

# Product Bulletin

# New



## 50/200 GHz Active Double-Stage Interleaver IMC Series

The JDS Uniphase optical frequency interleaver can be used as a colorless demultiplexer when employed within a banded system architecture. With its input stream of eighty 50 GHz spaced channels, the double-stage interleaver filters the channels into four output streams of twenty 200 GHz spaced channels. This terabit-enabling technology for ultra-dense wavelength multiplexing can be used over the entire C or L bands. In addition, the interleaver provides transmission network suppliers with more flexibility at the OADM site and reduces the performance requirements of the post-filtering DWDM module.

Actively heated, the interleaver lends itself to integration with temperature-controlled arrayed waveguides (AWG). Its flat top response complements the narrower bandwidth AWG component, resulting in almost negligible bandwidth narrowing of the AWG DWDM.

### Key Features

- Low insertion loss
- Flat, wide clear bandwidth
- Very high channel isolation
- Doubles capacity of existing networks
- Supports 2.5 and 10 Gb/s
- Lower-cost overall DWDM solution

### Applications

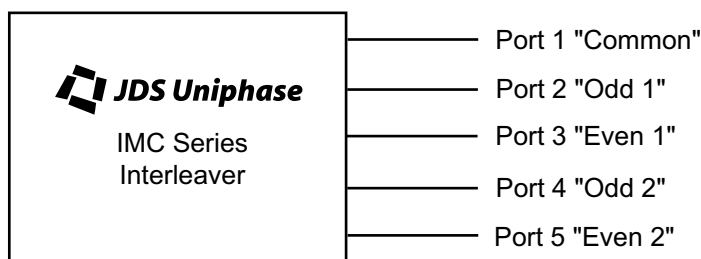
- High channel-count mux/demux
- Scalable terabit networks
- Universal 4-channel 50 GHz demux
- Bridge existing and new DWDM platforms
- Bidirectional networks
- Large node add/drop: entire set of odd or even channels can be dropped at once
- Comb filter

**Optical Specifications**

Parameter		50/200 GHz Mux	50/200 GHz Demux
Wavelength range (C band, for end channel)		1529.55 to 1561.01 nm	
Wavelength range (L band, for end channel)		1570.01 to 1610.056 nm	
Frequency range (C band, for end channel ITU grid)		196.000 to 192.050 THz	
Frequency range (L band, for end channel ITU grid)		190.950 to 186.200 THz	
Number of channels	Minimum	80 channel	
Reduced Clear Bandwidth <sup>1</sup>	Minimum	ITU ±10 GHz	
Clear bandwidth <sup>1</sup>	Minimum	ITU ±12 GHz	ITU ±11 GHz
Insertion loss within reduced clear bandwidth <sup>1</sup> (with one connection)	Maximum	2.0 dB	3.0 dB
Ripple within clear bandwidth <sup>1,2</sup>	Maximum	0.6 dB	0.5 dB
Polarization dependent loss within clear bandwidth <sup>1,3</sup>	Maximum		0.3 dB
Insertion loss uniformity <sup>1,4</sup>	Maximum		1.0 dB
Adjacent channel isolation of ±50 GHz within reduced clear bandwidth <sup>1</sup>	Minimum	13 dB	27 dB
Non-adjacent channel isolation of ±100 GHz within reduced clear bandwidth <sup>1</sup>	Minimum	13 dB	27 dB
Return loss for all ports	Minimum		40 dB
Directivity	Minimum		55 dB
Polarization mode dispersion within clear bandwidth	Maximum		0.3 ps
Optical power <sup>5</sup>	Maximum		23 dBm
Operating temperature			-5 to 70 °C

1. Over all operating temperatures and states of polarization (SOP).
2. Measured at any given SOP.
3. Difference between insertion loss at any two SOP, measure at a given wavelength.
4. Difference between the maximum insertion loss over any two clear bandwidths, at any given SOP, and at any operating temperature.
5. Restricted to wavelength range (C and L bands) and 1300 to 1320 nm.

**Interleaver (Top View)**



Note: See Table 1 below for channel designation of Ports 2 to 5.

**Table 1: Channel Designation of Ports 2, 3, 4, and 5**

Channel Spacing on ITU Grid	Port 2 Frequency	Port 3 Frequency	Port 4 Frequency	Port 5 Frequency
C band	196.00 to 192.20 THz	195.95 to 192.15 THz	195.90 to 192.10 THz	195.85 to 192.05 THz
L band	190.70 to 186.90 THz	190.75 to 186.95 THz	190.60 to 186.80 THz	190.65 to 186.85 THz

Note: Frequencies (THz) listed are for start channel on ITU grid.

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### Electrical Specifications

Parameter	50/200 GHz Mux/Demux	
Temperature sensor	100 $\Omega$ at 0 °C	
Temperature sensor slope (IEC 751 Class A)	0.00385 $\Omega/\Omega\text{-}^\circ\text{C}$	
RTD current <sup>1</sup>	Maximum	1 mA
Heater resistance	15 $\pm$ 0.3 $\Omega$	
Power consumption per heater (short-term, warm-up time only)	Maximum	3 W
Module warm-up time (case temperature at -5 °C)	Maximum	8 minutes

1. Platinum RTD, 3 wire.

### Electrical Pin Layout

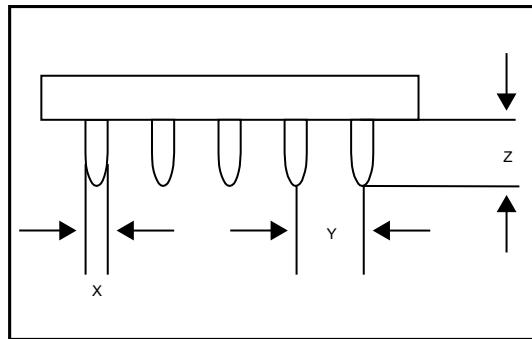
Pin	Description
1	Heater connection 1
2	Heater connection 2
3	RTDB1 <sup>1</sup>
4	RTDB2 <sup>1</sup>
5	RTDA
6	NC <sup>2</sup>
7	NC <sup>2</sup>
8	NC <sup>2</sup>
9	NC <sup>2</sup>
10	NC <sup>2</sup>

1. RTDB1 and RTDB2 are connected together at the sensor.
2. Pins 6-10 are not connected.

### Electrical Pin Specifications

#### Pin Specifications

Pin length from cassette (Z):	3.25 mm $\pm$ 0.25 (0.127" $\pm$ 0.01")
Pin diameter (X):	0.51 mm $\pm$ 0.05 mm (0.020" $\pm$ 0.002")
Pin separation (Y): (center to center)	2.54 mm (0.100")

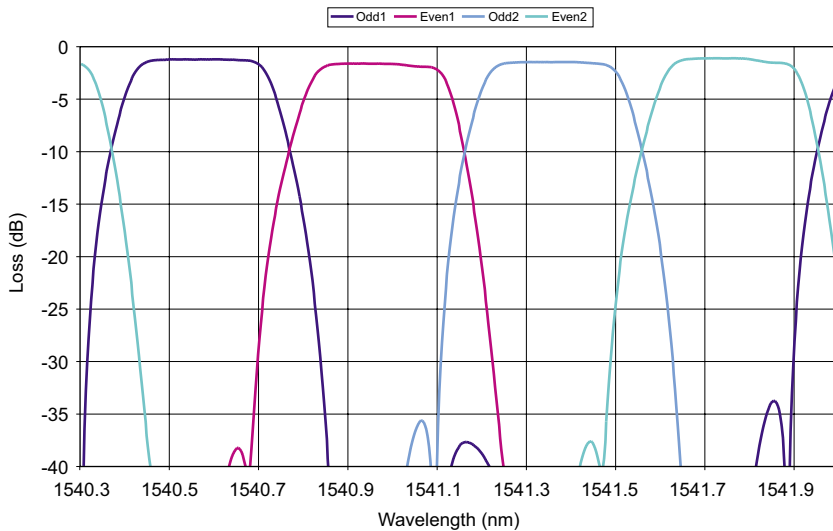


### Mechanical Specifications

Parameter	50/200 GHz Mux/Demux
Standard fiber type	Corning SMF-28, 900 $\mu\text{m}$ tight-buffer jacket
Standard fiber length	1.0 $\pm$ 0.1 m
Standard package dimensions (L x W x H)	152.4 x 127.0 x 15.2 mm

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### Spectral Response



### Ordering Information

Indicate your requirements by selecting one option from each configuration table. Please print the corresponding codes in the available boxes to form your part number. For more information on this or other products and their availability, please contact your JDS Uniphase account manager, or call 1-877-550-JDSU toll free in the U.S. and Canada or visit [www.jdsuniphase.com](http://www.jdsuniphase.com).

### Sample: IMC-CD5D02411

**IMC-  D  5   2  4  1**

Code	Wavelength Range
C	C band
L	L band

Code	Design Type
D	Double-stage Interleaver

Code	Narrower Channel Spacing
5	50 GHz

Code	Function
D	Demux
M	Mux

Code	Center Wavelength
0	Aligned with ITU grid <sup>1</sup>
5	50 GHz offset (for 100/200 GHz)

Code	Fiber Length
1	1 meter <sup>1</sup>

Code	Fiber Type
4	900 μm tight buffer SMF-28

Code	Package
2	Standard with heater

Code	Connector
0	None
1	FC/PC <sup>1</sup>
2	FC/SPC
3	FC/APC
4	SC/SPC
5	SC/APC
9	FC/UPC
A	SC/UPC
B	LC/PC
C	LC/UPC
D	MU/PC

1. Standard.

Corning SMF-28's a registered trademark of Corning Incorporated.  
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