

# SO-QSFP-LX4

QSFP+, 40G Ethernet IR4, 1271/1291/1311/1331nm, 2km@SM, 150m@OM3, 4.5dB, LC

## OVERVIEW

The SO-QSFP-LX4 is a QSFP+ (Quad Small Form-factor Pluggable Plus) transceiver for 40 Gbps applications such as inter- and intra-connect within and between data centers between switches, routers, storage equipment etc.

The SO-QSFP-LX4 converts 4x 10 Gbps flows into four CWDM channels in the 1300nm band up to 2 km over a SingleMode (SM) fiber, up to 150m over an OM3 grade MultiMode (MM) fiber and up to 300m if the more recent OM4 fiber is used.

The transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

## TECHNICAL DATA

Parameter	Value
Technology	Grey QSFP+
Transmission media	SM (2x LC)
Typical reach	2km (SM) / 150m (MM OM3) , 300m (MM OM4)
Nominal wavelength	Lane 1: 1271nm Lane 2: 1291nm Lane 3: 1311nm Lane 4: 1331nm
Interface standards	40GBASE-IR4
Bit rate support	41.25Gbps <sup>1)</sup> 10.3125Gbps <sup>2)</sup>
Protocol support	40GbE
Power budget	0 – 4.5dB 0 – 5.5dB
Power consumption	< 3.5W
Operating temperature	0°C to +70°C
Storage temperature	-40°C to +85°C

<sup>1)</sup> Aggregated line rate

<sup>2)</sup> Per lane

<sup>3)</sup> Average power

<sup>4)</sup> Using SM fiber

<sup>5)</sup> Using MM fiber

<sup>4)</sup> At 10.3125Gbps, BER less than  $10^{-12}$ , with a  $2^{31}-1$  PRBS

### Safety/regulatory compliance:

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

RoHS compliance

Parameter	Value
<b>Transmitter data:</b>	
Output power, total	Max: +9.5dBm <sup>3) 4)</sup>
Output power, per lane	Min: -7.0dBm <sup>2) 3) 4)</sup> Max: +2.3dBm <sup>2) 3) 4)</sup> Min: -5.0dBm <sup>2) 3) 5)</sup> Max: +3.5dBm <sup>2) 3) 5)</sup>
Transmit wavelength	1264.5 – 1277.5nm 1284.5 – 1297.5nm 1304.5 – 1317.5nm 1324.5 – 1337.5nm
<b>Receiver data:</b>	
Minimum input power	-11.5dBm <sup>2) 3) 4)</sup> -10.5dBm <sup>2) 3) 5)</sup>
Overload (max power)	+2.3dBm <sup>2) 3)</sup>
Wavelength range	1264.5 – 1277.5nm 1284.5 – 1297.5nm 1304.5 – 1317.5nm 1324.5 – 1337.5nm
LOS Assert	Min -30dBm
LOS De-Assert	Max -12dBm
LOS Hysteresis	Min 0.5dB
DDM	Yes
MSA compliance	QSFP+ MSA, SFF-8436

Subject to change without notice.

For more information visit [smartoptics.com](http://smartoptics.com).

smartoptics

## ORDERING INFORMATION

Ordering number	Description
SO-QSFP-LX4	QSFP+, 40G Ethernet IR4, 1271/1291/1311/1331nm, 2km@SM, 150m@OM3, 4.5dB, LC

## 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 100G4WDM-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.

Smartoptics makes no warranties or representations, expressed or implied, of any kind relative to the information or any portion thereof contained in this document or its adaptation or use, and assumes no responsibility or liability of any kind, including, but not limited to, indirect, special, consequential or incidental damages, for any errors or inaccuracies contained in the information or arising from the adaptation or use of the information or any portion thereof. The information in this document is subject to change without notice.