FS

OTN SOLUTIONS



Leading-Edge Optical Transport Network Solutions

Scalable Optical Transport Solutions

• Optimal Performance

Self-designed quality WDM products support up to 960G capacity and max. 120km transmission distance. High quality ensures assured network performance.

• Improved Scalability

FS FMT & FMU series products enable flexible, scalable and cost-effective deployment of infrastructure to support short and long haul optical transmission.

• Professional Service

Free network solution design and 24/7 online customer services are available to provide a satisfying purchase experience.

• Same-Day Shipping

Full inventories are provided in FS local warehouses in the US, AU, Europe, and Asia covering global markets and supporting same-day shipping.

With the ever-increasing loads on today's networks, it's more difficult for vendors and service providers to deploy and manage their advanced systems. To accommodate the increasing demand for greater bandwidth, OTNs (optical transport networks) have become the backbone for our next generation networks.

FS self-develops a series of OTN products including FMU series and FMT series to provide customers cost-effective and scalable solutions for their optical transmissions. This catalog is a guide of FS high-performance OTN and optical access solutions. According to different usage, there are mainly five parts: Mux/Demux/OADM, WDM transport platform, passive components, termination system, and support products.

In this catalog, each part will be illustrated with some key info to let our customers quickly understand those products. Besides, FS also provides professional network deployment suggestions to help customers find the most suitable OTN solutions for their network. If you need OTN network build advice and products, contact FS to get professional services.

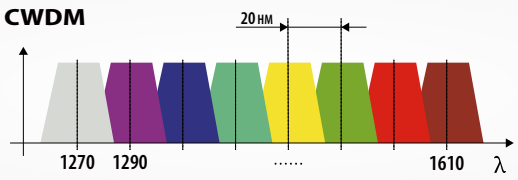
MUX/DEMUX/OADM

WDM Technology

WDM (Wavelength Division Multiplexing) technology is a way of transmitting multiple simultaneous data streams over the same fiber. It greatly increases capacity on the existing fiber links and reduces the cost of network expansion. It functions to multiplex multiple optical signals on a single fiber by using different wavelengths, or colors, of laser light to carry different signals. WDM comes into two flavors: CWDM (Coarse Wavelength Division Multiplexing) and DWDM (Dense Wavelength Division Multiplexing).

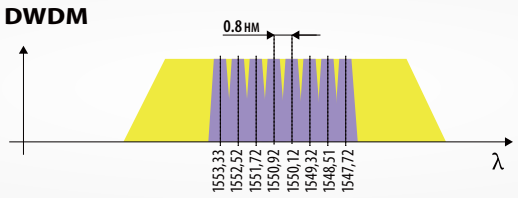
CWDM Technology

CWDM is a specific WDM technology defined by the ITU (International Telecommunication Union) in ITU-T G.694.2 spectral grids, using the wavelengths from 1270nm to 1610nm within a 20nm channel spacing. It is a technology of choice for cost-efficiently transporting large amounts of data traffic in telecoms or enterprise networks.



DWDM Technology

DWDM is defined by the ITU but in ITU-T G.694.1 spectral grids. The grid is specified as frequency in THz. With a variety of specified channel spacing from 12.5GHz to 200GHz, among which 100GHz is common. In practice, DWDM frequency is usually converted to wavelength. DWDM typically has the capability to transport up to 80 channels (wavelengths) in what is known as the C-band (Conventional band) spectrum, with all 80 channels in the 1550nm region.



CWDM and DWDM Mux/Demux are the core equipment used in WDM network transmission. While CWDM Mux/Demux has price advantage for connection rates below 10G and for short distances, DWDM Mux/Demux is more favored in ultra-long distance transmission. FS provides different types of CWDM and DWDM Mux/Demux to fit your specific needs.

DWDM MUX/DEMUX

DWDM Mux Demux is usually used for long-haul transmission where wavelengths are packed tightly together over the C-band, up to 48 wavelengths in 100GHz grid (0.8nm) and 96 wavelengths in 50GHz grid (0.4nm). Its protocol is transparent and suits applications including 10/1G Ethernet, SDH/SONET, 16/8/4/2/1G Fibre Channel, FTTx and CATV.



ID	Line Type	Wavelength	Client Port	Insertion Loss	Special Port	Housing
35887	Dual Fiber	40CH C21-C60	Duplex LC/UPC	≤ 5.0 dB, 3.5 dB typical	Monitor Port 1310nm Port	FMU 1U Rack Mount
33485		40CH C21-C60		≤ 4.5 dB, 3.0 dB typical	Monitor Port	
72430		16CH C21-C36		≤ 5.2 dB	1310nm/Monitor/ Expansion Port	
26569		16CH C27-C42		≤ 4.6 dB	None	
57884		16CH C43-C58		≤ 4.6 dB	Expansion Port	
72433		8CH C53-C60 (CWDM/DWDM Hybrid)		≤ 3.7 dB	1310nm/Monitor/ Expansion Port	FMU Plug-in Module
30568		8CH C53-C60 (CWDM/DWDM Hybrid)		≤ 3.2 dB	Expansion Port	
66601		96CH CH15-CH62		≤ 7.0 dB, 6.0 dB typical	None	2U
50117	Single Fiber	8CH C21-C35	Duplex LC/UPC	≤ 4.6 dB	Expansion Port	FMU Plug-in Module
50116		8CH C22-C36		≤ 4.6 dB	Expansion Port	FMU Plug-in Module
78535		C21-C36		≤ 4.3dB	None	FMU 1U Rack Mount
78536		C45-C60		≤ 4.3dB	None	FMU 1U Rack Mount
71687	Dual Fiber	C21-C36	LC/UPC	≤ 4.6dB	Expansion Port	Splice Pigtailed ABS Module

CWDM MUX/DEMUX

The CWDM Mux Demux covers all channels from 1270nm to 1610nm in 20nm increments. Without replacing any infrastructure, it totally supports data rates up to 180Gbps by being completely protocol transparent.

The main fields of applications are the use in SDH (STM-1, STM-4, STM-16, STM- 64), IP (Fast Ethernet, Gigabit Ethernet, 10 Gigabit) ATM and storage (1G, 2G, 4G, 8G, 10G Fibre Channel) networks.



ID	Line Type	Wavelength	Client Port	Insertion Loss	Special Port	Housing
42972	Dual Fiber	4CH 1270-1330nm	Duplex LC/UPC	≤1.5dB	None	FMU Plug-in Module
42944		4CH 1510-1570nm		≤2.2dB		
42937		8CH 1270-1450nm		≤3.1dB		
42945		8CH 1290-1430nm		≤3.1dB		
43099		8CH 1470-1610nm		≤3.1dB	Expansion Port	
72428		8CH 1470-1610nm		≤3.3dB	1310nm/Monitor/ Expansion Port	
33489		18CH 1270-1610nm		≤5.2dB	Monitor Port	FMU 1U Rack Mount
43711	Single Fiber	9CH 1270-1590nm	Duplex LC/UPC	≤ 4.9dB	None	FMU Plug-in Module
43699		9CH 1290-1610nm				
66209	Dual Fiber	4Ch 1270-1330nm	FC/UPC	≤ 2.2dB	None	Splice/Pigtailed ABS Module

DWDM/CWDM OADM

DWDM/CWDM optical add/drop multiplexer is a passive plug-in module designed for WDM networks and metro access applications. It works by adding and dropping one/multiple DWDM/CWDM channels in the C-band into one or two fibers, while letting the rest of the wavelengths bypass to the needed destination. They are modular, scalable and are perfectly suited to 10/1G Ethernet, 16/8/4/2/1G FC, SDH/SONET, video, CATV, FTTx applications.





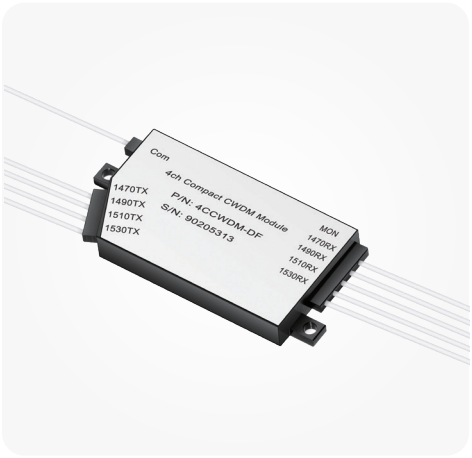
DWDM Add & Drop

ID	Line Type	Wavelength	Client Port	Insertion Loss	Channel Isolation	Housing
57509	Dual Fiber	1CH C21	Duplex LC/UPC	Add/Drop≤1.2 dB Pass-Through≤1.3 dB	Adjacent ≥30 dB Non-Adjacent ≥35dB	FMU Plug-in Module
57503		2CH C21-C22		Add/Drop≤1.5 dB Pass-Through≤1.7 dB	Adjacent ≥30 dB Non-Adjacent ≥35dB	
70427		1520nm-1570nm	LC/SC/FC/ST, UPC/APC	-	-	FMU/FUD Plug-in Module ABS Pigtailed Module 1U Rack Mount
70428	Single Fiber	1520nm-1570nm	LC/SC/FC/ST, UPC/APC	-	-	FMU/FUD Plug-in Module ABS Pigtailed Module 1U Rack Mount
73795				-	-	

CWDM Add & Drop

ID	Line Type	Wavelength	Client Port	Insertion Loss	Channel Isolation	Housing
70425	Dual Fiber	1270-1610nm	LC/SC/FC/ST, UPC/APC	-	-	FMU/FUD Plug-in Module ABS Pigtailed Module 1U Rack Mount
70426	Single Fiber			-	-	
73794				-	-	

Low Loss CCWDM Module



CCWDM Mux (Compact Coarse Wavelength Division Multiplexer) is the mini version of CWDM Mux. CCWDM technology uses free-space optics platform which can significantly improve optical performance. The size of the CCWDM module is less than 1/4 the size of conventional CWDM modules. Main advantages of CCWDM Mux are high wavelength accuracy and stability, low insertion loss, high isolation and low PDL (polarization dependent loss). It can be used in the CWDM system, PON networks, and CATV Links.

ID	P/N	Line Type	Wavelength	Client Port	Housing
73959	CCWDM-DF	Dual Fiber	Customized	Customized	FMU/1U Rack/ABS Module
73961	CCWDM-SFA	Single Fiber			FMU/ 1U rack/ABS Module/ Aluminum Box
73960	CCWDM-SFB				

FMU Mounting Chassis

Product Highlights:

· 1U 19" rack unloaded, holds up to 2 units plug-in modules for easy management

· Flexible mounting bracket, expand or reduce the mounting depth

· Rounded corners eliminate accidental injury or damage to installers



FMT WDM Transport Platform

FMT series are WDM dual-fiber end to end transmission solution designed primarily to address the growing needs for optical transmission links in enterprise networks, storage area networks, and data centers. Standard solutions listed below can be purchased directly when the system characters satisfy you. Personalized solutions can be tailored to fit your requirements as well.



FMT 1800 Efficient CWDM Connects

- Part Number: FMT-1800
- Wavelength: 9CH/18CH 1270nm-1610nm
- Transceiver: CWDM SFP 100km
- Distance (Max.): 50km
- Capacity: up to 90Gbps/180Gbps



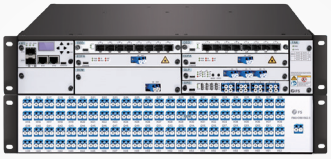
FMT 1600E Extending DWDM Connects

- Part Number: FMT-1600E
- Wavelength: 16CH C21-C36 (100GHz)
- Transceiver: DWDM SFP+ 80km
- Distance (Max.): 60km/120km
- Capacity: up to 160Gbps



FMT 4000E Competitive DWDM Connects

- Part Number: FMT-4000E
- Wavelength: 40CH C21-C36 (100GHz)
- Transceiver: DWDM SFP+ 80km
- Distance (Max.): 100km/160km
- Capacity: up to 400Gbps

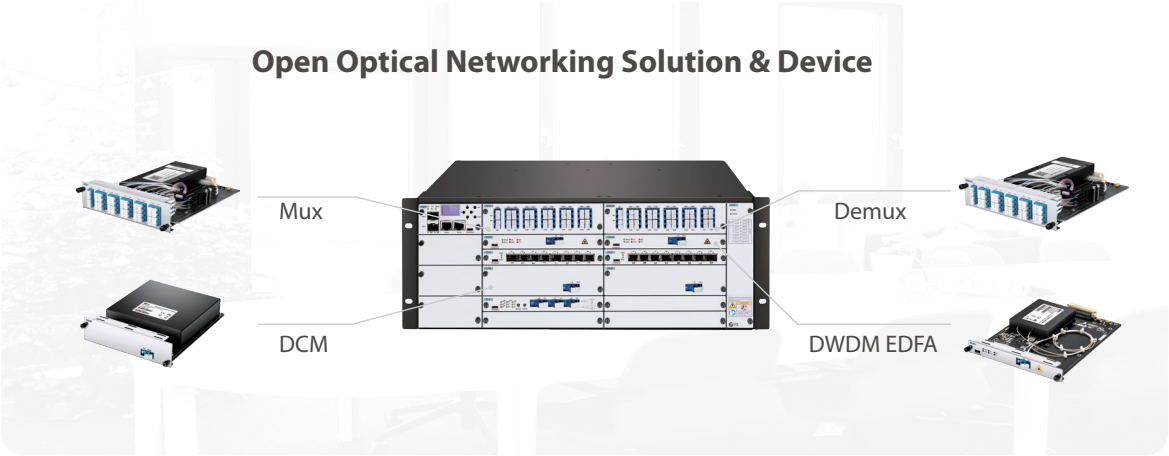


FMT 9600E Hyperscale DWDM Connects

- Part Number: FMT-9600E
- Wavelength: 96CH CH15-CH62 (50GHz)
- Transceiver: DWDM SFP+ 80km
- Distance (Max.): 80km/100km
- Capacity: up to 960Gbps

FMT 4000E DWDM Solution

The FMT 4000E is a DWDM multiplexer member of the FMT series offering 40CH MUX/DEMUX. It requires amplification and other signal conditioning elements to implement metro network transport up to 100km. Depending on the type of connectivity required, it can be configured with combination of EDFA and DCM modules to handle all protocols up to 400Gbps. Adding OEO (transponders sold separately) at both ends does not change the transport distance, but extends on the line.



FMT 4000E DWDM Connect Packing List for 100km Long Haul Transport:

ID	Quantity	Description
35952	2	4U 16 Slots Managed Chassis with NMS/MNU and Dual Power 100V-240VAC for Pluggable Module
74538	2	40CH C21~C60 100Ghz Active Dual Fiber DWDM Mux&Demux, LC/UPC, Occupies 2 slots
72283	2	O17/G17 Multi-channel BA C-band (1529~1564nm), AGC, LC/UPC, Occupies 1 slot
72284	2	G20/O13 Multi-channel PA C-band (1529~1564nm), AGC, LC/UPC, Occupies 1 slot
65781	4	40KM DCM C Band, G652 Fiber, LC/UPC, Occupies 2 slots
70008	1	LC/UPC Singlemode Fixed Fiber Optic Attenuator, Male-Female, 3dB

Amplifier Modules



The multi-channel EDFA (Erbium Doped Fiber Amplifier) features stable output power, low noise and low power consumption. The kernel components of the product are high-availability pump laser and high-performance gain flattening filters. Both input and output signals are sampled and monitored with an APC/AGC circuit.

ID	Type	Amplifier Type	Wave-length	Connector	Optical Gain	Input Power	Saturated Output Power	Housing
72284	DWDM EDFA	Pre-Amplifier	1528nm-1564nm	LC/UPC	20dB	-30dBm~+5dBm	≤13dBm	Pluggable Module
36524					26dB	-30dBm~-5dBm	≤16dBm	
36501		Booster Amplifier			24dB	-25dBm~0dBm	≤22dBm	
72283					17dB	-23dBm~+12dBm	≤17dBm	
36592		In-Line Amplifier			17dB	-20dBm~+5dBm	≤17dBm	
35924		In-Line Amplifier	1528nm-1564nm	Customized	Customized	Customized	Customized	
35925		Pre-Amplifier						
35919	SDH EDFA	Pre-Amplifier	1530nm-1562nm	LC/SC/FC/ST, UPC/APC	18-20dB	-35~-20dBm	-	1U Rack Mount
35921		Booster EDFA			32dB (Max)	-10~+10dBm	6~23dBm	
35902		In-Line Amplifier			16dB, 20dB, 30dB	-25~-10dBm	0~13dBm	
72604	Semi-conductor EDFA	Semi-conductor Optical Amplifier	1310nm	LC/UPC	10dB	-20~+6dBm	8dBm	Pluggable Module
65789	EYDFA	FTTxPON High Power	1529nm-1564nm	LC/UPC LC/APC	-	-10~10dBm	26dBm (Max)	Pluggable/ Standalone Module
36458	CATV EDFA	Booster EDFA	1530nm-1562nm	LC/UPC LC/APC	-	-10~+10dBm	13~24dBm	Pluggable Module

Notes:

Return loss of all modules above is <-45dB; noise figure of DWDM EDFA is 4.5dB (typical). All types of amplifiers listed above can be customized for your specific requirements.

Transponder & BO Modules

Transponder (OEO)

Features:

· 1Gbps to 11.3Gbps transparent transponders for Ethernet, P/SDH, ATM, FC, etc.

· Support 3R functionality (re-amplification, re-shaping and re-timing)

· Single card supports 4-channel two-way/8-channel one-way business processing

· Add or change optics to adjust data or media rates; maintain signal item inventor



Application:

· Functions as fiber mode converter or fiber repeater for long-distance transmission

· Used to convert any incoming optical signal into a CWDM or DWDM channel

· Highly integrated with FS management platform chassis

BO Modules

To offer the industry's highest-density 40/100Gbps transport, FS BO module is designed from the ground up to reduce capital and operational expenses, which utilizes pluggable interfaces to divide a single 40/100Gbps service to multiple protected 10Gbps services without the need to pre-plan the network or replace hardware for rapidly achieving the long-haul transmission.



ID	Speed	Fiber Mode	Matched Chassis	Housing
72371	4x10Gb/s	OM4	FMT 1U/2U/4U	Pluggable Module
72267	10x10Gb/s			
72490	4×10Gb/s, 10×10Gb/s	OS2, OM1, OM2, OM3, OM4		

Dispersion Compensation & Line Protection Modules

Dispersion Compensation Modules



Dispersion Compensation Module (DCM) is designed to fix the form of optical signals that are deformed by chromatic dispersion. The main constituent of DCM is DCF (Dispersion Compensation Fiber) with a negative chromatic dispersion value within the wavelength range between 1525nm and 1565nm. The module offers a high level of compensation while maintaining a low flat insertion loss as well as a low latency. When combined with EDFA and OEO, DCM provides a simple, reliable, and cost-effective long-haul transport solution, making signals go further without regeneration.

ID	Wave-length	Compensated Length	Dispersion (ps/nm)	Connector	Insertion Loss	PMD	Housing
65781	C-Band	40km	-680±3%	LC/UPC	3.5dB max	0.8ps max	luggable Module
65779		80km	-1360±3%		4.8dB max	1.2ps max	Pluggable Module
29296		80km			8.7dB max	1.2ps max	1U 19" Rack Mount
65783	C-Band& L-Band	10-140km	-	LC/SC/FC, UPC/APC	-	-	Pluggable Module/1U 19" rack mount
72427	1528nm-1568nm	60km/80km/100km			6dB max		Pluggable Module

Notes:

Compensated length, connector type and housing can be customized for your specific requirements.

Dispersion Compensation & Line Protection Modules

Line Protection Modules

OLP (Optical Line Protection) is a device used in pairs, one at each end of the optical signal to protect network transmission line. It can realize optical power monitoring and automatic switching. In optical communication network, OLP monitors optical power of optical fiber and standby optical fiber at real time. In case the current optical power of optical fiber is less than the pre-set switching threshold value, then the alarm is on and it would switch to standby optical fiber automatically to protect optical transmission system line.



ID	Connector	Wavelength	Insertion Loss	Return Loss	Monitoring Power Range	Housing
66010	LC/UPC	1310±50nm/ 1550±50nm	Tx<3.8dB Rx<1.2dB	≥55dB	+23~-50dBm	Pluggable Module
72700		C21-C60/ 1270nm~1610nm	Splitter<3.8dB BIDI OLP<1.2dB			
73324			<3.8dB			

Notes:

Fiber type, connector and housing can be customized for your specific requirement.

DWDM Red/Blue Filter

DWDM red/blue band filter is a passive micro optics device based on environmentally stable thin film filter technology. It is mainly used to separate or combine red band wavelength signals and blue band wavelength signals in C-band, in single fiber bi-directional DWDM systems and high power amplification system.

FS provides customized band filters and connectors to meet special control and applications. The filter units are available with steel tubes, 2-slot 1U rack mounts, pluggable modules, or ABS boxes.

Features:

· High level of integration by plug-in design

· High channel isolation and excellent environmental reliability

· Separate and polymerize red-band signal and blue-band signal

Applications:

· Single fiber bi-directional DWDM system

Active & Passive Pluggable Line Cards



DWDM EDFA



Mid-Stage EDFA



Transponders OEO



BO Module



Variable Optical Attenuator



Optical Bypass Protection



Red/Blue DWDM Splitter



Dispersion Compensation

Fiber Monitoring

OPD (Optical Power Detection) is a kind of optical power monitoring equipment, which can carry on the high-precision optical power detection. It is an ideal choice of optical real-time monitoring system in optical fiber, optical cable, optical passive device loss measurements.



OPM (Optical Performance Monitoring) acts as an all-in-one monitor of any WDM optical network which supports up to 96ch DWDM optical signal monitoring. It's used for optical performance monitoring analysis of high-speed DWDM signals, including optical wavelength monitoring, optical power monitoring and OSNR (Optical Signal Noise Ratio) monitoring.



FS OTDR (Optical Time Domain Reflectometer) is designed for remote fault detection and isolation, fiber-level fault monitoring, span-level fault monitoring and long-span monitoring. With the OTDR module, optical fiber cable monitoring, fiber optic cable construction and maintenance are simpler.



OPD (AIU) Optical Power Detection for Optical Monitoring

ID	Connector	Wavelength	Insertion Loss	Optical Power Monitoring Scope	Channel Optional	Housing
70941	LC/UPC	1310±20/ 1550±20nm	≤1dB	-50~+23dBm	4/8/16 Channels	Pluggable Module
78568		1550±20nm	≤1dB	-50~+23dBm	4 channels	

Optical Performance Monitoring (OPM) for WDM System Monitoring

ID	Wavelength	Channel Spacing	Channel Input Power Range	Response Time	Power Consumption	Housing
71586	1528nm-1568nm	50GHZ	-40dBm~-10dBm	<500ms	<2W	Pluggable Module

OTDR Pluggable Module for FMT Multi-Service Transport Platform

ID	Wavelength	Connector	Optical Fiber	Dynamic Range	Dead Zone	Housing
73281	1550/1625 (±20 nm)	SC/UPC	9/125 μm SMF	30~42dB	Attenuation: ≤10m Event: ≤2m	Pluggable Module

Chassis & Accessories

Available for all-in-one multi-service transport system, FS also provides a wide range of supporting chassis and accessories. There are managed chassis, network management unit, power supply modules, cooling fan module, and optical attenuators. All these optical devices are customized to meet our customers' needs.



1U Chassis



2U Chassis



4U Chassis



Power Supply AC



Fan Cool



Management Line Card

ID	P/N	Type	Description
39214	FMT04-CH1U	1U Managed Chassis	Managed Chassis Unloaded, Supports up to 4x Multiplexer/EDFA/OEO/OLP Card with Accessories, 1U Chassis Are Available
70413	FMT-CH	Customized Managed Chassis	Managed Chassis Unloaded, Supports up to 16x Multiplexer/EDFA/OEO/OLP Card with Accessories, 1U/2U/4U Chassis Are Available
66915	FMT-MNG-S	Customized Network Management Unit	Management Module with 2 x SFP Ports, Tailored for FMT 1U, 2U and 4U Managed Chassis
66922	FMT124U-PS	Customized Power Supply Module	Power Supply Module Tailored for FMT 1U/2U/4U Managed Chassis
70414	FMT-FAN	Customized Cooling Fan Module	Cooling Fan Module Tailored for FMT 1U/2U/4U Managed Chassis
65271	FS-VOA-C	Customized Variable Optical Attenuator	Pluggable Module for FMT Multi-service Transport Platform with LC/UPC Connector and 0~15dB Attenuation Range

Fixed Optical Attenuators

As a type of optical passive devices, attenuators are mainly used in fiber optic communication to debug optical power performance, optical instrument calibration correction, and fiber signal attenuation. They can ensure the optical power in a stable and desired level in the link without any changes on its original transmission wave. Attenuators with different attenuation values and connectors are available in FS.



ID	Fiber Connector	Connector Gender	Ferrule Type	Transfer Mode	Attenuation	Wavelength (nm)	Polarization Dependent Loss
76119	LC/UPC	Male to Female	Zirconia Ceramic	Single mode	1dB	1260~1620 (SMF)	≤0.2dB
76120					2dB		
70008					3dB		
70009					5dB		
72630					7dB		
70010					10dB		
76146	SC/UPC				3dB		
76147					5dB		
76148					10dB		
76149	SC/APC				3dB		
76150					5dB		
76151					10dB		

Notes:

10-pack bag or separately sold package is available.

Variable & Customized Optical Attenuators



Variable optical attenuators are used to control the power of light signals being transmitted through optical fibers. They can reduce signal power in a fiber by adjustable amounts. Variable attenuators can be used with single mode, multimode and polarization maintaining fiber. There will be low insertion loss and back reflection with the use of variable attenuators.

FS attenuators with different attenuation values and connectors can be customized to meed your specific demands.

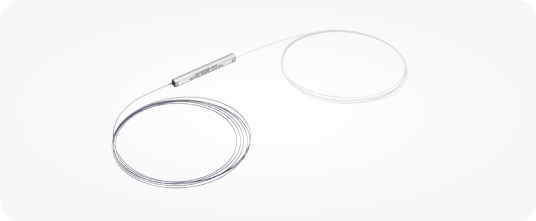
ID	Fiber Connector	Connector Gender	Ferrule Type	Transfer Mode	Attenua-tion	Wavelength (nm)	Polarization Dependent Loss
11819	LC/SC/ FC/ST/LSH, UPC/APC	Female to Female	Zirconia Ceramic	SMF	1~25dB	1260~1620 (SM)	≤0.2dB
11820	LC UPC/APC	Male to Female		SMF/MMF	1~25dB	1260~ 1620(SM), 850 or 1330(MM)	≤0.2dB
11824	SC UPC/APC	Male to Female			1~25dB		≤0.2dB
11826	FC UPC/APC	Male to Female			1~25dB		≤0.2dB
11829	ST UPC/APC	Male to Female			1~25dB		≤0.2dB
13554	LC/SC/ FC/ST, UPC/APC	-			0~60dB	1310~1550 (SM)/850~1 300(MM)	≤0.2dB
12822	FC UPC/APC	Variable		SMF	1~30dB	1260~1620 (SM)	≤0.2dB
35130	MU/UPC	Male to Female			1~25dB	1260~1620 (SM)	≤0.2dB
35199	LC/SC/FC/ST, UPC/APC	-			1~40dB	1525-1570 nm/1570-1 610nm	≤0.5dB
13975	FC/PC	-	-		-	1260~1650 nm	-

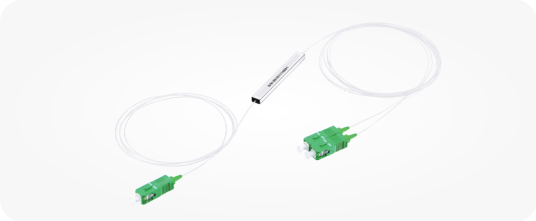
Notes:

10-pack bag or separately sold package is available.

PLC Splitters

PLC (Planar Lightwave Circuit) splitter is a type of optical power management device that is fabricated using silica optical waveguide technology to distribute optical signals from CO (Central Office) to multiple premise locations. FS provides bare PLC splitter, blockless PLC splitter, ABS PLC splitter, LGX box PLC splitter, mini plug-in PLC splitter, and 1U rack mount PLC splitter for your choice.





ID	Package Style	Connector	Configuration Type	Wavelength	Pigtail Length	Fiber Diameter
11519	Steel Tube, Bare Fiber	-	1x2	1260~1650nm	1.5m	250um
11521			1x4			
11524			1x8			
11528			1x32			
12493	Mini Module	SC/APC	1x2			900um
12492			1x4			
12491			1x8			
11615	ABS Module		1x2			2.0mm
11617			1x4			
11620			1x32			
71290			1x2			900um
48456			1x8			
71289			1x16			
71291			1x32			
11958	LGX Cassette		1x4		-	0.9mm
11959			1x8			
11947	1U Rack Mount		1x16			-
11948			1x32			

FBT Coupler Splitters

FBT (Fused Biconical Taper) splitter utilizes precision technology to combine or distribute light from single/multiple inputs to single/multiple outputs bi-directionally. They are designed for power splitting and tapping in telecommunication equipment, CATV network, and test equipment.

FS can provide customized FBT splitters in a variety of styles, sizes, port configurations, split values, and wavelength specifications, allowing a high degree of flexibility in tailoring the product to suit your precise requirements and application.

ID	Package Style	Configuration Type	Connector	Wavelength	Fiber Diameter	Split Ratio	Pigtail Length
21045	Steel Tube	1x2	FC/APC	1310/1550nm	0.9mm	50/50	1m
65798	Steel Tube	MxN	LC/SC/ST/FC, UPC/APC	1310/1490/ 1550nm	900μm	1/99~50/50	0.5/1.0/1.5m
65799			Unconnectorized		250μm		
65801	Steel Tube	1x2	None/LC/ SC/ST/FC	850nm	900μm	1/99~50/50	0.5/1.0/1.5m
65800	ABS Box	MxN	LC/SC/ST/FC, UPC/APC	1310/1490/ 1550nm	0.9/2.0/ 3.0mm	1/99~50/50	0.5/1.0/1.5m
65803			LC/SC/ST/FC	850nm			

Other Passive Components

Optical Switch

The optomechanical optical switches, based on thin film filter technology, connect optical channels by redirecting an incoming optical signal into the selected output fiber. This is achieved using a patent-pending optomechanical configuration and activated via an electrical control signal.

WDM Filter

WDM filter module is extensively used in EDFA, Raman amplifiers, and WDM networks. It is based on thin film filter technology. The WDM filter combines or separates light at different wavelengths in a wide wavelength range. It can expand the capacity of a single fiber to achieve bi-directional communication, so it's widely used in optical network upgrade and expansion.

Micro-Optic Devices

FS provides all kinds of micro-optic devices like high-power isolator, polarization insensitive optical circulator, etc.



ID	Name	Wavelength	Fiber Mode	Fiber Length	Cable Diameter	Connector
34148	Optical Switch	1310nm, 850nm, 1550nm, 1310/1550 nm	SMF/MMF	0.5m/1.0m/ 1.5m	250um/900um/ 2.0mm	Customized
34828					250um/900um	
65811	WDM Filter	Customized	SMF	0.5m/1.0m/ 1.5m	250um/900um/ 2.0mm/3.0mm	Customized
70090						
33364	Micro-Optic Devices	Customized	SMF	0.5m/1.0m	900um/2.0mm/ 3.0mm	Customized
29406		1310/1550nm			900um/2.0mm/ 3.0mm	
28938		1550nm		2m	0.35mm	-
35256		1310nm		0.8m	250μm	

Terminal Box & ODF Box

Terminal Box

The fiber optic terminal box is a kind of fiber optic management product, used to distribute and protect the optical fiber links in FTTH Network.





ODF Box

An ODF (Optical Distribution Frame) is used to provide cable interconnections between communication facilities, which can integrate fiber splicing, fiber termination, fiber optic adapters & connectors and cable connections together in a single unit. It is usually used as the interface between optical transmission networks, optical transmission facilities, and optical cables in access network of optical fiber subscribers. It also can protect fiber optic connections from damage.

Fiber Optic Wall Plates

Fiber optic plates are designed to bring fiber to the desk and widely used in multi-floor and high buildings. FS supplies different types of fiber optic wall plate outlets for customers' various needs.



ID	Adapter Type	Fiber Mode	Adapters/Ports	Color & Material
13391	SC Simplex UPC	OS2	1	White, ABS plastic
13393	SC Simplex APC	OS2	1	
13396	SC Simplex/LC Duplex	OS2,OM1/OM2, OM3/OM4	2	
62231	LC Duplex APC	OS2	1	
14457	LC Duplex UPC	OS2	1	
13409			4	
13410		OM3/OM4	1	
13413			2	
13414			4	

Splice Closures

FS splice closure is suitable for protecting optical fiber splices in straight-through and branching applications, and can be used in aerial, duct and direct-buried fiber optic cable projects.

Dome Closure

Dome (or vertical) fiber optic splice closures are made of excellent engineering plastics. FS supplies dome fiber optic splice closures with different port types, fittings and different fiber optic core numbers.

Inline Closure

Inline (or horizontal) fiber optic splice closures are made of excellent engineering plastics. FS supplies inline fiber optic splice closures with different port types, fittings and different fiber optic core numbers.

PLC Splitter Splice Closure

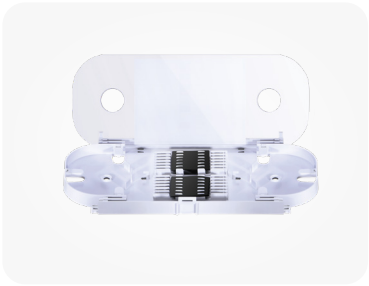
PLC splitter type of fiber optic splice closure is a member of dome closure series. The product adopts fully-mechanical sealing structure and silicone rubber sealing gasket to ensure good sealing performance of fiber cable whose diameter is within 13mm.

Fiber Splice Trays

Fiber optic splice trays are designed to provide a location to store and to protect the fiber cables and the splices. Each tray provides space for mounting fiber splice protectors and excess fiber.

Optical fiberglass inside the fiber tray can be melt with any other strand optical fiber in the tray, thus different fiber optic cables can be melt and connected directly via the tray. Optical fiber can also be melted with the fiber optic pigtail end, and via pigtail, it can connect out to other fiber optic equipment.







Features:

- 6/12/24 fibers optical connections
- With a cover-plate on the tray after fusion
- Offer an unique and flexible splice and storage system
- Ensure the optimal bend radius of fiber
- Prevent the eyes from high-power light
- Every board can be clamped with FC, SC, LC adapters
- Every board clamped with ST adapters, a plastic sleeve should be added
- IEC and RoHS compliant

Protection Sleeves

FS fiber optic protection sleeves are made up of cross-linked polyolefin heat-shrinkable tubes, hote melt tubes and stainless steel needle.

Features:

- Protect connection point
- Improve the mechanical strength
- Easy to operate, reducing the risk of fiber damage during installation
- Transparent tube, easy to see the status of fiber optical splice
- Min. shrinks temperature: 120°C; shrink very fast and very easy to install
- High work temperature (-55°C~100°C)
- Good resistance to temperature and humidity

ID	Name	Tube Length	Steel Needle Diameter	Inner Tube Diameter	Outer Tube Diameter	Pcs/Pkg
13663	FS-1240	40mm	1.2mm	2.2mm	3.5mm	100
13662	FS-1260	60mm				
34636	FS-1540	40mm	1.5mm	2.4mm	4.7mm	
13661	FS-1545	45mm				
11857	FS-1560	60mm				
34645	FS-1560C					
11861	FS-1045F	45mm	1mm	4.2mm	5.1mm	50
13664	FS-1060F	60mm				
34630	FS-4012SR	41mm	2*4mm	3*5mm	5.4mm	
11416	FS-SF1060	Size (LxW): 103 × 12mm	-	2.0/3.0/0.9/0.25 mm	-	1

Fiber Connectors

FS supplies various kinds of fiber optic connectors such as ST, SC, FC, LC, and MTRJ. Each fiber optic connector is functionally tested before shipping.



ID	Connector Type	Fiber Mode	Insertion Loss	Return Loss	Cable Diameter
35165	LC UPC	9/125μm Single Mode	≤0.35dB	≥45dB	0.9mm
38720	LC APC			≥50dB	0.9mm
48517	SC APC			≥50dB	0.9/2.0/3.0mm
13224	SC APC			≥45dB	0.9/2.0/3.0mm
76879	LC/SC/FC/ST/MU UPC/APC	9/125μm Single Mode	/	≥50dB (UPC) ≥60dB (APC)	/
35166	LC UPC	OM1/OM2	≤0.35dB	≥45dB	0.9mm
35160	SC UPC				0.9/2.0/3.0mm
11856	LC	SMF&MMF	0.20dB	>55dB (UPC)	0.9/2.0/3.0mm
11991	SC				
11865	ST				
11843	FC				
20297	SMA905/MU/MTRJ	SMF&MMF	/	/	3.0mm

Support Products

FS provides a complete series of powerful fiber cable testers for different applications, including basic fiber tester, advanced fiber tester, polisher & splicer, and fiber optic tools. All these testers and tools do great help in troubleshooting network problems and issues, which makes network maintenance, verification and certification more cost-effective.

OTDR

The handheld OTDR is designed for optical fiber measurement in short and medium distance. The built-in VFL can guarantee the fault detection for all range optical fibers.



ID	Dynamic Range	Connector	Wavelength	Test Range
49652	24/22dB	FC/SC	1310±20nm/ 1550±20nm	80km
34153	28/26dB			100km
34154	32/30dB			120km

OTDR Fiber Launch Cable Box

OTDR launch cable box is often used to create proper conditions for testing another similar optical fiber for faults. This method avoids undesirable variations in loss and distance measurements.

Fiber Type (Customized)	Length (Customized)	Connector (Customized)
SMF/MMF	150/400/500m, 1/2/5/10km	LC/SC/ST/FC/LSH

Optical Fiber Ranger

Optical fiber ranger adopts the OTDR technical principles and integrates the powerful analysis software, which makes detecting fiber faults location more accurately and easily.

ID	Fiber	Connector	Wavelength
11098	SMF	FC/PC	1550nm (1310nm optional)

Support Products

Fiber Identifier

FS fiber identifiers can indicate the signal direction in fiber without disrupting traffic.



Wavelength	Fiber	Detector Type	Visual Fault Locator
900-1700nm (SM)	0.25/0.9/3.0mm	InGaAs 2pcs	1mW/10mW

Optical Talk Set

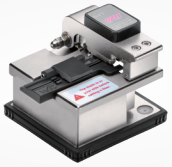
FS optical talk set is widely used in installation, optical testing, maintenance and fiber attenuation value testing in data network, CATV and telecommunication network. It can carry out full-duplex communication with high-quality conversation and very low background noise.



ID	Fiber	Connector	Wavelength	Transmission Distance
70395	SMF	FC/PC	1310/1550nm	120km

Fiber Optic Cleaver

Fiber optic cleaver is used to cut the fiberglass for fusion splicing. It's ideal for preparing fiber for pre-polished connectors to make a good end face. As an important process in the fiber splicing, usually it works together with the fusion splicer to meet the end needs.



ID	Coating Diameter	Cladding Diameter	Application
14341	250-900μm	125μm	Standard 125/250um & 125/900um Fibers

Support Products

Replacement Blade/Cutting Wheel

FS fiber cleaver replacement blade is 100% individually inspected to exceed the specifications required for the fiber optic industry. It's better or equal to original equipment parts. But the price is below half of the original price, which save you at least 50% budget.



ID	Cleave Face	Cutting	Application
66019	16 Faces	50,000 Sports	For FS-08C Fiber Cleaver (14341) Blade Replacement

Fusion Splicer

DVP-740 mini FTTx fusion splicer is either used for core or cladding alignment. Using one of these methods, the two cleaved fibers are automatically aligned by the fusion splicer in the x and y planes. Then they will be fused together. The bare fiber area is protected either by recoating or with a splice protector. A splice protector is a heat shrinkable tube with a strength membrane and less loss.

ID	Cleave Length	Protection Sleeve Length	Language
13292	8-22mm	20/40/60mm	English/Chinese, Russian/Spanish/Portuguese

Fiber Optic Polishing Machine

The FS-20A high-performance polish machine offers superior quality and maximum capacity throughput at a very affordable price. The square is pressurized by the spring, making the operation simple with high flexibility.

ID	Pressure Type	Polishing Capacity
13325	4 Coil Springs	18/20/24/40pcs Connectors

Support Products

Polishing Fixture/Holder

FS polishing fixture is made of stainless steel, adopting four corners pressurized way which can polish more stably and efficiently. Meanwhile, the adapter of connector can be interchanged, prolonging the service life of grinding plate.

ID	Connector No.	Application
13311	20	ST/UPC
13314	24	LC/UPC
13316	18	FC/APC

Hand Polish Puck

FS hand polish puck is made by CNC machines for identical quality and accuracy. The unique design prevents vapor locking and surface tension so your connectors are polished properly.



ID	Material	Application
13296	Stainless Steel	2.5mm SC/ST/FC Ferrules

Support Products

Polishing Film

Polishing films are polishing materials with ultra-precision flexibility. They are made from diamond powders evenly coated on the surface of flexible substrate by adhesives and are often used for lapping and precision polishing of optical fiber pins, semiconducting materials, metal rollers, etc.



ID	Micron Grade	Mineral Type	Colour
27129	1μm	Diamond	Purple
27130	3μm		Pink
27131	9μm		Blue
27133	30μm		Yellow/Green

Fiber Cable Slitter

Fiber cable slitters are effecient tools for removing or slitting PVC, rubber, PE and other jacket materials.





ID	Blade Material	Stripping Diameter
14358	Carbon Steel	8-30mm
14371	Supermalloy	1.5-3.3mm
72863	Nickel-chrome Alloy Steel	4.5-25mm

Support Products

Fiber Optic Cutter

Fiber optic cutter is an important tool in the fiber optic splicing and some other fiber optic cable cutting applications. Fiber optic kevlar cutter is made of high-quality carbon steel. The wider finger holes and smoother opening make for easy operation.



ID	Blade Material	Length	Colour
14346	High Carbon Steel	140mm	Orange

Fiber Cable Stripper

Fiber stripper is of high quality and easy for operation. It helps you safely and efficiently remove the outside jacket from an optical fiber cable, which can speed up the the process of fiber network maintenance.





ID	Type	Body Material	Length
14365	Fiber Stripper	Steel	165mm
11021	Cable Stripper	Zinc Alloy	110mm
72812	Wire Stripper	S50C Steell	148mm

Support Products

Fiber Optic Tool Kit

FS fiber optic tool kit includes kinds of hand tools, aiming to solve a variety of technical difficulties for fiber optic cable cutting, stripping, slitting, cleaning, or splicing.







ID	Type
72764	Fiber Optic Cleaning Kits
12601	Fiber Optic Construction Tool Kits
11404	Fiber Optic Fusion Splicing Tool Kit



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