

CWDM and DWDM Transceiver Specifications - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview and hardware datasheet for the next-generation Coarse Wavelength Division Multiplexing (CWDM) and Dense Wavelength Division Multiplexing (DWDM) optical transceiver portfolio. Engineered for carrier-grade and enterprise network infrastructures, these transceivers deliver high-density wavelength aggregation, extended reach, and exceptional signal integrity across both metro and long-haul optical transport networks. By supporting a wide array of form factors including SFP, SFP+, XFP, and QSFP, the portfolio ensures seamless integration with existing line cards, routers, and optical transport platforms. This datasheet details the key specifications, optical parameters, and regulatory compliance certifications.



ARCHITECTURE & CHASSIS DESIGN

The CWDM and DWDM transceiver series feature a standardized mechanical footprint conforming to the Small Form-factor Pluggable (SFP) and Quad Small Form-factor Pluggable (QSFP) multisource agreements. This ensures interoperability across a vast ecosystem of third-party switching and routing hardware. The architecture incorporates a high-performance transmitter optical subassembly (TOSA) and receiver optical subassembly (ROSA) within a compact electromagnetic interference (EMI) shielded housing. A robust digital diagnostic monitoring interface provides real-time access to key operating parameters, including transceiver temperature, supply voltage, laser bias current, and optical received power, facilitating proactive network maintenance.

HARDWARE FEATURES

Full C-band wavelength tunability for DWDM variants (channels 15 to 61) ensuring flexible grid and fixed grid compatibility. For CWDM, fixed wavelength operation within the 1270 nm to 1610 nm spectral range is supported. Industry-leading optical output power ranging from -5 dBm to +5 dBm ensures robust link budgets. Advanced clock data recovery (CDR) capabilities are included for SFP+ and QSFP modules to compensate for signal degradation in long-distance fiber runs. All units feature hot-swappable capability, enabling field replacement without service interruption. Fiber optic interfaces are compliant with IEC 61754 standards, ensuring universal physical connectivity.

COMPLIANCE & STANDARDS

All transceivers are certified to comply with the latest optical networking standards, ensuring conformity and multi-vendor compatibility. The portfolio adheres to IEEE 802.3 for Ethernet, Fibre Channel, and SONET/SDH optical interface specifications. Compliance is also verified against the Telcordia GR-468-CORE for reliability assurance and the RoHS Directive for environmental responsibility. Furthermore, each module undergoes rigorous Electrostatic Discharge (ESD) and Electromagnetic Compatibility (EMC) testing to meet the requirements of the FCC and European CE mark.

TECHNICAL SPECIFICATIONS

The following specifications represent the core optical and electrical performance metrics measured at a standard operating temperature of 25°C. Maximum transmit optical power and minimum receiver sensitivity are defined for a bit error rate (BER) of 1E-12.

Parameter	Specification
Form Factor	SFP, SFP+, XFP, QSFP (selectable at order)
Wavelength Range	CWDM: 1270nm to 1610nm (18 channels); DWDM: C-band 1529.55nm to 1566.72nm
Channel Spacing	CWDM: 20nm; DWDM: 50GHz (0.4nm) or 100GHz (0.8nm)
Data Rate	1Gbps to 100Gbps (dependent on form factor and hardware compatibility)
Optical Output Power	CWDM: -5 dBm to 0 dBm; DWDM: -2 dBm to +5 dBm (tunable)
Receiver Sensitivity	Maximum -18 dBm (10Gbps) to -25 dBm (1Gbps) at 1E-12 BER

Optical Interface	Duplex LC/UPC or Simplex LC/APC
Operating Temperature	Commercial: 0 °C to 70 °C; Industrial: -40°C to 85°C
Digital Monitoring	Yes, via I2C interface for real-time diagnostics
Power Consumption	SFP+: < 1.5W; QSFP: < 3.5W typical

ORDERING OPTIONS

A complete matrix of orderable SKUs is available to facilitate procurement and inventory management. Options include CWDM Transceiver - SFP (1270nm to 1610nm), DWDM Transceiver - SFP+ (C-band, 50GHz spacing), DWDM Transceiver - XFP (C-band, tunable), and DWDM Transceiver - QSFP (C-band, 100G). All models include a limited lifetime warranty and can be procured with extended environmental specifications for ruggedized deployments. For detailed pricing and availability, authorized partners and direct enterprise accounts may consult their designated regional sales contact.

