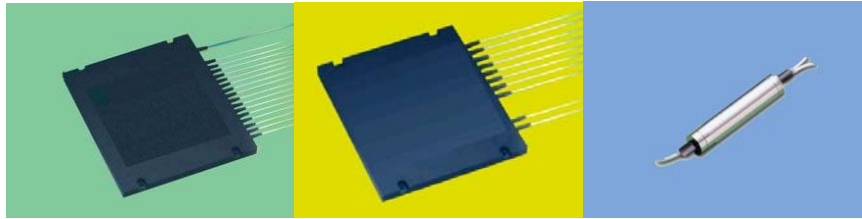


LEAD Fiber Optics PRODUCT CATALOGUE

DWDM Module

DWDM Module



The DWDM Modules combine or split particular wavelengths into a single fiber and are ideal for telecommunication and networking. DWDM technology uses ITU standard 0.8nm/1.6nm spacing between the wavelengths, from 1529.55nm to 1560.61nm.

DWDM Modules utilize thin-film coating and micro optics package technology. They are available in two main configurations: DWDM Multiplexer/Demultiplexer (Mux/Demux) modules and DWDM Add/Drop Multiplexer (OADM) modules.

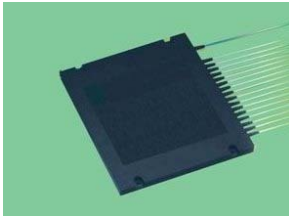
DWDM Mux/Demux Modules are available in 4, 6, 8 and 16 channel configurations. These modules passively multiplex the optical signal outputs from 4 or more electronic devices, send them over a single optical fiber and then de-multiplex the signals into separate, distinct signals for input into electronic devices at the other end of the fiber optic link.

DWDM Add/Drop multiplexer modules provide the ability to add or drop a single wavelength or multi-wavelengths from a fully multiplexed optical signal. These modules allow intermediate locations between remote sites to access the common, point-to-point fiber segment linking them. Wavelengths not dropped, pass-through the OADM and continue on in the direction of the remote site. Additional selected wavelengths can be added or dropped by successive OADMs as needed.

DWDM Add/Drop Multiplexer unit allows a single channel (DWDM Wavelength) to be inserted/extracted from the composite DWDM trunk. There are two versions of the OADM, one does Add/Drop in both directions, the second does Add/Drop in a single direction.

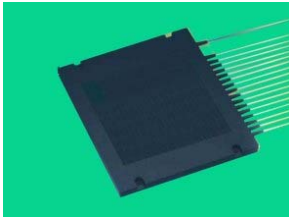
We provide both 100 GHz DWDM Module and 200 GHz DWDM Module with various kinds of **Fiber Connectors** and **Fiber Cable** length and optional stainless tube package or standard box package and to meet your requirement. We offer 1x2, 1x4, 1x8 DWDM Module...up to 1x16 DWDM Module. Our DWDM modules are configured by number of channels for any customer-specified channel plan, and can be integrated with taps and detectors for a complete DWDM solution.

LFO DWDM Module Series



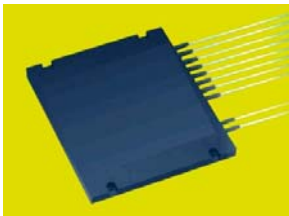
100 GHz DWDM Module (100 GHz Mux/Demux DWDM Module)

The DWDM modules with 100GHz channel spacing can be used to combine or separate wavelength channels at standard ITU grid. The minimum channel spacing between neighbor channels is 100GHz. Our 100 GHz DWDM module features narrow channel bandwidth (0.2nm) in ITU channel allocation. Their isolation is greater than 30dB for adjacent channels, and greater than 40dB for non-adjacent channels. They have also high thermal stability.



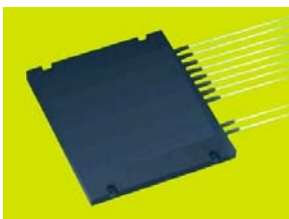
200 GHz DWDM module (200 GHz Mux/Demux DWDM Module)

The DWDM modules with 200GHz channel spacing can be used to combine or separate wavelength channels at standard ITU grid. The minimum channel spacing between neighbor channels is 200GHz. Our 200 GHz DWDM module features Narrow channel bandwidth (0.5nm) in ITU channel allocation. Their isolation is greater than 30dB for adjacent channels, and greater than 40dB for non-adjacent channels. They have also high thermal stability.



100 GHz DWDM Add/Drop Module

The 100 GHz DWDM Add/Drop Unit is designed to add and drop an individual channel flexibly at an optical node of a 100 GHz DWDM network system. Our 100 GHz DWDM Add/Drop Module Features narrow channel bandwidth (0.2nm) in ITU channel allocation. They have low insertion Loss (IL), low IL Uniformity and high Isolation. The central wavelength of each channel can be specified to one of the ITU-T grid wavelengths.



200 GHz DWDM Add/Drop Module

The 200 GHz DWDM Add/Drop Unit is designed to add and drop an individual channel flexibly at an optical node of a 200 GHz DWDM network system. Our 200 GHz DWDM Add/Drop Module Features narrow channel bandwidth (0.5nm) in ITU channel allocation. They have low insertion Loss (IL), low IL Uniformity and high Isolation. The central wavelength of each channel can be specified to one of the ITU-T grid wavelengths.



100 GHz DWDM Add/Drop Unit

The DWDM Add/Drop Unit with 200GHz is designed to add or drop one single DWDM wavelength at any node location of the network. The central wavelength and channel spacing of this component are at ITU grid. This component is the basic building block of multiple-channel DWDM mux/demux modules. Customers can specify the central wavelength of the add/drop channel of this component.



200 GHz DWDM Add/Drop Unit

The DWDM Add/Drop Unit with 200GHz is designed to add or drop one single DWDM wavelength at any node location of the network. The central wavelength and channel spacing of this component are at ITU grid. This component is the basic building block of [multiple-channel](#) DWDM mux/demux modules. Customers can specify the central wavelength of the add/drop channel of this component.

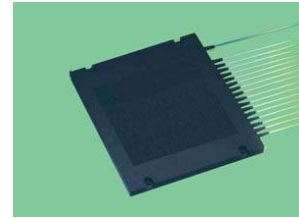
100 GHZ DWDM Module

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES	
	Mux	Demux
Type	Mux	Demux
Channel	4/8/16	
Central Wavelength, nm	Ch 21~60 or ITU Standard (Customer specify)	
Channel Space, nm	0.8	
Channel Space, GHz	100	
Pass band@ 0.5dB,nm	ITU±0.1nm	
Insert Loss, dB for 4 channel	≤2.8	
Insert Loss, dB for 8 channel	≤4.0	
Insert Loss, dB for 16 channel	≤5.0	
Adjacent Channel isolation, dB	N/A	≥25
Non-adjacent Channel isolation, dB	N/A	≥35
Uniformity, dB	Minimize Pair Loss or ≤1.5	
Directivity, dB	≥40	
Optical Input Return Loss, dB	≥45	
Polarization Dependent Loss, dB	≤0.15	
Polarization Mode Dispersion (PMD), ps	≤0.1	
Thermal Stability Drift, pm /°C	≤1	
Max. Optical Power, mW	300	
Max. Tensile Load, N	5	
Storage Temperature, °C	-40°C ~ 85°C	
Operating Temperature, °C	0 ~ 65°C	
Package size,mm ³	M4(1×4, 1×8 standard);M5(1×16 standard, Mux+Demux 1×8 standard), A2,A3	

100 GHz DWDM Module Ordering information

WD-D1 XX/XX XX XX X X XX XXX(cm)

Connector type

- 11-ST
- 21-FC/PC
- 22-FC/APC
- 31-SC/PC
- 32-SC/APC
- 41-LC/PC
- 51-MU/PC
- 00-None
- XX-Others

Pigtail length

- 050- 50cm
- 100- 100cm
- 150- 150cm
- 200- 200cm
- 000- Modulized
- XXX-Others

Central wavelength

- 11- ch 21/22/23/24
- 12- ch 25/26/27/28
- 13- ch 29/30/31/32
- 14- ch 33/34/35/36
- 15- ch 21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36
- 16- ch 43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58
- XX- Others

No.of channels

- 04- 4 channel, ITU Standard
- 06- 6 channel, ITU Standard
- 08- 8 channel, ITU Standard
- 16- 16 channel, ITU Standard
- XX- Others

Package option(for both ends)

- C1-Coated fiber(250um)
- L1-Loose tube cable (900um)
- XX-Others

Type

- M-Mux
- D-Demux
- U-Mux/Demux
- X-Others

Channel spacing

- 1- 100 GHz
- 2- 200 GHz
- X- Others

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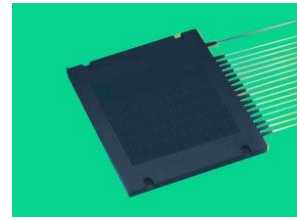
200 GHZ DWDM Module

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES	
	Mux	Demux
Type	Mux	Demux
Channel	4/8/16	
Central Wavelength ,nm (4 channel)	(21)Ch 21/23/25/27 (22)Ch 29/31/33/35 (23)Ch 43/45/47/49 (24)Ch 51/53/55/57 or ITU Standard (Customer specify)	
Central Wavelength ,nm (8 channel)	(25)ch 21/23/25/27/29/31/33/35 (26)ch 43/45/47/49/51/53/55/57	
Central Wavelength ,nm (16 channel)	(27)ch 21/23/25/27/29/31/33/35/43/45/47/49/51/53/55/57	
Channel Space, nm	1.6	
Channel Space, GHz	200	
Pass band@ 0.5dB,nm	ITU±0.25nm	
Insert Loss, dB for 4 channel	≤ 2.8	
Insert Loss, dB for 8 channel	≤ 4.0	
Insert Loss, dB for 16 channel	≤ 5.0	
Adjacent Channel isolation, dB	N/A	≥ 30
Non-adjacent Channel isolation, dB	N/A	≥ 40
Uniformity, dB	Minimize Pair Loss or ≤ 1.5	
Optical Input Return Loss, dB	≥ 45	
Polarization Dependent Loss, dB	≤ 0.15	
Polarization Mode Dispersion (PMD), ps	≤ 0.15	
Thermal Stability Drift, pm /°C	≤ 2	
Max. Optical Power, mW	300	
Max. Tensile Load, N	5	
Storage Temperature, °C	-40°C ~ 85°C	
Operating Temperature, °C	0 ~ 65°C	
Package size,mm ³	M4(1×4, 1×8 standard);M5(1×16 standard,Mux+Demux 1×8 standard), A2,A3	

200 GHz DWDM Module Ordering information

WD-D2

XX/XX

XX

XX

X

X

XX

XXX(cm)

Connector #1 #2

- 11-ST
- 21-FC/PC
- 22-FC/APC
- 31-SC/PC
- 32-SC/APC
- 41-LC/PC
- 51-MU/PC
- 00-None
- XX-Others

Pigtail length

- 050- 50cm
- 100- 100cm
- 150- 150cm
- 200- 200cm
- 000- Modulized
- XXX-Others

Central wavelength

- 21- ch 21//23/25/27
- 22- ch 29/31/33/35
- 23- ch 43/45/47/49
- 24- ch 51/53/55/57
- 25- ch 21/23/25/27/29/31/33/35
- 26- ch 43/45/47/49/51/53/55/57
- 27- ch 21/23/25/27/29/31/33/35/43/45/47/49/51/53/55/57
- XX- Others

No.of channels

- 04- 4 channel, ITU Standard
- 06- 6 channel, ITU Standard
- 08- 8 channel, ITU Standard
- 16- 16 channel, ITU Standard
- XX- Others

Package option(for both ends)

- C1-Coated fiber(250um)
- L1-Loose tube cable (900um)
- XX-Others

Type

- M-Mux
- D-Demux
- U-Mux/Demux
- X-Others

Channel spacing

- 1- 100 GHz
- 2- 200 GHz
- X- Others

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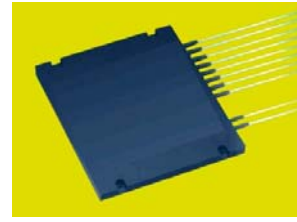
100 GHz DWDM Add/Drop Module

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES
Channel No.	1/2/4/8 or Customer Specify
Starting Wavelength, nm	Channel 21 to 60 or Customer specify
Channel Space, nm	0.8(100GHz)
Pass band@ 0.5dB, nm	ITU±0.1nm
Operation Wavelength, nm	1500-1610
Insertion Loss (Com In→N Drop Ch.)	$0.4 \times (N-1) + 1.5$
Insertion Loss(M Add Ch. →Com Out)	$0.4 \times (M-1) + 1.5$
Insertion Loss(In→Out)	$0.4 \times (N+M)$
Adjacent Channel isolation, dB	≥ 25
Non-adjacent Channel isolation, dB	≥ 35
Thermal Stability, Wavelength Drift, pm /°C	≤ 1
Thermal Stability, Insertion Loss Variation	≤ 0.5 (over operating temperature)
Directivity, dB	≥ 40
Return Loss, dB	≥ 45
Uniformity, dB	1.5 or Customer Specify
Polarization Mode Dispersion (PMD), ps	≤ 0.15
Polarization Dependent Loss, dB	≤ 0.1
Max. Optical Power, mW	300
Max. Tensile Load, N	5
Storage Temperature, °C	-40°C ~ 85°C
Operating Temperature, °C	0°C ~ 65°C
Package size, mm ³	M4(1/2/4, channel standard); M5(8 channel standard), A2, A3

100 GHz DWDM Add/Drop Module Ordering information

WD-DM XX/XX/XX XX XX XX XX XXX(cm)

Connector (in/common/out)

- 11-ST
- 21-FC/PC
- 22-FC/APC
- 31-SC/PC
- 32-SC/APC
- 41-LC/PC
- 51-MU/PC
- 00-None
- XX-Others

Pigtail length

- 050- 50cm
- 100- 100cm
- 150- 150cm
- 200- 200cm
- 000- Modulized
- XXX-Others

Starting wavelength

- | | |
|-----------------------------|-----------------------------|
| 21- ITU standard channel 21 | 30- ITU standard channel 30 |
| 22- ITU standard channel 22 | 31- ITU standard channel 31 |
| 23- ITU standard channel 23 | 32- ITU standard channel 32 |
| 24- ITU standard channel 24 | 33- ITU standard channel 33 |
| 25- ITU standard channel 25 | 34- ITU standard channel 34 |
| 26- ITU standard channel 26 | |
| 27- ITU standard channel 27 | XX-Others |
| 28- ITU standard channel 28 | |
| 29- ITU standard channel 29 | |

Sets of wavelengths

- 01- 1 set of wavelengths
- 02- 2 set of wavelengths
- 04- 4 set of wavelengths
- XX-Others

Channel spacing

- 1S- 0.8 nm, single directional (100 GHz)
- 1D- 0.8 nm, dual directional (100 GHz)
- 2S- 1.6 nm, single directional (200 GHz)
- 2D- 1.6 nm, dual directional (200 GHz)
- XX- Others

Cable type (for both ends)

- S1-Singlemode bare fiber
- L1-Loose tube cable (900um)
- XX-Others

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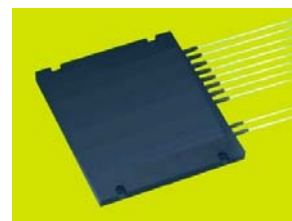
200 GHz DWDM Add/Drop Module

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES
Channel No.	1/2/4/8 or Customer Specify
Starting Wavelength, nm	Channel 21 to 60 or Customer Specify
Channel Space, nm	1.6(200GHz)
Pass band@ 0.5dB, nm	ITU±0.25nm
Operation Wavelength, nm	1500~1610
Insertion Loss (Com In→N Drop Ch.)	$0.4 \times (N-1) + 1.2$
Insertion Loss(M Add Ch. →Com Out)	$0.4 \times (M-1) + 1.2$
Insertion Loss(In→Out)	$0.4 \times (N+M)$
Adjacent Channel isolation, dB	≥ 30
Non-adjacent Channel isolation, dB	≥ 40
Thermal Stability, Wavelength Drift, pm /°C	≤ 2
Thermal Stability, Insertion Loss Variation	≤ 0.5 (over operating temperature)
Directivity, dB	≥ 40
Return Loss, dB	≤ 45
Uniformity, dB	1.5 or Customer Specify
Polarization Mode Dispersion (PMD), ps	≤ 0.15
Polarization Dependent Loss, dB	≤ 0.1
Max. Optical Power, mW	300
Max. Tensile Load, N	5
Storage Temperature, °C	-40°C ~ 85°C
Operating Temperature, °C	0°C ~ 65°C
Package size,mm ³	M4(1/2/4,channel standard);M5(8 channel standard), A2,A3

200 GHz DWDM Add/Drop Module Ordering information

WD-DM XX/XX/XX XX XX XX XX XXX(cm)

Connector (in/common/out)
 11-ST
 21-FC/PC
 22-FC/APC
 31-SC/PC
 32-SC/APC
 41-LC/PC
 51-MU/PC
 00-None
 XX-Others

Pigtail length
 050- 50cm
 100- 100cm
 150- 150cm
 200- 200cm
 000- Modulized
 XXX-Others

Starting wavelength

21- ITU standard channel 21	30- ITU standard channel 30
22- ITU standard channel 22	31- ITU standard channel 31
23- ITU standard channel 23	32- ITU standard channel 32
24- ITU standard channel 24	33- ITU standard channel 33
25- ITU standard channel 25	34- ITU standard channel 34
26- ITU standard channel 26	XX-Others
27- ITU standard channel 27	
28- ITU standard channel 28	
29- ITU standard channel 29	

Sets of wavelengths
 01- 1 set of wavelengths
 02- 2 set of wavelengths
 04- 4 set of wavelengths
 XX-Others

Channel spacing
 1S- 0.8 nm, single directional (100 GHz)
 1D- 0.8 nm, dual directional (100 GHz)
 2S- 1.6 nm, single directional (200 GHz)
 2D- 1.6 nm, dual directional (200 GHz)
 XX- Others

Cable type (for both ends)
 S1-Singlemode bare fiber
 L1-Loose tube cable (900um)
 XX-Others

100 GHz DWDM Add/Drop Unit

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

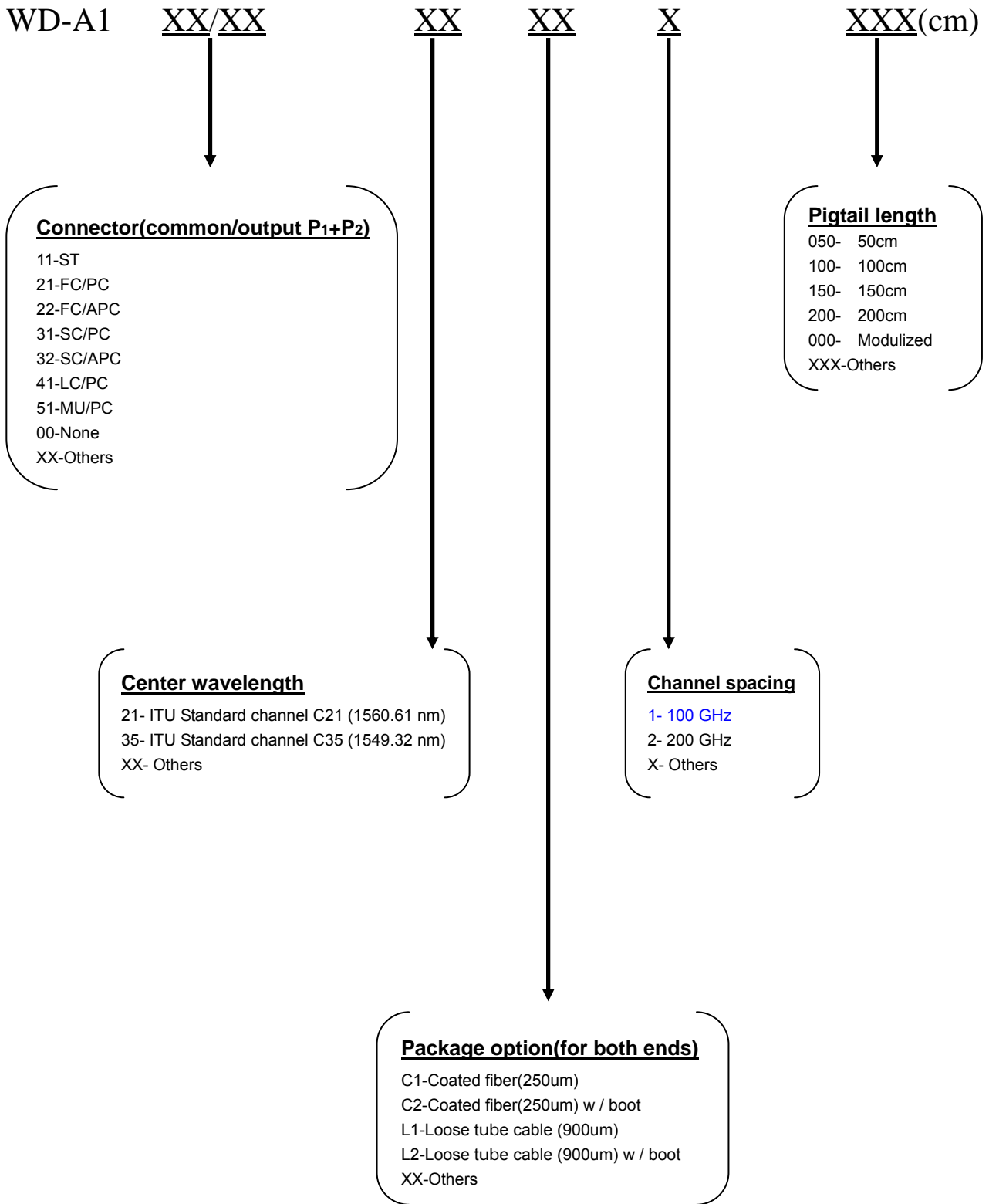
- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES
Pass band@ 0.5dB,nm	ITU±0.1nm
Channel Space, GHz	100
Add/Drop Channel Insertion Loss(C-P ₁), dB	≤ 1.2
Express Channel Insertion Loss(C-P ₂), dB	≤ 0.5
Add/Drop Channel Ripple, dB	≤ 0.3
Isolation(C-P ₁), dB	≤ 25
Isolation(C-P ₂), dB	≥ 10
Directivity, dB	≥ 40
Optical Input Return Loss, dB	≥ 45
Polarization Dependent Loss, dB	≤ 0.1
Polarization Mode Dispersion (PMD), ps	≤ 0.1
Thermal Stability, dB /°C	≤ 0.005
Thermal Stability Drift, pm /°C	≤ 1
Max. Optical Power, mW	300
Max. Tensile Load, N	5
Storage Temperature, °C	-40°C ~ 85°C
Operating Temperature, °C	0 ~ 65°C
Package size,mm	φ 5.5×34mm for coated fiber(250 μ m) φ 5.5×39mm for Loose tube cable(900 μ m)

100 GHz DWDM Add/Drop Unit Ordering information



200 GHz DWDM Add/Drop Unit

Features

- Environmentally stable
- Easy installation
- Custom-defined specifications
- Low return Loss
- Low Loss, Low cross Talk
- ITU standard

Applications

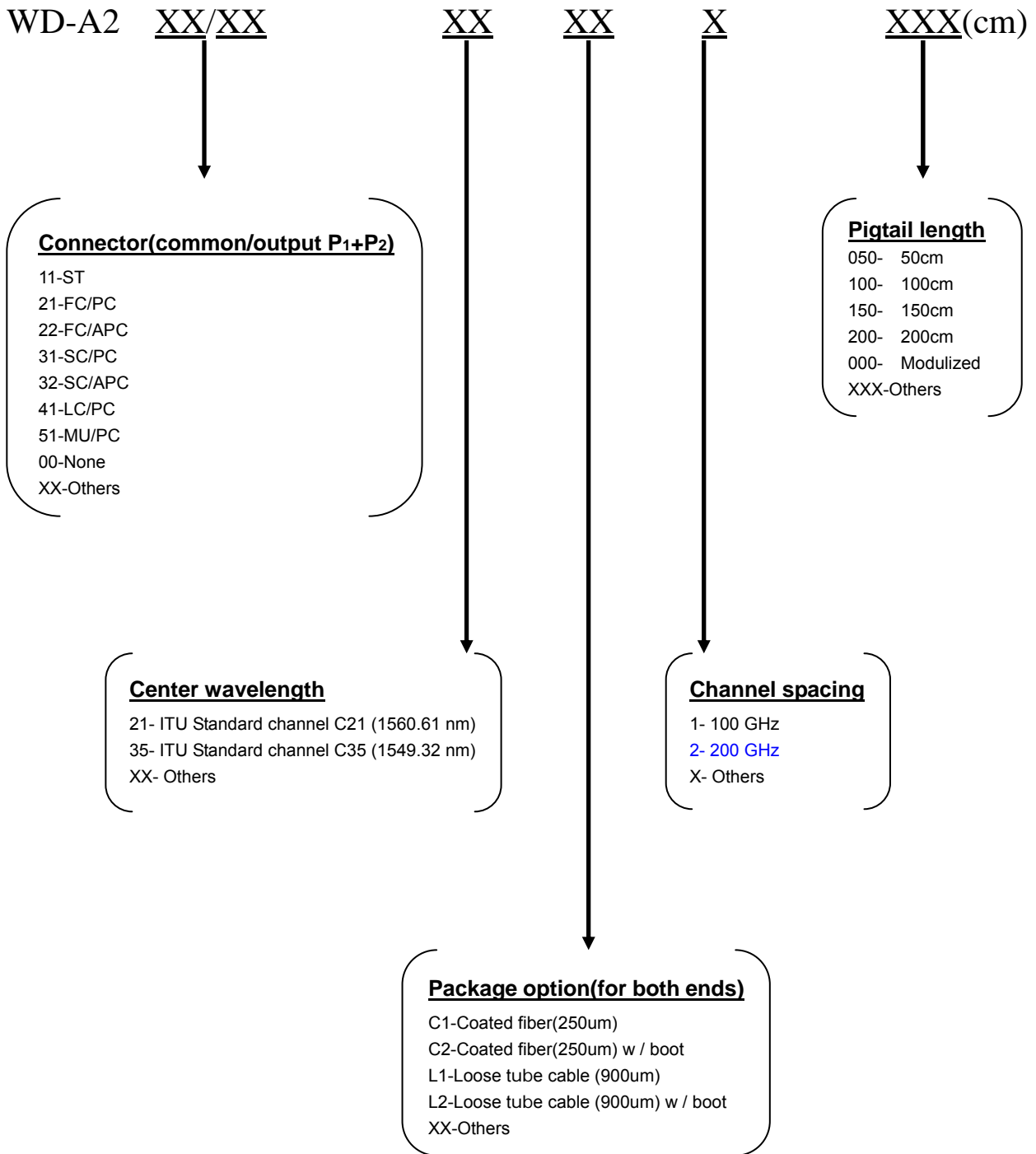
- Telecommunication
- Local area network
- DWDM & FTTH



Specifications

ITEM	VALUES
Pass band@ 0.5dB, nm	ITU±0.25nm
Channel Space, GHz	200
Add/Drop Channel Insertion Loss(C-P ₁), dB	≤ 1.2
Express Channel Insertion Loss(C-P ₂), dB	≤ 0.4
Add/Drop Channel Ripple, dB	≤ 0.3
Isolation(C-P ₁), dB	≤ 30
Isolation(C-P ₂), dB	≥ 10
Directivity, dB	≥ 40
Optical Input Return Loss, dB	≥ 45
Polarization Dependent Loss, dB	≤ 0.1
Polarization Mode Dispersion (PMD), ps	≤ 0.15
Thermal Stability, dB /°C	≤ 0.005
Thermal Stability Drift, pm /°C	≤ 2
Max. Optical Power, mW	300
Max. Tensile Load, N	5
Storage Temperature, °C	-40°C ~ 85°C
Operating Temperature, °C	0 ~ 65°C
Package size, mm	φ 5.5×34mm for coated fiber(250 μ m) φ 5.5×39mm for Loose tube cable(900 μ m)

200 GHz DWDM Add/Drop Unit Ordering information



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