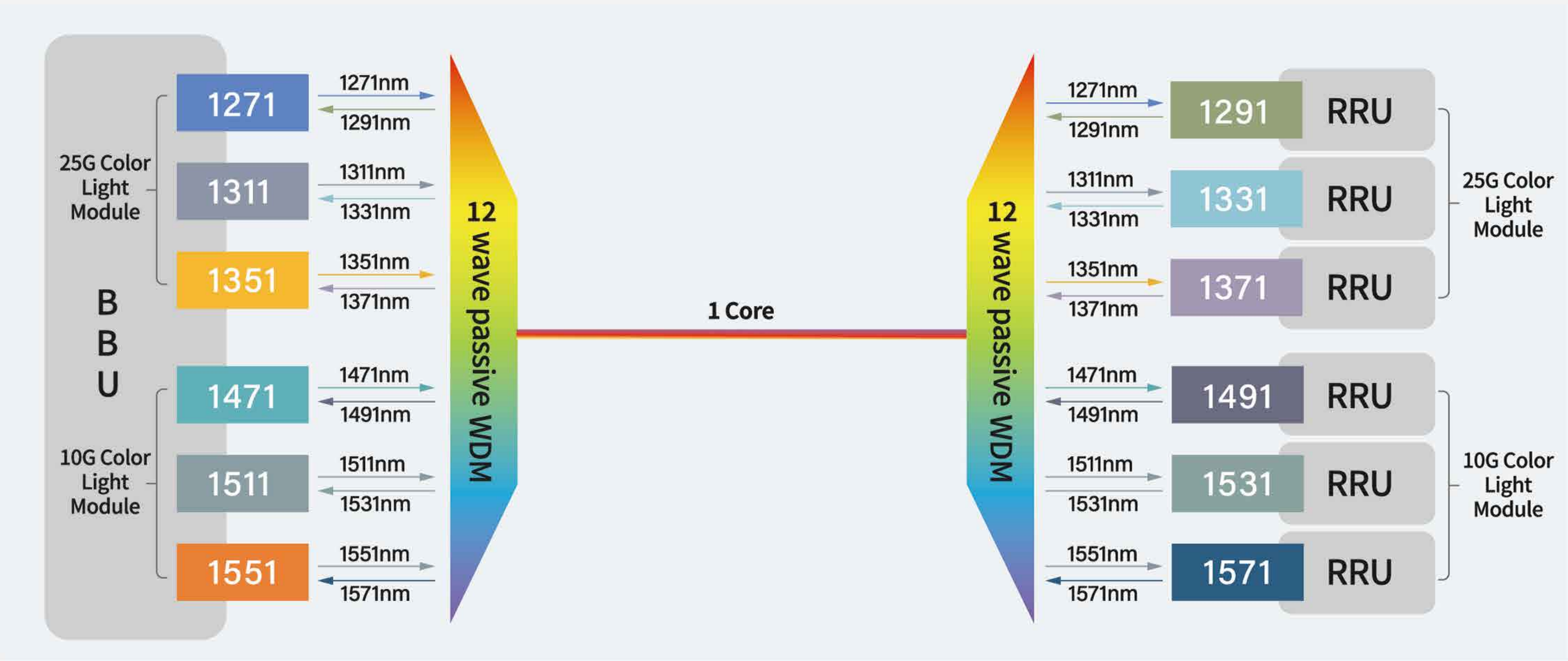
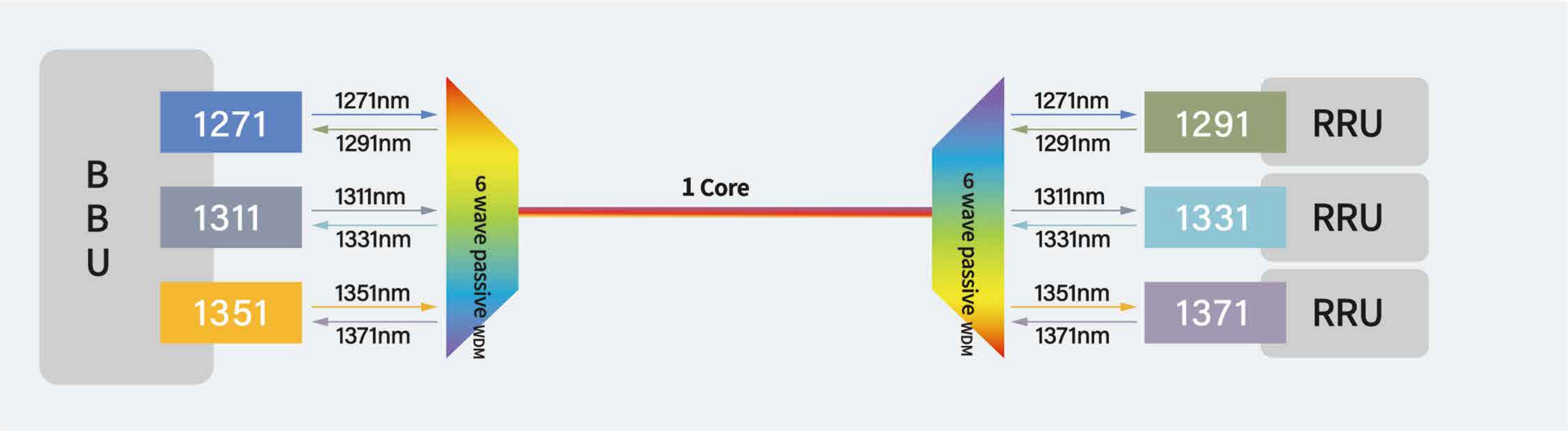
MWDM6/12 China Mobile Custom Models

Parameter	MWDM6	MWDM12
Center Wavelength (nm)	1267.5~1314.5	1267.5~1374.5
Center Wavelength Deviation (nm)		±1.0
1dB Passband Width (nm)		≥5
Passband Flatness (dB)		≤0.5
Channel Insertion Loss (dB)	≤2.2	≤3.4
Adjacent Channel Isolation (dB)		≥25
Non-adjacent Channel Isolation (dB)		≥30
Wavelength Thermal Stability (nm/°C)		≤0.002
Insertion Loss Thermal Stability (dB/°C)		≤0.007
Package		Blade

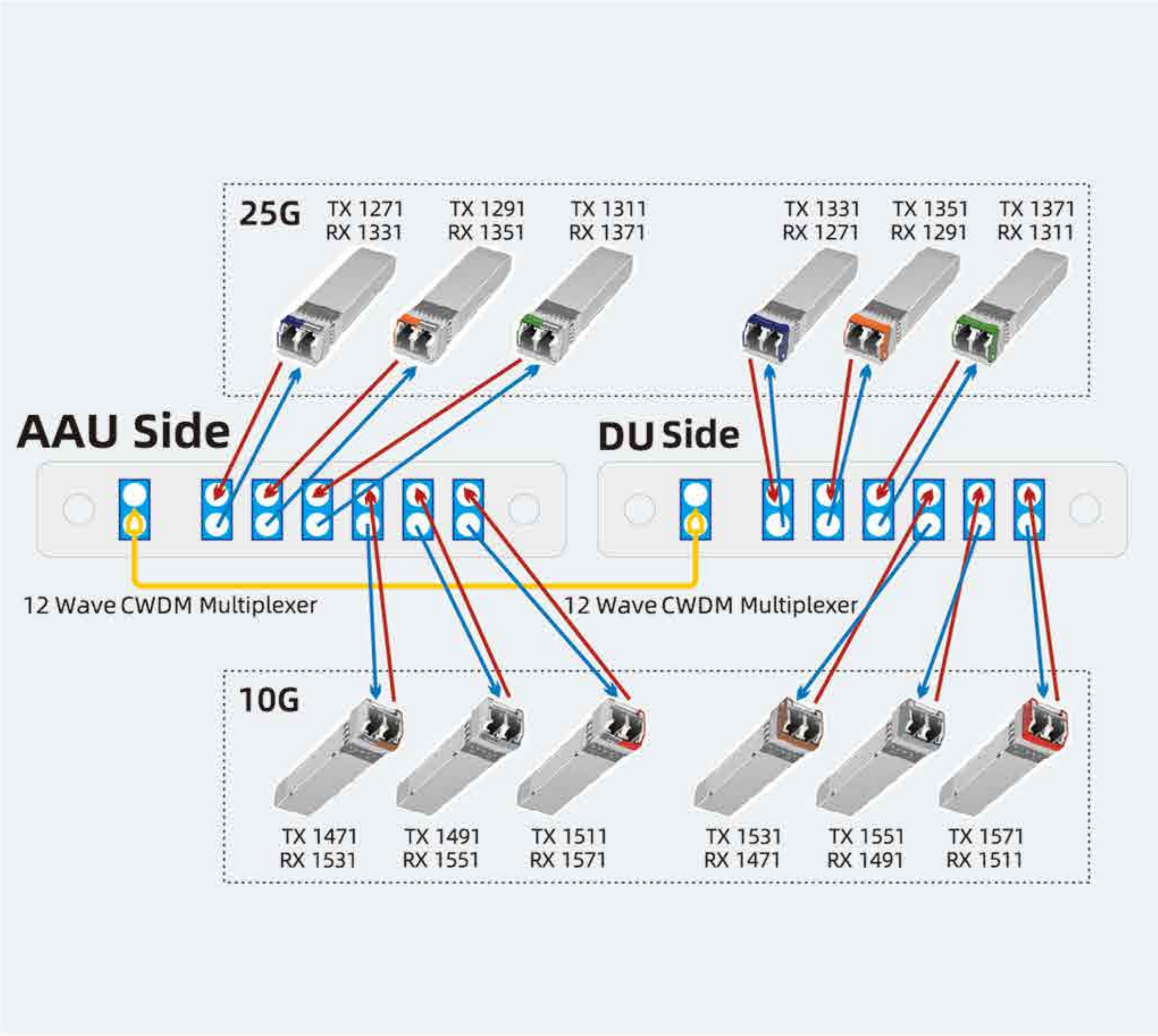
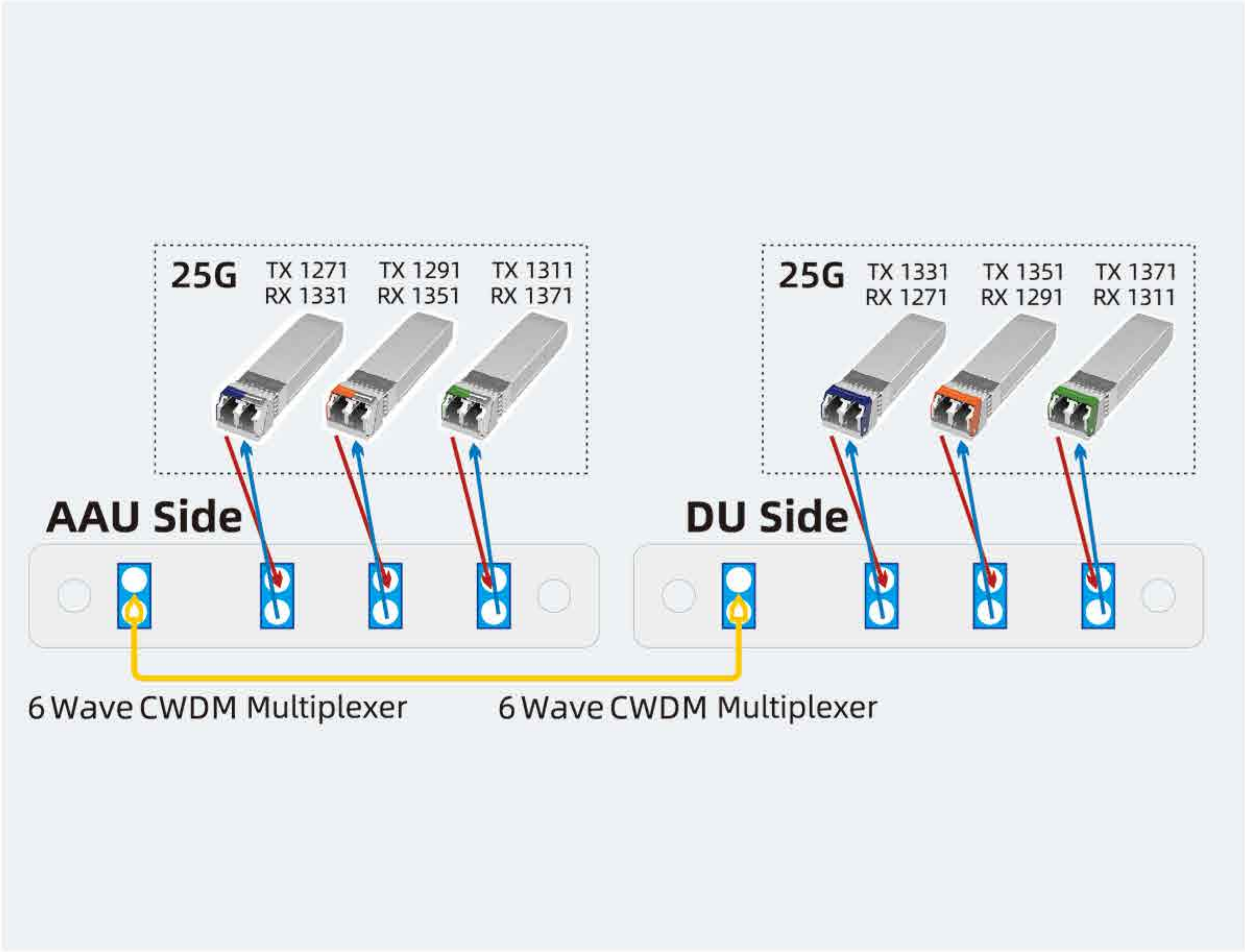
LWDM6/12 China Telecom & Korean Operators' Custom Models

Parameter	LWDM6 China Telecom	LWDM12 China Telecom	LWDM6 Korean Operators
Center Wavelength (nm)	1269.23~1291.10	1269.23~1318.35	1286.66~1309.14
Center Wavelength Deviation (nm)		±0.5	
1dB Passband Width (nm)		≥2.3	
Passband Flatness (dB)		≤0.5	
Link Loss (dB)	≤3.5	≤4.5	≤3.8
Adjacent Channel Isolation (dB)		≥25	
Non-adjacent Channel Isolation (dB)	≥30		≥35
Wavelength Thermal Stability (nm/°C)		≤0.002	
Insertion Loss Thermal Stability (dB/°C)		≤0.007	
Package	Blade		Mini LGX

CWDM6/12 Applications for China Mobile



CWDM6/12 Applications for China Telecom



xWDM/WDM-PON

GIGALIGHT's xWDM/WDM-PON products are based on the thin-film-filter (TFF) technology, including CWDM/DWDM MUX DEMUX, CWDM/DWDM OADM, CCWDM/CDWDM MUX DEMUX and Combo WDM-PON modules. These modules adopt excellent structural industrial design, featuring ultra-low insertion loss, ultra-high thermal stability and unparalleled reliability. They are compliant with carrier-grade reliability standards, and can be customized in ABS box, LGX cassette and 1U 19" rack mount and other packages, providing a low-cost solution with high bandwidth and capacity for high-speed and large-capacity transmission applications such as metro, long-haul DCI, and WDM-PON.

Highlights

- Highly Cost-effective — highest performance at the lowest cost in WDM application scenarios below 18 channels
- Flexible Customization Options—single fiber (MUX/DEMUX), dual fiber (MUX&DEMUX), and upgrade/monitoring ports
- Excellent Performance — ultra-low insertion loss and PDL, as well as ultra-high isolation and thermal stability
- Ultra-high Reliability — compliant with GR-1209-CORE-2001 and GR-1221-CORE-1999



CWDM/DWDM MUX DEMUX

CWDM MUX/DEMUX	2CH	4CH	8CH	16CH	18CH	DWDM MUX/DEMUX	2CH	4CH	8CH	16CH
Center Wavelength (nm)	1271 ~ 1611					Operating Wavelength (nm)	C-band			
Channel Spacing (nm)	20					Channel Spacing (nm)	0.8 or 1.6			
0.5dB Passband Width (nm)	ITU±6.5					0.5dB Passband Width (nm)	ITU±0.11			
Passband Flatness (dB)	≤0.5					Passband Flatness (dB)	≤0.5			
Channel Insertion Loss (dB)	≤1.2	≤1.8	≤3.0	≤3.4	≤3.7	Channel Insertion Loss (dB)	≤1.5	≤1.8	≤2.6	≤4.2
Link Loss (dB)	≤2.1	≤2.7	≤3.9	≤4.6	≤5.3	Link Loss (dB)	≤2.7	≤3.0	≤3.8	≤5.4
Adjacent Channel Isolation (dB)	≥30					Adjacent Channel Isolation (dB)	≥30			
Non-adjacent Channel Isolation (dB)	≥45					Non-adjacent Channel Isolation (dB)	≥45			
PDL (dB)	≤0.2					PDL (dB)	≤0.2			

CWDM OADM	1CH	2CH	3CH	4CH	5CH	6CH	7CH	8CH
Nominal Center Wavelength (nm)	1271~1611							
0.5dB Passband Width (nm)	ITU±6.5							
Passband Flatness (dB)	≤0.5							
Insertion/Sub-channel Insertion Loss (dB)	≤1.2	≤1.6	≤1.8	≤2.0	≤2.2	≤2.4	≤2.8	≤3.2
Input/Output Channel Insertion Loss (dB)	≤1.0	≤1.6	≤1.8	≤2.2	≤3.2	≤3.4	≤3.8	≤4.0
Adjacent Channel Isolation (dB)	≥30							
Non-adjacent Channel Isolation (dB)	≥40							
PDL (dB)	≤0.2							

DWDM OADM	1CH	2CH	3CH	4CH	5CH	6CH	7CH	8CH
Nominal Center Wavelength (nm)	ITU Grid (Channel Spacing 0.8nm or 1.6nm)							
0.5dB Passband Width (nm)	ITU±0.11							
Passband Flatness (dB)	≤0.5							
Insertion/Sub-channel Insertion Loss (dB)	≤1.2	≤1.6	≤1.8	≤2.0	≤2.2	≤2.4	≤2.8	≤3.2
Input/Output Channel Insertion Loss (dB)	≤1.0	≤1.6	≤1.8	≤2.2	≤3.2	≤3.4	≤3.8	≤4.0
Adjacent Channel Isolation (dB)	≥30							
Non-adjacent Channel Isolation (dB)	≥40							
PDL (dB)	≤0.1							

Combo WDM-PON

These modules support single-fiber bidirectional transmission through the multiplexing and demultiplexing of up to 8 wavelengths.

Service Channel	GPON	XG-PON1	NG-PON2	RF Video
Uplink Wavelength(nm)	1290 ~ 1330	1260 ~ 1280	1524 ~ 1544	1550 ~ 1560
Downlink Wavelength (nm)	1480 ~ 1500	1575 ~ 1581	1596 ~ 1603	
Passband Flatness (dB)	≤0.5			
Channel Insertion Loss (dB)	≤1.0	≤1.2	≤2.0	≤1.5
Adjacent Channel Isolation (dB)	≥30			
PDL (dB)	≤0.2			

CCWDM/CDWDM MUX DEMUX

These modules adopt free-space optical technology to achieve a smaller size and can be used in applications where space is limited, such as integration into the chassis of wavelength division equipment.



CCWDM MUX DEMUX	Mini 4CH	2x4CH	4CH	8CH	12CH	18CH
Center Wavelength (nm)	1270 ~ 1610					
Operating Wavelength (nm)	1260 ~ 1620					
Channel Spacing (nm)	20					
0.5dB Channel passband (nm)	ITU±6.5					
Passband Flatness (dB)	≤0.3	≤0.4	≤0.4	≤0.4	≤0.4	≤0.4
Channel Insertion Loss (dB)	≤1.5	≤1.4	≤1.2	≤1.5	≤2.0	≤2.5
Adjacent Channel Isolation (dB)	≥30					
Non-adjacent Channel Isolation (dB)	≥40					
Return Loss (dB)	≥45					
Directivity (dB)	≥50					
PDL (dB)	≤0.2					
Polarization Mode Dispersion (ps)	≤0.1					
Optical Power (mW)	≤300					
Operating Temperature (°C)	-5 ~ +75					
Storage Temperature (°C)	-40 ~ +85					
Dimension (mm)	32x26x8	49x25x8	45x25x8		50x50x8	

CDWDM MUX DEMUX	4CH	8CH
Center Wavelength (nm)	ITU±0.07	
0.5dB Passband Width (nm)	ITU±0.11	
Operating Wavelength (nm)	C-band	
Channel Spacing (nm)	0.8	
Channel Insertion Loss (dB)	≤1.4	≤2.0
Adjacent Channel Isolation (dB)	≥25	
Non-adjacent Channel Isolation (dB)	≥35	
Passband Flatness (dB)	≤0.5	
PDL (dB)	≤0.3	
Polarization Mode Dispersion (ps)	≤0.1	
Optical Power (mW)	≤500	
Return Loss (dB)	≥45	
Directivity (dB)	≥50	
Operating Temperature (°C)	-5 ~ +65	
Storage Temperature (°C)	-40 ~ +85	
Dimension (mm)	55x25x6.5	

AAWG

GIGALIGHT's AAWG products are based on the arrayed waveguide grating technology, and include 50GHz, 100GHz and 75GHz series. These modules adopt excellent industrial structural design, featuring ultra-low insertion loss, ultra-high thermal stability and unparalleled reliability. They are compliant with carrier-grade reliability standards, and can be customized in 19" rack-mount and standard metal modules and other various packages, providing a low-cost solution with high bandwidth capacity for high-speed and large-capacity transmission applications such as metro and long-haul DCI.

Highlights

- Support More Channels Than TFF DWDMs: 32 to 96 channels, which greatly expands the bandwidth and saves fiber resources
- Flexible Customization Options: single fiber (MUX/DEMUX), dual fiber (MUX&DEMUX), and upgrade/monitoring ports
- Excellent Performance: low insertion loss, low PDL, and high isolation
- Ultra-high Reliability: compliant with GR-1209-CORE-2001 and GR-1221-CORE-1999



Specifications

AAWG Number of Channels	32/40/48				64	80/96	
Operating Wavelength (nm)	C-band						
Channel Spacing (GHz)	100				75	50	
Wavelength Accuracy (nm)	±0.05				±0.05	±0.04	
Passband Type	Gaussian		Flat Top		Flat Top	Flat Top	
1dB Channel Passband (nm)	≥0.2		≥0.38		≥0.3	≥0.2	
3dB Channel Passband(nm)	≥0.4		≥0.58		≥0.55	≥0.4	
Passband Flatness (dB)	≤1.5		≤0.5		≤0.5	≤1.5	
Insertion Loss Level	Typ.	Min.	Typ.	Min.	Typ.	Typ.	Min.
Channel Insertion Loss (dB)	≤4.0	≤3.5	≤6.5	≤5.0	≤6.0	≤7.0	≤6.0
Insertion Loss Uniformity (dB)	≤1.5						
Adjacent Channel Crosstalk (dB)	≥26		≥23		≥8	≥26	
Non-adjacent Channel Crosstalk (dB)	≥26		≥26		≥30	≥26	
Total Crosstalk (dB)	≥21				≥5	≥20	
Return Loss	≥40						
PDL (dB)	≤0.7	≤0.6	≤0.5	≤0.4	≤0.7	≤0.7	
Polarization Mode Dispersion (ps)	≤0.5						
Dispersion (ps/nm)	±20				±35	±30	
Operating Temperature (°C)	-5 ~ +75						
Storage Temperature (°C)	-40 ~ +85						
Package	19" Rack Mount or Standard Metal Module				19" Rack Mount	19" Rack Mount (interleaved)	

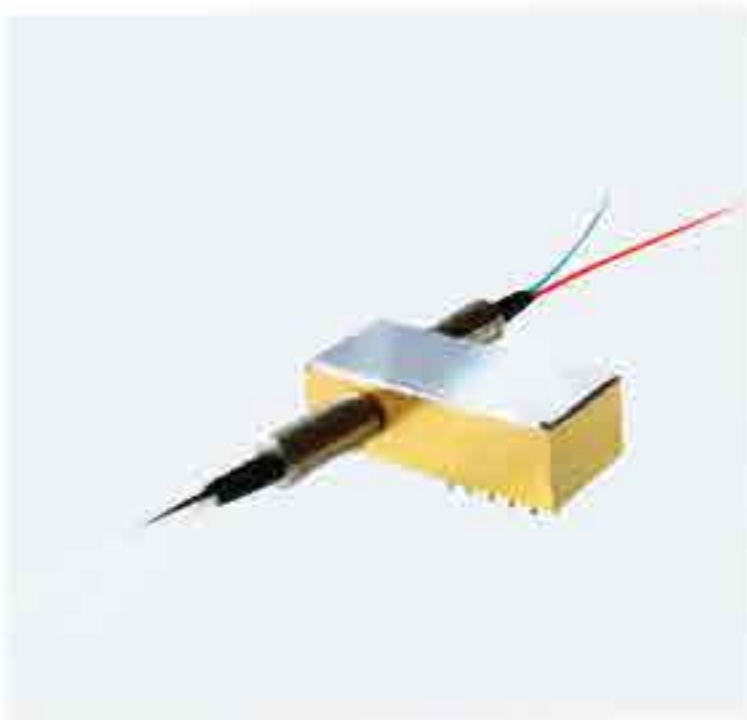
Mechanical Optical Switches

Mini Mechanical Optical Switches

GIGALIGHT's Mini mechanical optical switches realize optical path switching through a proprietary configuration of opto-mechanics and electrical control signals, providing ultra-high reliability, switching speed and bidirectional performance. They are available in 1×2, D2×2B, and 1×4 versions with customizable wavelengths (single-mode or multi-mode), pigtail length and fiber connector, providing customers with a mature and reliable low-cost optical path switching solution.

Highlights

- Low insertion loss
- High crosstalk
- Fast switching speed
- High stability and reliability
- No glue on optical path
- Small size and easy for integration



Specifications

Mini Mechanical Optical Switch	1×2		D2×2B	1×4
Wavelength Range (nm)	850/1310 (±50)	1260-1620	1260-1650	
Tested Wavelength (nm)	850/1310	1310/1550	1310/1550	
Insertion Loss (dB)	≤0.8		≤1.2 (Typical1.0)	
WDL (dB)	≤0.25		≤0.25	
TDL (dB)	≤0.2		≤0.2	
PDL (dB)	≤0.2		≤0.05	≤0.1
Return Loss (dB)	≥35	≥50	≥50	≥50
Crosstalk (dB)	≥35	≥50	≥55	≥55
Repeatability (dB)	±0.05		±0.02	±0.05
Durability (Cycle)	≥10 ⁷			
Switching Time (ms)	≤10		≤8	
Working Voltage (V)	3.3or5.0			
Power Consumption (mW)	≤500			
Operating Temperature (°C)	-5 ~ +70		-20 ~ +75	
Storage Temperature (°C)	-40 ~ +85			
Operating Humidity (%)	5 ~ 95			
Dimensions L×W×H (mm)	27×12×8.2		20×10×8	20×17.6×8

Optical Bypass Protection System

GIGALIGHT's Optical Bypass Protection System (OBPS) is an intelligent switching system device used in the optical communications which can automatically bypass faulty network nodes. The device can automatically identify the power supply and optical signal output status of network nodes, and perform optical path bypass switching when an optical transmission network node fails, thereby avoiding network interruption and maintaining overall network connectivity.

Highlights

- Automatic instantaneous switching without manual intervention
- Monitor the luminous power of network nodes in real time
- Reduce various losses caused by network node failures
- Increase the reliability of the transmission network and improve the service quality of operators
- To ensure that the services of other sites are not blocked, and the active and standby working routes can be arbitrarily scheduled
- Dual power supply and hybrid hot-swappable design



Specifications

Specifications	OBPS	
Center Wavelength (nm)	850	1310/1550
Insertion Loss (dB)	≤1.5	
Return Loss (dB)	≥30	≥45
Crosstalk (dB)	≥35	≥50
WDL (dB)	≤0.25	
PDL (dB)	≤0.1	
Switching Time (ms)	≤10	
Fiber Type	Multimode (62.5/125um)	Single Mode (9/125um)
Optical Power Range (dBm)	-50 ~ +23	
Optical Power Accuracy (dBm)	0.5	
Optical Power Resolution (dB)	≥2 (ITU±10GHz)	
Durability (Cycle)	107	
Optical Fiber Connector	LC/UPC	
Network Interface	RJ-45、RS-232 (RS-485 Options)	
Voltage Range (V)	AC 85 ~ 264、DC 36 ~ 72	
Power Consumption (W)	≤5	
Operating Temperature (°C)	-5 ~ +55	
Storage Temperature (°C)	-20 ~ +75	
Dimensions L×W×H (mm)	437×200×44 (1U 19" Rackmount)	

High-Density Optical Connectivity

MPO/MTP High-Density Cabling Products

With the continuous surge of global user traffic and the increasing demand for bandwidth, multi-channel parallel high-speed optical modules such as 100G, 200G and 400G have been widely used in data centers interconnection. GIGALIGHT's MPO high-density cabling products can perfectly fulfill the high-speed parallel interconnect demands. This portfolio includes MPO/MTP cable assemblies (patch cables, trunk cables, harness cables, hydra cables and conversion cables), MPO/MTP cabling management products (transition cassettes and patch panels), and MPO/MTP testing tools (loopbacks and polarity checker).

Highlights

- One-stop MPO/MTP cabling solution
- Visualization platform for client-oriented inventory, order and RMA
- Stable and reliable supply chain partners with more than 10 years of experience
- Various customization options to match cabling scenarios
- High precision automatic grinding
- 100% inspected and full data report provided
- Best optical performance guarantee
- Flexible solutions design for multiple applications
- The best solution for cost and performance balance
- Smaller and simpler product design
- 100% fiber utilization



Customization Options

MPO/MTP Customization	Options
Polarity	Type A (Direct Connection), Type B (Cross), Type C (Reversal), Type R (Corning)
Insertion Loss Level	Standard, Elite (Lower Insertion Loss)
Number of Single MPO Cores	8, 12, 16, 20, 24, 32, 48
Number of Jumper Cores	8, 12, 16, 20, 24
Number of Backbone Cores	12, 24, 36, 48,, 144
MPO Pin Type	Male, Female
Fiber Type	G625D, G657A1, G657A2, OM1, OM2, OM3, OM4
Cable Jacket Type	LSZH, OFNR, OFNR (Bare Fiber Optional)
Multicore Connectors/Adapters	MTP, MPO (Polishing Type PC or APC Optional)
Single Core Connector/Adapter	LC, SC, ST, FC, MTRJ etc. (Polishing Type UPC or APC Optional)
Fork Length (m)	0.5, 1, 1.5 etc.
Total Length (m)	1 ~ 999
Patch Panel Height	1U, 2U, 3U, 4U
Patch Panel Slots	3, 4, 6, 8, 12

MPO/MTP Connector Parameters

MPO/MTP Connector	Singlemode APC	Singlemode PC	Multimode PC*
Tested Wavelength (nm)	1310/1550		850/1310
Tested Polarity	Type A		
Standard Insertion Loss (dB)	≤0.7 (Typical 0.5)		≤0.50 (Typical 0.35)
Elite Insertion Loss (dB)	≤0.35 (Typical 0.25)		≤0.35 (Typical 0.20)
Return Loss (dB)	≥55	≥45	≥20
Durability (times)	≥200		

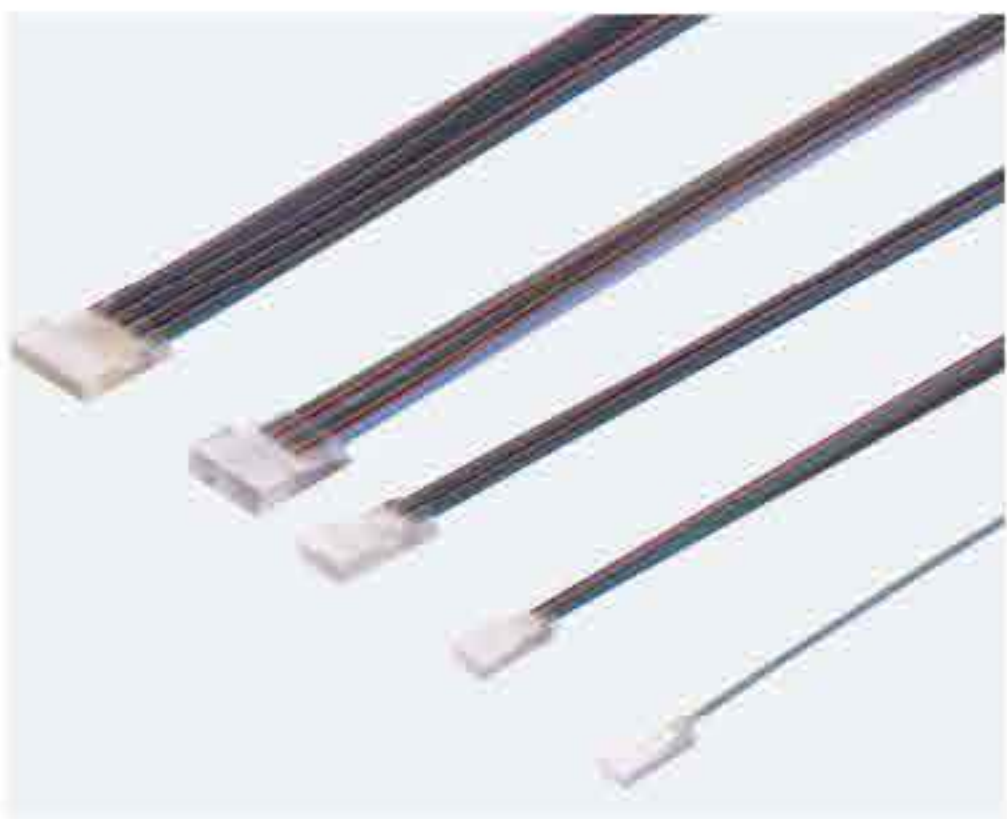
* Insertion loss of 48-core MPO/MTP multimode PC connector is ≤1.0dB

Fiber Arrays

GIGALIGHT's Fiber Array (FA) series products are made of silica glass with very small expansion coefficient with unique production process, which have excellent quality and can maintain the best working condition even in harsh environments. The series is widely used in planar lightwave circuit (PLC), arrayed waveguide grating (AWG), active array optical devices, silicon photonic coupling and other fields. This series includes standard models with standard single-mode fiber (1~64 channels optional) and PM models with polarization-maintaining fibers (1~32 channels optional, 4 types of Panda polarization-maintaining fibers optional).

Highlights

- Adopt low expansion coefficient quartz glass V-groove
- Low insertion loss
- High return loss
- Use colored ribbon fiber to distinguish channels
- A variety of channel numbers are available
- Compliant with RoHS, Telcordia GR-1221 and GR-1209 standards



Specifications

Fiber Array	1CH	2CH	4CH	8CH	16CH	32CH	64CH
Material	Quartz, Silicon						
Grinding Angle (Deg)	8 (±0.3)						
Pigtail Type	250μm Bare Fiber or 900μm Loose Tube	250μm Bare Fiber	4-core Ribbon Pigtail	8-core Ribbon Pigtail	2×8-core Ribbon Pigtail	4×8-core Ribbon Pigtail	8×8-core Ribbon Pigtail
V-groove Core Spacing (μm)	/	250	250	127 or 250	127	127	127
Operating Temperature (°C)	-40 ~ +85						
Storage Temperature (°C)	-40 ~ +85						
Dimensions LxWxH (mm)	6×2.5×2.5	9.5×2.5×2.5		9.5×2.5/3.5×2.5	11.5×3.5×2.5	11.5×5.7×2.5	11.5×10×2.5

Micro Optics

Mechanical/MEMS VOA

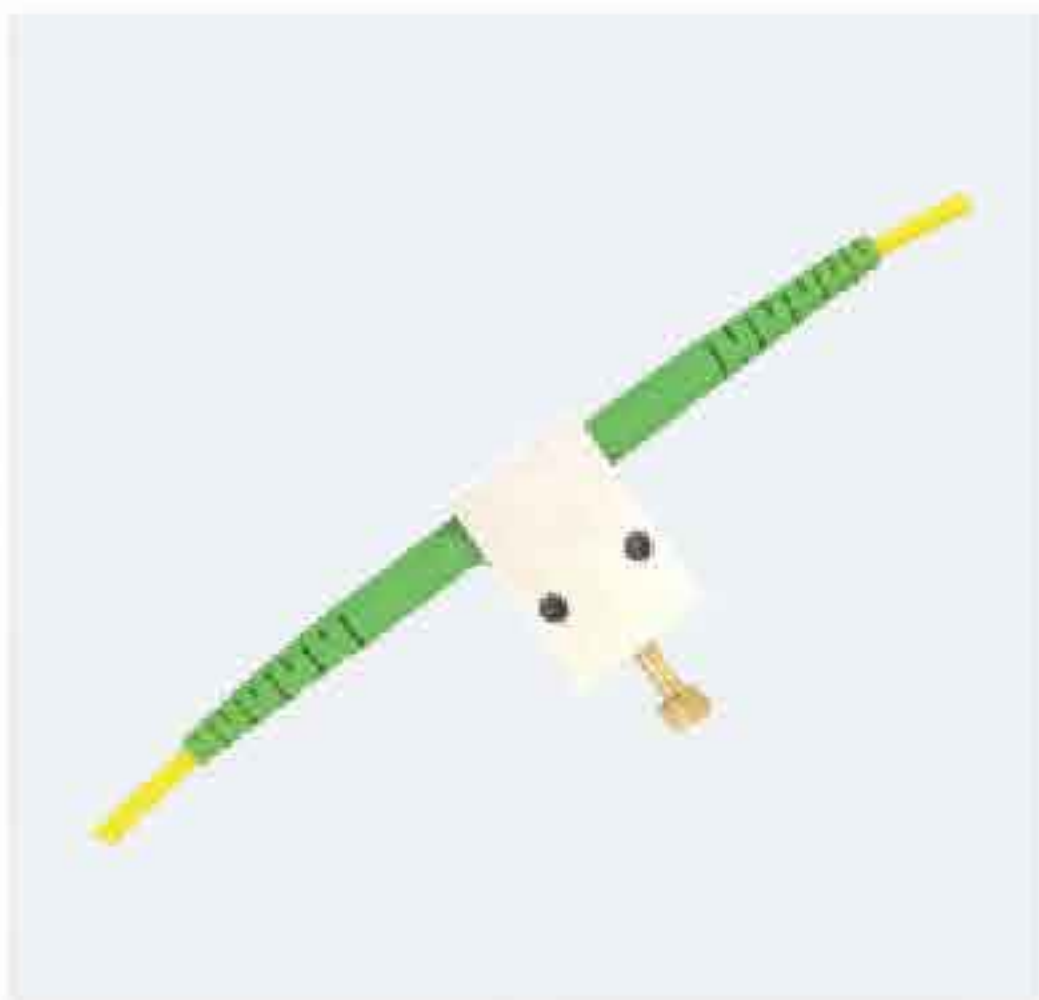
GIGALIGHT provides a series of VOAs for optical transmission networks, which can adjust the attenuation of optical signals very flexibly and conveniently, and accurately balance the optical signal strength in the optical link. The series includes mechanical VOA and MEMS (Micro Electro Mechanical Systems) VOA. The operating wavelengths, fiber types, fiber lengths and fiber connector types can all be customized.

Mechanical VOA

The attenuation can be precisely adjusted by adjusting one screw. It was produced with mature technology, good optical properties, and no temperature control is required.

Highlights

- Wide attenuation range, low insertion loss, low PDL
- Compact design with ultra-small size
- High reliability and high stability
- Compliant with Telcordia GR-1209-CORE-2001
- Compliant with Telcordia GR-1221-CORE-1999
- Compliant with RoHS-6 (Pb-free)



Specifications

Specifications	Mechanical VOA
Operating Wavelength (nm)	1310, 1550
Attenuation Range (dB)	0.6 ~ 60
Original Insertion Loss (dB)	≤0.6
Adjustment Accuracy (dB)	0.02
Return Loss (dB)	≥45
PDL (dB)	≤0.15
Polarization Mode Dispersion (ps)	≤0.1
Optical Power (mW)	≤300
Operating Temperature (°C)	-5 ~ +75
Storage Temperature (°C)	-40 ~ +85
Dimensions LxWxH (mm)	26×18×8

MEMS VOA

Based on photonic integrated circuit (PIC) and electrostatic MEMS technology, and light attenuation function realized through MEMS reflective mirror technology, GIGALIGHT's MEMS VOAs feature high performance, compactness, high manufacturability and high reliability, and are very suitable for the next generation of dynamically configurable optical networks. GIGALIGHT provides three types of MEMS VOAs—standard MEMS VOA, Mini MEMS VOA (smaller size) and PM MEMS VOA (using polarization-maintaining fiber, which can improve the coherent signal-to-noise ratio).

Highlights

- Wide attenuation range, low insertion loss, low PDL
- Compact design with ultra-small size
- Insensitive to shock and vibration
- High reliability and high stability
- Compliant with Telcordia GR-1209-CORE-2001
- Compliant with Telcordia GR-1221-CORE-1999
- Compliant with RoHS-6 (Pb-free)



Specifications

Specifications	Standard MEMS VOA	Mini MEMS VOA	PM MEMS VOA**
Operating Wavelength (nm)	C-band, L-band	1310, C-band, L-band	1260~1650
Attenuation Type	Bright or Dark		
Attenuation Range (dB)	≥30	≥30 (Single Mode), ≥25 (Multimode)	≥30
Blocking State Attenuation (dB)		≥40 (Dark)	
Insertion Loss (dB)	≤0.7(Typical 0.5)	≤0.8 (Single Mode), ≤1.0 (Multimode)	≤0.7 (Typical 0.5)
Attenuation Mode (dB)	Continuous		
WDL (dB)	≤0.3 @ 0dB, ≤1.5 @ 20dB	≤0.3 @ 0dB, ≤1.5 @ 20dB	≤0.3 @ 0dB, ≤1.5 @ 20dB
Return Loss (dB)	≥45	≥45 (Single Mode), ≥30 (Multimode)	≥50
TDL (dB)	≤0.7 @ 0dB, ≤1.0 @ 20dB	≤0.7 @ 0dB, ≤1.0 @ 20dB	≤0.2 @ 0dB, ≤1.0 @ 20dB
PDL (dB)	≤0.1 @ 0dB, ≤0.3 @ 20dB	≤0.1 @ 0dB, ≤0.5 @ 20dB	≤0.1 @ 0dB, ≤0.3 @ 20dB
Polarization Mode Dispersion (ps)	≤0.1		
Response Time (ms)	≤3 (10 ~ 90% Optical Power)	≤2 (10~90% Optical Power)	≤3 (10 ~ 90% Optical Power)
Optical Power (mW)	≤300	≤500	≤500
Voltage (V)	6 or 15 (DC)	6.5	5.2 or 15 (DC)
Power Consumption (W)	≤2		
Operating Temperature (°C)	-5 ~ +75	0 ~ 70	-5 ~ +50
Storage Temperature (°C)	-40 ~ +85	-40 ~ +85	-20 ~ +85
Dimension (mm)**	5.5×19	3.5×16	5.5×19

*without connectors
**The fiber type of the test sample is polarization-maintaining Panda fiber
***Excludes optical fiber and connectors

Tap-PD

GIGALIGHT's Tap-PD integrates a TFF-based Tap coupler and a high-sensitivity PIN detector into a very compact package, saving space and reducing device splicing and fiber routing efforts, while improving the reliability of the system and the design efficiency of modular equipment. GIGALIGHT provides three types of Tap-PD products—standard Tap-PD and Mini Tap-PD (smaller size) and CWDM Tap-PD (supporting a wider operating wavelength range).

Highlights

- High Responsiveness
- Low dark current
- Low WDL and PDL
- Compact design
- High reliability



Specifications

Specifications	Standard Tap-PD			Mini Tap-PD	CWDM Tap-PD		
Operating Wavelength (nm)	C-band, L-band			1550±40	1260 ~ 1620		
Spectral Ratio	1:99	2:98	5:95	5:95	2:98	5:95	10:90
Responsiveness (mA/W)	7 ~ 12	16 ~ 20	40 ~ 60	≥40	15	38	80
Insertion Loss (dB)*	0.5	0.6	0.6	≤0.7	0.4/1.0	0.6/1.2	1.0/1.5
Return Loss (dB)				≥45			
Dark Current (nA)	≤5.0 (Typical 1.0)			≤5.0 (Typical 1.0)	≤1.0 (Typical 0.1)		
Reverse Voltage (V)	≤20			≤15	≤20		
Operating Temperature (°C)	-5 ~ +70			-5 ~ +75	-5 ~ +70		
Storage Temperature (°C)	-40 ~ +85			-5 ~ +85	-40 ~ +85		
Dimension Φ×L (mm)**	5.5×19			2.5×16	5.5×19		

* Excludes connector insertion loss
**Excludes optical fiber and connectors

Mini EDFA Parts

GIGALIGHT's Mini EDFA parts provide an integrated solution for EDFA applications. This portfolio includes Mini Optical Isolator (polarization insensitive), Mini IWDM (integrated polarization insensitive optical isolator and 1550/980nm WDM function) and Mini Tap-PD (integrated Tap coupler and PIN detector function). Integrating the Mini EDFA parts into a very compact package can save space and reduce device splicing and fiber winding efforts, and cans also improve the system reliability and the design efficiency of modular devices.

Highlights

- Ultra-small size for space saving and easy integration
- Ultra-high isolation and return loss
- Ultra-low insertion loss and TDL/PDL/WDL
- Low polarization mode dispersion
- High reliability and stability



Mini Optical Isolator

Specifications	Mini Optical Isolator
Operating Wavelength (nm)	1528 ~ 1569
Insertion Loss (dB)*	≤0.7
Isolation (dB)	≥21
TDL (dB)	≤0.2
WDL (dB)	≤0.15
PDL (dB)	≤0.15
Polarization Mode Dispersion (ps)	≤0.1
Return Loss (dB)	≥55
Optical Power	≤500
Operating Temperature (°C)	-5 ~ +75
Storage Temperature (°C)	-5 ~ +85
Dimension Φ×L (mm)**	2.65×17.5

* Excludes connector insertion loss
**Excludes optical fiber and connectors

Mini IWDM

Specifications	Mini IWDM	
Channel	Signal Channel	Pump Channel
Operating Wavelength (nm)	1528 ~ 1569	965 ~ 990
Insertion Loss (dB)*	≤1.0	≤0.6
Isolation (dB)	≥21	≥18
TDL (dB)	≤0.2	≤0.15
WDL (dB)	≤0.2	-
Polarization Mode Dispersion (ps)	≤0.2	≤0.1
Polarization Mode Dispersion (ps)	≤0.1	-
Return Loss (dB)	≥55	
Optical Power	≤500	
Operating Temperature (°C)	-5 ~ +75	
Storage Temperature (°C)	-40 ~ +85	
Dimension Φ×L (mm)**	2.65×22	

Mini Tap-PD

Specifications	Mini Tap-PD
Operating Wavelength (nm)	1550±40
Spectral Ratio	5:95
Responsiveness (mA/W)	≥40
Insertion Loss (dB)*	≤0.7
Return Loss (dB)	≥45
Dark Current (nA)	≤5.0 (Typical 1.0)
Reverse Voltage (V)	≤15
Operating Temperature (°C)	-5 ~ +75
Storage Temperature (°C)	-5 ~ +85
Dimension Φ×L (mm)**	2.5×16

Fiber Optic Splitters

PLC Splitters

GIGALIGHT's PLC splitter is manufactured based on silicon optical planar waveguide technology. It has the characteristics of small size, high reliability, wide operating wavelength range, and high channel consistency. It is widely used in PON networks to achieve optical signal power splitting. GIGALIGHT's PLC splitters include 1×N and 2×N series, optional with various packages, such as bare fiber, mini module, ABS box, blade, LGX cassette, rack mount, wall mount etc. In addition, GIGALIGHT also provides special applications with PM PLC splitters, which adopt polarization-maintaining fibers to achieve polarization-maintaining coupling and light splitting.

Highlights

- Ultra-wide operating wavelength range
- Low insertion loss and good channel uniformity
- Low PDL, WDL and TDL
- High return loss and directivity
- High reliability and stability



Bare Fiber, Mini Module, and ABS Box

PLC Splitter	1×2	1×4	1×8	1×16	1×32	1×64
Operating Wavelength (nm)	1260 ~ 1650					
Fiber Type	G657A or customized ***					
Insertion Loss (dB) Class S*	≤4.0	≤7.3	≤10.5	≤13.7	≤16.9	≤21.0
Insertion Loss (dB) Class P*	≤3.8	≤7.1	≤10.2	≤13.5	≤16.5	≤20.5
Insertion Loss Uniformity (dB)	≤0.4	≤0.6	≤0.8	≤1.2	≤1.5	≤2.0
Return Loss (dB)	≥55					
PDL (dB)	≤0.2	≤0.2	≤0.2	≤0.25	≤0.3	≤0.35
Directivity (dB)	≥55					
WDL (dB)	≤0.3	≤0.3	≤0.3	≤0.5	≤0.5	≤0.5
TDL (dB)	≤0.4	≤0.4	≤0.4	≤0.5	≤0.5	≤0.5
Operating Temperature (°C)	-40 ~ +85					
Storage Temperature (°C)	-40 ~ +85					
Bare Fiber Dimension L×W×H (mm)**	40×4×4	40×4×4	40×4×4	50×4×4	50×7×4	60×12×4
Mini Module Dimension L×W×H (mm)**	50×7×4	50×7×4	60×7×4	60×12×4	80×20×6	N/A
ABS Box Dimension L×W×H (mm)**	100×80×10	100×80×10	100×80×10	120×80×18	140×115×18	140×115×18

PLC Splitter	2×2	2×4	2×8	2×16	2×32	2×64
Operating Wavelength (nm)	1260 ~ 1650					
Fiber Type	G657A or customized					
Insertion Loss (dB)*	≤4.0	≤7.6	≤11.0	≤14.4	≤17.5	≤21.0
Insertion Loss Uniformity (dB)	≤0.6	≤1.0	≤1.2	≤1.5	≤1.8	≤2.2
Return Loss (dB)	≥55					
PDL (dB)	≤0.2	≤0.2	≤0.3	≤0.3	≤0.4	≤0.4
Directivity (dB)	≥55					
WDL (dB)	≤0.3	≤0.4	≤0.5	≤0.5	≤0.5	≤0.5
TDL (dB)	≤0.4	≤0.4	≤0.4	≤0.5	≤0.5	≤0.5
Operating Temperature (°C)	-40 ~ +85					
Storage Temperature (°C)	-40 ~ +85					
Bare Fiber Dimension L×W×H (mm)**	40×4×4	50×4×4	50×4×4	50×7×4	60×7×4	60×12×4
Mini Module Dimension L×W×H (mm)**	60×7×4	60×7×4	60×7×4	60×12×4	80×20×6	N/A
ABS Box Dimension L×W×H (mm)**	100×80×10	100×80×10	100×80×10	120×80×18	140×115×18	140×115×18

*without connectors

**Dimensions of the module section only, excluding fibers and connectors

***GIGALIGHT can provide Mini Module and ABS Box PM PLC splitters with polarization maintaining fiber (1×N series only)

Blade, LGX Cassette, Rack Mount and Wall Mount

PLC Splitter	1×2	1×4	1×8	1×16	1×32	1×64
Operating Wavelength (nm)	1260 ~ 1650					
Fiber Type	G657A or customized					
Insertion Loss (dB) Class S*	≤4.3	≤7.6	≤10.8	≤14.0	≤17.2	≤21.3
Insertion Loss (dB) Class P*	≤4.1	≤7.4	≤10.5	≤13.8	≤16.8	≤20.8
Insertion Loss Uniformity (dB)	≤0.6	≤0.7	≤0.8	≤1.2	≤1.5	≤2.0
Return Loss (dB)	≥55					
PDL (dB)	≤0.2	≤0.2	≤0.2	≤0.25	≤0.25	≤0.35
Directivity (dB)	≥55					
WDL (dB)	≤0.5	≤0.5	≤0.5	≤0.8	≤0.8	≤1.0
TDL (dB)	≤0.5					
Operating Temperature (°C)	-40 ~ +85					
Storage Temperature (°C)	-40 ~ +85					
Blade Dimension L×W×H (mm)	130×100×25	130×100×25	130×100×25	130×100×25	267×100×50	N/A
LGX Cassette Dimension L×W×H (mm)	102×155×29	102×155×29	102×155×29	102×155×40	102×155×82	102×155×82
Rack Mount Dimension L×W×H (mm)	483×245×44					
Wall Mount Dimension L×W×H (mm)	Customized according to installation scenarios					

PLC Splitter	2×2	2×4	2×8	2×16	2×32	2×64
Operating Wavelength (nm)	1260 ~ 1650					
Fiber Type	G657A or customized					
Insertion Loss (dB) *	≤4.5	≤7.9	≤11.3	≤14.7	≤17.8	≤21.3
Insertion Loss Uniformity (dB)	≤0.9	≤1.0	≤1.2	≤1.5	≤1.8	≤2.2
Return Loss (dB)	≥55					
PDL (dB)	≤0.3	≤0.3	≤0.3	≤0.3	≤0.35	≤0.4
Directivity (dB)	≥55					
WDL (dB)	≤0.5	≤0.5	≤0.5	≤0.8	≤0.8	≤1.0
TDL (dB)	≤0.5					
Operating Temperature (°C)	-40 ~ +85					
Storage Temperature (°C)	-40 ~ +85					
Blade Dimension L×W×H (mm)	130×100×25	130×100×25	130×100×25	130×100×25	267×100×50	N/A
LGX Cassette Dimension L×W×H (mm)	102×155×29	102×155×29	102×155×29	102×155×40	102×155×82	102×155×82
Rack Mount Dimension L×W×H (mm)	483×245×44					
Wall Mount Dimension L×W×H (mm)	Customized according to installation scenarios					

* Including the insertion loss of the adapter

FBT Couplers

GIGALIGHT's FBT couplers are manufactured based on fused taper technology, support single-mode dual-window optical power distribution, and are widely used in passive optical networks. GIGALIGHT provides FBT couplers with 4 types of port configuration, including 1×2, 2×2, 1×3 and 3×3, which can all be customized for coupling ratio, fiber type, fiber length and fiber connector.

Highlights

- Low insertion loss and good channel uniformity
 - Low PDL
- High return loss and directivity
 - High reliability and stability



Specifications

Specifications	FBT Coupler
Center Wavelength (nm)	1310/1550
Operating Bandwidth (nm)	±20
1×2/2×2 Port Configuration, Coupling Ratio and Corresponding Insertion Loss (dB)*	50/50≤3.8/3.8, 55/45≤3.3/4.2, 60/40≤2.8/4.8, 65/35≤2.4/5.4, 70/30≤3.1/6.0, 75/25≤1.9/6.8 80/20≤1.5/7.8, 85/15≤1.2/9.2, 90/10≤1.0/11.3, 95/5≤0.7/14.4, 99/1≤0.5/22.6
1×3/3×3 Port Configuration, Coupling Ratio and Corresponding Insertion Loss (dB)*	33/33/33≤6.2/6.2/6.2, 10/45/45≤11.5/4.7/4.7, 20/40/40≤8.4/5.4/5.4, 30/35/35≤6.2/5.6/5.6 40/30/30≤5.1/6.3/6.3, 60/20/20≤3.4/8.5/8.5, 70/15/15≤2.7/9.4/9.4, 80/10/10≤2.0/11.6/11.6
Insertion Loss Uniformity (dB)	33/33/33≤1.4
Return Loss (dB)	≥50 (UPC), ≥55 (APC)
PDL (dB)	≤0.2
Operating Temperature (°C)	-40 ~ +85
Storage Temperature (°C)	-40 ~ +85
Bare Fiber Dimension Φ×L (mm)**	2.9×50, 3.05×65
Mini Module Dimension L×W×H (mm)**	96.5×12×10

*without connectors

**Dimensions of the module section only, excluding fibers and connectors

Fast Fiber Connectors

Fast Fiber Connectors

GIGALIGHT provides multiple types of fast fiber connectors, of which fiber types and connector types can be customized according to specific usage scenarios to meet all optical connection requirements in the access network ODN. The fast fiber connectors adopt high-quality optical fibers and connectors. Based on the mature manufacturing process and excellent product design, they can provide end users with excellent performance and experience.

Highlights

- Small and portable
- Directly connected to ONU
- Elastically fixed axially to avoid wrong connection
- High tensile strength (>100N), no other protection is required
- Easy and fast installation, average connection time of 100s, high success rate
- Precision ceramic components with coaxial auto-centering and outstanding durable optics
- Triple clamps with bare fiber, tight buffers and cables, etc., can be used as patch cords
- Integrated protection of the housing withstands harsh user environments





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