

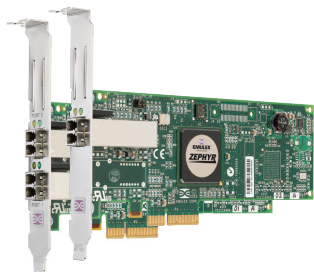


LightPulse®

# LPe11000/LPe11002

## 4Gb/s Fibre Channel PCI Express Host Bus Adapters

**UNPARALLELED  
MANAGEABILITY,  
RELIABILITY,  
PERFORMANCE  
AND EASE OF  
DEPLOYMENT**



Streamlined installation and management, unrivaled scalability, and industry-leading virtualization support make the single-channel Emulex LightPulse LPe11000 and dual-channel LPe11002 ideal solutions for enterprise and mixed-OS SAN environments. With powerful management tools and broad platform support, they deliver maximum performance in the broadest range of applications and environments.

### Proven design, architecture and interface

LightPulse HBAs' highly integrated single-chip design minimizes onboard components, while advanced error-checking and correcting methods assure robust data integrity. The Emulex firmware-based architecture enables feature and performance upgrades without costly hardware changes. The unique Service Level Interface (SLI™) allows use of a common driver across all models of Emulex HBAs. Installation and management applications are designed to minimize reboots and further simplify deployment.

### Powerful management software for maximum data center efficiency

The Emulex HBAAnyware enterprise-class management application has gained broad market acceptance with over 6 million Fibre Channel and FCoE ports managed to date. Building on the success of the HBAAnyware application, Emulex has released OneCommand Manager. OneCommand Manager's multi-protocol, cross platform architecture, provides centralized management of Emulex adapters within the enterprise data center. OneCommand Manager streamlines IT administrative tasks by delivering uniform management across heterogeneous data center environments. With OneCommand Manager, IT administrators can increase management efficiency and flexibility by improving responsiveness to dynamic business environments. To ensure a transparent transition for customers who are using Emulex's existing HBAAnyware management solution, OneCommand Manager is backward compatible with HBAAnyware 4.1.

### Key Benefits

- Superior quality and reliability ensure data availability
- Highly efficient installation accelerates deployment and reduces administration costs
- Maximum SAN performance increases scalability and user satisfaction in large enterprise installations
- Robust interoperability simplifies deployment and upgrades of SAN hardware and software
- LightPulse Virtual HBA technology provides efficient host utilization and compliance with SAN management best practices
- Advanced security protects the SAN from potential threats such as WWN spoofing, host masquerading, rogue/compromised servers and administrator errors

### Key Features

- Exceptional performance and full-duplex data throughput
- Comprehensive virtualization capabilities with support for N\_Port ID Virtualization (NPIV)
- Simplified installation and configuration using common HBA drivers and AutoPilot Installer®
- Efficient administration via Emulex OneCommand™ Manager for HBAs anywhere in the SAN
- Common driver model eases management and enables upgrades independent of HBA firmware

# LightPulse® LPe11000/LPe11002

## 4Gb/s Fibre Channel PCI Express Host Bus Adapters

### SPECIFICATIONS

#### Standards

- ANSI Fibre Channel: FC-PH-3, FC-PI-2, FC-FS, FC-AL-2, FC-GS-4, FC-FLA, FC-SP, FC-PLDA, FC-TAPE, FCP-2, and RFC 2625 (IP over FC)
- PCI Express base spec 1.0a
- PCI Express card electromechanical spec 1.0a
- Fibre Channel class 2 and 3
- PHP hot plug-hot swap

#### Architecture

- Single-channel (LPe11000) or dual-channel (LPe11002)
- 4Gb/s, 2Gb/s or 1Gb/s FC Link speeds automatically detected
- Integrated data buffer and code space memory

#### Comprehensive OS Support

- Windows, Linux, NetWare, Solaris, VMware, HP-UX
- Additional support is available from OEMs and partners

#### Hardware Environments

- PowerPC® SPARC®, x86, x64 and Intel® Itanium® 64-bit processor family

#### Optical

- Data rates: 1.0625, 2.125 and 4.25Gb/s (auto-detected)
- Optics: Short wave lasers with LC type connector
- Cable: 50/125µm, up to 150 meters at 4Gb/s  
62.5/125µm, up to 70 meters at 4Gb/s

#### Physical Dimensions

- Short, low profile MD2 form factor card
- 167.64mm x 64.42mm (6.60" x 2.54")
- Standard bracket (low profile available)

#### Power & Environmental Requirements

- Volts: +3.3
- Operating temperature: 0° to 55° C (32° to 131° F)
- Airflow required: 100 lf/m
- Storage temperature: -40° to 70° C (-40° to 158° F)
- Relative humidity: 5% to 95% non-condensing

#### Agency Approvals

- Class 1 Laser Product per DHHS 21CFR (J) and EN60825-1
- UL recognized to UL 60950-1
- CUR recognized to CSA22.2, No. 60950-1-03
- TUV certified to EN60950-1
- FCC rules, Part 15, Class A
- ICES-003, Class A
- EMC Directive 2004/108/EEC (CE Mark)
  - EN55022, Class A
  - EN55024
- Australian EMC Framework (C-Tick Mark)
  - AS/NZS CISPR22, Class A
- VCCI, Class A
- MIC (Korea), Class A
- BSMI (Taiwan), Class A
- RoHS Compliant (Directive 2002/95/EC) for environmental requirements.

#### Ordering Information

- **LPe11000-M4**
  - Single-channel, embedded multi-mode optic interface
- **LPe11002-M4**
  - Dual-channel, embedded multi-mode optic interface

#### Additional Features

- **Performance features**
  - Emulex LightPulse technology features Frame-level Multiplexing and out-of-order frame reassembly for maximum link utilization.
- **Data protection features**
  - End-to-end data protection with hardware parity, CRC, ECC and other advanced error checking and correcting ensure that data is safe from corruption.
- **Deployment and management features**
  - Detailed real-time event logging and tracing enables quick diagnosis of SAN problems.
  - Universal Boot capability allows the appropriate boot environment to be automatically selected for any given OS.
  - Strong authentication between host and fabric is based on Fibre Channel Security Protocol (FC-SP) Diffie-Hellman Challenge Handshake Authentication Protocol (DH-CHAP).

#### Management Features

- The Emulex AutoPilot Installer automates the HBA installation process and significantly reduces time to deployment and administrative costs. Automated installation and configuration of driver and management tools simplifies deployment of multiple adapters within Windows environments. A single installation of driver and management application eliminates multiple reboots and ensures that each component is installed correctly and the HBA is ready to use.
- The Emulex OneCommand™ Manager application enables centralized discovery, monitoring, reporting, and administration of Emulex HBAs and UCNAs on local and remote hosts. Powerful automation capabilities facilitate remote driver parameter, firmware and boot code upgrades. Advanced diagnostic features such as adapter port beaconing and adapter statistics help to optimize management and network performance while the environmental monitoring feature helps to maintain optimum host to fabric connections. In addition to the GUI interface, management functions can also be performed via a scriptable Command Line Interface (CLI) as well as a web browser. With in-band and out-of-band management capabilities, Emulex provides data center administrators with the greatest level of management flexibility.
- Emulex's management instrumentation complies to Open Management Standards, such as SMI-S and common HBA API support, which enables seamless upward integration into enterprise storage and server management solutions.



**World Headquarters** 3333 Susan Street, Costa Mesa, CA 92626 +1 714 662 5600  
**Wokingham, UK** +44 (0) 118 977 2929 | **Munich, Germany** +49 (0) 89 97007 177  
**Paris, France** +33 (0) 158 580 022 | **Beijing, China** +86 10 68499547  
**Tokyo, Japan** +81 3 5322 1348 | **Bangalore, India** +91 80 40156789

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