

Dense Wavelength Division Multiplexer (DWDM) modules utilize proven thin-film construction. Modules are available in the standard ITU channel sets in the 100GHz or 200GHz format. An epoxy-free optical path ensures greater reliability. We can manufacture the package to your specifications. All DWDM modules have passed the Bellcore standard GR 1209 and GR 1221 quality standards.

DWDM

4-Channel 100GHz DWDM
8-Channel 100GHz DWDM
16-Channel 100GHz DWDM
20-Channel 100GHz DWDM
4-Channel 200GHz DWDM
8-Channel 200GHz DWDM
16-Channel 200GHz DWDM
20-Channel 200GHz DWDM

4-CHANNEL 100GHz DWDM

Features

- 100GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



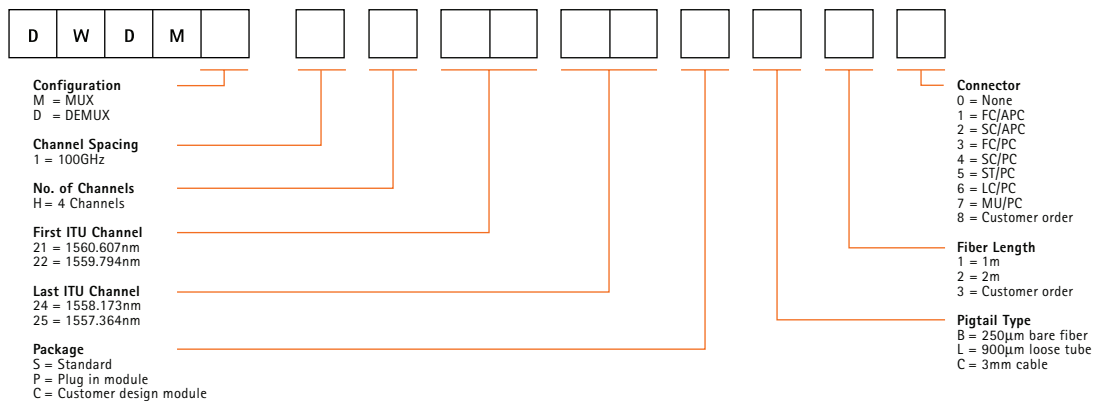
Specifications

DWDM-M (D)-1H-	Multiplexer	De-Multiplexer
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)	
Center wavelength difference (nm)	<= 0.1	
Channel spacing (GHz)	100 (~ 0.8nm)	
Channel passband (nm)	(min.) ± 0.11 @ -0.5dB	(min.) ± 0.11 @ -1.0dB
Insertion loss (dB)	<= 3.0	<= 3.5
Output uniformity (dB)*	<= 1.0	
Passband ripple (dB)	max.: 0.5	max.: 1.0
Adjcent channel isolation (dB)	>= 20	>= 25
Non-adjcent channel Isolation (dB)	>= 45	
Directivity (dB) (all ports)	>= 55	
Return loss (dB) (all ports)	>= 50	
Insertion loss temperature sensitivity (dB / °C)	< 0.005	
Wavelength temperature sensitivity (nm / °C)	< 0.001	
Polarization dependence loss (PDL) (dB)	<= 0.1	
Polarization mode dispersion (PMD) (ps)	<= 0.1	
Max. operating power (mW)	<= 300	
Max. tensile load (N)	5	
Operating temperature range (°C)	0 ~ 65	
Storage temperature range (°C)	-40 ~ +85	
Package dimension (mm)	(L) 127 x (W) 89 x (H) 10.7	

All specifications referenced are without connectors.

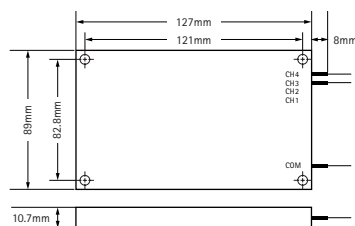
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

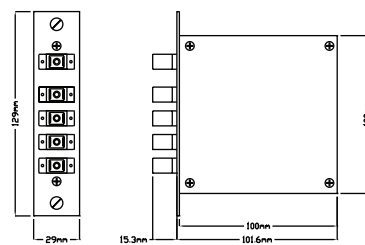


Dimensions

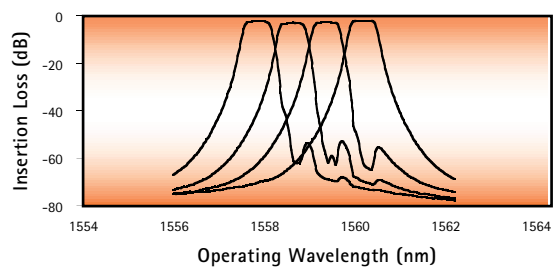
S: Standard



P: Plug-in Module



Transmission Spectrum



8-CHANNEL 100GHz DWDM

Features

- 100GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



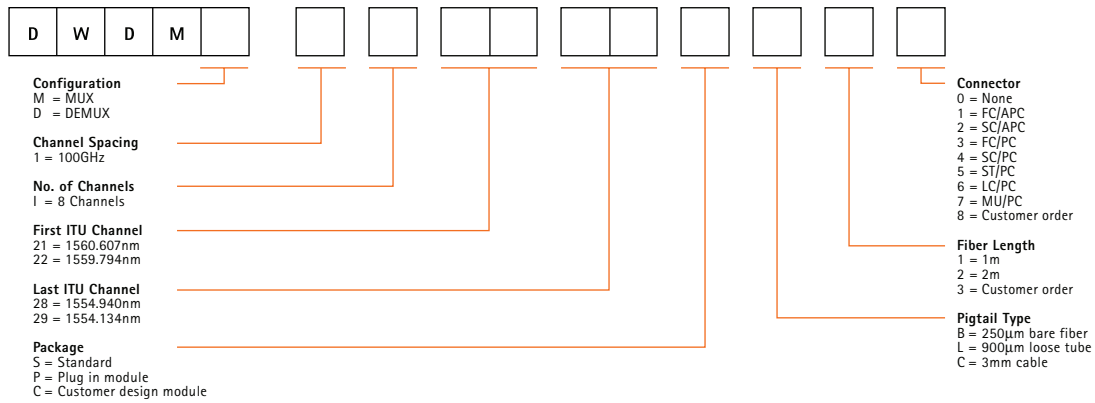
Specifications

DWDM-M (D)-11-	Multiplexer	De-Multiplexer
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)	
Center wavelength difference (nm)	<= 0.1	
Channel spacing (GHz)	100 (~ 0.8nm)	
Channel passband (nm)	(min.) ± 0.11 @ -0.5dB	(min.) ± 0.11 @ -1.0dB
Insertion loss (dB)	<= 4.0	<= 4.5
Output uniformity (dB)*	<= 1.0	
Passband ripple (dB)	max.: 0.5	max.: 1.0
Adjcent channel isolation (dB)	>= 20	>= 25
Non-adjcent channel Isolation (dB)	>= 45	
Directivity (dB) (all ports)	>= 55	
Return loss (dB) (all ports)	>= 50	
Insertion loss temperature sensitivity (dB / °C)	< 0.005	
Wavelength temperature sensitivity (nm / °C)	< 0.001	
Polarization dependence loss (PDL) (dB)	<= 0.1	
Polarization mode dispersion (PMD) (ps)	<= 0.1	
Max. operating power (mW)	<= 300	
Max. tensile load (N)	5	
Operating temperature range (°C)	0 ~ 65	
Storage temperature range (°C)	-40 ~ +85	
Package dimension (mm)	(L) 142 x (W) 102 x (H) 10.7	

All specifications referenced are without connectors.

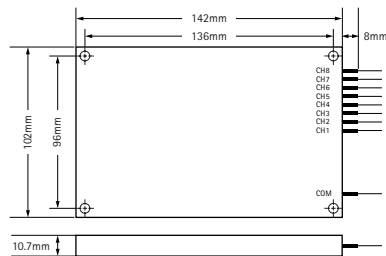
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

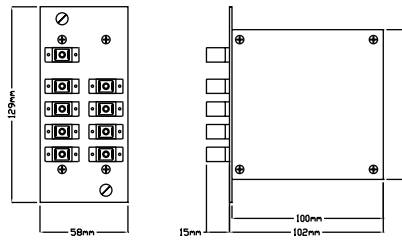


Dimensions

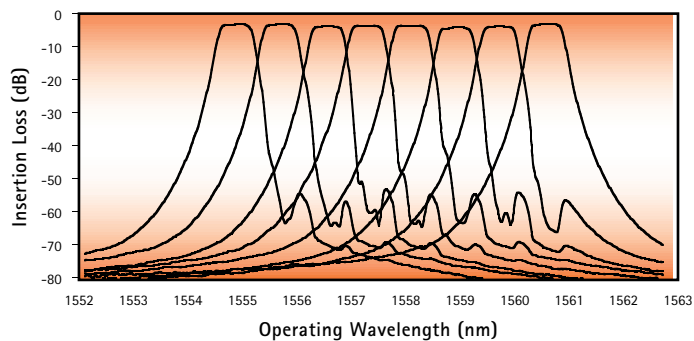
S: Standard



P: Plug-in Module



Transmission Spectrum



16-CHANNEL 100GHz DWDM

Features

- 100GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



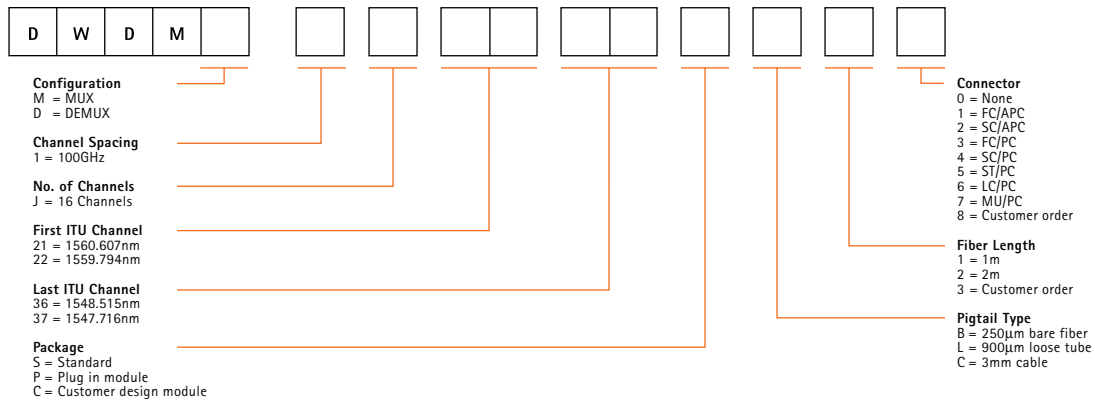
Specifications

DWDM-M (D)-1J-	Multiplexer	De-Multiplexer
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)	
Center wavelength difference (nm)	<= 0.1	
Channel spacing (GHz)	100 (~ 0.8nm)	
Channel passband (nm)	(min.) ± 0.11 @ -0.5dB	(min.) ± 0.11 @ -1.0dB
Insertion loss (dB)	<= 6.0	<= 6.5
Output uniformity (dB)*	<= 1.8	
Passband ripple (dB)	max.: 0.5	max.: 1.0
Adjcent channel isolation (dB)	>= 20	>= 25
Non-adjcent channel Isolation (dB)	>= 45	
Directivity (dB) (all ports)	>= 55	
Return loss (dB) (all ports)	>= 50	
Insertion loss temperature sensitivity (dB / °C)	< 0.005	
Wavelength temperature sensitivity (nm / °C)	< 0.001	
Polarization dependence loss (PDL) (dB)	<= 0.1	
Polarization mode dispersion (PMD) (ps)	<= 0.1	
Max. operating power (mW)	<= 300	
Max. tensile load (N)	5	
Operating temperature range (°C)	0 ~ 65	
Storage temperature range (°C)	-40 ~ +85	
Package dimension (mm)	(L) 150 x (W) 116 x (H) 15	

All specifications referenced are without connectors.

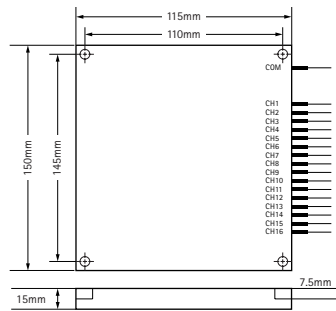
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

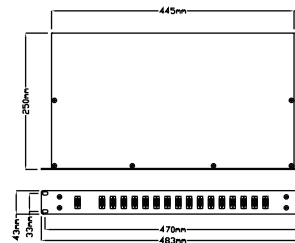


Dimensions

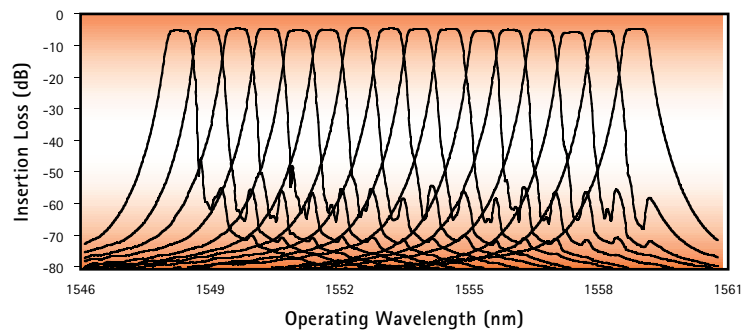
S: Standard



P: Plug-in Module



Transmission Spectrum



20-CHANNEL 100GHz DWDM

Features

- 100GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



Specifications

DWDM-M (D)-1K	Multiplexer	De-Multiplexer
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)	
Center wavelength difference (nm)	<= 0.1	
Channel spacing (GHz)	100 (~ 0.8nm)	
Channel passband (nm)	(min.) ± 0.11 @ -0.5dB	(min.) ± 0.11 @ -1.0dB
Insertion loss (dB)	<= 7.5	<= 8.0
Output uniformity (dB)*	<= 1.8	
Passband ripple (dB)	max.: 0.5	max.: 1.0
Adjcent channel isolation (dB)	>= 20	>= 25
Non-adjcent channel Isolation (dB)	>= 45	
Directivity (dB) (all ports)	>= 55	
Return loss (dB) (all ports)	>= 50	
Insertion loss temperature sensitivity (dB / °C)	< 0.005	
Wavelength temperature sensitivity (nm / °C)	< 0.001	
Polarization dependence loss (PDL) (dB)	<= 0.1	
Polarization mode dispersion (PMD) (ps)	<= 0.1	
Max. operating power (mW)	<= 300	
Max. tensile load (N)	5	
Operating temperature range (°C)	0 ~ 65	
Storage temperature range (°C)	-40 ~ +85	
Package dimension (mm)	(L) 150 x (W) 116 x (H) 15	

All specifications referenced are without connectors.

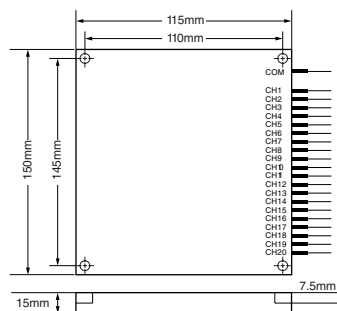
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

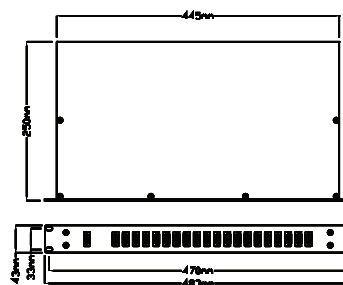
D	W	D	M										
Configuration M = MUX D = DEMUX				Channel Spacing 1 = 100GHz		No. of Channels K = 20 Channels		First ITU Channel 21 = 1560.60nm 22 = 1559.794nm		Last ITU Channel 40 = 1545.322nm 41 = 1544.526nm		Package S = Standard P = Plug in module C = Customer design module	
												Connector 0 = None 1 = FC/APC 2 = SC/APC 3 = FC/PC 4 = SC/PC 5 = ST/PC 6 = LC/PC 7 = MU/PC 8 = Customer order	
												Fiber Length 1 = 1m 2 = 2m 3 = Customer order	
												Pigtail Type B = 250 m bare fiber L = 900 m loose tube C = 3mm cable	

Dimensions

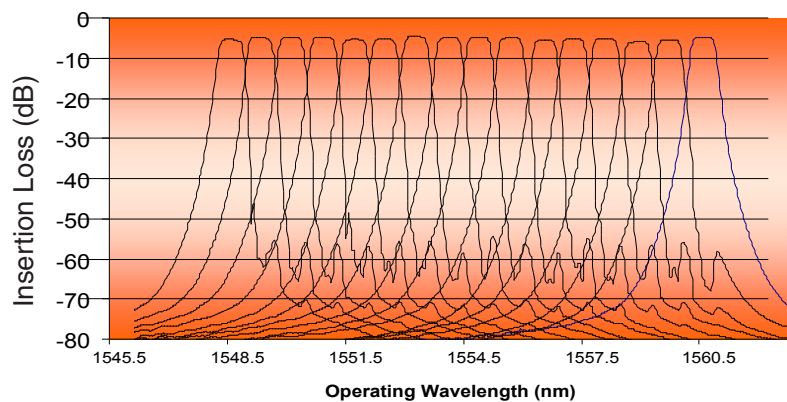
S: Standard



P: Plug-in Module



Transmission Spectrum



4-CHANNEL 200GHz DWDM

Features

- 200GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



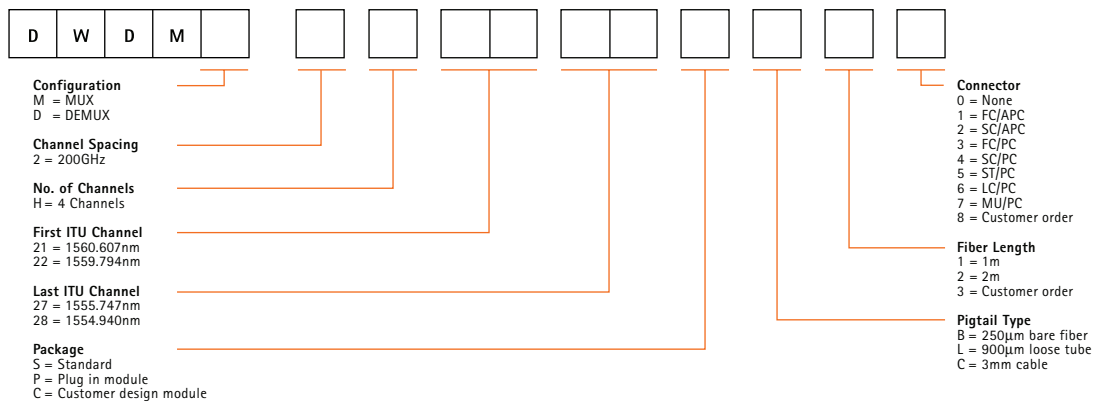
Specifications

DWDM-M (D)-2H-	Mux / Demux
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)
Center wavelength difference (nm)	<= 0.1
Channel spacing (GHz)	200 (~ 1.6nm)
Channel passband (nm) @0.5 dB	>= 0.5 (± 0.25nm)
Insertion loss (dB)	<= 3.0
Output uniformity (dB)*	<= 1.0
Passband ripple (dB)	max.: 0.5, typ.: 0.3
Adjcent channel isolation (dB)	>= 25
Non-adjcent channel Isolation (dB)	>= 45
Directivity (dB) (all ports)	>= 55
Return loss (dB) (all ports)	>= 50
Insertion loss temperature sensitivity (dB / °C)	< 0.005
Wavelength temperature sensitivity (nm / °C)	< 0.002
Polarization dependence loss (PDL) (dB)	<= 0.1
Polarization mode dispersion (PMD) (ps)	<= 0.1
Max. operating power (mW)	<= 300
Max. tensile load (N)	5
Operating temperature range (°C)	0 ~ 65
Storage temperature range (°C)	-40 ~ +85
Package dimension (mm)	(L) 127 x (W) 89 x (H) 10.7

All specifications referenced are without connectors.

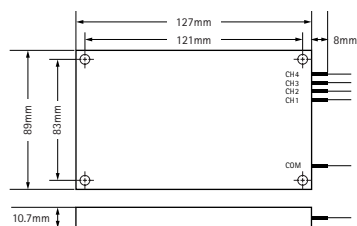
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

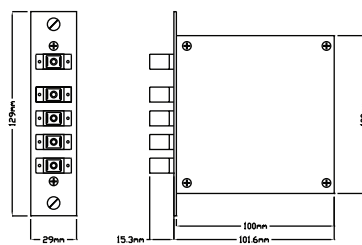


Dimensions

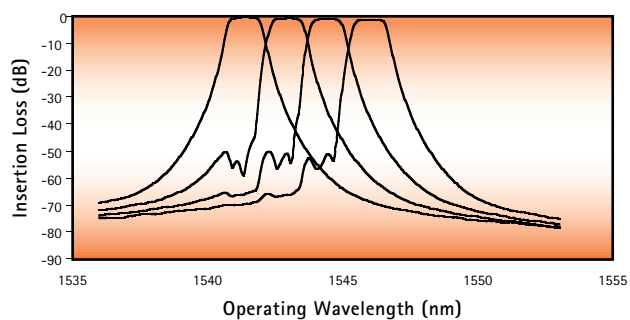
S: Standard



P: Plug-in Module



Transmission Spectrum



8-CHANNEL 200GHz DWDM

Features

- 200GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



Specifications

DWDM-M (D)-2I-

Center wavelength (nm)

Mux / Demux

ITU Grid (C-band: 1529.55 ~ 1560.61)

(L-band: 1570.42 ~ 1603.17)

Center wavelength difference (nm)

<= 0.1

Channel spacing (GHz)

200 (~ 1.6nm)

Channel passband (nm)@ 0.5 dB

>= 0.5

Insertion loss (dB)

<= 4.0

Output uniformity (dB)*

<= 1.5

Passband ripple (dB)

max.: 0.5, typ.: 0.3

Adjcent channel isolation (dB)

>= 25

Non-adjcent channel Isolation (dB)

>= 45

Directivity (dB) (all ports)

>= 55

Return loss (dB) (all ports)

>= 50

Insertion loss temperature sensitivity (dB / °C)

< 0.005

Wavelength temperature sensitivity (nm / °C)

< 0.002

Polarization dependence loss (PDL) (dB)

<= 0.1

Polarization mode dispersion (PMD) (ps)

<= 0.1

Max. operating power (mW)

<= 300

Max. tensile load (N)

5

Operating temperature range (°C)

0 ~ 65

Storage temperature range (°C)

-40 ~ +85

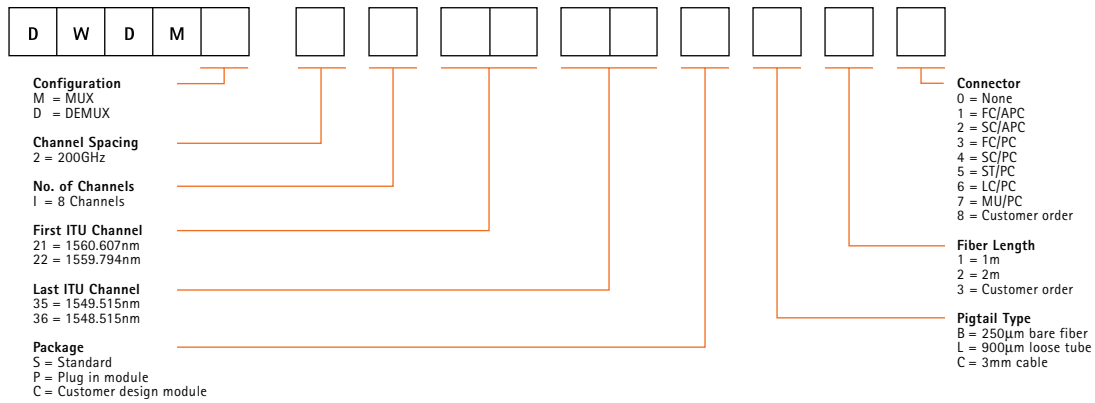
Package dimension (mm)

(L) 142 x (W) 96 x (H) 10.7

All specifications referenced are without connectors.

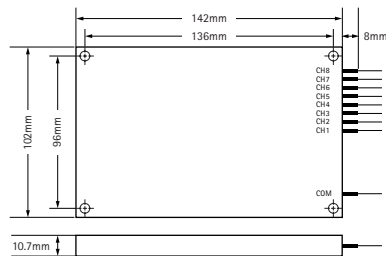
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

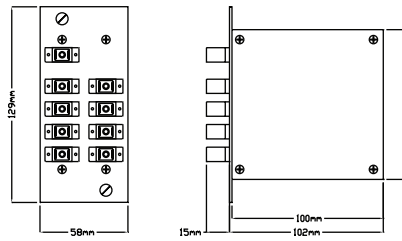


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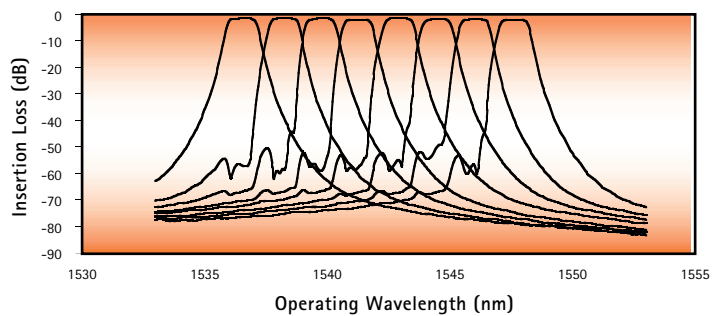
S: Standard



P: Plug-in Module



Transmission Spectrum



16-CHANNEL 200GHz DWDM

Features

- 200GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



Specifications

DWDM-M (D)-2J-	Mux / Demux
Center wavelength (nm)	ITU Grid (C-band: 1529.55 ~ 1560.61) (L-band: 1570.42 ~ 1603.17)
Center wavelength difference (nm)	<= 0.1
Channel spacing (GHz)	200 (~ 1.6nm)
Channel passband (nm)@ -0.5dB	>= 0.5
Insertion loss (dB)	<= 5.5
Output uniformity (dB)*	<= 1.8
Passband ripple (dB)	max.: 0.5, typ.: 0.3
Adjcent channel isolation (dB)	>= 25
Non-adjcent channel Isolation (dB)	>= 45
Directivity (dB) (all ports)	>= 55
Return loss (dB) (all ports)	>= 50
Insertion loss temperature sensitivity (dB / °C)	< 0.005
Wavelength temperature sensitivity (nm / °C)	< 0.002
Polarization dependence loss (PDL) (dB)	<= 0.1
Polarization mode dispersion (PMD) (ps)	<= 0.1
Max. operating power (mW)	<= 300
Max. tensile load (N)	5
Operating temperature range (°C)	0 ~ 65
Storage temperature range (°C)	-40 ~ +85
Package dimension (mm)	(L) 150 x (W) 116 x (H) 15

All specifications referenced are without connectors.

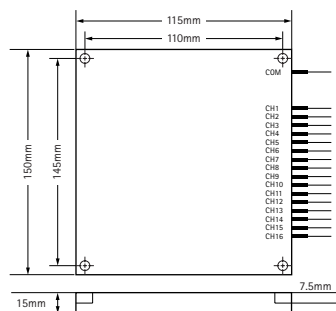
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

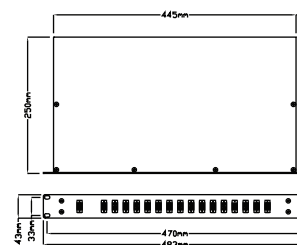
D	W	D	M									
Configuration M = MUX D = DEMUX				Channel Spacing 2 = 200GHz		No. of Channels J = 16 Channels		First ITU Channel 21 = 1560.607nm 22 = 1559.794nm		Last ITU Channel 51 = 1536.609nm 52 = 1535.822nm		Package S = Standard P = Plug in module C = Customer design module
												Connector 0 = None 1 = FC/APC 2 = SC/APC 3 = FC/PC 4 = SC/PC 5 = ST/PC 6 = LC/PC 7 = MU/PC 8 = Customer order
												Fiber Length 1 = 1m 2 = 2m 3 = Customer order
												Pigtail Type B = 250μm bare fiber L = 900μm loose tube C = 3mm cable

Dimensions

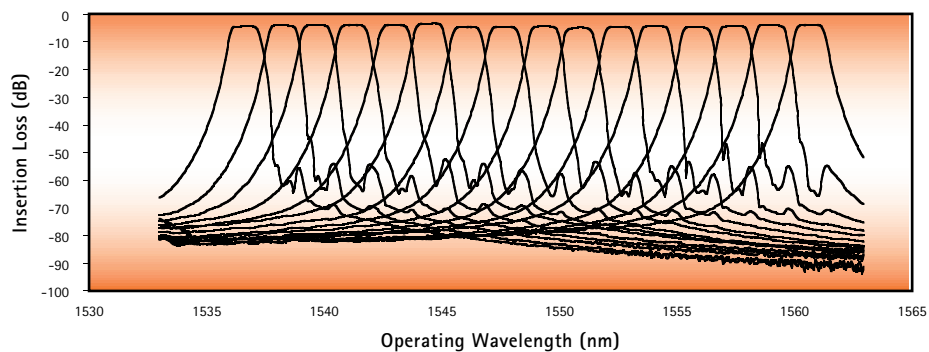
S: Standard



P: Plug-in Module



Transmission Spectrum



20-CHANNEL 200GHz DWDM

Features

- 200GHz channel spacing
- Low insertion loss, high isolation
- High stability and reliability
- Optical path epoxy free

Applications

- Long-haul optical fiber network
- Metro optical fiber network
- CATV transmission systems
- EDFA system



Specifications

DWDM-M (D)-2K-

Mux / Demux

Center wavelength (nm)

ITU Grid (C-band: 1529.55 ~ 1560.61)
(L-band: 1570.42 ~ 1603.17)

Center wavelength difference (nm)

<= 0.1

Channel spacing (GHz)

200 (~ 1.6nm)

Channel passband (nm) @-0.5 dB

>= 0.5

Insertion loss (dB)

<= 7.0

Output uniformity (dB)*

<= 1.8

Passband ripple (dB)

max.: 0.5, typ.: 0.3

Adjcent channel isolation (dB)

>= 25

Non-adjcent channel Isolation (dB)

>= 45

Directivity (dB) (all ports)

>= 55

Return loss (dB) (all ports)

>= 50

Insertion loss temperature sensitivity (dB / °C)

< 0.005

Wavelength temperature sensitivity (nm / °C)

< 0.002

Polarization dependence loss (PDL) (dB)

<= 0.1

Polarization mode dispersion (PMD) (ps)

<= 0.1

Max. operating power (mW)

<= 300

Max. tensile load (N)

5

Operating temperature range (°C)

0 ~ 65

Storage temperature range (°C)

-40 ~ +85

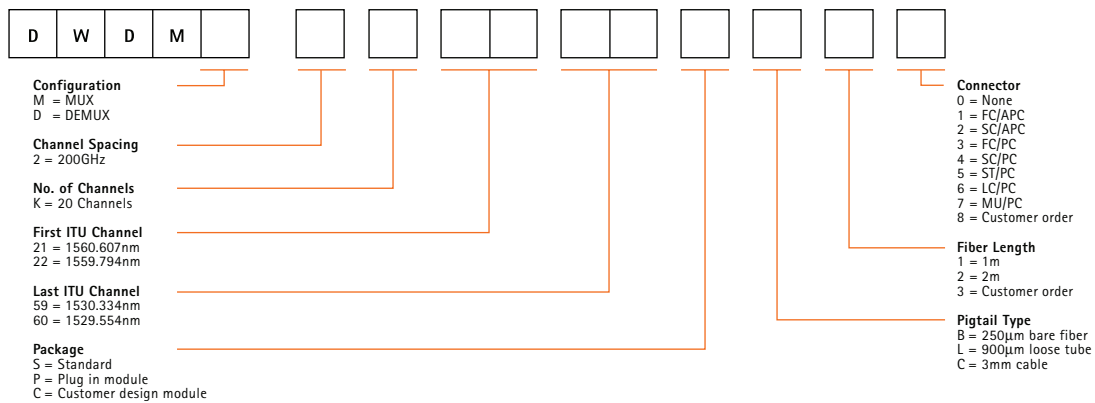
Package dimension (mm)

(L) 150 x (W) 116 x (H) 15

All specifications referenced are without connectors.

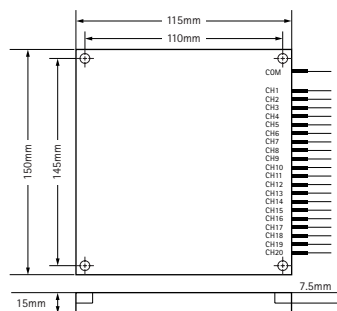
* Insertion loss, increasing from low to high with respect to the output ports, is available by customer order.

Ordering Information

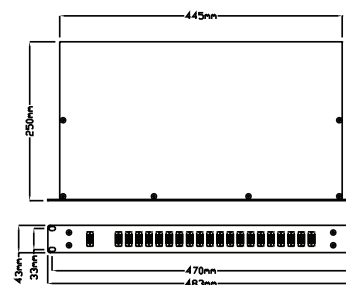


Dimensions

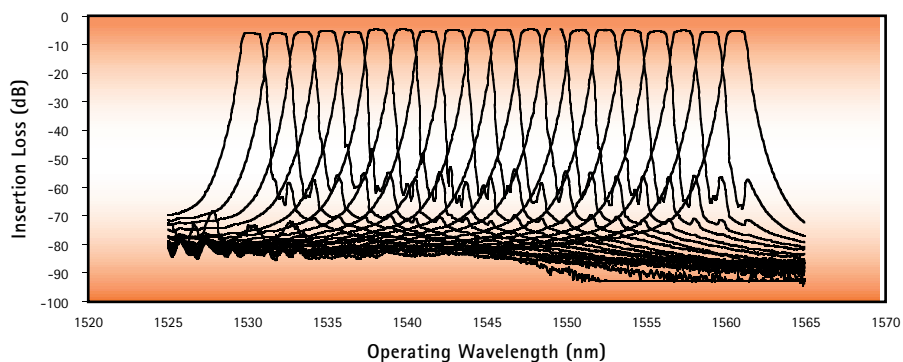
S: Standard



P: Plug-in Module



Transmission Spectrum



ITU GRID TABLE

ITU Channel No.	Frequency (THz)	Wavelength (nm)	ITU Channel No.	Frequency (THz)	Wavelength (nm)
15	191.50	1565.50	41	194.10	1544.53
16	191.60	1564.68	42	194.20	1543.73
17	191.70	1563.86	43	194.30	1542.94
18	191.80	1563.05	44	194.40	1542.14
19	191.90	1562.23	45	194.50	1541.35
20	192.00	1561.42	46	194.60	1540.56
21	192.10	1560.61	47	194.70	1539.77
22	192.20	1559.79	48	194.80	1538.98
23	192.30	1558.98	49	194.90	1538.19
24	192.40	1558.17	50	195.00	1537.40
25	192.50	1557.36	51	195.10	1536.61
26	192.60	1556.55	52	195.20	1535.82
27	192.70	1555.75	53	195.30	1535.04
28	192.80	1554.94	54	195.40	1534.25
29	192.90	1554.13	55	195.50	1533.47
30	193.00	1553.33	56	195.60	1532.68
31	193.10	1552.52	57	195.70	1531.90
32	193.20	1551.72	58	195.80	1531.12
33	193.30	1550.92	59	195.90	1530.33
34	193.40	1550.12	60	196.00	1529.55
35	193.50	1549.32	61	196.10	1528.77
36	193.60	1548.51	62	196.20	1527.99
37	193.70	1547.72	63	196.30	1527.22
38	193.80	1546.92	64	196.40	1526.44
39	193.90	1546.12	65	196.50	1525.66
40	194.00	1545.32			