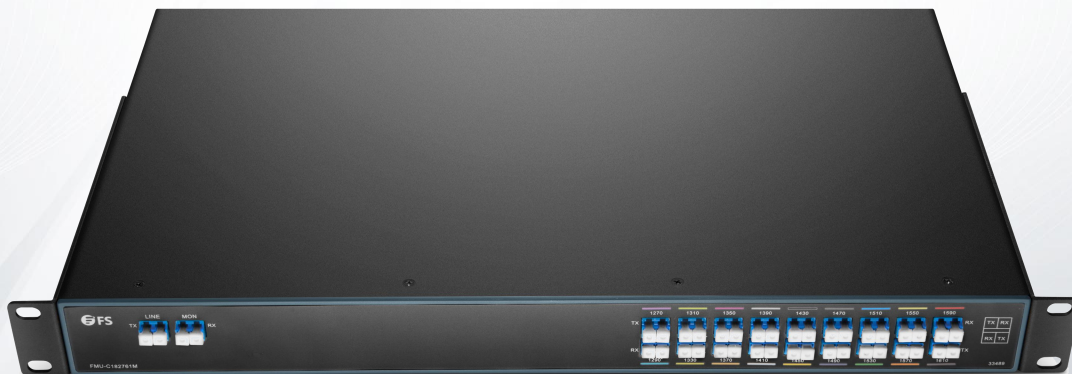FS

Dual & Single Fiber CWDM MUX DEMUX

Data Center & Cloud Computing Infrastructure Solutions

Overview

FMU series CWDM Mux Demux covers up to 18 CWDM channels from 1270nm to 1610nm in 20nm increments as defined by ITU-T G.694.2. It's protocol and rate transparent supporting such applications as 1G/10G Ethernet, SDH/SONET and 8/4/2/1G Fiber Channel across the same fiber link.

CWDM technology provides the flexibility to increase capacity of existing fiber infrastructure by enabling multiple channels/wavelengths over the same fiber cabling. Each channel carries data independently from each other, allowing network designers to transport different data rates.

Highlights

- Industrial temperature: -40~+85℃
- Based on thin-film filter technology
- Color coding for accurate installation
- 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/1550nm/expansion port for external functions

Technical Data

Parameter	Dual Fiber				
Number of Channels	2ch	4ch	8ch	16ch	18ch
Operating Wavelength	1260~1620nm				
Channel Spacing	20nm				
Channel Passband	±6.5nm				
Insertion Loss (Passband)	≤ 1.5dB	≤ 1.6dB	≤ 3.0dB	≤ 5.2dB	≤ 5.2dB
Insertion Loss (+ 1% Mon)	≤ +0.3dB				
Insertion Loss (+ 1310nm port)	≤ +0.3dB				
Insertion Loss (+ 1550nm port)	≤ +0.3dB				
Adjacent Channel Isolation	≥ 30dB				
Non-adjacent Channel Isolation	≥ 40dB				
Technology	TFF				
Passband Ripple	≤ 0.3dB				
Polarization Dependent Loss	≤ 0.3dB				
Return Loss	≥ 45dB				
Directivity	≥ 50dB				
Polarization Mode Dispersion	≤ 0.1ps				
Power Handling	≤ 500mW				
Operating Temperature	-40 ~ 85°C				
Storage Temperature	-40 ~ 85°C				
Fiber Type	G657 A1				

Notes:

1.Specified with connectors and adapters.

Parameter		Single Fiber		
Number of Channels	2ch	4ch	8ch	9ch
Operating Wavelength	1260~1620nm			
Channel Spacing	20nm			
Channel Passband	±6.5nm			
Insertion Loss (Passband)	≤1.9dB	≤ 3.0dB	≤ 5.2dB	≤ 5.2dB
Insertion Loss (+ 1% Mon)	≤ +0.3dB			
Insertion Loss (+ 1310nm port)	≤ +0.3dB			
Insertion Loss (+ 1550nm port)	≤ +0.3dB			
Adjacent Channel Isolation	≥ 30dB			
Non-adjacent Channel Isolation	≥ 40dB			
Technology	TFF			
Passband Ripple	≤ 0.3dB			
Polarization Dependent Loss	≤ 0.3dB			
Return Loss	≥ 45dB			
Directivity	≥ 50dB			
Polarization Mode Dispersion	≤ 0.1ps			
Power Handling	≤ 500mW			
Operating Temperature	-40 ~ 85°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/1550nm port 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
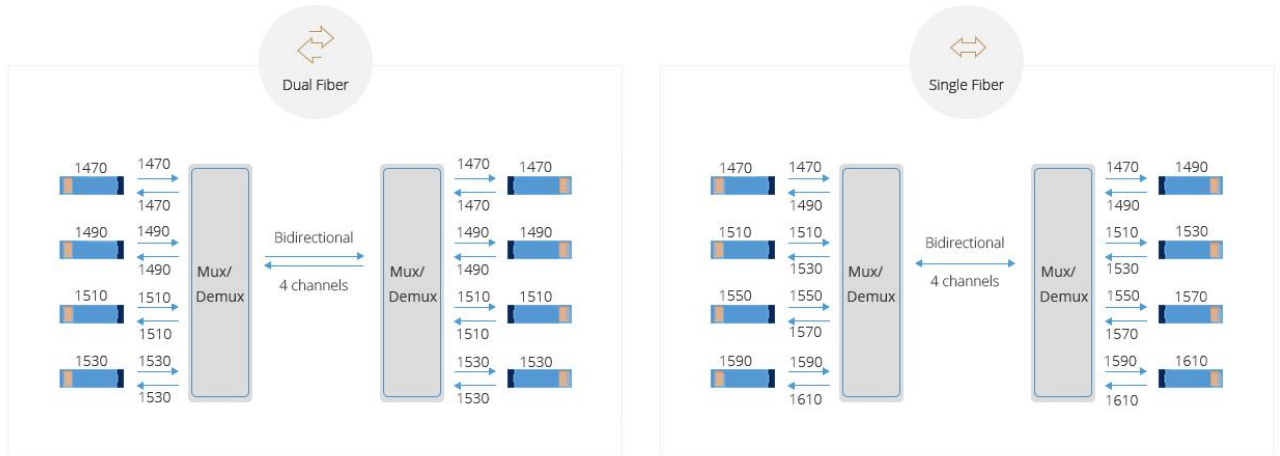
The CWDM transceivers connected to CWDM Mux/Demux should have the same wavelength as the client port.

The CWDM 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 and 1550nm Ports

These two extra ports allow existing legacy 1310nm and 1550nm 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;
If 1550nm port is added, the following CWDM wavelengths can't be added: 1510nm, 1530nm, 1550nm, 1570nm, 1590nm and 1610nm.
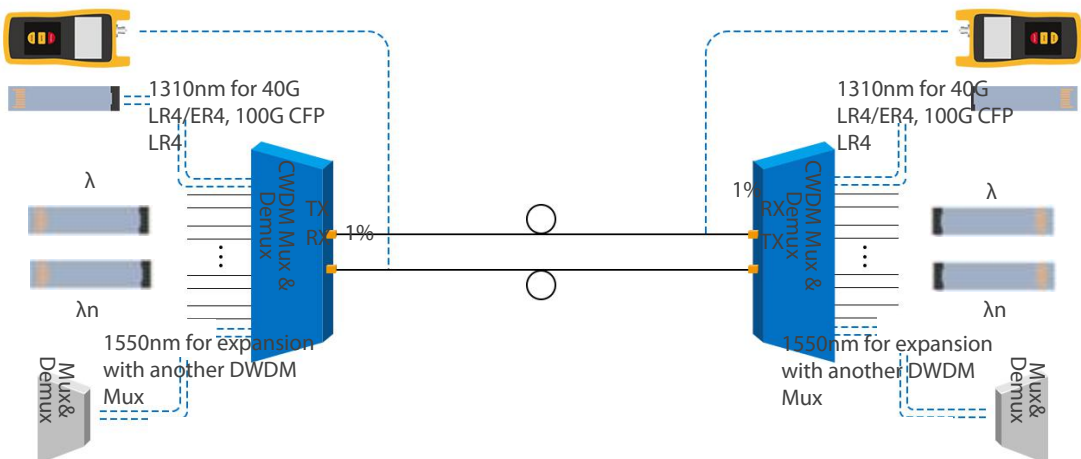
Housing & Enclosure

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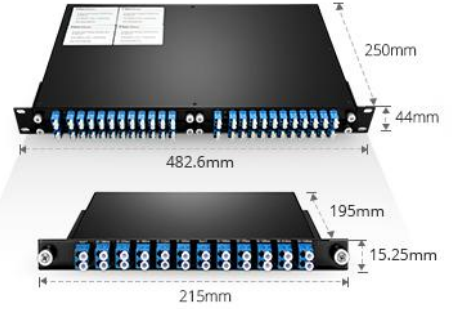
CWDM MUX DEMUX Optional Housing

FMU 2-slot 1U Rack

261.2mm
44mm
481.8mm

255mm
44mm
212mm

FMU Plug-in module

FUD 4-slot 1U Rack

250mm
44mm
482.6mm

195mm
15.25mm
215mm

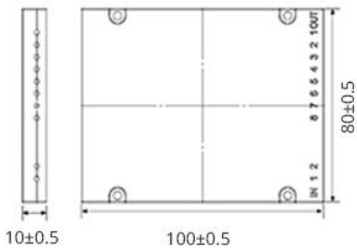FUD Plug-in module

261.2mm
44mm
481.8mm

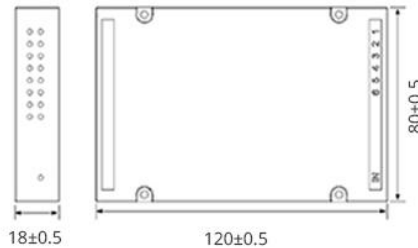1U 19" Rack Mount

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 CWDM Mux Demux has 3 kinds of dimension.

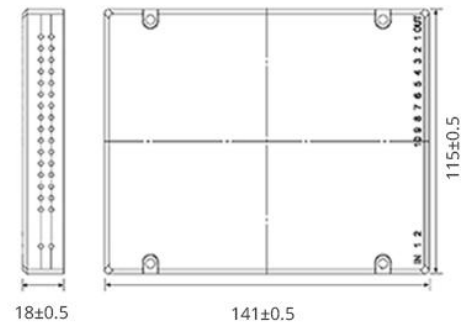80±0.5
10±0.5
100±0.5

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

Channel Number: ≤4ch

80±0.5
18±0.5
120±0.5

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

Channel Number: 4~16ch

115±0.5
18±0.5
141±0.5

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

Channel Number: ≥16ch

CWDM Mux Demux Series

Application	ID#	Description
WHOLE BAND (1270-1610NM)		
Whole band (1270-1610nm)	#33489	18 Channels 1270-1610nm, with Monitor Port, LC/UPC, Dual Fiber CWDM Mux Demux, FMU 1U Rack Mount
HIGH BAND (1470-1610NM)		
High band (1470-1610nm)	**#78163**	8 Channels 1470-1610nm, with Monitor and Expansion Port, LC/UPC, Dual Fiber Low Insertion Loss CWDM Mux Demux, FMU Plug-in Module
LOW BAND (1270-1450NM)		
Low band (1270-1450nm)	#42937	8 Channels 1270-1450nm (Skip 1390, 1410nm), LC/UPC, Dual Fiber CWDM Mux Demux, FMU Plug-in Module
Low band (1270-1450nm)	#42972	4 Channels 1270-1330nm, LC/UPC, Dual Fiber Low Insertion Loss CWDM Mux Demux, FMU Plug-in Module
SINGLE FIBER		
Single fiber	#43711	9 Channels 1270-1590nm, LC/UPC, Single Fiber CWDM Mux Demux, Side-A, Plug-in Module, used together with ID#43699
Single fiber	#43699	9 Channels 1290-1610nm, LC/UPC, Single Fiber CWDM Mux Demux, Side-B, Plug-in Module, used together with ID#43711
CUSTOMIZED CWDM MUX DEMUX		
Dual fiber	#70410	Customized Dual Fiber CWDM Mux Demux
Single fiber	#70407	Customized Single Fiber CWDM Mux Demux, Side-A
Single fiber	#70851	Customized Single Fiber CWDM Mux Demux, Side-B

Channel Wavelengths and Color Coding for CWDM

For CWDM systems an industry standard color coding scheme is used. The latches of the transceivers match the colored port indicators on the passive units therefore guaranteeing simple setup, following color codes and wavelength are valid for CWDM.

ITU channel no.	Wavelength	Color	Color Coding
27	1270nm	light purple	
29	1290nm	sky blue	
31	1310nm	yellow green	
33	1330nm	yellow ocher	
35	1350nm	pink	
37	1370nm	beige	
39	1390nm	white	
41	1410nm	silver	
43	1430nm	black	

ITU channel no.	Wavelength	Color	Color Coding
45	1450nm	yellow orange	
47	1470nm	gray	
49	1490nm	violet	
51	1510nm	blue	
53	1530nm	green	
55	1550nm	yellow	
57	1570nm	orange	
59	1590nm	red	
61	1610nm	brown	

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