

DESCRIPTION

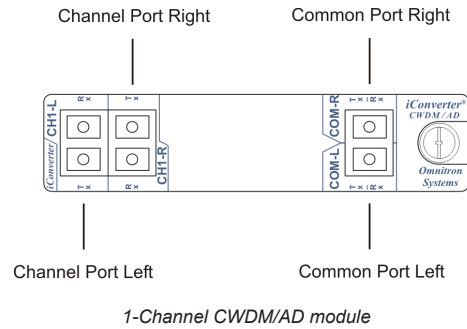
iConverter 1-Channel Single-Fiber CWDM/AD modules are CWDM Optical Add and Drop Multiplexers (OADM). The CWDM/AD modules add and drop one channel on one or both directions of a CWDM single-fiber common link. Nine standard models of the 1-Channel Single-Fiber CWDM/AD modules are available.

The Single-Fiber CWDM/AD modules support dual fiber Channel Ports and single-fiber Common Port connections. Each fiber strand on the Channel Port supports a different wavelength, one wavelength for transmit (TX) and a different wavelength for receive (RX).

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.](#)

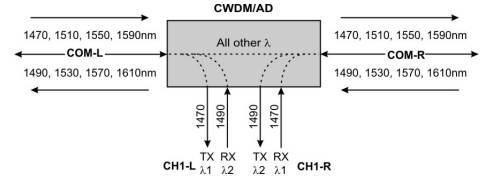
PORT DEFINITIONS



1-Channel CWDM/AD module

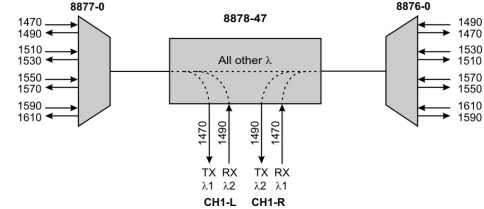
The figure below illustrates the operation of the Add/Drop MUX/DEMUX. The illustration shows the Common Ports (COM-L and COM-R) as bidirectional single-fiber connections. The Channel Ports (CH1-L and CH1-R) are composed of two different wavelengths creating a dual fiber connection.

The figure below illustrates the Channel Port wavelength configuration for model 8878-47. The wavelength for CH1-L RX is 1490 and a TX of 1470, and CH1-R RX of 1470 and a TX of 1490.



1-Channel Add/Drop MUX/DEMUX

The figure below illustrates an end-to-end solution where a wavelength is added/dropped in the middle of the network.



Single-Fiber Multiplexers with Add/Drop MUX

Common Port (Left and Right)

The Channel Ports transmit and receive signals using two specific CWDM wavelengths based on the CWDM/AD model. The Channel Ports are multiplexed and demultiplexed from the Common Port. As shown in Figure 2, each Channel Port on the CWDM/AD module has a Left (CH1-L) and Right (CH1-R) port. Data transmitted and received by Channel Port Left is aggregated on Common Port Left (COM-L) and data transmitted and received by Channel Port Right (COM-R) is aggregated on Common Port Right.

When connecting external dual fiber transceivers to the Channel Port, select an optical transceiver that matches the receive (RX) wavelength of the specific Channel Port. Since the Channel Port uses two different wavelengths over dual fiber, 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 (Left and Right)

The aggregated wavelengths from the Channel Ports are transmitted and received over the single-fiber Common Port. As shown in Figure 2, there are Left and Right Common Ports on the CWDM/AD module. Common Port Left (COM-L) and Common Port Right (COM-R) are internally connected to pass through all wavelengths not dropped or added by the specific CWDM/AD model. Only the specific wavelengths of the model selected will be dropped to the appropriate Channel Port. Common Port Left drops and adds wavelength traffic from Channel Port Left and Common Port Right drops and adds wavelength traffic from Channel Port Right.

MOUNTING AND CABLE ATTACHMENT

1. 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/AD module and the attached device. It is important to ensure that the wavelength of the CWDM/AD matches the wavelength of the attached device. Connect both 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/AD modules (this connection may be made through fiber patch panels since the modules may not be co-located) or CWDM/X module. Make sure the Left/Right designation is followed.

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.

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](#).

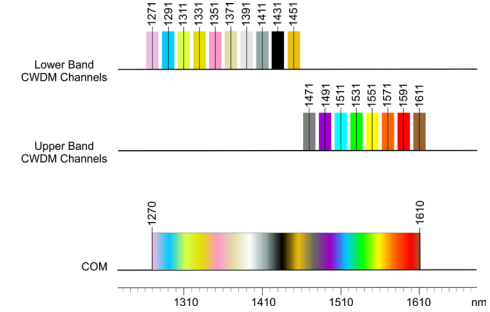
DESIGN CONSIDERATIONS

iConverter CWDM/AD modules are passive devices that require no external power. Attenuation (signal loss) of less than 1.9dB 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.

WAVELENGTH DIAGRAM



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
1-Channel Insertion Loss	dB	< 1.9
Adjacent Channel Isolation	dB	> 30
Non-Adjacent Channel Isolation	dB	> 40
Return Loss (filtered channel)	dB	≥ 45

MODULE SPECIFICATIONS

Standards	Telecordia GR-1209, GR-1221	
Regulatory	Safety: UL, CE, UKCA	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 Power Requirements	DC Input (Backplane): 3.3VDC, 0.025A @ 3.3VDC (when management is required, otherwise passive operation)	
Dimensions W x D x H	0.85" x 4.5" x 2.8" (21.6 mm x 114.3 mm x 71.1 mm)	
Weight	12.0 oz. (340.2 grams)	
Temperature	Commercial: 0 to 50°C	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	1 year warranty with 24/7/365 free Technical Support	

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

to return the product to Buyer's designated US address using Omnitron's standard shipping method.

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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.), or improper site preparation or maintenance.

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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.omnitron-systems.com/support or e-mail to Omnitron at intlinfo@omnitron-systems.com.



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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