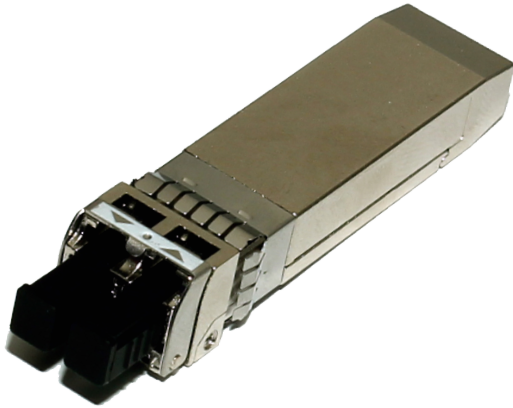


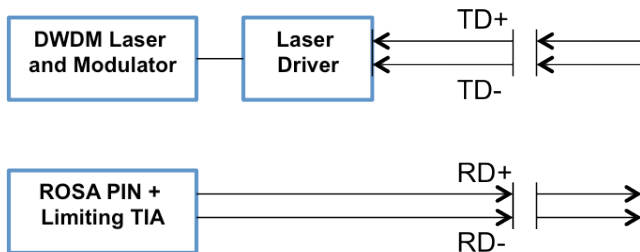


# DWDM 10GBASE-ER/OC-192 IR-2 SFP+ Transceiver 10Gb/s 40km, 100GHz ITU-T P/N 5ER0P0y-DWxx



## Description

Menara Networks' DWDM 5ER0P0y-DWxx SFP+ transceivers are designed for use in 10Gb/s to 11.1Gb/s 100GHz DWDM links up to 40km of G.652 fiber. The SFP+ module supports IEEE 802.3ae 10GBASE-ER and -EW applications along with SONET OC-192 IR-2 and SDH STM-64 ITU-T G.959 S-64.2b applications for Ethernet Switches, IP Routers or SONET/SDH optical interfaces. Digital Optical Monitoring interfaces are provided via the SFP+ standards compliant I<sup>2</sup>C interface.

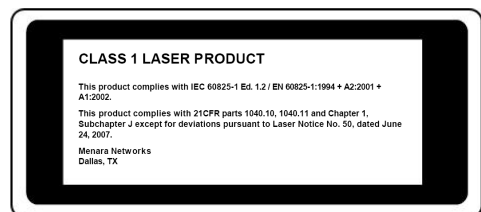


## Applications

- DWDM 10GBASE-ER 10G Ethernet
- 8GB/10GB Fibre Channel
- SONET OC-192 IR-2
- SDH STM-64 ITU-T G.959 S-64.2b
- Access DWDM Ethernet Switch or IP Router Interconnect

## Features

- Hot-pluggable SFP+ footprint
- 100GHz DWDM ITU-T fixed wavelength
- Supports 9.95Gb/s to 11.3Gb/s bit rates
- 40km 100GHz DWDM EML laser
- 40km PIN photodiode receiver
- Single 3.3V power supply
- Power dissipation < 1.5W
- 5°C to +70°C and -5°C to +85°C extended temperature ranges
- Duplex LC fiber connectors
- IEEE 802.3ae 10GBASE-ER/EW
- SDH STM-64 ITU-T G.959 S-64.2b
- Full Digital Optical Monitoring
- Metal enclosure for lower EMI
- Complies with RoHS directive (2002/95/EC)
- Compliant with SFP+ Electrical MSA SFF-8431
- Compliant with SFP+ Mechanical MSA SFF-8432
- Laser Class 1 IEC/CDRH compliant



### Transmitter E-O Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Support data rate	-	9.95	10.3125	11.1	Gb/s	-
Center Wavelength (DWDM)	$\lambda$	1529.55	-	1561.42	nm	ITU-T
Spectral Width (RMS)	$\Delta\lambda$			0.20	nm	-
Wavelength Stability after Startup	$\Delta\lambda_{EOL}$	$\lambda_i - 100$	-	$\lambda_i + 100$	pm	
DWDM Channel Spacing	$f_{SPACING}$		100		GHz	
Average Optical Output Power	$P_o$	-1.0	-	+3.0	dBm	EOL
Optical Power of Off Transmitter	$P_{off}$			-30	dBm	
Extinction Ratio	$E_r$	8.2			dB	EOL
Output Eye Diagram	Compliant with SFP+ MSA					

### Receiver O-E Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Support data rate	-	9.95	10.3125	11.1	Gb/s	-
Operate Wavelength	-	1528	-	1561	nm	-
Sensitivity @ 9.95 to 10.3Gbps	Sen1			-16	dBm	1
Sensitivity @ 11.1Gbps	Sen1			-15	dBm	1
Saturation	$P_s$	-1			dBm	1
Optical Path Penalty @ 10.3Gbps 800ps/nm	OPP1			2	dB	1
Optical Path Penalty @ 10.7Gbps 800ps/nm	OPP2			3	dB	1
Optical Path Penalty @ 11.1Gbps 800ps/nm	OPP3			3	dB	1
LOS Asserted (EOL)	T_loss_on	-40.0	-	-27.5	dBm	High level: Alarm
LOS De-Asserted	T_loss_off			-27	dBm	
LOS Hysteresis (EOL)	T_loss_Hs	0.5			dB	

Notes:

1. PRBS  $2^{31}-1$  at  $10^{-12}$  BER

### Ordering Information

Part Number	ROHS Compliant	Operating Case Temperature
5ER0P0y-DWxx	ROHS-6	-5 ~ +70°C
5ER0P1y-DWxx	ROHS-6	-5 ~ +85°C

xx = DWDM ITU-T Channel as defined below

y = Router compatibility; J = Juniper, A = AlcatelLucent, C = Cisco, O = Cisco ONS

Freq (THz)	Wave (nm)	Ch	Freq (THz)	Wave (nm)	Ch	Freq (THz)	Wave (nm)	Ch
196.1	1528.77	61	194.70	1539.77	47	193.30	1550.92	33
196.00	1529.55	60	194.60	1540.56	46	193.20	1551.72	32
195.90	1530.33	59	194.50	1541.35	45	193.10	1552.52	31
195.80	1531.12	58	194.40	1542.14	44	193.00	1553.33	30
195.70	1531.90	57	194.30	1542.94	43	192.90	1554.13	29
195.60	1532.68	56	194.20	1543.73	42	192.80	1554.94	28
195.50	1533.47	55	194.10	1544.53	41	192.70	1555.75	27
195.40	1534.25	54	194.00	1545.32	40	192.60	1556.55	26
195.30	1535.04	53	193.90	1546.12	39	192.50	1557.36	25
195.20	1535.82	52	193.80	1546.92	38	192.40	1558.17	24
195.10	1536.61	51	193.70	1547.72	37	192.30	1558.98	23
195.00	1537.40	50	193.60	1548.51	36	192.20	1559.79	22
194.90	1538.19	49	193.50	1549.32	35	192.10	1560.61	21
194.80	1538.98	48	193.40	1550.12	34	192.00	1561.42	20