Dual & Single Fiber DWDM MUX DEMUX

Data Center & Cloud Computing Infrastructure Solutions

Overview

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

Highlights

- Support up to 96 channels
- Based on thin-film filter and technology
- Low insertion loss for C-band channels
- Passive, no electric power required. (MTBF ca. 500 years)
- Various connectors are available - LC/SC/FC/ST, UPC/APC polish
- Compliant to ITU-T G.694.2 standard
- Optional monitor/1310nm/expansion port for external functions

Technical Data

Parameter	Dual Fiber						
Number of Channels	4ch	8ch	16ch	32ch	40ch	44ch	48ch
ITU channel	C15-C60						
Operating Wavelength	1520-1570nm						
Channel Spacing	100GHz (0.8nm)						
Channel Passband	±0.11nm						
Center Wavelength Accuracy	--			±0.05nm			
-1dB Channel Bandwidth	--			≥ 0.24nm			
-3dB Channel Bandwidth	--			≥ 0.43nm			
Insertion Loss (Passband)	≤ 2.4dB	≤ 3.0dB	≤ 4.6dB	≤ 4.3dB			
Insertion Loss (+ 1% Mon)	≤ +0.3dB						
Insertion Loss (+1310nm port)	≤ +0.3dB						
Adjacent Channel Isolation	≥ 30dB			≥ 25dB			
Non-adjacent Channel Isolation	≥ 40dB			≥ 29dB			
Technology	TFF			AAWG (Gaussian)			
Insertion Loss Uniformity	--			≤ 1.5dB			
Return Loss	≥ 45dB			≥ 40dB			
Directivity	≥ 45dB			≥ 440dB			
Polarization Dependent Loss	≤ 0.3dB			≤ 0.3dB			
Polarization Mode Dispersion	≤ 0.1ps			≤ 0.1ps			
Power Handling	≤ 500mW			≤ 300mW			
Operating Temperature	-40 ~ 85° C			-5 ~ 65° C			
Storage Temperature	-40 ~ 85° C			-40 ~ 85° C			
Fiber Type	G657 A1						

Parameter	Dual Fiber			
Number of Channels	64ch	80ch	88ch	96ch
ITU channel	C15-C60			
Operating Wavelength	1520-1570nm			
Channel Spacing	50GHz (0.4nm)			
Channel Passband	±0.05nm			
Center Wavelength Accuracy	±0.05nm			
-1dB Channel Bandwidth	≥ 0.22nm			
-3dB Channel Bandwidth	≥ 0.27nm			
Insertion Loss (Passband)	≤ 7.0dB			
Insertion Loss (+ 1% Mon)	≤ +0.3dB			
Insertion Loss (+1310nm port)	≤ +0.3dB			
Adjacent Channel Isolation	≥ 22dB			
Non-adjacent Channel Isolation	≥ 28dB			
Technology	AAWG (Gaussian)			
Insertion Loss Uniformity	≤ 1.5dB			
Return Loss	≥ 40dB			
Directivity	≥ 40dB			
Polarization Dependent Loss	≤ 0.3dB			
Polarization Mode Dispersion	≤ 0.1ps			
Power Handling	≤ 300mW			
Operating Temperature	-5 ~ 65° C			
Storage Temperature	-40 ~ 85° C			
Fiber Type	G657 A1			

Notes:

1. Specified without connectors. Add an additional 0.2dB loss per connector.

2. If any Mon/1310nm is added, passband insertion loss will increase about 0.3dB, but Exp port is added, passband insertion loss will not change.

Parameter	Single Fiber			
Number of Channels	4ch	8ch	16ch	20ch
ITU channel	C15-C60			
Operating Wavelength	1520-1570nm			
Channel Spacing	100GHz (0.8nm)			
Channel Passband	±0.11nm			
Center Wavelength Accuracy	--		±0.05nm	
-1dB Channel Bandwidth	--		≥ 0.24nm	
-3dB Channel Bandwidth	--		≥ 0.43nm	
Insertion Loss (Passband)	≤ 3.0dB	≤ 4.6dB	≤ 4.8dB	
Insertion Loss (+ 1% Mon)	≤ +0.3dB			
Insertion Loss (+1310nm port)	≤ +0.3dB			
Adjacent Channel Isolation	≥ 30dB		≥ 25dB	
Non-adjacent Channel Isolation	≥ 40dB		≥ 29dB	
Technology	TFF		AAWG (Gaussian)	
Insertion Loss Uniformity	--		≤ 1.5dB	
Return Loss	≥ 45dB		≥ 40dB	
Directivity	≥ 45dB		≥ 40dB	
Polarization Dependent Loss	≤ 0.3dB		≤ 0.3dB	
Polarization Mode Dispersion	≤ 0.1ps		≤ 0.1ps	
Power Handling	≤ 500mW		≤ 300mW	
Operating Temperature	-40 ~ 85° C		-5 ~ 65° C	
Storage Temperature	-40 ~ 85° C		-40 ~ 85° C	
Fiber Type	G657 A1			

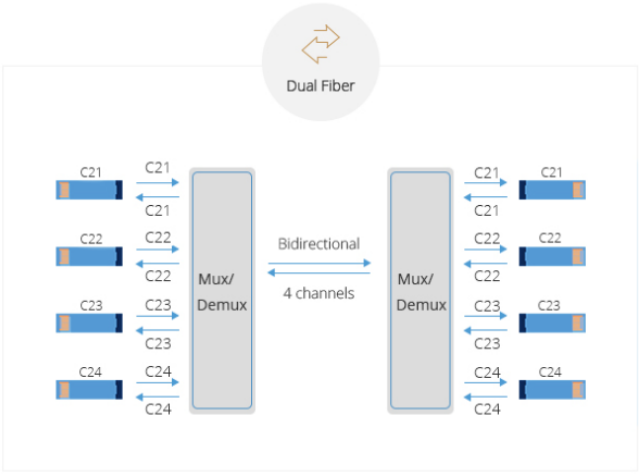
Notes:

1. Specified without connectors. Add an additional 0.2dB loss per connector.

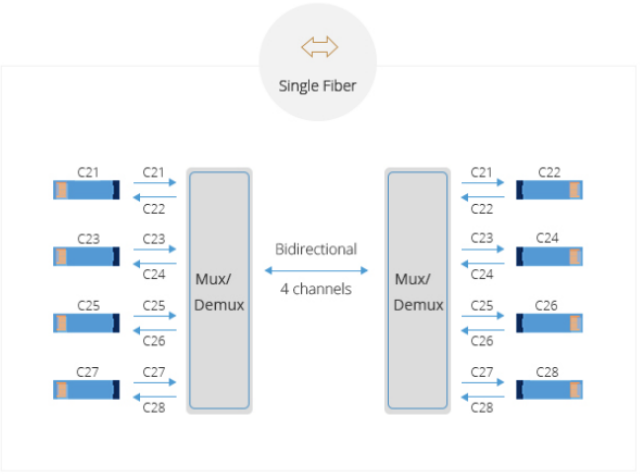
2. If any Mon/1310nm is added, passband insertion loss will increase about 0.3dB, but Exp port is added, passband insertion loss will not change.

Line Type

Dual/Single fiber bi-directional transmission



The DWDM transceivers connected to DWDM Mux/Demux should have the same wavelength as the client port.



The DWDM transceivers should have the same wavelength as the transmit wavelength of the client port.

Special Service

1. Monitor Port

Monitor port is used to monitor or test the power signal, usually at a 1% ratio, 2%, 3%, 5%, etc, also available. By connecting with measurement or monitoring equipment, such as power meters, spectrum analyzer, or FMT AIU/OPD card, the signal can be inspected without interrupting the existing network.

2. Expansion Port

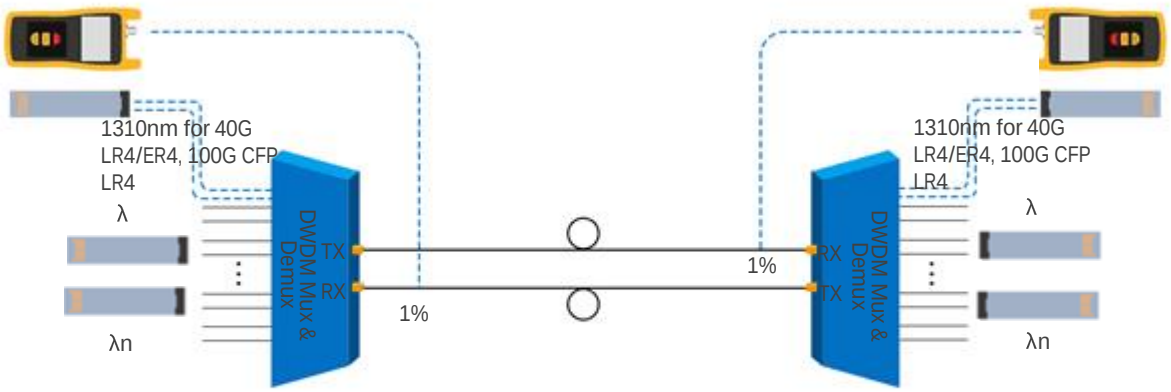
Expansion port makes it possible to increase the network capacity by connecting it to the line port of another DWDM MUX/DEMUX supporting different wavelengths, without the need of installing or leasing additional fibers.

3. 1310nm Ports

These two extra ports allow existing legacy 1310nm traffic to be added such as conventional SFP, SFP+ or other data rate conventional transceiver. And with the 1550nm port, it can be also used to cascade with another DWDM Mux for expansion.

Note:

If 1310nm port is added, the following CWDM wavelengths can't be added: 1270nm, 1290nm, 1310nm, 1330nm, 1350nm and 1370nm; DWDM Mux Demux can't add 1550nm port due to DWDM wavelength range near 1550nm wavelength.



Housing & Enclosure

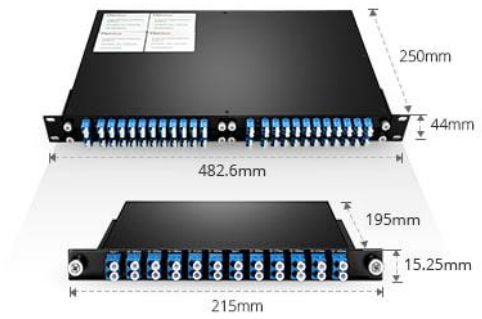
FS.COM provides 4 different package options for DWDM Mux Demux, including FMU&FUD plug-in module, ABS pigtailed module and 1U 19" rack mount, as well as the matched chassis.

DWDM MUX DEMUX Optional Housing

FMU 2-slot 1U Rack

FMU Plug-in module

FUD 4-slot 1U Rack



FUD Plug-in module

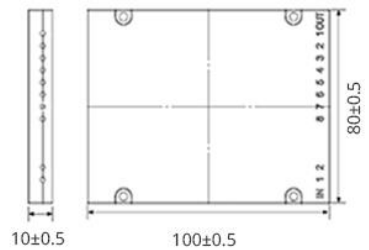
1U 19" Rack Mount

ABS Pigtailed module

0.9mm/2.0mm/3.0mm cable diameter can be customized.

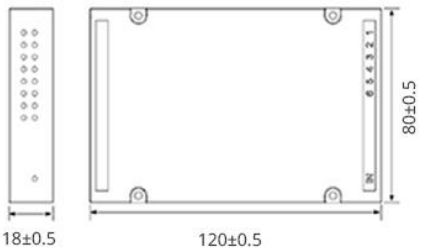
Structure and Dimension of ABS Pigtailed Module

The ABS pigtailed module of DWDM Mux Demux has 3 kinds of dimension.



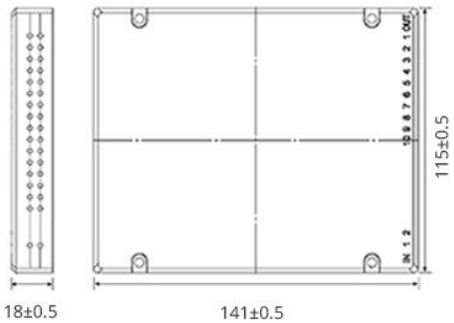
Dimension: 10mm(H)*100mm(W)*80mm(D)

Channel Number: ≤4ch



Dimension: 18mm(H)*120mm(W)*80mm(D)

Channel Number: 4~16ch



Dimension: 18mm(H)*141mm(W)*115mm(D)

Channel Number: ≥16ch

DWDM Mux Demux Series

Application	ID#	Description
		40/16/8 CHANNELS DUAL FIBER
40 channels	#33485	40ch. DWDM Mux Demux, 100GHz, C21-C60, with monitor port, 3.0dB typical IL, 4.5dB max IL, duplex LC/UPC
40 channels	#35887	40ch. DWDM Mux Demux, 100GHz, C21-C60, with monitor port and 1310nm port, 3.5dB typical IL, 5.0dB max IL, duplex LC/UPC
40 channels	#79580	Flat-top 40ch. DWDM Mux Demux, 100GHz, C21-C60, duplex LC/UPC
16 channels	#72430	16ch. DWDM Mux Demux, 100GHz, C21-C36, with monitor port, expansion port and 1310nm port, IL ≤ 5.2dB, duplex LC/UPC
16 channels	#26569	16ch. DWDM Mux Demux, 100GHz, C27-C42, IL ≤ 4.6dB, duplex LC/UPC
16 channels	#57884	16ch. DWDM Mux Demux, 100GHz, C43-C58, with expansion port, IL ≤ 4.6dB, duplex LC/UPC
8 channels	#30568	8ch. DWDM Mux Demux, 100GHz, C53-C60, with expansion port, IL ≤ 3.2dB, duplex LC/UPC
8 channels	#72433	8ch. DWDM Mux Demux, 100GHz, C53-C60, with Monitor Port, Expansion Port and 1310nm Port, IL ≤ 3.7dB, duplex LC/UPC
		16/8 CHANNELS SINGLE FIBER
16 channels	#78535	16ch. DWDM Mux Demux, 100GHz, C21-C36 for transceiver wavelengths, IL ≤ 4.3dB, LC/UPC
16 channels	#78536	16ch. DWDM Mux Demux, 100GHz, C45-C60 for transceiver wavelengths, IL ≤ 4.3dB, LC/UPC
8 channels	#50116	8ch. DWDM Mux Demux, 100GHz, C22-C36 for transceiver wavelengths, with expansion port, IL ≤ 4.6dB, LC/UPC
8 channels	#50117	8ch. DWDM Mux Demux, 100GHz, C21-C35 for transceiver wavelengths, with expansion port, IL ≤ 4.6dB, LC/UPC

Customized DWDM Mux Demux

Dual Fiber	#70411	Customized Dual Fiber DWDM Mux Demux
Single Fiber	#70412	Customized Single Fiber DWDM Mux Demux, Side-A
Single Fiber	#70852	Customized Single Fiber DWDM Mux Demux, Side-B

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

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