

DS-16G-ER

SFP+, 16/8/4 Gbps FC/FICON, 1550nm, SM, DDM, 13dB, 40km



OVERVIEW

The DS-16G-ER is a versatile 1550nm transceiver in SFP+ form-factor supporting a wide range of Fiber Channel (FC) services (4G to 16G). For diagnostic purposes, the transceiver supports optical (OWRAP) and electrical (EWRAP) loop-back functionality, with or without forwarding. The transceiver is layer-1 tested and approved by Cisco.

The optical performance provides a bridgeable distance of up to 40km (without dispersion compensation) for 16G FC. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The transceiver module is compliant to RoHS-6/6.

TECHNICAL DATA

Parameter	Value
Technology	Grey SFP+
Transmission media	SM (2x LC)
Typical reach	40km
Nominal wavelengths	1550nm
Bit rate support	14.025Gbps 8.500Gbps 4.250Gbps
Protocol support	16G FC 8G FC 4G FC
Power budget	6 – 13dB @ 16G FC 6 – 14dB @ 8G/4G FC
Dispersion tolerance	800ps/nm ¹⁾
Dispersion penalty	Max 2dB
Power consumption	< 2.2W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

¹⁾ Average power

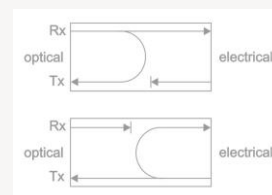
²⁾ @ BER < 1E-12 using PRBS 2³¹-1

Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance

Parameter	Value
Transmitter data:	
Output power	Min: 0.0dBm ¹⁾ Max: +4.0dBm ¹⁾
Transmit wavelengths	1540 – 1560nm
Receiver data:	
Minimum input power 16G FC	-13.0dBm ^{1) 2)}
8G FC	-14.0dBm ^{1) 2)}
4G FC	-14.0dBm ^{1) 2)}
Overload (max power)	-2.0dBm ^{1) 2)}
Wavelength range	1480 - 1580nm
DDM	Yes
MSA compliance	SFF-8431, -8432, -8472



OWRAP with forwarding

EWRAP with forwarding

Subject to change without notice.

For more information visit smartoptics.com.

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ORDERING INFORMATION

Ordering code	Description
DS-16G-ER	SFP+, 16/8/4Gbps FC/FICON, 1550nm, SM, DDM, 13dB, 40km

GENERAL DEFINITIONS

Parameter	Description
Technology	Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable. Electrical cable with attached connectors. AOC: Active Optical Cable. Optical cable with attached connectors.
Transmission Media	Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).
Typical reach	Nominal distance performance based on typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.
Bit rate range	Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).
Protocols	Protocols within supported bit rate range.
Nominal wavelength	Typical wavelength(s) from transmitter.
Interface standards	Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services or 100G 4WDM-10 etc.
Power budget	Min and max power budget between Transmitter and Receiver w/o optical path penalties.
Dispersion tolerance/penalty	Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.
Temperature range	Max operating case temperature range. Standard temperature range (C-temp): 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F) Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)
Power consumption	Worst case power consumption. Will vary over temperature.
Transmitter Output power	Average output power. Provided in min and max values.
Receiver minimum input power	Minimum average input power at specified BER, normally $1E^{-12}$. Note that some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $1E^{-12}$.
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.

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