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In fiber-optic communications, WDM (wavelength-division multiplexing) is a technology which multiplexes a number of optical carrier signals onto a single optical fiber by using different wavelengths (i.e., colors) of laser light.

This technique enables bidirectional communications over one strand of fiber as well as multiplication of capacity. Generally, WDM technology is applied to an optical carrier which is typically described by its wavelength.

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Why WDM ?

WDM system uses a multiplexer at the transmitter to join the signals together, and a demultiplexer at the receiver to split the signals apart (see Figure 1). WDM system is very popular in the telecommunication industry because it allows the capacity of the network to be expanded without laying more fiber. By utilizing WDM and optical amplifiers, users can accommodate several generations of technology development in their optical infrastructure without having to overhaul the backbone network. Moreover, the capacity of a given link can be expanded simply by upgrading the multiplexers and demultiplexers at each end.

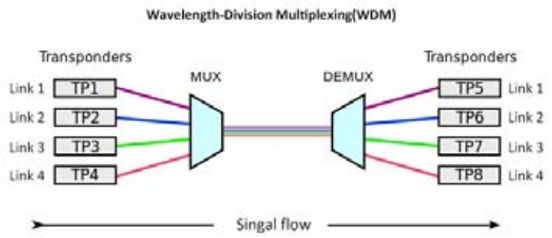

Figure 1

WDM could be divided into CWDM (coarse wavelength division multiplexing) and DWDM (dense wavelength division multiplexing). DWDM and CWDM are based on the same concept of using multiple wavelengths of light on a single fiber but differ in the spacing of the wavelengths, number of channels, and the ability to amplify the multiplexed signals in the optical space. Below part will introduce some differences between CWDM and DWDM system.

Wavelength Spacing

CWDM provides 8 channels with 8 wavelengths (from 1470nm through 1610nm) with a channel spacing of 20nm. While DWDM can accommodate 40, 80 or even 160 wavelengths with narrower wavelength spans which are as small as 0.8nm, 0.4nm or even 0.2nm (see Figure 2).

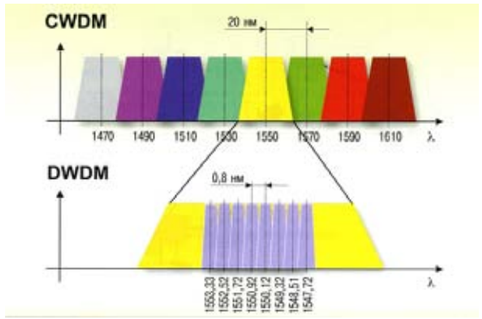

Figure 2

Transmission Distance

DWDM multiplexing system is capable of having a longer haul transmittal by keeping the wavelengths tightly packed. It can transmit more data over a larger run of cable with less interference than CWDM system. CWDM system cannot transmit data over long distance as the wavelengths are not amplified. Usually, CWDM can transmit data up to 100 miles (160km).

General Specifications

I. No. of Channel:
2ch, 4ch, 8ch, 16ch,
18ch, etc. available

II. Wavelengths:
Any wavelength combination
from 1270nm to 1610nm

III. Line Type:
Dual/Single Fiber

IV. Line & Client Port:
LC/SC/FC/ST, UPC/APC polish

V. Special Service:
Monitor/Expansion/1310nm/
1550nm port

VI. Housing:
Mini stainless steel tube module
ABS cassette
LGX box
Aluminum module
1U 19'' rack mount

Module Type

Mini Stainless Steel Tube Module

ABS Cassette

LGX Module

Aluminum Module

Rack Mount Type

19'' 1U Rack Mount Package
Customizable Design

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Specs

Parameter		4 Channel		8 Channel		16 Channel	
		MUX	DEMUX	MUX	DEMUX	MUX	DEMUX
CWDM Channel Wavelength (nm)		1270-1610					
DWDM Channel Wavelength (nm)		ITU 100/200GHz Grid					
CWDM Channel Spacing (nm)		20					
DWDM Channel Spacing (nm)		>0.3/>0.5					
Insertion Loss (dB)		≤1.5		≤3.0		≤50	
Isolation (dB)	Adjacent	>30					
	Non-adjacent	>40					
Wavelength Temperature Shifting (nm/°C)		<0.005					
Polarization Dependent Loss (dB)		<0.1					
Polarization Mode Dispersion		<0.1					
Directivity (dB)		>50					
Return Loss(dB)		>45					
Maximum Power Handling (mW)		300					
Opterating Temperature (°C)		-5~+75					
Storage Temperature (°C)		-40~+85					
Package Dimension (mm) (ABS Cassette)		A: L100 x W80 x H10		B: L120 x W80 x H18			
Package Dimension (mm) (19" 1U Rackmount)		C: L483 x W200 x H44					

*Above specification are for device without connector.
*Customized design available upon your request.

Catalog Number

D	X	XX	X	XX	X	X	XX
	Channel Spacing	Number of Channels	Configuration	1st Channel	Fiber Type	Fiber Length	In/Out Connector
D=DWDM	1=100GHz 2=200GHz	04=4 Channel 08=8 Channel 16=16 Channel XX=XX Channel	M=MUX D=DEMUX	21=Ch21 ..... 34=Ch34 ..... 60=Ch60	1=Bare fiber 2=900um loose tube 3=2mm Cable 4=3mm Cable	1=1m 2=2m S=Specify	0=None 1=FC/APC 2=FC/PC 3=SC/APC 4=SC/PC 5=ST 6=LC S=Specify

C	X	XX	X	XX	X	X	XX
	Channel Spacing	Number of Channels	Configuration	1st Channel	Fiber Type	Fiber Length	In/Out Connector
C=CWDM	C=CWDM Grid	04=4 Channel 08=8 Channel 16=16 Channel 18=18 Channel N=N Channel	M=MUX D=DEMUX	27=1270nm ..... 47=1470nm 49=1490nm ..... 61=1610nm	1=Bare fiber 2=900um Loose tube 3=2mm Cable 4=3mm Cable	1=1m 2=2m S=Specify	0=None 1=FC/APC 2=FC/PC 3=SC/APC 4=SC/PC 5=ST 6=LC S=Specify