

XFPD-ER-xx

XFP Single-Mode, Dual Fiber, DWDM transceiver for 10GbE/10GFC/SDH/SONET



Product description

Opticonnect's XFPD-ER 40km Small Form Factor 10Gb/s transceiver complies with the current XFP Multi-Source Agreement (MSA) Specification. They support DWDM 10Gb/s SONET/SDH, DWDM 10-Gigabit Ethernet and 10-Gigabit Fiber Channel applications. Digital diagnostics functions are available via a 2-wire serial interface, as specified in the XFP MSA.

Features

- Data Rate 9.95Gb/s to 11.1Gb/s
- 100GHz ITU Grid, C Band
- 14dB Power Budget
- Temperature-Stabilized DWDM rated EML transmitter
- Hot-Pluggable XFP Footprint
- Duplex LC Connector
- Digital Diagnostics
- Support Line Side Loopback
- Support XFI Loopback
- Auxiliary 1 Monitoring Laser Temperature
- Auxiliary 2 Monitoring 5V Supply

Applications

- 10GBASE-ER/EW Ethernet
- 1200-SM-LL-L 10G Fiber Channel
- SONET OC-192 IR-2
- SDH STM S-64.2b
- SONET OC-192 IR-3
- SDH STM S-64.3b



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	Laser	Power budget	Temp.	Optical interface
XFPD-ER-xx*	10Gbps	EML EA	14dB	Standard	LC

*Note1: Standard version.

xx- Channel refers to the following table:

Channel	Part no.	Frequency (THz)	Center wavelength (nm)
17*	XFPD-ER1417	191.7	1563.86
18*	XFPD-ER1418	191.8	1563.05
19*	XFPD-ER1419	191.9	1562.23
20*	XFPD-ER1420	192.0	1561.42
21	XFPD-ER1421	192.1	1560.61
22	XFPD-ER1422	192.2	1559.79
23	XFPD-ER1423	192.3	1558.98
24	XFPD-ER1424	192.4	1558.17
25	XFPD-ER1425	192.5	1557.36
26	XFPD-ER1426	192.6	1556.55
27	XFPD-ER1427	192.7	1555.75
28	XFPD-ER1428	192.8	1554.94
29	XFPD-ER1429	192.9	1554.13
30	XFPD-ER1430	193.0	1553.33
31	XFPD-ER1431	193.1	1552.52
32	XFPD-ER1432	193.2	1551.72
33	XFPD-ER1433	193.3	1550.92
34	XFPD-ER1434	193.4	1550.12
35	XFPD-ER1435	193.5	1549.32
36	XFPD-ER1436	193.6	1548.51
37	XFPD-ER1437	193.7	1547.72
38	XFPD-ER1438	193.8	1546.92
39	XFPD-ER1439	193.9	1546.12
40	XFPD-ER1440	194.0	1545.32
41	XFPD-ER1441	194.1	1544.53
42	XFPD-ER1442	194.2	1543.73
43	XFPD-ER1443	194.3	1542.94
44	XFPD-ER1444	194.4	1542.14
45	XFPD-ER1445	194.5	1541.35
46	XFPD-ER1446	194.6	1540.56
47	XFPD-ER1447	194.7	1539.77

Channel	Part no.	Frequency (THz)	Center wavelength (nm)
48	XFPD-ER1448	194.8	1538.98
49	XFPD-ER1449	194.9	1538.19
50	XFPD-ER1450	195.0	1537.40
51	XFPD-ER1451	195.1	1536.61
52	XFPD-ER1452	195.2	1535.82
53	XFPD-ER1453	195.3	1535.04
54	XFPD-ER1454	195.4	1534.25
55	XFPD-ER1455	195.5	1533.47
56	XFPD-ER1456	195.6	1532.68
57	XFPD-ER1457	195.7	1531.90
58	XFPD-ER1458	195.8	1531.12
59	XFPD-ER1459	195.9	1530.33
60*	XFPD-ER1460	196.0	1529.55
61*	XFPD-ER1461	196.1	1528.77

*Note2: This channel is supported with limited availability; please contact Opticonnect for further details.

Regulatory compliance

Product Certificate	Certificate Number	Applicable Standard
TUV	R50135086	EN 60950-1:2006+A11+A1+A12
		EN 60825-1:2007
		EN 60825-2:2004+A1+A2
UL	E317337	UL 60950-1
		CSA C22.2 No. 60950-1-07
EMC CE	AE 50135430 0001	EN 55022:2006
		EN 55024:1998+A1+A2
CB	JPTUV-024038-M1	IEC 60825-2
		IEC 60950-1
FCC	WTF13F0503735E	47 CFR PART 15 OCT., 2010
	WTF13F0503732E	47 CFR PART 15 OCT., 2010
FDA	1230816-000	CDRH 1040.10
ROHS	RLSZF00163462	2011/65/EU

Absolute maximum ratings

Parameter	Symbol	Min	Typ.	Max	Unit
Maximum supply voltage 1	V_{CC3}	-0.5		4.0	V
Maximum supply voltage 2	V_{CC5}	-0.5		6.0	V
Storage temperature	T_s	-40		85	°C

Recommend operating condition

Parameter	Symbol	Min	Typ.	Max	Units
Supply voltage 1	V_{CC3}	3.13	3.3	3.45	V
Supply voltage 2	V_{CC5}	4.75	5	5.25	V
Case operating temperature	T_c XFPD-ER	0		70	°C

Electrical characteristics - (TOP = -40 to 85°C, $V_{CC5} = 4.75$ to 5.25 Volt)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note	
Main supply voltage	V_{CC5}	4.75		5.25	V		
Supply voltage #2	V_{CC3}	3.13		3.45	V		
Supply current – V_{CC5} supply	I_{CC5}			500	mA		
Supply current – V_{CC3} supply	I_{CC3}			750	mA		
Transmitter							
Input differential impedance	R_{in}		100		Ω	1	
Differential data input swing	$V_{in, pp}$	120		820	mV		
Transmit disable voltage	V_D	2.0		V_{CC}	V		
Transmit enable voltage	V_{EN}	GND		GND+0.8	V		
Transmit disable assert time				10	μs		
Receiver							
Differential data output swing	$V_{out, pp}$	340	650	850	mV		
Data output rise time	T_r			38	ps	2	
Data output fall time	T_f			38	ps	2	
LOS Fault	$V_{LOS\ Fault}$	$V_{CC} - 0.5$		$V_{CC_{HOST}}$	V	3	
LOS Normal	$V_{LOS\ Normal}$	GND		GND+0.5	V	3	
Power supply noise rejection	PSNR	Compliant to Section 2.7.1 of XFP MSA					

Note 1: Internal AC coupling.

Note 2: 20% – 80%

Note 3: Loss Of Signal is open collector to be pulled up with a 4.7k – 10k ohm resistor to 3.15 – 3.6V. Logic 0 indicates normal operation; logic 1 indicates no signal detected.

Optical characteristics

Please note that the transmitter becomes operational within 60 seconds of power-up. This is due to the time required for the EML to reach its optimum operating temperature.

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Output Opt. Pwr: 9/125 SMF	P _{out}	-1		+4	dBm	
Center wavelength spacing			100		GHz	
			0.8		nm	
Optical wavelength-EOL	λ_c	X-100	X	X+100	pm	
Transmitter center wavelength -BOL	λ_c	X-40	X	X+40	pm	
Optical extinction ratio	ER	8.2			dB	
Transmitter and dispersion penalty	TDP			2	dB	
Side mode suppression ratio	SMSR	30			dB	
TX jitter generation (peak-to-peak)	TX _j			0.1	UI	
TX jitter generation (RMS)	TX _j _{RMS}			0.01	UI	
Receiver						
Receiver sensitivity @ 10.7Gb/s	P _{min}			-15	dBm	
Maximum input power	P _{max}	+0.5			dBm	
Optical center wavelength	λ_c	1270		1600	nm	
Path penalty				2	dB	
Receiver reflectance	R _{rx}			-27	dB	
LOS De-Assert	LOSD			-17	dBm	
LOS assert	LOSA	-29			dBm	
LOS hysteresis		1			dB	