# QLOGIC®

# QEM3472

## Dual Port 4Gbps FC and Dual 1Gbps Ethernet HBA for Sun™

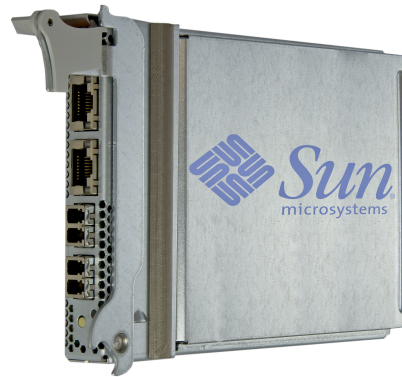## Sun Part Number: SG-XPCIE2FCGBE-Q-Z

### High Performance

- 300,000 IOPS delivers high Fibre Channel (FC) I/O transfer rates for storage applications
- Intelligent interleaved DMA (iiDMA) ensures maximum utilization of FC data links
- Out-of-Order Frame Reassembly (OoOFR) reduces FC congestion and retransmissions
- CPU off-load for TCP/IP checksum calculation and jumbo frame support (9 KB) reduces CPU utilization and increases Ethernet throughput

### Superior Scalability

- Multi-ID and N_Port virtualization ready. Allows physical FC ports to be part of multiple logical networks
- Virtual fabric (VSAN) ready. Allows physical FC ports to be part of multiple logical networks
- Comprehensive Operating System (OS) driver support including Windows®, Linux®, Solaris™, and VMware®

### Enhanced Reliability

- Overlapping protection domains for continuous protection of internal data paths

**#1 BLADE IO PROVIDER**

**QEM3472 Fibre Channel & Ethernet Expansion Card.** The QEM3472 is the industry's first multi-protocol expansion card enabling 4Gbps Fibre Channel and 1Gbps Ethernet in a PCI Express Module form factor for Sun servers and workstations  The QEM3472 not only delivers unprecedented levels of performance and availability, but also provides intelligent networking features specific to enterprise class data centers.

**Enterprise Class Features.** The QEM3472 delivers unmatched Fibre Channel and Ethernet performance, providing over 300,000 IOPS, nearly 1.6GBps FC throughput, 1Gbps full-duplex Ethernet, and support for PCI Express x4 bus speeds.  More importantly, the QEM3472 Host Bus Adapter (HBA) provides new intelligent storage networking features that redefine the enterprise class HBA, providing increased data protection, advanced frame routing, and enterprise wide management capabilities.

**Simplified Setup.**  Point-and-click installation and configuration wizards simplify the HBA setup process.  Storage administrators can quickly deploy HBAs across a SAN using QLogic SANsurfer® HBA management tools and device utilities.  The QEM3472 is also fully compliant with industry standard Application Programming Interfaces (APIs), including SNIA HBA API and SMI-S.  This compatibility allows administrators to manage QLogic HBAs using third-party software applications.

**Comprehensive Operating System Support.**  QEM3472 drivers exist for all major operating systems.  A single FC driver strategy per OS allows storage administrators to easily deploy and manage HBAs in heterogeneous SAN configurations.  In addition, QLogic's unique unified driver model, whereby firmware is bundled with the driver, eliminates any potential interoperability issues between the driver and firmware and reduces the number of software components to be managed by SAN administrators.  Ethernet drivers are also available on QLogic's website.

**Guaranteed Interoperability.**  Storage partner certifications, combined with agency and regulatory testing, ensures 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 and Ethernet interoperability and compatibility.

## QEM3472 Dual Port 4Gbps FC and Dual 1Gbps Ethernet HBA for Sun™

### Host Bus Interface Specifications

**Bus interface**
- PCI Express x4 (electrical), x8 (physical connector)

**Memory**
- Integrated 512KB SRAM per port
- 1-MB flash and 128-KB flash (SPI)
- 2-KB NVRAM (SPI)
- 4-KB EEPROM (I²C)

**Hardware platforms**
- SPARC: Sun Blade T6300, T6320, T6340
- x64: Sun Blade X6220, X6240, X6250, X6440, X6450, X8440, X8450

**Compliance**
- *PCI Express Base Specification*, rev. 1.0a
- *PCI Express Module Electromechanical Specification*, rev. 1.0
- *PCI Bus Power Management Interface Specification,* rev. 1.1

### Fibre Channel Specifications

**Data rate**
- 4/2/1 Gbps auto-negotiation (4.25/2.125/1.0625 Gbps)

**Performance**
- 150,000 IOPS per port

**Topology**
- Point-to-point (N_Port)
- Arbitrated loop (NL_Port)
- Switched fabric (N_Port)

**Logins**
- Support for F_Port and FL_Port login
- 2,048 concurrent logins and 2,048 active exchanges per port

**Protocols**
- FCP (SCSI-FCP)
- FC-TAPE (FCP-2)

**Compliance**
- *SCSI-3 Fibre Channel Protocol (SCSI-FCP)*
- *Fibre Channel Physical and Signaling Interface (FC-PH)*
- *Fibre Channel 2nd Generation (FC-PH-2)*
- *Third Generation Fibre Channel Physical and Signaling Interface (FC-PH-3)*
- *Fibre Channel-Arbitrated Loop (FC-AL-2)*
- *Fibre Channel Fabric Loop Attachment Technical Report (FC-FLA)*
- *Fibre Channel-Private Loop Direct Attach Technical Report (FC-PLDA)*
- *Fibre Channel Tape (FC-TAPE) profile*
- *SCSI Fibre Channel Protocol-2 (FCP-2)*
- *Second Generation FC Generic Services (FC-GS-2)*
- *Third Generation FC Generic Services (FC-GS-3)*
- *Fibre Channel Framing and Signaling (FC-FS)*

### Ethernet Specifications

**Data rate**
- 1Gbps full-duplex per port

**Topology**
- Any Ethernet network

### Physical Specifications

**Ports**
- Dual 4Gbps FC & dual 1Gbps Ethernet

**Form factor**
- PCI Express Module

### Environment and Equipment Specifications

**Airflow**
- Provided by BladeSystem enclosure

**Temperature**
- Operating:  0°C/32°F to 55°C/131°F
- Storage:  -40°C/-40°F to 70°C/158°F

**Relative Humidity**
- 10% to 90% (operating, non-condensing)
- 5% to 95% (non-operating, non-condensing)

**Power dissipation**
- 11.8 Watts (typical)
- 12.5 Watts (maximum)

### Tools and Utilities

**Management tools**
- SANsurfer FC HBA Manager
- SANsurfer FC HBA Command Line Interface (CLI)

**Device utilities**
- FLASUTIL for updating firmware, boot code, HBA parameters

**Boot support**
- BIOS, FCode, PXE Ethernet Boot

**APIs**
- SNIA HBA API V2, SMI-S, FDMI

**Operating systems**
- Windows
- Linux – Red Hat®, SuSE®
- Solaris
- VMware

### Agency Approvals — EMI and EMC

**US/Canada**
- FCC Part 15, Subpart B, Class A; ICES-003, Class A

**Europe**
- EN55022, Class A

**New Zealand/Australia**
- AS/NZS 3548 Class A

**Japan**
- VCCI V-3/2004.4, Class A

**Korea**
- MIC

**Taiwan**
- BSMI (CNS 13438)

### Agengy Approval —Safety

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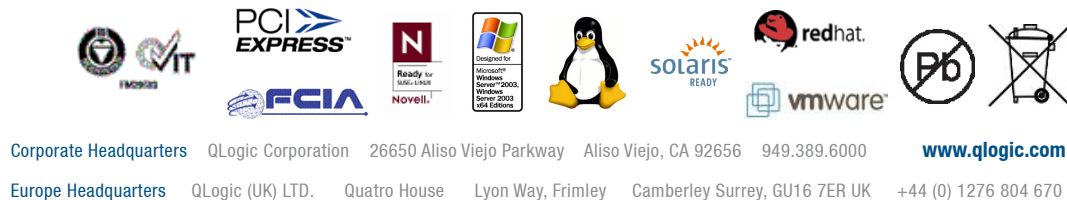
**Europe**
- 73/23/ECC Low Voltage Directive:
  – TUV: EN60950-1:2001, EN60825-1:1994+A1+A2, EN60825-2:1994+A1

### Ordering Information

**QEM3472**
- The QEM3472 is available from Sun (Sun part number: SG-XPCIE2FCGBE-Q-Z)