



LPC X INSTALLATION GUIDE & HARDWARE REFERENCE



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WELCOME

Thank you for purchasing a Pharos Architectural Controls product, we hope that it fulfills your expectations and provides a lifetime of reliable service.

If you have any questions or require technical support please contact:

Email: support@pharoscontrols.com
Telephone: +44-(0)20-7471-9229

Technical specifications of this and other Pharos products can be found on our website at <http://www.pharoscontrols.com>.

OVERVIEW

The Pharos control solution has two complementary parts: the installed Controllers (LPC, AVC) and Remote Devices (RIO), and the Designer software which runs on any personal computer and is only required when creating or modifying the presentation.

This guide is primarily intended as a reference for the Pharos hardware installation. For Designer software help please refer to the on-line documentation (once installed, see below) or the PDF file on the installation CD.

SOFTWARE INSTALLATION

- Microsoft Windows 2000, XP & Vista:

Insert the CD and use Windows Explorer to navigate to the Pharos Designer folder and double-click on the file "pharos_designer_installer.exe" to launch the software installation process and follow the simple instructions.

- Apple Macintosh OS-X (10.4.x):

Insert the CD and use Finder to navigate to the Pharos Designer folder and double-click on the file "pharos_designer_installer.dmg" to launch the software installation process and follow the simple instructions.

QUICKTIME

Apple's Quicktime must be installed for Designer to function and so version 7 is supplied on the CD; navigate to the Apple Quicktime folder and double-click either "QuickTimeInstaller.exe" (Windows) or "QuickTimeInstaller.dmg" (Macintosh) to launch the installation process.

SAMPLE MEDIA

Sample media has been kindly provided by Projected Image Digital, Digigobos and Mode Studios which you are free to use without paying a royalty fee. These media clips can be found in the Sample Media folder on the CD and more can be obtained by visiting these suppliers' websites; click on the links provided on the Media pane of the Designer software.

LPC X INSTALLATION

The Pharos LPC X is designed to be rack mounted in a central control room for fixed installations or flight cased for touring applications. The 2U enclosure and 19" rack mounting complies with IEC 60297.

The unit is 100% solid state and has been qualified to operate in a dry environment within a temperature range of 0°C to 40°C (32°F to 104°F).

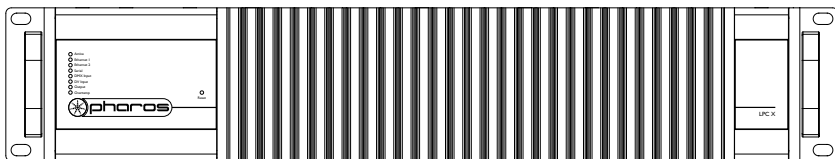
CAUTION: Particular attention must be paid to cooling; under no circumstances should the airflow to the heat sinks be restricted and a rack fan cooling unit should be considered when multiple units are stacked together to maintain the correct ambient temperature.

Since the unit requires no user intervention once installed it is suitable for remote installation with all configuration and management taking place over an Ethernet network. However it is recommended that access can be gained in the unlikely event of a hardware failure.

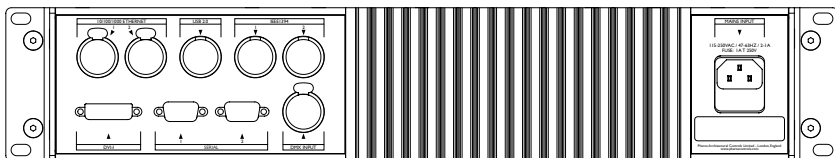
LPC X LAYOUT

The following drawings illustrate the layout of the LPC X, refer to the following sections for details:

FRONT



BACK



LPC X VERSIONS

There are multiple versions of the LPC X that differ only in the maximum number of control channels that can be accommodated. For example, the LPC 20 can control 20 DMX universes (10,240 channels) while the LPC 200 can control 200 DMX universes (102,400 channels).

The LPC X can be used as a stand-alone controller or co-operatively with other Pharos controllers and remote devices, via an Ethernet network, to form a scalable system.

POWER SUPPLY

The LPC X is mains powered via a fused, universal input power supply unit (PSU) compatible with all worldwide mains supply standards; 100-250V 50/60Hz.

The replacement fuse should be a 250V rated I A T (anti-surge) 20mm cartridge type only.

CAUTION: Power must not be disconnected when uploading project data nor during bootloader/firmware updates to the LPC X as corruption of the data or software may occur, perhaps even rendering the unit inoperable.

UK, EU and US mains IEC cables are provided.

CAUTION: For pluggable equipment, the socket outlet shall be installed near the equipment and shall be easily accessible.

ATTENTION: En cas d'équipement enfichable, la prise doit être montée près de l'équipement et doit offrir un accès facile.

GROUNDING

The LPC X must be correctly grounded to electrical safety earth at all times.

REALTIME CLOCK BATTERIES

The LPC X's internal realtime clock is battery-backed to ensure operation when the unit is not powered. The batteries should last for at least 10 years and are easily replaced when necessary, replacement battery: Renata CR2032 Lithium Button Cell.

CAUTION: Risk of explosion if battery replaced by incorrect type. Dispose of used batteries according to the manufacturer's instructions.

ATTENTION: Il y a un danger d'explosion s'il y a un remplacement incorrect de batterie. Mettre au rebut les batteries usages conformément aux instructions du fabricant.

COMPACT FLASH CARD

The LPC X is shipped with a 2Gbyte Type I Compact Flash Card which should be sufficient for most projects since the LPC X's data storage is extremely efficient, even with a multitude of imported media files. However, a larger capacity card could of course be fitted if required.

As only the project's programming data resides on the card, the card is also a convenient way to back-up data for archiving; the Pharos Designer project file for example.

Furthermore, in the event of LPC X hardware failure, simply moving the card into a replacement unit is sufficient to get the project up and running again.

STATUS LEDES

The Pharos logo will illuminate when power is applied to the LPC X. The red LEDs above indicate the unit's current status.

The Active LED flashes throughout the boot up procedure and lights solidly once this has been completed and is indicative of a fully functional unit.

The Ethernet LEDs indicates network activity (not network link) while other LEDs indicate communication on the various ports of the LPC X.

The Output LED indicates that a valid project file has been loaded from the Compact Flash Card and that data output has started.

The Overtemp LED will illuminate if the processor core(s) reaches 95°C (203°F) indicating a fault in the system's cooling, typically caused by raised ambient temperatures. Consult the web interface's home page to monitor the system temperatures and take remedial action.

ERROR CODES

Additionally the red status LEDs are used to indicate any boot failures of the LPC X that prevent the unit from going active. Error codes are displayed by a repeating pattern of flashing LEDs a number of times in succession, followed by a 1 second pause.

• Front panel LED codes (all LEDs):

- 1 flash - Invalid build version
- 2 flashes - Unable to determine serial number
- 3 flashes - SPI flash test failed
- 4 flashes - Unable to perform front panel factory restore as factory firmware is corrupt
- 5 flashes - Current firmware is corrupt, no valid firmware versions available to restore
- 6 flashes - Restored front panel firmware is corrupt

• Main board LED codes (bottom 4 LEDs):

- 2 flashes - Failed to power up main board
- 3 flashes - Firmware failed to boot
- 4 flashes - Power failed during boot
- 5 flashes - Power failed during normal operation
- 6 flashes - Watchdog timeout expired

RESET SWITCH

The LPC X may be reset by inserting a small blunt object into the reset hole on the front panel to depress the reset switch. The switch should be held for at least one second.

CAUTION: The reset must not be operated when uploading project data nor during bootloader/firmware updates to the LPC X as corruption of the data or software may occur, perhaps even rendering the unit inoperable.

WATCHDOG

The internal “watchdog” is enabled by default to reset automatically the LPC X in case of a software crash as a result of either a coding error (“bug”) or a random electromagnetic event such as a power brown-out or spike, nearby lightning strike or static discharge. Please refer to the Designer Help to learn how to disable this feature (not recommended).

PORTS

- Ethernet 1 - Management

A standard 10/100/1000BASE-T Ethernet connection may be made to this port for management and networking to other Pharos controllers and remote devices.

- Ethernet 2 - Protocol

A standard 10/100/1000BASE-T Ethernet connection may be made to this port to route output data to the lighting fixtures using Ethernet protocols such as ArtNet and ETCNet2.

- DVI-I Output

A standard DVI connection may be made to this port to route output data to the lighting fixtures using the Digital Video Interface.

- RS232 Serial Ports (2)

The serial ports may be connected directly to a PC using a null modem cable. Other devices may require different cables depending on their pinout. The serial port is a 9 pin male D connector with the following pinout:

- 1: DCD
- 2: Receive data (RXD)
- 3: Transmit data (TXD)
- 4: DTR
- 5: Signal ground
- 6: DSR
- 7: RTS
- 8: CTS
- 9: RI

The serial port is not isolated from the LPC X's power supply. If isolation is required, it must either be provided by the connected device or a separate RS232 isolator should be used.

- DMX Input

A USITT DMX 512 compatible input is provided on a standard 5 pin male XLR connector with the following pinout:

- 1: Shield
- 2: Data - ('Cold' or 'Complement')
- 3: Data + ('Hot' or 'True')
- 4-5: Not connected

The DMX input port is optically isolated from the LPC X's electronics and ground connection which is the recommended configuration for a DMX receiver.

- IEEE 1394 (2)

These standard IEEE 1394 ports (aka Firewire) may be used to connect Digital Video (DV) sources or external storage devices.

- USB 2.0 Host

This standard USB 2.0 port may be used to connect USB peripherals such as a keyboard or memory device.

WARRANTY

This Pharos Architectural Controls ("Pharos") product is warranted for the period of five (5) years from the original date of purchase against defective materials and workmanship.

In the event that warranty service is required, you should contact your dealer or Pharos technical support at the following email address: support@pharoscontrols.com.

CONDITIONS

1. The warranty is only valid if the Pharos Designer software registration is fully and properly completed, and Pharos is presented with the original invoice or sales confirmation, and the serial number on the product has not been defaced.
2. Pharos' obligations are limited to the repair or, at its discretion, replacement of the product or the defective part.
3. It is the consumer's obligation to notify Pharos within one week of any suspected defect, and to return the goods prepaid to Pharos' authorised service address. Goods will only be received under warranty when they are returned with a recognised RMA number that has been issued by Pharos.
4. Warranty repairs must be carried out by a nominated Pharos employee or Pharos approved service technician. No reimbursement will be made for repairs carried out by non-Pharos personnel or dealers, and any such repair work or damage to the product caused by such repair work will not be covered by this warranty.
5. This product is not considered to be defective in materials or workmanship by reason that it requires adaptation in order to conform to national or local technical or safety standards in force in any country other than the one for which the product was originally designed or manufactured. This warranty will not cover, and no reimbursement will be made for such adaptation or any damage which may result.
6. This warranty covers none of the following:
 - a) Maintenance and repair or replacement of parts due to normal wear and tear.
 - b) Cost relating to transport, removal or installation of the product.
 - c) Misuse, including the failure to use this product for its normal purposes or incorrect installation.
 - d) Damage caused by lightning, water, fire, acts of God, war, public disturbances, incorrect supply voltage, improper ventilation or any other cause beyond the control of Pharos.
7. This warranty is valid for any person who legally acquired possession of the product during the warranty period.
8. The consumer's statutory rights in any applicable national legislation arising from the purchase are not affected by this warranty. The rights under this warranty are the consumer's sole rights and Pharos, its subsidiaries or distributors shall not be liable for any indirect or consequential loss, damages for any loss of use, time, profits or income, or any damage to related equipment, materials or consumable parts.

COMPLIANCE

The Pharos Lighting Playback Controller X (LPC X) is manufactured to the highest quality in compliance with the following international standards:

ENCLOSURE & MOUNTING

- IEC 60297: 2U 19" rack mounting enclosure.
- IP40 rated.

ELECTROMAGNETIC COMPATIBILITY

- EN61000-6-1:2001, EN61000-6-3:2001 & FCC Part 15 verification.

SAFETY

- UL 60950-1:2007 & CAN/CSA C22.2 No. 60950-1-07.

ENVIRONMENTAL

- 2002/95/EC (RoHS): Exempt - Category 9 "Monitoring & control instruments".
- 2002/96/EC (WEEE): Pharos will recycle returned products & packaging.



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CONFORMS TO ANSI/UL 60950-1
CERTIFIED TO CAN/CSA-C22.2 60950-1

