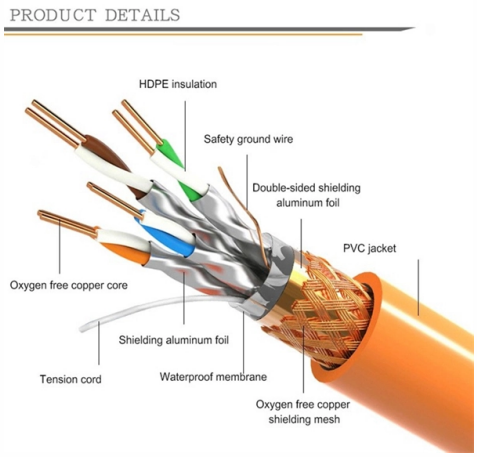
Optical module distance 80km



Overview

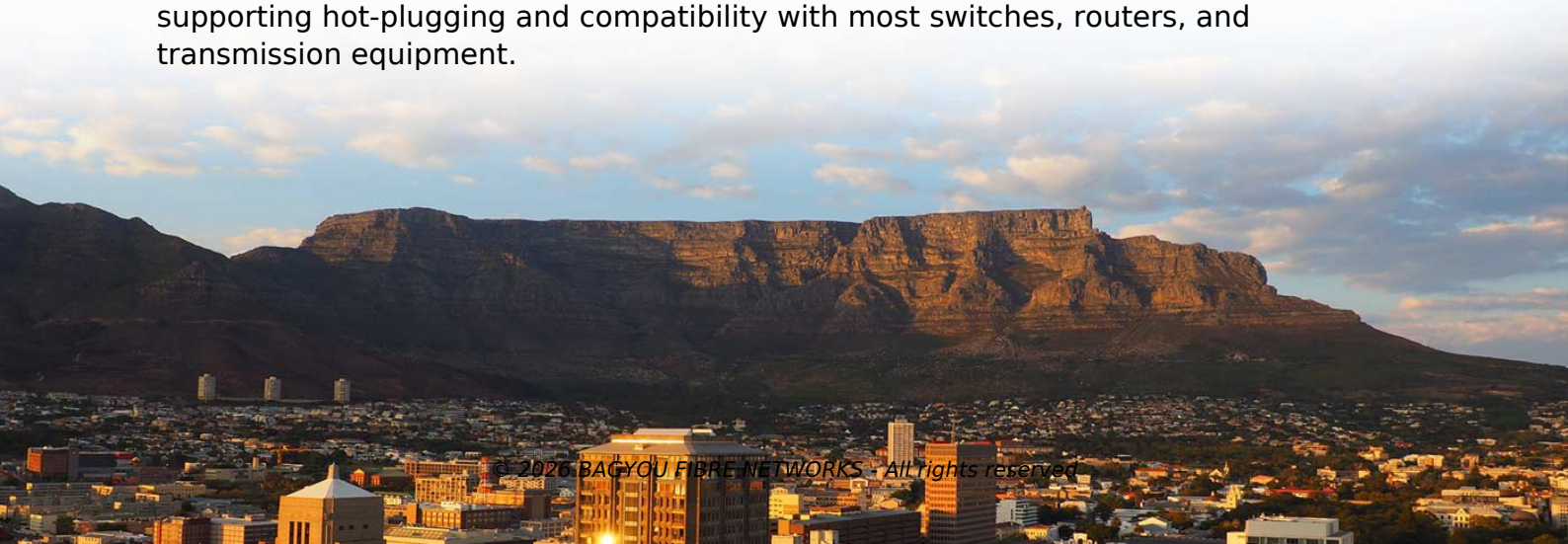
Explore how SFP 80km optical modules deliver reliable long-distance fiber connectivity. Learn key specifications, performance metrics, and deployment insights.

Key Takeaways

80km optical modules are designed to reliably transmit data over single-mode fiber up to 80 kilometers using high-power lasers, sensitive receivers, and 1550nm wavelength operation. Overview80km optical modules, including SFP and QSFP28 transceivers, are long-reach fiber optic devices engineered for medium- to long-distance network connections. They convert electrical signals from networking equipment into optical signals for transmission over single-mode fiber and then back into electrical signals at the receiving end, maintaining low bit error rates and stable signal integrity across distances up to 80km.

Key Technical Features

Wavelength: Typically operate at 1550nm, where fiber attenuation is lower, allowing longer transmission distances. Optical Power Budget: High-power laser transmitters and sensitive receivers provide a sufficient optical budget to overcome fiber loss and maintain signal quality over 80km. Form Factor: Standard SFP or QSFP28 modules, supporting hot-plugging and compatibility with most switches, routers, and transmission equipment.



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Forward Error Correction (FEC): Many 100G QSFP28 modules include KR4 FEC, which helps correct bit errors and ensures reliable operation over long distances. Bidirectional (BiDi) Options: Some modules use BiDi technology, allowing a single fiber strand to carry traffic in both directions using different wavelengths, optimizing fiber usage in constrained infrastructure. Dispersion Compensation: For non-coherent modules, dispersion compensation modules (DCMs) may be required beyond 40–80km to mitigate chromatic dispersion, while coherent modules with built-in DSPs often do not require external DCMs.

Applications80km optical modules are widely used in: Metropolitan Area Networks (MANs) and carrier-grade backbone networksEnterprise private lines and data center interconnectionsConnecting geographically distant network nodes without intermediate repeaters These modules balance distance, cost, and operational stability, making them ideal for long-haul Ethernet links, telecom access networks, and multi-site enterprise backbones.

Deployment Considerations

Ensure single-mode fiber is used to achieve the full 80km reach. Verify network equipment compatibility with the module type (SFP, QSFP28, BiDi, or coherent optics).

Consider FE

C and dispersion compensation requirements depending on the fiber quality and network design.

Bi

Di modules can reduce fiber usage in networks with limited fiber strands, simplifying deployment and lowering infrastructure costs. In summary, 80km optical modules provide a reliable, standardized solution for long-distance fiber connectivity, supporting high-bandwidth, low-latency communication while minimizing the need for additional network infrastructure.

Article Content

SFP 80km Modules: Performance Analysis of Premium Optics

Explore how SFP 80km optical modules deliver reliable long-distance fiber connectivity. Learn key specifications, performance metrics, and deployment insights.

800G/400G/200G Coherent CFP2 Transceiver Modules

FS 800G/400G/200G Coherent CFP2 optical transceiver module solutions offer a full range of CFP2 modules 80km reach. Purchase from nearby warehouses. 30

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100G BIDI 80KM Optical Module for Long-Haul Links

100G BIDI 80KM optical module delivers cost-effective long-distance transmission for DCI, 5G, and backbone networks with high reliability.

Cisco QSFP28 100G ZR Digital Coherent Optics Module Data Sheet

The QSFP28 100G ZR can cost effectively extend 100G links to 80km on any fiber type, and is a cost-effective migration option of multiple 10G wavelengths to 100G.

100G BIDI 80KM Optical Module for Data Center and Telecom Networks

High-performance 100G BIDI QSFP28 ZR4 optical module for 80km single-fiber transmission. Ideal for data center interconnection, 4G/5G base station backhaul, and IoT networks.

SFP+ 10G ZR Selection Guide: 80km Single Mode Transceiver

An SFP+ 10G ZR transceiver is a long-reach 10GbE optical module designed to deliver stable point-to-point transmission over up to 80km of single-mode fiber. It fills the distance gap where standard 10G

10G SFP+ 80 km DWDM Optical Transceiver Datasheet

10G SFP+ 80 km DWDM Optical Transceiver Datasheet Overview The T1-SFP-10G-DWDM80-Cxx is a high performance, cost effective module supporting d. ta rate of 10Gbps and 80km transmission

100G QSFP28 BIDI ZR4 80km Optical Transceiver | AscentOptics

Experience high-speed data transmission with 100G QSFP28 BIDI ZR4 optical modules. This 100G transceiver supports up to 80km over smf - AscentOptics.

Understanding 100G QSFP28 80km BiDi Optical Modules in Long

100G QSFP28 80km BiDi optical modules provide a practical solution for high-bandwidth connections across long distances. By enabling bidirectional communication over a single strand of single-mode

400G Optical Modules Explained: SR4 Vs. DR4 Vs. FR4 Vs. LR4

Key differences between SR4, DR4, FR4, and LR4 400G optical modules. Expert advice from Asterfusion engineers to optimize your data center network.

10Gbps SFP+ Optical Module

Describes the chassis, power supply, fans, boards, optical modules, and power distribution box of the NetEngine 8000 M14K, M14, M8K, M8, M4, 8000E M14, M8.

10 Gbit/s SFP+ Optical Module

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10 Gbit/s SFP+ Optical Module You can use different levels of 10 Gbit/s SFP+ optical modules only with 10 GE interfaces. The wavelength of these 10 Gbit/s SFP+ optical modules can be

2.5G SFP 300m□80km Optical Modules (Industrial Grade Optional)

GIGALIGHT''s 2.5G SFP series optical transceiver modules are widely used in synchronous optical networking (SONET OC-48 / SDH STM-16) and are compatible with Gigabit Ethernet and 1G/2G

Optic Modules Datasheet

These platforms support multiple interface types and technologies such as Ethernet, ATM, and SONET. Depending on the deployment scenario, they support different pluggable optic modules that can be

SFP Optical Transceiver | SFP Optical Module | Perle

Perle SFP Optical Transceivers are hot-swappable, compact media connectors that provide instant fiber connectivity for your networking gear. They are a cost effective way to connect a single network

Meaning of Optical Module Pull Tap Colors

4. 10G SFP+ Optical Module Pull Ring Colors 10G SFP+ red pull tab = ER 40km, white pull tab = ZR 80km; this color rule is the mainstream standard among mainstream brands including

10 Gbit/s SFP+ Optical Modules

10 Gbit/s SFP+ optical modules apply to 10 GE optical ports. The wavelength can be 850 nm, 1310 nm, or 1550 nm, and the transmission distance ranges from 0.5 km (0.31 mi) to 80 km (49.71 mi).

Cisco 10GBASE SFP+ Modules Data Sheet

The Cisco® 10GBASE SFP+ modules (Figure 1) give you a wide variety of 10 Gigabit Ethernet connectivity options for data center, enterprise

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