

Article Overview

A 1550nm single-mode optical module is a fiber-optic transceiver designed for long-distance data transmission over single-mode fiber, typically in SFP or SFP+ form factors.

Overview

A 1550nm single-mode optical module converts electrical signals into light at a wavelength of 1550 nanometers for transmission over single-mode fiber (SMF) and then converts the light back into electrical signals at the receiving end . These modules are widely used in metro, WAN, and long-haul networks due to their ability to transmit data over long distances, often ranging from 40 km to over 100 km depending on the module type .

Key Features

- o Form Factor: Commonly available in SFP, SFP+, or BiDi SFP formats for easy integration into network switches, routers, or media converters .
- o Data Rate: Typically supports 1 Gbps (1000BASE-ZX), with some advanced modules supporting 10 Gbps or higher .
- o Transmission Distance: Standard 1550nm modules can reach up to 80 km, while specialized long-reach modules may exceed 100 km .
- o Laser Type: Uses DFB, EML, or FP lasers for stable and efficient light emission .
- o Connector Type: Usually LC duplex or LC/UPC, with BiDi modules using a single fiber for bidirectional transmission (TX 1550nm / RX 1310nm), .
- o Monitoring: Many modules include Digital Optical Monitoring (DOM) for real-time tracking of temperature, voltage, and optical power .
- o Safety: Compliant with Class I laser safety standards .

Applications

- o Telecommunications: Long-distance backbone and metro networks.
- o Enterprise Networks: Connecting data centers, campuses, or offices over single-mode fiber.
- o Industrial and Security Systems: High-definition video transmission and surveillance over extended distances.
- o Network Upgrades: Ideal for replacing or extending existing fiber infrastructure with minimal signal loss .

Example Modules

- o 1000BASE-ZX SFP 1550nm 80 km: Supports 1 Gbps over single-mode fiber with DOM functionality and

Optical Module 1550 Single Mode

LC/UPC duplex connectors .

- o BiDi SFP 1000BASE-BX: Uses WDM technology for bidirectional transmission over a single fiber, TX 1550nm / RX 1310nm, up to 40 km .
 - o LINK-PP LS-SM5510-A0C: 10 Gbps module with cooled EML laser for ultra-long reach applications .
- These modules provide high-speed, reliable, and energy-efficient solutions for long-distance fiber-optic communication, making them essential components in modern networking infrastructure.

8. Digital Diagnostics / Digital Optical Monitoring The transceiver provides serial ID memory contents and diagnostic information

This is a standard SFP optical module. It uses a single mode optical fiber and the speed rate can up to 155Mbps, transmission

Optical modules complying with SFP (Small Form-factor Pluggable) standard are devices converting electrical signal to the optical

Mouser offers inventory, pricing, & datasheets for Singlemode 1550 nm Fiber Optics.

1550nm SFP operates at a wavelength of 1550 nanometers and is used for longer distance transmission, typically up to

This series of 1×9 optical transceivers provide a 100km transmission distance over single mode fiber at a nominal wavelength of

The SFP 1000Base-BX transceiver The 1G SFP BiDi optical module is designed for data transmission

There are three wavelength windows for 10G optical module communication applications, namely the 850nm window,

A single mode SFP transceiver is an optical module that uses laser-based transmission over single mode fiber to deliver long

In single-mode optical modules, the light is typically transmitted using laser diodes, which produce a coherent light beam. The

In Singlemode cable assembly, the 2 wavelengths used for Insertion Loss testing are 1310nm & 1550nm. Read the

1.25G SFP Module, SC Single-mode Fiber Optic Cable Connector, 1000 Base-BX TX 1550nm / RX 1330nm

Optical Module 1550 Single Mode

Single-mode, DDM

1.25Gb/s SFP module, LC/UPC single-mode fiber optic cable connector, Bidirectional WDM over 1000

These 1550nm single mode fibers are available in 250um bare fiber, 900um tight buffer, 3mm jacketed cable, and multi-strand high

The LD-1550-21B Fiber Coupled Laser Diode consists of Fabry-Perot lasers, having a fiber pigtail precisely attached for optimum

Transceiver high performance, data rate up to length on single mode BlueOptics®; transceivers SFP Multi-Source Agreement (MSA).

Web: <https://www.kremgroup.co.za>

