LanBox-LCX/LCM/LCE user manual

A publication of
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Maassluis, The Netherlands

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Table of contents

Welcome

Welcome to the LanBox system. With the LanBox you've bought a modern desktop DMX controller that can compete with the best. We hope you will enjoy working with your LanBox.

What's in this manual?

This manual is divided into five parts. The first part is a brief introduction, the second part describes how to setup the box and it's software. Part three describes how the LanBox and the firmware actually works. The fourth part explains how to use the box with MIDI or ASCII commands. The last part has trouble shooting, tip&tricks and specifications.

The LanBox-LCX was designed to be used in a network, but can also be used with a personal computer or MIDI equipment using the USB or MIDI ports. These port can also be used to trigger the LanBox-LCX from within, for example, multimedia or MIDI application.

What's packed with the box?

What exactly do you get when you buy a LanBox and what do you need in addition? The main part is the LanBox itself. This small black box harbours a complete DMX controller & sequencer, for up to 512 DMX channels (3072 on a LCX) . On the front of the sturdy black box you'll find at least a DMX output connector (5 or 3 pole XLR), and a RJ45 connector which is either 10-BT network or serial/MIDI port.

Bundled with the LanBox is a CD which contain MacOS and Windows software, manuals and some examples. The software comes on a dual platform CD, so it's readable from Mac as well from Windows systems. The software bundle includes the LCedit+ lighting editor, documentation and MAX examples for Macintosh and Windows.

Also in the box you'll find at least one cable for the connection from your LanBox to your personal computer. The 100-240V AC to 6V power adapter needed for the LanBox is also included, but has European pins (an US plug adapter is included in US versions)

What's not packed with the box?

For connecting the DMX lighting equipment to the LanBox you need a DMX cable with 5-pole connectors (3 pole XLR for LCM) or a 5 pole to 3 pole XLR adapter cable. This cable is not supplied with the LanBox, but are widely obtainable from DMX lighting suppliers.

If your main socket is anything other than European you'll need an additional power adapter plug (travel adapter). The included power adapter is suited for any voltage between 100 to 240V AC 50 or 60 Hz.

If you have DMX devices that work with a 3-pole XLR connector or a 3-pole, old Martin style connector, you'll need an adapter cable. See "About Fixtures and DMX" about the correct pinning of the LanBox-LCX DMX cable.

We don't sell any lighting equipment other than our 788-LD digital dimmer pack. There are plenty of companies that sell or rent all sorts of DMX-512 lighting equipment. To help you get started you will find some links on our web site.

Additional software and new versions

When we ship your LanBox we'll put the latest release of all bundled software in the box. However, because we will continue to develop additional features for a LanBox, you can expect new versions, new examples on how to use the LanBox from various software environments and supporting software at a regular basis. All these new developments will be available on our web site and can be downloaded for free.

We will keep you posted (through e-mail) about new developments, available software and planned revisions. If you have ideas about useful additions, or want to let us know how you use the LanBox-LCX , send an email to: info@cds.nl

TIP: Subscribe to the LanBox-Talk email discussion list, just by sending an email to: lanbox-talk-on@lists.lanbox.com.

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With e.g. an iBook (or PowerBook, notebook) and a LanBox you have a small, but powerful setup for up to 512 DMX channels per LanBox. Triggers from the computer (for example using the bundled LCedit software) and/or using MIDI with a LCX or LCM. Set it up in no time, run the show and get out fast, without any hassle.

LanBox-LCX or LCE.

Connect with the supplied RJ45 (10 BT) network connector of a LanBox to the Ethernet port of a Mac or PC with the supplied cross (black) cable. On a Mac you can use either AppleTalk or TCP/IP as protocol in LCedit+, but on a PC it's TCP/IP only.

USB or ethernet cross cable connection

LanBox-LCX

Alternatively connect the USB cable of the LanBox-LCX to your Mac or PC. The USB connection appears in the serial menu of LCedit+ as Modemxx, no USB installation is required with MacOS or OS X. For a PC you need to install the supplied Win98 or Win2000/XP CDS USB driver from the CD. The USB connection appears in the serial menu of LCedit+ as a COM port.

LanBox-LCM

Connect with the supplied serial cable the LanBox-LCM to the serial port (DB9M) of a portable computer. The connection appears in the serial menu of LCedit+ as a serial port. If your computer has no serial port, but USB only, you need to obtain the optional Keyspan USB<->DB9 high speed serial adapter.

LanBox-LCM serial connection

Computer requirements

Any PPC Macintosh with MacOS 8.6 or later, or a pentium PC with Windows 98SE, 2000 or XP. The computer must have at least an USB (LCX), Ethernet (LCE) or RS232 / USB + adapter (LCM) port, and a 1024x768 colour screen.

The LanBox

Before powering the LanBox, it should be connected to a personal computer with the appropriate cable (if your LanBox has to be connected to an Ethernet hub you should use a normal UTP cable) . A pre-programmed LanBox can however also run a lighting program completely standalone.

One cable to go, the DMX cable. Every DMX chain should be ending with a DMX terminator, so be sure you have one. Connect the DMX cable to your light equipment and the terminator to the last DMX device. If you have DMX equipment that uses 5-pole or 3-pole non Martin cable, you'll need an adapter cable, see also "About Fixtures and DMX".

The LanBox is shipped with a 100-240V AC power adapter, but has European sockets. If your main socket have a different style, you need to obtain a plug adapter (travel adapter).

When you plug the power in, the LanBox will start running (the display of a LanBox-LCM or LCE will show "boot" with walking dots, the most right green led of a LCX should be on). After about 10 seconds the yellow DMX led should start blinking rapidly and the display shows "----" or "====" when the MIDI adapter (LCM only) is connected.

Time to power up your light equipment. It's best to power up light equipment after the cables are in place and the controller is on. This is true for all DMX controllers.

What software should you use.

In order to create/edit lighting scenes and to configure the LanBox-LCX, you should use LCedit+. The lighting editor LCedit+ run on Macintosh (OS 8/9 or OSX), as well on Windows 98SE/2000/XP systems and is capable to communicate via network (AppleTalk, TCP/IP), serial/USB and MIDI (on PCs and OSX serial/USB and TCP/IP only). Instructions and usage of the "Plus" software can be found in the LCedit+ tutorial and LCedit+ reference manual. MIDI and serial usage and commands can be found in the LC+ reference manual and at the "Using MIDI and i/o" chapter.

Using the LCM or LCE with an IR remote controller

The picture illustrates an example of a stand-alone lighting control setup with the LanBox-LCM or LCE for semi-permanent shows and interactive applications using an IR remote control.

For this setup you need a Sony or Philips (RC5) VCR remote controller. You can control the LCM/LCE with most ordinary VCR remote controls, but as there are so many types, you should test the remote controller if it's working with the box.

Note: Default the LanBox-LCM/LCE is configured with four "play" layers called A..D and one edit (load) layer called E. Each play layer can be used to run/load a chase or cue independently, but if there is an overlap in channels the highest layer takes precedence. If nothing is running in the play layers (cue = xx.00), you have full manual control via the edit layer E, see menu 1, 7, 8 and 9.

Using IR control

When we refer below to pressing on a "button", we always refer to buttons on the remote control. The LCM has no buttons itself. The LCM/LCE display-interface is menu-based. When the LCM/LCE starts up, it'll be in the main menu, which only has a display state and normally shows "----". If the MIDI-adapter is connected when a LCM is turned on, then the LCM will enter MIDI-mode and show "====" in the main menu.

You can switch to another menu by pressing the digit corresponding to the menu (see below). The display will briefly show the name of the menu, and after that the value of that menu. When multiple menus have the same number, you can switch between the menus by pressing the corresponding digit button again. You can at any time return to the main menu by pressing the power button.

To edit the value in a menu, press the Play button. The value will now blink to indicate it's in edit mode. You can now use the Channel Up/Down buttons to alter the value, or use the digit buttons to type a new value. You must always type all digits, so if you want to set a dmx value to 5% you'll have to press 0, 0, 5.

When you've set the value you want, you can apply it by pressing the play button again. This may merely store the value, or it may have some action associated with it. See the description of the menus below. To cancel edit mode without applying, press the power button to return to the main menu.

To permanently save the current settings of the LCM, go to the main menu and press and hold the record key until "FLSH" appears on the display. If after 10 seconds the display still remains at "----" (or "====") then your remote control doesn't send signals the way we expect them. You can try repeatedly pressing the record button instead (it may take up to 10-15 presses quickly after each other).

Some menus assign special meaning to various buttons on your remote control. These are listed in the menu descriptions below, and do not apply when you are entering a value. When entering a value, you can only use Channel Up/Down, the digits, play (to apply) and power (to cancel).

IR controller commands

*** Load (1) ***

You can use this menu to load a previously stored scene. When you go to the menu, it shows the most recently loaded/stored scene (2-digit cuelist "." 2-digit cuestep). When you apply a new value, it loads the scene you specified.

As a shortcut, you can use the "Fast forward" and "Rewind" buttons to load the next and previous scene respectively, equivalent to pressing play, channel up/down, and again play.

*** Store (2) ***

You can use this menu to store your lights into a scene. When you go to the menu, it shows the most recently loaded/stored scene. When you apply a new value, it stores the lights (set using menus 7 through 9) into the scene you specified.

*** Fade Time (3) ***

You can set the fade time here, which is stored into the scene along with your lights, and used when you run the cuelist where it determines how long the transition to the new light values should take.

*** Fade number (3) ***

You can set the fade type here, which determines how the fade mentioned above works:

0 - No fade, 1 - Fade in, 2 - Fade out, 3 - Cross fade

4-7 are constant-rate versions of 0-3.

*** Hold Time (4) ***

You can set the hold time here, which is stored into the scene along with your lights, and used when you run the cuelist where it determines how long the sequencer will wait until advancing to the next step.

*** Play (5) ***

Here you can run and stop cuelists/chases. It shows the cuelist.cuestep of the currently selected layer. You can choose between the various layer using the Channel Up/Down buttons. Lights in higher layers take precedence over lower layers when using the same channels.

If you enter a new value and apply, the selected layer it will go to the cuelist.cuestep you specify. If the layer is on a nonzero cuestep (of an existing cuelist), the chaser will start running. You can manually make the selected layer go to the next/previous step using the fast forward/rew keys. When the chaser hits the end of the cuelist, it stops at xx.00 and disables all used channels. You can manually stop by pressing stop. You can use the pause button to pause and resume the chaser.

Note: Whether and when a started cuelist will step automatically to next step is dependent of the programmed hold time of a step, if it is "for ever", it will stay at that cue until a "Next" or other cue number is entered.

*** Chase speed (6) ***

Here you can change the speed of the chaser of the currently selected layer (which you can select in menu 5). This only affects hold times, not fade times.

*** Chase mode (6) ***

Here you can change the mode of the chaser of the currently selected layer (which you can select in menu 5):

0 - No Chase (same as Up, except chase speed is ignored)
1 - Up, 2 - Down, 4 - Random, 6 - Bounce
2 - Up Loop, 3 - Down Loop, 5 - Random Loop, 7 - Bounce Loop

Note that in "loop" modes, the chaser will never finish, until you press the stop button while in menu 5.

*** First channel (7) ***

Here you can set the first channel of the range of light channels you want to view/set. When you change the first channel and apply, the last channel is set to the same value, therefore creating a range containing only the channel you chose. To select a range of multiple channels, first the first channel of the range, and then the last channel.

*** Last channel (8) ***

Here you can set the last channel of the range of light channels you want to view/set.

*** Value (9) ***

Here you can view/change the value of the selected range of channel. Initially all channels are disabled. You can enable the selected channels by setting the value to some value, and disable them by setting them "below 0". If you have multiple channels selected, it shows the value of the first channel, however when you alter the value, all selected channels will be affected. When you store a scene, only enabled channels are stored. When building cuelists, make sure all channels involved in the cuelist are enabled, and all channels not involved in the cuelist are disabled.

*** Shortcuts in menus 7, 8 and 9 ***

You can use the Fast Forward and Rewind buttons to quickly select the next/previous enabled channel, Channel Up/Down to change the value of the selected channels, and Stop to disable the selected channels.

**** Configure (0) ***

Menu 0 is for configuration. You have to press play, enter a 4-digit configuration code, and press play again to enter a specific configuration sub menu.

*There is currently only one configuration sub menu: Erase All (9172). To erase all settings and light scenes/chases (permanently: you can't undo by unplugging the LCM), go to this sub menu and press and hold down the Record button for a while. Note that we deliberately picked a sub menu number you'll certainly never type accidentally.

What is DMX

DMX is a protocol for light equipment. You can compare it with RS-232, a protocol for computers, or MIDI a protocol for music instruments. With DMX you can control light equipment remotely. The current DMX standard is called DMX-512 USITT 1990, to which all LanBoxes complies. From 2004 a newer standard DMX512-A will be introduced, and as far as we know do the LanBoxes also comply with it.

Do all lights use DMX? Well, almost all professional light equipment uses it, and for light equipment that only has a power plug there are DMX dimmers. DMX dimmers provide DMX control for more simple, non DMX lights. CDS advanced technology bv has developed its own digital DMX dimmer, the 788-LD, read all about on the product page of our web site.

With DMX you can control all aspects of a light source remotely. For instance, intensity and on more professional lights, colour, prism, direction, beam angle and so on.

Every DMX device has two XLR connectors, a DMX address and a DMX range. The two connectors are for the DMX cable. The DMX cable from the LanBox goes into the DMX input of the light device. The other DMX connector (DMX output) is used to connect the next light device in the chain.

Every DMX device has a DMX address. The LanBox support up to 512 addresses. Each DMX device must have it's own address. However most DMX devices use more than one address. For instance a Martin RoboScan Pro 518 uses 9 addresses. When you select DMX address 1 on the RoboScan it will use addresses 1 to 9. The next DMX device should start at address 10.

The LanBox supports up to 512 DMX channels. This means that you can hook up to 56 Martin RoboScan 518s to a LanBox-LCX. More simple lights, like a Par, use only one DMX channel.

The LanBox supports DMX patching. In the editor you'll use light channels (in stead of DMX channels), a DMX patcher will assign a light channel to one or more DMX channels. This can be very convenient when you're working with different lighting setups often. You can read more about the DMX patcher and its uses in the LCedit manuals.

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XLR connector pin layout

DMX is a standard protocol for lighting equipment. Unfortunately three different kind of cables and connector are used to carry the protocol. All these types of cables can be used in a mixed fashion, but it's very hard to find out what's wrong when it's not working. There are two kinds of connectors in use; 3-pole and 5-pole. The LanBox-LCX and LCE uses the 5-pole connector. Below are descriptions on how to make an adapter cable. If you're using all 3-pole cable and it doesn't work, you'll probably need to swap pin 2 and 3. It's a drag, we know, but there's not a lot we can do about it.

5-pin XLR output to 3-pin XLR input DMX cable

Description	5-pin male XLR	3-pin female XLR
(0V) Screen	1	1
(-) signal	2	2
(+) signal	3	3
Not used	4	-
Not used	5	-
Metal housing	Safety ground, do NOT connect with pin 1.	

3-pin XLR output to 5-pin XLR input DMX cable

Description	3-pin male XLR	5-pin female XLR
(0V) Screen	1	1
(-) signal	2	2
(+) signal	3	3
Not used	-	4
Not used	-	5
Metal housing	Safety ground, do NOT connect with pin 1.	

Note: Some fixtures (or dimmers) are not DMX compatible, but use a different protocol, this will not work with the LanBox. Be sure your lighting equipment conforms to the DMX-512 USITT 1990 protocol (or better the new DMX512-A), else you need a convertor/translator.

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Introduction to MIDI and i/o usage with the LanBox-LCX or LCM

MIDI is a very often used protocol in the music world, so there are lots of controllers that can be used together with a LanBox-LCX or LCM . We'll give you some examples.

The most simple way is to connect a MIDI keyboard directly to the LanBox. You can play notes on the keyboard and the lights on the corresponding DMX channels will follow what you play. If you select an instrument on the keyboard (which is a program change) you select a cue list in the LanBox. (Make sure the MIDI send channel on the keyboard corresponds with the MIDI receive channel on the LanBox-LCX or LCM).

Another powerful way to control lights is using a programmable MIDI command station with sliders and/or buttons, like the Peavey PC1600 X.

The more expensive MIDI keyboards have built-in sequencers. You can use these sequencers to make the light show run in sync with the (MIDI) song. Reserve one MIDI track for the LanBox. You still have the option of using select scenes (program changes) or individual DMX control (note-on) or both.

The only problem with using a sequencer for individual DMX control is that a sequencer will send note-on and note-offs in pairs. On a note-off the LanBox will set the corresponding DMX channel to zero. However you can use the Sustain (Collect note-offs) or the Portamento (Ignore note-offs) Controllers to prevent this.

Of course you can use more advanced computer based sequencers (like EMagics Logic, MOTUs Performer or Cubase), for the same purpose. These sequencers normally give you a lot more control, but you'll need a (portable) computer in your setup.

You can also use the MAX-MSP MIDI audio video programming environment to let you imagination really run wild. With MAX you can do very complicated MIDI tricks in a very simple way. In the LCedit+ bundled software you can find examples of how to use the LanBox with MAX.

Note: Besides NoteOns and Program Change there are many MIDI messages supported by a LanBox, actually you can control the box completely with MIDI, but also with SysEx, and MSC (Midi Show Control). For a description of all commands see the LC+ reference manual.


External i/o usage

A LanBox can be used stand alone (without a computer attached to it). Users have expressed the need for attaching sensors like switch, bend, touch, near, etc. in order to Go to a scene or chase depending on the state of the sensor. The LanBox-LCM has two contact inputs when using the MIDI adapter (picture right). The LanBox-LCX has eight analogue inputs and eight digital outputs to accomplish this. The analogue inputs have an input range of 0-5V with 10 bit resolution and the outputs switch between 0 and 5V. Sensors like Infusion system make them can used for this purpose, but any (resistance or active) sensor will do.

LCX i/o Connection

The LanBox-LCX has a 37 pole D-sub connector at the back labelled 'In/Out'. Analogue sensors should be connected between the In and 0V and can use the 6V (via a diode) as supply. Using switches as sensor is possible if you connect the input via a 47K resistor to the 6V and switch the input to 0V. The digital output can supply max 20mA, so can be used directly for low loading actuators.
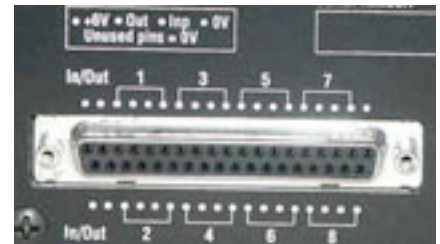
Protocol with the LC+ firmware:
With the step action "Go on input" it's possible to jump on a value larger, smaller or equal then preset value. With the External outputs patcher you can map the digital outputs to light channels. For examples see also the LCedit+ tutorial.

Note
We will not supply actual sensors or actuators, just supporting the possibility in hardware and software.

Building an Ethernet network

Building an 10 or 100-BT Ethernet network is not difficult or expensive anymore, and has big advantages over e.g. USB or serial connections. This type of Ethernet is galvanic isolated from each device, the cable length can be up to 300 meters. The 10 or 100-BT means 10 or 100 Mbit twisted pair cabling, also called CAT 5 cabling. Such a network is built as a "star" topology, which means each device is connected with it's own cable to a central point, called "hub" or "switch".

Hubs are widely available and have 4, 8, 16 or more ports. A port is like a big telephone socket but now with 8 pins and it's called RJ45. Each network device (computers, ADSL modem, LanBox-LCX or LCE) must have it's own cable to the hub.

The TCP/IP protocol

Once you have an Ethernet network, you must setup the devices to use it with TCP/IP. This protocol (also used on the Internet) is the most used protocol today, but others also exist (e.g. EtherTalk). As long as you use your network only for the LanBoxes, the setup is not critical, but if you also have access to the Internet via an ADSL or Cable Ethernet modem, it must be planned.

Each TCP/IP device must have an IP address and a so called mask. As near all IP addresses are reserved for the Internet and must be unique world wide, you can NOT take a random address for private use. There are two common ranges of IPs reserved for private use; the 10.0.0.0-10.255.255.255 and 192.168.0.0-192.168.255.255.

As the default IP of a LanBox is 192.168.1.77 with the mask on 255.255.255.0 it is the easiest way to make your local net 192.168.1.0-192.168.1.255. It should be noted that the first address (.0) can not be used as it is the cable address, while the last one (255) can also not be used as it is the broadcast address. Note: With the 255.255.255.0 mask your local network is limited to 254 addresses.

If you turn on NAPT in your ADSL/Cable modem (standard in most modems) and set the local address of the modem to 192.168.1.1 (this is the gateway address in the TCP/IP settings of all other devices), you can use your LanBox and have Internet at the same time. If your modem also has a fixed internet IP, you can even make your LanBox accessible from the Internet by mapping TCP port 777 to 192.168.1.77. just like demo.lanbox.com ;-)

Testing your network

If you have an ADSL/Cable modem which also provides automatic addresses (DHCP server is On), the TCP/IP setting on your computer should be "Automatic", otherwise set it to 192.168.1.2, mask 255.255.255.0 and no "Gateway".

Note: The gateway is the device to which all non local addresses are send, in order to send it to other networks (e.g. the Internet).

Assuming all cabling is connected and the Link LEDs are on, you want to know if your network is working. You could try with LCedit+ to connect via TCP/IP to 192.168.1.77 (the LanBox), but a simple test is using the "ping" program which is on near every computer. From the command line (DOS in Windows, or Terminal in OSX) type: ping 192.168.1.77 and return. You should see something like:
PING 192.168.1.77 (192.168.1.77): 56 data bytes
64 bytes from 192.168.1.77: icmp_seq=0 ttl=254 time=4.057 ms
64 bytes from 192.168.1.77: icmp_seq=1 ttl=254 time=3.922 ms

This indicates good working of the connection between your computer and the LanBox. The same way you can test your modem and other computers.

Note: If you are using multiple LanBoxes, be absolute sure that each box has an unique IP address -and- an unique LanBox name!

The electronics in the LanBox-LCX, LCE and LCM

The LanBox houses an industrial embedded microprocessor system, with the following features:

- 1MB FlashPROM, enables easy upgrading of firmware and is used as non-volatile storage for lighting scenes.
- 500KB, RAM memory.
- Balanced, filtered and spike protected DMX output (conforms to DMX-512 USITT 1990 protocol), with diagnostic LED.
- Balanced, filtered and spike protected DMX input (LCX).
- RS232/MIDI and IR interface with input LED (LCM).
- Four digit green LED display (LCM and LCE).
- 10-BT Ethernet and IR interface with input LED (LCE).
- 10-BT Ethernet interface with link and activity LED (LCX).
- USB interface with link and activity LED (LCX).
- MIDI interface with input and output LED (LCX).
- Analogue/digital i/o interface (10bit high speed A/D, LCX).
- Black extruded aluminium case, withstand On-The-Road conditions.
- CE and FCC approved, so low radiation and highly sustainable to RFI.
- A LanBox is developed and produced under ISO 9001 quality control.

Last resort: clearing the box

On the printed circuit board you see (besides all kind of electronic components) a small push button. If you ever loose your password this button can save you. When pressing it for more then 10 seconds, when the box is powered up, it clears ALL memory including the password.

Note: When you have cleared the LanBox with this button, the password is 777, the name of the box is "LanBox-LCX-1" (or "LanBox-LCE-1", or "LanBox-LCM-1"), it's IP is 192.168.1.77 and ALL lighting settings and programs (including the firmware) are gone.

Note: Uploading firmware can only be done with LCedit+ v3.2.1 or higher.

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The operation of the LanBox firmware

When we ship a LanBox we'll always load the latest firmware into the box. New versions can be downloaded from our web site for free.

The firmware has a fast file system in order to store and retrieve all kind of data in a very efficient way.

An engine (from now on called Layer) gets data delivered to it's light channel(s) as a result of a request from the sequencer to the file system or it's delivered by network, MIDI or USB commands. As a result of this, the status of a channel which has data will be "active" and (when "Auto Output" is on), the channel output is also switched on. As the result of new data, faders are started for each enabled channel .
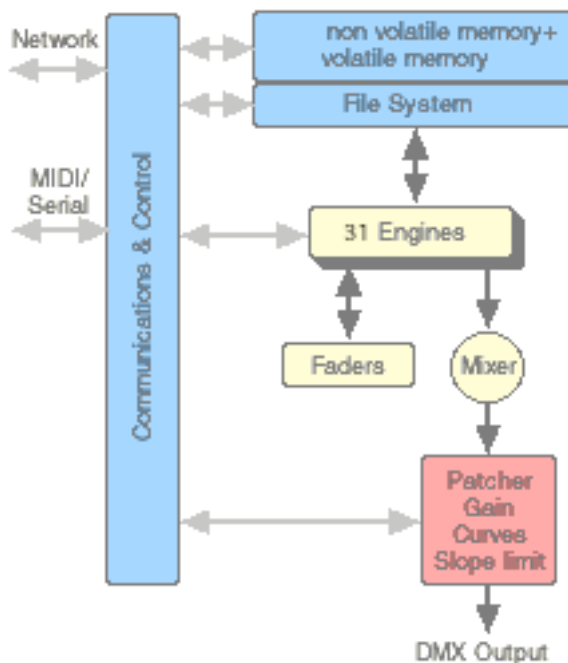
Light channels

The "active" status of a channel marks that it is used and should be stored when inserting/appending/replacing a scene. The active status is cleared for all channels when the sequencer requests a new scene or by hand with the "clear layer" command. When the output status of a channel is on, the data from the faders are fed into the mixer. The mixer works like layers in Photoshop and can be set for each layer (engine) to Copy, HTP, LTP and transparent mode. The order of the layers is from the top layer (has the highest priority), to the lowest layer and can be reordered at any time. Layers can have an ID (like A) so that they can easily be referenced.

Note: Each layer has a master output switch, in order to override the channel output switches. If you turn off the auto output and the master output you can view/edit scenes while the data is not going to the mixer (blind editing).

Post processing

After the mixer the data of each light channel is mapped to a DMX channel (patcher), multiplied by the channel gain (channel masters), translated via a curve and limited in change rate (slope limiting). The resulting data is placed in the DMX output buffer and sent to the DMX cable 20 times per second.

The sequencers

Each layer has it's own sequencer in order to automate loading of scenes or do special actions. A so called step (there are maximal 99 steps per cue list) contain instructions for the sequencer and can hold scene data when it is a scene instruction. The LanBox has many possible actions (see reference manual), but most of the time they will be just scenes.

Each scene load activates faders with the fade time of the step instruction and is independent of the hold time of the step. This makes it possible to start at a certain time with completely different fade times for different channels or have different fade-in and -out times for a cross fade.

Once a sequencer is enabled (Run) and it has been "Go"ed, it keeps sequencing until the end of a cue list. When the Chaser is set it can keep on going depending of the chaser mode.

LanBox FAQs

Q: Why did you use 3-pole XLR connectors instead of 5-pole XLR on the LCM?
A: A number of reasons for this. First a production reason, this 5-pole DMX connector is not available in printed circuit versions. This would make 5-pole pole connectors expensive for production. Secondly, many of our (multimedia) customers use low cost light systems with 3 pole XLR and therefore can connect without having problems.

Q: Can I use the LanBox-LCM with 5-pole DMX connectors.
A: Yes, 3-pole XLR or 5-pole DMX connectors only have different pin assignments, the DMX protocol is the same. A simple patch cable will do the trick. Refer to page 13 of this manual for details.

Q: How do I know if the LanBox software (firmware) is running?
A: On the front of a LanBox you'll find a yellow DMX output LED. This LED should be blinking at a rate of 20 times a second and indicates that a DMX frame is send. If it is blinking, the software in the LanBox (firmware) is running.

Q: Can I use a LanBox as a protocol convertor?
A: Yes you can, but you'd be using only a fraction of its capabilities. You can use the LanBox as an TCP/IP, AppleTalk to DMX, serial to DMX and MIDI to DMX convertor (depending on LanBox type).

Q: Can I use a LanBox with Windows?
A: Yes, we have a PC (Windows 98SE/2000/XP) version of LCedit+, which communicate with the LanBox through a standard serial/USB ASCII protocol or TCP/IP.

Q: What should I do if the LanBox software is not running?
A: First try to turn the power off and after a couple of seconds back on again. The LanBox should start-up its program now. If it doesn't, you need LCedit+ to (re-) load the LanBox firmware back into the LanBox and start it again. This situation however, should never occur. A LanBox will store it's program in non-volatile FLASH memory and this should not be erased. If you're experimenting with cables of e.g. the serial port and, accidentally, short-circuited some of the pins, this could lead to stopping the LanBox firmware. In this case you should be able to correct the problem by restarting the LanBox.

DMX FAQs

Q: LCedit+ seems to be working, but my lighting equipment does not seem to be working. It's reacting very strangely to LCedit. What's causing this?
A: DMX is a standard protocol for lighting equipment. Unfortunately three different kind of cables and connector are used to carry the protocol. All these types of cables can be used in a mixed fashion, but it's very hard to find out what's wrong when it's not working. There are two kinds of connectors in use; 3-pole and 5-pole. The LanBox-LC and LCM uses the 3-pole connector. See also chapter 2 of this manual. If you're using all 3-pole cable and it doesn't work, you'll probably need to swap pin 2 and 3. It's a drag, we know, but there's not a lot we can do about it.

Q: How do I set the address of my DMX equipment?
A: Most DMX equipment have a set of DIP switches to set the address.

Q: First my DMX equipment worked fine with the LanBox. I added some new equipment and now it doesn't work at all. What can be wrong?
A: The number of DMX devices you can attach to a DMX chain is limited (max. 32) as is the total cable length (depending on the quality of the cable, you should not exceed the 200 to 500 meters mark). If you need more equipment on the DMX chain or more cable length, you'll need a DMX repeater.

Q: My cheap dimmer pack does not work with a LanBox-LCX, but it's working on a simple desk.
A: This happens when a DMX device is NOT fully complying with the standard. The LanBox-LCX sends 512 DMX channels at highest speed to keep latency low, but the receiving DMX device just can't keep up with the speed. As a simple DMX desk is very slow, it will work with such a device. To prevent situations like this, be sure to check that a DMX device complies to DMX-512 USITT 1990, or better (e.g. DMX512-A).

Technical specifications

Dimensions	86 x 104 x 45 mm (LCX: 166 x 104 x 65 mm)
Ambient temperature	0…40 degrees Celsius
100-240 V ac adapter output	6V DC, 3%
Power consumption	max. 10 VA

This device complies with the European low voltage directive and the European EMC directive, according to the following standards:

Electrical safety	EN60950
Emission	EN55022 class B
	EN60555
Immunity	EN500082-1

FCC

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution

The electric safety depends on the used AC-adapter. Only use an AC adapter as specified in the table above that carries the following sign:

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