

DWDM Optical Transport Modules for Data Center Interconnect Topologies - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview and hardware datasheet for the DWDM Optical Transport Modules for Data Center Interconnect Topologies. These carrier-grade modules are engineered to address the surging bandwidth demands between hyperscale, colocation, and enterprise data centers. By leveraging dense wavelength division multiplexing (DWDM) technology, the platform enables the cost-effective scaling of fiber capacity, delivering multi-terabit transport over a single fiber pair. The solution is purpose-built for high-capacity, low-latency, and highly resilient Data Center Interconnect (DCI) topologies, ensuring seamless integration into existing optical transport networks. It embodies a pay-as-you-grow architecture, allowing service providers and large enterprises to scale from 100G to 400G+ per wavelength, optimizing both capital and operational expenditures.



ARCHITECTURE & CHASSIS DESIGN

The DWDM Optical Transport Modules are housed in a compact, modular 1RU or 2RU chassis, designed for high-density deployments in space-constrained data center environments. The architecture is centered around a redundant, hot-swappable controller and power supply design, ensuring maximum service availability. The passive optical layer is fully integrated, supporting multiplexing and demultiplexing of up to 96 channels. The system employs a flexible grid technology, supporting both 50GHz and 75GHz channel spacing, which allows for optimal spectrum utilization and future-proof capacity expansion. The backplane is designed to support non-blocking, line-rate forwarding across all slots, eliminating internal bottlenecks and ensuring deterministic performance for latency-sensitive applications.

HARDWARE FEATURES

The hardware platform offers a rich set of features tailored for DCI environments. Key capabilities include:

- High-Density Transport: Supports a mix of 100G, 200G, and 400G line cards in a single chassis.
- Advanced Coherent Optics: Utilizes programmable coherent DSPs to support multiple modulation formats (e.g., QPSK, 16QAM, 64QAM), enabling adaptive capacity and reach based on link conditions.
- Integrated OTN Framing: Provides robust OAM&P (Operations, Administration, Maintenance, and Provisioning) capabilities, including FEC (Forward Error Correction), performance monitoring, and fault isolation.
- Layer 0/Layer 1 Encryption: Optional line-rate AES-256 encryption ensures data integrity and confidentiality across the optical link.
- Redundant Timing: Supports Synchronous Ethernet (SyncE) and IEEE 1588v2 PTP for precise frequency and phase synchronization.

COMPLIANCE & STANDARDS

The module strictly adheres to international telecom and data center standards, ensuring interoperability and regulatory compliance. It is designed to meet the following requirements:

- Optical Interfaces: ITU-T G.694.1 (DWDM grid), ITU-T G.709 (OTN), OIF 400ZR/OpenZR+.
- Safety: IEC 60950-1, IEC 62368-1, UL 60950-1.
- EMC: FCC Part 15 Class A, EN 55032 Class A, EN 55024.
- Environmental: RoHS, WEEE, NEBS Level 3 (optional for ruggedized variants).
- Management: SNMPv3, NETCONF/YANG, CLI, and support for SDN controllers via open APIs.

TECHNICAL SPECIFICATIONS

The following table summarizes the key technical parameters of the DWDM Optical Transport Modules.

Parameter	Specification
Form Factor	1RU / 2RU Modular Chassis
Switching Capacity	Up to 3.6 Tbps per chassis (bidirectional)
Wavelength Capacity	Up to 96 channels (50GHz spacing)
Per-Wavelength Speed	100G / 200G / 400G (programmable)
Power Supply	1+1 Redundant, Hot-swappable AC/DC
Cooling	Front-to-back airflow, redundant fan

	trays
Management Interfaces	SNMPv3, NETCONF/YANG, CLI, Web UI
Operating Temperature	0°C to 45°C (32°F to 113°F)
Dimensions (HxWxD)	44mm x 440mm x 600mm (1RU)

ORDERING OPTIONS

A variety of configuration options are available to tailor the platform to specific network requirements. This includes selection of chassis configuration (AC or DC power), line card types (100G, 200G, 400G), optical multiplexer/demultiplexer modules (fixed or reconfigurable), and software feature licenses (e.g., encryption, advanced OTN). Please consult the factory for detailed SKU information and configuration validation.

