

SO-SFP-10GE-ER-CXX & CXX-I

SFP+, 10G Multirate, CWDM, DDM, 15dB, 40km, 1470nm-1610nm (8ch)

OVERVIEW

The SO-SFP-10GE-ER40-Cxx is a versatile CWDM transceiver supporting a wide range of traffic formats. The distance performance is in accordance with the IEEE 802.3ae ER/EW-standard, providing a bridgeable distance of up to 40km for 10GbE-LAN (10GBASE-ER) and 10GbE-WAN (10GBASE-EW) services.

The transceiver is available in 8 CWDM wavelength versions, spanning from 1470nm to 1610nm in accordance with the G.694.2 standard. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The transceiver is available in two temperature range options, one being the Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F).

TECHNICAL DATA

Technology	CWDM SFP+
Transmission media	SM (2x LC)
Typical reach	40 km
Nominal wavelength	1470 nm - 1610 nm (8ch)
Interface standards	10GBASE-ER 10GBASE-EW
Bit rate range	0.6 - 11.3 Gbps
Protocols	10GbE-LAN 10GbE-WAN GbE
Eth:	
OTN:	OTU2 OTU2e OTU1
SDH/SONET:	STM-64/OC-192 STM-16/OC-48 STM-4/OC-12
FC:	10G FC 8G FC 4G FC 1G FC
CPRI:	Opt 1 (0.6144 Gbps) Opt 2 (1.2288 Gbps) Opt 3 (2.4576 Gbps) Opt 4 (3.0720 Gbps) Opt 5 (4.9152 Gbps) Opt 6 (6.1440 Gbps) Opt 7 (9.8304 Gbps) Opt 7A (8.11008 Gbps) Opt 8 (10.1376 Gbps)
OBSAI:	1x (0.768 Gbps) 2x (1.536 Gbps) 4x (3.0720 Gbps) 8x (6.1440 Gbps)
Power budget	5.0 - 15.0 dB ¹⁾ 5.0 - 14.0 dB ²⁾
Dispersion tolerance	800 ps/nm ¹⁾
Dispersion penalty	3.0 dB ¹⁾
Temperature range	0°C to +70°C (Cxx) -40°C to +85°C (Cxx-I)
Power consumption	< 1.5W

Transmitter data	Output power:	Min: -1.0 dBm ¹⁾ Min: -2.0 dBm ²⁾ Max: +4.0 dBm ^{1) 2)}
	Tx wavelength:	1470 - 1610 nm in 20nm steps (G.694.2)
Receiver data	Minimum input power:	-16.0 dBm ^{1) 2) 3)}
	Overload (max power):	-1.0 dBm
	Wavelength range:	1260 - 1620 nm
DDM		Yes
MSA compliance		SFF-8431 SFF-8432 SFF-8472

¹⁾ Cxx

²⁾ Cxx-I

³⁾ @ 10.3Gbps

Regulatory compliance

EMC CE	EN 55022:2010 EN 55024:2010
UL/Safety	UL 60950-1
FCC	47 CFR PART 15 OCT, 2013
RoHS	RoHS 6
TUV	EN 60950-1:2006+A11+A1+A12+A2 EN 60825-1:2014 EN 60825-2:2004+A1+A2

Storage temp.	-40°C to +85°C
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Note! See "Definitions" below.

Note: IEEE 802.3ae 10GBASE-ER/EW is defined only at 1550 nm. The standard is referred to from bridgeable distance perspective for the other wavelengths within the CWDM band.

Subject to change without notice.

For more information visit smaroptics.com.

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ORDERING INFORMATION

Part number	Description
SO-SFP-10GE-ER-C47	SFP+, 10G Multirate, CWDM 1470nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C49	SFP+, 10G Multirate, CWDM 1490nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C51	SFP+, 10G Multirate, CWDM 1510nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C53	SFP+, 10G Multirate, CWDM 1530nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C55	SFP+, 10G Multirate, CWDM 1550nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C57	SFP+, 10G Multirate, CWDM 1570nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C59	SFP+, 10G Multirate, CWDM 1590nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C61	SFP+, 10G Multirate, CWDM 1610nm, DDM, 15dB, 40km
SO-SFP-10GE-ER-C47-I	SFP+, 10G Multirate, CWDM 1470nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C49-I	SFP+, 10G Multirate, CWDM 1490nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C51-I	SFP+, 10G Multirate, CWDM 1510nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C53-I	SFP+, 10G Multirate, CWDM 1530nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C55-I	SFP+, 10G Multirate, CWDM 1550nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C57-I	SFP+, 10G Multirate, CWDM 1570nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C59-I	SFP+, 10G Multirate, CWDM 1590nm, DDM, 15dB, 40km, I-temp.
SO-SFP-10GE-ER-C61-I	SFP+, 10G Multirate, CWDM 1610nm, DDM, 15dB, 40km, I-temp.

DEFINITIONS

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 (DAC). Electrical or 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 dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification.
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 from transmitter.
Interface standards:	Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services.
Power budget:	Min and max power budget between Transmitter and Receiver. Excluding any dispersion penalty.
Dispersion tolerance/penalty:	Maximum amount of tolerated dispersion and required reduction of power budget to maintain BER better than $1E^{-12}$. Defined at a specific bit rate.
Temperature range:	Max operating case temperature range. Standard temperature range: typically 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.
Transmitter Output power:	Average output power. Provided in min and max values.
Receiver minimum input power:	Minimum average input power at specified BER, normally $1E^{-12}$.
Receiver max input power:	Maximum average input power giving a BER, normally $1E^{-12}$.
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.