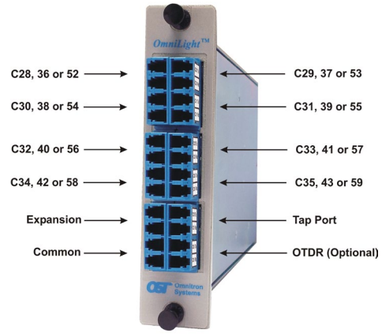
OmniLight® 8-Channel Dual Fiber
DWDM MUX/DEMUX
USER MANUAL

Product Overview

OmniLight 8-Channel LGX Dual Fiber DWDM MUX/DEMUX modules support DWDM channels 28 through 35, 36 through 43 and 52 through 59 in 100GHz spacing. An expansion port is available to cascade multiple DWDM MUX/DEMUX modules, doubling the capacity of the common fiber link to 16 channels or tripling the capacity to 24 channels. Tap ports are available to port to monitor optical levels of the incoming and outgoing common channels. 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.

See data sheet for available models.



Front Panel Ports

DWDM Channel Ports

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

Expansion Port

The Expansion Port cascades multiple DWDM MUX/DEMUX modules, doubling or tripling the capacity of the Common Port. The Expansion Port will accept the remaining wavelengths in the C Band not used by the module.

Tap Ports

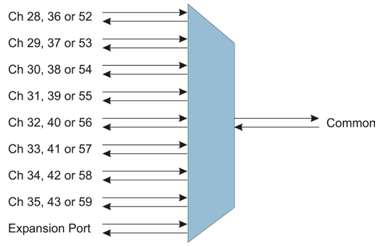
Tap ports are available to monitor incoming and outgoing optical levels. Attach an external light meter to either the transmit or receive port.

OTDR Port

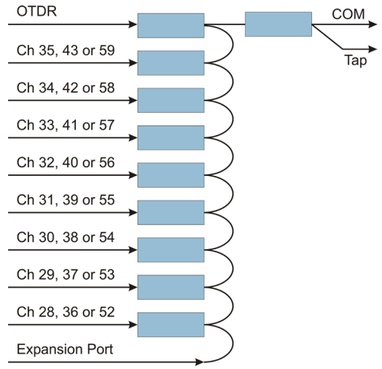
The optional OTDR port provides the ability to test the integrity of the fiber optic link by connecting an external test equipment to the port. It operates at 1625nm to 1640nm.

Common Ports

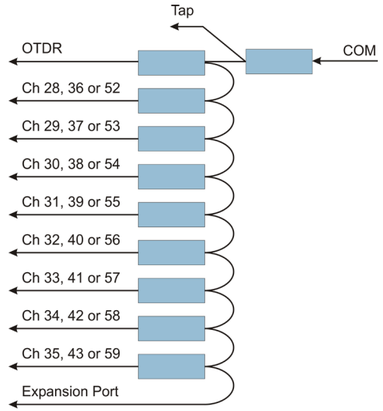
The Common Port transmits and receives the aggregated wavelengths connected to the Channel Ports.



8-Channel DWDM MUX/DEMUX with Expansion Port



8-Channel Mux Block Diagram



8-Channel DeMux Block Diagram

Mounting and Cable Attachment

a. For OmniLight Chassis or Shelf installations, carefully align the push rivets on the module with mounting holes on the chassis/shelf corresponding with the desired opening. Once aligned, push the rivets into mounting holes to lock the module in place. For more information on the chassis and shelf, see OmniLight Chassis and Rack Mount product web page.

b. Connect a single-mode, LC/UPC 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.

c. When using the Expansion Port, connect the LC/UPC single-mode fiber cable from the Expansion Port to the Common Port on another 8-Channel DWDM MUX/DEMUX module.

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

Design Considerations

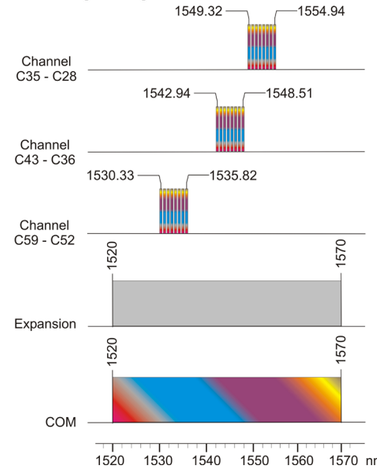
Detailed power/loss budget calculations should be performed for each fiber optic link in the network.

OmniLight DWDM modules are passive devices that require no external power. Attenuation (signal loss) of less than 3.7dB will be realized through each port on the module (see the Optical Specifications for exact loss specification for each model and port). 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/DWDM Resource Center to view all relevant documents.

Wavelength Diagrams



Optical Specifications

Optical Characteristics		
Parameter	**Units**	**Values**
Common Port Operating Wavelength	nm	1520 - 1570
Number of Channels	NA	8 + Expansion
Channel Spacing	GHz	100
DWDM Center Wavelengths Model 5520-101 (C28 - C35)	nm	1554.94, 1554.13, 1553.33, 1552.52, 1551.72, 1550.92, 1550.12, 1549.32
DWDM Center Wavelengths Model 5520-102 (C36 - C43)	nm	1548.51, 1547.72, 1546.92, 1546.12, 1545.32, 1544.53, 1543.73, 1542.94
DWDM Center Wavelengths Model 5520-103 (C52 - C59)	nm	1535.82, 1535.04, 1534.25, 1533.47, 1532.68, 1534.90, 1531.12, 1530.33
Expansion Port	nm	1520 - 1570
OTDR Port	nm	1625 - 1640
DWDM Channel Bandwidth	nm	± 0.12
DWDM Channel Insertion Loss	dB	≤ 3.7
Expansion Port Insertion Loss	dB	≤ 3.4
OTDR Port Insertion Loss	dB	≤ 1.3
Tap Port Insertion Loss (Mux)	dB	≤ 23.3
Tap Port Insertion Loss (DeMux)	dB	≤ 20.0

Adjacent Channel Isolation	dB	≥ 25
Non-adjacent Channel Isolation	dB	≥ 40
Insertion Loss Thermal Stability	dB/°C	≤ 0.005
Wavelength Thermal Stability	nm/°C	≤ 0.002
Polarization Dependent Loss (PDL)	dB	≤ 0.2
Polarization Mode Dispersion (PMD)	ps	≤ 0.2
Return Loss	dB	≥ 45
Directivity	dB	≥ 50
Optical Operating Power	mW	≤ 300

Module Specifications

Description	OmniLight DWDM MUX/DEMUX 8-Channel Dual Fiber DWDM Mux/DeMux	
Standard Compliances	Telecordia GR-1209, GR-1221	
Regulatory Compliances	Safety: UL, CE, UKCA ACT: TAA, BAA, NDAA	
Environmental	RoHS, WEEE, REACH	
Port Types	Fiber:	8 Channel: LC (UPC)
Cable Types	Fiber:	Single-mode: 9/125µm Channel Ports: Dual Fiber Common Port: Dual Fiber
Dimensions W x D x H	1.162" x 6.12" x 5.10" (29.51 mm x 155.45 mm x 129.5 mm)	
Weight	1.0 lbs. (453.6 grams)	
Operating Temperature	-5 to 65°C	
Storage Temperature	-40 to 85°C	
Humidity	5 to 90% operational (non-condensing) 0 to 95% storage	
Altitude	-100m to 4,000m	
Warranty	One (1) year warranty with 24/7/365 free Technical Support	

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.

Customer Support Information

Phone: (949) 250-6510
Fax: (949) 250-6514
Address: Omnitron Systems Technology, Inc.
38 Tesla
Irvine, CA 92618, USA
Email: support@omnitron-systems.com
URL: www.omnitron-systems.com

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