Omnitron Systems

iConverter® **CWDM/X**
5 Channel Single-Fiber Multiplexer
User Manual

DESCRIPTION

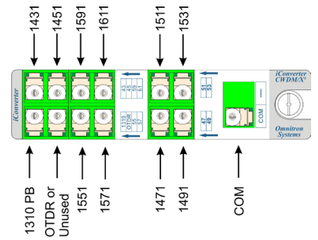
The 5-Channel Single-Fiber CWDM Multiplexer/ Demultiplexer (MUX/DEMUX) modules support ITU-T G.694.2 wavelengths between 1431nm to 1611nm in 20nm increments with a 1310nm Pass Band Port. An optional Optical Time Domain Reflectometer (OTDR) port is available which provides the ability to test the integrity of the fiber optic link without disturbing the wavelength channels.

iConverter CWDM modules are protocol and rate transparent allowing different services up to 10Gbps to be transported across the same common fiber link.

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



CWDM MUX/DEMUX

CWDM Channel Ports

The Channel Ports transmit and receive signals on specific CWDM wavelengths. The Channel Ports are multiplexed onto and demultiplexed from the Common Port.

OTDR Port

The optional OTDR port provides the ability to test the integrity of the fiber optic link by connecting an external test equipment to the port. It operates at 1625nm to 1660nm.

1310 Pass Band Port

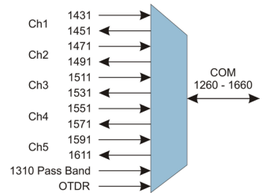
The 1310 Pass Band Port allows a uni-directional legacy 1310nm signal to pass through the module on a reserved band (1270nm to 1350nm). The port can be used to combine an existing legacy 1310nm signal with up to 10 CWDM channels, allowing the CWDM channels in the range of 1431nm to 1611nm to be overlaid on the same fiber pair as the existing 1310nm signal.

Common Ports

The Common Port transmits and receives the aggregated wavelengths connected to the Channel Ports.

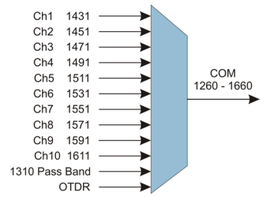
Diagrams

The 5-Channel Single-Fiber MUX/DEMUX can be configured to operate as a 5-Channel Single-Fiber MUX/DEMUX.



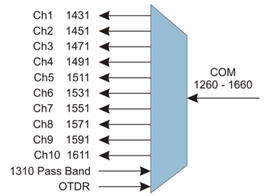
5-Channel CWDM MUX/DEMUX with 1310 Pass Band and Optional OTDR

Single-Fiber MUX/DEMUX can also be configured as a 10-Channel Single-Fiber MUX.



10-Channel CWDM MUX

Single-Fiber MUX/DEMUX can also be configured as a 10-Channel Single-Fiber DEMUX.



10-Channel CWDM DEMUX

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, LC/APC single-mode fiber cable between the Channel Port of the module and the attached device. It is important to ensure that the wavelength of the Channel Port matches the wavelength 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. When overlaying an existing 1310nm legacy network, connect the LC/APC single-mode fiber cable from the legacy network to the 1310 Pass Band Port on the module.

4. Depending on the network topology, the Common Ports support a single-mode LC/APC fiber cable. Connect these ports according to the network topology.

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.

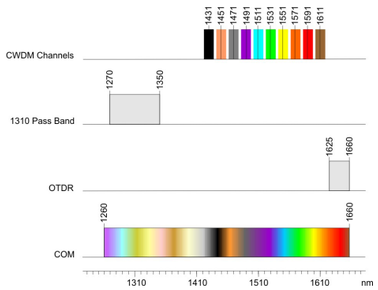
DESIGN CONSIDERATIONS

iConverter CWDM/X modules are passive devices that require no external power. Attenuation (signal loss) 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 SPECIFICATION

Parameter	Units	Values
1431 CWDM Insertion Loss*	dB	Typical 4.4, Max 5.0
1451 CWDM Insertion Loss*	dB	Typical 4.0, Max 4.7
1471 CWDM Insertion Loss*	dB	Typical 3.7, Max 4.4
1491 CWDM Insertion Loss*	dB	Typical 3.4, Max 4.1
1511 CWDM Insertion Loss*	dB	Typical 3.1, Max 3.8
1531 CWDM Insertion Loss*	dB	Typical 2.8, Max 3.5
1551 CWDM Insertion Loss*	dB	Typical 2.5, Max 3.2
1571 CWDM Insertion Loss*	dB	Typical 2.2, Max 2.9
1591 CWDM Insertion Loss*	dB	Typical 1.9, Max 2.6
1611 CWDM Insertion Loss*	dB	Typical 1.6, Max 2.3
1310 Pass Band Insertion Loss*	dB	Typical 0.8, Max 1.0
OTDR Insertion Loss*	dB	Typical 1.4, Max 2.5
***Note – Above specs includes connector loss**		

OPTICAL SPECIFICATIONS

Parameter	Units	Values
Common Port	nm	1260 - 1660
CWDM Center Channel	nm	1431, 1451, 1471, 1491, 1511, 1531, 1551, 1571, 1591, 1611
CWDM Channel Spacing	nm	20
1310 Pass Band	nm	1270 - 1350
CWDM Pass Band Width	nm	± 6.5
OTDR	nm	1625 - 1660
Ripple over Pass Band	dB	≤ 0.5
Adjacent Channel Isolation	dB	≥ 30
Insertion Loss Thermal Stability	dB/°C	≤ 0.006
Wavelength Thermal Stability	nm/°C	≤ 0.002
Polarization Dependent Loss	dB	≤ 0.15
Polarization Mode Dispersion	ps	≤ 0.15
Return Loss	dB	≥ 45
Directivity	dB	≥ 55

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/APC, Dual Fiber or Single-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	One (1) year warranty with 24/7/365 free Technical Support

General and Copyright Notice

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

Limitation of Warranty

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.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

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.

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@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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