

FMT4DL-OEO25GSFP28 Data Sheet

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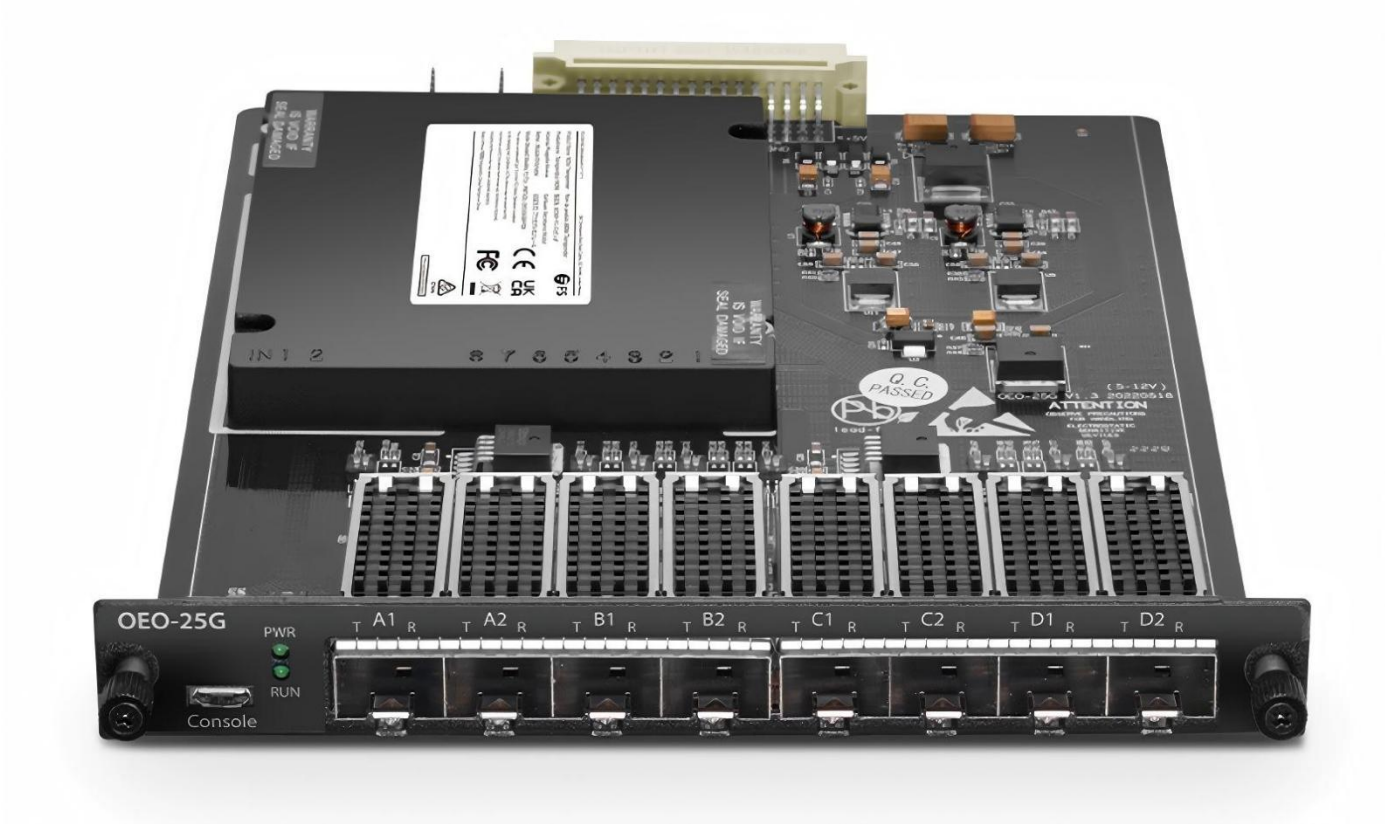
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Product Overview

The 25G WDM converter can be used as a transponder or as a repeater and regenerator with optical-electrical-optical (OEO) wavelength and wavelength division multiplexing technology. It can achieve wavelength conversion, optical signal amplification and single or multiple-channel long-distance transmission of optical signals within a single fiber. The card is compatible with SFP+/SFP28 optical modules and allows for multi-rate service access ranging from 8Gbps to 28.1Gbps. It is designed for maximum configuration flexibility, with pluggable modules that plug directly into the 1U FMT managed chassis, each module occupying one slot.

The module can facilitate an integrated cost-effective and flexible optical layer solution by incorporating a variety of optical layer boards, such as DCM/MUX/OSW/OLP/R/B. It can be applied to DWDM dual and single fiber networks, to meet the diverse needs of scenarios.



Features and Benefits

- 4 Independent ITU Standard-based Multi-rate 8G to 28.1G OTN Transponders
- Facilitate an Integrated Optical Layer Solution by Incorporating EDFA/DCM/MUX/OSW/OLP/R/B
- Support SDH STM64, 10/25GE Ethernet, 16/32 Fiber Channel
- Ideal for Metro 25G Ethernet and Cable Landing Extensions, Single or Dual Fiber Solutions
- Support Basic Web-based Management and Enhanced AmpCon-T Management
- Fit into One Slot of the FMT Managed Chassis

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Pluggable Transceivers Providing Great Flexibility

FS.COM OEO is an 8-port 25G transponder, each transponder supports up to four CWDM or DWDM line SFP28/SFP+ optics (plugged into the ports labeled "A2", "B2", "c2"and "D2") as well as four client SFP28/SFP+ optics (plugged in the ports labeled "A1", "B1", "C1" and "D1". The usage of pluggable transceivers (SFP28/SFP+) for network facing interfaces provides a high level of flexibility since the transponders can be used in both CWDM and DWDM networks by selecting the appropriate type of SFP28/SFP+.



High Integration by Pluggable Design



The transponder is available as a managed chassis pluggable card (part number: FMT04-CH1U).

Four transponder cards can coexist together in 1U managed chassis. And the transponder can coexist in the same chassis with any FS.COM FMT cards.

Highly-scalable Optical Transport Platform

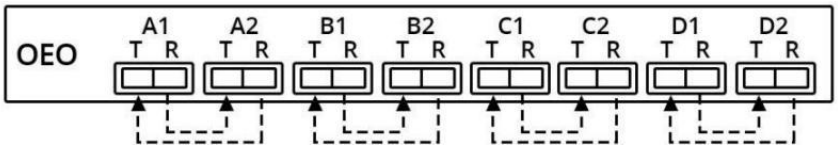
1U management chassis for applications where space, power and environment are key considerations. The chassis supports both DWDM and CWDM for both dual fiber and single fiber configurations and optical amplifiers, OEO(converter), DCM and OLP modules are designed in a modular fashion to accommodate distance extension without service interruption.



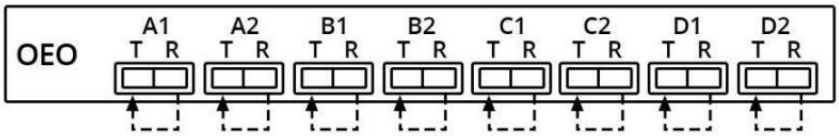
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Flexible and Versatile Transponder

The OEO working mode is divided into normal mode and loopback mode according to the application scenario. It can be set to the normal mode in the normal connection. The loopback mode is mainly used for device detection and troubleshooting.



①Normal mode is used for conversion of fiber mode and wavelength and regeneration of optical signal. Ports A 1&A2 are paired, the data signal entering R of port A 1 and is retransmitted out T of port A2.



②Loopback mode is used for detection and troubleshooting, the data signal entering R of port A 1 and is retransmitted out T of port A 1.

Note: On Ports A1&A2, the power values and receiving the status of the module, temperature, rate, and wavelength can be checked. But the error rate can not be checked.

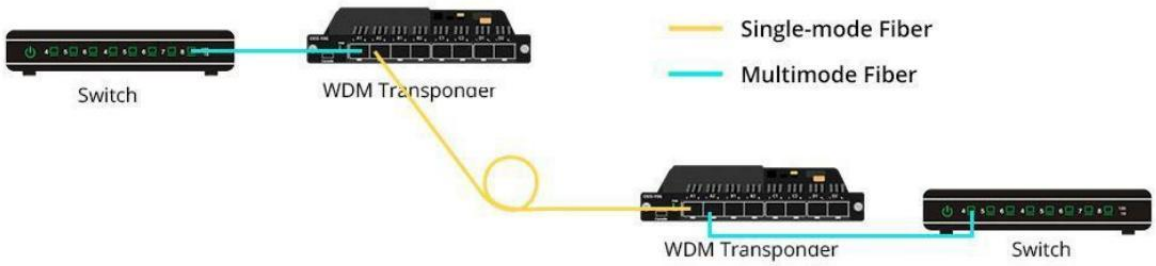
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Applications

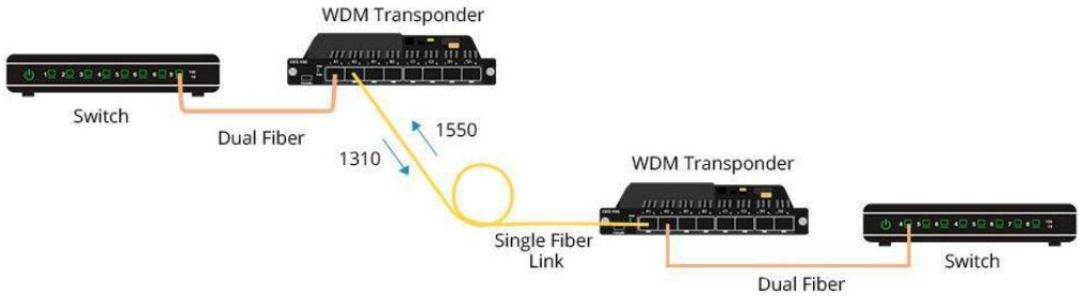
Optical transponder can be deployed in seamless integration of different fiber types by converting multimode fiber to single-mode fiber, dual fiber to single fiber.

It can also be used as a repeater to convert the weak optical signals from the fiber into electrical signals and regenerates or amplifies, then recovers them into strong optical signals for continuous transmission. Although the signal is amplified, the data rate before and after the conversion will not be changed.

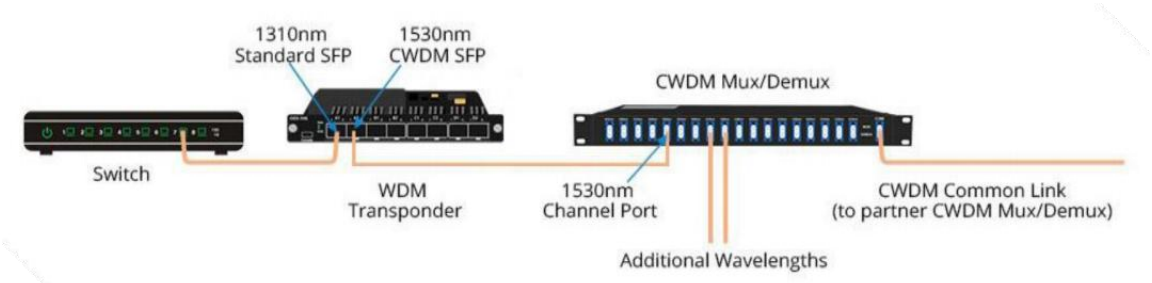
1.Multimode to Single-mode Conversion



2.Dual Fiber to Single Fiber Conversion

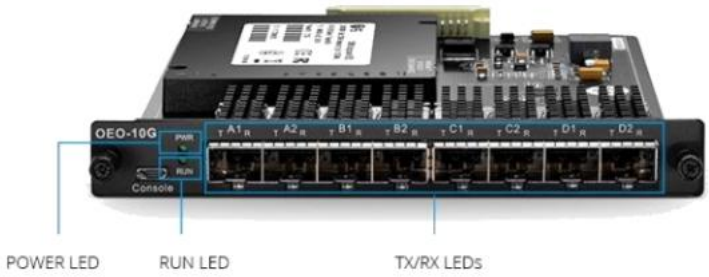


3.Wavelength Conversion



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Product Specifications



Indicator	Notes	Normal state	Alarm or other status
PWR	Power on	Green	Off
RUN	Power run	Flashing/1s	Off or flash irregularly
A1	Module	Green	Off, module not present
A2	Module	Green	Off, module not present
B1	Module	Green	Off, module not present
B2	Module	Green	Off, module not present
C1	Module	Green	Off, module not present
C2	Module	Green	Off, module not present
D1	Module	Green	Off, module not present
D2	Module	Green	Off, module not present

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Table 1 Performance Index



Parameters	Wavelength（nm)	Transmission distance (km)	Input power (dBm)	Output power (dBm)
9.95~11.3 Gbps	850	0.1	-11~-1	-6~-1
	1310	10	-14~0	-6~-0
	CWDM	40	-16~-0	-1~3
	DWDM	80	-24~-7	0~4
25.5~28.1 Gbps	850	0.1	-14~0	-8~3
	1310	10	-14~0	-8.4~3
	CWDM	10	0	-7~3
	DWDM	10	0	-1~5

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Table 2 Supported SFP28/SFP+ Optics and Applications

Protocol	Bit Rate (Mbps)	Client SFP (FS PN)	CWDM Line SFP (PN)	DWDM Line SFP (PN)
Ethernet	10Gbps	SFP-10GSR-85 SFP-10GLRM-31 SFP-10GLR-31 SFP-10GER-31	CWDM-SFP10G-10SP CWDM-SFP10G-10M CWDM-SFP10G-20SP CWDM-SFP10G-20S CWDM-SFP10G-20L CWDM-SFP10G-40S CWDM-SFP10G-40L CWDM-SFP10G-80L	DWDM-SFP10G-40 DWDM-SFP10G-80
Ethernet	25Gbps	SFP28-25GSR-85 SFP28-25GLR-31 SFP28-25GER-31 SFP28-25GER40-31	CWDM-SFP25G-10SP	DWDM-SFP25G-10
8G FC	8.5Gbps	SFP-10GSR-85 SFP-10GLR-31 SFP-10GER-31 SFP-10GZR-55 SFP-10GER-55	CWDM-SFP10G-10SP CWDM-SFP10G-10M CWDM-SFP10G-20SP CWDM-SFP10G-20S CWDM-SFP10G-20L CWDM-SFP10G-40S CWDM-SFP10G-40L CWDM-SFP10G-80L	DWDM-SFP10G-40 DWDM-SFP10G-80
16G FC	14.025Gbps	SFP-16GSR-85 SFP-16GLR-31 SFP-16GER-55	CW51-16GSFP-40	DWC35-16GSFP-40
32G FC	28.50Gbps	SFP28-32GSR-85 SFP28-32GLR-31		

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Table 3 Product Specifications

Configuration	Parameter	Specification
Performance	Bit rate	8Gbps to 28.1 Gbps
	Signal mode	SM/MM
	Interface type	SFP28/SFP+
	Optical transceiver slot numbers	8
	Service channel number	4
	Dithering performance	Conform ITU-T G.825 (2000)
	Consumption	<20W
	Consumption/channel	3R
	Regeneration	≤5W
Electrical	Transmission distance	Up to 80km
	Client protocols	Ethernet, FC
	Number of supply voltage	Single/Dual power
	Supply voltage	100V-240VAC/36V-72VDC
	Max power consumption	20W
Mechanical	FMT Chassis Dimensions (H x W x D):	1.75"x19"x11.81" (44.5x483.6x300mm)
Environment	Storage temperature	-40 to 85°C (-40 to 185°F)
	Operating temperature	-10 to 60°C (14 to 140°F)

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Layout and Dimensions



- Height: 44.50mm (1.75")
- Width: 482.6mm (19")
- Depth: 300mm (11.81")

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Ordering Information

Mux Demux & OADM		
DWDM MUX DEMUX	FMU-D402160M	40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor Port, 3.0dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#33485
	FMU-D402160M3	40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor and 1310nm Port, 3.5dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#35887
	FMU-D162136EM3	16 Channels DWDM Mux Demux, 100GHz C21-C36, with Monitor, Expansion and 1310nm Port, 4.4dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#72430
	FMU-MD085360EM3	8 Channels DWDM Mux Demux, 100GHz C53-C60, with Monitor, Expansion and 1310nm Port, 3.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#72433
	FMU-FD402160M3	40 Channels DWDM Mux Demux, 100GHz C21-C60, with Monitor and 1310nm Port, 4.5dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#84492
	FHD-D82128EM3	8 Channels DWDM Mux Demux, 100GHz C21-C28, with Monitor, Expansion and 1310nm Port, 2.4dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126899
	FMT-OMD	FMT-OMD, Customized DWDM Dual-fiber Mux/Demux for FMT Managed Chassis#317057
	FMT-OMD-SF	FMT-OMD-SF, Customized DWDM Single-fiber Mux/Demux for FMT Managed Chassis#317055
CWDM MUX DEMUX	FMU-C182761M	18 Channels CWDM Mux Demux, 1270-1610nm, with Monitor Port, 5.0dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#33489
	FMU-MC042733	4 Channels CWDM Mux Demux, 1270-1330nm, 1.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#42972
	FMU-MC09B	9 Channels CWDM Mux Demux, 1290-1610nm, 2.4dB Typical IL, LC/UPC, Single Fiber, Side-B, FMU Plug-in Module#43699
	FMU-MC09A	9 Channels CWDM Mux Demux, 1270-1590nm, 2.4dB Typical IL, LC/UPC, Single Fiber, Side-A, FMU Plug-in Module#43711
	FMU-MC084761EM	8 Channels CWDM Mux Demux, 1470-1610nm, with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, FMU Plug-in Module#78163
	FMU-C182761M	18 Channels CWDM Mux Demux, 1270-1610nm, with Monitor Port, 2.2dB Typical IL, LC/UPC, Dual Fiber, FMU 1U Rack Mount#123533
	FHD-C84761EM	8 Channels CWDM Mux Demux, 1470-1610nm, with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126902
	FHD-C82745EM	8 Channels CWDM Mux Demux, 1270-1450nm (Skip 1390, 1410nm), with Monitor and Expansion Port, 2.0dB Typical IL, LC/UPC, Dual Fiber, High Density, FHD Plug-in Module#126903
LWDM MUX DEMUX	FMU-L042930A	4 Channels LAN-WDM Mux Demux, 1295.56-1309.14nm, 2.7dB Typical IL, LC/UPC, Single Fiber, Side A, FMU Plug-in Module#244657
	FMU-L042728B	4 Channels LAN-WDM Mux Demux, 1273.55-1286.66nm, 2.7dB Typical IL, LC/UPC, Single Fiber, Side B, FMU Plug-in Module#244655
Customized Mux Demux	MUX-DWDM	Customized Dual and Single Fiber DWDM Mux Demux#322911
	MUX-CWDM	Customized Dual and Single Fiber CWDM Mux Demux#70410
	MUX-CCWDM	Customized Dual and Single Fiber Low-loss Compact CWDM Mux Demux#73961
OADM	DOADM-EAW	Customized Dual and Single Fiber DWDM OADM, East and West#70427
	DOADM-EOW	Customized Dual and Single Fiber DWDM OADM, East or West#73795
	COADM-EAW	Customized Dual and Single Fiber CWDM OADM, East and West#70425
	COADM-EOW	Customized Dual and Single Fiber CWDM OADM, East or West#73794
Chassis	FMU-1UFMX-N	FMU 2-Slot 1U 19" Rack Chassis Unloaded, Holds up to 2 Units FMU Plug-in Module#30408
	FHD-1U-CMP400	FHD High Density 1U Rack Mount Modular Enclosure Unloaded, Rear Cable Managers, Holds up to 4 x FHD® Cassettes or Panels, 144 Fibers (LC)#70419

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TRANSPONDERS & MUXPONDERS

25G	FMT4DL-OEO25GSFP28	FMT4DL-OEO10GSFP, 4 Channels WDM Transponder (Converter) for FMT Managed Chassis, 8 SFP/SFP+ Slots#30515
10G	FMT4DL-OEO10GSFP	FMT4DL-OEO25GSFP28, 4 Channels 25G WDM Transponder (Converter) for FMT Managed Chassis, 8 SFP28/SFP+ Slots#92056

OPTICAL LINE SYSTEM

Amplifiers	FMT20PA-EDFA	FMT20PA-EDFA, 20dB Gain C-band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 13dBm Output#72284
	FMT26PA-EDFA	FMT26PA-EDFA, 26dB Gain C-band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 16dBm Output#36524
	FMT17BA-EDFA	FMT17BA-EDFA, 17dB Gain C-band DWDM EDFA Booster Amplifier for FMT Managed Chassis, 17dBm Output#72283
	FMT26PA-51EDFA	FMT26PA-51EDFA, 26dB Gain Extended C-Band DWDM EDFA Pre-amplifier for FMT Managed Chassis, 20dBm Output#248135
	FMT17BA-51EDFA	FMT17BA-51EDFA, 17dB Gain Extended C-Band DWDM EDFA Booster Amplifier for FMT Managed Chassis, 20dBm Output#248133
	FMT-EDFA	Customized C-band DWDM EDFA Amplifier for DWDM Solution#322907
	FMT-ARRAY-OA	Customized Multiports DWDM Array EDFA Amplifie#322909
	FS-SOA	Customized 1310nm Semiconductor Optical Amplifier (SOA) for FMT Managed Chassis#69350
	HPA	Customized FTTx PON High Power 1550nm EYDFA for FMT Managed Chassis#65789
Dispersion Compensation	FMT40-DCM	FMT40-DCM, C-Band 40km DCF-based Passive Dispersion Compensation Module for FMT Managed Chassis#65781
	FMT80-DCM	FMT80-DCM, C-Band 80km DCF-based Passive Dispersion Compensation Module for FMT Managed Chassis#65779
	FS-DCM	Customized C-Band DCF-based Dispersion Compensation Module for FMT Managed Chassis#65783
	FS-TDCM	Customized C-band Tunable Dispersion Compensation Module (TDCM) for FMT Managed Chassis#72427
Red/Blue Filter	FSBR-1x2	FSBR-1x2, Customized 1x2 Single Fiber DWDM Splitter Red/Blue C-band Filter#65981
Line Protection	FMT-OLP2	FMT-OLP2, 1+1 Optical Line Protection Switch for FMT Managed Chassis#66010
	FMT-OLP	FMT-OLP, 1:1 Optical Line Protection Switch for FMT Managed Chassis#192620
	FMT-BDSplitter	FMT-BDSplitter, Optical Splitter for FMT Managed Chassis#73324
	FS-OLP	Customized Optical Line Protection Switch (OLP) for FMT Managed Chassis#34720
	FMT-BDOLP	Customized 1+1 BIDI Optical Line Protection Switch (OLP) for FMT Managed Chassis#72700
Fiber Monitoring	FMT-OPD	FMT-4OPD, 4 Channels 1550nm Optical Power Detection OPD (AIU) for FMT Managed Chassis#78568
	FMT-OPM	FMT-OPM, Optical Performance Monitoring (OPM) for FMT Managed Chassis#71586
	FMT-OPD	Customized Optical Power Detection OPD (AIU) for FMT Managed Chassis#70941
	FMTOSW-1x16	Customized 1x16 Multi-Channel MEMS Optical Switches with Adjustable Channels Control for FMT Managed Chassis#73287
	FMT-OTDR	Customized Optical Time Domain Reflectometer (OTDR) for FMT Managed Chassis#73281
	FMT-LSU	Customized LSU Light Source Unit, Pluggable Module for FMT Multi-Service Transport Platform#78469

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OPTICAL LINE SYSTEM

VOA Units	FS-VOA-C	Customized Variable Optical Attenuator, LC/UPC for FMT Managed Chassis#65271
Chassis	FMT04-CH1U	FMT04-CH1U, 4 Slots 1U Managed Chassis Unloaded Platform, Redundant AC PSUs, Support SNMP V3 Network Management#39214
	FMT-CH	FMT-CH, Customized 4/8/16 Slots 1U/2U/4U Managed Chassis Unloaded Platform, Redundant AC/DC PSUs, Support SNMP Network Management#70413
	FMT04-CH1U	Customized FMT04-CH1U, 4 Slots 1U Managed Chassis Platform, Redundant AC PSUs, Support SNMP Network Management#190253

WDM TRANSCEIVERS

100G/200G CFP2	CFP2-DCO-200G-M	C14 1566.31nm CFP2-DCO 100G/200G DWDM C-band Tunable 96Chs ITU CH13-CH60 50GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#120128
25G SFP28	DW-SFP25G10-17	Cisco C17 DWDM-SFP25G-63.86 Compatible SFP28 25G DWDM 1563.86nm 100GHz 10km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#87000
	CW-SFP25G30-27	Cisco CWDM-SFP25G-1270-30 Compatible SFP28 25G CWDM 1270nm 30km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#100112
	CW-SFP25G10-27	Cisco CWDM-SFP25G-1270-10 Compatible SFP28 25G CWDM 1270nm 10km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#76003
	LW-SFP25G40-86	Cisco LWDM-SFP25G-86.66 Compatible SFP28 25G LWDM 1286.66nm 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#93786
10G SFP+	DW-SFP10G80-21-I	Cisco C21 DWDM-SFP10G-60.61-I Compatible SFP+ 10G DWDM 1560.61nm 100GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#113562
	DW-SFP10G40-21-I	Cisco C21 DWDM-SFP10G-60.61-I Compatible SFP+ 10G DWDM 1560.61nm 100GHz 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#113511
	CW-SFP10G80-47	Cisco CWDM-SFP10G-1470 Compatible SFP+ 10G CWDM 1470nm 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#19367
	CW-SFP10G40-27-I	Cisco CWDM-SFP10G-1270-I Compatible SFP+ 10G CWDM 1270nm 40km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission (Industrial)#112392
1G SFP	DWDM-SFP1G-EZX	Cisco C17 DWDM-SFP-6386 Compatible SFP 1000BASE-DWDM 1563.86nm 100GHz 100km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#54150
	DWDM-SFP1G-ZX	Cisco C17 DWDM-SFP-6386-80 Compatible SFP 1000BASE-DWDM 1563.86nm 100GHz 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#47697
	CWDM-SFP1G-ZX	Cisco CWDM-SFP-1270 Compatible SFP 1000BASE-CWDM 1270nm 80km DOM Duplex LC/UPC SMF Optical Transceiver Module for Transmission#33234

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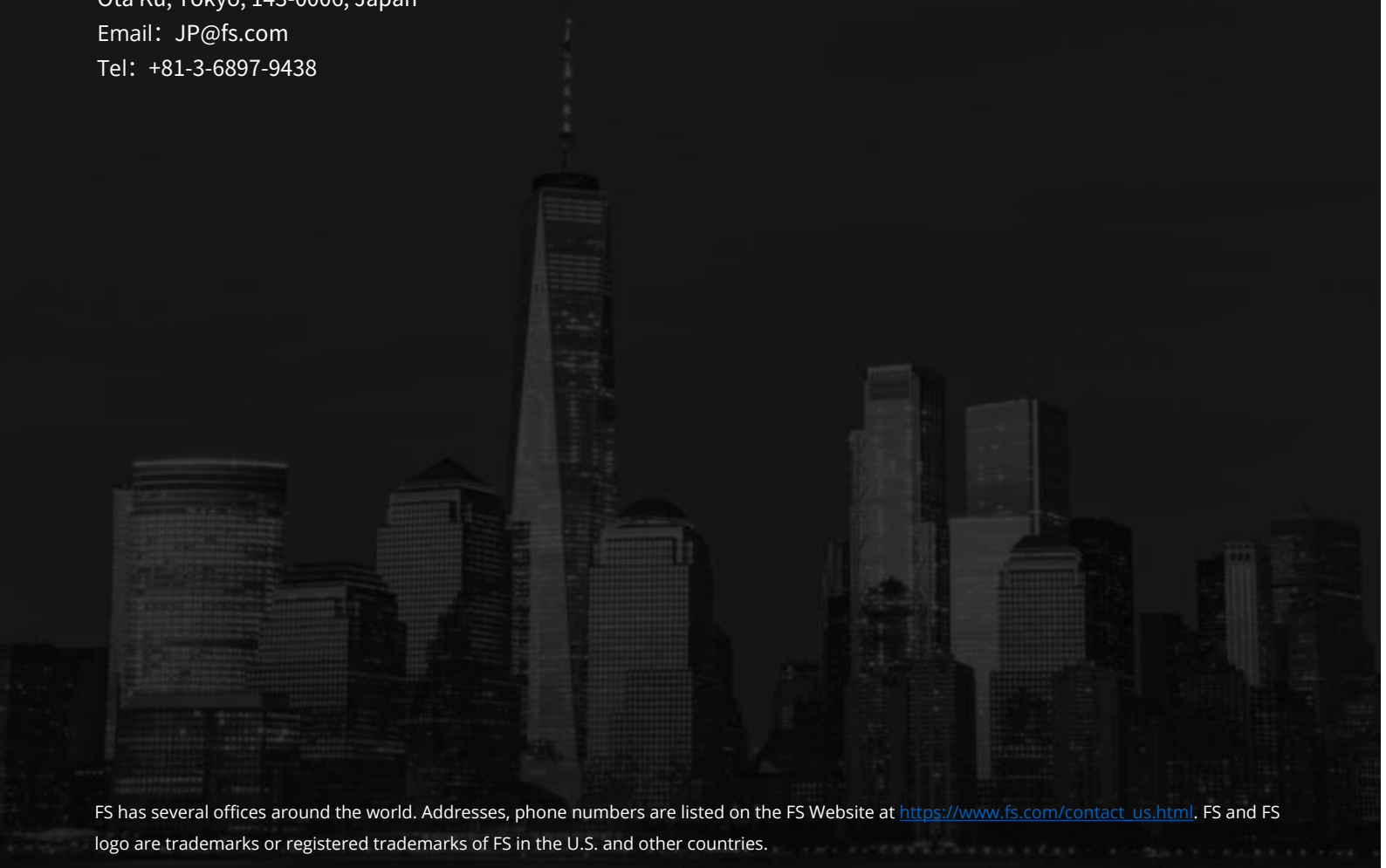
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