

BROCADE OPTICS FAMILY



ENTERPRISE LAN SWITCHING

Highly Reliable, Brocade Tested and Certified Optics

HIGHLIGHTS

- Rigorously tested and qualified by Brocade—performance and reliability are constantly tested and verified in the Brocade laboratories
- Fully warranted—return and repair for up to 1 year from shipment
- Hot swappable flexibility in the field for greater ease and lower total cost of ownership
- Standards based—802.3z, 802.3ah, 802.3u, 802.3ae, and 802.3ak compliant where appropriate
- Compliant with Requirements to Reduce Hazardous Substances (RoHS)—all Brocade optical transceivers meet either RoHS 5 or RoHS 6 EU standards

The unique set of high-performance, reliable, and cost-effective optical transceivers from Brocade® help enterprises and service providers meet the challenges of diverse network topologies. To ensure the highest level of quality, Brocade selected and tested the most reliable and best performing optical transceivers on the market, and Brocade warrants their availability, capacity, and performance in Brocade products.

Extensive performance and reliability testing reflects an ongoing commitment to quality. Brocade tests transceivers using the industry's most advanced tools and instruments to ensure that they provide the right mix of functionality and performance when used in conjunction with Brocade products. The speed, capacity, reliability, and low cost of ownership that Brocade is known for is also provided in all optical components.

By using Brocade tested and certified components you can be assured that all of your warranty and service requirements will be met and your Brocade products will

continue to deliver the assured uptime, performance, and reliability experienced by the world's most demanding enterprise service providers.

OPTIC FAMILY FEATURES

100MbE Optics

- 100MbE transceivers support link lengths from 2km to 40km
- Both SMF and MMF fiber types
- RoHS 5 and 6 compliant
- Enterprise switching and routing

GbE Optics

- GbE transceivers support link lengths from 300m to 100km
- Both SMF and MMF fiber types
- Coarse Wavelength Division Multiplexing (CWDM) Support for distances of 80km to 100km
- Core routers
- Security applications



BROCADE

10-GbE XFP Optics

- 10-GbE transmissions support link lengths of 26m to 80km
- Protocol independent
- Less than one-third the power and size of MSA optic
- Hot swappable
- Digital Optical Monitoring support
- Application delivery and acceleration
- High Performance Computing interconnects
- Service provider traffic management

10-GbE XENPAK Optics

- 10-GbE link lengths from 5m to 80km
- Industry standard, hot swappable
- Front panel pluggable
- Provides Digital Optical Monitoring support
- Application delivery and acceleration
- High Performance Computing interconnects
- Service provider traffic management

POS Pluggable OC12, OC48, and OC192 XFP Optics

- Pluggable XFP Optic
- Ranges from 500m to 80km

PRODUCT SUPPORT MATRIX FOR FAST ETHERNET

Fast Ethernet Optics	FastIron® Series		FastIron X Series		BigIron® Series	NetIron® Series	
	FLS	FGS	FESX	SuperX	BI-RX	NI-XMR/MLX	MI-M2404
E1MG-100FX	•	•	• ¹ (FESX424HF)	• ² (SX-FI424HF)	•	•	•
E1MG-100BXU	•	•	• ¹ (FESX424HF)	• ² (SX-FI424HF)	•	•	•
E1MG-100BXD	•	•	• ¹ (FESX424HF)	• ² (SX-FI424HF)	•	•	•
E1MG-100FX-IR	•	•	• ¹ (FESX424HF)	• ² (SX-FI424HF)	Software v2.4.00	Software v3.3.00	Future
E1MG-100FX-LR	•	•	• ¹ (FESX424HF)	• ² (SX-FI424HF)	Software v2.4.00	Software v3.3.00	Future

1-Available only with the FESX424HF. 2-Available only with SX-FI424HF.

PRODUCT SUPPORT MATRIX FOR GIGABIT ETHERNET

1-GbE Fiber Optics	Edgelron® Series			FastIron Series			FastIron X Series			FastIron Workgroup Switch	BigIron Series			NetIron Series		ServerIron Series
	CF	G	GS	FES	FLS	FGS	FWSX	FESX	SUPER X	FWS4802	IronCore/ JetCore	BI-RX	BI-MG8	NI-XMR/ MLX	NI-M2404	
E1MG-SX, E1MTG-SX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
E1MG-SX2 ¹	•	•	•	•	•	•	•	•	•	• ¹	• ¹	•	•	•	•	• ¹
E1MG-LX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
E1MG-LHA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
E1MG-LHB	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
E1MG-BXD				•	•	•	•	•	•		• ¹	•	•	•	•	• ¹
E1MG-BXU				•	•	•	•	•	•		• ¹	•	•	•	•	• ¹
CWDM80-XXXX		•	•	•	•	•	•	•	•		•	•	•	•	•	•
E1MG-TX				•	•	•	•	•	•		•	•	•	•	•	•

1-Will not appear in the "sh media" command for JetCore and IronCore boxes.

PRODUCT SUPPORT MATRIX FOR POS OPTICS

	NetIron Series	NetIron Series
	NI-XMR/MLX	NI-XMR/MLX
OC12-SFP-MM	•	OC48-SFP-LR1
OC12-SFP-IR1	•	OC48-SFP-LR2
OC12-SFP-LR1	•	OC192-XFP-SR1
OC12-SFP-LR2	•	OC192-XFP-IR2
OC48-SFP-SR1	•	OC192-XFP-LR2
OC48-SFP-IR1	•	

PRODUCT SUPPORT MATRIX FOR 10-GIGABIT ETHERNET

	Edgelson Series		FastIron Series		FastIron X Series			BigIron Series			NetIron Series			ServerIron Series
10-GbE Fiber Optics	GS	8X10GbE	FLS	FGS	FWSX	FESX	SUPER X	IronCore/JetCore	BI-RX	BI-MG8	NI-40G	NI-IMR	NI-XMR/MLX	
10G-XFP-SR, LR, ER		•	•	•	•	•	• ¹		• ²	•			• ²	
10G-XFP-ZR			•	•	•	•	• ¹		• ²	•			• ²	
10G-XFP-ZRD			•	•	•	•	• ¹		• ²				• ²	
10G-XFP-CX4			•	• ³	•	•	• ¹		•				•	
10G-XNPK-SR, LR, ER	•							•		•	•	•		•
10G-XNPK-CX4	•							Software v8.1		•	•	•		
10G-XNPK-LX4	•							Software v8.1		•	•	•		
10G-XNPK-ZR								Software v8.1		•	•	•		
10G-XNPK-ZRD								Software v8.1		•	•	•		

KEY STANDARDS AND FEATURES

	IEEE Standards	Domestic Safety Standards	International Safety Standards	Wavelength (nm)	Fiber Type	Maximum Cable Distance	RoHS Compliant 5 or 6	Digital Optical Monitoring				
Fast Ethernet												
E1MG-100FX	802.3u	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/UL 60950-1	EN 60825-1, EN 60950-1	1310	MMF	2km	5	N/A				
E1MG-100BXU	802.3ah			1310	SMF	10km						
E1MG-100BXD	802.3ah			1550	SMF	10km						
E1MG-100FX-IR	802.3			1310	SMF	15km	6	Yes				
E1MG-100FX-LR	802.3			1310	SMF	40km		Yes				
1-GbE Fiber												
E1MG-SX, E1MTG-SX	802.3z	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/UL 60950-1	EN 60825-1, EN 60950-1	850	MMF	220m-550m	5	N/A				
E1MG-SX2	802.3z			1310	MMF	2km		Yes				
E1MG-LX	802.3z			1310	MMF/SMF	550m-10km		Yes				
E1MG-LHA	802.3z			1550	SMF	70km		Yes				
E1MG-LHB	802.3z			1550		150km w/0.18dB/km cable, 91km w/std 0.3db/km cable		N/A				
E1MG-BXD	802.3ah			TX:1490, RX:1310		10km		Yes				
E1MG-BXU	802.3z			TX:1310, RX:1490		10km		Yes				
CWDM80-XXXX	802.3z			1470-1610		80km		Yes				
CWDM100-XXXX	802.3z			1470-1610	100km	Yes						
1000BaseT Copper												
E1MG-TX	802.3z	CSA 60950-1-03/UL	EN 60950-1	N/A	Cat5	100m	5	N/A				
10-GbE Fiber												
10G-XFP-SR	802.3ae	FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/UL 60950-1	EN 60825-1, EN 60950-1	850	MMF	26m-300m	5	Yes				
10G-XFP-LR ¹	802.3ae			1310		SMF			10km			
10G-XFP-ER	802.3ae			1550					40km			
10G-XFP-ZR	802.3ae			1550					80km			
10G-XFP-ZRD	802.3ae			1528.77-1561.42					80km			
10G-XFP-CX4	802.3ak			N/A		15m						
10G-XNPK-SR	802.3ae			850	MMF	26m-300m						
10G-XNPK-LR ¹	802.3ae			1310	SMF	10km						
10G-XNPK-ER ¹	802.3ae			1550	SMF	40km						
10G-XNPK-CX4	802.3ae			N/A	CX4 InfiniBand copper N/A	15m						
10G-XNPK-LX4 ¹	802.3ae			1310 WWDM	MMF/SMF	300m-10km						
10G-XNPK-ZR	802.3ae			1550	SMF	80km						
10G-XNPK-ZRD (ZR DWDM)	802.3ae			1530,334- 1561.419	SMF	80km						
WAN Module												
10G-XNPK-LW ¹	802.3ae			FDA 21CFR 1040.10 Class 1, CSA 60950-1-03/UL 60950-1	EN 60825-1, EN-60950-1	1310			SMF	10km	5	Yes

1-SX-FI42XGW module supports WAN mode. 2-All XMR and RX 10GE modules support WAN mode. 3-Applicable to the FGS624XGP-POE in port 0/3/1 only.

ORDERING INFORMATION

Part Number	Description
100MbE SFP Transceivers	
E1MG-100BXD	100Base-BXD SFP optic SMF, 1490nm, LC connector. This optic can only be connected to an E1MG-100BXU at the far end.
E1MG-100BXU	100Base-BXU SFP optic SMF, 1310nm, LC connector. This optic can only be connected to an E1MG-100BXD at the far end.
E1MG-100FX	100Base-FX SFP optic MMF, LC connector.
E1MG-100FX-IR	100BaseFX-IR SFP optic for SMF with LC connector. For distances up to 15km. For the SX-FI424HF, FESX424HF, and FastIron GS.
E1MG-100FX-IR	100BaseFX-LR SFP optic for SMF with LC connector. For distances up to 40km. For the SX-FI424HF, FESX424HF, and FastIron GS.
GbE Optics	
E1G-LH	1000Base-LHA-series, GBIC optic, SMF, SC connector (70km)
E1G-LX	1000Base-LX GBIC optic, SMF, SC connector
E1G-SX	1000Base-SX GBIC optic, MMF, SC connector
E1MG-BXD	1000Base-BXD SFP optic, SMF, 1490nm, LC connector. This optic can only be connected to an E1MG-BXU at the far end.
E1MG-BXU	1000Base-BXU SFP optic, SMF, 1310nm, LC connector. This optic can only be connected to an E1MG-BXD at the far end.
E1MG-CWDM80-XXXX	CWDM SFP optic, 80km, 1470-1610 (total 8 wavelengths supplied by 8 optics, each 20nm apart in wavelength), LC connector
E1MG-LHA	1000BaseLHA SFP optic SMF, LC connector
E1MG-LHB	1000Base-LHB SFP optic, SMF, LC connector, 150km maximum reach
E1MG-LX	1000Base-LX SFP optic SMF, LC connector
E1MG-SX	1000Base-SX SFP optic, MMF, LC connector
E1MG-TX	1000Base-TX SFP copper, RJ-45 connector
E1MTG-SX	1000Base-SX SFP optic, MMF, MTRJ connector
10GbE-XFP	
10G-XFP-CX4	10GBase-CX4, XFP module, 15m, CX4 connector (Supported only on integrated XFP slot on FGS624XGP and FGS624XGP-POE)
10G-XFP-ER	1550nm serial pluggable XFP optic (LC) for up to 40km over SMF
10G-XFP-LR	1310nm serial pluggable XFP optic (LC) for up to 10km over SMF
10G-XFP-SR	850nm serial pluggable XFP optic (LC), target range 300m over MMF
10G-XFP-ZR	1550nm serial pluggable XFP optic (LC) for up to 80km over SMF
10G-XFP-ZRD-XXXX-AA	10GBase-ZR DWDM, XFP optic, 80km, 1528.77 to 1561.42 (Total 41 wavelengths supplied by 41 optics, each 100GHz apart in frequency)

Part Number	Description
10GbE-Xenpak	
10G-XNPK-CX4	10GBase-CX4 10-GbE XENPAK copper transceiver; supports distance of 15m over InfiniBand cable
10G-XNPK-ER	1550nm serial pluggable XENPAK optic only (SC) for up to 40km over SMF
10G-XNPK-LR	1310nm serial pluggable XENPAK optic only (SC) for up to 10km over SMF
10G-XNPK-LW	10GBase-LW 1310nm serial pluggable XENPAK WAN PHY optic only (SC) for up to 10km over SMF OC-192 format
10G-XNPK-LX4	10GBase-LX4 WWDM four parallel signals pluggable XENPAK LAN PHY optic (SC) for up to 10km over SMF or 300m FDDI-grade MMF
10G-XNPK-SR	850nm serial XENPAK plug-in transceiver (SC), target range of 300m over MMF
10G-XNPK-ZR	10GBase-ZR, XENPAK optic, 80km, 1550nm, SC connectors
10G-XNPK-ZRD (ZRDWDM)-XXXX-AA	10GBase-ZR DWDM, XENPAK optic, 80km, 1530.334 to 1561.419 (total 40 wavelengths supplied by 40 optics, each 100GHz apart in frequency), SC Connector
OC12-POS-SFP	
OC12-SFP-MM	POS OC-12 (STM-4) pluggable SFP optic (LC connector). Range up to 500m over MMF.
OC12-SFP-IR1	POS OC-12 (STM-4) SR-1/IR-1 pluggable SFP optic (LC connector). Range up to 15km over SMF. No attenuator needed for SR-1 applications
OC12-SFP-LR1	POS OC-12 (STM-4) LR-1 pluggable SFP optic (LC connector). Range up to 40km over SMF.
OC12-SFP-LR2	POS OC-12 (STM-4) LR-2 pluggable SFP optic (LC connector). Range up to 80km over SMF.
OC48-POS-SFP 2.5Gbps	
OC48-SFP-SR1	POS OC-48 (STM-16) SR-1 pluggable SFP optic (LC connector). Range up to 2km over SMF.
OC48-SFP-IR1	POS OC-48 (STM-16) LR-1 pluggable SFP optic (LC connector). Range up to 15km over SMF.
OC48-SFP-LR1	POS OC-48 (STM-16) LR-2 pluggable SFP optic (LC connector). Range up to 40km over SMF.
OC48-SFP-LR2	POS OC-48 (STM-16) LR-2 pluggable SFP optic (LC connector). Range up to 80km over SMF.
OC192-POS-XFP	
OC192-XFP-SR1 POS	OC-192 (STM-64) SR-1 pluggable XFP optic (LC connector). Range up to 2km over SMF.
OC192-XFP-IR2	POS OC-192 (STM-64) IR-2 pluggable XFP optic (LC connector). Range up to 40km over SMF.
OC192-XFP-LR2	POS OC-192 (STM-64) LR-2 pluggable XFP optic (LC connector). Range up to 80km over SMF.

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