

Cisco Compatible Optical Modules Catalog - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the Cisco Compatible Optical Modules Catalog, encompassing a comprehensive portfolio of Small Form-Factor Pluggable (SFP), SFP+, SFP28, QSFP+, and QSFP28 transceivers. Designed to deliver seamless interoperability within Cisco networking ecosystems, this catalog provides carrier-grade optical solutions for Enterprise, Data Center, and Service Provider architectures. Each module is engineered to meet or exceed the stringent performance, reliability, and environmental standards required for mission-critical network infrastructure, offering a strategic balance of cost-efficiency and uncompromised functionality.



ARCHITECTURE & CHASSIS DESIGN

The catalog is structured around a modular transceiver architecture, adhering to the Multi-Source Agreement (MSA) standards to ensure physical and electrical compatibility with a wide range of Cisco switches and routers. The portfolio is organized by data rate, reach, and optical interface type to facilitate precise selection for any network topology. The fundamental design philosophy centers on a digital diagnostic monitoring (DDM) interface, enabling real-time performance tracking of parameters such as optical output power, input power, temperature, and bias current. This architecture integrates advanced retiming and clock data recovery (CDR) circuits for high-speed modules (10G and above) to enhance signal integrity and reduce jitter over extended fiber runs, ensuring robust performance in high-density chassis environments.

HARDWARE FEATURES

All modules in the Cisco Compatible Optical Modules Catalog are built with industry-leading laser technology, including uncooled DFB (Distributed Feedback) and VCSEL (Vertical-Cavity Surface-Emitting Laser) options, selected to optimize performance for their specific reach and wavelength. Key hardware features include:

- ****Hot-Swappable Design:**** Enables insertion and removal without system

power-down, facilitating zero-touch maintenance and seamless upgrades.

- **Digital Diagnostic Monitoring (DDM):** Provides an industry-standard I2C interface for host systems to monitor vital parameters, supporting proactive maintenance and fault isolation.

- **Duplex LC Connector:** Industry-standard interface ensuring low insertion loss and high repeatability for both single-mode and multimode fiber connections.

- **EMI Shielding:** Integrated metal enclosure provides superior electromagnetic interference suppression, ensuring compliance with FCC and CE standards.

- **Wide Operating Temperature Range:** Options available for commercial (0 to 70°C) and industrial (-40 to 85°C) environments, suitable for both controlled data centers and outdoor telecom cabinets.

- **Protocol Transparency:** Fully transparent to protocols such as Gigabit Ethernet, Fibre Channel, SONET/SDH, and CPRI, offering versatile deployment capabilities.

COMPLIANCE & STANDARDS

Each transceiver is rigorously tested and compliant with a comprehensive suite of international standards and certifications, ensuring legal and operational acceptance in global networks. The compliance matrix is as follows:

- **Safety:** IEC 60825-1 (Class 1 Laser Product), FDA 21 CFR 1040.10 and 1040.11.
- **EMC:** FCC Part 15, CE EMC Directive (EN 55032, EN 55024).
- **Environmental:** RoHS 3 (Directive 2015/863/EU), REACH (EC 1907/2006), WEEE (2012/19/EU).
- **Optical Interoperability:** SFF-8472 (Digital Diagnostics), SFF-8431 (SFP+), SFF-8636 (QSFP+).
- **Networking Standards:** IEEE 802.3ae (10G Ethernet), IEEE 802.3by (25G Ethernet), IEEE 802.3bm (40G/100G Ethernet).
- **Quality Management:** Manufactured under ISO 9001 and ISO 14001 certified facilities.

TECHNICAL SPECIFICATIONS

The following table encapsulates the primary classifications and general capabilities of the catalog. For detailed, model-specific parameters, please refer to the individual SKU datasheets.

| Parameter | Specification |
|-------------------|-------------------------------------|
| Form Factor | SFP, SFP+, SFP28, QSFP+, QSFP28 |
| Data Rates | 1G, 10G, 25G, 40G, 100G |
| Optical Interface | Duplex LC (Single-mode / Multimode) |

| | |
|---------------------|---|
| Max Reach | 100m (MMF) to 120km (SMF) |
| Wavelength | 850nm, 1310nm, 1550nm, CWDM, DWDM |
| Digital Diagnostics | SFF-8472 / SFF-8636 Compliant |
| Power Consumption | < 1.5W (SFP) to < 3.5W (QSFP28) |
| Operating Temp. | Commercial: 0 to 70°C / Industrial: -40 to 85°C |

ORDERING OPTIONS

The Cisco Compatible Optical Modules Catalog is structured to simplify procurement and inventory management. All modules are available in standard and extended temperature variants, and can be ordered with either a standard bail-clasp latch or a pull-tab for high-density applications. Specific ordering details are as follows:

- **Standard Base Models:** Available in the primary form factors: 1000BASE-SX/LX, 10G-SR/LR/ER/ZR, 25G-SR/LR, 40G-SR4/LR4, and 100G-SR4/LR4.
- **Reach Variants:** For each standard model, multiple reach options (e.g., 300m, 2km, 10km, 40km, 80km) are available to match different link budgets.
- **Wavelength Options:** In addition to standard 850nm and 1310nm, CWDM

and DWDM variants are available for wavelength-division multiplexing applications.

- **Custom Coding:** Optional custom EEPROM programming to match specific Cisco OEM model numbers and firmware versions for enhanced network management software compatibility.

- **Bulk Packaging:** Available in tray or reel packaging for high-volume automated assembly processes.

