

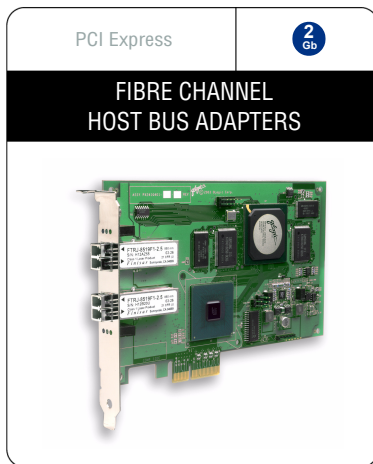


SANblade®

2-Gbps Fibre Channel (FC) to
PCI Express Host Bus Adapters (HBAs)

QLE236x
Family

Highest Performing PCI Express HBA in the Industry.



Ease of Use

- Autonegotiation of Fibre Channel speed bit rate (1 Gbps or 2 Gbps)
- Enhanced beacon/LED indicators
- Proactive failure detection and alerts
- Quick start guide
- Persistent binding

Superior Scalability

- Single and dual channel versions maximize performance and take advantage of PCI Express slots
- Load balancing for optimized performance
- Native support for all major operating systems, including Microsoft® Windows 2003, Windows® 2000, Red Hat™ Linux™, and SuSE Linux
- Concurrent support for SCSI and IP protocols
- Storage networking industry association (SNIA) HBA application programming interface (API), and storage management interface Specification (SMI-S) compliant

Enhanced Reliability

- Unique, single-integrated Fibre Channel controller for added reliability and optimum performance

- HBA and LUN level failover

- 2-Gbps Fibre Channel (FC) to PCI Express™ x4 host bus adapter (HBA)

- Local and remote management

QLE236x Host Bus Adapter. The QLE236x is a high-performance, 2-Gbps to PCI-Express HBA. The QLE2360 is a single port HBA, the QLE2362 is a dual port HBA. Unlike other HBAs, the QLE236x delivers unprecedented levels of performance and availability.

Why PCI Express? PCI Express is a serial host bus that provides higher throughputs, lower pin counts, and ease of scalability. This technology is being adopted by major server OEMs. PCI Express x4, supported by the QLE236x, provides 2-GBps FC data rate, addressing increasing higher throughput requirements.

Higher Performance. The QLE236x has an enhanced RISC processor on the FC controller chip, providing up to 160,000 I/Os per second by having completely independent, internal resources for each port.

Simplified Setup. Point-and-click installation and configuration wizards simplify the HBA setup process. Storage administrators can quickly deploy HBAs across a SAN using standard HBA management tools and device utilities. The QLE236x is also fully compatible with industry standard application programming interfaces (APIs), including SNIA HBA API and SMI-S, thereby allowing administrators to manage QLogic HBAs using third-party software applications.

Comprehensive Operating System (OS) Support. QLogic offers the broadest range of support for all major operating systems to ensure OS and hardware server compatibility. Drivers are available for all major operating systems, including Windows®, Linux™, and NetWare®. A single driver strategy per OS allows storage administrators to easily deploy, configure, and manage HBAs in heterogeneous SAN configurations.

Guaranteed Interoperability. Storage partner certifications, combined with agency and regulatory testing, ensures that all products meet world compliance hardware and software specifications. All our HBAs are tested extensively with third-party hardware, along with multiple software applications, to ensure best-in-class SAN interoperability and compatibility. You can be confident that QLogic HBAs will meet your FC storage networking needs.

Investment Protection. For over 15 years, QLogic has been a technological leader with products that address the current needs of customers, yet provide strong investment protection to support emerging technologies and standards. QLogic stands alone in the industry with its product portfolio depth and experience in successfully delivering technological solutions that address the needs of today and tomorrow.

Host Bus Interface Specifications

Bus interface	2.5 GHz PCI Express x4
Memory	1-MB SRAM per port, 1-MB flash, and 4-Kb NVRAM
HW platforms	IA32 (x86), IEM64T
Compliance	PCI Express Base Specification rev. 1.0a, PCI Express Card Electromechanical Specification rev. 1.0, PCI Local Bus Specification rev. 2.3, PCI Bus Power Management Interface Specification revision. 1.1

Fibre Channel Specifications

Data rate	2/1 Gbps auto-negotiation (2.1240/1.0625 Gbps)
Performance	83,000 IOPS per port
Throughput	380 MBps at full-duplex per port
Topology	FCAL, FCAL-2, point to point, switched fabric (FL_Port and F_Port)
Class of service	Class 3 FC service
Protocols	SCSI-FCP, FC-TAPE
Buffer credits	3 credits available per port (2,112 Byte frame payload)
Compliance	Second Generation FC Generic Services Definition (FC-GS-2), Third Generation FC Generic Services Definition (FC-GS-3), Fibre Channel-Physical and Signaling Interface (FC-PH), SCSI-3 Fibre Channel Protocol (SCSI-FCP), Fibre Channel-Arbitrated Loop-2 (FC-AL-2), Fibre Channel-Private Loop Direct Attach Technical Report (FC-PLDA), Fibre Channel Framing and Signaling (FC-FS), SCSI-3 Architecture Model (SAM), and SCSI-3 Controller Command Set

Physical Specifications

Ports	One (QLE2360); Two (QLE2362)
Media	Multimode optic
Optics	Short wave laser
Connectors	LC-style connectors that support non-OFC, multimode fibre optic cabling using a small form factor optical transceiver modules (one in the QLE2360, two in the QLE2362)
Form factor	Half size: 16.76 cm × 11.12 cm (6.6" × 4.376")
Bracket size	Standard size

Environment and Equipment Specifications

Temperature	Operating: 0°C/32°F to 55°C/131°F. Storage: -20°C/-4°F to 70°C/158°F
Airflow	None required
Humidity	Relative (non-condensing): 10% to 90%, Storage: 5% to 95%
Power dissipation	QLE2360: ~9.5W (1.7W @ 3.3V; 7.8W @ 12V) QLE2362: ~12.5W (2.3W @ 3.3V; 10.2W @ 12V)
Cable	50/125µm multimode fiber, 62.5/125 µm multimode fiber
Cable distances	1 Gbps: 500 meters 50/125 µm fiber, 300 meters 62.5/125 µm fiber 2 Gbps: 300 meters 50/125 µm fiber, 150 meters 62.5/125 µm fiber

Agency Approvals—Product Safety

US/Canada	UL, cUL UL60950-1 CSA C22.2 No.60950 Class 1 Laser Product per DHHS 21CFR J
Europe	73/23/EEC Low Voltage Directive: TUV: EN60950-1: 2001 EN60825-1: 1994+A1+A2 EN60825-2: 1994 +A1

Agency Approvals—EMI and EMC

US	FCC Part 15, Class A
Canada	Industry Canada ICES-003, Class A
Europe	89/336/EEC EMC Directive CE Mark: EN55022: 1998 / CISPR22:1997 Class A EN55024: 1998 EN61000-3-2:2000 EN61000-3-3:2001 VCCI, Class A CNS 13438 Class A AS/NZS CISPR 22, Class A MIC Class A
Japan	
Taiwan	
New Zealand/Australia	
Korea	

Tools and Utilities

Management tools	FC HBA Manager
Device utilities	Command line interface; utilities for firmware, driver, boot code, and NVRAM
Boot support	BIOS
APIs	SNIA HBA API V2, SMI-S, FC-SP/DH-CHAP, and FDMI
Operating systems	Windows® Server™ 2003; Windows 2000; Linux Red Hat AS 3.0; Linux SuSE SLES 8, 9; Novell NetWare 6.5

Ordering Information

QLE2360-BK	Ships in a bulk box in quantities of 20, 50, or 100 with standard size brackets	QLE2362-BK	Ships in a bulk box in quantities of 20, 50, or 100 with standard size brackets
QLE2360-CK	Ships in an individually packed box with a standard size bracket, FC HBA Manager, and Quick Start Guide	QLE2362-CK	Ships in an individually packed box with a standard size bracket, FC HBA Manager, and Quick Start Guide



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