LA NETWORK MANAGER
REMOTE CONTROL SOFTWARE
USER MANUAL

VERSION 1.2.0.102A

1 CONTENTS

2   INTRODUCTION

2.1   Welcome to L-ACOUSTICS®

Thank you for purchasing an L-ACOUSTICS® system. Each system can be remote controlled by using the **L-ACOUSTICS® LA NETWORK MANAGER Software** within the **L-ACOUSTICS® L-NET Network**.

This manual contains essential information on installing the L-NET Network and operating the LA NETWORK MANAGER software. Read this manual carefully in order to become familiar with these procedures.

As part of a continuous evolution of techniques and standards, L-ACOUSTICS® reserves the right to change the specifications of the product and the content of this manual without prior notice.
Please check the L-ACOUSTICS® web site @ www.l-acoustics.com on a regular basis for latest updates.

Should the software not work properly or if information is needed, please contact an approved L-ACOUSTICS® distributor. The address of the nearest distributor is available on the L-ACOUSTICS® web site.

2.2   Sources for LA NETWORK MANAGER software

The **L-ACOUSTICS® LA NETWORK MANAGER Remote Control Software** is a freeware. It is downloadable from the L-ACOUSTICS® web site.

2.3   How to read this manual

Many specific terms are employed throughout this manual. When needed, please refer to the Glossary chapter 9 for definition.

Throughout this manual the three following symbols are used:

✍   The ARROW symbol notifies a procedure description.
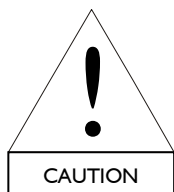
⚠ CAUTION   The CAUTION symbol notifies the user about information to prevent possible product damage.

⚠ IMPORTANT   The IMPORTANT symbol notifies an important recommendation of use.

The users who are familiar with network cabling and set up procedures can directly refer to the **"Quick Start"** section 6.1.

3   SYSTEM CONCEPT

From a PC Windows®-operating system the **L-ACOUSTICS® LA NETWORK MANAGER Remote Control Software** provides network control and monitoring of up to 253 **L-ACOUSTICS® LA4 and/or LA8 Amplified Controllers** within the **L-ACOUSTICS® L-NET Network**.

The **L-ACOUSTICS® LA4 and LA8 Amplified Controllers** (called **"Units"**) are at the heart of the L-ACOUSTICS® integrated system approach. They offer cutting edge loudspeaker Amplification, DSP, L-NET Network Control, and comprehensive System Protection in single ergonomic packages.

The proprietary **L-ACOUSTICS® L-NET Network** allows to easily configure multiple Ethernet® network topologies using CAT5e U/FTP cables (or higher categories) and standard RJ45 connectors. The use of a universal Ethernet® switch is recommended for specific network topologies.

The system approach developed by L-ACOUSTICS® consists of the elements needed to fully optimize the possible configurations. The main components of the L-ACOUSTICS® systems are listed below (see also Figure 1):

8XT, 12XT, 115XT HiQ	⇨	XT coaxial enclosures
KIVA, dV-DOSC, ARCS®	⇨	2-way WST® systems
KUDO®, V-DOSC®, K1	⇨	3-way WST® systems
KILO, dV-SUB, K1-SB	⇨	Subwoofer extensions for KIVA, dV-DOSC, and K1, respectively
SB118, SB28	⇨	Subwoofer enclosures
LA4	⇨	Amplified controller
LA-RAK	⇨	Touring rack containing three **LA8** amplified controllers
LA NETWORK MANAGER	⇨	Remote control software
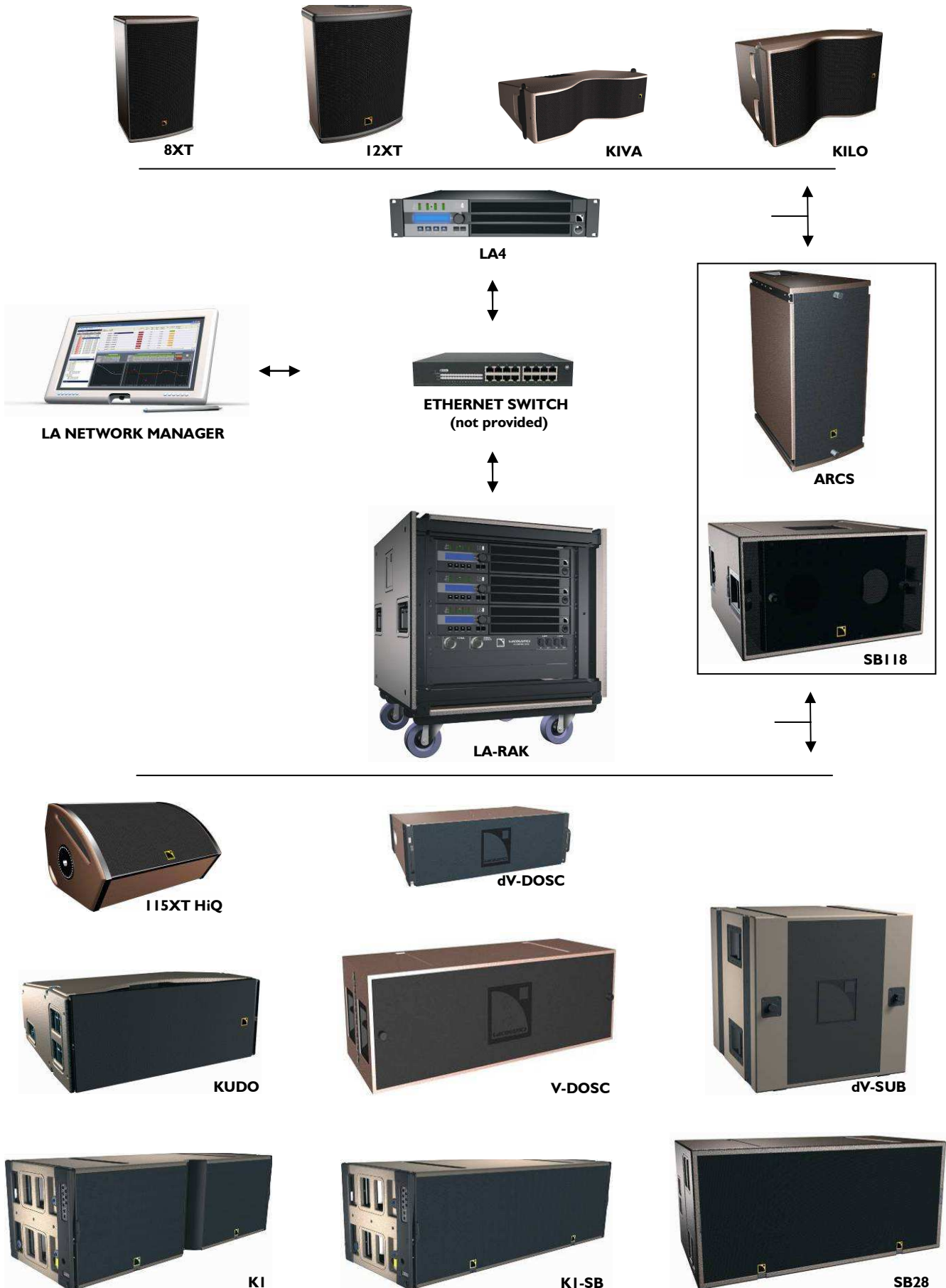
Figure 1: L-ACOUSTICS® loudspeaker systems within the L-NET Network

4 LA NETWORK MANAGER SOFTWARE

The **L-ACOUSTICS® LA NETWORK MANAGER Software** provides network control and monitoring for both LA4 and LA8 amplified controllers (Units) from a PC Windows®-operating system. The multiple window display (Figure 2) gives an overall visualization of the L-NET Network status, Units, Groups of Units, and all the information related to the control and monitoring of the Units.

Access to all settings such as Preset, Mute/Solo, Gain, Delay, Polarity, and Matrix can be done via the remote software user interface. A "Contour EQ" window is also available for quick and easy Loudspeaker System frequency response setting. In particular, the original Array Morphing tool is dedicated to line source array systems. LA NETWORK MANAGER also features System standby and initialization control in addition to comprehensive visual monitoring of the audio signal paths and quick detection of any faults in the attached Networks.

LA NETWORK MANAGER features two possible workflows: the **Offline** and **Online Modes**. In the Offline Mode the user can configure a System before connecting to an L-NET Network. In the Online Mode a System can be sent to or retrieved from the synchronized L-NET Network, and the software provides real time control of each Group and Unit in the L-NET Network. Three saving levels are available: System (**"*.system"** file), Preset (**"*.preset"** file), and Output Channel (**"*.channel"** file).

Figure 2: The LA NETWORK MANAGER user interface

5   INSTALLATION

5.1   Installing the **LA NETWORK MANAGER** software

5.1.1   PC system requirements

Running the LA NETWORK MANAGER software requires a PC fitted with the following material:

- Operating system: Microsoft® Windows® XP® or higher
- RAM: Minimum 512 Mo
- Monitor: 800 x 600, 24 bits, color
- Network card: 100 Mbps Ethernet® card

> ⚠ **IMPORTANT**
>
> Running LA NETWORK MANAGER on a OSX (MAC OS) is also possible.
> Refer to the **"LA NETWORK MANAGER – Installation procedure on OSX – Technical Bulletin"**.

5.1.2   Installing the software
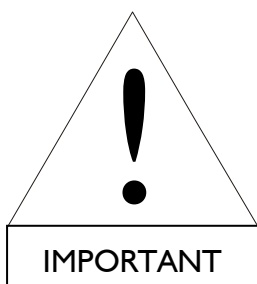
> ⚠ **IMPORTANT**
>
> All user personal settings stored in the Amplified Controllers and software Current System must be saved to files ("*.system, *.preset, and/or *.channel) before applying the LA NETWORK MANAGER software update (to version 1.2.0.102) as:
>
> - The new software will not be able to communicate with an Amplified Controller fitted with the old Firmware version (see section 7.1).
>
> - The Firmware update (to version 1.3.0.32) will cancel all User Preset Memories and all Group Parameters in each Amplified Controller.

✎ Download and unzip the latest installation file version, say **"Install LA Network Manager 1.2.0.102.zip"** for example.

✎ Run the **"Install LA Network Manager 1.2.0.102.exe"** file.

✎ Follow the instructions given in the installation wizard (Figure 3).
   The application will install all the components needed to run the LA NETWORK MANAGER software, as well as a shortcut on the PC desktop.
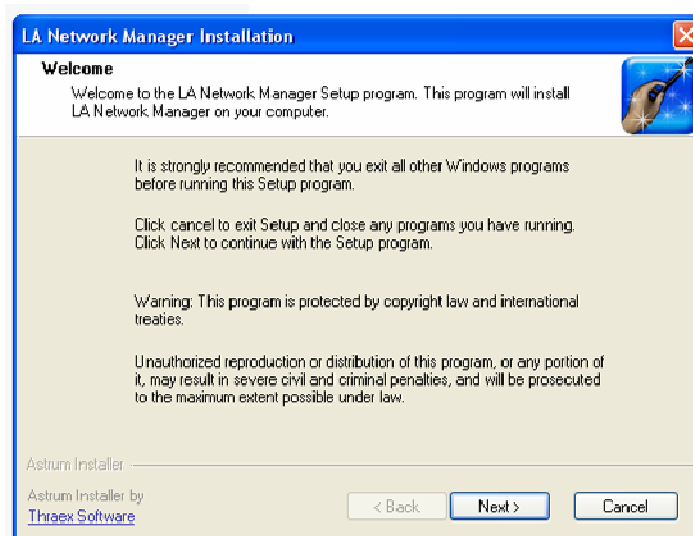
Figure 3: Installation wizard first window

5.1.3   Uninstalling the software

✎   In the PC **"Start"** menu, select **"Programs – LA Network Manager – LA Network Manager Uninstaller"**.

✎   Follow the instructions given in the uninstall wizard.

5.1.4   Software update

✎   Uninstall the old software version (see section 5.1.3).

✎   Download and install the latest software version (see section 5.1.2).

5.2   L-NET Network considerations

5.2.1   The L-NET Network

The proprietary L-NET Network uses a high speed data transfer of 100 Mbps for real-time monitoring and control of each individual Unit (LA4 or LA8 amplified controller) within a network of up to 253 Units. Connecting the PC to a set of Units requires to physically connect the devices to each other (see sections 5.2.2 and 5.2.3) and to allocate an IP Address for each one (see section 5.3).

5.2.2   Physical connections

To physically connect the PC and the Units use CAT5e U/FTP cables (or higher category) of maximum length of 100 m/328 ft, fitted with RJ45 connectors.

Note: CAT5e U/FTP stands for a category 5, unshielded cable with foiled twisted pairs.

✎   Connect the PC to a Unit by plugging one cable side into the RJ45 socket of the PC Ethernet® card and the other cable side into the Unit **L-NET IN** socket (located on the rear panel: see Figure 4).

✎   Connect a first Unit to a second one by plugging one cable side in the first Unit **L-NET OUT** socket and the other cable side in the second Unit **L-NET IN** socket (see Figure 4).
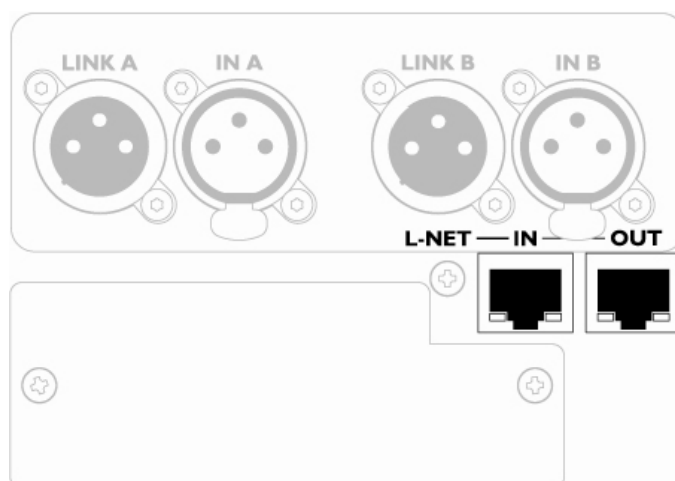
Figure 4: L-NET IN and OUT sockets located on a Unit rear panel

5.2.3 L-NET Network topologies

Multiple L-NET Network topologies such as Daisy Chain, Star, and Hybrid are quickly and easily configurable, allowing total flexibility in achieving the required System architecture. The Star and Hybrid network topologies require the addition of a 100 Mbps universal Ethernet® Switch.

> **!** **IMPORTANT**
> If the Auto MDI/MDIX functionality is not available in the PC Network Card and/or the Switch, a crossed cable between the PC and the first Unit is necessary.

Daisy Chain topology

Based on the **series** connecting scheme, the Daisy Chain network topology is the simplest way to connect the PC and the Units to each other, as it is shown in Figure 5:

Only use CAT5e U/FTP cables (or higher category) with a maximum length of 100 m / 328 ft
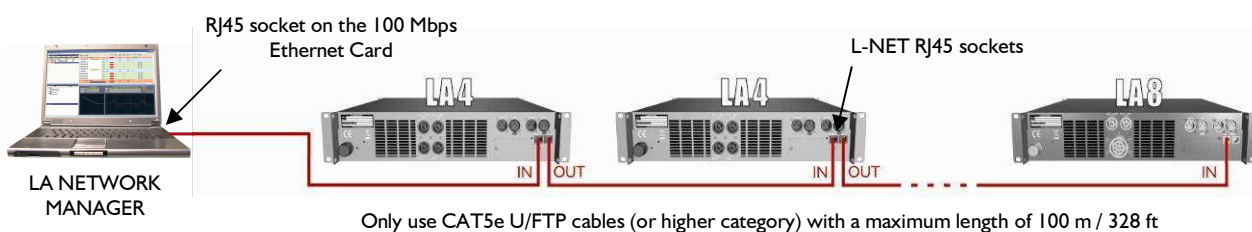
Figure 5: Daisy Chain network topology

Star topology

Based on the **parallel** connecting scheme, the Star Network topology is the most common way to connect the PC and the Units to each other. This topology requires a 100 Mbps Switch as shown in Figure 6:

Only use CAT5e U/FTP cables (or higher category) with a maximum length of 100 m / 328 ft
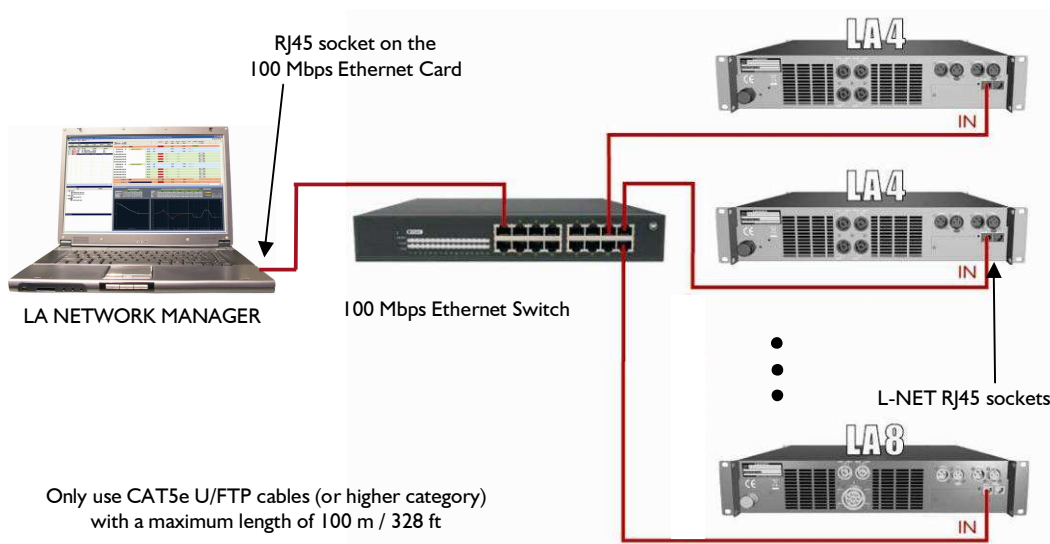
Figure 6: Star network topology

> **!** **IMPORTANT**
> The parallel connecting scheme reduces the risk of network failure: even if the connection between the Switch and a particular Unit fails, the other Units remain connected to the Switch.

Hybrid topology

The Hybrid network topology is a mix between the Daisy Chain and the Star topologies, e.g. a mix between the series and parallel connecting schemes, as shown in Figure 7:
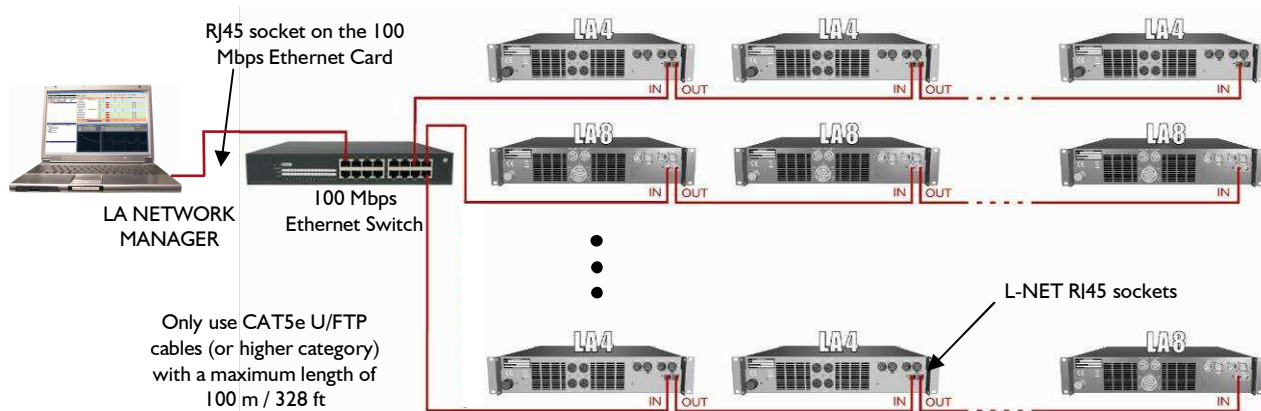
Figure 7: Hybrid network topology

5.3   Managing IP Addresses

5.3.1   Introduction

It is possible to connect up to 253 Units to a master PC running LA NETWORK MANAGER within the proprietary L-NET Network. Each device (PC or Unit) uses an IP Address to be identified and to communicate.

An IP Address is a unique identification number within the Internet Protocol (IP) standard. The usable L-NET IP Addresses are of the form **192.168.1.✕✕✕**, where **✕✕✕** is taken between 1 and 254.

L-ACOUSTICS® recommends using the last available IP Address (192.168.1.254) for the PC Network Card. The other IP Addresses between **192.168.1.1** and **192.168.1.253** can be allocated to the Units in the L-NET Network.

5.3.2   PC IP Address setup

Set the PC TCP/IP Address by following the procedure below:

- �   In the PC **"Start"** menu, select **"Settings – Network Connections – Local Area Connection"** (Figure 8).

- ✋   Right click on **"Local Area Connection"** and select **"Properties"** in the menu.

- ✋   In the **"Local Area Connection Properties"** window, double click on **"Internet Protocol (TCP/IP)"** (Figure 9).

- ✋   In the **"Internet Protocol properties (TCP/IP)"** window, select **"Use the following IP address"** and type in the **IP address = 192.168.1.254** (recommended) and the **Subnet mask = 255.255.255.0** (Figure 10).

- ✋   Click **"OK"** and close all remaining windows.

Note: Fast and easy management of multiple IP Addresses (to switch between L-NET and Internet, for example) is possible using free software available on the web.
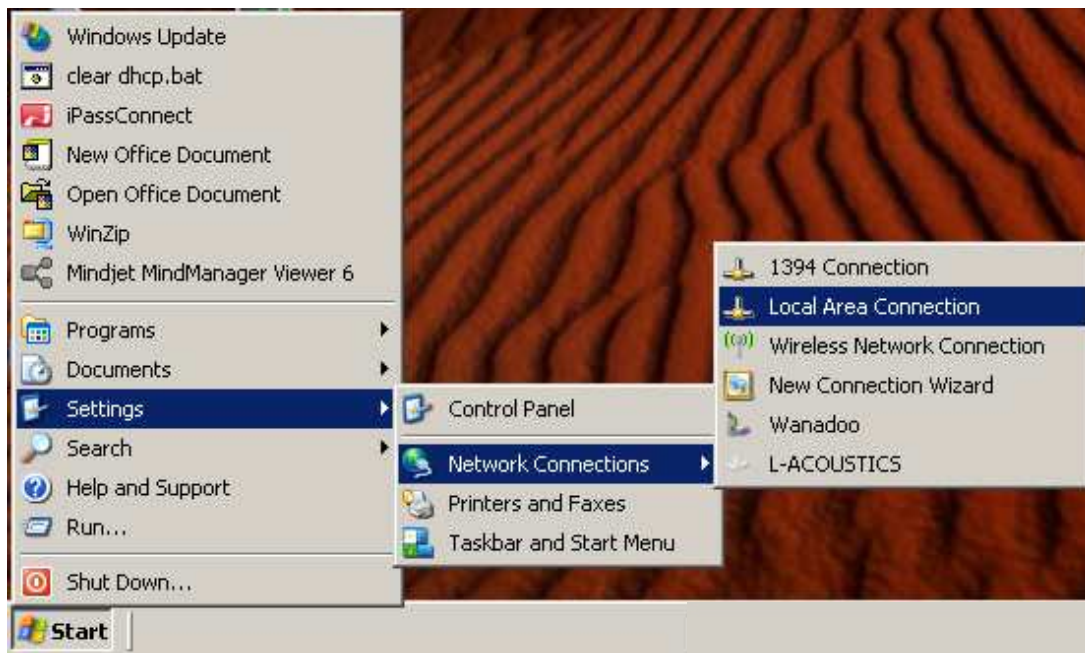
Figure 8: Selecting the "Local Area Connection" item
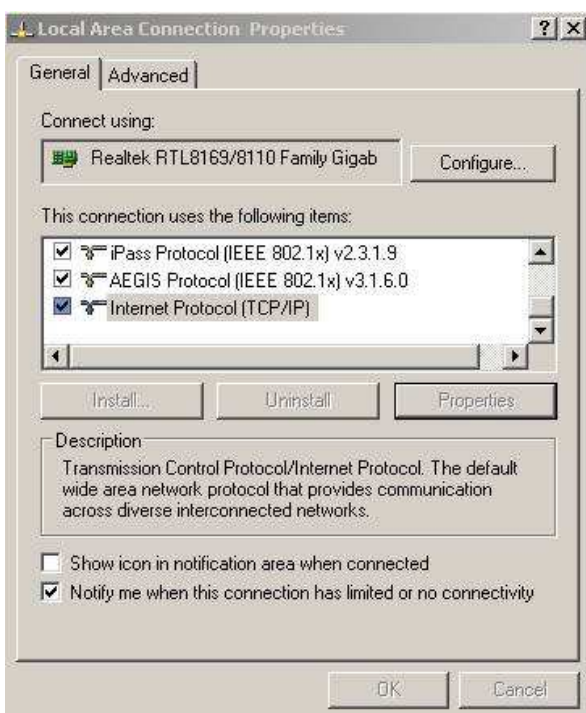
Figure 9: Double clicking on the "Internet Protocol (TCP/IP)" item
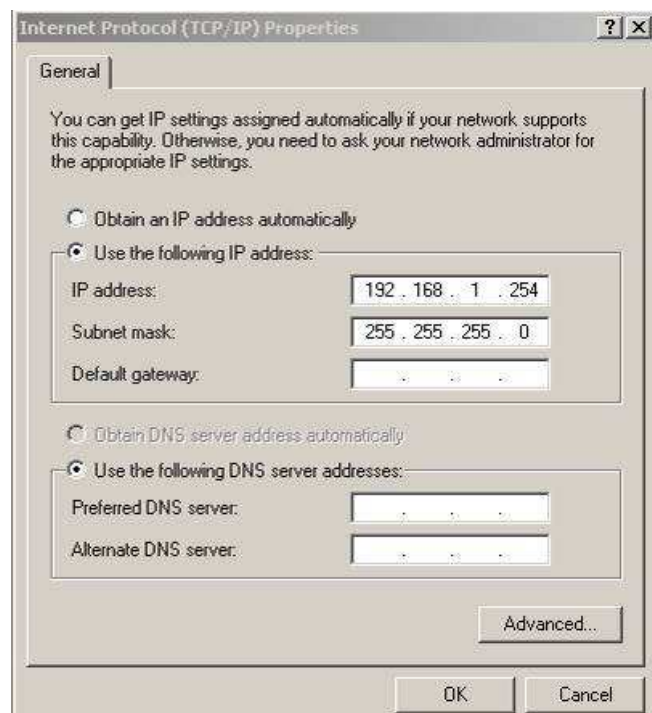
Figure 10: Filling in the IP Address and Subnet mask

5.3.3   Unit IP Addresses setup

Each Unit's IP Address is typically of the format **192.168.1.✗✗✗**. To modify the value of the last 3 digits (the other digits are fixed and cannot be modified) follow the procedure below:

✳   On the Unit front panel, press the Encoder Wheel.

✳   Select the NETWORK ADDRESS menu page by rotating the Encoder Wheel and press the OK key or the Encoder Wheel.

✳   Select the desired value from 1 to 253 (recommended) by rotating the Encoder Wheel.

IMPORTANT

The selected IP Address must be different from those of the PC and other Units.

✳   Press the OK key or the Encoder Wheel to validate the setting.

6   OPERATION

6.1   Quick start

6.1.1   Virtual and Physical Systems

A **System** is a set of **Units** (**L-ACOUSTICS**® **LA4** and/or **LA8** amplified controllers) arranged into **Groups**, and featuring:

- For each Unit: the **IP Address**, **Unit Type**, **Preset**, and **Unit Parameters** (Gain, Delay, and Polarity settings for the 2 Input and 4 Output Channels, as well as Mute and Matrix for the 4 Output Channels).

- For each Group: the **Group Parameters** (Mute/Solo, Gain, Delay, and Contour EQ settings) uniformly allocated to all Units in the Group.

Two System types exist:

- The **Virtual System** is the System edited in the LA NETWORK MANAGER user interface when the PC is not synchronized with the L-NET Network.

- The **Physical System** is the System composed of a set of Units physically connected to the L-NET Network (including the IP Addresses, selected Presets, Unit and Group Parameters each Unit memory contains).

6.1.2   Offline and Online Modes

The System displayed in the software user interface, called the **Current System**, can be managed within two possible workflows:

- In the **Offline Mode** the PC running LA NETWORK MANAGER is not synchronized with the L-NET Network. The Current System is a Virtual System.
  In this mode the user can create/modify the Virtual System in advance with no need to be present at the event issue.

- In the **Online Mode** the PC running LA NETWORK MANAGER is synchronized with the L-NET Network: the data displayed on the software user interface (IP Addresses, selected Presets, Unit and Group Parameters) are those of the Units of the Physical System. They are transmitted and modified within the **Full Duplex** data transfer protocol.
  In this mode the user can control the Physical System before and during the event performance.
  The Online Mode is activated when a System is sent to or retrieved from the L-NET Network (see section 6.6.3).

6.1.3   Launching the software

✫ Double click on the **LA NETWORK MANAGER** shortcut located on the desktop, or select **"Programs – LA Network Manager – LA Network Manager"** in the PC **"Start"** menu. A new window (Figure 11) prompts the user to select between three possible ways to edit a System:

Create an Offline System (Offline Mode)

    ↳ Select this function. Click **"OK"**: the software user interface gets empty so that a new Virtual System can be built Unit by Unit.

Open a System File (Offline Mode)

    ↳ Select this function. Click **"OK"**. Browse through the new window and select the desired System File (**"*.system"**): the System stored in the System File is loaded in the software and becomes the Virtual System.

Retrieve System from Network (Online Mode)

    ↳ Select this function. Select the IP Address range to be scanned through the L-NET Network by filling in both values **"from 192.168.1.✱✱✱ to ✱✱✱"** where **✱✱✱** is chosen between 1 and 253.

    ↳ Click **"OK"**: the Physical System is retrieved from the L-NET Network and becomes the Current System. The Online Mode is activated.

![IMPORTANT] The **Retrieve System from Network** function only works if an L-NET Network is synchronized with the PC and if the PC and units IP Addresses are correctly set (see chapter 5 for instructions, and section 7.3 for troubleshooting).
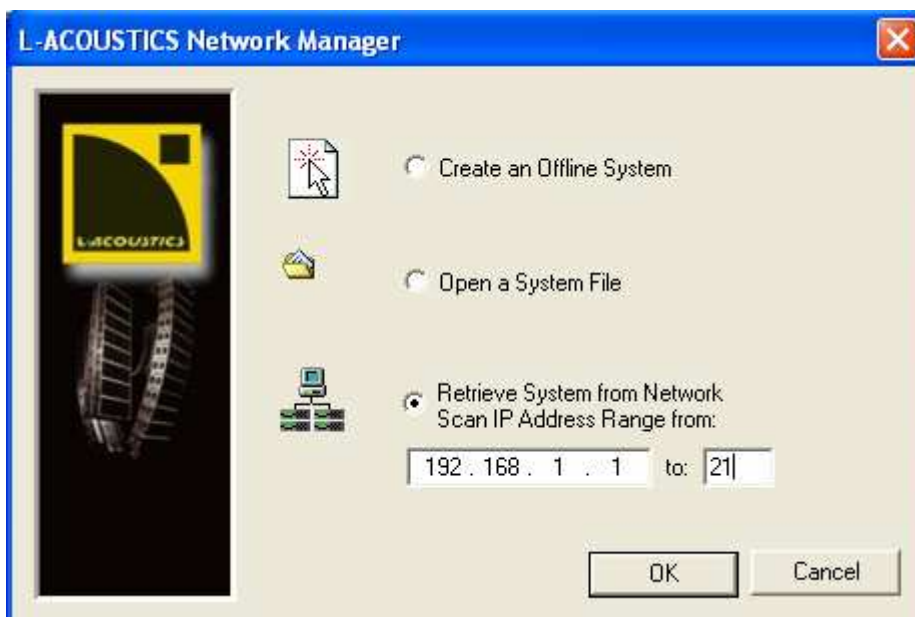
Figure 11: Launch window

6.1.4   Software user interface

The LA NETWORK MANAGER user interface (Figure 12) features **four operating windows** and a **Command toolbar** (fully detailed through the sections 6.2 to 6.6) for Offline or Online overall management of the Current System.

Also exists the **"Message"** window in which are displayed real-time information and warnings:
- ✍ Click on the **"Message"** window to stop the flashing sequence while keeping the message in the window.
- ✍ Double click on the last message and click "YES" in the edited window to cancel all messages.

5. Command toolbar   **1. "Units Over Network" window**   **3. Control window**

"Messages" window   **2. "System/Groups"**   **4. "Contour EQ" window**

Figure 12: LA NETWORK MANAGER user interface

The following procedure features an overview of how to create and manage a System (Virtual or Physical) using the LA NETWORK MANAGER software:

1. **"Units Over Network" window (list of the Units)**

    ✎ Fast create, delete, or modify the Units (IP Address, Unit Type, Preset) composing the System by left and right mouse clicking operations (see section 6.2).

2. **"System/Groups" window (list of the Groups and attached Units)**

    ✎ Fast form the Groups and assign Units to each one by dragging and dropping Units from the **"Units Over Network"** window (see section 6.3).

3. **Control window (Output Channel import/export functions, Unit and Group Parameter settings)**

    ✎ By mouse clicking operations, fast import/export Output Channels and set the Group Parameters (applying for all Units in the selected Group) and Unit Parameters (applying only for the selected Unit).
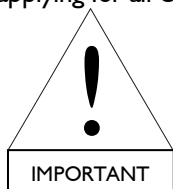
    > **!** Importing at least one Output Channel into a Unit results in creating a Custom Preset.
    >
    > IMPORTANT

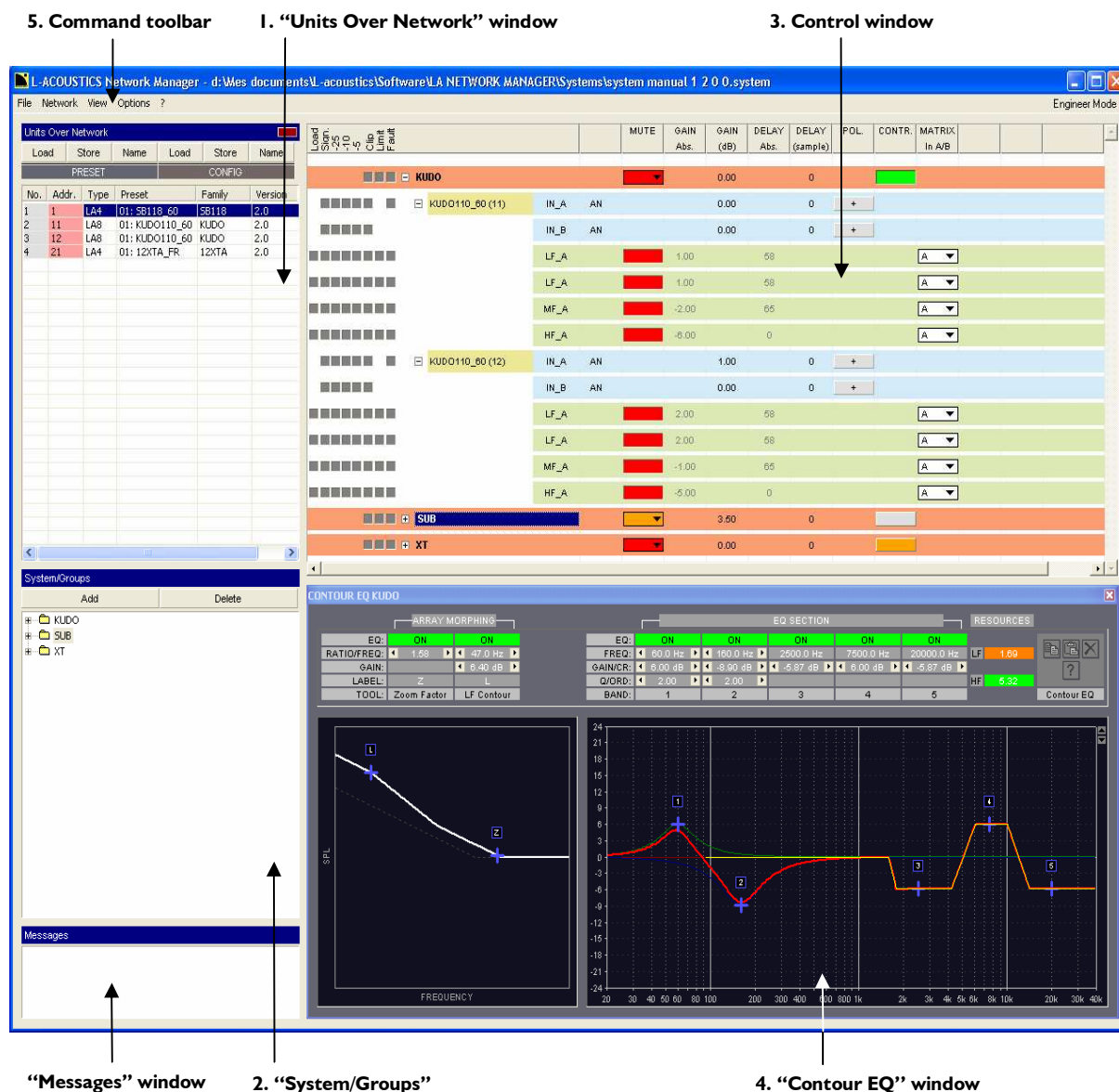   The Group Parameters are the Mute/Solo, Gain, Delay, and Contour EQ parameters (see step #4). The Unit Parameters are the Mute, Gain, Delay, Polarity, and Matrix parameters. The Gain and Delay parameters have their Group and Unit values summed in the **"Abs."** columns that show absolute values.

    The Matrix parameter is for selecting the way an Output Channel is driven by the IN A and/or IN B Input Channels (A, B, A+B, or A-B).

    In the Online Mode, the Control window provides real-time monitoring and control of each Group and Unit status (including audio signal path and faults) (see section 6.4).

    In both Offline and Online Modes, each loudspeaker resources (Headroom) can be displayed at all times (see section 6.6.3).

4. **"Contour EQ" windows (Loudspeaker System frequency response settings for each Group)**

    ✎ For each group, a selectable **"Contour EQ"** window allows fast intuitive loudspeaker frequency response settings by mouse click and drag operations (see section 6.5).

    The ARRAY MORPHING section is dedicated to Line Source Array response setting using both ZOOM FACTOR and LF CONTOUR tools.

    The EQ SECTION is a mini EQ station composed of 2 parametric IIR filters (#1-2) for room acoustic equalization and 3 linear phase FIR plateau filters (#3-5) for air absorption compensation.

5. **Command Toolbar (File, L-NET Network functionalities, and user options)**

    Feature System file, L-NET Network, as well as software option menus (see section 6.6).

6.2 "Units Over Network" window

6.2.1 Overview

The **"Units Over Network"** window (Figure 13) displays the list of the Units composing the Current System and allows to create/modify them. In this window features the following information:

- **Unit Number (No.)**   Counts the Units composing the System.

- **IP Address (Addr.)**   Identifies the Unit within the L-NET Network.

    The IP Address cell color code is: <mark>pink</mark> in Offline Mode, <mark>green</mark> in Online Mode, and <mark>blue</mark> in Standby Mode or if a connection default occurs (see Figure 13).

    > ⚠ **IMPORTANT**
    >
    > In Online Mode, the <mark>yellow</mark> color will be displayed if the Firmware installed in the Physical Unit needs to be updated (see Figure 13 and section 7.1). The default display will be "empty, SB118, 2.0" as it will be impossible to communicate with the Physical Unit.
    >
    > The IP Address is not linked to the Unit Number.
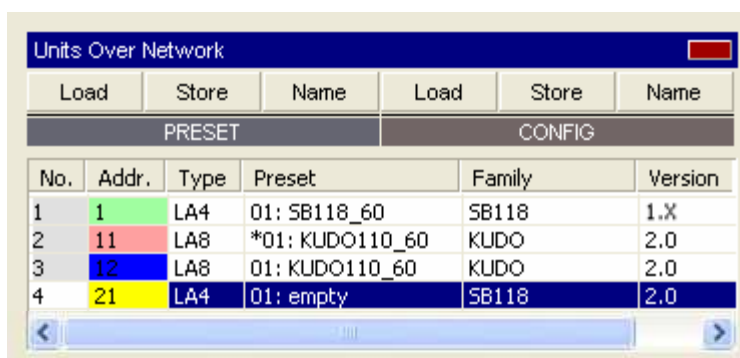
- **Unit Type (Type)**   Specifies whether the Unit is an LA4 or an LA8 amplified controller.

- **Current Preset (Preset)**   Displays the name and memory location (from 1 to 99) of the Current Preset.

- **Preset Family (Family)**   Specifies the Preset Family to which the Current Preset belongs.

- **Preset Library version number (Vers.)**   Specifies the version number of the Preset Family the Current Preset comes from.

    > ⚠ **IMPORTANT**
    >
    > It is recommended to use the Preset of latest version as the optimization level will be increased. However, the user can load any older Preset in order to recover his personal settings.

    Example: In Figure 13 the Preset versions are of the form 2.0 (latest version) or 1.x (older versions).

Figure 13: "Units Over Network" window

Two menus are available to manage the Units:

- **"Right Clicking"** menu (see section 6.2.2): create, delete, or modify a Unit by directly right clicking on the Unit or on a blank location.

- **"PRESET"** and **"CONFIG"** toolbars (see section 6.2.3): Online manage the presets in the Physical Units.

6.2.2 "Right Clicking" menu

↳ Right click on a Unit: the **"Right Clicking"** menu is displayed (see Unit #1 in Figure 14). All the selectable functions are described below.

↳ Right click on a blank cell: only the **"Add new Units…"** function is displayed.

Note: In Figure 14, the star sign (*) displayed in the "Preset" cell of Unit#2 indicates that parameter settings have been modified from the original Preset stored in memory. It is synchronized with the Physical Unit LCD screen (see the **"LA4"** or **"LA8 – User Manual"**).
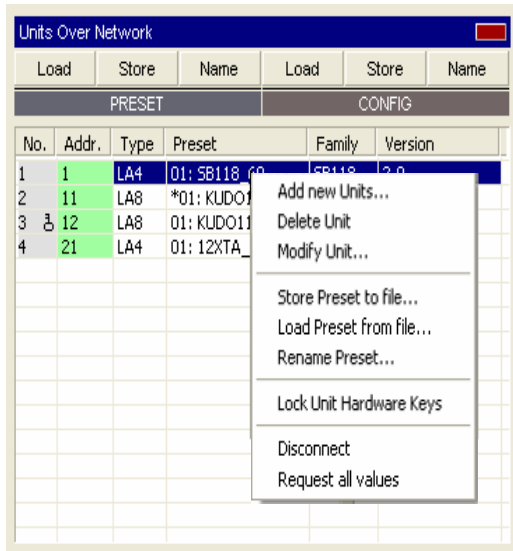
Figure 14: The "Right Clicking" menu	Figure 15: Selecting a Preset from the LA4 Library
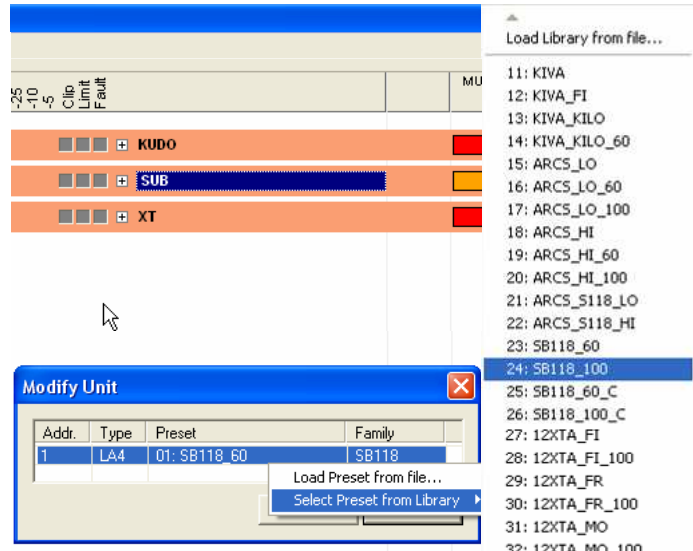
Add new Units…   This function adds a new Virtual Unit.

↳ Left click on this function: a new window is edited (see Figure 15).

↳ Click on the **"Addr."** cell and select an available IP Address in the displayed list.

↳ Click on the **"Type"** cell to alternatively select the **"LA4"** or **"LA8"** Unit Type.

↳ Directly load a Preset from a file by clicking on the **"Load Preset from file…"** function: browse for the desired Preset File (**"*.preset"**), select the user memory location (from 1 to 10) for the new Preset, and click **"OK"**.

Or Load a Preset from the OEM Preset Library by clicking on the **"Select Preset from Library"** function: select the desired Preset among the list, select the user memory location (from 1 to 10) for the new Preset, and click **"OK"**.

⚠ **IMPORTANT**

- If the list does not exist or is the wrong one the user may load the Library File prior selecting a Preset:
  - ↳ Click on the **"Load Library from file…"** function and browse for the desired Library File (**"*.LA4"** or **"*.LA8"**).
- The **"*.LA4"** and **"*.LA8"** files are downloadable from the L-ACOUSTICS® web site.
- An LA8 OEM Preset can not be loaded into an LA4 Unit.
- The Preset Family directly depends on the loaded Preset. It is set automatically and thus cannot be modified by the user.

↳ Once the whole changes are made click **"OK"** to validate and return to the software user interface.

Delete Unit   This function deletes the selected Unit.

✎   Left click on this function. Click **"OK"** in the new window: the Unit will be deleted.

⚠ IMPORTANT   This function is available in the Offline Mode only.

Modify Unit…   This function modifies the IP Address, Unit Type, and/or Current Preset of the selected Unit.

✎   Left click on this function: a new window is edited (see Figure 15).

✎   Click on the **"Addr."** cell and select an available IP Address in the displayed list.

⚠ IMPORTANT   Trying to modify the IP Address of a Physical Unit from the LA NETWORK MANAGER user interface forces the Unit to disconnect from the L-NET Network: the Current Unit will become a Virtual Unit and the new IP Address will not be stored into the Physical Unit.
Therefore, modifying the IP Address of a Physical Unit is only possible from the Unit's front panel user interface (see the **"LA4"** or **"LA8 - User Manual"**).

⚠ IMPORTANT   If a Physical Unit pertaining to a Group has been disconnected from the L-NET Network when trying to modify its IP Address in the **"Addr."** cell, the Group and Unit Parameters (see section 6.4) remain active into the Physical Unit.

✎   Click on the **"Type"** cell to alternatively select the **"LA4"** or **"LA8"** Unit Type.

⚠ IMPORTANT   Modifying the Unit Type will automatically cancel the Current Preset, thus a new Preset has to be loaded.

✎   <u>Directly load a Preset from a file</u> by clicking on the **"Load Preset from file…"** function: browse for the desired Preset File (**"*.preset"**), select the user memory location (from 1 to 10) for the new Preset, and click **"OK"**.

Or   <u>Load a Preset from the OEM Preset Library</u> by clicking on the **"Select Preset from Library"** function: select the desired Preset among the list, select the user memory location (from 1 to 10) for the new Preset, and click **"OK"**.

⚠ IMPORTANT
- If the list does not exist or is the wrong one, the user may load the Library File prior selecting a Preset:
  - ✎ Click on the **"Load Library from file…"** function and browse for the desired Library File (**"*.LA4"** or **"*.LA8"**).
- The **"*.LA4"** and **"*.LA8"** files are downloadable from the L-ACOUSTICS® web site.
- An LA8 OEM Preset can not be loaded into an LA4 Unit.
- The Preset Family directly depends on the loaded Preset. It is set automatically and thus cannot be modified by the user.

Note: The **"Right Clicking"** menu allows to load presets that are stored in the PC. On the contrary, the "PRESET" and "CONFIG" menus (section 6.2.3) allows to load presets that are stored in the Physical Unit.

✎   Once the whole changes are made click **"OK"** to validate and return to the software user interface.

Store Preset to file...   This function stores the Current Preset of a selected Unit into a Preset File (**"*.preset"**).

↰   Click on this function. In the new window browse for the desired directory, keyboard the Preset File name, and click **"OK"**.

Load Preset from file...

This function loads a Preset from a Preset File (**"*.preset"**). This Preset will become the Current Preset in the selected Unit.

↰   Select this function. In the new window browse for the desired Preset File, select the user memory location (from 1 to 10) in which the new Preset will be loaded, click **"OK"**.

Rename Preset...   This function renames the selected Preset. This is useful in case of creation of a Custom Preset.

↰   Select this function. In the new window, keyboard the new Preset name and click **"OK"**.

> ⚠ **IMPORTANT**
>
> Renaming a Preset is only possible for a Preset located in a User Memory Location (from 1 to 10).

Lock Unit Hardware Keys (Online Mode)

↰   Clicking on this function alternatively locks and unlocks the front panel commands (even the Mute function) for the selected Physical Unit.

Notes: This function is useful in the Online Mode, but it can be activated in the Offline Mode and then be sent to the Physical System using the **"Send System To Network"** function (see section 6.6.3).
When a Unit is locked a "key" is displayed in the corresponding **"No."** cell (see Unit #3 in Figure 14).
When trying to press any keys on a locked Unit front panel, the "DISPLAY LOCKED" message is displayed on the LCD screen and the action has not effect, even for the "Mute" function (see the **"LA4"** or **"LA8 - User Manual"**). This prevents any unintentional operation during an event performance, for example.

Disconnect (from Online to Offline Mode) / **Try to connect (from Offline to Online Mode)**

↰   Clicking on the **"Disconnect"** function disconnects the selected Unit from the L-NET Network.

> ⚠ **IMPORTANT**
>
> When a Physical Unit pertaining to a Group has been disconnected from the L-NET Network by using the **"Disconnect"** function the Group and Unit Parameters (see section 6.4) remain active into the Physical Unit.

↰   Clicking on the **"Try to connect"** function connects the selected Unit to the L-NET Network.

> ⚠ **IMPORTANT**
>
> When using the **"Try to connect"** function the Virtual Unit becomes the Current Unit and the Physical Unit Parameters are overwritten without control (not as the "Send System to Network…" function [see section 6.6.3]).

Note: The mode for each Unit is indicated by the color of the IP Address cell: green or blue for the Online Mode and pink for the Offline Mode (see Figure 13).

6.2.3 "PRESET" and "CONFIG" menus

Only available in the **Online Mode** the **"PRESET"** and **"CONFIG"** menus feature the same three functions: **"Load"**, **"Store"**, and **"Name"** (see Figure 16). They respectively modify the Current Preset, the memory location, and the Preset name into each selected Physical Unit. They apply either for **one** Unit in the **"PRESET"** menu or for **all the synchronized** Units in the **"CONFIG"** menu.

Figure 16: "PRESET" and "CONFIG" menus

Figure 17: "Load", "Store", and "Name" lists in the Unit#1 "PRESET" menu

Load

In the **"PRESET"** menu, the **"Load"** function applies for the selected Physical Unit and loads a Preset taken from the Preset Library stored in the Unit (see the **"Load list"** in Figure 17). The selected Preset will become the Current Preset.

✎ Click on the desired Physical Unit, click on the **"Load"** key in the **"PRESET"** menu, select the desired Preset among the edited list, and click **"YES"**.

In the **"CONFIG"** menu, the **"Load"** function applies for all the synchronized Physical Units simultaneously. For each Unit, the Preset is taken from one of its 10 User Memory Locations (#1 to #10 of the **"Load list"** in Figure 17). The User Memory Location number is common to all Units but the selected Preset is particular to each Unit and can be different from one to another.

✎ Click on the **"Load"** key in the **"CONFIG"** menu, select the desired User Memory Location number, click **"YES"**.

> ⚠ **IMPORTANT**
>
> In both menus the **"Load"** function only works when the selected Preset and the Current Preset are pertaining to the same Preset Family. On the contrary case (including for empty memories) a conflict list is displayed for each concerned Physical Unit (see the Troubleshooting section 7.3).
>
> Loading a new Preset the Family of which is different from the Current Preset's one must be done directly on the Physical Unit's front panel.

Store

In the **"PRESET"** menu, the **"Store"** function applies for the selected Physical Unit and stores the Current Preset (including the Unit Parameters) into one of its 10 User Memory Locations (see the **"Store list"** in Figure 17).

✏ Click on the desired Physical Unit, click on the **"Store"** key of the **"PRESET"** menu, select the desired User Memory Location among the edited list, and click **"YES"**.

In the **"CONFIG"** menu, the **"Store"** function applies for all the synchronized Physical Units simultaneously. The User Memory Location number is common to all Units but the Current Preset is particular to each Unit and can be different from one to another.

✏ Click on the **"Store"** key of the **"CONFIG"** menu, select the desired User Memory Location, click **"YES"**.

Name

In the **"PRESET"** menu, the **"Name"** function applies for the selected Physical Unit and renames one of its User Memory Locations (from #1 to 10: see the **"Name list"** in Figure 17).

✏ Click on the desired Unit, click on the **"Name"** key of the **"PRESET"** menu, keyboard the new name in the new window, click **"OK"**.

In the **"CONFIG"** menu, the **"Name"** function applies for all the synchronized Physical Units simultaneously. The name and the User Memory Location are common to all Units.

✏ Click on the **"Name"** key of the **"CONFIG"** menu, keyboard the new name, click **"OK"** and **"YES"**.

⚠ **IMPORTANT**
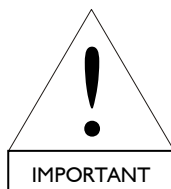
Renaming a Preset does not change the Preset Family name.

A Preset can be renamed even if it is not the Current Preset.

6.3 "System/Groups" window

The **"System/Groups"** window (Figure 18) contains a list of the Groups composing the System. In this window the user can create or modify the Groups and assign Units to each one.

 IMPORTANT

Assigning a Unit to a Group is necessary to monitor and control it in the Control window (see section 6.4). In particular, this allows setting the Group Parameters (Mute/Solo, Gain, Delay, Contour EQ) that are applied to all Units in the Group.
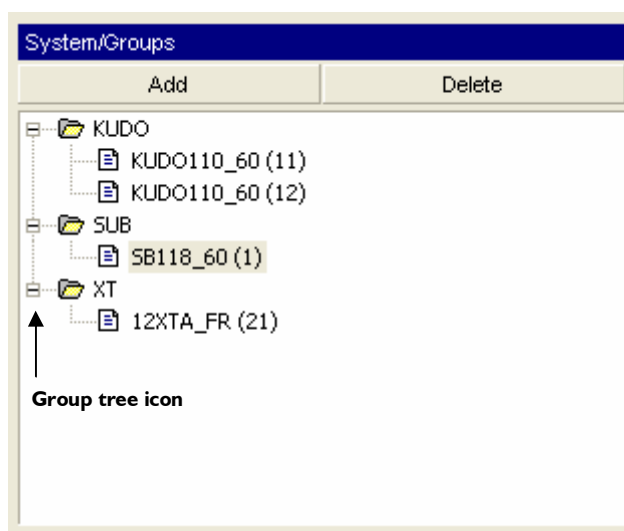
Figure 18: The "System/Groups" window

Two ways to create Groups and assign Units to each one

↪ Click N times on the **"Add"** key to create N Groups. They will automatically be named "Group 1", "group 2" … "Group N". If wanted, rename each one by clicking on its name and keyboarding the new name. Drag and drop each Unit from the **"Units Over Network"** window to the desired Group.

↪ Drag and drop a Unit to the empty **"System/Groups"** window: a Group is automatically created and named "Group 1". Drag and drop the second Unit to the "Group 1" Group or to the empty area of the **"System/Groups"** window: in the last case the "Group 2" Group is automatically created. Repeat the procedure for all Units. If wanted, rename each Group by clicking on its name and keyboarding the new name.

Note: When assigning a Unit to a Group, the **"No."** cell background color turns gray in the "Units over Network" window (see the Units #1-3 in Figure 13). On the contrary case, the background color remains white (see the Unit #4).

 IMPORTANT

It is not possible to create subgroups (Groups within a Group).

It is possible to check if a Physical Unit is part of a Group and to identify its Group name by pressing and holding either the IN A or IN B key on the Unit front panel. The name of the Group will appear at the bottom right of the LCD (see the **"LA4"** or **"LA8 - User Manual"**).

Deleting a Unit or a Group

☞ Click on the Unit or the Group to be deleted, press the **"Delete"** key on the keyboard or in the **"System/Groups"** window, click **"YES"** in the new window.

In order to move a Unit from a Group to another one the user must delete the Unit from the first Group and reassign the Unit to the second Group (by dragging and dropping it from the **"Units Over Network"** window).

In the Unit, the Group Parameters of the first Group will be replaced by those of the second Group.

In the Online Mode, when a Unit has been deleted from a Group or if the Group containing the Unit has been deleted:

- The Group Parameters are cancelled into the Physical Unit while the Unit Parameters remain active (see section 6.4).
- The Outputs are muted on the Physical Unit.

Consider a Physical Unit in the Standalone Mode. If some Group Parameters remain active in it, they cannot be seen and accessed via the front panel user interface, and they are not preset dependent (they will remain the same even if a new Preset is loaded).

Therefore, when recuperating a Physical Unit for a Standalone application that has been previously used within a L-NET Network, L-ACOUSTICS® recommends using the CLEAR GROUP PARAMETERS function in order to clear all Group Parameters (see the **"LA4"** or **"LA8 - User Manual"**).

Showing/hiding the Units

☞ Alternatively clicking on a Group tree icon displays or hides the Units pertaining to this Group.

6.4 Control window

The **Control window** (Figure 19) allows overall monitoring and control of the Current System through a removable tree.

Figure 19: The Control window

6.4.1   Monitoring the System

✥   The user can display or hide information by alternatively clicking on the tree icons: by default, only the brown Group Bars are displayed. Clicking on the Group tree icon will add the blue Input Channel Bars, and clicking on the Unit tree icon will add the green Output Channel Bars (Figure 19).

   Note: The bar colors can be modified (see the **"Settings…"** menu in section 6.6.5).

The available information is the following:

- Each Group is displayed along with its **Name** and **Group Parameters** (Mute/Solo, Gain, Delay, Contour EQ). For each Group, a **"Contour EQ"** window is selectable by clicking on the **"CONTR."** key in the Group Bar (see section 6.5).

- Each Unit is displayed along with the **Current Preset**, **IP Address**, and for each Channel (2 x in, 4 x out) the **Channel Label** (see Note below) and the **Unit Parameters** (Mute, Gain, Delay, Polarity, and Matrix).

   Note: The A and B Input Channels are labeled IN_A and IN_B respectively. The 4 Output Channels are labeled **"✶✶_✶"** where the first 2 digits indicate the Channel Type (LF, MF, HF for Low, Mid, High frequency transducers respectively, SB for subwoofer, SR for reversed subwoofer in cardioid applications, PA for passive enclosure), and the last digit indicates the Matrix setting ("A, B, +, -" stand for "A, B, A+B, A-B" settings respectively). The Channel Label is displayed in the software as well as on the Units main screens (see the **"LA4"** or **"LA8 - User Manual"**) for each Channel.

- The Group and Unit Parameter values are cumulative for the Gain and Delay parameters. The cumulate values are shown in the **"GAIN Abs."** and **"DELAY Abs."** columns.

- In the Online Mode, real time audio signal path and faults for each Channel of each Unit is given by the **Meter LED** (**"Load, Signal, -25, -10, -5, Clip, Limit, Fault"**) described below (see also the **"LA4"** or **"LA8 - User Manual"** for additional information):

   LOAD   The green **"Load"** LED is lit when a speaker is connected at the corresponding Unit Output Channel and when the Output power reaches at least 2 W. **Example:** In Figure 19 a speaker is connected to the SB118_60 Unit Output Channel #3.

   SIGNAL   The green **"Signal"** LED is lit when a signal is detected at the corresponding Unit Channel (Input or Output). **Example:** In Figure 19 a signal is detected at the SB118_60 Unit Output Channel #3.

   dB   The green **"-25, -10, -5 dB"** LED are lit when the Unit Channel voltage (Input or Output) reaches respectively 25, 10, or 5 dB below the maximum level. **Example:** In Figure 19 the SB118_60 Unit Output Channel #3 signal reaches 5 dB below the maximum level.

   CLIP   The red **"Clip"** LED is lit when the Channel voltage (Input or Output) reaches the maximum level (22 dBu for the Input Channels). **Example:** In Figure 19 the SB118_60 Unit Output Channel #1 signal reaches the clip level. The **"Clip"** LED in the Group Bar is also lit.

   LIMIT   The yellow **"Limit"** LED indicates that the L-DRIVE, Fuse Protect, or Temperature protection is active. The signal is attenuated.
   When the limited Channel returns to nominal state the protection automatically gets off and the Unit returns to normal operating state.
   Example: In Figure 19 the SB118_60 Unit Output Channel #1 signal reaches the limiter threshold. The **"Limit"** LED in the Group Bar is also lit.

   FAULT   The red **"Fault"** LED indicates that one or several Input or Output Channels on the Unit are no longer operational (refer to the "Malfunctions" section on the **"LA4"** or **"LA8 – User Manual"**).
   When the faulty component returns to nominal state the protection automatically gets off and the Unit returns to normal operating state.
   Example: In Figure 19 the SB118_60 Unit is in faulty state (the LED located at the right of the A Input Channel LED is lit). The **"Fault"** LED in the Group Bar is also lit.

- In both Offline and Online Modes, each loudspeaker resources (Headroom) can be displayed at all times (see section 6.6.3).

6.4.2 Offline and Online System management

The Control window allows the user to modify in advance (Offline) or real-time monitor (Online) the Group and Unit Parameters of the Current System.

Group Parameters

The Group Parameters are the Mute/Solo, Gain, Delay, and Contour EQ parameters located in the brown Group Bar.

✎ Clicking on the **"MUTE"** key will display a menu, click one of the three options as described below:

- **"Global"** is for muting/unmuting all Output Channels in all Groups.
- **"This group"** is for muting/unmuting all Output Channels in the selected Group, or for unmuting these last while muting all channels in the other Groups (**"SOLO"**).
- **[Preset Family] [Channel Type]** is for muting/unmuting all Output Channels featuring the **[Channel Type]** type and belonging to the **[Preset Family]** family in the selected Group, or for unmuting these last while muting all other channels in all Groups (**"SOLO"**).

Notes: In a Group, the **"MUTE"** key background turns <mark>red</mark> when all the channels are muted, in <mark>orange</mark> when at least one channel is unmuted, and in <mark>gray</mark> when all the channels are unmuted.
The SR Channel Type is treated as the SB Channel Type for the Mute function.

Example: The user has selected the 12XTA HF SOLO function as shown in Figure 20 to obtain the window displayed in Figure 21. Note that both 12XTA HF_A and HF_B channels have been unmuted and both SB118 channels #1 and 3 have been muted. The output meter LED are lit for the unmuted output channels only.

✎ Click on the **"GAIN"** cell and keyboard the Gain value: the Gain value is uniformly modified for all Output Channels in the Group. Gain values are adjustable between -60 dB and +15 dB at 0.1 dB resolution.

Example: In the Figure 21, all Output Channel Gain values of the SUB Group have been increased by 3.5 dB.

✎ Modify the Delay value in the same way as for the Gain value by clicking on the **"DELAY"** cell.

The Delay value is adjustable from 0 to 500 ms (172 m/564 ft at 20 °C) at one hundredth resolution, within the limitation of 535 ms for the Abs. Delay value.

Delay unit and temperature can be set in the menu displayed by right clicking on the main "DELAY" cell (see Figure 21). The temperature value is adjustable from -60 to 60 °C (from -76 to 140 °F).

✎ Clicking on the **"CONTR."** key edits the **"Contour EQ"** window which applies for all channels in the selected Group.

⚠ **IMPORTANT**
If a Physical Unit pertaining to a Group has been disconnected from the L-NET Network because the PC has shut down, a cable has been removed, or the **"New System"** (section 6.6.2), **"Delete Unit"**, **"Modify Unit"**, or **"Disconnect"** (section 6.2.2) function has been used, the Group Parameters remain active in the Physical Unit.
On the contrary, when using the **"Delete"** function in the **"System/Groups"** window (section 6.3) the Group parameters are cancelled in the Physical Unit.

⚠ **IMPORTANT**
Consider a Physical Unit in the Standalone Mode. If some Group Parameters remain active in it, they cannot be seen and accessed via the front panel user interface, and they are not preset dependent (they will remain the same even if a new Preset is loaded). Therefore, when recuperating a Physical Unit for a Standalone application that has been previously used within a L-NET Network, L-ACOUSTICS® recommends using the CLEAR GROUP PARAMETERS function in order to clear all Group Parameters (see the **"LA4"** or **"LA8 - User Manual"**).

The Contour EQ settings will be discussed in section 6.5.

Figure 20: Selecting the 12XT HF SOLO function

Main "DELAY" cell

Figure 21: 12XT HF SOLO function selected

Unit Parameters

The Unit Parameters are the Mute, Gain, Delay, Polarity, and Matrix parameters, located in the blue and green Unit Bars respectively for Input and Output Channels. They only apply for the selected Channel.

↳ Alternatively clicking on the **"MUTE"** key mutes (red color) or unmutes (gray color) the selected Channel. This function is only available for the Output Channels.

Example: In the Figure 21 the Unit in the XT Group has Output Channels 1 and 3 muted and Output Channels 2 and 4 unmuted.

↳ Click on the **"GAIN"** cell and keyboard the Gain value: the Gain value is modified for the selected Channel. Gain values are adjustable between -60 dB and +15 dB at 0.1 dB resolution.

Example: In the Figure 21 the Unit in the SUB Group has Output Channels #1 and 3 Gain values increased by 11 dB. Thus, the addition of the Group (3.5 dB) and Unit (11 dB) Gain values results in a total of 14.5 dB in the **"GAIN Abs."** column.

↳ Modify the Delay value in the same way as for the Gain value by clicking on the **"DELAY"** cell.

Delay values are adjustable from 0 to 500 ms (172 m/564 ft at 20 °C) for the input channels and from 0 to 35 ms (12 m/39 ft at 20 °C) for the output channels at one hundredth resolution, within the limitation of 535 ms for the Abs. Delay value.

Delay unit and temperature can be set in the menu displayed by right clicking on the main "DELAY" cell (see Figure 21). The temperature value is adjustable from -60 to 60 °C (from -76 to 140 °F).

↳ Alternatively clicking on the **"POLARITY"** key will set the polarity at 0° ("+" sign and gray color) or 180° ("-" sign and red color).

Example: In the Figure 21 the Unit in the SUB Group has Output Channels 1 and 3 set at 180°, and the Output Channels 2 and 4 set at 0°.
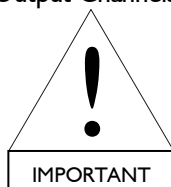
> **!** IMPORTANT
>
> If a Physical Unit pertaining to a Group has been disconnected from the L-NET Network because the PC has shut down, a cable has been removed, or the **"New System"** (section 6.6.2), **"Delete Unit"**, **"Modify Unit"**, **"Disconnect"** (section 6.2.2), or **"Delete"** (section 6.3) function has been used, the Unit Parameters remain active into the Physical Unit.

↳ Alternatively click on the **"MATRIX"** key to set the Matrix setting between the A & B Input Channels and the selected Output Channel. The available routing paths are listed below:

MATRIX key label	Output Channel driven by the:	Channel Label
A	A Input Channel signal	�_A
B	B Input Channel signal	✸✸_B
A+B	sum of the A & B Input Channel signals	✸✸_+
A - B	difference between the A & B Input Channel signals	✸✸_-

Examples: In the Figure 21, the KUDO Output Channels are all driven by the A Input Channel, the 12XTA and last two SB118 Output Channels are driven by A or B, and the first two SB118 Output Channels are driven by the sum of A & B.

> **!** IMPORTANT
>
> Modifying the Matrix setting for a particular Output Channel in a Unit can result, in some cases, in automatically modifying the Matrix settings for other Output Channels within the Unit. The rules are the following:
> - For active 3-way, cardioid, or KILOKIVA family Presets, the four Output Channels must feature identical Matrix settings.
> - For Presets including active 2-way channels, each LF/HF associated Output Channels must feature identical Matrix settings.
>
> For any additional information, please refer to the **"Preset Libraries – User Manual"**.

"Store channel to file…", "Load channel from file…"

These functions allow the user to create Custom Presets by replacing one or more Output Channels into a Unit.

↳ Right click on an Output Channel Bar to display the Output Channel menu (see the XT Unit in Figure 22).

↳ Click on the **"Store channel to file…"** function, browse for a Channel File (**"*.channel"**), and validate: the current Output Channel is stored to the selected file.

↳ Click on the **"Load channel from file…"** function, browse for a Channel File (**"*.channel"**), and validate: the Output Channel stored in the selected file is loaded to the current Output Channel and overwrites the previous Output Channel Parameters.

The **"Load channel from file…"** function only applies:
- For Presets located in a User Memory Location from 1 to 10.
- If the Output Channel to load is compatible with the host Preset (e.g. both has been extracted from Preset Libraries with version numbers featuring same first digit. Example: 1.0 is compatible with 1.3 but not with 2.0).
- In Offline Mode.

For compatibility purposes, it is only possible to EXPORT:
- PA channels, except those coming from a Preset of the KILOKIVA Family.
- SB channels, except those coming from a cardioid Preset.

And it is only possible to IMPORT an Output Channel in place of a:
- PA channel (including those which are part of a Preset of the KILOKIVA Family).
- SB channel, except if this one is part of a cardioid Preset.
- LF / HF couple of associated 2-way channels located on the OUT1 & OUT2 channels (both of them will automatically be replaced by the same imported Output Channel; in a second step it will be possible to replace one of them).

When replacing at least one Output Channel in a Factory Preset, the Preset Family name is automatically renamed as **"CUSTOM"**. In this case, the compatibility rules related to the factory Preset Family names (see section 7.3) no longer apply. Therefore, **it is strongly recommended to give explicit name to any Custom Preset (in the limit of 16 characters).**

Example: When inserting a SB28 Channel in the first Output Channel of a factory [SB118_60] Preset, rename the Custom Preset as [28_60-3x118_60] to prevent the user from connecting a SB118 enclosure on the first Channel (which may result in excursion or thermal overstep).

Examples in Figure 22: The new [KIVAFI-3x118_60] Custom Preset has been created by replacing the first SB_A channel by a PA_A channel (prior exported from a [KIVA_FI] Preset).
The new [KIFI-11860-12XTA] Custom Preset has been created by replacing the LF_A & HF_A channels by the PA_A & SB_A channels (by applying a two-step procedure). Both channels have been prior extracted from the [KIVA_FI] and [SB118_60] presets, respectively.

Figure 22: Importing three Output Channels

6.5 **"Contour EQ" window**

☞ Clicking on the **"CONTR."** key of a Group Bar in the **Control window** edits the **"Contour EQ"** window dedicated to this Group: the corresponding **"CONTR."** key color turns <mark>green</mark>.

Example: Figure 23 shows the **"Contour EQ"** window for the KUDO Group.

The **"Contour EQ"** window is for Loudspeaker System frequency response setting. It is split into an ARRAY MORPHING section, an EQ SECTION, two RESOURCES indicators, and a "Contour EQ" menu.

The ARRAY MORPHING section is dedicated to Line Source Array response setting and the EQ SECTION is a mini EQ station for room acoustic equalization and air absorption compensation.

All settings uniformly apply for all Units pertaining to the selected Group.

Note: When closing the **"Contour EQ"** window the **"CONTR."** key color turns <mark>orange</mark> or <mark>gray</mark> whether the Contour EQ section has been respectively enabled or disabled (see the SUB and XT Groups in Figure 23).

The Contour EQ window settings apply for this Group

Figure 23: Selecting the Contour EQ window for the KUDO Group

6.5.1 ARRAY MORPHING section

The ARRAY MORPHING section is dedicated to **Line Source Array** frequency response setting using two original and simple tools: ZOOM FACTOR and LF CONTOUR. The background explanation for both tools is given in the **"ARRAY MORPHING – White Paper"** available in the "Help" menu (see section 6.5.4) and the L-ACOUSTICS® web site.

> ⚠ **IMPORTANT**
>
> ALWAYS apply the ZOOM FACTOR and LF CONTOUR tools to ALL enclosures in the array to avoid poor acoustic results.
> For that, check that all corresponding Units are part of the Group for which the current CONTOUR EQ window applies.

ZOOM FACTOR

- ✧ In the **ZOOM FACTOR menu**, click on the **"ON/OFF"** key and select **"ON"**: the ZOOM FACTOR tool is turned on and the key is colored in green (see Figure 24).

- ✧ Set the **"Z"** parameter (RATIO value between 0.32 and 3.16) by clicking on the side cursors, or keyboarding the value, or shifting horizontally the **"Z"** cross on the curve.

  - Z = 1 is the neutral setting and has no effect on the frequency response curve (dotted line on Figure 24).

  - Z > 1 acts as a telephoto lens (array looks bigger, inter-enclosure angles appear larger, listening distance looks shorter). The corresponding response curve has transition frequency shifted towards right (Figure 24a). This setting will enhance the LF contribution and is useful for additional LF contour when using an ultra-compact system.

  - Z < 1 acts as a wide angle photo lens (array looks shorter, inter-enclosure angles appear smaller, listening distance looks longer). The corresponding response curve has transition frequency shifted towards left (Figure 24b). This setting will "flatten" the frequency response curve and is useful for classical or corporate applications when using a large format system.

a.   b.
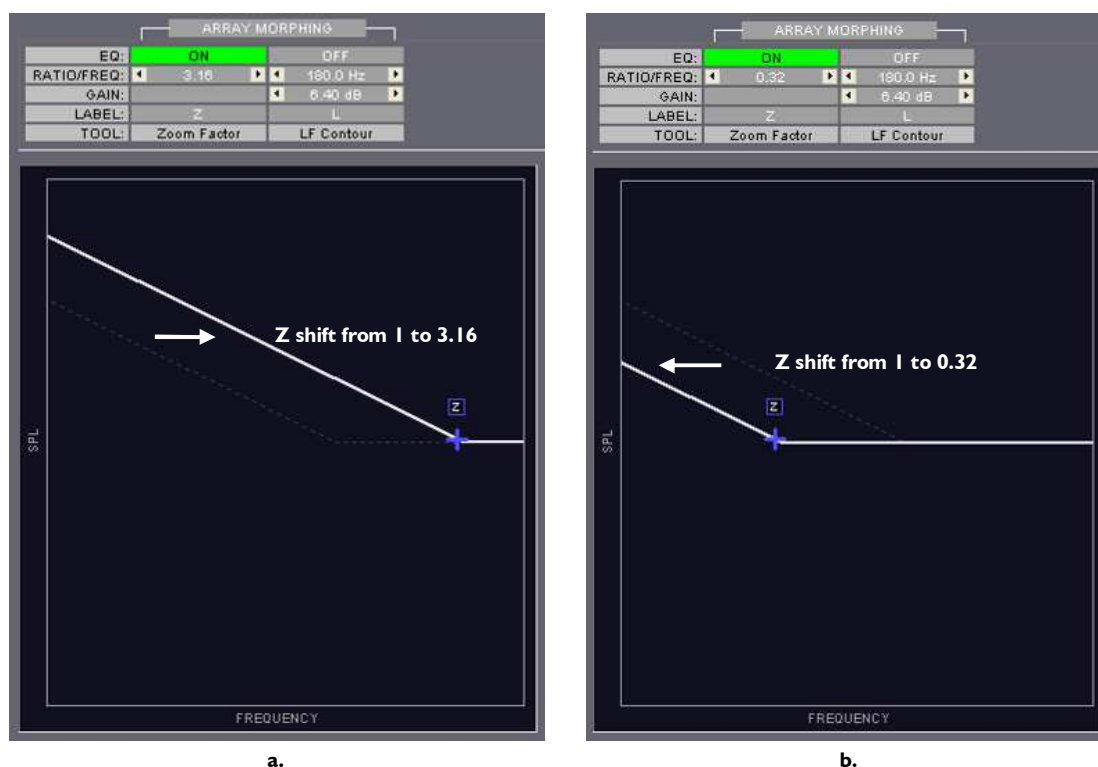
Figure 24: ZOOM FACTOR setting

LF CONTOUR

The LF CONTOUR tool can be used either as an additional refinement of the ZOOM FACTOR settings or as an alternate way to address the LF response of a line source array.

↳ In the **LF CONTOUR menu**, click on the **"ON/OFF"** key and select **"ON"**: the LF CONTOUR tool is turned on and the key is colored in green (see Figure 25).

↳ Set the **"GAIN"** parameter (between -15 and +10 dB at 0.1 dB resolution) by clicking on the side cursors, or keyboarding the value, or shifting vertically the **"L"** cross on the curve (Figure 25a).

↳ Set the **"FREQ"** parameter (between 35 and 180 Hz at 1 Hz resolution) by clicking on the side cursors, or keyboarding the value, or shifting horizontally the **"L"** cross on the curve (Figure 25b).
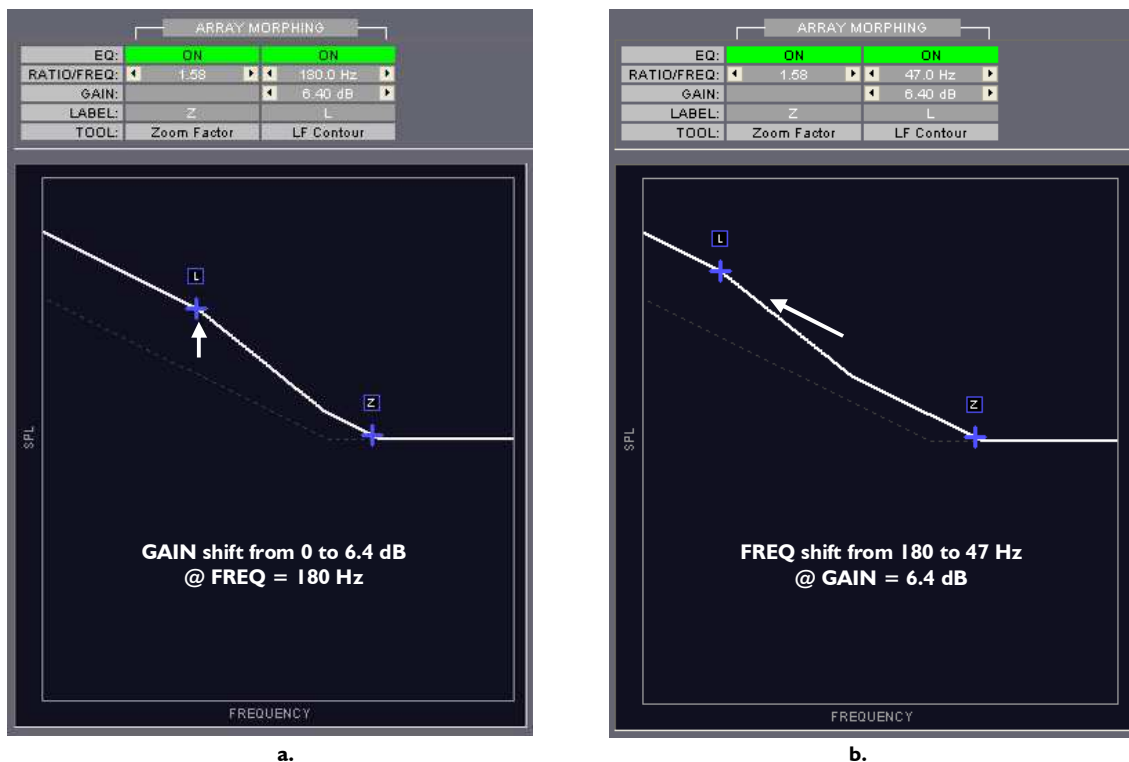
Figure 25: Setting the FREQUENCY and GAIN parameters

Notes: When using the side cursors obtain larger variation steps by pressing the SHIFT key. The parameter values can be modified before the **"ON/OFF"** key is turned **"ON"**.

6.5.2 EQ section

The EQ SECTION is a mini EQ station composed of 2 parametric IIR filters (#1-2) for room acoustic equalization and 3 linear phase FIR plateau filters (#3-5) for air absorption compensation (see Figure 26).

The **EQ SECTION menu** shows the parameter settings for the five filters labeled from **"1"** to **"5"** while the **Curve window** features the resulting magnitude transfer function (in dB) in the frequency domain (Hz, logarithm scale) for each filter (thin curves) and their summation (thick red curve). The magnitude scale is settable by using the **Scaling cursors**.

⚠️ **IMPORTANT**

Do not confuse the types of the curves presented in the ARRAY MORPHING section and in the EQ section. The first one is an acoustic frequency response curve while the second one is a transfer function curve.
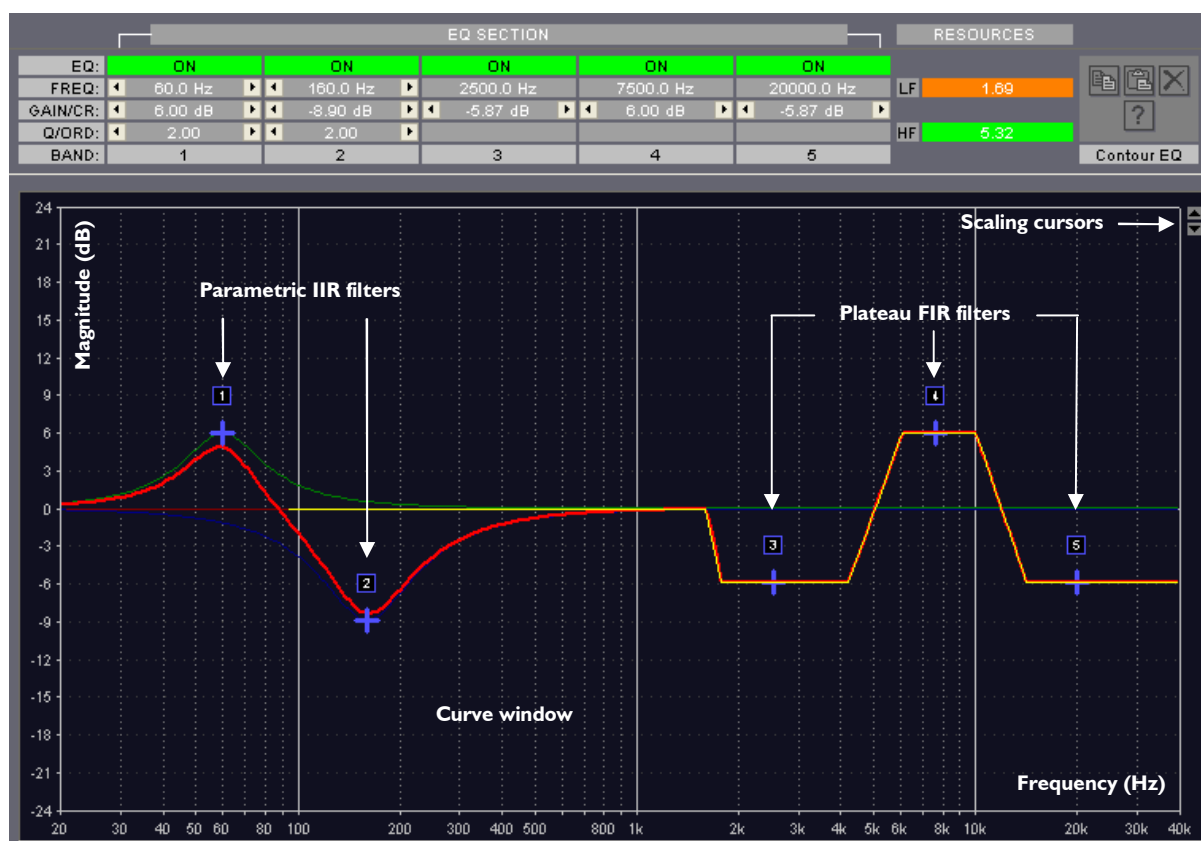
Figure 26: EQ section

IIR filters "1" and "2"

↳ In the **"1" or "2" menu**, click on the **"ON/OFF"** key and select **"ON"**: the filter is turned on, the key is colored in green and a blue cross labeled "1" or "2" is edited into the **Curve window** (see Figure 26).

↳ Set the **FREQUENCY**, **GAIN**, and **QUALITY FACTOR (Q)** parameters by clicking on the side cursors, or keyboarding the value, or shifting the **"1" or "2"** cross on the curve (right click for Q setting).

The FREQUENCY parameter is settable between 20 Hz and 20 kHz at 1 Hz resolution.
The GAIN parameter is settable between -15 and +10 dB at 0.1 dB resolution.
The Q parameter is settable between 1 and 10 at 0.1 resolution.

Note: When using the side cursors, obtain larger variation steps by pressing the SHIFT key.

FIR filters from "3" to "5"

↳ In the **"3", "4", or "5" menu**, click on the **"ON/OFF"** key and select **"ON"**: the filter is turned on, the key is colored in green and a blue cross labeled "3", "4", or "5" is edited into the **Curve window** (see Figure 26).

↳ Set the **GAIN** parameter by clicking on the side cursors, or keyboarding the value, or shifting vertically the **"3", "4", or "5"** cross on the curve.

The GAIN parameter is settable between -15 and +6 dB at 0.1 dB resolution.
The "3", "4", and "5" respective flat filters frequency bandwidths are: 1.5-5 kHz, 5-12 kHz, and 12-40 kHz.

Note: When using the side cursors, obtain larger variation steps by pressing the SHIFT key. The parameter values can be modified before the **"ON/OFF"** key is turned **"ON"**.

Scaling cursors

↳ Click on the top or bottom **Scaling Cursor** to set the magnitude interval to be displayed on screen: from [-3 ; +3] to [-120 ; +120] dB.

6.5.3   Power resources indicators

Setting the Z > 1 and/or any GAIN > 0 in the "Contour EQ" window will reduce the available power resources (Headroom) for all loudspeakers connected to the Units that are part of the corresponding Group.

The minimum Headroom (the most critical) among all these loudspeakers is displayed in dB for both LF and HF sections in the RESOURCES section (see Figure 27). This last will allow real time-monitoring the System power resources in order to avoid damaging the loudspeakers.

Note: These data also include the GAIN set in the Control window (see the "System Resources" window in section 6.6.3).

For more visibility, the background color of each Headroom cell acts as a loudspeaker power resource indicator. The color code is the following:

- GREEN = loudspeaker in a safe range (Headroom > 2 dB).
- ORANGE = loudspeaker near the critical range (-2 dB ≤ Headroom ≤ 2 dB).
- RED = loudspeaker in a critical range (Headroom < -2dB).

When modifying a GAIN or Z value, ALWAYS verify that the Headroom of the corresponding loudspeakers remain in the <mark>GREEN</mark> range.

The <mark>ORANGE</mark> color indicates a potential risk of sound distortion and the <mark>RED</mark> color indicates a potential risk of serious loudspeaker damage. In both cases, the user may decrease the corresponding GAIN and/or Z value (e.g. increase the Headroom value) until the <mark>GREEN</mark> range has been reached.

CAUTION

The power resources values are not correlated with the real input signal. These values are calculated on the basis of a pink noise signal. As a consequence, this power resources calculation is also available in the Offline Mode.

CAUTION

Figure 27: Headroom display in the RESOURCES section

6.5.4   Contour EQ menu

The **Contour EQ menu** features classical functionalities regarding the ARRAY MORPHING and EQ SECTION settings.

✎   In a **first Group** Contour EQ window, click on the **Copy** key to copy all settings of this first Group.

✎   In a **second Group** Contour EQ window, click on the **Paste** key to paste all settings of the first Group in the second Group (the second Group preceding settings will be overwritten).
       Note: The Paste function is available only if the Copy function has been used in a preceding step.

✎   Click on the **Reset** key to turn all filters off, set the Z value to 1 and all GAIN values to 0.

✎   Click on the **Help** key to edit the **"ARRAY MORPHING - White paper"**.
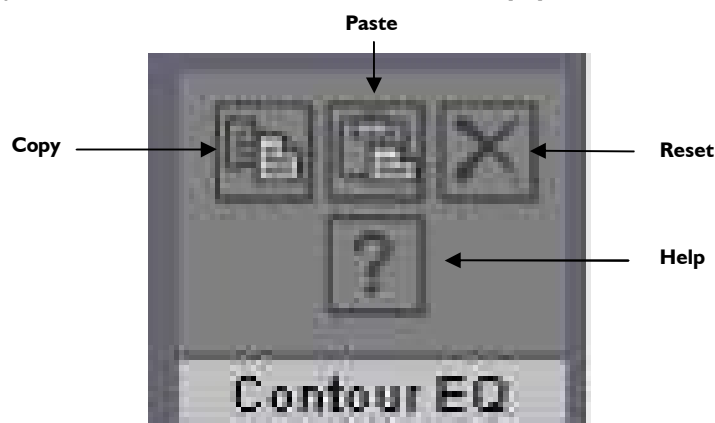
Figure 28: Contour EQ menu

6.6 Command toolbar

6.6.1 Overview

The **Command toolbar** features System File management, L-NET Network connection, software option menus, and information upon the software.
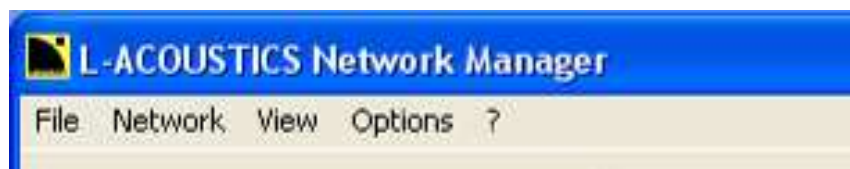
Figure 29: The Command toolbar

6.6.2 "File" menu

The **"File"** menu provides System File management.

✍ Click on the **"File"** key.
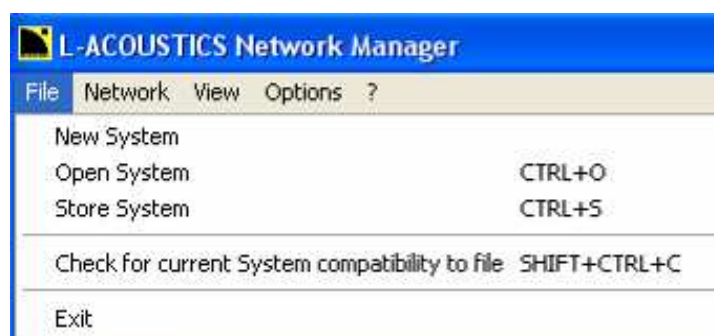
Figure 30: The "File" menu

New System

This function edits a new System by choosing between three possible ways: creating (Offline), opening (Offline), or retrieving (Online).

✍ Click **"New System"**, follow the instructions given in section 6.1.3.

⚠ **IMPORTANT**

This function automatically cancels all eventually prior edited Current System.
If a Physical Unit pertaining to a Group has been disconnected from the L-NET Network when using the **"New System"** function the Group and Unit Parameters (see section 6.4) remain active into the Physical Unit.

Open System

This function edits a System that was previously stored in a file. Editing is possible in both Offline and Online Modes.

↳ Click **"Open System"**, browse for a System File (**"*.system"**), click **"OPEN"**.

> ⚠️ **IMPORTANT**
>
> When a Current System is already active, opening a System File is only possible if the System stored in it is compatible (see the Glossary chapter 9) with the Current System. If both Systems are not compatible a conflict list is edited (see the Troubleshooting section 7.3).

> ⚠️ **IMPORTANT**
>
> A Preset can be opened from a file only if it is part of a User Memory Location (from 1 to 10). If a Preset, at least, is part of a Factory Location (from 11 to 99) a message will prompt the user to select a User Memory Location in which each Preset will be stored as the System is opened.

Store System   This function stores the Current System to a System File.

↳ Click **"Store System"**. In the new window browse for the desired directory location and keyboard the System File name, click **"SAVE"**: the **"name.system"** file will be saved into the chosen directory location.

> ⚠️ **IMPORTANT**
>
> A Preset can be stored to a file only if it is part of a User Memory Location (from 1 to 10). If a Preset, at least, is part of a Factory Location (from 11 to 99) a message will prompt the user to store all Presets to User Memory Locations before storing the System to a file.

Check for current System compatibility to file

This function checks if a System stored in a System File is compatible (see the Glossary chapter 9) or not with the Current System.

↳ Click **"Check for current System compatibility to file"**. In the new window browse for a System File (**"*.system"**), click **"OPEN"**: if both systems are compatible the ''The loaded system is compatible to the current system'' message is displayed, in the opposite case a conflict list is displayed (see the Troubleshooting section 7.3).

Exit

↳ Click **"Exit"** to close the LA NETWORK MANAGER software.

> ⚠️ **IMPORTANT**
>
> When working in the Online Mode all synchronized Physical Units will be disconnected, but the Group and Unit parameters (see section 6.4) will remain active into each one. They can be retrieved later using the **"Retrieve System From Network"** function (see section 6.6.3).

> ⚠️ **IMPORTANT**
>
> Consider a Physical Unit in the Standalone Mode. If some Group Parameters remain active in it, they cannot be seen and accessed via the front panel user interface, and they are not preset dependent (they will remain the same even if a new Preset is loaded). Therefore, when recuperating a Physical Unit for a Standalone application that has been previously used within a L-NET Network, L-ACOUSTICS® recommends using the CLEAR GROUP PARAMETERS function in order to clear all Group Parameters (see the **"LA4"** or **"LA8 - User Manual"**).

6.6.3 "Network" menu

The **"Network"** menu provides System transfer management between the software and the L-NET Network.

✍ Click on the **"Network"** key.

Figure 31: The "Network" menu

Send System to Network…

This function sends the Virtual System into the Physical Units connected to the L-NET Network.

✍ Click **"Send System to Network…"**. In the new window click **"YES"**: the Physical System is scanned. In the second new window click **"OK"**: the Virtual System will be loaded into the connected Physical Units and the old Physical System will be overwritten, the new Physical System will become the Current System as the Online Mode will be activated.

⚠ IMPORTANT

The **"Send System to Network…"** function works only if:
- An L-NET Network is synchronized with the PC and the PC and Units IP Addresses are evenly set (see chapter 5 for instructions, and section 7.3 for troubleshooting).
- The Virtual System is compatible (see the Glossary chapter 9) with the Physical System (if both Systems are not compatible a conflict list is edited: see the Troubleshooting section 7.3).

⚠ IMPORTANT

A Preset can be sent to a Unit only if it is part of a User Memory Location (from 1 to 10).
If a Preset, at least, is part of a Factory Location (from 11 to 99) a message will prompt the user to store all Presets to User Memory Locations before sending the System to the Network.

Retrieve System from Network…

This function retrieves the Physical System so that it becomes the Current System. The Online Mode is activated.

✍ Click on the **"Retrieve System from Network…"** function, click **"YES"**. The application will scan the IP address range set in Figure 11 and a message will be displayed for each unit not found in the range.

⚠ IMPORTANT

The **"Retrieve System from Network…"** function only works if a L-NET Network is synchronized with the PC and if the PC and Units IP Addresses are correctly set (see chapter 5 for instructions, and section 7.3 for troubleshooting).
This function automatically cancels all eventually prior edited Current System.
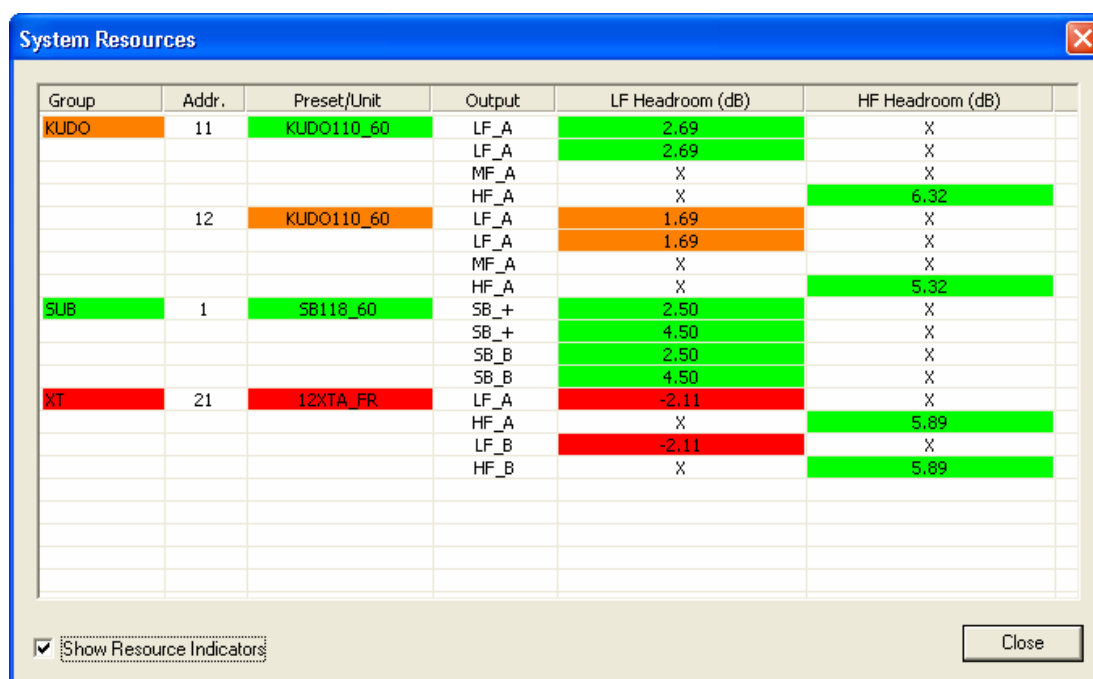
Show System Resources

Any GAIN or Z value modification in the Control or "Contour EQ" window will affect the available power resources (Headroom) for the loudspeakers connected to the corresponding Output Channel, Unit, or Group. The **"Show System Resources"** function allows the user to control at all time if the Headroom is large enough for each loudspeaker in the Current System.

✥ Click on the **"Show System Resources"** function: the "System Resources" window opens.

The "System Resources" window displays the Headroom in dB for each Output Channel in the Current System. The Headroom values are given for both LF and HF loudspeaker sections in both right columns (see Figure 32).

Group	Addr.	Preset/Unit	Output	LF Headroom (dB)	HF Headroom (dB)	
KUDO	11	KUDO110_60	LF_A	2.69	X	
			LF_A	2.69	X	
			MF_A	X	X	
			HF_A	X	6.32	
	12	KUDO110_60	LF_A	1.69	X	
			LF_A	1.69	X	
			MF_A	X	X	
			HF_A	X	5.32	
SUB	1	SB118_60	SB_+	2.50	X	
			SB_+	4.50	X	
			SB_B	2.50	X	
			SB_B	4.50	X	
XT	21	12XTA_FR	LF_A	-2.11	X	
			HF_A	X	5.89	
			LF_B	-2.11	X	
			HF_B	X	5.89	

☑ Show Resource Indicators   Close

Figure 32: The "System Resources" window

For more visibility, the background color of each Headroom cell acts as a loudspeaker power resource indicator. The color code is the following:

- GREEN = loudspeaker in a safe range (Headroom > 2 dB).
- ORANGE = loudspeaker near the critical range (-2 dB ≤ Headroom ≤ 2 dB).
- RED = loudspeaker in a critical range (Headroom < -2dB).

⚠ CAUTION

When modifying a GAIN or Z value, ALWAYS verify that the Headroom of the corresponding loudspeakers remain in the GREEN range.

The ORANGE color indicates a potential risk of sound distortion and the RED color indicates a potential risk of serious loudspeaker damage. In both cases, the user may decrease the corresponding GAIN and/or Z value (e.g. increase the Headroom value) until the GREEN range has been reached.

In the same way, each Unit cell background color indicates the worse case among its four Output Channels and each Group cell background color indicates the worse case among the Units it contains.

Example: The worse case in the KUDO Group occurs for the LF sections of the #12 Unit which have turned orange. As a consequence, the #12 Unit cell and the KUDO Group cells also have turned orange. All SUB Group Headrooms are in the green safe range. One has to increase the XT LF Headroom as it is in the red critical range.

✎ Select/Unselect the **"Show Resource Indicators"** function (in the bottom of Figure 32) to display/hide the Headroom color code in the Control window (see Figure 33). This function is useful for real-time resource monitoring.
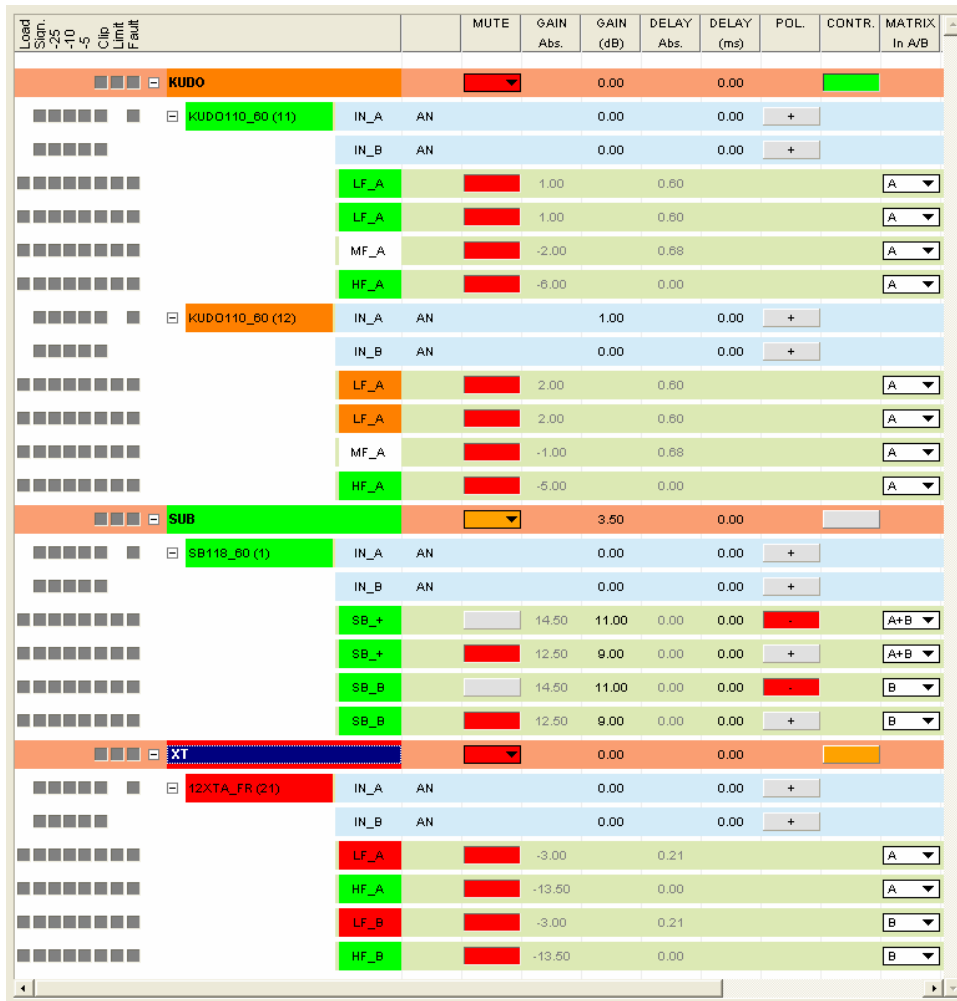
Figure 33: Resource indicators displayed in the Control window

6.6.4 "View" menu

The **"View"** menu allows showing/hiding the Unit and Group Parameters in the Control window (see section 6.4).

✎ Click on the **"View"** key.

Figure 34: The "View" menu

Expand Tree

✎ Clicking on the **"Expand Tree"** function displays the whole available information (Groups and Units Parameters) for monitoring the System.

Collapse Tree

✎ Clicking on the **"Collapse Tree"** function hides the Unit Parameters.

6.6.5 "Options" menu

The **"Options"** menu provides software user interface accessibility settings, maintenance operations, and Physical Unit state management.

✛ Click on the **"Options"** key.

Figure 35: The "Options" menu

Go to USER Mode / Go to ENGINEER Mode…

The **ENGINEER Mode** is dedicated to System creation and installation before the event performance. All the functions are accessible to:

- Create or modify a System setup in the **"Units Over Network"** and **"System/Groups"** windows,
- Modify the Group and Unit Parameters in the **Control window**.

✛ Click **"Go to ENGINEER Mode…"**. If a password has been set: keyboard the password in the new window and click **"OK"**, click **"OK"** in the second new window.

The **USER Mode** is dedicated to the online operations before and during a live show. The accessible functions are restricted:

- Creating a System is not possible and the access to the **"Units Over Network"** and **"System/Groups"** windows is denied,
- opening a System from a file is only possible if this System is compatible (see the Glossary chapter 9) with the Current System,
- Only the authorized Group and Unit Parameters are accessible in the **Control Window**: accessibility is set in the ENGINEER Mode (see the **"Edit Visibility"** function),
- Returning to the ENGINEER Mode can be locked by password (see the **"Settings…"** function).

✛ Click **"Go to USER Mode"** function.

Note: The current mode is labeled on the extreme right part of the **Command toolbar** (see Figure 12).

Edit visibility

Sets each Group and Unit Parameter accessibility (accessible or locked) in the **Control window**. The settings are made in the ENGINEER Mode and the restrictions will apply in the USER Mode.

✎ Activate the ENGINEER Mode (see the function above). Position the mouse cursor on **"Edit Visibility"**. In the new menu click **"User Level"**: the Parameter cells will be colored in green or gray in the **Control Window** (see Figure 36):

- Green color: the parameter will be **accessible** in the User Mode.
- Gray color: the parameter will be **locked** in the User Mode.

Click on each Parameter cell to set the Parameter accessibility (green or gray). Position the mouse cursor on **"Edit Visibility"**, click **"Off"**. Activate the USER Mode (see the function above): accessible Parameters will be displayed and locked Parameters will be hidden (see Figure 37).

Notes: Each accessibility setting uniformly apply for all Units of all Groups. When a parameter is locked by L-ACOUSTICS® the corresponding **"EXT"** cell it is colored in gray. On the contrary case, the **"EXT"** cell it is colored in green.

!
IMPORTANT

The Mute function in the Group Parameters cannot be locked for Online safety purposes.

Figure 36: The "User Level" Control window

(a) (b) (c)

Figure 37: Hiding the Output Channel polarity: (a) ENGINEER Mode, (b) User Level Control, (c) USER Mode

Lock Hardware Keys

↳ Position the mouse cursor on the **"Lock Hardware Keys"** function. In the new menu click on the **"Lock all Units"** or **"Unlock all Units"** function to respectively lock or unlock the front panels of all Physical Units in the L-NET Network.

Notes: This function is useful in the Online Mode but can be set in advance in the Offline Mode and then be sent to the Physical System using the **"Send System To Network"** function (see section 6.6.3).
When a Unit is locked a "key" is displayed in the corresponding **"No."** cell (see Unit #3 in Figure 14).
If trying to press any keys on a locked Unit front panel the "DISPLAY LOCKED" message is displayed on the LCD screen and the action has not effect, even for the **"Mute"** function (see the **"LA4"** or **"LA8 - User Manual"**). This feature prevents any unintentional operation during an event performance, for example.

Power Standby (Online Mode)

↳ Position the mouse cursor on the **"Power Standby"** function. In the new menu click on the **"All Units Power up"** or **"All Units standby"** function to respectively put all the Physical Units in the Operating or Standby Mode.

Notes: Each Unit state is indicated by the color of its IP Address cell in the **"Units Over Network"** window (see section 6.2): the green color stands for the Operating Mode, the blue color stands for the Standby Mode.
When a Physical Unit is in the Standby Mode the four **"Load"** LED lit (on both the LCD screen and software interface) and the message "Standby Mode" is displayed on the LCD screen (see the **"LA4"** or **"LA8 - User Manual"**).

Update (Online Mode)

This function updates the Firmware or the Preset Library for the selected Physical Units (see sections 7.1 and 7.2 respectively).

Input Settings…

This function will be available as a future development as it concerns digital sound signal distribution.

Other settings…

This function sets the **background color** for the different branches of the tree (Groups, Units, Input and Output Channels) in the **Control window** (see section 6.4).

↳ Click **"Other Settings…"**. In the **"Settings"** window (Figure 38), click on the desired background color in the **"Tree Colors"** menu. In the **"Color"** window (Figure 38), set the desired color and click **"OK"**. Click **"OK"** a second time in the **"Settings"** window.

This function sets the **Engineer Password** for the ENGINEER Mode to be locked when trying to switch from USER Mode to ENGINEER Mode (the USER Mode is also activated when launching the software). In that way the user cannot modify the Current System (see the beginning of section 6.6.5).

↳ Click **"Other Settings…"**. In the **"Settings"** window (Figure 38), enter the desired password in the **"Setup Engineer Password"** menu and click **"Set"**. In the **"Confirm with old Password!"** window (Figure 38), enter the old password and click **"OK"**. Click **"OK"** in the new window. Click **"OK"** In the **"Settings"** window.

⚠ Do not to forget the password as it will not be removed
even if uninstalling the software.

IMPORTANT
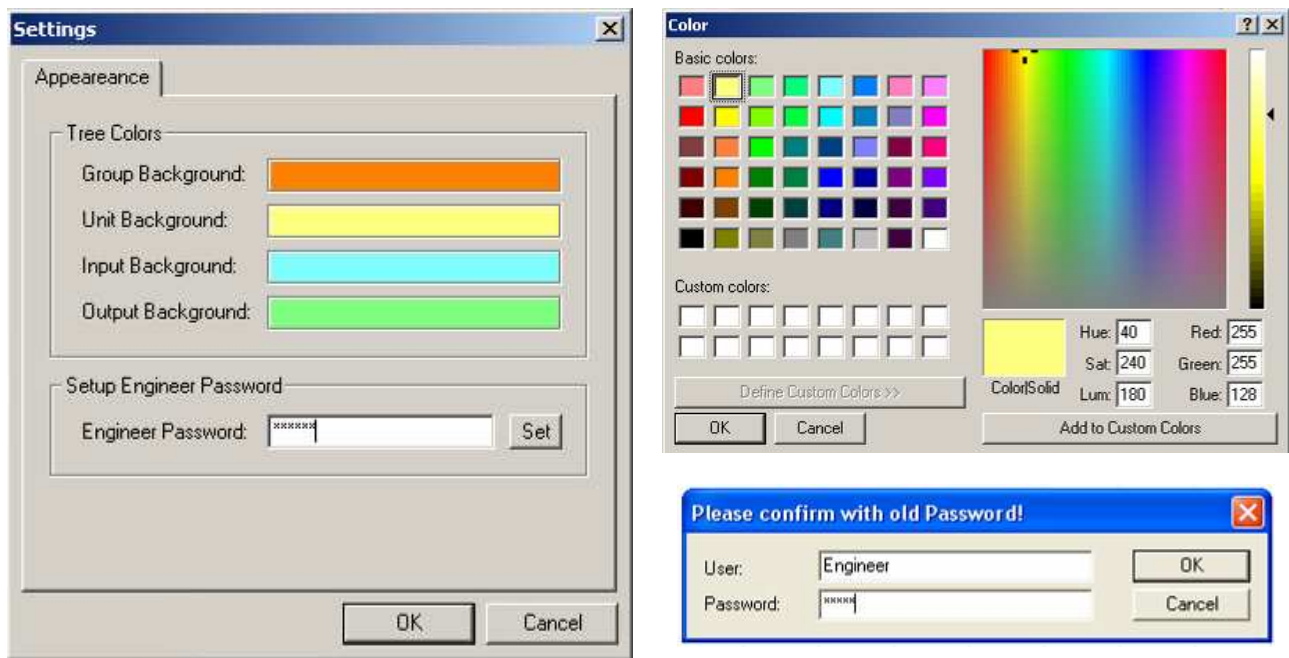
Figure 38: The "Settings", "Color", and "Confirm with old Password!" windows

6.6.6 "?" menu

Displays the software version and the L-ACOUSTICS® web site address for latest Software, Firmware, and Preset Library files download.

↳ Click on the **"?"** key. Click on the **"About…"** function in the new menu: a new window displays the required information. Click on this window to close it.

7   CARE AND MAINTENANCE

7.1   Firmware update

Each Physical Unit is managed by a Firmware (refer to the **"LA4"** or **"LA8 - User Manual"**). Two Firmware Files exist and correspond to the **"LA4"** and **"LA8"** Unit Types. The user should check the L-ACOUSTICS® web site on a regular basis for the latest Firmware version for each Unit Type.

✎   Upload the desired Firmware package and follow the instructions given in the accompanying **"FIRMWARE_UPDATE_PROCEDURE.pdf"** file.

Note: As the Online Mode is launched, LA NETWORK MANAGER (from version 1.2.0.102) will automatically check the Firmware version of each Physical Unit. If no update is needed, the "Addr." cell color will turn green in the "Units Over Network" window and the Unit will be ready for use (see section 6.2.1).
On the contrary, if an update is needed, the "Addr." cell color will turn yellow and a prompting message will be displayed in the "Messages" window (see Figure 39). It will be impossible to connect the Unit until the Firmware has been updated.

Figure 39: Prompting message in the "Messages" window

7.2   Preset Library update

In each Physical Unit is stored a complete onboard OEM Preset Library (see the **"LA4"** or **"LA8 - User Manual"**) to cover all principal L-ACOUSTICS® Loudspeaker System configurations. Two Preset Library Files exist and correspond to the LA4 (**"*.LA4"**) and LA8 (**"*.LA8"**) Unit Types. The user should check on a regular basis the L-ACOUSTICS® web site for the latest Preset Library versions.

✎   Upload the desired Preset Library package and follow the instructions given in the accompanying **"LIBRARY_UPDATE_PROCEDURE.pdf"** file.

7.3 Troubleshooting

This section provides flowcharts to assist the user in troubleshooting problems with LA NETWORK MANAGER. The keys for interpretation of the flowcharts are the following:

| Symptom | Question | Remedy | Comment |
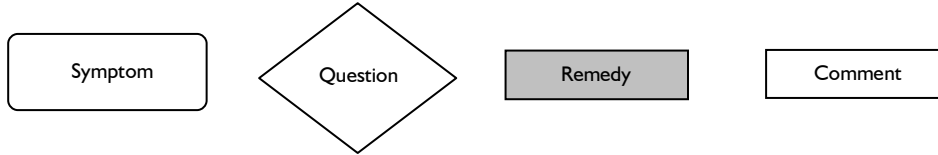
Note: The flowcharts cannot cover every possible scenario the user may encounter.

7.3.1 No Units or not all Units could be found on the L-NET Network

When performing the **"Retrieve System From Network"**, **"Send System To Network"**, or **"Try To Connect"** functions a conflict list (see section 7.3.2) can be displayed indicating that one or several expected Units cannot be found within the L-NET Network. The flowchart below assists the user for troubleshooting:

No Units or not all Units could be found on the Network

Devices switched on? — No → For each device (Unit, Switch), check that power switch is on, AC plug is connected, AC outlet works

Yes ↓

Network Topology and cabling scheme correct? — No → Check for correct Network Topology and cabling scheme (see section 5.2.3)

Yes ↓

All CAT5e U/FTP cables connected? — No → Connect each CAT5e U/FTP cable on both sides: the orange and green LED must lit on each RJ45 connector socket

Yes ↓

IP Address correct on each device? — No → Each device (PC, Unit) has to be identified within the Network by its IP Address in the format **192.168.1.✗✗✗** (see section 5.3). The last 3 digits are chosen between 1 and 254 and **must be different for each device**. L-ACOUSTICS recommends the Address 254 for the PC and the Addresses 1 to 253 for the Units.

Yes ↓

IP scanning range correct? — No → In the launch window (see section 6.1.3), enter IP scanning range containing all the Physical Unit IP Addresses

Yes ↓

Contact local distributor for service

7.3.2   Conflict list

Two Systems are compatible if they are formed of the same number of Units with each corresponding pair having the same IP Address, Unit Type, and Preset Family. If two Systems are not compatible a conflict list is displayed featuring four possible messages:

Message #1: "Not found in actual system!"
Some Units (identified by their IP Addresses) defined in the System File cannot be found in the Current System.

Message #2: "Not found in file system!"
Some Units (identified by their IP Addresses) defined in the Current System cannot be found in the File System.

Message #3: "Wrong Unit Type!"
Two Units of same IP Address are found in both Current System and System File but their Unit Types do not match (LA4 vs LA8).

Message #4: "Wrong Family!"
Two Units of same IP Address and same Unit Type are found in both Current System and System File but their Preset Families do not match.
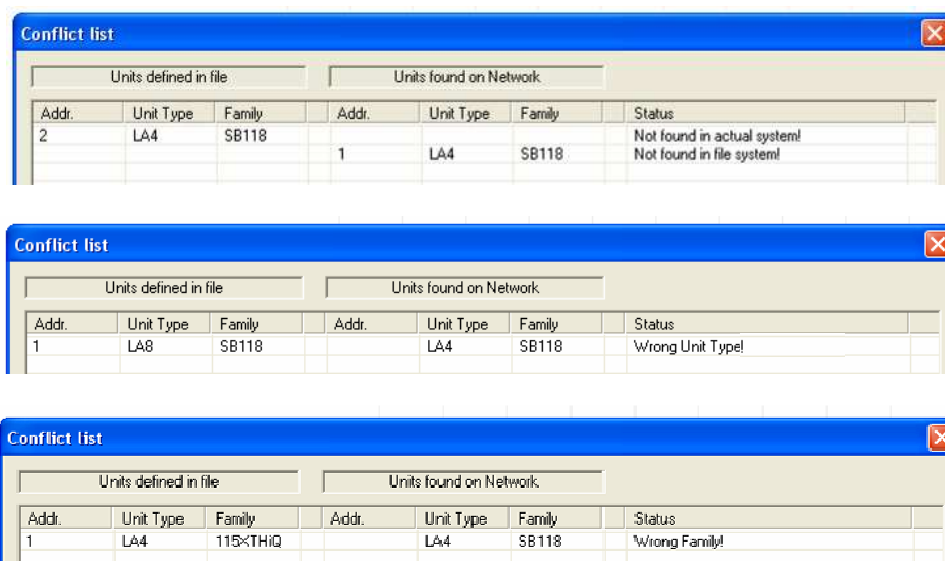
Figure 40: The four messages of the "Conflict list" window: #1 and #2 (top), #3 (middle), #4 (bottom)

The above messages can be displayed when using the **"Check for current System compatibility to file"**, **"Open system"** (section 6.6.2), or **"Send System to Network"** (section 6.6.3) function. For the last one the System File stands for the Virtual System and the Current System stands for the Physical System.

Conflict messages can also be displayed when using the **"Try to Connect"**, **"Modify Unit"**, **"Load Preset from File"** (section 6.2.2), or **"Load"** (section 6.2.3) function.

7.3.3 Impossible to communicate with a Unit found in the Network

```
Impossible to
communicate with a
Unit found on the
Network
        │
        ▼
Unit background           Unit background              Latest
color is blue in    No    color is yellow    Yes    Firmware        No    Install the Firmware of
the "Units     ──────►   in the "Units    ──────►  version     ──────►   latest version in the Unit
Over                     Over Network"              installed in the     (see Section 7.1)
Network"                 window ?                   Unit ?
window ?                    │ No      │ Yes
   │ Yes                    ▼         ▼
   ▼                     Contact a local distributor
Unit in           Yes
Standby    ──────►  Unselect the Standby Mode (see the "Power
Mode ?              Standby" function in Section 6.6.5)
   │ No
   ▼
Latest LA
NETWORK           No    Install the latest LA NETWORK MANAGER
MANAGER     ──────►    software version (see Section 5.1.4)
software version
installed ?
   │ Yes
   ▼
Contact a local distributor
```

Note: The blue color in the "Units Over Network" window indicates that the corresponding Unit is in Standby Mode or that there is communication default with the Physical Unit in Online Mode.

7.3.4 Impossible to load an Output Channel, a Preset, or a System

```
Impossible to load an
Output Channel, a
Preset, or a System
        │
        ▼
"The version of the        Yes     Install the latest LA NETWORK MANAGER
saved file is not    ──────►      software version (see Section 5.1.4)
supported!"
message displayed ?
        │ No
        ▼
Contact a local distributor
```
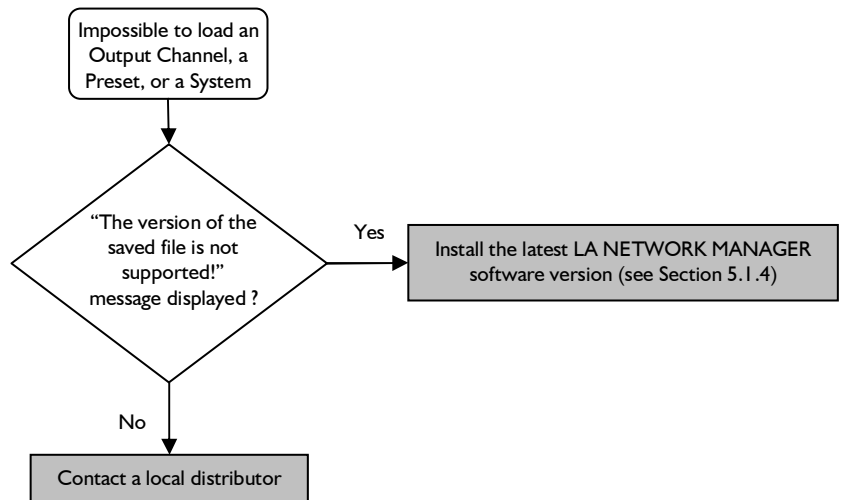
8 SPECIFICATIONS

Operating system	Microsoft® Windows® XP® or higher
RAM	Minimum 512 Mo
Monitor	800 x 600, 24 bits, color
Network Card	100 Mbps Ethernet® card
Network cabling	CAT5e U/FTP or upper category (maximum 100 m/328 ft length)
Units	L-ACOUSTICS® LA4 and LA8 amplified controllers (Units of different Unit Types can be connected within the L-NET Network)
Switch (for Star or Hybrid topologies)	Minimum 100 Mbps with Auto MDI/MDIX functionality

9   GLOSSARY

Channel File   PC file containing a set of Output Channel parameters. A Channel File features the extension **"*.channel"**.

Channel Label   Identification information regarding each Input and Output Channels. The Channel Label is composed of the Channel Type and the Matrix setting. It is displayed on the Input and Output Channel Bars as well as on the main screens of the Physical Units (refer to the **"LA4"** or **"LA8 - User Manual"**).

Channel Type   For an Input Channel: "IN" label.
For an Output Channel: Type of transducer to be driven by the Output Channel. The Channel Type is labeled in the corresponding Output Channel Bar as follows:

PA	Passive enclosure
LF	Low frequency transducer which is part of a 2 or 3-way enclosure
MF	Mid frequency transducer which is part of a 3-way enclosure
HF	High frequency transducer which is part of a 2 or 3-way enclosure
SB	Subwoofer enclosure set in standard configuration
SR	Subwoofer enclosure set in reversed configuration for "cardioid" applications

Compatible Systems   Two Systems formed of the same number of Units with each corresponding pair featuring the same IP Address, Unit Type, and Preset Family.

Contour EQ   WST® Loudspeaker System frequency response setting tool applying uniformly for all Units of a selected Group (see section 6.5).

Current Preset   Preset loaded in a Unit.

Current System   System displayed in the LA NETWORK MANAGER user interface. The Current System can be either a Physical System or a Virtual System.

Current Unit   Unit displayed in the LA NETWORK MANAGER user interface.

Custom Preset   Preset in which at least one Output Channel has been replaced by the user. The resulting Preset is considered as a hybrid one, therefore its Preset Family is automatically renamed as "CUSTOM".

Daisy Chain topology   Series-based network cabling scheme (see section 5.2.3).

DSP   Digital Signal Processor.

FIR   Finite impulse response.

Firmware   Program installed in a Physical Unit. The Firmware manages the Unit internal components (LCD screen display, preset flash memory, L-NET Network path, DSP, and Switch Mode Power Supply: refer to the **"LA4"** or **"LA8 - User Manual"**).

Firmware File   Executable file named **"run.exe"** containing Physical Unit Firmware program source. Two firmware file exist for both the LA4 and LA8 Units. The user should check on a regular basis the L-ACOUSTICS® internet website @ www.l-acoustics.com for the latest Firmware versions.

Full Duplex   Network protocol featuring bi-directional data transmission between the PC and the connected Units.

Group   Set of Units sharing the same Group Parameters.

Group Bar   Horizontal graphic bar (colored in brown in Figure 19) located in the **Control window** for Group Parameter visualization and settings.

Group Parameters   Mute/Solo, Gain, Delay, and Contour EQ parameters applying for all Units of a selected Group. The Group Parameters can be set in the selected Group Bar located in the **Control window**.

Headroom   Difference between the maximum power level a loudspeaker can support and the current level. The Headroom is expressed in dB and can be negative if the maximum level has been overstepped (which may cause serious loudspeaker damage).

Hybrid topology   Network cabling scheme including both Daisy Chain and Star topologies (see section 5.2.3).

IIR   Infinite impulse response.

Input Channel   Signal path and processing, within a Unit, from an Input Connector to the DSP. Two Input Channels are available on each Unit: IN A and IN B (see the **"LA4"** or **"LA8 - User Manual"**). Each Input Channel processing is driven by the Input Channel Parameters displayed in the corresponding Input Channel Bar.

Input Channel Bar   Horizontal graphic bar (colored in blue in Figure 19) located in the **Control window** for Input Channel Parameters visualization and settings.

Input Channel Parameters   Gain, Delay, and Polarity settings that apply for a selected Input Channel. Some parameters are locked by L-ACOUSTICS®. The other ones can be set in the corresponding Input Channel Bar.

Input Connector   Female XLR® or RJ45 socket located on a Physical Unit rear panel (see the **"LA4"** or **"LA8 - User Manual"**) and allowing connection with a Signal Source.

IP Address   The IP Address is a unique Internet Protocol Address to identify each device (PC or Unit) within the L-NET Network. The usable IP Addresses are of the form 192.168.1.✕✕✕, where ✕✕✕ is taken between 1 and 254.

L-DRIVE   Loudspeaker protection module located in each Physical Unit and acting as a power regulator. Refer to the **"LA4"** or **"LA8 - User Manual"**.

L-NET Network   Set of Physical Units synchronized with a PC running LA NETWORK MANAGER using CAT5e U/FTP cables. Communication between the devices (PC and Units) is based on the Ethernet® protocol at a speed of 100 Mbps. Three network topologies are available: Daisy Chain, Star, and Hybrid.

Line Source Array   Loudspeaker System arranged in the form of a vertical or horizontal array and respecting the five WST® criteria.

Loudspeaker System   Set of L-ACOUSTICS® loudspeaker enclosures.

Matrix setting   Parameter selecting the way an Output Channel is driven by the A and B Input Channels. This parameter can be set using the "MATRIX" key located in the corresponding Output Channel Bar. The available Matrix settings are listed below:

"MATRIX" key label	Output Channel driven by the:	Channel Label
A	A Input Channel signal	✕✕_A
B	B Input Channel signal	✕✕_B
A+B	sum of the A & B Input Channel signals	✕✕_+
A - B	difference between the A & B Input Channel signals	✕✕_-

Network Card   PC peripheral device for physical connection to L-NET Network.

OEM Memory Location   Allocated space in a Physical Unit flash memory to store a factory Preset (see the **"LA4"** or **"LA8 - User Manual"**). 89 OEM Memory Locations are available in each Unit (labeled from 11 to 99).

Offline Mode   PC running workflow in which the PC is not synchronized with the L-NET Network (as opposed to the Online Mode). The Current System is a Virtual System. In this mode the user can create/modify the Virtual System in advance with no need to be present at the event issue.

Online Mode   PC running workflow is in which the PC is synchronized with the L-NET Network (as opposed to the Offline Mode). The data displayed on the software user interface (IP Addresses, selected Presets, Unit and Group Parameters) are those of the Physical Units, and are transmitted within the Full Duplex protocol. In this mode the user can control the Physical System before and during the event performance. The Online Mode is activated when a System is sent to or retrieved from the L-NET Network (see section 6.6.3).

Output Channel   Signal path and processing, within a Unit, from the DSP to an Output Connector. Four Output Channels are available on each Unit: from OUT 1 to OUT 4 (see the **"LA4"** or **"LA8 - User Manual"**). Each Output Channel processing is driven by the Output Channel Parameters displayed in the corresponding Output Channel Bar.

Output Channel Bar   Horizontal graphic bar (colored in green in Figure 19) located in the **Control window** for Output Channel Parameters visualization and settings.

Output Channel Parameters   Mute, Gain, Delay, Polarity, Matrix, Contour EQ, and L-DRIVE parameters which apply for a selected Output Channel. Some parameters are locked by L-ACOUSTICS®. The other ones can be set in the corresponding Output Channel Bar.

Output Connector   Female Speakon® or CA-COM® socket located on a Unit rear panel (see the **"LA4"** or **"LA8 - User Manual"**) allowing connection with a Loudspeaker System.

Physical System   System composed of a set of Physical Units connected to the L-NET Network (including the IP Address, selected Preset, as well as Unit and Group Parameters each Unit memory contains).

Physical Unit   Real Unit (as opposed to the Virtual Unit): L-ACOUSTICS® LA4 or LA8 amplified controller.

Preset   Complete set of parameters to drive two Input and four Output Channels. Any Loudspeaker System connected to a Unit must be driven by a specific Preset stored in this Unit.

Preset Family   Set of Presets driving Loudspeaker Systems of same type. All Presets which are part of a particular Preset Family feature the same family name.

Preset File   PC file containing a Preset. A Preset File features the extension **"*.preset"**.

Preset Library   Set of Presets.

Preset Library File   PC file containing a Preset Library. Two Preset Library Files exist and correspond to both LA4 and LA8 Unit Types. They feature the respective extensions **"*.LA4"** and **"*.LA8"**.

Signal Source   Device providing low voltage signal to be connected to a Unit Input Connector. Examples: mixing console or EQ device.

Standalone Mode   Physical Unit operating state in which the Unit is not synchronized with the L-NET Network.

Standby Mode   Physical Unit state in which the Unit is synchronized with the L-NET Network but does not operate (as opposed to the Operating Mode).

Star topology   Parallel-based network cabling scheme including a Switch (see section 5.2.3).

System   Set of Units arranged into Groups, each Unit featuring its IP Address, Unit Type, Preset, Unit Parameters, and Group Parameters.

System File   PC file containing a System. A System File features the extension **"*.system"**.

Switch   Universal Ethernet® device used within a Star or Hybrid topology to connect the Units in parallel within the L- NET Network.

Unit   System basic component, identified by its IP Address and featuring Unit Type, Current Preset, and Unit Parameters. A Unit can be either a Virtual Unit or a Physical Unit. A Physical Unit's flash memory can also contain a Group name and some Group Parameters (see the **"LA4"** or **"LA8 - User Manual"**).

Unit Bar Input and Output Channel Bars.

Unit Type L-ACOUSTICS® amplified controller model: LA4 or LA8.

Unit Parameters Input and Output Channel Parameters.

User Memory Location Physical Unit flash memory space allocated to user modified Preset storage (see the **"LA4"** or **"LA8 - User Manual"**). 10 User Memory Locations are available in each Unit (labeled from 1 to 10).

Virtual System System displayed in the LA NETWORK MANAGER user interface while the PC is not synchronized with the L-NET Network.

Virtual Unit Unit displayed in the LA NETWORK MANAGER user interface when the PC is not synchronized with the L-NET Network.

Operating Mode Physical Unit state in which the Unit is synchronized with the L-NET Network and is operating or ready for operation (as opposed to the Standby Mode).

WST® Wavefront Sculpture Technology®: set of 5 technical criteria to apply to a horizontal or vertical loudspeaker line array in order for it to produce homogeneous sound field with a -3 dB SPL level decay rate when doubling the listening distance. The resulting Loudspeaker system is called a Line Source Array.

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