

16G-ER-DXXX-BR2

SFP+, 16/8/4 Gbps FC/FICON, DWDM 100GHz, DDM, 13dB, 40km, D200 - D600 (41ch)



OVERVIEW

The 16G-ER-Dxxx-BR2 is a versatile DWDM transceiver in SFP+ form-factor supporting a wide range of Fiber Channel (FC) services (4G to 16G). The transceiver has been layer-1 tested and approved by Brocade.

For diagnostic purposes, the transceiver supports optical (OWRAP) and electrical (EWRAP) loop-back functionality, with or without forwarding. The transceiver is provided in 41 channel versions at the 100GHz DWDM grid as specified in the ITU-T 694.1 standard. The transceiver can also be used in 1550/1530nm CWDM applications by selecting wavelength versions that match these.

The optical performance provides a bridgeable distance of up to 40km (without dispersion compensation) for 16G FC. This transceiver provides digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

The transceiver module is compliant to RoHS-6/6.

TECHNICAL DATA

Technology	DWDM 100GHz SFP+
Transmission media	SM (2x LC)
Typical reach	40 km
Nominal wavelength	192.00 - 196.00 THz (41ch)
Bit rate range	4.25 – 14.025 Gbps
Protocols FC:	16G FC 8G FC 4G FC
Power budget	6 – 13 dB ¹⁾ 6 – 14 dB ^{2) 3)}
Dispersion tolerance	800 ps/nm
Dispersion penalty	Max: 2dB
Temperature range	0°C to +70°C
Power consumption	< 2.1 W

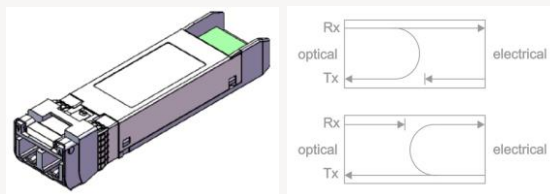
Transmitter data	Output power (avg):	Min: 0 dBm ¹⁾ Max: +4 dBm ¹⁾
	Tx wavelength:	192.00 - 196.00 THz in 100GHz steps (G.694.1)
Receiver data	Minimum input power:	-13.0 dBm ^{1) 4)} -14.0 dBm ^{2) 4)} -14.0 dBm ^{3) 4)}
	Max input power:	-2.0 dBm
	Wavelength range:	1480 – 1580 nm
DDM		Yes
MSA compliance		SFP+ MSA

- ¹⁾ @ 14.025 Gbps (16G FC)
- ²⁾ @ 8.5 Gbps (8G FC)
- ³⁾ @ 4.25 Gbps (4G FC)
- ⁴⁾ @ BER < 1E-12 using PRBS 2³¹-1

Regulatory compliance

RoHS	RoHS 6
Safety	EN 60825-1 Class 1 laser product

Storage temp.	-40°C to 85°C
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OWRAP with forwarding

EWRAP with forwarding

For a 1550nm CWDM channel the DWDM channels D250 – D410 can be used.
For a 1530nm CWDM channel the DWDM channels D500 – D600 can be used.
(The ITU G.694.2 channel grid states 1551/1531nm ± 7nm)

For 1550nm single-channel applications, the ITU-T G.959 states 1500nm – 1565nm, which means any channel between D200 – D600.

Subject to change without notice.

For more information visit smaroptics.com.



ORDERING INFORMATION

Part number	ITU channel	λ nm	Part number	Freq. THz	λ nm
16G-ER-D200-BR2	192.00	1561.42	16G-ER-D400-BR2	194.00	1545.32
16G-ER-D210-BR2	192.10	1560.61	16G-ER-D410-BR2	194.10	1544.53
16G-ER-D220-BR2	192.20	1559.79	16G-ER-D420-BR2	194.20	1543.73
16G-ER-D230-BR2	192.30	1558.98	16G-ER-D430-BR2	194.30	1542.94
16G-ER-D240-BR2	192.40	1558.17	16G-ER-D440-BR2	194.40	1542.14
16G-ER-D250-BR2	192.50	1557.36	16G-ER-D450-BR2	194.50	1541.35
16G-ER-D260-BR2	192.60	1556.55	16G-ER-D460-BR2	194.60	1540.56
16G-ER-D270-BR2	192.70	1555.75	16G-ER-D470-BR2	194.70	1539.77
16G-ER-D280-BR2	192.80	1554.94	16G-ER-D480-BR2	194.80	1538.98
16G-ER-D290-BR2	192.90	1554.13	16G-ER-D490-BR2	194.90	1538.18
16G-ER-D300-BR2	193.00	1553.33	16G-ER-D500-BR2	195.00	1537.40
16G-ER-D310-BR2	193.10	1552.52	16G-ER-D510-BR2	195.10	1536.61
16G-ER-D320-BR2	193.20	1551.72	16G-ER-D520-BR2	195.20	1535.82
16G-ER-D330-BR2	193.30	1550.92	16G-ER-D530-BR2	195.30	1535.04
16G-ER-D340-BR2	193.40	1550.12	16G-ER-D540-BR2	195.40	1534.25
16G-ER-D350-BR2	193.50	1549.32	16G-ER-D550-BR2	195.50	1533.47
16G-ER-D360-BR2	193.60	1548.51	16G-ER-D560-BR2	195.60	1532.68
16G-ER-D370-BR2	193.70	1547.72	16G-ER-D570-BR2	195.70	1531.90
16G-ER-D380-BR2	193.80	1546.92	16G-ER-D580-BR2	195.80	1531.12
16G-ER-D390-BR2	193.90	1546.12	16G-ER-D590-BR2	195.90	1530.33
			16G-ER-D600-BR2	196.00	1529.55

DEFINITIONS

Technology:	CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid.
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:	Max operating case temperature range. Standard temperature range: Typically 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.
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.