FS

8ch C53-C60 DWDM Mux Demux + Monitor, 1310nm and Expansion Port

FMU Plug-in Module, LC/UPC
Data Center & Cloud Computing Infrastructure Solutions

Overview

The DWDM passive Mux Demux modules deliver the benefits of a Dense Wave Division Multiplexer in a fully passive solution. They are designed for long-haul transmission where wavelengths are packed tightly together over the C-band range of wavelengths, up to 48 wavelengths in 100GHz grid(0.8nm) and 96 wavelengths in 50GHz grid(0.4nm). ITU G.694.1 standard and Telcordia GR1221, GR1209, CE, RoHS, FCC are compliant.

Our DWDM Mux Demux are modular, scalable and are perfectly suited to transport PDH, SDH / SONET, ETHERNET services over WWDM, CWDM and DWDM in optical metro edge and access networks.
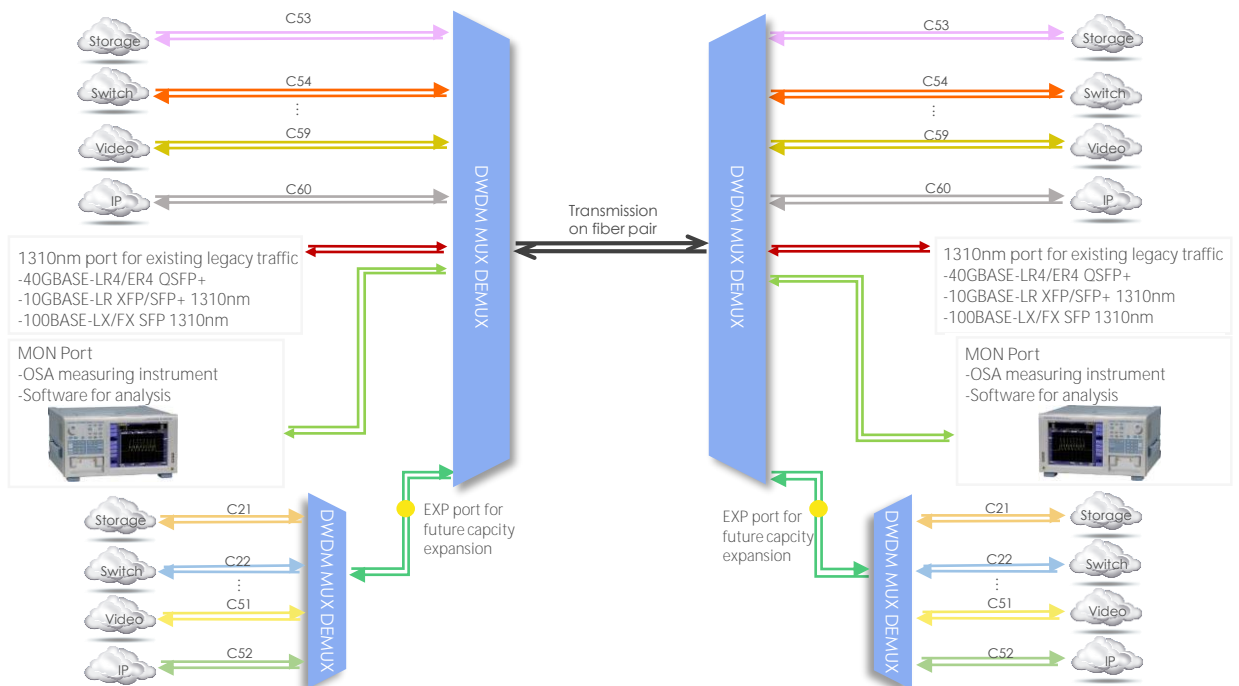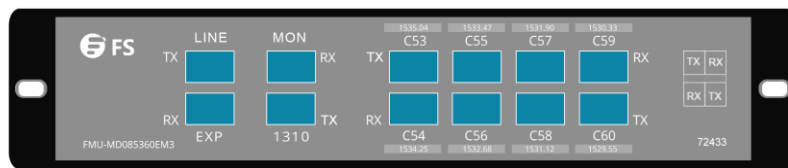
Highlights

- Multiplexing of 8 channels on fiber pair

- Low insertion loss

- Low-profile modular design, fits in FMU 2-slot 1U chassis

- LC/UPC connectors

- 1% monitor port for Tx and Rx, ensures easy troubleshooting without downtime

- 1310nm port allows the overlaid on an existing legacy 1310nm network such as 1000Base SFP LX, 10G SFP+ LR, 40G QSFP+ LR4 and 100G CFP LR4

- Expansion port for future capacity expansion

- Compliant to ITU G.694.1, 100GHz ITU gird, 0.8 nm spacing

- High quality thin film filter technology

- Passive, no electricity needed (MTBF ca. 500 years)

General Specification

Front View	Function

72433

Technical Data

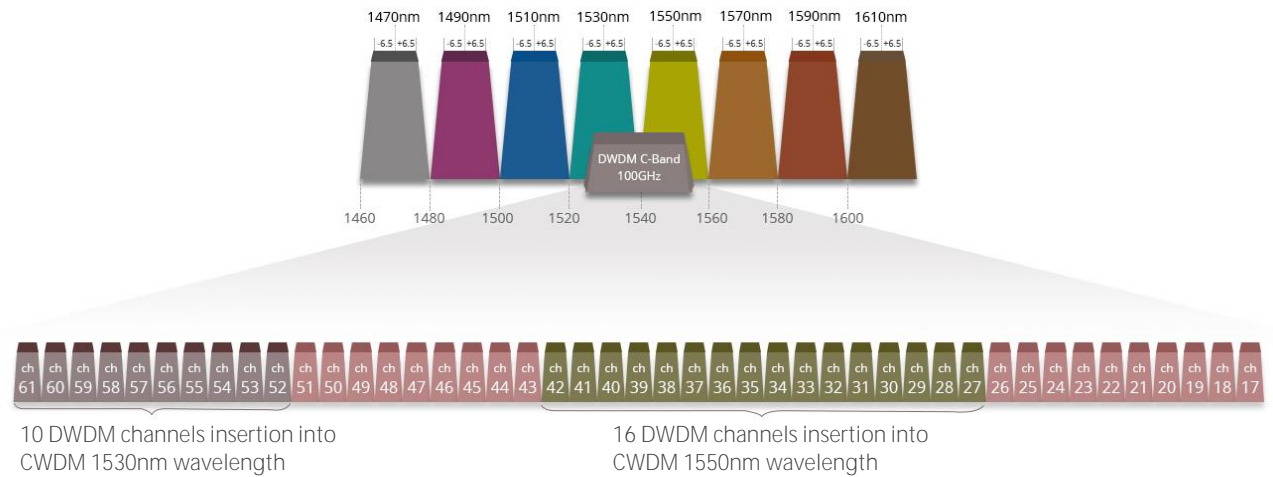| Parameter	Value
ITU Channel	8 channels C53-C60 (DWDM ports)
Operating Wavelength	1529.55-1535.04nm
Channel Spacing	100GHz (0.8nm)
Channel Passband	±0.11nm
Center Wavelength Accuracy	±0.05nm
Insertion Loss	≤ 3.3dB
Insertion Loss (1% Mon)	≤ 25.2dB
Insertion Loss (1310 port)	≤ 1.3dB
Insertion Loss (Exp port)	≤ 3.3dB
Adjacent Channel Isolation	≥ 30dB
Non-adjacent Channel Isolation	≥ 40dB
Filter Technology	TFF (Thin Film Filter)
Passband Ripple	≤ 0.5dB
Return Loss	≥ 45dB
Directivity	≥ 45dB
Polarization Dependent Loss	≤ 0.3dB
Polarization Mode Dispersion	≤ 0.1ps
Power Handling	≤ 500mW
Operating Temperature	-40°C~ +85°C
Storage Temperature	-40°C~ +85°C

Notes:

1. Specified with connectors and adapters.
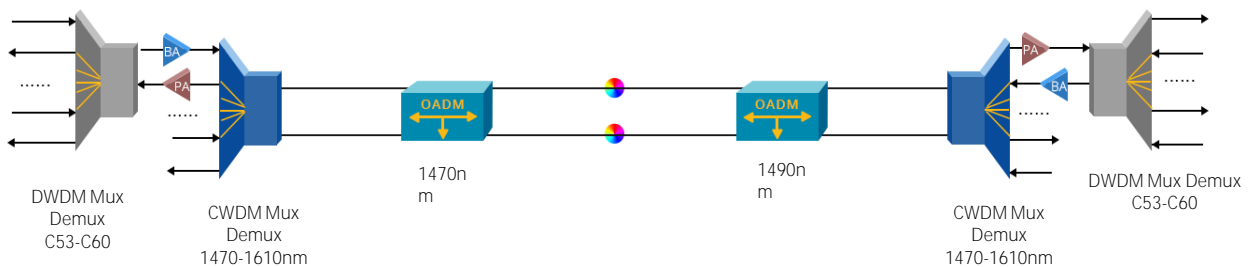
Hybrid CWDM/DWDM System

DWDM wavelengths are within the wavelength range of CWDM, which have much smaller channel spacing, so CWDM wavelengths near DWDM can be used to transmit the DWDM wavelengths. A hybrid C/DWDM system is built to expand the existing CWDM system, keeping initial startup costs low.

CWDM Channels (Bandwidth)	DWDM Channels (Center Wavelength)
1530nm (±6.5nm)	C52-C61 (1528.77 - 1535.82nm)
1550nm (±6.5nm)	C27-C42 (1543.73 - 1555.75nm)

10 DWDM channels insertion into CWDM 1530nm wavelength

16 DWDM channels insertion into CWDM 1550nm wavelength

Solution Design

To meet customers' applications, connect 8ch C53-C60 DWDM Mux Demux to 1530nm channel of 8ch CWDM Mux Demux to achieve the hybrid. Boost amplifier is deployed to amplify the output of single channel, which optimize the residual and signal quality of the link.

High Quality DWDM Transceivers to Build a Passive DWDM System

FS.COM offers DWDM transceiver modules in SFP, SFP+ and XFP formats. Every optics is tested in real switches and full compatible with Cisco, Juniper, Arista, Brocade, Dell, Extreme, etc.

Transmission distances range from 20-120km for Gigabit speeds, and 40-120km for 10 Gigabit speeds, without the use of optical amplifiers.

DWDM-SFP10G-80   DWDM-XFP10G-80   DWDM-Tunable-XFP   DWDM-Tunable-SFP+   DWDM-SFP1G-ZX
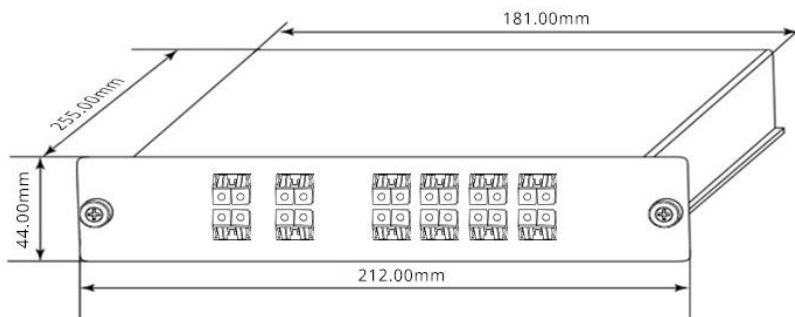
ITU Channel Guiding

ITU Channel (xx or yy)	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Wavelength (nm)	1560.61	1559.79	1558.98	1558.17	1557.36	1556.55	1555.75	1554.94	1554.13	1553.33	1552.52	1551.72	1550.92	1550.12	1549.32	1548.51	1547.72	1546.92	1546.12	1545.32

ITU Channel (xx or yy)	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Wavelength (nm)	1544.53	1543.73	1542.94	1542.14	1541.35	1540.56	1539.77	1538.98	1538.19	1537.40	1536.61	1535.82	1535.04	1534.25	1533.47	1532.68	1531.90	1531.12	1530.33	1529.55

Layout and Dimensions

- Width: 212.00mm (8.35")   - The color of the module is black
- Height: 44.00mm (1.73")   - All fonts and lables are printed in black
- Depth: 255.00mm (10.04")

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 FUD 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#107370
	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
	DWDM-SFP16G-40	Customized 16G DWDM SFP+ C20-C61 100GHz 40km DDM LC SMF Transceiver Module#73084
16G/8G FC	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

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