

6800 G16X³



High-Density Mini-GBIC Gigabit Ethernet Module

Extreme Networks' BlackDiamond® G16X³ module is a 16 port 1000BASE-X Gigabit Ethernet module based on advanced Triumph™ technology. Triumph technology dramatically improves the network performance of today's high bandwidth applications while providing unique traffic management capabilities making each Gigabit Ethernet connection much more efficient. The G16X³ module supports sixteen mini-GBIC Gigabit Ethernet ports enabling the network administrator to scale Gigabit Ethernet technology to more devices in the network. In addition to supporting excellent Gigabit Ethernet density, the G16X³ supports T-Control, a set of Triumph-enabled advanced traffic management and rate shaping features allowing the incremental tracking and control of bandwidth by end users. The combining of high-density Gigabit Ethernet scalability and advanced traffic shaping capabilities make the BlackDiamond G16X³ module particularly well suited to advanced end user applications that demand high performance and bandwidth capacity.

- The GM16X³ module supports 16 mini-GBIC Gigabit Ethernet ports, scaling to 256 Gigabit Ethernet ports in a single BlackDiamond 6816 chassis—significantly increasing total system capacity and dramatically lowering total cost per port.
- Each of the 16 ports can support up to a full gigabit of throughput, with average per port throughput 500% greater than current 10/100 connections; the G16X³ provides plenty of capacity to avoid congestion in the network and sufficient support for today's high bandwidth applications.
- Dramatically increasing the efficiency of the network, the G16X³ supports T-Control, advanced traffic management features that enable the network administrator to track and control the amount of bandwidth each port receives.

Triumph Technology To Keep Your Network Running Smoothly

The BlackDiamond G16X³ module uses advanced Triumph technology to support high Gigabit Ethernet density along with sophisticated traffic management features which enables the most efficient utilization of high bandwidth applications. The G16X³ module supports:

- 8 ingress and 8 egress queues with an egress super-queue allowing the network administrator to prioritize different levels of traffic coming into and going out of the module
- Tiered rate shaping with Committed Information Rate (CIR) for guaranteed traffic and peak rate (PR) for burst services to ensure bandwidth is efficiently used
- DiffServ marking for out-of-profile traffic
- Granular and accurate rate shaping with as low as 1kbps increments at each port optimizing bandwidth manageability at the port level
- Byte based statistics for CIR, PR and dropped bytes so the network administrator can accurately track and analyze traffic patterns in the network

T-Control enables the G16X³ to guarantee any level of bandwidth (from 1kbps to 1 Gbps) to any port on the module. Network designers will no longer worry about any one application or port monopolizing bandwidth. The network designer can assign a minimum and maximum amount of bandwidth to every port and dynamically configure that bandwidth as network conditions change.

As an added benefit, the G16X³ tracks and maintains detailed throughput statistics so the network administrator can analyze usage trends and maximize network efficiency. The G16X³ protects your network through the most accurate and granular traffic management capabilities translating to your network running smoother and more efficiently than ever before.

Scalable To Meet Your Gigabit Ethernet Needs Today And The Future

The G16X³ module uses Triumph technology to significantly increase optical Gigabit Ethernet density in the BlackDiamond switch so customers can easily (and inexpensively) add more Gigabit Ethernet connections as high bandwidth application requirements grow. A BlackDiamond 6816, for example, can support up to 256 mini-GBIC Gigabit Ethernet ports providing the network manager tremendous flexibility in scaling to support expansion of server farms, aggregation of optical uplinks from closet switches, fiber-based workstations, and other very high capacity Gigabit Ethernet edge applications.

	G16X ³	G8Xi
BlackDiamond 6816	256	128
BlackDiamond 6808	128	64
BlackDiamond 6804	64	32

BlackDiamond Series Chassis

Throughput Performance For The Most Demanding Applications

Many applications and configurations in today's network are dependent upon very high throughput. Configurations such as fiber uplinks from wiring closet switches, optical server connections for new data centers and campus and metro Ethernet rings require high performance mini-GBIC Gigabit Ethernet connectivity. Not only does the G16X³ increase your mini-GBIC Gigabit Ethernet capacity, but this module also provides real-world throughput that is significantly greater than the 10/100 Ethernet capacity that many users are limited by today. Every port in the G16X³ can support up to a full gigabit of Ethernet traffic with a maximum module throughput of eight gigabits. By optimizing port density and full gigabit throughput, the G16X³ provides an ideal price-performance configuration for today's high capacity optical applications.

G16X³ Feature Summary

- Scales to 256 mini-GBIC Gigabit Ethernet connections in a BlackDiamond 6816, with 128 and 64 optical connections in the 6808 and 6804 respectively
- Advanced T-Control traffic management and bi-directional rate shaping relevant for growing enterprises and metro Ethernet providers
- Byte based traffic accounting based on ingress port, application, VLAN or traffic priority
- Wire-speed IP/IPX routing using RIP v1/v2 OSPF, BGP4, PIM and DVMRP
- Access control lists can be linked to a class of service, while performing Layer 1-4 packet-level security and controlling traffic flows – all at wire-speed

BlackDiamond[™] 6800 G16X³ Product Specifications

Number of ports:

- G16X³: 16 ports of 1000BASE-X using SFP style mini-GBICs

Connectors:

- G16X³: LC for Optical SFP GBIC

Port density per chassis:

- BlackDiamond 6816: 256 ports
- BlackDiamond 6808: 128 ports
- BlackDiamond 6804: 64 ports

Distance:

- G16X³:
 - SX SFP GBIC: 550 Meters over Multi-mode Fiber
 - LX SFP GBIC: 10 Kilometers over Single-mode Fiber
 - ZX SFP GBIC: 70 Kilometers over Single-mode Fiber

Physical Specifications

- Occupies a single I/O slot on a BlackDiamond 6800 series chassis
- Module dimensions (H x W x D): 1.6 x 15.1 x 16.0 in (4.1 x 38.4 x 40.6 cm)
- Module weight: 7.5lb (2.81 kg)
- Shipping box dimensions (H x W x D): 3.25 x 21 x 20.25 in (8.3 x 53.3 x 51.4 cm)

Environmental Compliance & Conditions

- ETSI/EN 300 019-2-1: 2000 class 1.2 (Storage Environment)
- ETSI/EN 300 019-2-2: 1999 class 2.3 (Transportation Environment)
- ETSI/EN 300 019-2-2: 1999 class 3.1e (Operational Weather Protected Environment)
- ASTM D5276 (Drop - packaged)
- ASTM D3580 (Random Vibration 1.5g min, non-packaged)
- ASTM D3332 (Shock 30g min, non-packaged)
- Operating temperature: 0° to 40° C
- Storage temperature: -40° to 70° C
- Operating relative humidity: 10% to 95%, non-condensing

Mean Time Before Failure

- G16X³ module: 98,707 hours

Safety Compliance

- UL 60950 3rd Edition, Listed Accessory (North American Safety of ITE)
- cULus, Listed Accessory, Equivalent to CAN/CSA-C22.2 No. 60950-00 (Canadian Safety)
- EN60950: 2000 with Deviations (European Safety of ITE)
- IEC60950: 2000 CB Scheme with Deviations (International Safety of ITE)
- TUV-R GS Mark (German Notified Body)
- Low Voltage Directive (LVD) (European Safety of ITE)
- AS/NZX 3260 (Australia / New Zealand Safety Standard)
- NOM/NYCE (Mexico Safety & EMC Approval)
- S-Mark (Argentina Safety)
- EN60825-1 (European Safety of Laser Products)
- FCC 21 CFR subpart J (North American Safety Laser Products)
- CDRH Letter of Approval (North American Safety Laser Products)

EMI/EMC Compliance

- FCC 47 CFR Part 15 Class A (USA Emissions Standard)
- ICES-003 Class A (Canada Emissions Standard)
- 89/336/EEC EMC Directive (European Directive)
- EN 55022: 1998 Class A (European Emissions Standard)
- EN 55024: 1998 includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11 (European Immunity Standards)
- CISPR 22: 1997 Class A (International Emissions Standard)
- CISPR 24: 1998 (International Immunity Standard)
- ETSI/EN 300 386: 2001 (EU Telecom Emissions & Immunity Standard)
- EN 61000-3-2,3 (European Harmonics & Flicker Standards)
- CNS 13438: 1997 Class A (Taiwan BSMI Approval)
- VCCI Class A (Japan EMC Standard)
- AS/NZS 3548 (Australia/New Zealand EMC Standard)
- MIC Approval (Korean EMC Approval)
- NOM/NYCE (Mexico Product Safety & EMC Approval)
- GOST (Russia)

Ordering Information

Part Number	Description
51051	G16X ³ - BlackDiamond 6800 16-port 1000BASE-X Module SFP (mini-GBIC) Module
10051	Mini-GBIC, SFP, 1000BASE-SX, LC Connector, for use with multi-mode fiber with distances up to 550 meters.
10052	Mini-GBIC, SFP, 1000BASE-LX, LC Connector, for use with single mode fiber, distances up to 10 Km.
10053	Mini-GBIC, SFP, 1000BASE-ZX Extra long distance SMF 70 Km/21 dB budget, LC connector

For more product information from Extreme Networks, please call 1.888.257.3000. 3585 Monroe Street, Santa Clara, CA 95051-1450 Phone 408.579.2800 Fax 408.579.3000 Email info@extremenetworks.com Web www.extremenetworks.com

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