



HYC
HYC CO., LTD

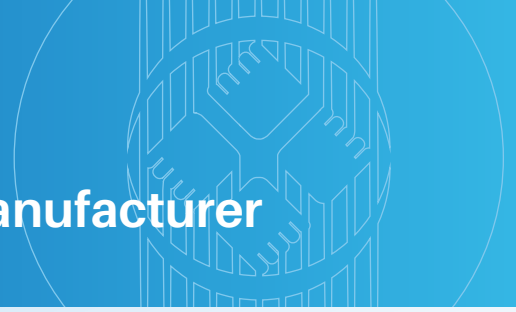
**Products
Manual**

Passive Optical Devices OEM/ODM Manufacturer

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01

HYC Co., Ltd



02

HYC Co., Ltd Shenzhen Branch



03

HYC Co., Ltd Wuhan Branch



04

Qing Yuan HYC Hongkong Co., Ltd

Company Profile

Founded in 2000, HYC Co., Ltd (HYC) is the world's leading passive optical devices OEM/ODM manufacturer who engages in R&D, producing, marketing and providing service of fiber optical products.

Our main products are: optical fiber connector, WDM, PLC splitter, MEMS optical switch and other optical passive basics devices. HYC products and solutions are widely used in 4G/5G, Telecom, Data Center, Cloud Computing industry and other fields.

HYC has long adhered to the concept of "High-quality Manufacturing" and strives to be internationally competitive in the optical communication industry. It devotes itself to becoming a manufacturer of optical passive devices leading the development of cutting-edge technologies in the industry, and takes it as an honor to provide services to global data users and to create value for the industry and society.



21 years
Industry experience



OEM/ODM
Service



1000+
Employees



40,000m²
Factory areas



Enterprise Advantages

Lean production | Professional R&D team | Production lines

Lean production

In terms of operation, HYC builds up a lean operation system based on quality control, lean production and information technology, continuously provides high-quality, low-cost products to customers with fast response and delivery. HYC also invested in a variety of precision automation and testing equipment, and 100,000-level dust-free production workshops to ensure product consistency and high reliability.

Professional R&D team

HYC has an international R&D and operation team and persists in continuous innovation around customer requirement. It focuses on the R&D and manufacturing of optical fiber connectors, WDM, PLC, MEMS optical switch and other optical passive devices and possesses the ability to provide customized modules for customers.



Connectivity

Patch Cord

WDM

Optical Switch

Passive Devices

PLC

*Intelligent manufacturing as foundation;
High quality, creating trust*



WDM Series

Device/Module/Rack Type

GR-1209

GR-1221

RoHS
COMPLIANT

Compact size to save space



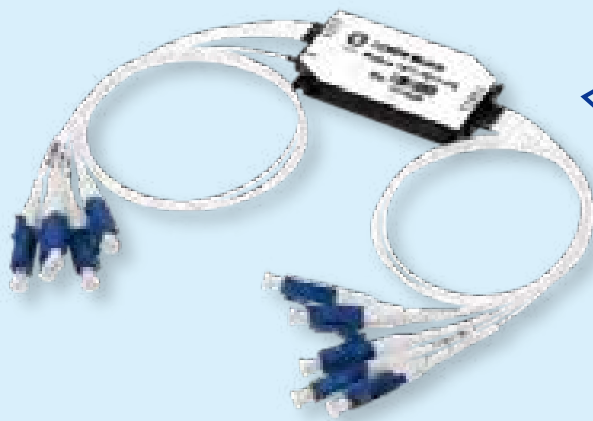
+85°C
Stable and reliable performance
Support to work under temperature ranging from -40°C to 85°C
-40°C

Mini WDM Size

Ø3.2 x L30mm Ø3.0 x L30mm
Ø2.6 x L25mm Ø2.2 x L25mm

5G DWDM LGX Module

Easy to install and customizable



Compact design and low IL

CCWDM Module

- Epoxy free optical path
- Wide operating temperature(-40°~85°C)
- Low insertion loss(IL<= 1.7dB @8-CH)
- High extensibility(Available 4/8 channel or more)
- Wide operating wavelength range
- High isolation

GPON 19" RACK

- Epoxy-free optical path
- Low insertion loss(IL≤1.7dB @8CH)
- High extensibility (4/8CH or more available)
- Wide operating wavelength range
- High isolation
- Wide operating temperature range(-40°C~85°C)



Athermal AWG

GR-1209

GR-1221



HYC's athermal AWG module is based on arrayed waveguide grating technology, which does not require power and temperature generation equipment; it belongs to pure passive module. Based on mature technology, HYC offers a variety of customized AAWG products, including 50GHz, 75GHz and 100GHz, supports up to 96CH.

Applications:

- WDM Network
- Metro Network, Access Network

Technical specification:

Specs	AAWG		
Channels(CH)	16~48	64	96
Channel Spacing(GHz)	100	75	50
Center Wavelength(nm)	1567.13~1527.99	1566.62~1528.87	1567.13~1527.99
Wavelength Stability(nm)	±0.05	±0.05	±0.05
Insertion Loss(dB)	6.0 (Max)	6.5 (Max)	12 (Max)
Return Loss(dB)	45 (Min)	36 (Min)	45 (Min)
Operating Temperature(°C)	I:-40~+70 C:-15~+65	-5~+65	-5~+65
Storage Temperature(°C)	-40~+85	-40~+85	-40~+85

Features:

- Pure passive module
- Extended up to 96CH
- Channel frequency (50GHz, 75GHz, 100GHz)
- High integration
- Excellent uniformity
- Low PMD
- High Stability and reliability
- GR-1209 & GR-1221 compliant

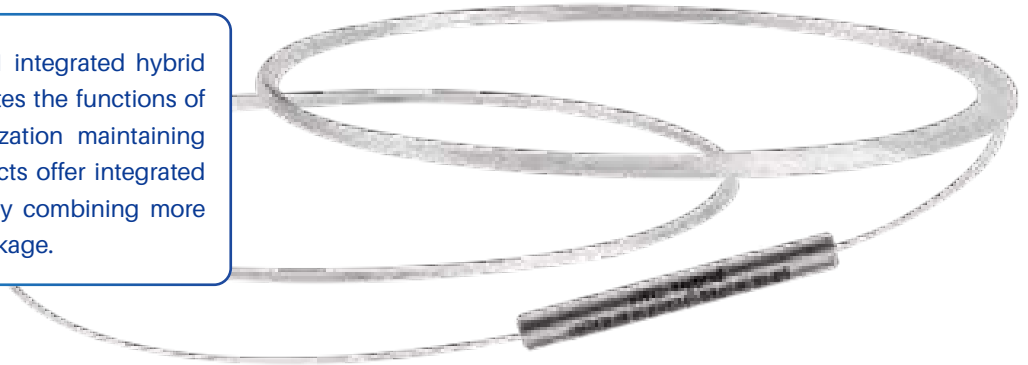


AAWG 48CH

Hybrid Series

Small integrated device for optical amplifier application

HYC provides customized N in 1 integrated hybrid combination devices that integrates the functions of isolators, couplers, WDM, polarization maintaining devices, etc. Hybrid series products offer integrated solutions to EDFA applications by combining more functions into a very compact package.

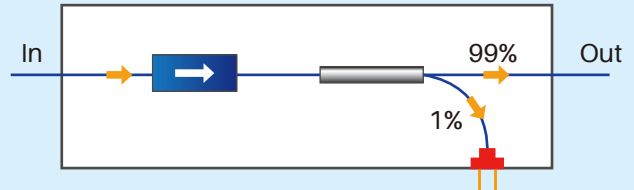


Isolator/Tap Coupler/PD Hybrid Combination (ITPH)

ITPH is a hybrid component for power monitoring application. It's one of the EDFA rear end solution components, integrates the functionality of an optical Isolator, a coupler and a photodiode. This product offers integrated solutions to EDFA applications by combining more functions into a very compact package.

Features:

- Miniaturized package
- Low dark current
- Epoxy-free optical path



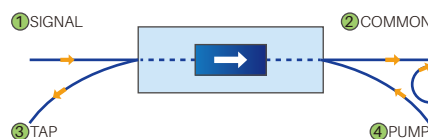
Miniaturization Integration

ITCW & IWHC

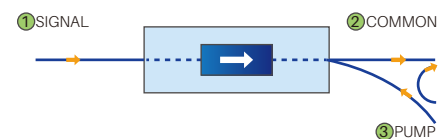
Features:

- Combine WDM and isolation functions in one
- Wide operating wavelength range
- Compact size
- High Isolation
- Ultra Low PDL&PMD
- Epoxy-free optical path

Isolator/Tap Coupler/WDM Hybrid Combination (ITCW)



Isolator/WDM Hybrid Combination (IWHC)



High-speed FA Assembly Series

RoHS
COMPLIANT

PM-FA/MPO-FA

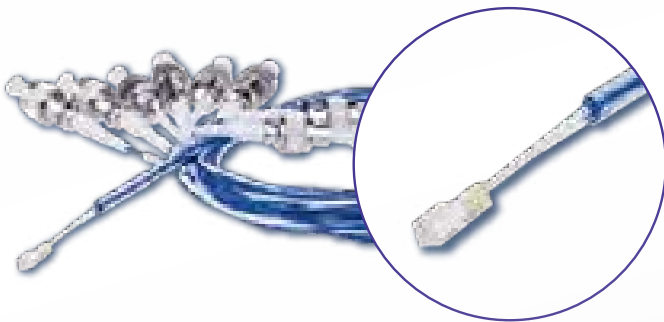
GR-1209

GR-1221



Features:

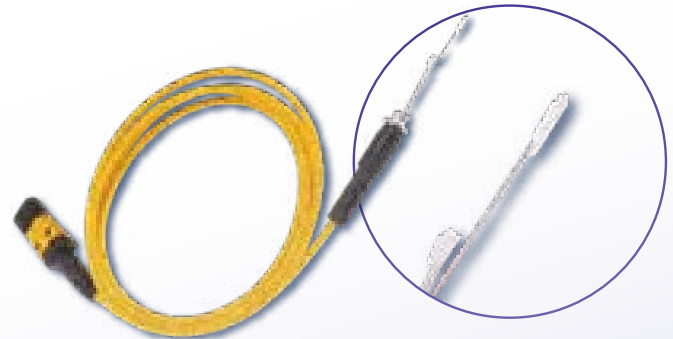
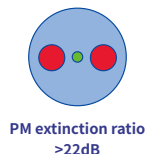
- Professional lapping technology
- Precision structure control process
- Angle control: $\pm 0.3^\circ$
- Length dimension control: $\pm 0.3\text{mm}$
- Low insertion loss, high return loss, extremely high temperature resistance and high reliability.
- Compliant with RoHS, Telcordia GR-1221 and GR-1209 standards



PM-FA

Polarization-maintaining PM Fiber Array uses V-groove to install a polarization-maintaining fiber ribbon on the array substrate.

- Coherent optical communication
- Polarization maintaining waveguide device



MPO-FA

- High optical fiber protrusion accuracy
- Small size and easy to install
- Various end-face angles and parameters can be customized

MT Series

MT-FA/MT-MT

GR-1221

GR-1209

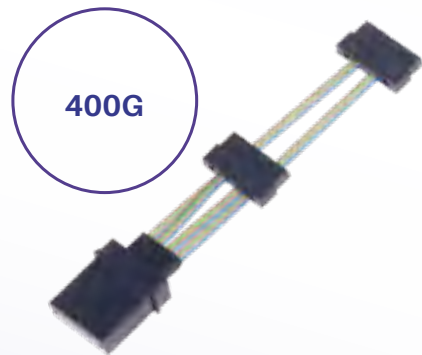
RoHS
COMPLIANT



MT-MT 12F OM3

Features:

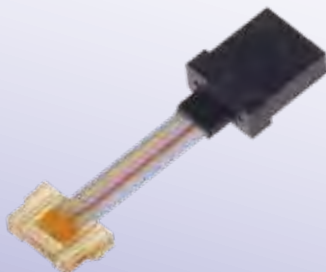
- Optical device for 40G/100G/400G networks
- SM fiber mode: G657A2/ZBL B3
- MM fiber mode: OM3/OM4/OM5
- Angle of MT: PC or APC
- Angle of FA: 0°, 8°, 42.5°
- MT IL: ≤0.5dB
- MT RL: > 20dB
- FA RL: > 50dB
- Working Temperature: -40°C~85°C
- Comply with GR1209/1221 reliability standard



MT-2xmini MT 16F



MT-FA (42.5°)



MT-OE



MT-FA (42°/8°)

AOC Series

RoHS
COMPLIANT

Applicable to 40G/100G/400G high-speed interconnection



2xLC-2xLC
(SFP28 AOCCOB cable)



Mini MT-Mini MT
patch cable

Description:

Passive optical interconnect products can be deployed in QSFP AOC, QSFP28 AOC, CXP AOC, CFP AOC, CPAK AOC products, etc.

Features:

- Type of optical fiber: OM2,OM3,OM4,OM5
- Cable core number: 8F/12F/16F/24F
- Length: 20 ~ 50mm
- Length tolerance: +0.3/-0mm ~ +0.5/-0mm
- MT IL ≤ 0.60 dB
- MT RL ≥ 20 dB



MPO 1x2
breakout patch cable

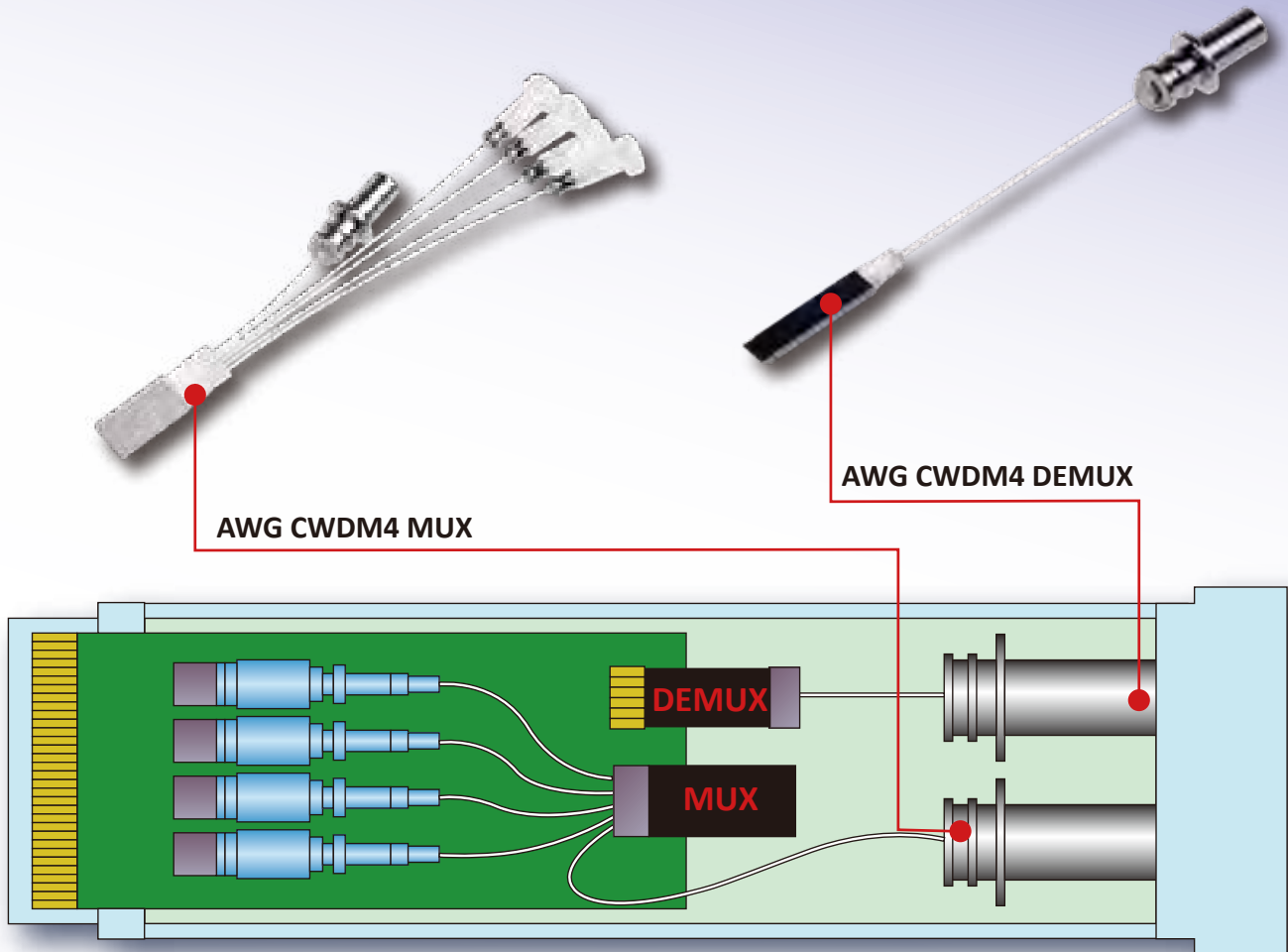
Applications:

1. Data centers
2. The servers

AWG CWDM 4

RoHS
COMPLIANT

Apply to 40G/100G/400G Active Optical Modules



Description:

The AWG CWDM4 module of HYC is based on silicon ship technology and has compact structure and high reliability. It is widely used for combining and dividing optical signals in 40G or 100G active optical modules.

Features:

- Low insertion loss
- Good uniformity
- Planar waveguide technology
- Compact size
- High reliability and stability
- Telcordia GR-1209 and GR-1221 qualified

PLC Splitter Series

Device/Module/Rack Type

GR-1221

GR-1209

RoHS
COMPLIANT



MINI PLC Splitter module

- Automatic alignment and test system
- FA products produced by HYC are applied to this PLC splitter
- Test Wavelength: 1270/1310/1490/1550/1625nm
- Meets Telcordia GR-1209 and GR-1221 standards

ABS type PLC Splitter

- Automatic alignment and test system
- Test Wavelength: 1270/1310/1490/1550/1625nm
- Wide operating wavelength from 1260-1650nm
- Operating temperature -40 °C ~ +85 °C
- Available in a variety of splitting modes and package types and meanwhile customizable
- Conform to RoHS, IEC61300-2, Telcordia GR-1209-CORE and GR-1221-CORE

Unique compact structure design



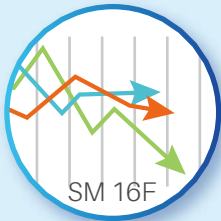
Rack Type PLC Splitter

- Low insertion loss, low PDL
- 19" standard installation, compatible for ETSI installation type
- Module design, slideway tray structure, easy to installation
- Easy to maintain, high reliability
- Compatible for 1x2~2x64 PLC splitter



MPO Connector

16/32F | HD Push-Pull Design



IL ≤ **0.25** dB
Ultra low IL



Logo customizable



Ribbon fiber type



Round cable type
(2.6~3.6mm)

Features:

- Adapter available for 12F, 16F, 24F, 32F
- Integral one-piece design with SC footprint
- Special spring design to make sure it fixed in panel
- Logo customizable
- Working temperature ranging from -20°C to 75°C
- IEC61754-7 and GR-1435 compliant
- RoHS/REACH and UL94-V0 inflammability grade compliant



16/32F

One-piece SC
Footprint Design



Key up to
Key up



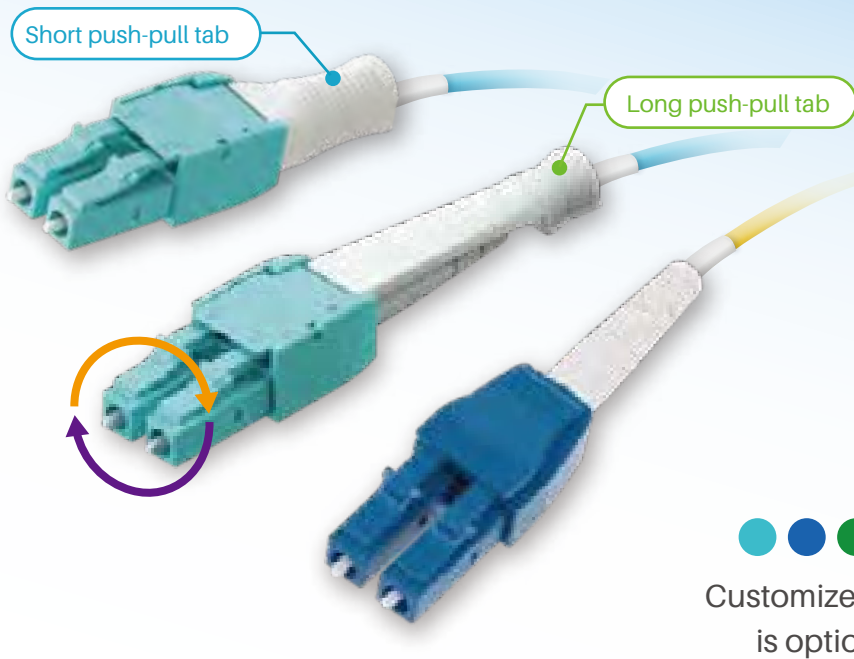
Key up to
Key down



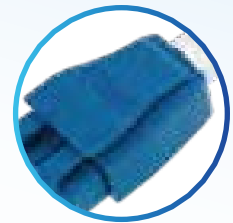
MPO Adapter

LC Uniboot Connector

HD Push-Pull Design | Polarity Switchable



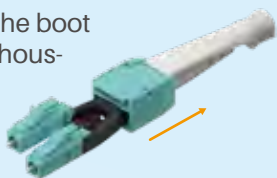
High density application



Various colors available

Easy Polarity Revisable

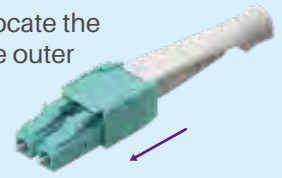
Step 1: Strip the boot and the outer housing



Step 2: Switch the polarity

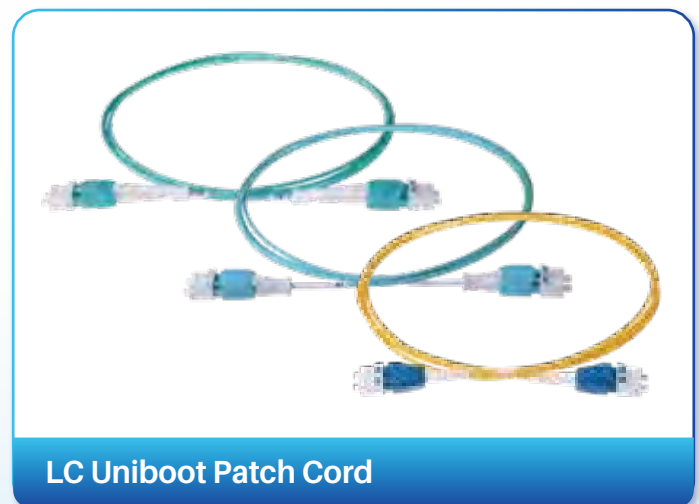


Step 3: Relocate the boot and the outer housing



Features:

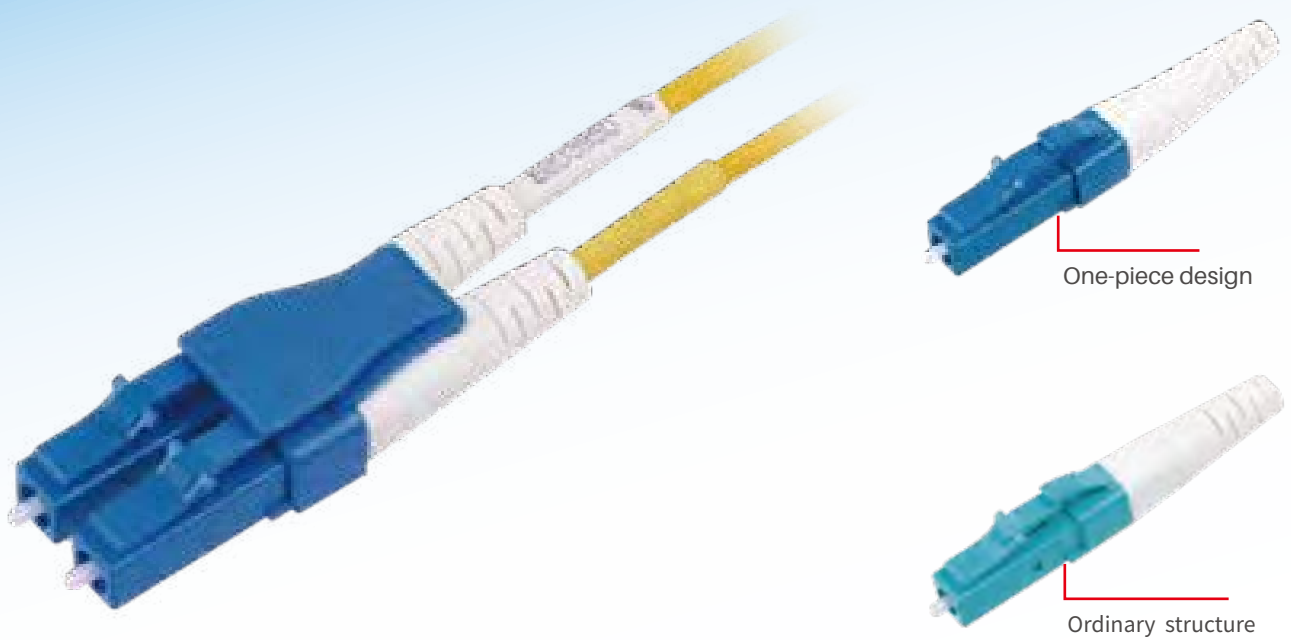
- A push-pull design ensure easier release from the HD environment
- Different length push-pull tab for option
- Switch connector to change polarity
- A half-surround tab end structure to avoid cable tangling together
- Working temperature ranging from -40°C to 85°C
- IEC 61754-20 and GR-326-Core compliant
- RoHS/REACH and UL94-V0 inflammability grade compliant



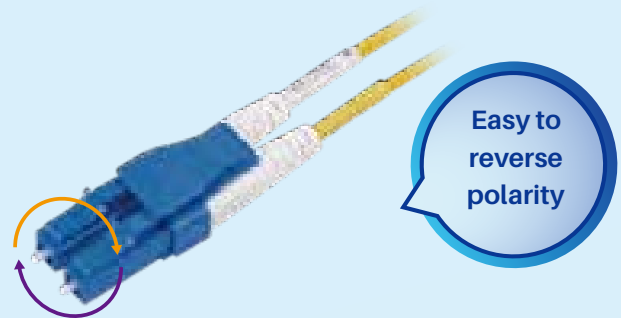
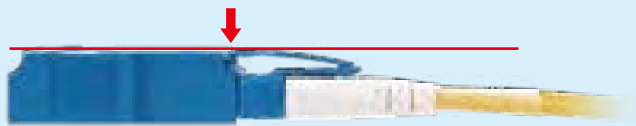
LC Uniboot Patch Cord

LC Integrate connector

One-piece Structure Design

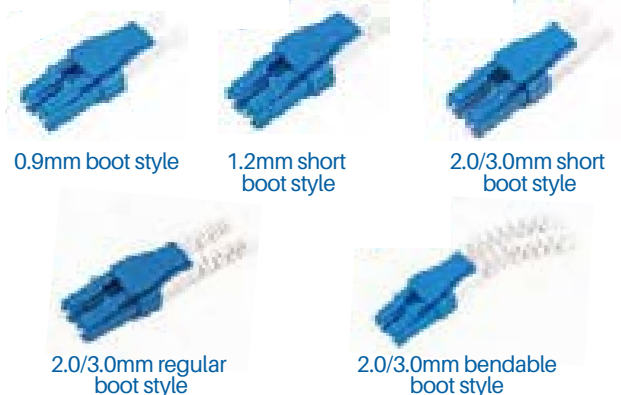


The LC integrated connector is the same height as the LC integrated adapter



Features:

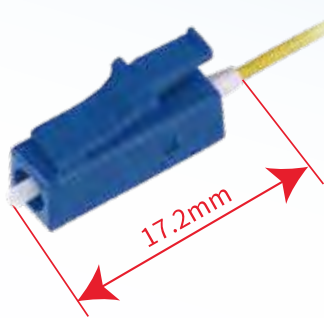
- One-piece structure design to improve mechanical strength
- SM/MM, PC/APC available
- Applied to 0.9/1.2/2.0/3.0mm cable
- A customized logo is optional
- IEC61754-20 and GR-326-Core compliant
- RoHS/REACH & UL94-V0 inflammability compliant



Various Boot Type Available

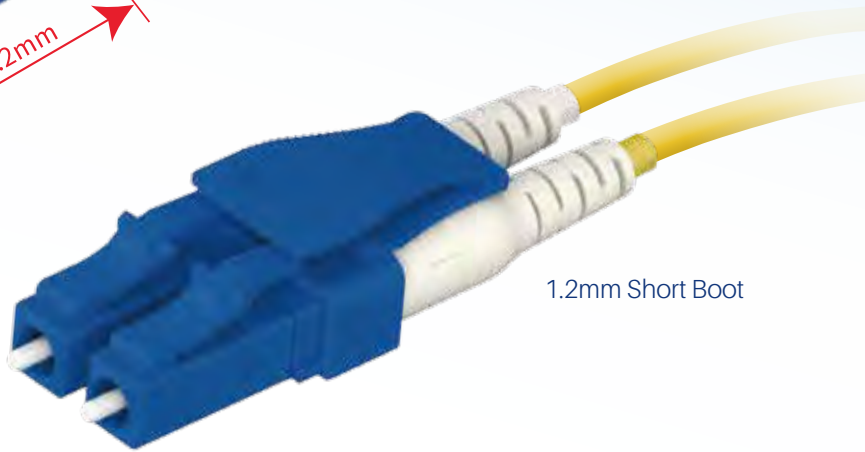
LC Connector

One-click to Unlock from HD Environment



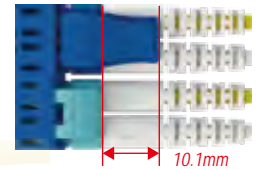
Mini LC Connector

Compact design, only 17.2mm



1.2mm Short Boot

Unique handle design makes it easier to unlock



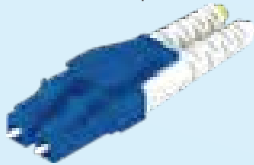
Longer clip, more convenient to release;



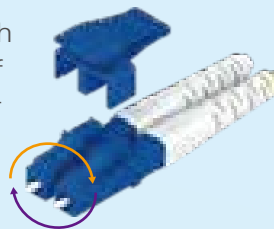
Lower clip, more suitable for high-density panel

Easy Polarity Reversible

Step 1 Take off the clip



Step 2 Switch the location of the connector



Step 3 Relocate the clip



Features:

- Easy to switch polarity
- SM/MM, PC/APC available
- A customized logo is optional
- Cost-effective and various boot type available
- Working temperature ranging from -40 °C to 85 °C
- IEC61754-20 and GR326 compliant
- RoHS and UL94-V0 inflammability grade compliant



0.9mm boot style



1.2mm short boot style



2.0/3.0mm short boot style



2.0/3.0mm regular boot style

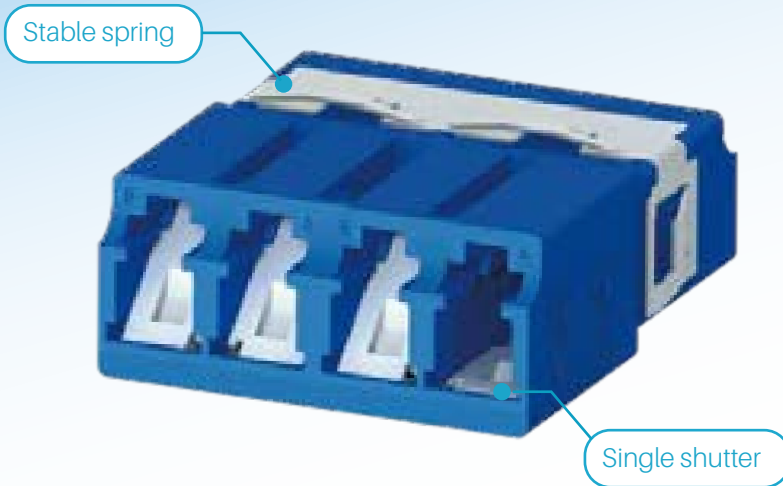


2.0/3.0mm bendable boot style

Various Boot Type Available

LC Internal Shutter Adapter

Dust and Laser Proof | One-piece Structure



Dust and Laser Proof

Ferrule end face doesn't touch shutter plate:

Horizontal angle



Down angle



Up angle



Features:

- Unique shrapnel design to ensure stable installation of adapters
- Duplex and quad adapter available
- A real one-piece integrated design
- Perfectly fit for installation in 1/3U module cassette
- Various colors available
- Working under temperature ranging from -40°C to 85°C
- IEC61754-20 compliant
- RoHS/REACH and UL94/V0 inflammability grade compliant

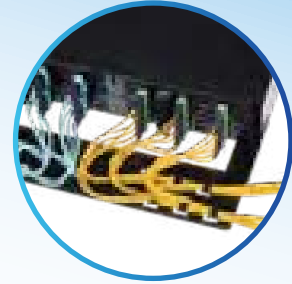


Available in a Variety of Colors

Data Center Solutions

HD Patch Panel 1U/2U/4U

RoHS
COMPLIANT

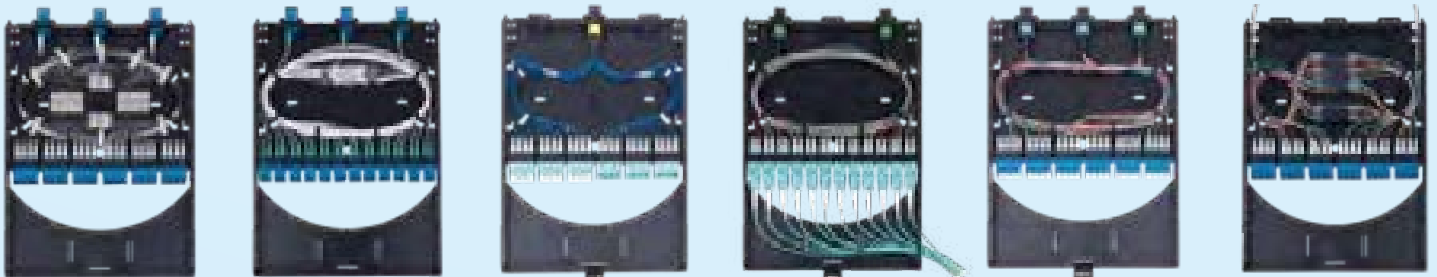


Independent lockable
cassette design



Can be applied with
various of accessory

Display of Different Cassettes:



Features:

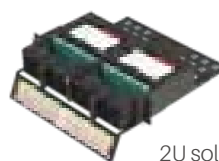
- 19" rack mount with 2 cassettes in each layer
- 1U: 6pcs independent cassettes with 144 cores LC
- 2U: 12pcs independent cassettes with 288 cores LC
- 4U: 24pcs independent cassettes with 576 cores LC
- User-defined label for easy management
- Large space for easy expansion of capacity
- Light weight aluminum material
- Conform to RoHS and EIA/TIA568C standards



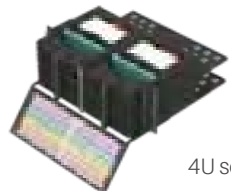
Cassette



1U solution



2U solution

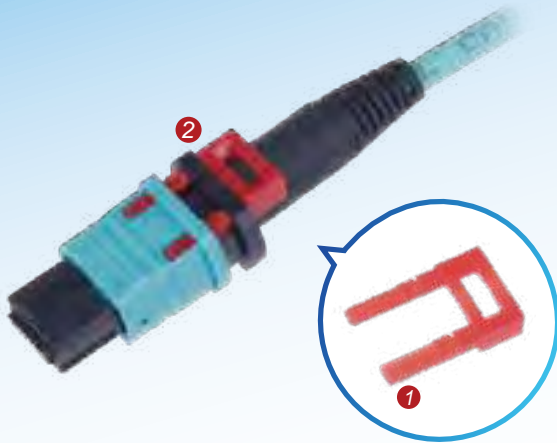


4U solution

HD Patch Panel 1U/2U/4U

Secure Lockable Connector

MPO/SC



MPO Lockable Connector

- 1 To avoid unexpected releasing
- 2 To reduce the chance of getting dusty on the endface of the ferrule



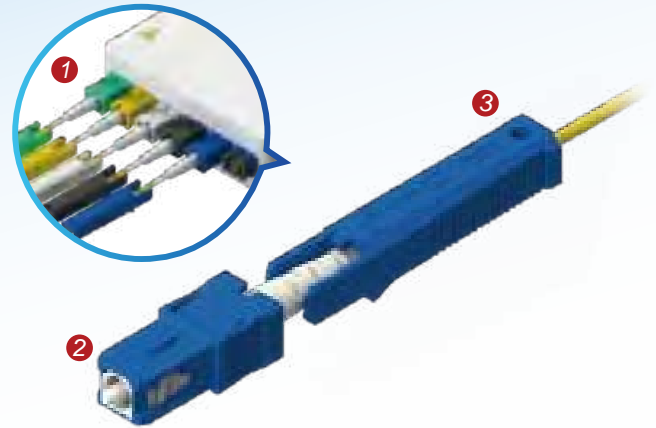
Without using any tool, it can be easily unlocked.



Compatible with optical module



Compatible with MPO adapter

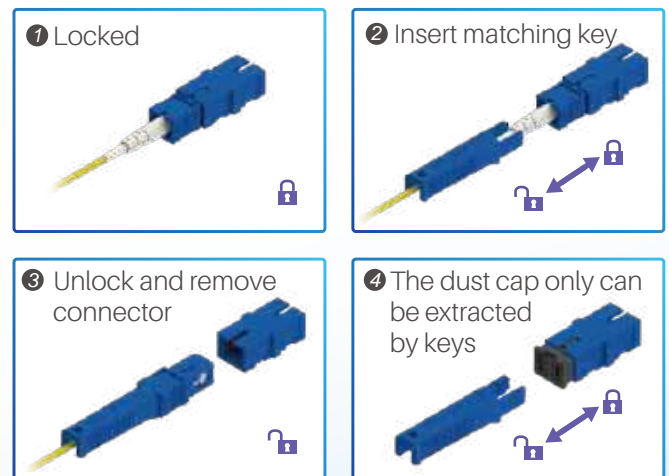


SC Secure Lockable Connector

Ideal for high security level networks

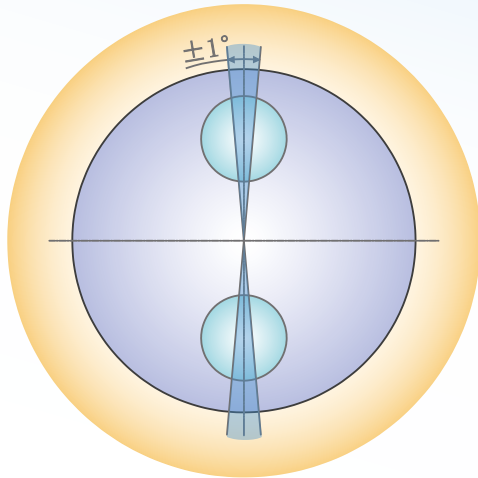
- 1 5 different colors connector with matching color keys
- 2 Can only be unlocked by key of the same color
- 3 The key

Compatible with all industry standard SC adapters

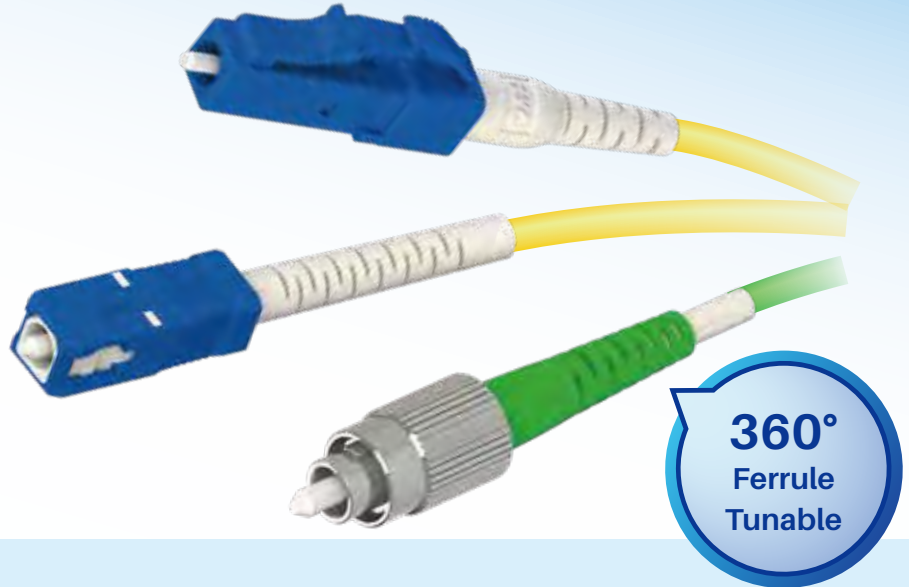


PM Connector




360° Ferrule Tunable



PM degree $\pm 1^\circ$



Different styles available

Item \ Spec	0.9mm	2.0mm			3.0mm		
		Short boot	Long boot	Bendable Boot	Short boot	Long boot	Bendable Boot
 LC	✓	✓	✓	✓	✓	✓	✓
 SC	✓	✓	✓	✓	✓	✓	✓
 FC	✓	✓	✓	✓	✓	✓	✓

Features:

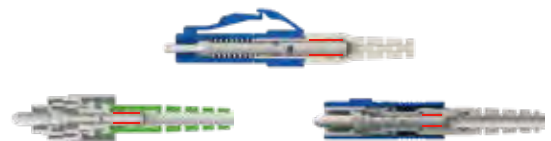
- 360° ferrule tunable
- PC/APC available
- Less than $\pm 1^\circ$ maintaining degree
- 25dB or more extinction ratio
- 0.9/2.0/3.0mm diameter cable applicable
- Multiple options of size of boot
- Conform to RoHS/REACH and UL94-V0 inflammability grade
- Conform to GR326 and IEC61754-20 standards



1 Dispensing on the axis of rotation



2 Insert the rotating shaft and turn the ferrule to align the optical axis



3 Solidify the glue on the rotating shaft and assemble the connector according to the normal process

Assembly Steps

MEMS Optical Switch

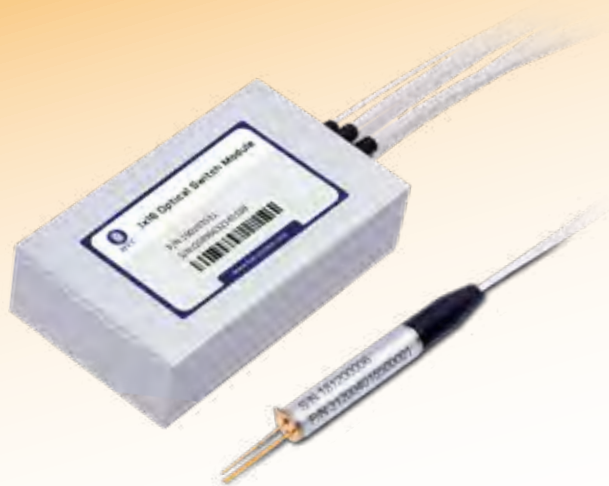
Optical Network Monitoring and Switching

GR-1209

RoHS
COMPLIANT

GR-1221

GR-1073



MEMS Optical Switch Device

Insertion Loss	≤1dB
Loss Repeatability	≤0.1dB
Crosstalk	≥50dB
Switching Speed	≤30ms
Dimension	φ5.5×42mm

MCS Module

	8x12	8x16
Insertion Loss(dB)	≤15	≤16
Loss Uniformity(dB)	≤1.5	≤1.7
Power Supply	5V/1.5A	5V/1.5A
Switching Speed(ms)	≤300	≤300
Dimension	220×140×20.5 mm	

MEMS Features:

- Available in any 1xN configuration
- MEMS Optical Switch Module has small size and many channels, which is good for the scene of optical network with high integration
- High reliability and stability
- Conform to GR-1209 and GR-1221 standards
- Conform to GR-1073 and RoHS standards

MCS Features:

- Based on PLC and MEMS technology
- Flexible port configuration independent from wavelength
- Low power consumption and insertion loss
- Design for signal switching or blocking
- Conform to GR-1209 and GR-1221 standards
- Conform to GR-1073 and RoHS standards

Optical Circulator

Multi-port non-mutual-easy optical device

Applications:

- Three ports, four ports, different power, different wavelengths can be customized
- High isolation
- Low insertion loss
- High Stability and reliability



Compact size to save space

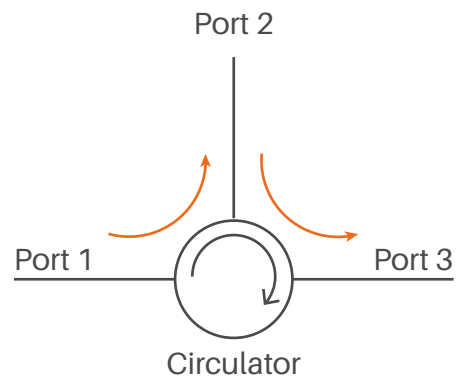
Technical specification :

Specs	3-Ports Optical Circulator		4-Ports Optical Circulator	
	Grade P	Grade A	Grade P	Grade A
Directivity	Port 1 to Port 2 to Port 3		Port 1 to Port 2 to Port 3 to Port 4	
Center Wavelength(λ_c)(nm)	1310 or 1550			
Operating Wavelength(nm)	$\lambda_c \pm 30$		$\lambda_c \pm 20$	
Typical Peak Isolation(dB)	50			
Insertion Loss(dB)	≤ 0.6	≤ 0.8	≤ 0.7	≤ 0.9
PDL(dB)	0.1		0.2	
Return Loss(dB)	> 50			
Optical Average Power(Mw)	500 or customized			

Working principle of 3-ports optical circulator

The optical circulator is a multi-port non-mutual-easy optical device, and light can only travel in one direction.

The operating characteristics of 3-ports is that if the signal is from port 1 input, it is output from port 2, and the signal from port 2 input, will be output from port 3, its output loss is very small, light from port 2 input, from port 1 output when the loss is very large, the same light from port 3 input, from port 3 output loss is also very large.

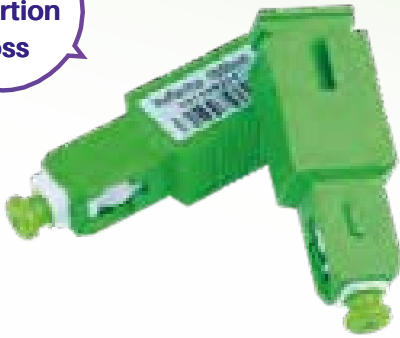


FBG Reflector

LC/SC, Male-Female/Pigtail Type



Low insertion loss



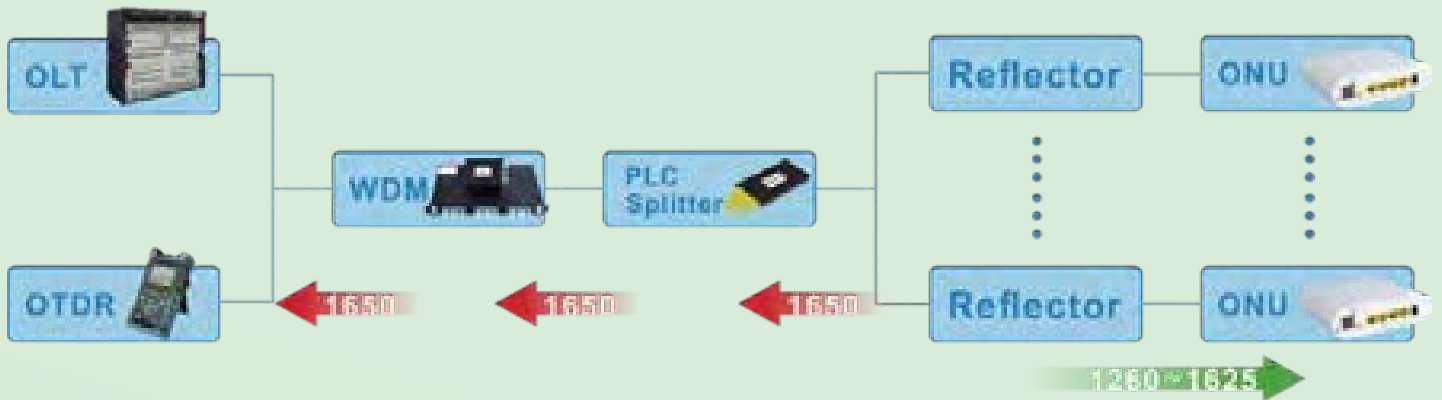
SC Reflector

Low insertion loss



LC Reflector

Application:



Features:

- Optional wavelengths
- High sensitivity
- Compact design and easy installation
- Low insertion loss and high reflectivity
- Conform to GR326 and IEC61300-2 standards
- Conform to RoHS and IEC61754-4 standards



Different Kinds of Reflector