Long Line
FIBER SOLUTIONS

OPTICAL NETWORK DEVICES INNOVATOR

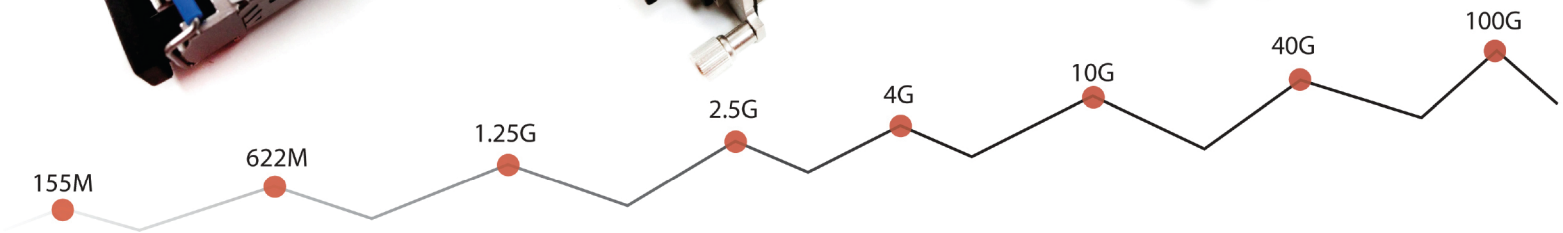
- Optical Transceivers
- Video&Consumer Optics
- Coupling/Splitting
- Signal Conditioning&Monitoring
- WDM MUX/DEMUX
- Switching/Routing
- Test Instrument
- RF-Over-Fiber

- **A**ctive Transceivers
  10G XENPAK/X2/XFP/SFP+
  40G QSFP+,**40G** LRD CFP
  10G&40G Active Cables

- **P**assive Products

CONNECT FIBER TECHNOLOGY WITH LONGLINE

The fiber products which support and are %100 compatible with the brands such as CISCO, HP, NORTEL, JUNIPER and etc., have 3 year warranty with high performance and reasonable cost. Breakdown and risk ratio of the product is nearly zero and shows great performance in all gbic projects supported up to 80 km.



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100G Transceivers

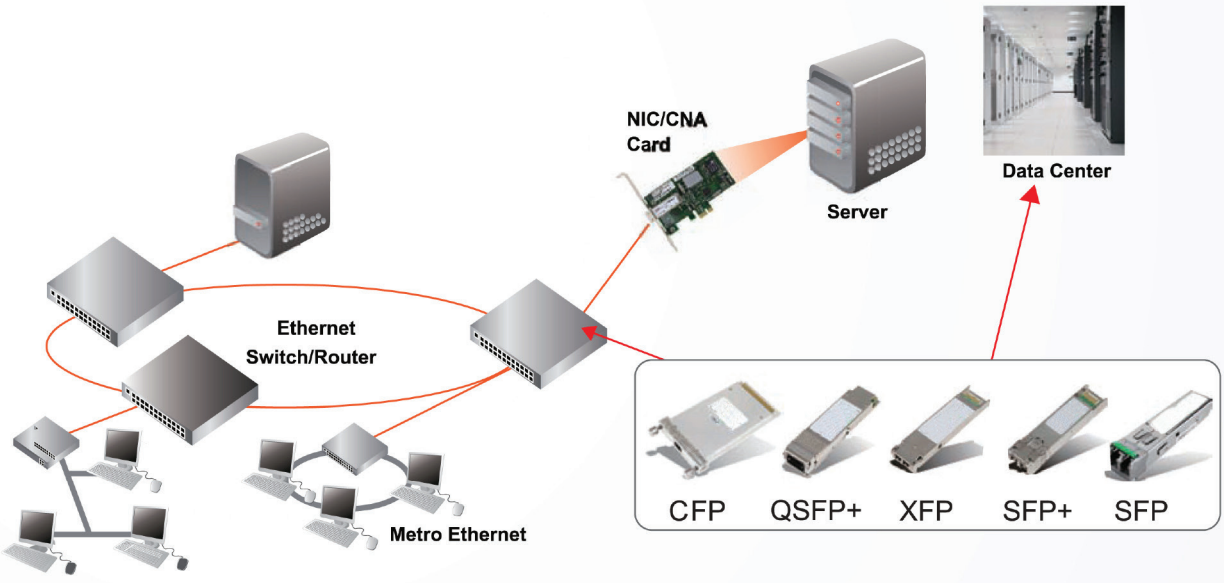
— High Speed interconnect

100G CFP SR10

- Compliant to CFP MSA standard
- 300m on OM3 fiber and 400m on OM4 fiber
- 10 channels 850nm VCSEL array
- 10 channels PIN photo detector array
- Power consumption < 8W
- Operating case temperature range of 0°C to +70°C
- MDIO management interface
- Male MPO(MTP) receptacle
- Digital Diagnostic function

Applications

- High-speed core router interlinks and data center aggregation



100G CFP2 SR10

- Compliant to CFP2 MSA standard
- 100GbE specifications 802.3ba (100GBASE-SR10, CAUI) up to 100m OM3 fiber and 150m OM4 fiber
- 10 channels 850nm VCSEL array
- 10 channels PIN photo detector array
- Power dissipation < 6W
- Operating case temperature of 0 °C to 70 °C
- MDIO management interface
- Utilizes standard 24 lane optical fiber with MPO(MTP) receptacle
- Digital Diagnostic function

Applications

- High-speed core router interlinks and data center aggregation

The LongLine's 100G CFP2 SR10 optical module is a 10-channel pluggable, multi-mode parallel optic transceiver module designed for high-density 100G Ethernet and Optical Transport Network (OTN), which is designed to maximize the delivery of 10G data channels for modern 100G networks at significantly lower costs than existing industry solutions. The device supports 10x10Gbps Ethernet interconnects.

Type	Tx Power (dBm)		Rx Power (dbm)	
	Min	Max	Min	Max
100GBASE-SR10	-8.0	+7.0	-12.0	+1.0

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
850	0 ~ 70	10.3125G/s	3.0	-

120G CXP Module

- 12 channels full-duplex transceiver
- Hot pluggable CXP footprint
- Maximum link length of 300m on OM3 MMF and 400m on OM4 MMF
- Data rate up to 10.5Gbps per channel
- Unretimed CPPI electrical interface
- Requires 3.3V power supply only
- Low power consumption<4.5W
- Built-in digital diagnostic functions

Applications

- 100G Ethernet
- Switches, Routers
- Data Center

LongLine's CXP transceiver module is a high performance, low power consumption, long reach interconnect solution supporting 100G Ethernet, Infiniband QDR,DDR,SDR,1G/2G/4G/8G/10G fiber channel and PCIe. It is compliant with 120Gbits Small Form factor Hot-Pluggable CXP-interface. GIGALIGHT's CXP transceiver module is an assembly of 12 full-duplex lanes, where each lane is capable of transmitting data at rates up to 10.5Gb/s, providing an aggregated rate of 120Gb/s.

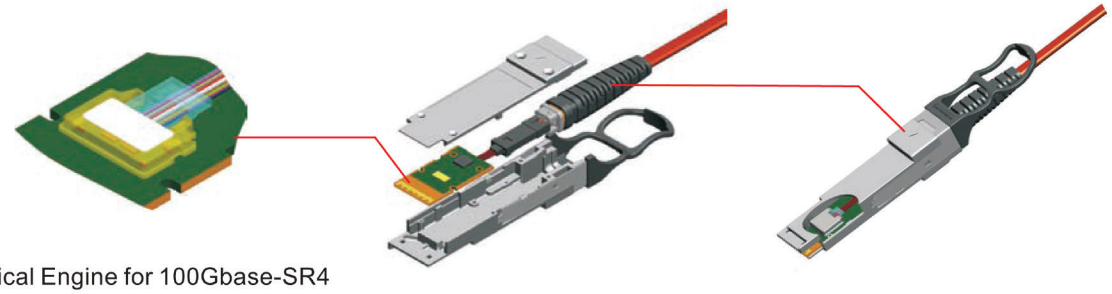
Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
100GBASE-SR10	-7.6	+2.4	-9.5	+2.4
Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
850	0 ~ 70	10.5G/s	3.0	-

100G QSFP28 SR4

- 100m reach on parallel multi-mode fiber(OM3) and 150m on OM4 fiber
- Compliant with QSFP+ MSA module form factor
- Compliant with IEEE 802.3bm*100Gbase-SR4
  4x25G Optical 850nm VCSEL
  4x25G Electrical I/O
- Operating case temperature 0°C to +70°C
- Digital diagnostic function

Applications

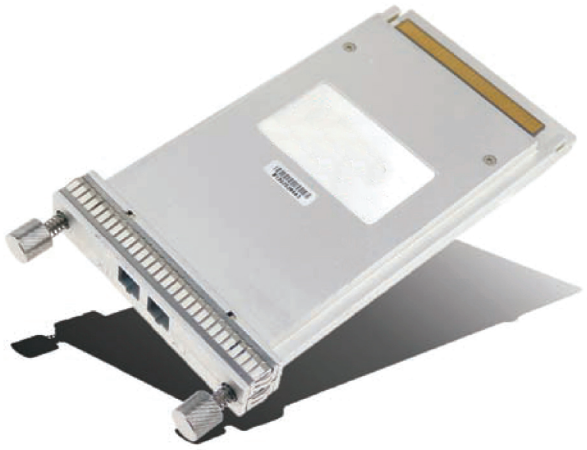
- High-speed core router interlinks and data center aggregation



Optical Engine for 100Gbase-SR4

Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
100GBASE-SR4	-7.5	+2.5	-12.0	+1.0

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
850	0 ~ 70	25G/s	3.0	-



100G CFP LR4

- Compliant to CFP MSA standard
- Supports 103.1Gb/s aggregate bit
- OTU4 compatible
- 4x25Gb/s LAN-WDM transmitter
- Maximum link length of 10km on SMF
- Commercial case temperature 0°C to 70°C
- CAUI electrical interface
- MDIO management interface
- Single 3.3V power supply

Applications

- High-speed core router interlinks and data center aggregation

The LongLine 100GBASE-LR4 CFP module supports a link length of 10 kilometers on standard single-mode fiber (SMF, G.652). 100 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. They are compliant with the CFP MSA and IEEE 802.3ba 100GBASE-LR4. Digital diagnostics functions are available via an MDIO interface.

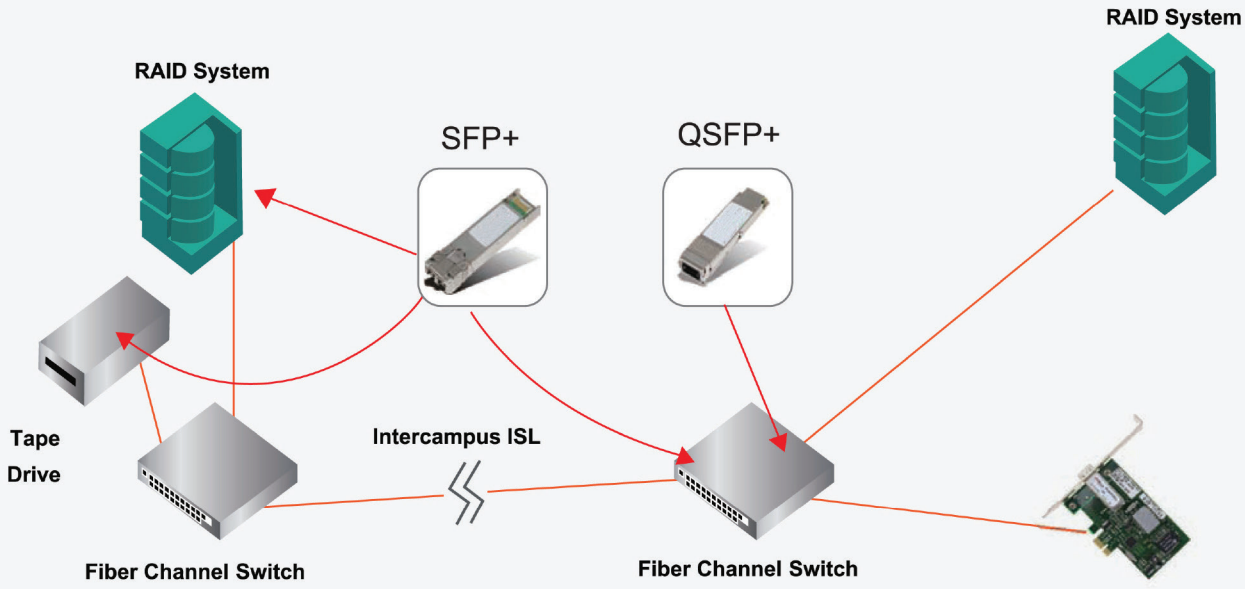
Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
100GBASE-LR4	-4.3	+4.5	-10.6	+5.5
Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
1295.56/1300.05/1304.58/1309.14	0 ~ 70	25G/s	4.0	-

56G/40G Transceivers

— Storage Network/Server

56G QSFP+ SR4

- 300m reach on parallel multi-mode fiber(OM3)
- Compliant with QSFP+ MSA module form factor
- Compliant with IEEE 802.3ba *40Gbase-SR4
  4x14G Optical 850nm VCSEL
  4x14G Electrical I/O (XLPPI)
- Operating case temperature range of
  0°C to +70°C
- Power consumption <1.5W
- Male MPO(MTP) receptacle(12 Fiber)
- Digital diagnostic function



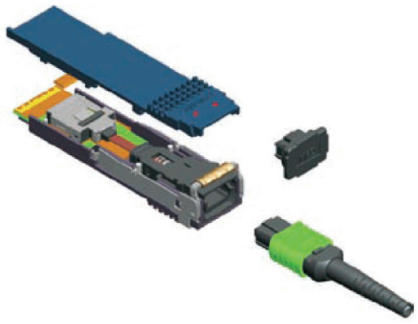
40G QSFP+ SR4

- 300m reach on parallel multi-mode fiber(OM3)
- Compliant with QSFP+ MSA module form factor
- Compliant with IEEE 802.3ba*40Gbase-SR4
  4x10G Optical 850nm VCSEL
  4x10G Electrical I/O (XLPPI)
- Operating case temperature range of
  0°C to +70°C
- Power consumption <1.5W
- Male MPO(MTP) receptacle(12 Fiber)
- Digital diagnostic function

Applications

- 40G Ethernet
- Datacom/Telecom switch & router connections
- Proprietary Protocol and Density Applications
- Infiniband transmission at 4ch SDR, DDR and QDR

It integrates four data lanes in each direction with 40 Gbps bandwidth. Each lane can operate at 10.3125 Gbps up to 300 m using OM3 fiber or 400 m using OM4 fiber. These modules are designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 38 contact edge type connector. The optical interface uses an 12 fiber MTP (MPO) connector.



Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
40GBASE-SR4	-7.5	+2.5	-12.0	+1.0

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
850	0 ~ 70	10.3125G/s	3.0	-

40G QSFP+ LR4

- 10km reach on Single mode fiber
- Compliant with QSFP+ MSA module form factor
- Compliant with IEEE 802.3ba*40Gbase-LR4
  4x10G 1271, 1291, 1311, 1331nm CWDM DFB
  4x10G Electrical I/O (XLPPI)
- Operating case temperature 0°C to +70°C
- Power consumption <3.5 W
- Duplex LC receptacle optical interface(2 Fiber)
- Digital diagnostic function

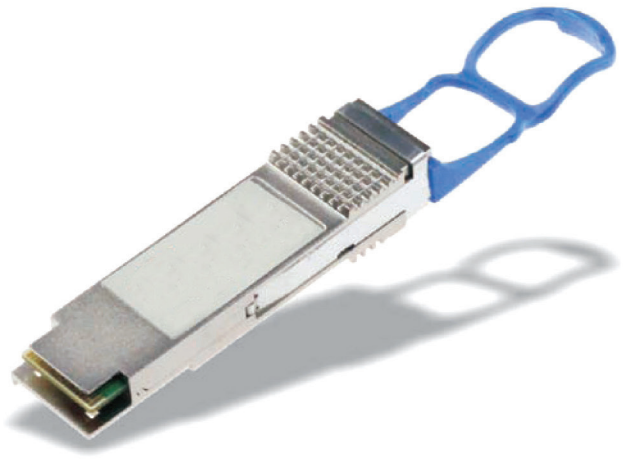
Applications

- 40G Ethernet links
- Infiniband QDR and DDR interconnects
- Client-side 40G Telecom connections

The LongLine technology enables the integration of 4 transmitters, 4 receivers and an optical MUX/DeMUX into a small form factor package that delivers a 40 Gbps data link in a compact QSFP footprint. The optical connectivity is based on two SMF LC connectors, one for Tx and the other for Rx. The Tx and Rx each consist of 4 10GB/s CWDM channels, whose wavelengths are 1270nm,1290nm,1310nm,1330nm. The QSFP-LR transceiver is designed for applications based on the IEEE 802.3ba 40BASE-LR4 standard of up to 10km reach.

Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
40GBASE-LR4	-7.5	+2.3	-13.7	+2.3

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
1270/1290/1310/1330	0 ~ 70	10.3125G/s	3.5	-

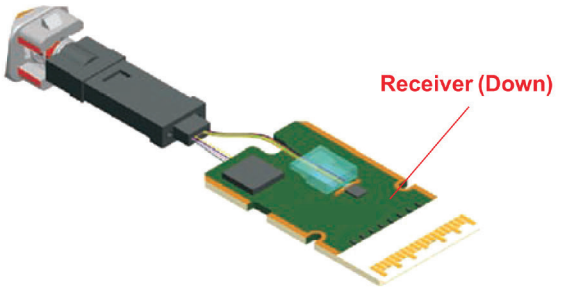


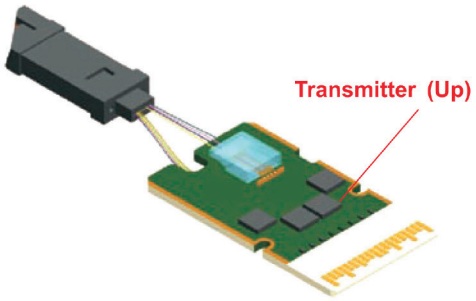
40G QSFP+ PSM IR4

- 2km reach on parallel single mode fiber
- Compliant with QSFP+ MSA module form factor
- Compliant with with IEEE 802.3ba*40Gbase-LR4
  4x10G 1310nm FP
  4x10G Electrical I/O
- Operating case temperature 0°C to +70°C
- Power consumption <3.5 W
- Single mode male MPO receptacle(use 8 SMF)
- Interoperate with 4 x 10GBASE-LR links

Applications

- High-speed core router interlinks and data center aggregation
- Test equipment

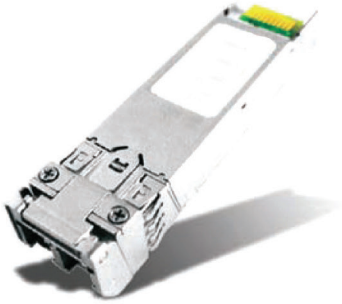




Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
40G PSM 2km	-7.5	+0.5	-11.5	0

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
1310	0 ~ 70	10.3125G/s	3.5	-

10G Transceivers



10G SFP+

- 220m/300m/2km/10km/40km/80km
- 0℃ to 70℃ or -40℃ to 85℃

10G SFP+ SONET(CDR)

- 10km/40km/80km
- 0℃ to 70℃

10G BIDI SFP+

- 10km//20km/40km/60km
- 0℃ to 70℃

10G CWDM SFP+

- 10km//20km/40km/80km
- 0℃ to 70℃

10G DWDM SFP+

- 40km/80km
- 0℃ to 70℃

10G X2

- 220m/300m/10km/40km/80km
- 0℃ to 70℃

10G CWDM X2

- 40km/70 ~ 80km
- 0℃ to 70℃

10G DWDM X2

- 40km/80km
- 0℃ to 70℃

10G Tunable XFP

- Monolithically integrated full C-band tunable transmitter
- 80km reach on SMF
- 50 GHz ITU channel spacing(88CH) with integrated wavelength locker
- Commercial operating temperature 0°C to 70°C
- Maximum power consumption <3.5 W
- No reference clock required
- Digital diagnostic monitoring

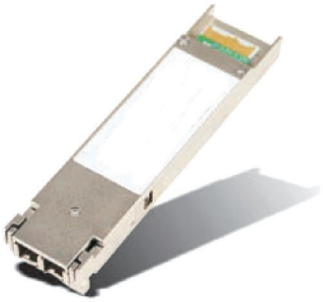
Applications

- 10G Ethernet
- DWDM System

The LongLine 10G DWDM (50-GHz ITU grid) Tunable XFP is an integrated fiber optic transceiver that provides a high-speed serial link at signaling rates from 9.95 Gbps to 11.3 Gbps.Supports 9.953 Gbps (SONET and SDH), 10.31 Gbps (Ethernet), 10.52 Gbps (Fibre Channel), and corresponding forward error correction (FEC)rates of 10.66/10.709/11.09/11.3 Gbps.

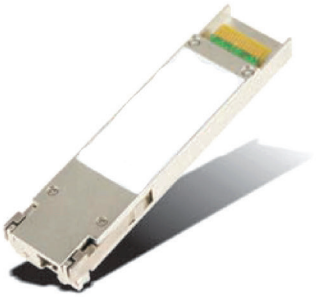
Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
10G Tunable	0	+4.0	-24	-7.0

Center Wavelength	Operating Temperature (°C)	Data Rate per Channel	Extinction Ratio(dB)	
			Min	Max
50 GHz ITU spacing(88CH)	0 ~ 70	Up to 11.3G/s	9.0	-



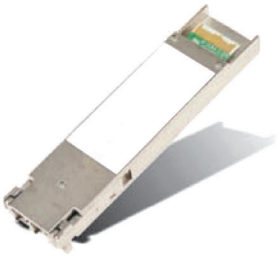
10G XFP

- 300m/10km/40km/80km/120km
- 0℃ to 70℃ or -40℃ to 85℃



10G BIDI XFP

- 10km/20km/40km/60km
- 0℃ to 70℃



10G CWDM XFP

- 10km/20km/40km/80km/120km
- 0℃ to 70℃

10G DWDM XFP

- 40km/80km/120km
- 0℃ to 70℃

10G XENPAK

- 220m/300m/10km/20km/40km/80km
- 0℃ to 70℃

10G CWDM XENPAK

- 40km/80km
- 0℃ to 70℃

10G DWDM XENPAK

- 40km/80km
- 0℃ to 70℃

X2-SFP+ Converter

- 10km/ 40km/80km
- 0℃ to 70℃

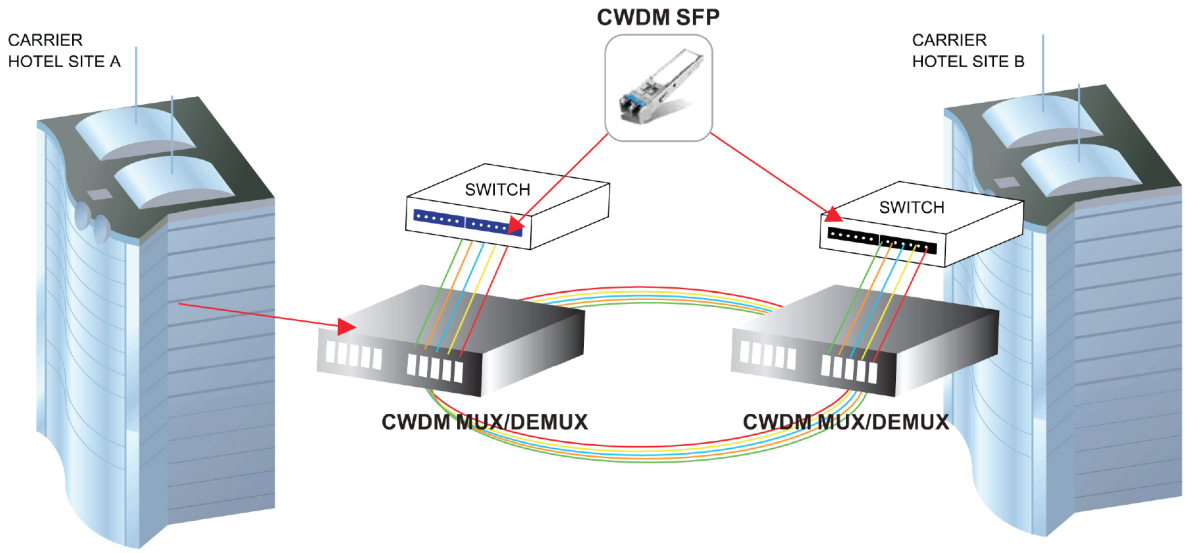
SFP Transceivers

Applications

- Gigabit Ethernet
- Fiber Channel
- Switch to Switch interface
- Switched backplane applications
- Router/Server interface

CWDM SFP Transceiver

- Data rates 155M/622M/1.25G/2.5G/4.25G
- Transceiver center wavelength: 1270nm～1610nm
- Compliant with SFP MSA and SFF-8472 with duplex LC receptacle
- 40km/80km/120km reach
- +3.3V single power supply
- Internal calibration or external calibration
- Operating case temperature 0°C to 70°C
- Compatible with RoHS



SFP

- 300m/500m/2km/20km/40km/80km/120km
- 0℃ to 70℃ or -40℃ to 85℃

BIDI SFP

- 2km/20km/40km/80km/120km
- 0℃ to 70℃ or -40℃ to 85℃

SGMII SFP

- 2km/10km
- 0℃ to 70℃

BIDI CWDM SFP

- 40km/80km/120km
- 0℃ to 70℃

DWDM SFP

- 80km/120km
- 0℃ to 70℃

Copper SFP

- 200m
- 0℃ to 70℃ or -20 ℃ to 85℃

Asymmetrical BIDI SFP

- 20km/40km
- 0℃ to 70℃

1.25/2.5G SWSF BIDI SFP

- Single Wavelength Single Fiber(SWSF)
- Dual data-rate of 2.488Gbps operation
- 1550nm DFB laser and PIN photodetector for 20km transmission
- Compliant with SFP MSA and SFF-8472 with simplex LC receptacle
- Internal calibration or external calibration
- Compatible with SONET OC-48 system
- Operating case temperature 0 to +70°C
- Compatible with RoHS

Applications

- SDH STM-16 and SONET OC-48 system
- CWDM Fiber Channel
- Switched backplane applications
- Router/Server interface

The LongLine SWSF(Single Wavelength Single Fiber) SFP Transceivers offers a direct replacement for dual-fiber SFP optics, with the added benefit of simplifying your sparing requirements. It uses a single wavelength, bi-directional(one fiber)transmission technology for a simultaneous communication in both directions for P2P access network application. The single wavelength single-fiber SFP minimizes operational concerns by utilizing the same wavelength on both 'ends' of the link.

Type	TX Power (dBm)		RX Power (dBm)	
	Min	Max	Min	Max
SFP SWSF	-5	0	-18	0

Center Wavelength (nm)	Operating Temperature (℃)	Data Rate per Channel (Typical)	Extinction Ratio(dB)	
			Min	Max
1550	0 ~ 70	3.125G/s	9.0	-

3.072G CPRI/OBSAI SFP

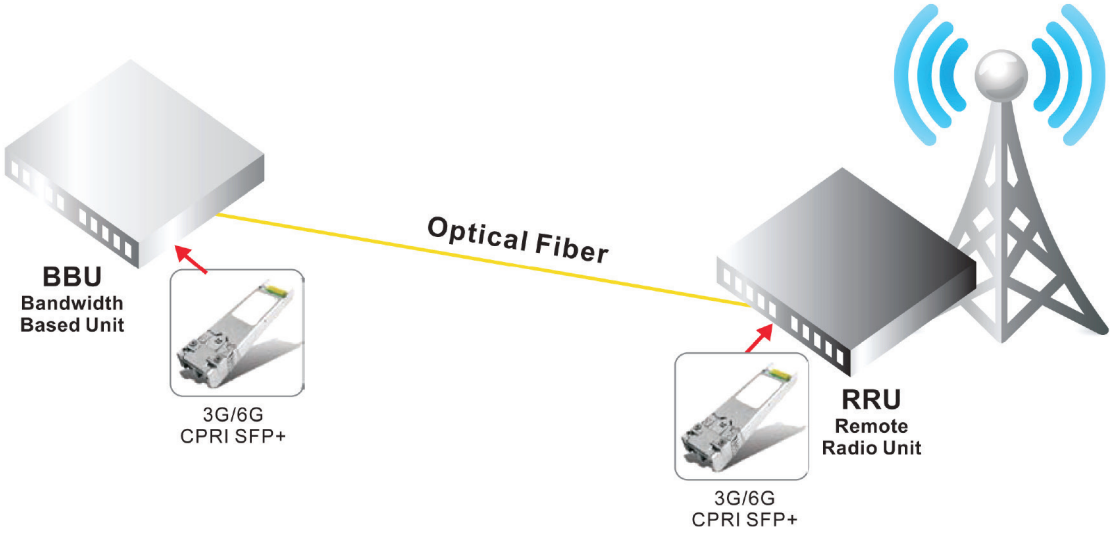
- Operating data rate up to 3.072Gbps
- CPRI/OBSAI compatible optical interface
- 500m/2km/15km/40km reach
- -40 to 85℃

4.9G/6.25G CPRI/OBSAI SFP

- Operating data rate up to 6.25Gbps
- CPRI/OBSAI compatible optical interface
- Transceiver center wavelength 850nm/1310nm
- 300m/2km/10km reach
- -40 to 85℃

CPRI/OBSAI CWDM BIDI SFP

- CPRI/OBSAI compatible optical interface
- CWDM-LD transmitter and PIN photodetector
- 3.072G,reach 40km;6.25G, reach 10km
- -40 to 85℃



OTDR SFP Transceivers

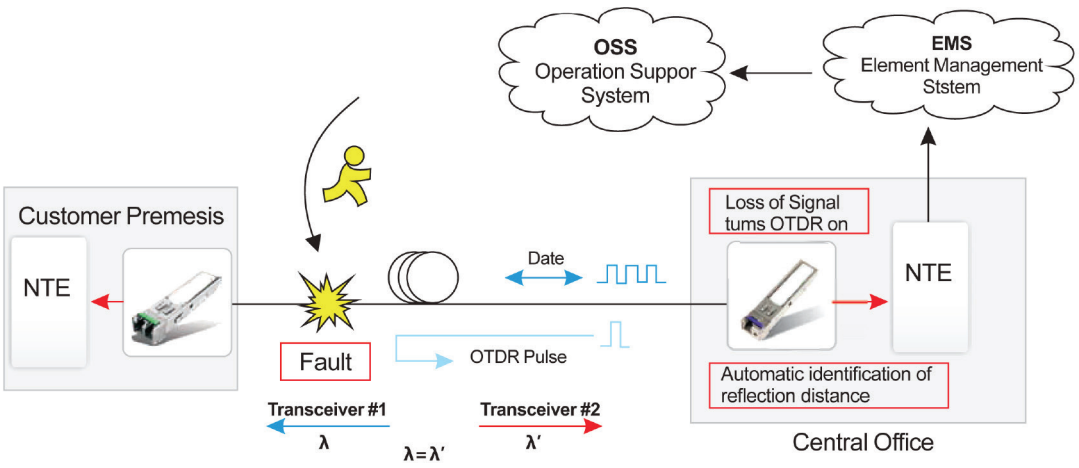
Micro OTDR SWSF BIDI SFP

- Compliant with SFF-8472 SFP MSA
- Compliant with SONET OC-24-LR-1
- Multi-rate of 155M~1.25Gbps operation
- Integral Micro-OTDR, fast to report fiber fault and Lower Mean-Time-To-Repair
- Easy to install and maintain

Applications

- Gigabit Ethernet,Fiber Channel
- Switched back-plane applications
- Network monitoring/maintenance
- Central office cross-connect

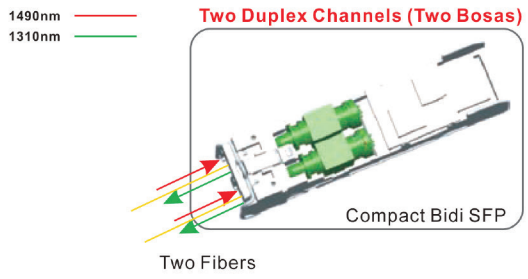
The LongLine micro-OTDR SFP offers cost-effective fiber maintenance by embedding OTDR Functionality into an Single wavelength Single fiber Bidi SFP module for monitoring and maintaining fiber networks in an easy and fast way.



Compact BIDI SFP Application

Compact BIDI SFP

- Supports 155Mbps/1.25G/2.5Gbps/10Gbps operation
- 2xBi-directional transceivers in one SFP package
- Compliant with CSFP MSA option 1/2 and SFF-8472
- Digital diagnostic monitoring



Applications

- SDH STM-16 and SONET OC-48 system
- Fiber Channel
- Switch to Switch interface
- Point to Point FTTH Application
- Other optical transmission systems

Video &Consumer Optics

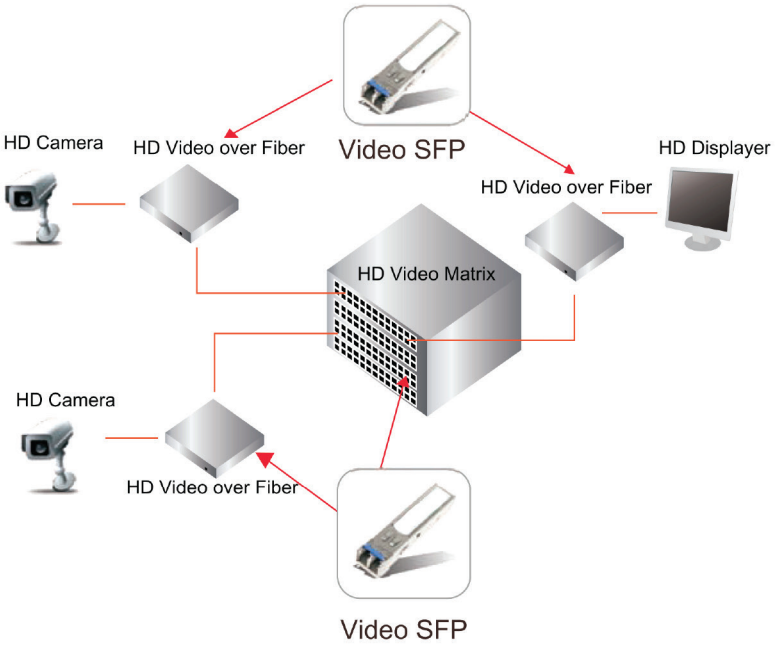
3G-SDI Video SFP

- Data rate 50Mbps to 2.97Gbps
- Transceiver center wavelength 1310nm/1550nm/CWDM
- SMPTE 297-2006 compatible
- Supports video pathological patterns for SD-SDI, HD-SDI and 3G-SDI Metal enclosure for lower EMI
- PIN photodetector
- Reach 2km/20km/40km on SMF
- 0ºC to 70ºC

Applications

- SMPTE 297-2006 Compatible Electrical-to-Optical Interfaces
- HDTV/SDTV Service Interfaces

The video series transceivers are high performance, cost effective modules for duplex video transmission application over single mode fiber.



Video BIDI SFP Transceiver

- SMPTE 297-2006 compatible
- Supports video pathological patterns for SD-SDI, HD-SDI and 3G-SDI
- Metal enclosure for lower EMI
- PIN photodetector
- Distance≤40km
- 0ºC to 70ºC or -40℃ to 85℃

Dual Video SFP Receiver

- ≤40km
- 0℃ to 70℃

Single Video SFP Receiver

- ≤40km
- 0℃ to 70℃

Single Video SFP Transmitter

- 2km/20km/40km
- 0℃ to 70℃

Dual Video SFP Transmitter

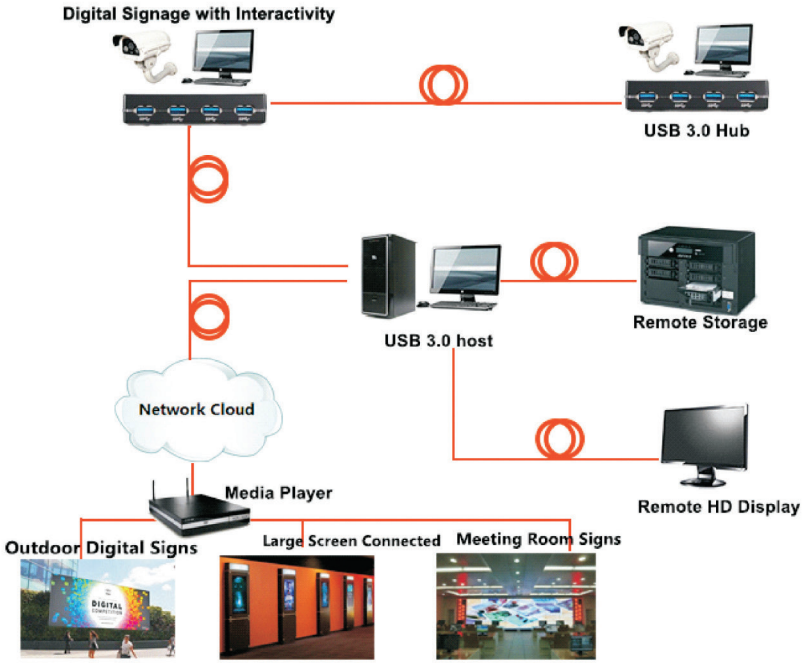
- 2km/20km/40km
- 0℃ to 70℃

USB 3.0
Active Optical Cable

- Extends USB 3.0 super speed devices up to 100 m over fiber optic
- Data rate up to 5Gbps
- Supports all USB 3.0 device types control, interrupt, bulk and isochronous
- Operates with USB 3.0 super speed host controllers
- Supports all major operating systems including Windows, Mac OS,and Linux

Applications

- Digital signage system
- Machine vision system
- Industrial printer system
- USB devices mass produce system
- High-definition video surveillance system
- High-speed data acquisition system



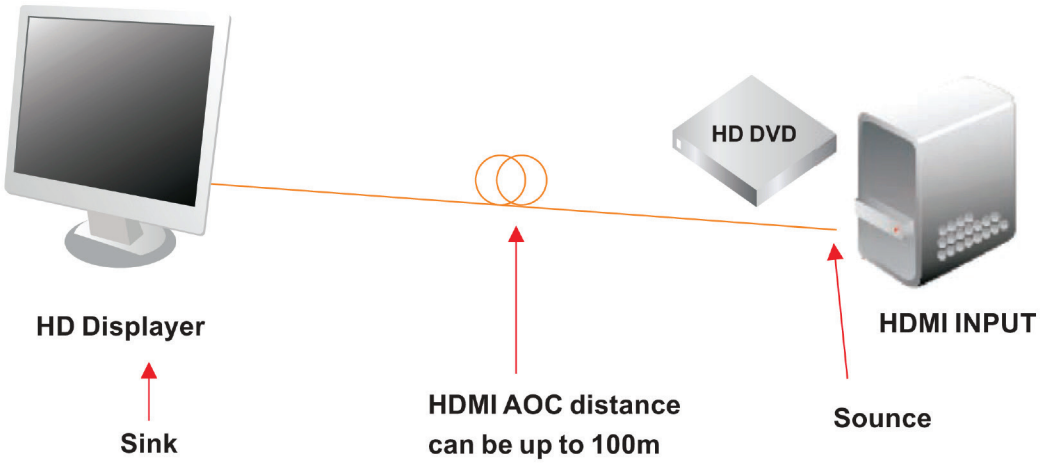
HDMI
Active Optical Cable

- 10.2Gb/s Data rate
- Extend HDMI reach to 100m on Multi-mode fiber
- Compatible with HDMI 1.4

Applications

- Digital home theatre
- TFT-LCD, projectors and plasma flat panel displays for conference room, auditorium, kiosk, medical imaging, traffic control and factory automation system

The LongLine HDMI Active Optical Cable is the perfect solution for extending HDMI signals in classrooms, conference rooms, healthcare facilities, houses of worship and other commercial environments. Utilizing AOC technology that performs similar to traditional copper cabling, the optical fiber construction between the connectors provides optimum performance and easy installation.



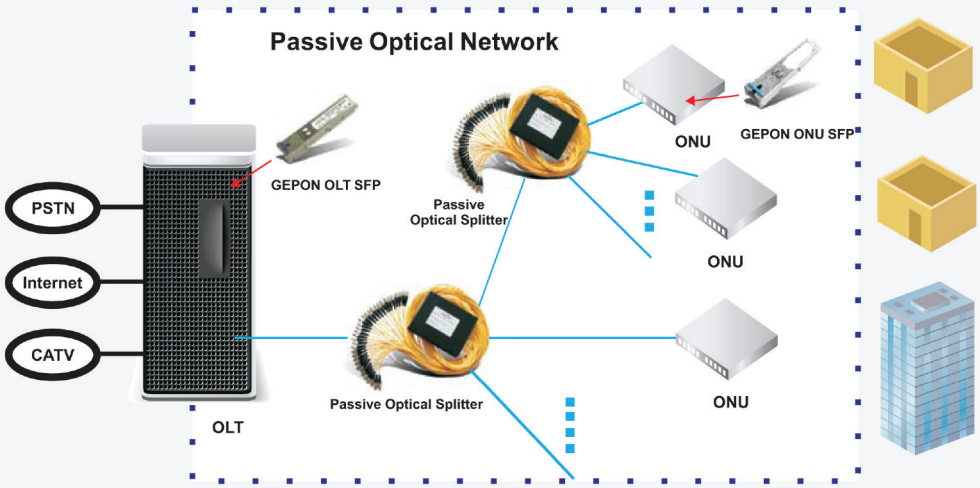
Coupling/Splitting

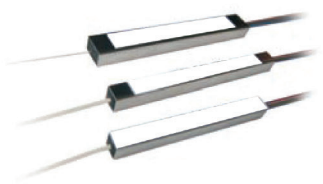
PLC Splitter

- Wide operating wavelength range
- Ultra-low insertion loss
- Low polarization dependent loss
- Excellent IL uniformity
- Compact size
- RoHS compliant
- Telcordia GR-1221-CORE compliant

Applications

- FTTX Solutions
- Passive Optical Network(PON)
- Local Area Network (LAN)
- Cable Television

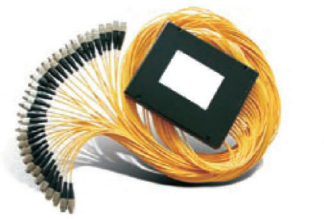




Bare Fiber PLC Splitter

Two in One PLC Splitter

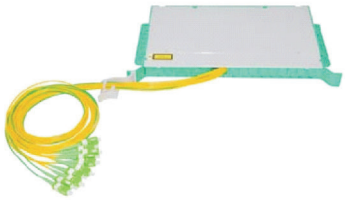
Mini Module PLC Splitter



Box Module/PM PLC Splitter

Rack-Mountable PLC Splitter

Tray Type PLC Splitter



Direct Tray Type PLC Splitter

Cassette PLC Splitter

Wall-Mounted PLC Splitter

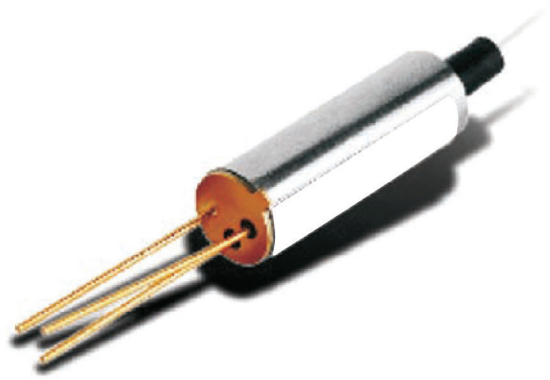
Fiber Array

- High precise fiber core-to-core accuracy
- Low insertion loss
- High precise angle polishing
- Wide operating wavelength 1260nm ~ 1620nm
- Wide operating temperature -40℃ ~85℃
- High reliability and stability

Applications

- Planner lightwave circuit splitter devices
- Array waveguide grating (AWG)
- Arrayed active and passive fiber devices
- MEMS devices
- Multi-channel micro-optics modules

Signal Conditioning & Monitoring



MEMS VOA

- Low insertion loss
- Low polarization dependent loss
- Compact design
- Low power consumption
- Insensitive to shock and vibration

Applications

- Power control and equalization in multi channel systems
- Gain-tilt control in EDFAs
- Receiver protection
- Channel on/off switching
- OADM

Compliance

- Telcordia GR-1221-CORE
- RoHS

LongLine's MEMS VOA uses an electronstatic tilting mirror to change light coupling between input and output fibers. It features low IL, fast response and compact size, and can be available in Dark and Bright type. Applications include power equilization before optical amplification in multi-channel WDM networks, power control, receiver protection or gain variation in EDFA. The VOA is designed to withstand diverse environmental conditions and fully compliant with GR-1221-core.

Product Type	Operating Wavelength (nm)	Attenuation Type(dB)	Attenuation Resolution (dB)	IL(dB)	Attenuation Range (dB)	TDL(dB)		WDL(dB)	
						@0dB Att	@20dB Att	@0dB Att	@20dB Att
MEMS VOA	C+L Band	Bright, Dark	Continuous	0.70	Up to 40	0.7	0.1	0.3	1.5

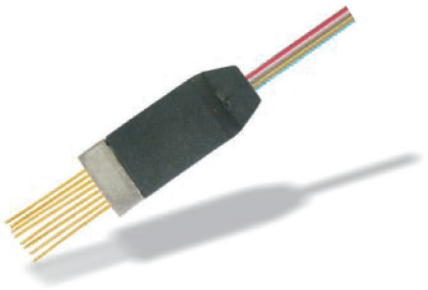
TAP PD

- Low insertion loss
- High precision
- Wide attenuation range from 0.6dB to 60dB
- Compact design
- Wide operating wavelength from 1260nm to 1620nm
- Operating temperature -5℃~75℃
- High reliability and stability

Applications

- WDM transmission
- Metro and long haul network

8CH Tap Photo Detector Array



8CH Photo Detector Array

Product Type	Operating Wavelength (nm)	Tap Ratio				Dark Current (nA)	Reverse Voltage (V)	Forward Current (mA)	Capacitance (pF)	PD Bandwidth (GHz)
			1:99	2:98	5:95					
TAP PD	C+L Band	Max.(dBm)	25	22	18	1.0	20	10	5	2
		Rsp.(mA/W)	7~12	16~20	40~60	1.0	20	10	5	2
		IL(dB)	0.5	0.6	0.6	1.0	20	10	5	2
8-ch TAP PD Array	C+L Band	Rsp.(mA/W)	7~9	14~18	35~45	1.0	20	10	0.45	2
		IL(dB)	0.7	0.8	1.0	1.0	20	10	0.45	2

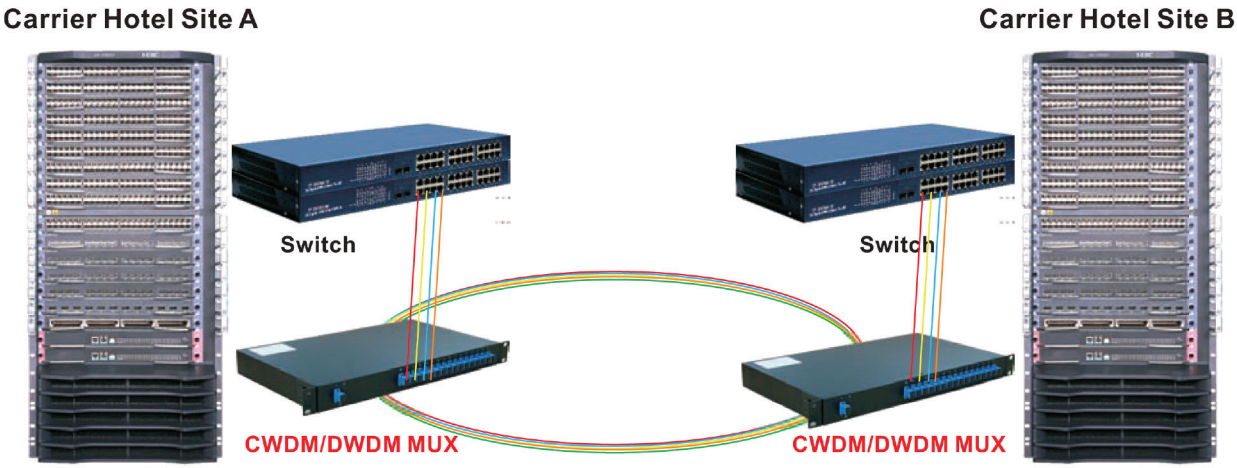
WDM MUX/DEMUX

TFF WDM

- Low insertion loss
- Wide pass band
- High channel isolation
- Low polarization dependent loss
- Exceptional reliability and stability
- Epoxy free optical path
- Telcordia GR-1221/1209-CORE compliant

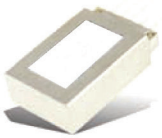
Applications

- Access networks
- Metro WDM systems
- Enterprise networks
- Add/Drop Channels



CWDM Device

CCWDM

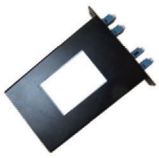


Mini CCWDM

Two in One CWDM Device

Mini CWDM Mux and Demux Module

CWDM/DWDM Optical Add/Drop Module



CWDM/DWDM Mux/Demux Module

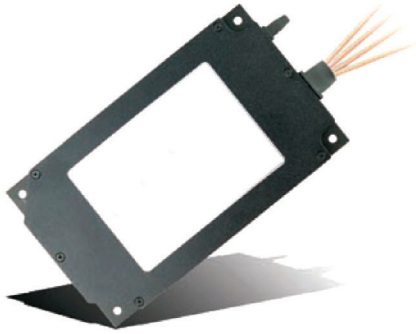
WDM-Isolator Hybrid Device

CWDM MUX/DEMUX Specification

Packaging Type	Port Configuration	Operating Wavelength (nm)	Channel Spacing (nm)	Channel Passband (nm)	IL(dB)		Isolation(dB)		Passband \ Ripple (dB)	Directivity (dB)
							Adjacent	Non-adjacent		
3-Port CWDM Device	1x2 Device	1260~1620	20nm	λc±7	⩽0.6 (Passport)	⩽0.4 (Reflection)	30	50	0.30	50
CWDM MUX/DEMUX	1x2	1260~1620	20nm	λc±7	0.7		30	40	0.3	50
	1x4	1260~1620	20nm	λc±7	1.4		30	40	0.3	50
	1x8	1260~1620	20nm	λc±7	2.0		30	40	0.3	50
	1x16	1260~1620	20nm	λc±7	3.5		30	40	0.3	50
					Add&Drop	Express				
CWDM OADM	1-CH	1260~1620	20nm	λc±7	0.5	0.6	30	40	0.3	50
	2-CH	1260~1620	20nm	λc±7	0.7	1.2	30	40	0.3	50
	4-CH	1260~1620	20nm	λc±7	1.4	1.8	30	40	0.3	50
	8-CH	1260~1620	20nm	λc±7	2.0	3.6	30	40	0.5	50
CCWDM	1x4	1260~1620	20nm	λc±7	1.0		30	40	0.5	50
	1x8	1260~1620	20nm	λc±7	1.5		30	40	0.5	50
Mini CCWDM	1x4	1260~1620	20nm	λc±7	1.2		30	40	0.5	50

DWDM MUX/DEMUX Specification

Packaging Type	Port Configuration	Operating Wavelength (nm)	Channel Spacing (nm)	Channel Passband (nm)	IL(dB)		Isolation(dB)		Passband \ Ripple (dB)	Directivity (dB)
							Adjacent	Non-adjacent		
3-Port DWDM Device	1x2 Device	C+L Band	100G or 200G	λc±0.11 for100G ; λc±0.25 for200G	⩽0.9 (Passport)	⩽0.4 (Reflection)	30	50	0.30	50
DWDM MUX/DEMUX	1x2	C+L Band	100G or 200G	λc±0.11 for100G ; λc±0.25 for200G	1.4		30	40	0.35	50
	1x4	C+L Band			1.8		30	40	0.35	50
	1x8	C+L Band	100G or 200G	λc±0.11 for100G ; λc±0.25 for200G	3.0		30	40	0.40	50
	1x16	C+L Band			4.0		30	40	0.50	50
					Add&Drop	Express				
DWDM OADM	1-CH	C+L Band	100G or 200G	λc±0.11 for100G ; λc±0.25 for200G	1.0	0.8	30	40	0.3	50
	2-CH	C+L Band			1.4	1.4	30	40	0.3	50
	4-CH	C+L Band	100G or 200G	λc±0.11 for100G ; λc±0.25 for200G	1.8	2.0	30	40	0.3	50
	8-CH	C+L Band			3.0	3.8	30	40	0.5	50



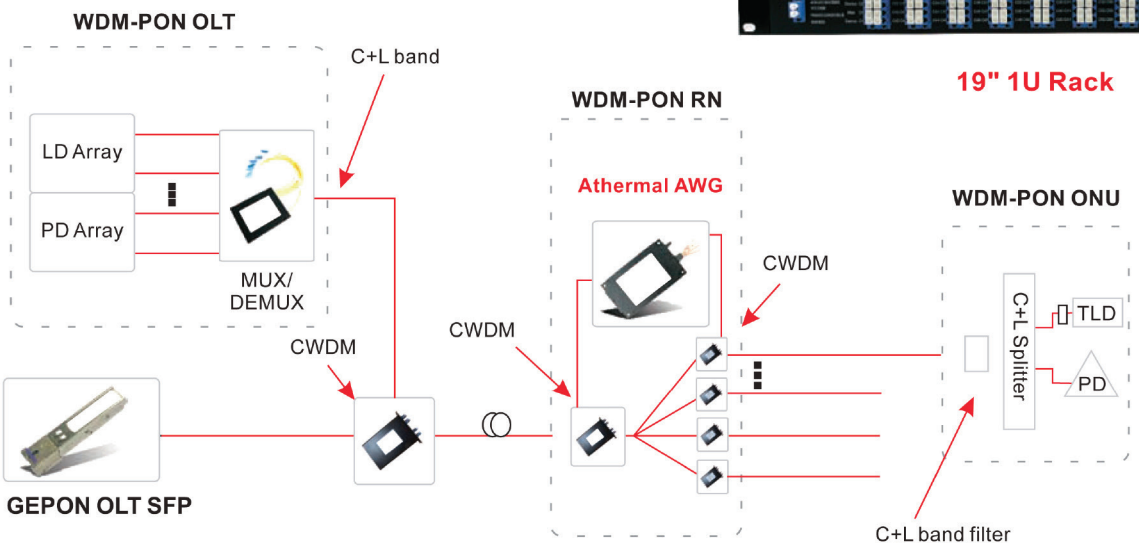
50G/100GHz Athermal AWG

- No electrical power required.
- Athermal design operates over outdoor temperature
- 50 or 100 GHz channel spacing
- Large channel number
- Low insertion loss & high isolation
- Compact size
- Telcordia GR-1209/1221-CORE compliant

Applications

- MUX/DMUX in DWDM systems
- Long haul/Metro/Access networks
- OADM and ROADM applications
- Terminal Application

19" 1U Rack



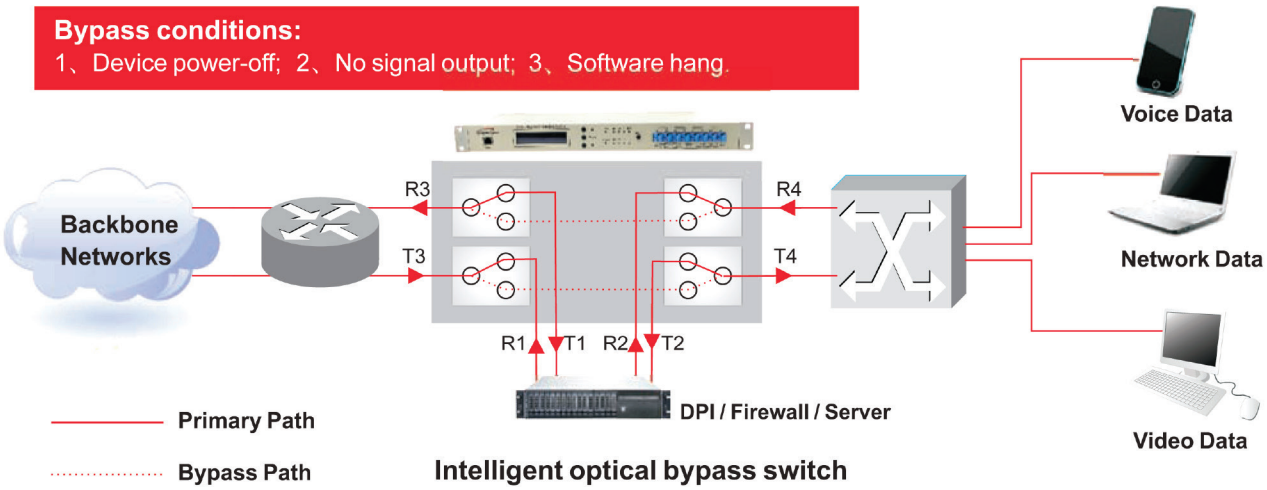
Packaging Type	Port Configuration	Channel Spacing (nm)	Channel Passband (nm)	IL(dB)	Uniformity (dB)	Isolation(dB)		PDL (dB)	Passband Ripple (dB)	CD (ps/nm)	PMD (ps)	Operating Temperature (°C)
						Adjacent	Non-adjacent					
AAWG	40-CH	100GHz	1dB Passband≥0.38 3dB Passband≥0.58	6.0	1.5	23.0	29.0	0.5	0.5	±20	0.5	-5~+65
	48-CH											
	80-CH	50GHz	±6. 25GHz	7.0	1.5	23.0	29.0	0.5	0.5	±20	0.5	-5~+65

Switching/Routing

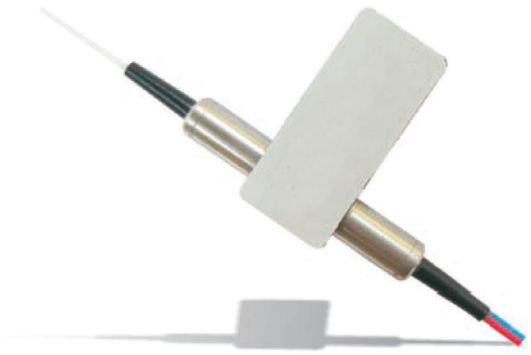
LongLine's Optical Bypass Protection (OBP) system is an intelligent switching system which can bypass the faulty node caused by power off or fault of optical output. It can identify the power status of network node and the status of optical signal output, and instantaneously take switching of optical route when network node fails accidently, thus avoid all route blocking and guarantee the high availability of the whole network.

Optical Bypass Protection Systems

- Optical transparent transmission
- Optical power real-time monitoring and alarm system
- RS-232 and RJ45 available for data communication interface
- Single mode & multi-mode selectable
- Heart beat function available upon request
- AC and DC power supply suitable for different field applications
- With LCD screen &control panel , plus user-friendly software interface



Intelligent optical bypass switch



Mechanical Optical Switch

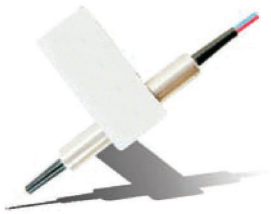
- Low insertion loss
- Wide wavelength range
- Low crosstalk
- High stability & reliability
- Epoxy-free on optical path
- Latching and non-latching optional

Applications

- Optical line protection(OLP)
- Optical Line monitoring (OLM)
- Optical bypass protection (OBP)
- ROADM
- Optical cross connection (OXC)
- Testing and Instrumentation

LongLine's mechanical optical switch series feature low insertion ,quick switch time and excellent repeatability, which makes it ideally used for ROADM, optical cross-connection systems, and network fault protection. All these patented switches are GR-1221-CORE and CR-1073-CORE qualified , and can be directly mounted on PCBs.

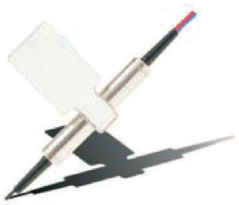
Port Configuration	Latching Type	Drive Voltage (V)	Switch Time	IL(dB)	PDL (dB)	Crosstalk (dB)	Repeatability (dB)	RL (dB)	Durability Cycles	Operating Temperature (℃)
1x2	Latching or Non-latching	3V or 5V	10ms	0.80	≤0.15	≥50 for SM ≥35 for MM	±0.05	≥50 for SM ≥35 for MM	10Million	-40~+85
2x2 FULL		3V or 5V	10ms	1.00	≤0.15		±0.05		10Million	-40~+85
2x2 Bypass	Latching or Non-latching	3V or 5V	10ms	1.00	≤0.15	≥50 for SM ≥35 for MM	±0.05		10Million	-40~+85
2x4 (Dual 1x2)		3V or 5V	10ms	1.20	≤0.15		±0.05		10Million	-40~+85
4x4 (Dual 2x2)		3V or 5V	10ms	1.20	≤0.15	≥50 for SM ≥35 for MM	±0.05		10Million	-40~+85
1x4	Non-latching	3V or 5V	10ms	1.20	≤0.15		±0.05		10Million	-40~+85
1x8	Non-latching	3V or 5V	10ms	1.50	≤0.15		±0.05		10Million	-40~+85



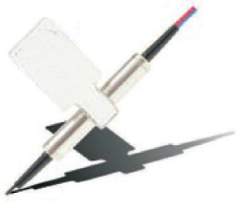
1x2 Mechanical Switch

1x4 Mechanical Switch

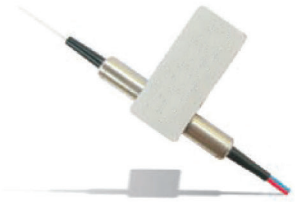
1x8 Mechanical Switch



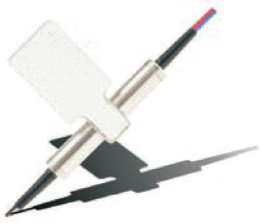
2x2 Full Mechanical Switch



2x2 Bypass Mechanical Switch

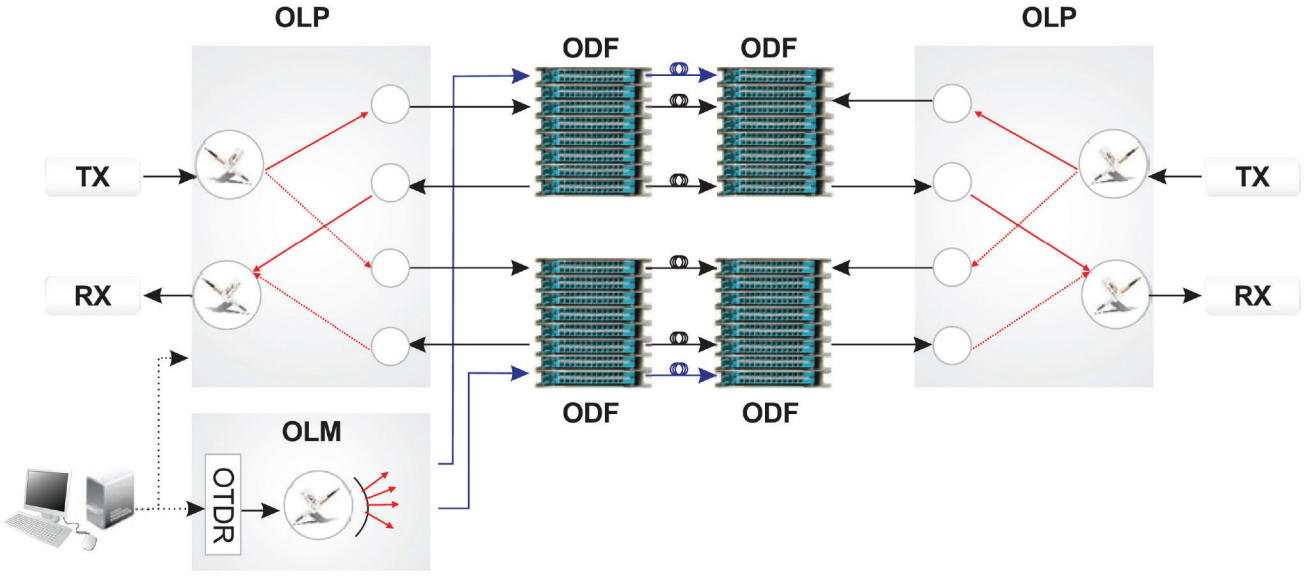


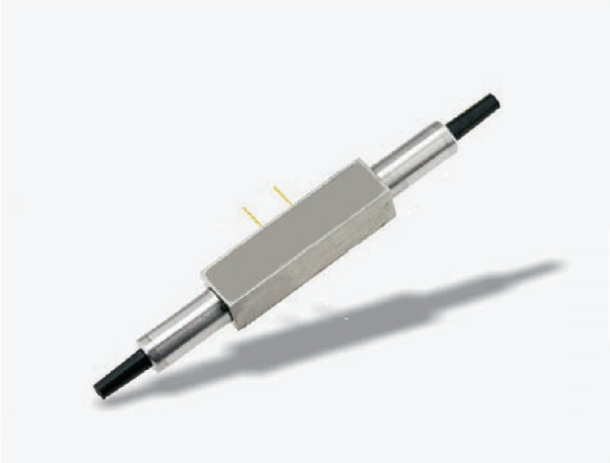
Dual 1x2 Mechanical Switch

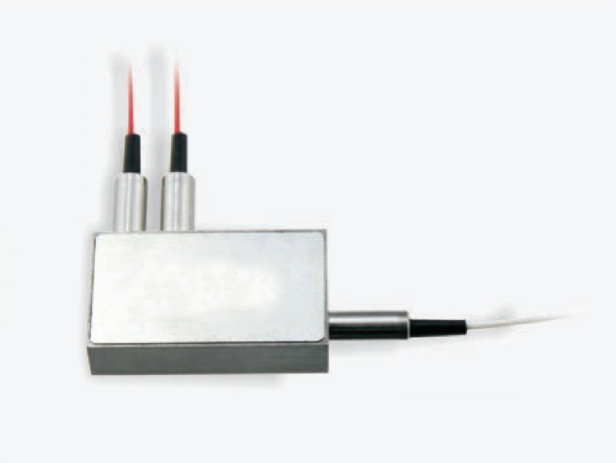


Dual 2x2 Mechanical Switch

OLP/OLM Solutions







1x2 Magneto-optic Switch

- Ultra-fast switching speed<=200μs
- Repeatability ±0.01dB
- Durability cycles>=10 Billion
- Exceptional reliability and stability
- Extremely stable latching mode
- Telcordia GR-1221/1073-core compliant

1x4 Magneto-optic Switch

- Ultra-fast switching speed<=200μs
- Repeatability ±0.01dB
- Durability cycles>=10 Billion
- Exceptional reliability and stability
- Extremely stable latching mode
- Telcordia GR-1221/1073-core compliant

LongLine's Magneto-optical switch features low insertion, quick switching speed and excellent repeatability, which makes it ideally used for ROADM, optical cross-connection systems, and system monitoring. All these patented switches are GR-1221-CORE and GR-1073-CORE qualified , and can be directly mounted on PCBs. LongLine also provides customized design to meet individual needs and applications.

Test Instrument

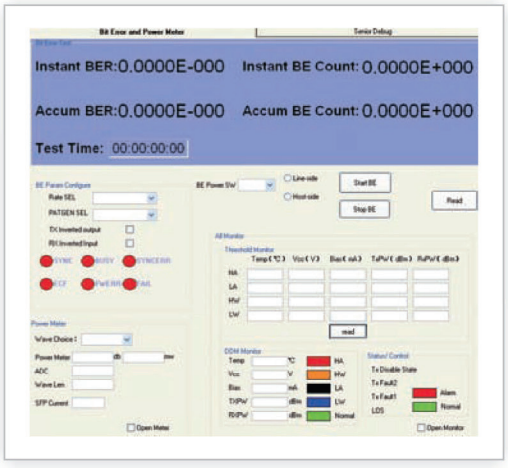
4G/10G SFP Checker

- 125Mbps~4.25Gbps BERT(10G optional)
- Optical power meter with 1270~1610nm(850nm optional)
- SFP status checker
- Friendly graphic user interface (GUI)
- 1 port SFP TX&RX ,1 port SFP TX
- 5V DC power supply
- Small form & full metal case
- Mini-USB connection
- Trigger out with SMA connection

Applications

- Bit error rate test
- Optical transmitting power measurement
- SFP transceiver supply current measurement
- Optical reference signal

The SFP Checker is an instrument which combines the Serial Pattern Generator, Bit Error Rate Analyzer, It provides common transmission rate OC-3/OC12/OC48 for SONET, 125M/1.25G for Ethernet, 1.0625G/2.125G/4.25G for Fiber Channel, SDH STM-1/4/16.



Testing Interface

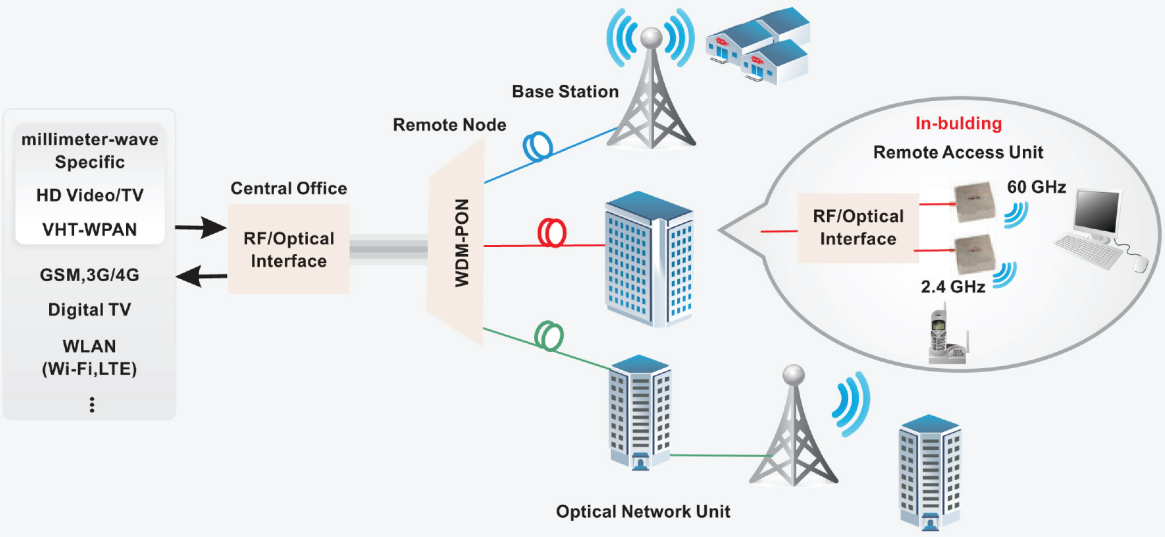
RF-Over-Fiber

3GHz RF-Over-Fiber

- 100 KHz-3 and 100 KHz-6 Ghz wideband application
- 1.3 um or 1.5 um low noise isolated DFB laser
- Automatic power control
- Variety of RF and optical connectors
- LD/PD monitoring and alarm
- Optional wide DC input + 12 VDC to + 24 VDC
- Rugged dust-tight housing
- 19" rack-mount enclosure

Applications

- Analog signal distribution
- Antenna remoting
- Wireless application



18GHz RF-Over-Fiber

- 50 MHz to 18 GHz ultra wide bandwidth
- 1550nm wavelength
- >7.0dBm optical power output
- RS232 interface for health monitoring of TX
- RF input standard SMA connector

Applications

- Analog signal distribution
- Distributed antenna system
- Satellite signal remoting
- Military & secure communications

The ROF Series is a family of high-performance microwave photonic links intended for antenna remoting or RF signal distribution in military systems, satellite communications, radio astronomy, optical delay lines, cellular/wireless base stations or other applications with operation RF performance up to 18 Ghz. The specification of product can be customized.

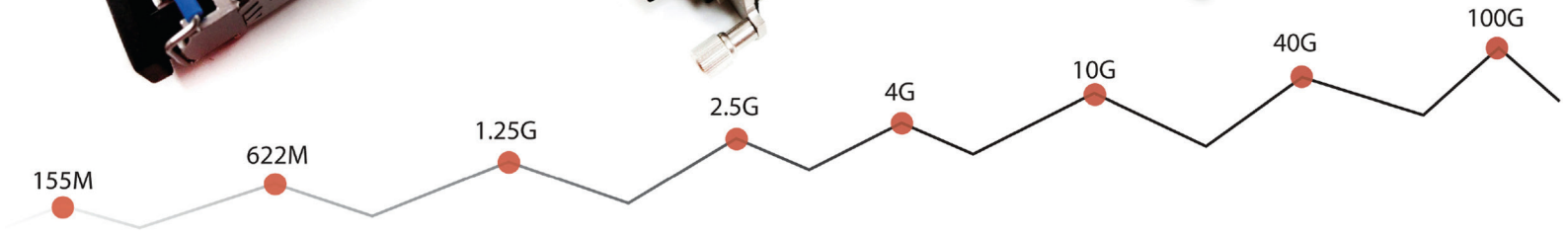
RF Specification

Frequency Range(GHz)	SFDR(dB)	NF(dB)	Input IP3(dBm)
0.5～18	104	<38	21
RF Gain Flatness(dB)	**Link Gain,0dBm input(with Gain)(dB)**		**RF Return Loss(dB)**
±1.5	>-30(0)		>10

Optical Specification

TX Spectral Range(Typical)(nm)	Output Power(dBmo)	Operating Temperature(℃)
1550	≥+7	0～70

CONNECT FIBER TECHNOLOGY WITH LONGLINE



LONGLINE BİLİŞİM TEKNOLOJİLERİ

LONGLINE BİLİŞİM TEKNOLOJİLERİ LTD. ŞTİ
Çağlayan Mh. Park Sk. No:29 Kat:7 Kağıthane - İst.