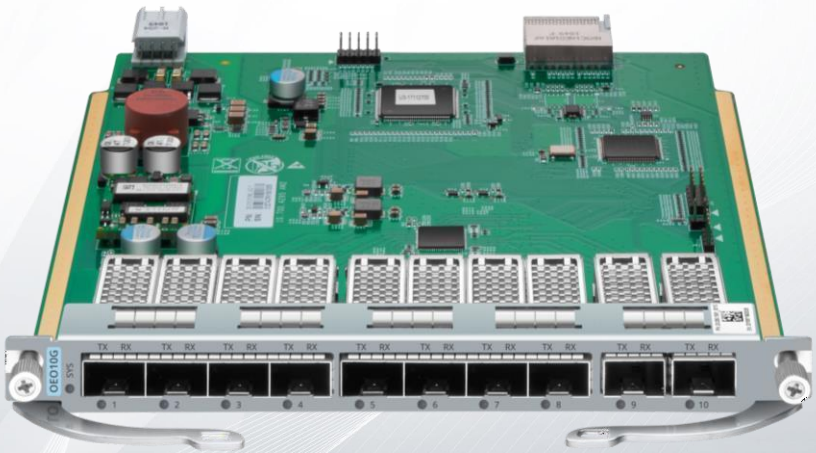
5 Channels Multi-Rate WDM Converter (Transponder)

Up to 11.1G Rate, 10 SFP/SFP+ Slots, Pluggable Module



Description

M6200 series transport module is part of the M6200 series management platform and is used as STM-64/10GbE/10G FC signal regenerators or as metro, regional, or long haul DWDM transponders.

It offers five independent transponders operating from 100M to 11.1G line rates. With transparent bi-directional forwarding capability between the 2 fiber media, the WDM transponder is widely used in metro, regional and long haul WDM optical networks.

Highlight

- Low latency:≤1.8μs
- 10 ports can be arbitrarily crossed
- Support C/DWDM wavelengths
- Support 850nm/1310nm/1550nm optical signal wavelength forwarding
- Support automatic laser shutdown (ALS) function
- Support forward, loopback, 1+1 protection, broadcast mode, etc.
- Support 10G WAN/LAN, STM-16/64, OTU2/2e, 1/2/4/8G FC protocol transparent
- Highly integrated with M6200 series management platform

Application

- DWDM long haul networks
- Managed business services

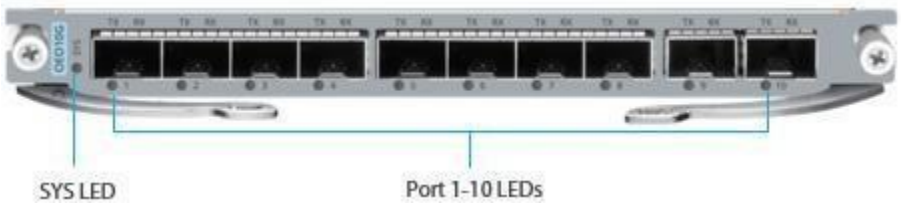
Table 1 Product Specifications

Physical Specification	Description
Transmission Speed	100M to 11.1G
Interface Type	SFP/SFP+
Transceiver Slot Number	10
Service Channel Number	5
Client Protocols	SONET/SDH, Ethernet, FC, STM, OTU
Management Type	WEB, SNMP v2
Power Consumption	<15W
Latency	1.8μs
Operating Temperature	0 to 50℃
Storage Temperature	-10 to 70℃
Housing	Pluggable module (Occupies 1 slot in M6200 series managed chassis)
Matching Chassis Dimensions (HxWxD):	3.46"x17.48"x12.80" (88x444x325mm)

Table 2 Signal Protocol

Service	Type	Rate
STM-1	SDH Service	155.52Mbit/s
STM-4	SDH Service	622.08Mbit/s
STM-16	SDH Service	2.488Gbit/s
STM-64	SDH Service	9.95Gbit/s
ESCON	SAN Service	200Mbit/s
FC100	SAN Service	1.06Gbit/s
FC200	SAN Service	2.12Gbit/s
DVB-ASI, SDI	Digital TV Service	270Mbit/s
HD-SDI	HDTV Service	1.485Gbit/s
GE	Ethernet Service	1.25Gbit/s
FE	Ethernet Service	125Mbit/s
CPRI Option 1	Ethernet Service	0.6144Gbit/s
CPRI Option 2	Ethernet Service	1.2288Gbit/s
CPRI Option 3	Ethernet Service	2.4576Gbit/s
10GE LAN	Ethernet Service	10.31Gbit/s
10GE WAN	Ethernet Service	9.95Gbit/s
OTU2	OTN Service	10.71Gbit/s
OTU2v	OTN Service	11.1Gbit/s

Table 3 Indicator Specifications



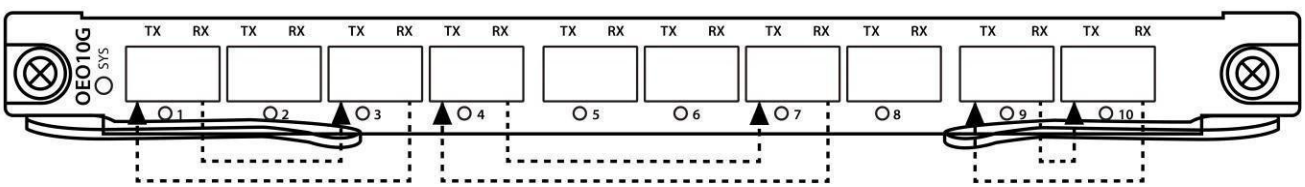
LED	States	Description
SYS	Slow Flash of Green Light	There is no alarm of the module
	Quick Flash of Red Light	The module type does not match
	Slow Flash of Red Light	There is alarm of the module
	Red	The module is enabling
Port 1-10	Always Green	There is no LOS alarm of the module
	Always Red	There is LOS alarm of the module
	Always Off	The port is disabled

Flexible and Versatile Transponder

The OEO working mode is divided into freedom mode, forward mode, loopback mode, 1+1 protection mode and broadcast mode according to the application scenario.

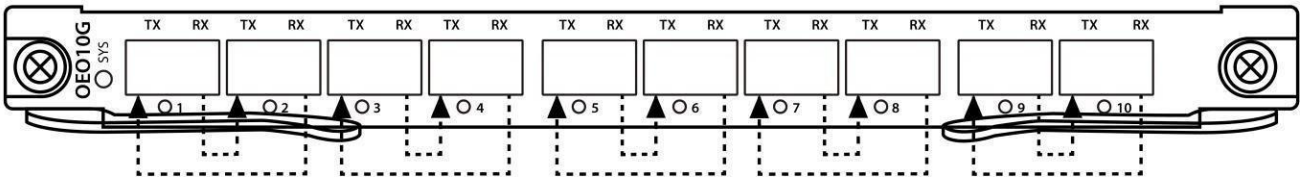
① **Freedom mode** is used for choosing the source of the port arbitrarily. For example, RX input from one port, TX output from any port can be set.

Port correspondence: 10 ports can be arbitrarily crossed.



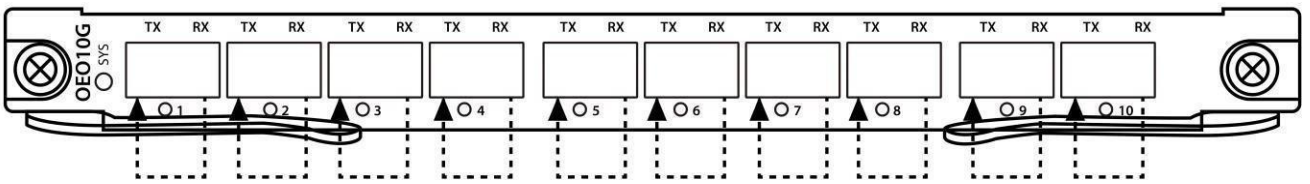
Freedom Mode

② **Forward mode** is used for conversion of fiber mode and wavelength and regeneration of optical signal.
Port correspondence: port1-port2, port3-port4, port5-port6, port7-port8, port9-port10



Forward Mode

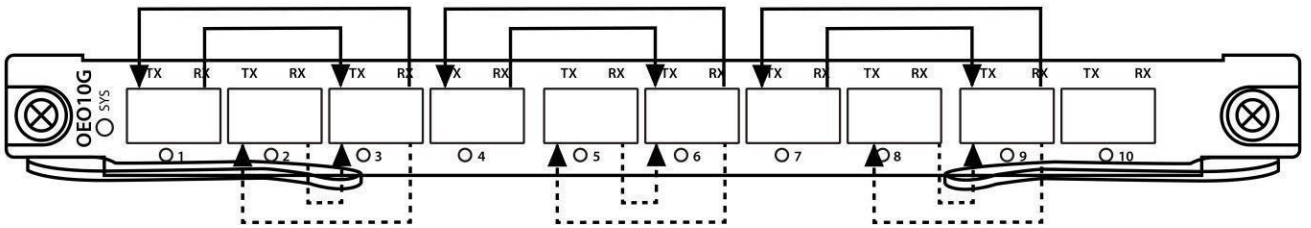
③ **Loopback mode** is used for detection and troubleshooting, and the data signal entering R of port 1 is retransmitted out T of port 1.



Loopback Mode

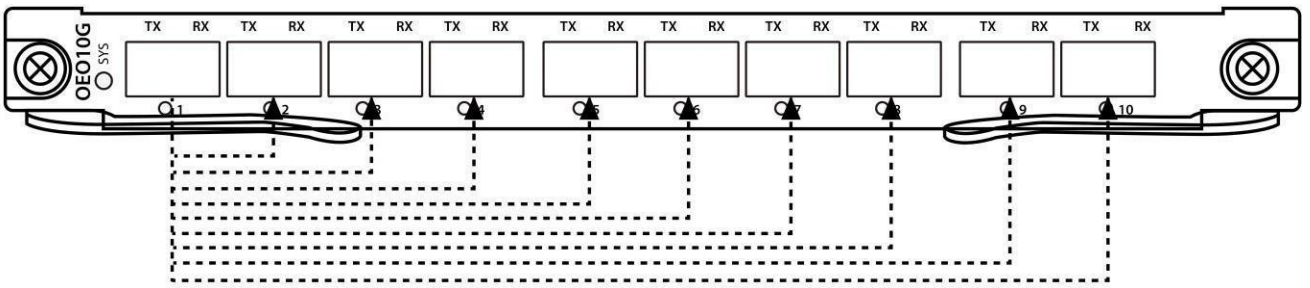
Note: The power values and receiving the status of the module, temperature, rate, and wavelength can be checked, but the error rate can not be checked.

④ **1+1 protection mode** is used for data backup. It takes place at the electrical layer and is completed by the transmission of port crossover, and the switching time is less than 50ms.
Port correspondence: port3-port1/2, port6-port4/5, port9-port7/8



1+1 Protection Mode

⑤ **Broadcast mode** is used for forwarding data frames of the same type and format to continuously broadcast to other ports.



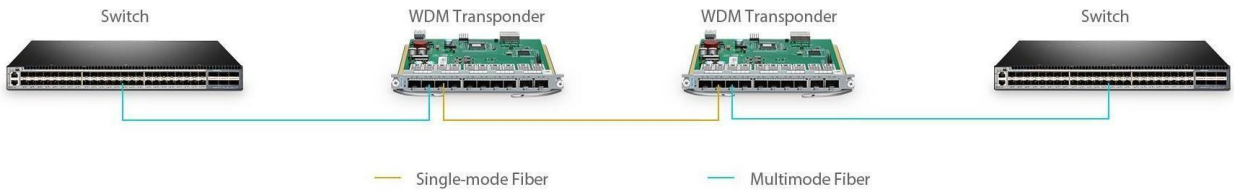
Broadcast Mode

Applications

The optical transponder can be deployed in seamless integration of different fiber types by converting incoming optical signal into WDM wavelength, 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 into the strong optical signal for continuous transmission.

1. Wavelength Conversion

2. Multimode to Single-mode Conversion

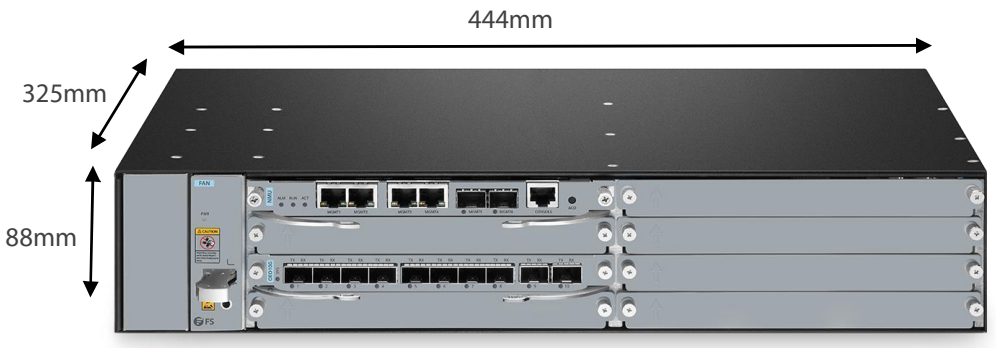


3. Dual Fiber to Single Fiber Conversion

Matching Chassis

M6200 series WDM transponder pluggable module occupies one slot in M6200 series managed chassis.

- Width: 444mm(17.48")
- Height: 88mm (3.46")
- Depth: 325mm (12.80")



Ordering Information

Mux Demux & OADM		
DWDM MUX DEMUX	FMU-D402160M3	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
	M6200-D2160M	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
	FMU-D162136EM3	16 Channels 100GHz C21-C36, with Monitor, Expansion and 1310nm Port, LC/UPC, Dual Fiber DWDM Mux Demux, 1U Rack Mount #72430
	FMU-MD085360EM3	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	FMU-C182761M	18 Channels 1270-1610nm, with Monitor Port, LC/UPC, Dual Fiber CWDM Mux Demux, 1U Rack Mount #33489
	FMU-MC084761EM	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	ABS-L042930A	4 Channels 1295.56-1309.14nm, Single Fiber LAN-WDM Mux Demux, Side-A, ABS Pigtailed Module, LC/UPC #97782
	ABS-C062737A	6 Channels 1271-1371nm, Single Fiber CWDM Mux Demux, Side-A, ABS Pigtailed Module, LC/UPC #97784
OADM	DOADM-DF	Customized Dual Fiber & Single Fiber DWDM OADM #70427
	COADM-DF	Customized Dual Fiber & Single Fiber CWDM OADM #70425
Chassis	FMU-1UFMX-N	FMU 2-slot 1U 19" Rack Chassis Unloaded, holds up to 2 Units FMU Plug-in Module#30408
	FUD-1UFMX-N	FUD 4-slot 1U 19" Rack Chassis Unloaded, holds up to 4 Units FMU Plug-in Module #106578

TRANSPONDERS & MUXPONDERS		
8x 200G	M6800-TSP16	16x 100G QSFP28 to 8x 200G CFP2 OTN Managed Transport Platform#111053
100G/200G	M6500-TMXP5	2x 100G QSFP28/4x 40G QSFP+ to 1x 200G CFP2 Transponder/Muxponder#111049
10G	M6200-OEO10G	5 Channels WDM Transponder (Converter), 10 SFP/SFP+ Slots#107365
Chassis	M6500-CH2U	2U Managed Chassis Unloaded Platform, Supports 2x 200G Transponder/Muxponder #96454
	M6500-CH5U	5U Managed Chassis Unloaded Platform, Supports 6x 200G Transponder/Muxponder #111050
	M6200-CH2U	2U Managed Chassis Unloaded Platform, Supports 7x Mux/DEMUX/EDFA/OEO/OLP/DCM Cards #107371
	M6200-CH5U	5U Managed Chassis Unloaded Platform, Supports 15x MUX/DEMUX/EDFA/OEO/OLP/DCM Cards #111052

OPEN LINE SYSTEM		
Amplifiers	M6200-25PA	25dB Gain DWDM EDFA Pre-Amplifier, 16dBm Output#107367
	M6200-20BA	20dBm Output DWDM EDFA Booster Amplifer, 16dB Gain#107366
Dispersion Compensation	M6200-DCM40	40KM DCF-based Passive Dispersion Compensation Module#118368
	M6200-DCM80	80KM DCF-based Passive Dispersion Compensation Module#119071
Line Protection	M6200-OLP2	1+1 Optical Line Protection Switch (OLP)#107368
Red/Blue Filter	M6200-RB	1x2 Single Fiber DWDM Red/Blue Filter#107369
VOA Units	M6200-SFPVOA	SFP Variable Optical Attenuator Module#107373
	AT-M-LCU	Fixed Fiber Optic Attenuators #70009
Chassis	M6200-CH2U	2U Managed Chassis Unloaded Platform, Supports 7x Mux/DEMUX/EDFA/OEO/OLP/DCM Cards #107371
	M6200-CH5U	5U Managed Chassis Unloaded Platform, Supports 15x MUX/DEMUX/EDFA/OEO/OLP/DCM Cards #111052

WDM TRANSCEIVERS		
100G/200G CFP2	M-CFP2-DCO	C14 1566.31nm 100G/200G Tunable CFP2-DCO Coherent Transceiver, up to 1000km#120128
25G SFP28	DWDM-SFP25G-10	25G DWDM SFP28 100GHz 1563.86nm 10km DOM LC SMF Optical Transceiver Module#87000
	CWDM-SFP25G-40S	25G 1270nm CWDM SFP28 40km DOM LC SMF Optical Transceiver Module #100112
	CWDM-SFP25G-10SP	25G 1270nm CWDM SFP28 10km DOM LC SMF Optical Transceiver Module #76003
	LWDM-SFP25G-40	25G LWDM SFP28 1286.66nm 40km DOM LC SMF Optical Transceiver Module#93786
16G/8G FC	DWDM-SFP16G-40	Customized 16G DWDM SFP+ C20-C61 100GHz 40km DDM LC SMF TransceiverModule#73084
	DWDM-SFP16GH-40	Customized 16G DWDM SFP+ 50GHz 40km DDM LC SMF Transceiver Module #73085
	CWDM-SFP16G-40	Customized 16G Fiber Channel CWDM SFP+ 1470-1610nm 40km DDM LC SMF Transceiver Module #80765
10G SFP+	DWDM-SFP10G-80	10G DWDM SFP+ 1559.79nm 80km DOM LC SMF Transceiver Module, Commercial Temperature#31237, Industrial Temperature#113562
	DWDM-SFP10G-40	10G DWDM SFP+ 1560.61nm 40km DOM LC SMF Transceiver Module, Commercial Temperature#38731, Industrial Temperature#113511
	DWDM-SFP10G-C	10G DWDM C-band Tunable SFP+ 50GHz 80km DOM LC SMF Transceiver Module #69267
	CWDM-SFP10G-80L	10G CWDM SFP+ 1470nm 80km DOM LC SMF Transceiver Module #19367
	CWDM-SFP10G-40S	10G CWDM SFP+ 1270nm 40km DOM LC SMF Transceiver Module, Commercial Temperature#22168, Industrial Temperature#112392
1G SFP	DWDM-SFP1G-EZX	1000BASE-DWDM SFP 100GHz 1563.86nm 100km DOM LC SMF Transceiver Module#54150
	DWDM-SFP1G-ZX	1000BASE-DWDM SFP 1563.86nm 80km DOM LC SMF Transceiver Module #47697
	CWDM-SFP1G-EZX	1000BASE-CWDM SFP 1270nm 120km DOM LC SMF Transceiver Module #102776
	CWDM-SFP1G-ZX	1000BASE-CWDM SFP 1270nm 80km DOM LC SMF Transceiver Module #33234

*Standard products are listed above. Customized specifications are available upon request.

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