

DATASHEET 5.0

16G-ER-DXXX-BR1

SFP+, 16/8/4 Gbps FC/FICON, DWDM 100GHz, DDM, 14dB, 40km, D200 - D600 (41ch)

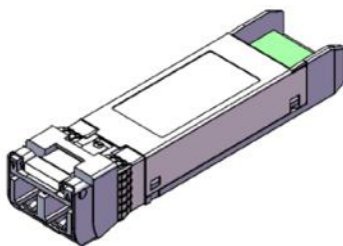
OVERVIEW

The 16G-ER-Dxxx-BR1 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.

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.



Safety/regulatory compliance:

RoHS	RoHS 6
Safety	EN 60825-1 Class 1 laser product
Storage Temp.	-40°C to 85°C

TECHNICAL DATA

PARAMETER	VALUE
Technology	CWDM SFP+
Transmission media	SM (2x LC)
Typical reach	40km
Nominal wavelengths	147920 - 1960 THz (14ch)
Bit rate range	4.25 – 14.025 Gbps
Protocol support	18G FC 8G FC 4G FC
Power budget	6 – 13 dB ¹⁾ 6 – 13 dB ^{2) 3)}
Dispersion tolerance	800ps/nm ¹⁾
Dispersion penalty	Max 2dB
Temperature range	0°C to +70°C
Power consumption	< 2.2 W
Transmitter data:	
Output power	Min: 0 dBm ¹⁾ Max: +4 dBm ¹⁾
Transmit wavelengths	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⁾
Overload (max power)	-2.0 dBm
Wavelength range	1480 – 1580 nm
DDM	Yes
MSA compliance	SFP+ MSA

¹⁾ @ 14.025 Gbps (16G FC) ²⁾ @ BER < 1E-6 using PRBS 231-1 ³⁾ Average power

ORDERING INFORMATION

Part Number	ITU Channel	λ nm
16G-ER-D200-BR1	192.00	1561.42
16G-ER-D210-BR1	192.10	1560.61
16G-ER-D220-BR1	192.20	1559.79
16G-ER-D230-BR1	192.30	1558.98
16G-ER-D240-BR1	192.40	1558.17
16G-ER-D250-BR1	192.50	1557.36
16G-ER-D260-BR1	192.60	1556.55
16G-ER-D270-BR1	192.70	1555.75
16G-ER-D280-BR1	192.80	1554.94
16G-ER-D290-BR1	192.90	1554.13
16G-ER-D300-BR1	192.00	1553.33
16G-ER-D310-BR1	192.10	1552.52
16G-ER-D320-BR1	192.20	1551.72
16G-ER-D330-BR1	192.30	1550.92
16G-ER-D340-BR1	192.40	1550.12
16G-ER-D350-BR1	192.50	1549.32
16G-ER-D360-BR1	192.60	1548.51
16G-ER-D370-BR1	192.70	1547.72
16G-ER-D380-BR1	192.80	1546.92
16G-ER-D390-BR1	192.90	1546.12

Part Number	Freq. THz	λ nm
16G-ER-D400-BR1	194.00	1545.23
16G-ER-D410-BR1	194.10	1544.53
16G-ER-D420-BR1	194.20	1543.73
16G-ER-D430-BR1	194.30	1542.94
16G-ER-D440-BR1	194.40	1542.14
16G-ER-D450-BR1	194.50	1541.35
16G-ER-D460-BR1	194.60	1540.56
16G-ER-D470-BR1	194.70	1539.77
16G-ER-D480-BR1	194.80	1538.98
16G-ER-D490-BR1	194.90	1538.18
16G-ER-D500-BR1	195.00	1537.40
16G-ER-D510-BR1	195.10	1536.61
16G-ER-D520-BR1	195.20	1535.82
16G-ER-D530-BR1	195.30	1535.04
16G-ER-D540-BR1	195.40	1534.25
16G-ER-D550-BR1	195.50	1533.47
16G-ER-D560-BR1	195.60	1532.68
16G-ER-D570-BR1	195.70	1531.90
16G-ER-D580-BR1	195.80	1531.12
16G-ER-D590-BR1	195.90	1530.33
16G-ER-D600-BR1	196.00	1529.55

GENERAL 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 giving a BER, normally $1E^{-12}$.
DDM	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.

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