

**DATASHEET 5.0**

# SO-XFP-LR-CXX

**XFP, 10G Multirate, CWDM, DDM, 10dB, 10km, 1270nm-1610nm (18ch)**

## OVERVIEW

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

The transceiver is available in 8 CWDM wavelength versions, spanning from 1270nm 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.

## TECHNICAL DATA

<b>Technology</b>		CWDM XFP
<b>Transmission media</b>		SM (2x LC)
<b>Typical reach</b>		10 km
<b>Nominal wavelength</b>		1270 nm - 1610 nm (18ch)
<b>Interface standards</b>		10GBASE-LR 10GBASE-LW 1200-SM-LL-L 10G FC
<b>Bit rate range</b>		9.95 - 11.1 Gbps
<b>Protocols</b>	<b>Eth:</b>	10GbE-LAN 10GbE-WAN
	<b>OTN:</b>	OTU2e OTU2
	<b>SDH/SONET:</b>	STM-64/OC-192
	<b>FC:</b>	10G FC
	<b>CPRI:</b>	Opt 8 (10.1376 Gbps)
	<b>Power budget</b>	0 - 10.0 dB
<b>Dispersion tolerance</b>		200 ps/nm <sub>1</sub>
<b>Dispersion penalty</b>		2.0 dB <sub>1</sub>
<b>Temperature range</b>		-5 C to +70 C (Cxx)
<b>Power consumption</b>		< 2.5W

<b>Transmitter data</b>	<b>Output power:</b>	Min: -5.0 dBm Max: 0.0 dBm
<b>Receiver data</b>	<b>Minimum input power:</b>	-15.0 dBm <sup>1)</sup>
	<b>Overload (max power):</b>	+0.5 dBm
	<b>Wavelength range:</b>	1260 - 1620 nm
<b>DDM</b>		Yes
<b>MSA compliance</b>		SFF-8431
		SFF-8432
		SFF-8472

<b>Regulatory compliance</b>		
<b>Safety</b>		EN 55022:2010
		EN 55024:2010
<b>UL/Safety</b>		UL 60950-1
<b>FCC</b>		47 CFR PART 15 OCT, 2013
<b>RoHS</b>		RoHS 6
<b>TUV</b>		EN 60950-1:2006+A11+A1+A2
		EN 60825-1:2014
		EN 60825-2:2004+A1+A2
<b>Storage temp.</b>		-40°C to +85°C

- 1) Maximum switching time from one wavelength to any other wavelength, including modulator bias optimization time.
- 2) Optimum Input power range. Signal power of the selected channel. The input power range gets optimum OSNR performance.
- 3) Minimum input power needed to achieve post FEC BER < 10<sup>-15</sup> when OSNR > 35dB and SDFEC is enabled.
- 4) CD tolerance with less than 0.3dB OSNR penalty at SD-FEC.

For further technical details, please contact Smartoptics.

## ORDERING INFORMATION

Part number	Description
SO-XFP-LR-C27	XFP, 10G Multirate, CWDM 1270nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C29	XFP, 10G Multirate, CWDM 1290nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C31	XFP, 10G Multirate, CWDM 1310nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C33	XFP, 10G Multirate, CWDM 1330nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C35	XFP, 10G Multirate, CWDM 1350nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C37	XFP, 10G Multirate, CWDM 1370nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C39	XFP, 10G Multirate, CWDM 1390nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C41	XFP, 10G Multirate, CWDM 1410nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C43	XFP, 10G Multirate, CWDM 1430nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C45	XFP, 10G Multirate, CWDM 1450nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C47	XFP, 10G Multirate, CWDM 1470nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C49	XFP, 10G Multirate, CWDM 1490nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C51	XFP, 10G Multirate, CWDM 1510nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C53	XFP, 10G Multirate, CWDM 1530nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C55	XFP, 10G Multirate, CWDM 1550nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C57	XFP, 10G Multirate, CWDM 1570nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C59	XFP, 10G Multirate, CWDM 1590nm, SM, DDM, 10dB, 10km
SO-XFP-LR-C61	XFP, 10G Multirate, CWDM 1610nm, SM, DDM, 10dB, 10km

## DEFINITIONS

Technology	<p>Grey; Transceiver type for non-WDM applications. Electrical or optical.</p> <p>CWDM; Transceiver type for CWDM applications using G.694.2 channel grid.</p> <p>DWDM; Transceiver type for DWDM applications using G.694.1 channel grid.</p> <p>BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber.</p> <p>DAC: Direct Attach Cable. Electrical or optical cable with attached connectors.</p>
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:	<p>Max operating case temperature range.</p> <p>Standard temperature range: Typically 0°C to +70°C (32°F to +158°F)</p> <p>Extended temperature range (E-temp): Typically -20°C to +75°C (-4°F to +167°F)</p> <p>Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)</p>
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 at specified BER, normally $1E^{-12}$ .
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.