

SFPS-ELX-3149D and 4931D series

SFP Single-Mode, Single-Fiber transceiver for 100Mbps to 1.25Gbps FE/GbE /1GFC



Product description

The SFPS-ELX-3149 and SFPS-ELX-4931 series is small form factor pluggable module for Gigabit Ethernet 1000BASE-BX and Fiber Channel single fiber applications by using 1310nm / 1490nm transmitter and 1490nm/1310nm receiver. It is with the SFP 20-pin connector to allow hot plug capability. The transmitter section uses a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated B type / A type detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. The SFPS-ELX-3149 and SFPS-ELX-4931 series are designed to be compliant with SFF-8472 Multi-source Agreement (MSA).

Features

- Data Rate up to 1.25Gbps
- Side A: 1310nm TX /1490nm RX
- Side B: 1490nm TX /1310nm RX
- 20km with 9/125 μ m SMF
- Hot-Pluggable
- Simplex LC Connector interface
- Class 1 FDA and IEC60825-1 Laser Safety Compliant
- MSA Compliant
- Digital diagnostics

Applications

- Fiber Channel links
- Gigabit Ethernet links
- Fast Ethernet links
- FttX



All product specifications are subject to change without notice to improve reliability, function or design or otherwise.

Opticonnect SYSTEMS B.V., an Optical Networking vendor with its headquarters in the Netherlands, provides Optical Transport solutions and Optical Transceivers at the best price performance ratio possible. Our goal is to simplify the planning, deployment and maintenance of

complex Optical Networks. This is achieved by our user friendly planning apps and information, sophisticated products and transparent support. Relying on our superior product quality, all items are supplied with life time warranty.

Ordering information

Part no.	Data rate	Wavelength	Interface	Temp.	DDMI
SFPS-ELX-3149D	0.1~1.25Gbps	1310nm	LC	Standard	YES
SFPS-ELX-4931D	0.1~1.25Gbps	1490nm	LC	Standard	YES

Regulatory compliance

Feature	Standard	Performance
Electrostatic discharge (ESD) to the electrical pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic discharge to the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards. Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.
Laser eye safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component recognition	UL and CUL EN60950-1:2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards ^{*note1}

Note1: For update of the equipments and strict control of raw materials, Opticonnect has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union.

In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.

In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for Opticonnect's transceivers, because Opticonnect's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

Absolute maximum ratings^{*note2}

Parameter	Symbol	Min.	Max.	Unit
Storage temperature	T_s	-40	+85	°C
Supply voltage	V_{CC}	-0.5	3.6	V
Operating relative humidity		-	95	%

Note 2: Exceeding any one of these values may destroy the device immediately.

Recommended operating conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating case temperature	T_A	0		+70	°C
Power supply voltage	V_{CC}	3.15	3.3	3.45	V
Power supply current	I_{CC}			300	mA
Data rate	FE		100		Mbps
	1GFC		1.063		Gbps
	GbE		1.25		Gbps

Performance specifications - Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter						
LVPECL Inputs (differential)	V_{in}	400		2000	mVpp	AC coupled inputs ^{*(note5)}
Input impedance (differential)	Z_{in}	85	100	115	ohm	$R_{in} > 100$ kohm @ DC
TX_Dis	Disable	2		$V_{CC} + 0.3$	V	
	Enable	0		0.8		
TX_FAULT	Fault	2		$V_{CC} + 0.3$	V	
	Normal	0		0.5		
Receiver						
LVPECL Outputs (differential)	V_{out}	400		2000	mVpp	AC coupled outputs ^{*(note5)}
Output impedance (differential)	Z_{out}	85	100	115	ohm	
RX_LOS	LOS	2		$V_{CC} + 0.3$	V	
	Normal	0		0.8	V	
MOD_DEF (0:2)	VoH	2.5			V	With serial ID
	VoL	0		0.5	V	

Performance specifications - Optical - SFP-ELX-3149D

Parameter	Symbol	Min.	Typical	Max.	Unit
9µm Core diameter SMF	L		20		km
Data rate			1063/1250		Mbps
Transmitter					
Center wavelength	λ_c	1270	1310	1350	nm
Spectral width (RMS)	$\Delta\lambda$			3.5	nm
Average output power*(note3)	Pout	-8		-3	dBm
Extinction ratio @ 1250Mbps	ER	6	9		dB
Rise/Fall Time(20%~80%)	t_r/t_f			0.26	ns
Total jitter	TJ			260	ps
Output optical eye*(note4)	Compliant with IEEE 802.3z*(note7)				
TX_Disable assert time	t_{off}			10	µs
P _{out} @TX Disable asserted	Pout			-45	dBm
P _{out} @TX Disable asserted	Pout			-45	dBm
Receiver					
Center wavelength	λ_c	1450	1490	1530	nm
Receiver sensitivity*(note6) @1250Mbps	Pmin			-22	dBm
Receiver overload	Pmax	-3			dBm
LOS De-Assert@1250Mbps	LOSD			-23	dBm
LOS Assert	LOSA	-45			dBm
LOS hysteresis*(note8)		0.5			dB

SFPS-ELX4931D

Parameter	Symbol	Min.	Typical	Max.	Unit
9µm Core diameter SMF	L		20		km
Data rate			1063/1250		Mbps
Transmitter					
Center wavelength	λ_c	1460	1490	1520	nm
Spectral width (-20dB)	$\Delta\lambda$			1	nm
Average output power*(note3)	Pout	-8		-3	dBm
Extinction ratio @ 1250Mbps	ER	6	9		dB
Side mode suppression ratio	SMSR	30			dB
Rise/Fall time(20%~80%)	t_r/t_f			260	ps
Output optical eye*(note4)	Compliant with IEEE 802.3ah-2004*(note7)				
TX_Disable assert time	t_{off}			10	µs
P _{out} @TX Disable asserted	Pout			-45	dBm

Parameter	Symbol	Min.	Typical	Max.	Unit
Receiver					
Center wavelength	λ_c	1290		1330	nm
Receiver sensitivity*(note6)	Pmin			-23	dBm
Receiver overload	Pmax	-3			dBm
Return loss		12			dB
Optical path penalty				1	dB
LOS De-Assert	LOSD			-24	dBm
LOS Assert	LOSA	-45			dBm
LOS Hysteresis*(note8)		0.5			dB

Note3: Output is coupled into a 9/125 μ m single-mode fiber.

Note4: Filtered, measured with a PRBS 2⁷-1.

Note5: LVPECL logic, internally AC coupled.

Note6: Measured at all data rates specified in Data Rate table with ER=9 dB, 2⁷-1 PRBS data pattern, BER <1E-12.

Note7: Eye pattern mask

Note8: LOS Hysteresis

