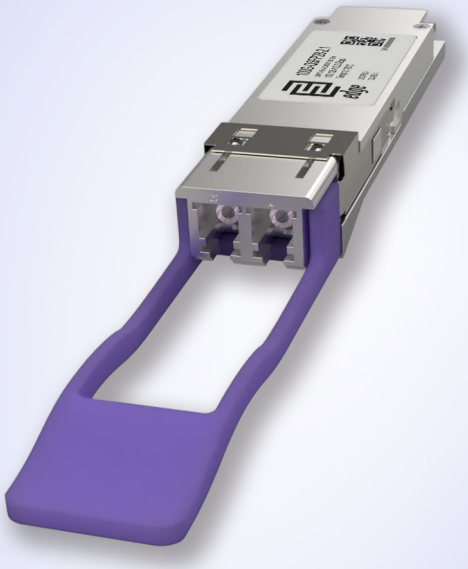
edge OPTICAL SOLUTIONS

Product Data Sheet

100G-QSFP28-2.1

Optical Transceiver



Key Features

- Media Type: **Single-Mode Fiber (SMF)**
- Connector: **Double LC/UPC**
- Fiber Count: **Duplex**
- Maximum Distance: **2 km**
- Guaranteed Link Budget: **3.5 dB**
- Tx Wavelenght: **CWDM 4 Ch**
- Supported Data Rate: **103.125 Gbps**
- DDM/DOM: **Supported**

Product Description

Our EDGEOPTIC 100G-QSFP28-2.1 is a multi-vendor compatible 100G CWDM4 QSFP28 optical module designed for 100 Gigabit Ethernet, OTN, and Fiber Channel applications operating over single-mode fiber infrastructure. This quad small form-factor pluggable transceiver utilizes four coarse wavelength division multiplexed optical lanes at 25 Gbps each, delivering aggregate throughput up to 103.125 Gbps for cost-effective short-reach single-mode fiber deployments.

The 100G-QSFP28-2.1 module operates using CWDM technology with four discrete wavelength channels at 1271nm, 1291nm, 1311nm, and 1331nm, employing NRZ (Non-Return to Zero) modulation for signal encoding. On the transmission side, module converts four electrical input channels into four optical lanes and multiplexes them into a single fiber for 100G optical transmission. Reversely on the receiver side, module optically demultiplexes input signal into four lanes and converts them to electrical data. Our 100G CWDM4 QSFP28 transceiver utilizes DML (Directly Modulated Laser) array for transmission and PIN photodiode array for receiving.

Transceiver ensures a 3.5 dB guaranteed optical link budget, which determines the maximum transmission distance. Over standard single-mode fiber, the transceiver can reach distances up to 2 kilometers. However, distance is just an indicative parameter calculated for comfort of identification – eventually we calculate distance taking into account minimal optical budget and average attenuation of optical cabling in industry. The duplex fiber configuration with wider CWDM channel spacing provides cost advantages over LAN WDM solutions for shorter reach applications.

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100G-QSFP28-2.1 compatible 100G CWDM4 module is a hot-pluggable QSFP28 with dual LC/UPC connectors as the optical interface. The electrical interface conforms to SFF-8636 and SFF-8665 MSA (Multi-Source Agreement) specifications, ensuring compatibility with standard QSFP28 host systems supporting multiple vendor equipment platforms. Our 100G CWDM4 QSFP28 transceiver can be encoded to be compatible and successfully operate in different 80+ brands of equipment.

The module incorporates DDM/DOM (Digital Diagnostic Monitoring) functionality providing real-time information including transmitted and received optical power levels, module temperature, bias current, and supply voltage. Additionally, the module supports Host FEC (Forward Error Correction) function which helps the receiving side detect and correct bit errors, improving overall link quality. The module operates within a 0 to 70°C temperature range with maximum power consumption of 3.5W, with appropriate thermal considerations for sustained operation in controlled data center environments.

Standards compliance includes 100G CWDM4 MSA, 100G CLR4 Alliance, and QSFP28 MSA specifications. The transceiver supports multi-protocol operation including 100G Ethernet (103.125 Gbps), 4x 32G Fiber Channel (112.2 Gbps), and OTU4 (112 Gbps) for optical transport networks. The transceiver achieves multi-vendor interoperability through adherence to industry MSA standards, though equipment with vendor-specific module validation may require custom EEPROM programming for compatibility. Our 100G CWDM4 QSFP28 transceiver is CE/RoHS certified, Class 1 FDA and IEC60825-1 Laser Safety Compliant.

Typical applications include data center interconnects, Internet Service Provider aggregation networks, mobile operator core networks, and storage area network deployments. The CWDM4 design provides economical alternative to LAN WDM for 2km reach requirements while maintaining duplex fiber simplicity.

Because our focus is providing top quality service, we are performing serious quality checks before delivery of our products. As a result, we do optical parameter measurements, connector cleanliness tests and QSFP28 transceiver EEPROM memory data validation tests.

Technical Specifications

Specification	Value
Form Factor	QSFP28
Modulation	NRZ (Non-Return to Zero)
Media Type	Single-Mode Fiber (SMF)
Connector	Double LC/UPC
Fiber Count	Duplex

Maximum Distance	2 km
Guaranteed Link Budget	3.5 dB
TX Wavelenght	4-channel CWDM (1271/1291/1311/1331 nm)
RX Wavelenght	4-channel CWDM (1271/1291/1311/1331 nm)
Supported Data Rate	103.125 Gbps
Supportet Ethernet Applications	100G Ethernet (103.125 Gbps)
Supported Fiber Channel Applications	4x 32G Fiber Channel (112.2Gbps)
Optical Transport Network (OTN) Applications	OTU4 (112 Gbps)
DDM/DOM	Supported
Forward Error Correction (FEC)	Host FEC Supported
Transmitter Type	DML Laser
Tx Wave Bandwidth	4 CWDM Lanes (73 nm 1264.50 – 1337.50nm) (L0 Tx center 1271nm, L1 Tx center 1291nm, L2 Tx center 1311nm, L3 Tx center 1331nm)
Average Launch Power (Min) Each Lane	-6.5 dBm
Average Launch Power (Max) Each Lane	2.5 dBm
Extinction Ratio (Min)	4 dB
Receiver Type	PIN photodiode
RX Wave Bandwidth	4 CWDM Lanes (73 nm 1264.50 – 1337.50nm) (L0 Tx center 1271nm, L1 Tx center 1291nm, L2 Tx center 1311nm, L3 Tx center 1331nm)
Average Receiver Sensitivity (Min) Each Lane	-10 dBm
Average Receiver Sensitivity (Max) Each Lane	0 dBm
Receiver Overload	3.3 dBm

Temperature Range	Standard 0°-70°C
Storage Temperature	-40° to 85°C
Relative Humidity	5 to 85%
Power Consumption (Max)	3.5 W
Power	+3.3V single power supply
Compliance	CE, RoHS, Class 1 FDA and IEC60825-1 Laser Safety Compliant, 100G CLR4 Alliance, 100G CWDM4 MSA, QSFP28 MSA, SFF-8636 (Management Interface for 4-lane modules), SFF-8665

Ordering Info

SKU	Description
100G-QSFP28-2.1	Double Fiber 100G CWDM4 and CLR4 QSFP28 Module (Tx/Rx 4 CWDM lines:1271, 1291, 1311, 1331, up to 103.125 Gbps, Max. 2km over SMF, 3.5 dB, Temp. 0-70C, LC/UPC)

Warranty

EDGE Optic's provides a limited warranty for **sixty (60) months** from Purchaser's receipt of the Equipment represented in this data sheet against defective design or workmanship.

Compatibility

EDGE Optical transceivers can be provided with custom-encoded firmware, in order to provide compatibility with more than 100 vendor brands in data and telecom communications industry:

MS - General MSA
AD - Adva (Adtran)
AR - Arista
MS - Arris
AG - Avago
BR - Broadcom
QL - Cavium (Qlogic)
MS - Ceragon
CH - Checkpoint
MS - Chelsio
CN - Ciena
CI - Cisco
MS - DCN
DL - Dell
EI - ECI
MS - EdgeCore
MS - EdgeWare
MS - Eltex
ER - Ericsson
EX - Extreme Networks
F5 - F5 Networks
MS - Finisar
FO - Fortinet
MS - Fujitsu
HP - HP
AU - HP Aruba
HU - Huawei
IB - IBM
IF - Infinera
MS - Innolight
IN - Intel
MS - Ixia
MS - JDSU
JU - Juniper
MS - KyLand
LN - Lenovo
ML - Mellanox (NVIDIA)
MS - MikroTik
MS - MRV
MS - NetApp
MS - Netgear
MS - Netinsight
NK - Nokia (Alcatel)
NS - NSN
MS - OE Solutions
MS - Oracle
MS - Palo Alto Network
MS - Planet
QL - Qlogic (Oracle)
MS - QNAP
RD - RAD
MS - RadWare
MS - Raisecom
MS - Ruckus
MS - Ruijie Networks
MS - Sandvine
MS - Silicom
MS - SolarFlare
SW - Sonicwall
MS - Sophos
MS - Sumitomo
MS - Supermicro
MS - Synology
MS - Telco Systems
MS - TP-LINK
TM - Transmode
MS - Trendnet
MS - Ubiquiti Networks
MS - WatchGuard
MS - ZTE
MS - Zyxel
XX - Other

Version Control

Version: 2.0
Updated: November 27, 2025

CERTIFIED
ISO 9001

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