

Optical Module Model Parameter Comparison Table



Overview

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right module for your fiber network.

Key Takeaways



Optical modules can be compared across form factor, connector type, data rate, wavelength, transmitter/receiver characteristics, power budget, and monitoring capabilities. Key Parameters Comparison

Parameter	Description	Typical Values / Notes
Form Factor	Physical size and shape of the module	SFP, SFP+, SFP28, QSFP+, QSFP28, OSFP; determines switch/port compatibility
Connector Type	Interface to fiber cable	LC Duplex, SC Duplex, MPO/MTP; must match patch cables
Transmission Rate	Maximum supported data rate	1G, 10G, 25G, 40G, 100G, 400G; PON modules: 1.25G (EPON/GPON), 10G (10GEPON/XG-PON)
Wavelength	Light color used	850nm, 1310nm, 1550nm; affects fiber type (multimode/singlemode) and distance
Transmitter Type	Laser technology	VCSEL (multimode), DFB/EML (singlemode); affects cost, power, and distance
Receiver Type	Photodetector technology	PIN photodiode, APD; impacts sensitivity
Transmitter Power (Tx)	Output optical power	Measured in dBm; must be within receiver input range
Receiver Sensitivity	Minimum detectable optical power	Measured in dBm; lower (more negative) indicates better sensitivity
Power Budget	Difference between Tx power and receiver sensitivity	Must exceed total link loss (cable + connectors)
Receiver Saturation / Overload	Maximum optical power receiver can handle	Avoids signal distortion
Extinction Ratio (ER)	Ratio of '1' bit power to '0' bit power	Higher ratio improves signal quality
Modulation Format	Data encoding method	NRZ, PAM4; affects bandwidth efficiency
Monitoring / Diagnostics	Real-time monitoring of module parameters	DDM/DOM: Tx/Rx power, temperature, supply voltage; essential for proactive maintenance
PON-Specific Parameters	For GPON/EPON/XG-PON modules	Transmission power, reception power, reception sensitivity, overload optical power; standards: IEEE 802.3ah, 802.3av, ITU-T G. 984, G. 987

3ah, 802.3av, ITU-T G. 984, G. 987

Environmental & Reliability Operating conditions Temperature range, humidity, mechanical durability; affects lifespan
Notes on Module Selection Compatibility: Ensure form factor and connector type match your network equipment. Performance: Choose modules with appropriate transmission rate, wavelength, and power budget for your link distance. Reliability: Consider environmental tolerance and receiver sensitivity to maintain stable operation.

Cost-

Effectiveness: Balance features with budget; multimode VCSEL modules are generally lower cost than singlemode DFB/EML modules. **Monitoring:** DDM/DOM support is recommended for proactive network management.

PO

N Modules: Select based on upstream/downstream rates and standard compliance (EPON, GPON, XG-PON) for optical access networks. This table provides a structured overview to compare optical modules across multiple specifications, helping network engineers and planners make informed decisions for deployment.

Article Content

The Most Comprehensive Guide Of Optical Modules

Explore the ultimate guide to optical modules. Learn types, functions, performance metrics & how to choose the right module for your fiber network.

SFP Optical Module Specifications: Standards & Performance

From electrical and optical parameters to environmental limits and diagnostic capabilities, we explain what each specification means in practice, how it affects real-world performance, and the

Cisco Compatible Optical Modules Catalog

TECHNICAL SPECIFICATIONS ing table encapsulates the primary classifications an capabilities of the catalog. For detailed, model-specific parameters, please refer to the individual SKU datasheets.

PON Module Parameters Guide: How to Choose the Best GPON

Discover key PON module parameters for selecting the best GPON and EPON modules. Understand their impact on network performance and make informed choices.

400G Optical Modules 2026 Guide: DR4 vs. FR4 vs. LR8 Lab

400G optical modules are high-speed transceivers using PAM4 modulation and multi-lane architectures to enable ultra-high bandwidth connectivity. They are essential for AI clusters,

What Are the Key Parameters of Optical Modules

Understand the key parameters of optical modules, including transmission rate, distance, wavelength, and fiber compatibility, for better network performance.

How to Understand the Performance Parameters of Optical Modules?

The optical module is a core component in optical fiber communication systems, and its performance parameters directly impact the transmission rate, stability, and reliability of the entire

100G Optical Module Mainstream Model Analysis-fiber -

Comparison chart of the technical parameters of four mainstream models of 100G QSFP28 dual-fiber optical modules : These four mainstream models of 100G QSFP28 dual-fiber

Understanding Optical Modules: Working Principles, Structures, and ...

Explore the working principles, structures, and performance metrics of optical modules, essential components of optical fiber communication systems. Learn about key indicators such as

Cisco Transceiver Modules

Cisco Transceiver Modules - Learn product details such as features and benefits, as well as hardware and software specifications.

What Is an Optical Module and Its FAQs (V200)

What Is an Optical Module and Its FAQs (V200) Describes what an optical module is and FAQs, including the fundamentals, appearance and structure, key performance counters, common types,

Find & Compare Optics | Photonics Services

Search for and compare optical components from manufacturers around the world, or for custom jobs we'll match you with an industry expert service provider.

The Ultimate 10G Optical Module Guide: Compare LRM, SR, LR, ER,

In high-speed network construction, 10G optical modules are critical components for data centers, enterprise networks, and telecom infrastructures. However, with numerous models available—such

Optical Module Comparison: Understanding Performance Metrics and ...

In our blog titled "Optical Module Comparison: Understanding Performance Metrics and Applications," we take a closer look at what really matters when it comes to optical modules—like

240816 Fiberwdm

FIBERWDM, based on years of accumulation in the field of transmission, provides multi-specification optical module applications for data centers, enterprise networks, data communication

The Evolution of Optical Modules: Powering the Future

Enter optical modules, which leverage the power of light to transmit data efficiently over long distances, driving the next generation of technological

Microsoft PowerPoint

Metrology of Optical Systems Figures and Images for Instructors Module 1 Optical System Parameters and Performance Metrics Precision Optics Series 2018 University of Central Florida This text was

TI DLP® System Design: Optical Module Specifications

Developers can use Table 4-2 to accelerate communication with DLP Display projection optical module manufacturers. Optical module manufacturers list target and boundary specifications to effectively

Contact Us

Continue your research online:

Website: <https://cgweb.co.za>

Technical inquiry: <https://cgweb.co.za/project-enquiry.html>

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

