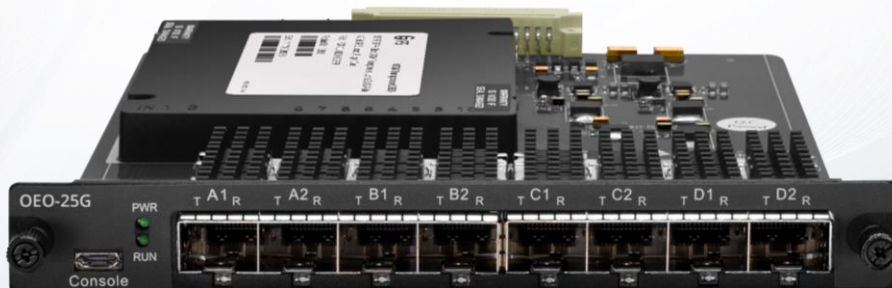


# 4 Channels 25G Multi-Rate WDM Converter (Transponder)

Up to 28.1G Rate, 8 SFP28/SFP+ Slots, Plug-in Card



## 4 Channels Multi-Rate WDM Converter

The optical transponder can convert 8G~28.1Gbps Ethernet signals into a corresponding wavelength in CWDM and DWDM network infrastructures. Its flexibility in terms of data rates, protocols, and wavelength-division multiplexing (WDM) options are provided by FS pluggable optics.

FS WDM transponder operates as a protocol and rate-transparent device, supporting SFP28/SFP+ transceivers the same wavelength reside on client and trunk sides, it's used as a 3R regenerator (re-amplification, reshaping and retiming).

## Flexible WDM Transport Solution

The WDM Converter (Transponder) is a multi-rate transponder that can support an extended number of services for both coarse (CWDM) and dense wavelength division multiplexing (DWDM) transport applications. Due to its high flexibility and density, the transponder is the ideal transport solution for access and metro wavelength division multiplexing (WDM) networks.

The module has four independent transponders that can transport traffic running at different rates. The transponder can also be used as a regenerator, an optical signal received by the transponder is converted to an electrical data stream which it then processes and regenerates.

## 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 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.



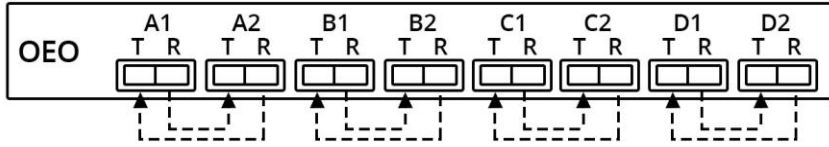
## Simple and Easy to Remote Management

The FS.COM Network Management Unit (NMU/NMS) module is the central management hub of the FMT system. The transponder can be managed by Monitor Online and Simple Management tool based on the management software of Windows platform. And it can also be monitored by SNMPv1, currently, only relevant MIB library files are provided, SNMP-based management software is not provided. In addition, an “Active Alarms List” is available which shows an overview of all the critical states. All alarms are stored in an alarm history file.

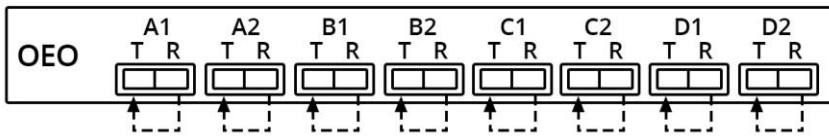


## Flexible and Versatile Transponder

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.



① Normal mode is used for conversion of fiber mode and wavelength and regeneration of optical signal. Ports A1&A2 are paired, the data signal entering R of port A1 and is retransmitted out T of port A2.



② Loopback mode is used for detection and troubleshooting, the data signal entering R of port A1 and is retransmitted out T of port A1.

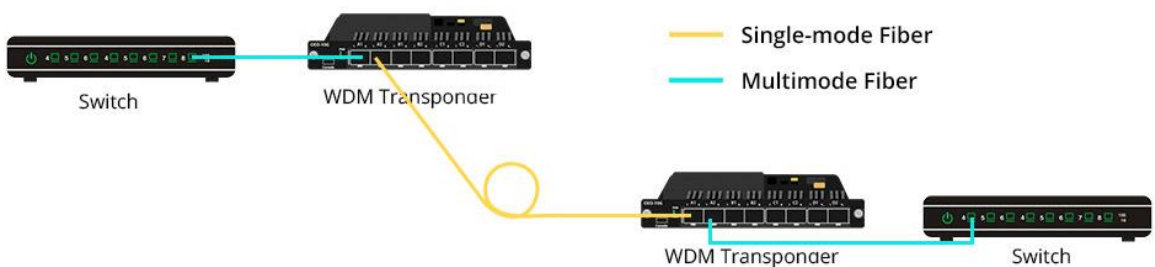
Note: On Ports A1&A2, the power values and receiving the status of the module, temperature, rate, and wavelength can be checked. But the error rate can not be checked.

## Applications

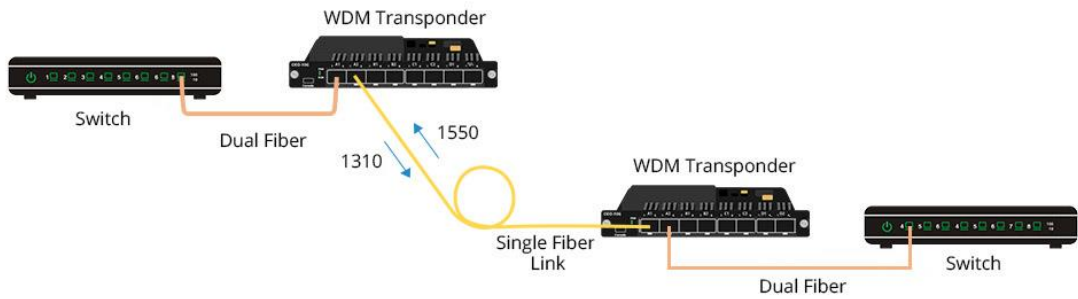
Optical transponder can be deployed in seamless integration of different fiber types by converting multimode fiber to single-mode fiber, dual fiber to single fiber.

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.

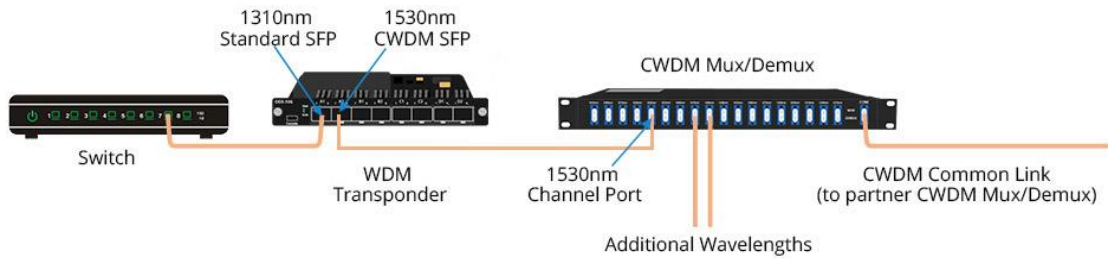
### 1. Multimode to Single-mode Conversion



2. Dual Fiber to Single Fiber Conversion



3. Wavelength Conversion



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

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	/	-7~3
	DWDM	10	/	-1~5

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	CWDM-SFP10G-10SP CWDM-SFP10G-10M	
		SFP-10GLRM-31	CWDM-SFP10G-20SP	DWDM-SFP10G-40
		SFP-10GLR-31	CWDM-SFP10G-20S CWDM-SFP10G-20L	DWDM-SFP10G-80
		SFP-10GER-31	CWDM-SFP10G-40S CWDM-SFP10G-40L	
			CWDM-SFP10G-80L	
Ethernet	25Gbps	SFP28-25GSR-85		
		SFP28-25GLR-31	CWDM-SFP25G-10SP	DWDM-SFP25G-10
		SFP28-25GER-31		
		SFP28-25GER40-31		
FC	8.5Gbps	SFP-10GSR-85	CWDM-SFP10G-10SP CWDM-SFP10G-10M	
		SFP-10GLR-31	CWDM-SFP10G-20SP	DWDM-SFP10G-40
		SFP-10GER-31	CWDM-SFP10G-20S CWDM-SFP10G-20L	DWDM-SFP10G-80
		SFP-10GZR-55	CWDM-SFP10G-40S CWDM-SFP10G-40L	
		SFP-10GER-55	CWDM-SFP10G-80L	
FC	16Gbps	SFP-16GSR-85		
		SFP-16GLR-31	CWDM-SFP25G-10SP	DWDM-SFP25G-10
		SFP-16GER-55		

Table 3 Product Specifications

Configuration	Parameter	Specification	
	Bit rate	8Gbps to 28.1Gbps	
	Signal mode	SM/MM	
	Interface type	SFP28/SFP+	
	Optical transceiver slot numbers	8	
	Service channel numbers	4	
	Performance	Dithering performance	Conform ITU-T G.825 (2000)
		Consumption	<20W
Consumption/channel		3R	
Regeneration		≤5W	
Transmission distance		Up to 80km	
Client protocols		Ethernet, FC	
Electrical		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	Operating temperature	0 ~ 50° C	
	Storage temperature	-10 ~ 70° C	

## Ordering Information

Mux Demux & OADM		
	<a href="#">FMU-D402160M3</a>	40 Channels 100GHz C21-C60, with 1310nm and Monitor Port, 3.5dB Typical IL, LC/UPC, Dual Fiber DWDM Mux Demux, 1U Rack Mount #35887
DWDM MUX DEMUX	<a href="#">M6200-D2160M</a>	40 Channels 100GHz C21-C60 Dual Fiber DWDM Mux and Demux with Monitor Port, Pluggable Module, LC/UPC, Integrated with M6200 Series Managed Chassis #120424
	<a href="#">FMU-D162136EM3</a>	16 Channels 100GHz C21-C36, with Monitor, Expansion and 1310nm Port, LC/UPC, Dual Fiber DWDM Mux Demux, 1U Rack Mount #72430
	<a href="#">FMU-MD085360EM3</a>	CWDM/DWDM Hybrid Solution, 8 Channels 100GHz C53-C60, with Monitor, Expansion and 1310nm Port, LC/UPC, Dual Fiber DWDM Mux Demux, FMU Plug-in Module #72433
CWDM MUX DEMUX	<a href="#">FMU-C182761M</a>	18 Channels 1270-1610nm, with Monitor Port, LC/UPC, Dual Fiber CWDM Mux Demux, 1U Rack Mount #33489
	<a href="#">FMU-MC084761EM</a>	8 Channels 1470-1610nm, with Monitor and Expansion Port, LC/UPC, Dual Fiber, Low Insertion Loss CWDM Mux Demux, FMU Plug-in Module #78163
LWDM MUX DEMUX	<a href="#">ABS-L042930A</a>	4 Channels 1295.56-1309.14nm, Single Fiber LAN-WDM Mux Demux, Side-A, ABS Pigtailed Module, LC/UPC #97782
	<a href="#">ABS-C062737A</a>	6 Channels 1271-1371nm, Single Fiber CWDM Mux Demux, Side-A, ABS Pigtailed Module, LC/UPC #97784
OADM	<a href="#">DOADM-DF</a>	Customized Dual Fiber & Single Fiber DWDM OADM #70427
	<a href="#">COADM-DF</a>	Customized Dual Fiber & Single Fiber CWDM OADM #70425
Chassis	<a href="#">FMU-1UFMX-N</a>	FMU 2-Slot 1U 19" Rack Chassis Unloaded, holds up to 2 Units FMU Plug-in Module #30408
	<a href="#">FUD-1UFMX-N</a>	FUD 4-Slot 1U 19" Rack Chassis Unloaded, holds up to 4 Units FUD Plug-in Module #106578
TRANSPONDERS & MUXPONDERS		
25G	<a href="#">FMT4DL-OEO25GSFP28</a>	4 Channels 25G WDM Transponder (Converter), 8 SFP28/SFP+ Slots#92056
10G	<a href="#">FMT4DL-OEO10GSFP</a>	4 Channels WDM Transponder (Converter), 8 SFP/SFP+ Slots#30515
Chassis	<a href="#">FMT04-CH1U</a>	1U Managed Chassis Unloaded Platform, Supports up to 4x EDFA/OEO/OLP Card with Accessories #39214
	<a href="#">FMT-CH</a>	Customized 1U/2U/4U Managed Chassis Unloaded, Supports up to 16x Multiplexer/EDFA/OEO/OLP Module with Accessories #70413



## OPEN LINE SYSTEM

Amplifiers	<a href="#">FMT26PA-EDFA</a>	26dB Gain DWDM EDFA Pre-Amplifier, 16dBm Output#36524
	<a href="#">FMT20PA-EDFA</a>	20dB Gain DWDM EDFA Pre-Amplifier, 13dBm Output#72284
	<a href="#">FMT17BA-EDFA</a>	17dBm Output DWDM EDFA Booster Amplifier, 17dB Gain #72283
	<a href="#">FMT-LA</a>	In-Line EDFA for DWDM Solution#35924
Dispersion Compensation	<a href="#">FMT40-DCM</a>	40KM DCF-based Passive Dispersion Compensation Module#65781
	<a href="#">FMT80-DCM</a>	80KM DCF-based Passive Dispersion Compensation Module#65779
	<a href="#">FS-TDCM</a>	C-band Tunable Dispersion Compensation Module (TDCM)#72427
Line Protection	<a href="#">FMT-OLP2</a>	1+1 Optical Line Protection Switch (OLP)#66010
	<a href="#">FMT-BDOLP</a>	FMT-BDOLP, Optical Line Protection Switch (OLP)#72700
	<a href="#">FMT-BDSplitter</a>	FMT-BDSplitter, Optical Splitter#73324
Red/Blue Filter	<a href="#">FMT-RB</a>	1x2 Single Fiber DWDM Splitter Red/Blue C Band Filter#65981
	<a href="#">FMT-OPD</a>	4 Channels 1550nm Optical Power Detection OPD (AIU)#78568
Fiber Monitoring	<a href="#">FMT-OPM</a>	Optical Performance Monitoring (OPM)#71586
	<a href="#">FMT-OSW</a>	1x16 Multi-Channel Opto-Mechanical Optical Switches with Adjustable Channels Control#73287
	<a href="#">FMT-OTDR</a>	Optical Time Domain Reflectometer (OTDR)#73281
	<a href="#">FMT-LSU</a>	LSU Light Source Unit, Pluggable Module for FMT Multi-Service Transport Platform#78469
VOA Units	<a href="#">FS-VOA-C</a>	Variable Optical Attenuator, 0~15dB, Pluggable Module, LC/UPC#65271
	<a href="#">AT-M-LCU</a>	Fixed Fiber Optic Attenuators #70009
Chassis	<a href="#">FMT04-CH1U</a>	1U Managed Chassis Unloaded Platform, Supports up to 4x EDFA/OEO/OLP Card with Accessories #39214
	<a href="#">FMT-CH</a>	Customized 1U/2U/4U Managed Chassis Unloaded, Supports up to 16x Multiplexer/EDFA/OEO/OLP Module with Accessories #70413

## WDM TRANSCEIVERS

	<a href="#">DWDM-SFP25G-10</a>	25G DWDM SFP28 100GHz 1563.86nm 10km DOM LC SMF Optical Transceiver Module #87000
25G SFP28	<a href="#">CWDM-SFP25G-40S</a>	25G 1270nm CWDM SFP28 40km DOM LC SMF Optical Transceiver Module #100112
	<a href="#">CWDM-SFP25G-10SP</a>	25G 1270nm CWDM SFP28 10km DOM LC SMF Optical Transceiver Module #76003
	<a href="#">LWDM-SFP25G-40</a>	25G LWDM SFP28 1286.66nm 40km DOM LC SMF Optical Transceiver Module #93786
16G/8G FC	<a href="#">DWDM-SFP16G-40</a>	Customized 16G DWDM SFP+ C20-C61 100GHz 40km DDM LC SMF Transceiver Module#73084
	<a href="#">DWDM-SFP16GH-40</a>	Customized 16G DWDM SFP+ 50GHz 40km DDM LC SMF Transceiver Module #73085
	<a href="#">CWDM-SFP16G-40</a>	Customized 16G Fiber Channel CWDM SFP+ 1470-1610nm 40km DDM LC SMF Transceiver Module #80765
10G SFP+	<a href="#">DWDM-SFP10G-80</a>	10G DWDM SFP+ 1559.79nm 80km DOM LC SMF Transceiver Module, Commercial Temperature#31237, Industrial Temperature#113562
	<a href="#">DWDM-SFP10G-40</a>	10G DWDM SFP+ 1560.61nm 40km DOM LC SMF Transceiver Module, Commercial Temperature#38731, Industrial Temperature#113511
	<a href="#">DWDM-SFP10G-C</a>	10G DWDM C-band Tunable SFP+ 50GHz 80km DOM LC SMF Transceiver Module #69267
	<a href="#">CWDM-SFP10G-80L</a>	10G CWDM SFP+ 1470nm 80km DOM LC SMF Transceiver Module #19367
	<a href="#">CWDM-SFP10G-40S</a>	10G CWDM SFP+ 1270nm 40km DOM LC SMF Transceiver Module, Commercial Temperature#22168, Industrial Temperature#112392
1G SFP	<a href="#">DWDM-SFP1G-EZX</a>	1000BASE-DWDM SFP 100GHz 1563.86nm 100km DOM LC SMF Transceiver Module #54150
	<a href="#">DWDM-SFP1G-ZX</a>	1000BASE-DWDM SFP 1563.86nm 80km DOM LC SMF Transceiver Module #47697
	<a href="#">CWDM-SFP1G-EZX</a>	1000BASE-CWDM SFP 1270nm 120km DOM LC SMF Transceiver Module #102776
	<a href="#">CWDM-SFP1G-ZX</a>	1000BASE-CWDM SFP 1270nm 80km DOM LC SMF Transceiver Module #33234



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