

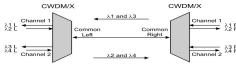
iConverter® CWDM/X 2 and 4 Channel Single-Fiber Multiplexer User Manual

DESCRIPTION

The iConverter CWDM/X Single-Fiber MUX/DEMUX modules utilize a single-fiber Common Port that aggregates two different wavelengths from each dual fiber Channel Port. Each fiber strand on the Channel Port supports a different wavelength, one wavelength for transmit (Tx) and a different wavelength for receive (Rx).

Single-Fiber CWDM/X modules are always used in pairs (example: model 8870-0 used with 8871-0). The transmit wavelength of the Channel Port at one end must match the receive wavelength of the same Channel Port at the other end, and the receive wavelength of the Channel Port at one end must match the transmit wavelength of the same Channel Port at the other end.

Each channel on the Common Port consists of two wavelengths, a transmit and a receive as shown below.



2-Channel MUX/DEMUX Modules

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OPTICAL SPECIFICATIONS

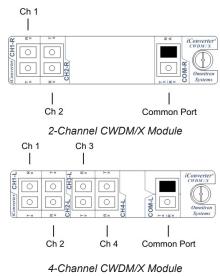
OPTICAL SPECIFICATIONS				
Optical Characteristics				
Parameter	Units	Values		
Common Port Operating Wavelength	nm	1270 - 1610		
CWDM Center Channel	nm	1271, 1291, 1311, 1331, 1351, 1371, 1431, 1451, 1431, 1451, 1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611		
CWDM Channel Spacing	nm	20		
2-Channel MUX Insertion Loss	dB	< 1.9		
4-Channel MUX Insertion Loss	dB	< 2.4		
Adjacent Channel Isolation	dB	> 30		
Non-Adjacent Channel Isolation 2 and 4-Channel	dB	> 40		
Return Loss (filtered channel)	dB	≥ 45		

2-Channel CWDM/X modules support four wavelengths; two transmit and two receive. 4-Channel Single-Fiber CWDM/X modules support eight wavelengths. Up to 8 channels (sixteen wavelengths) are supported by combining two CWDM/X modules with an iConverter Band Splitter (8865-0).

The CWDM modules can be used in an unmanaged or managed applications. To be managed, an Network Management Module (NMM2) or a module with integrated management must be installed in the same chassis.

See data sheet for available models.

PORT DEFINITIONS



4-Channel CWDM/X Modu Page 2

MODULE SPECIFICATIONS

Standards	Telecordia GR-1209, GR-1221		
Regulatory	Safety:	UL, CE, UKCA	
Regulatory	EMI:	FCC Class A	
Environmental	RoHS, WEEE, REACH		
Port Types	Fiber: Channel Ports: LC/UPC, Dual Fiber		
	Common: LC/UPC, Single-Fiber		
Cable Types	Fiber: Single-mode: 9/125µm		
	DC Input (Backplane): 3.3VDC, 0.025A @ 3.3VDC		
DC Power			
Requirements	(when management is required, otherwise		
	passive operation)		
Dimensions	0.85" x 4.5" x 2.8"		
WxDxH	(21.6 mm x 114.3 mm x 71.1 mm)		
Weight	12.0 oz. (340.2 grams)		
	Commercial:	0 to 50°C	
Temperature	Wide:	-40 to 60°C	
	Storage:	-40 to 80°C	
Humidity	5 to 95% (non-condensing)		
Altitude	-100m to 4,000m		
MTBF (hrs)	> 1,000,000		
Warranty	One (1) year warranty with 24/7/365 free Technical Support		

Channel Port

The Channel Ports transmit and receive signals on specific CWDM wavelengths. Each Channel Port supports a different transmit and receive wavelength based on the CWDM/X model. The Channel Ports are multiplexed onto and demultiplexed from the Common Port.

When connecting external dual fiber transceivers to the Channel Port, select an optical transceiver that matches the receive wavelength of the specific Channel Port. Since the Channel Port uses two different wavelengths over dual fiber, one wavelength for transmit (Tx) and a different wavelength for receive (Rx), the receiver of the external dual fiber transceiver must have the capability to detect the transmit wavelength of the Channel Port. Typically, the receiver of a dual fiber transceiver has an operating center wavelength of 1260nm to 1610nm. Verify the external transceiver's optical parameters before using.

Common Port

The Common Port transmits and receives the aggregated wavelengths connected to the Channel Ports over a single-fiber common link. CWDM/X modules are always used in pairs. When connecting two CWDM/X modules, the COM-L port is connected to the COM-R port on the matching pair.

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Warranty

This product is warranted to the original purchaser (Buyer) against defects in material and workmanship for a period of one (1) years from the date of shipment. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective with the same product or with a product with at least the same functionality.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge MOUNTING AND CABLE ATTACHMENT

- Carefully slide the module into an open slot in an iConverter chassis. Align the module with the installation guides and ensure that the module is firmly seated against the backplane. Secure the module by fastening the front panel thumbscrew(s) (push in and turn clockwise to tighten) to the chassis front.
- 2. Connect a single-mode, dual fiber duplex LC cable between the Channel Port of the CWDM/X module and the attached device. It is important to ensure that the wavelength on each fiber strand of the CWDM/X matches the wavelengths of the attached device. Connect all Channel Ports in this manner. Ensure that the transmit (Tx) is attached to the receive side of the device at the other end, and the receive (Rx) is attached to the transmit side.
- 3. Connect a single-mode, single-fiber simplex LC cable between the Common Ports on the CWDM/X modules (this connection may be made through fiber patch panels since the modules may not be co-located). Ensure that the COM-L port at one end connects to the COM-R port at the other end.

NOTE: For proper installation, a network diagram indicating port designations is recommended.

NOTE: The iConverter CWDM/AD modules can not be installed in slots 4, 8, 12 and 16 of a 19-Module Chassis or in the top slot of a 2-Module Chassis or in a 1-Module Redundant Power Chassis.

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to return the product to Buyer's designated US

address using Omnitron's standard shipping

The foregoing warranty shall not apply to product

malfunctions resulting from improper or inadequate

use and/or maintenance of the equipment

by Buyer, Buyer-supplied equipment, Buyer-

supplied interfacing, unauthorized modifications

or tampering with equipment (including removal

of equipment cover by personnel not specifically

authorized and certified by Omnitron), or misuse, or

operating outside the environmental specification

of the product (including but not limited to voltage,

ambient temperature, radiation, unusual dust, etc.),

No other warranty is expressed or implied.

Omnitron specifically disclaims the implied

warranties of merchantability and fitness for any

The remedies provided herein are the Buyer's

sole and exclusive remedies. Omnitron shall not

be liable for any direct, indirect, special, incidental,

or consequential damages, whether based on

contract, tort, or any legal theory.

or improper site preparation or maintenance.

method.

Limitation of Warranty

particular purpose.

Environmental Notices

The equipment covered by this manual must be disposed of or recycled in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) of the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2015/863/EU, for electrical and electronic equipment sold in the EU after July 2019. Such disposal must follow national legislation for IT and Telecommunication equipment in accordance with the WEEE directive: (a) Do not dispose waste equipment with unsorted municipal and household waste. (b) Collect equipment waste separately. (c) Return equipment using collection method agreed with Omnitron.

The equipment is marked with the WEEE symbol shown to indicate that it must be collected separately from other types of waste. In case of small items the symbol may be printed only on the packaging or in the user manual. If you have questions regarding the correct disposal of equipment go to www.omniton-systems.com/ support or e-mail to Omnitron at intlinfo@omnitronsystems.com.



SOFTWARE OPTIONS

The CWDM modules do not have any configurable settings. If used in a managed application, the modules can be viewed and model and serial numbers are displayed.

For more information on management, register for access to the NetOutlook Management Software user manual

DESIGN CONSIDERATIONS

iConverter CWDM/X modules are passive devices that require no external power. Attenuation (signal loss) of less than 1.5dB (1-Channel), 1.6dB (2-Channel) and 2.2dB (OADM) will be realized through each port on the module (see the Optical Specifications for exact loss specification for each model). Detailed calculations should be performed for each fiber optic link in the network to ensure the proper optical devices are specified with sufficient transmitter power.

When calculating optical loss, ensure that the total loss, plus a safety factor (typically 3dB) does not exceed the optical power budget. The optical power budget is the difference between the transmitter optical output power and the receiver's optical sensitivity. The transmitter optical output power and receiver optical sensitivity values can be obtained from the manufacturers of the respective equipment.

For more information, access the CWDM Resource Center to view all relevant documents.

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Lower Band CWDM Channels Upper Band CWDM Channels COM

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Safety Warnings and Cautions

ATTENTION: Observe precautions for handling electrostatic discharge sensitive devices.

WARNING: Potential damage to equipment and personal injury.



WARNING: Risk of electrical shock.

Customer Support Information

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