

# HANDBOOK

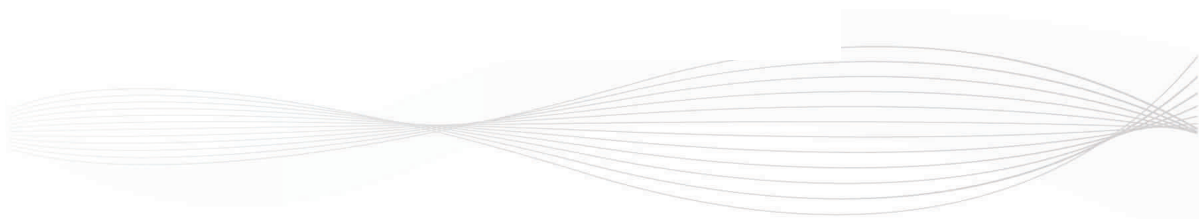
## Leema Acoustics Elements Integrated Amplifier & DAC



ELEMENTS INTEGRATED



LEEMA ACOUSTICS





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## EC Declaration of Conformity

In accordance with EN ISO 17070-1:2004

*We* **Leema Electro Acoustics Limited**

*of* **Llanfair Caereinion  
Welshpool  
Powys  
UK**

*in accordance with the following Directive(s):* 2006/95/EC The Low Voltage Directive      2004/108/EC The Electromagnetic Compatibility Directive

*hereby declare that:*      Equipment HI-FI Integrated Amplifier Model Name **ELEMENTS INTEGRATED AMPLIFIER & DAC**

*is in conformity with the applicable requirements of the following standards*

Standard. No.	Name	International Equivalents
BS EN60065; 2002	Electrical Safety Requirements	EN60065; 2002 / IEC60065; 2001
BS EN 55020; 2002	EMC Immunity	EN55020; 2002 / CISPR 20; 2002
BS EN 55013; 2001	EMC Emissions	EN55013; 2001 / CISPR 12; 2001
BS EN 61000-3-2; 2001	EMC Limits for Harmonic Emissions	EN61000-3-2; 2000 / IEC61000-3-2; 2000
BS EN 61000-3-3; 1995	EMC Limits for Voltage Fluctuations	EN61000-3-3; 1995 / IEC61000-3-3; 1994

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives and Standards.



Signed by: .....

Name: **Mallory Nicholls**  
Position: **Technical Director**  
Done at: **Leema Electro Acoustics Ltd.**  
On: **08/7/2011**



## Introduction

Congratulations on your purchase of a Leema Elements Integrated amplifier.

The Leema range of products has been painstakingly engineered in the United Kingdom to offer genuine state-of-the-art performance.

Partnered with suitable equipment, Leema amplification will provide audio performance far beyond that of competitors and will equal or better the performance of products costing many times their purchase price.

A notable feature of all Leema amplification is incredible bass power and control, due to massive current capability, together with superb clarity and finesse in the upper frequencies with stunning realism in the midband.

Purchasers should read and follow this instruction manual, paying particular attention to the user installation and safety advice section.

This manual has been written to enable you to achieve the very best performance and maximum listening pleasure from your investment.

We wish you many years of pleasurable listening... Move Your World!

With best regards

The Leema Team.

## **VERY IMPORTANT**

Before connecting your new Leema amplifier to the rest of your system, please ensure that the loudspeaker cables are correctly and firmly attached to the 4mm banana sockets on the rear of the unit. All required sources should also be connected **BEFORE** inserting the mains power lead and powering for the first time. Although the Elements Integrated amplifier has short-circuit protection, shorts should be avoided to reduce the stress on the amplifier.

### **User installation and safety advice**

Please ensure that the mains voltage of your new Elements Integrated amplifier is correct for your region. The setting is displayed on a label above the mains power inlet. The mains voltage setting is not user adjustable, therefore the amplifier must be returned to the manufacturer if any changes are required.

Ensure the mains supply is switched off at the wall socket, or unplugged before installing or moving the amplifier.

Do not use near water, for example do not place a potted plant on top of the unit or allow drinks to be placed near the unit. If liquid is spilt in to the cabinet, remove the mains lead from the wall immediately. The amplifier should then be returned to your dealer for safety testing before re-use. Failure to do so may result in electric shock or even fire! Do not use the amplifier in damp conditions, e.g. outside of the house.

Keep away from direct sunlight and other heat sources and ensure adequate ventilation around the amplifier to maintain proper cooling. Units **MUST NOT** be stacked directly on top of each other.

Never attempt to open the cabinet. There are no user adjustable parts inside and doing so will invalidate the amplifier's warranty.

In the event of an electrical storm, remove the mains power lead from the wall outlet.

## Overview

As with all high-powered amplifiers, high voltages can occur at the loudspeaker sockets. Connection should only be carried out with the unit switched off. **Neither of the Black negative connectors are Earth.** 4 mm banana type plugs must be used.

## Elements Integrated overview

The Leema Elements Integrated is a high power output, microprocessor controlled, stereo integrated amplifier and high-performance DAC. It is capable of class-leading performance at the heart of an audiophile stereo system, but thanks to the LIPS (Leema intelligent protocol system) interface, it can also be the centre of a stunning home cinema or surround music system. Each component in the system dynamically configures in real time depending on the requirements of each input source. The microprocessor gives an unprecedented degree of sophistication, making Leema products easy to use for all the family.

## Environmental Issues

Leema operates a 100% recycling program. All waste materials generated as part of the manufacturing process are recycled via a licensed specialist company. The power drain from all Leema electronics, in standby or power off modes, has been optimised to a negligible level. All Leema amplifiers have been designed to attain full operational specifications and sound quality within a few minutes of switch-on.

## Made in the UK

Leema electronics are designed and manufactured in the UK.

## Contact Us

Leema may be contacted via our website: [www.leema-acoustics.com](http://www.leema-acoustics.com) or by telephone: +44 (0)1938-811900

**Rear Panel**

**Digital connectivity**

Three optical inputs to the 24 bit 192kHz DACs are provided, along with a coaxial input and a USB connector for use with a computer.

**'LIPS' connectors**

This allows communication between various Leema system components.

**Loudspeaker Outputs**

The loudspeakers connect here. Ensure correct polarity:  
 Red terminal is +  
 Black terminal is -  
**WARNING**  
 Black terminals are NOT grounded. Do not make connections with unit connected to the mains supply.  
 4mm banana type plugs **must** be used.



**Balanced Inputs**

Balanced connection is possible with a suitably equipped source, such as an Elements CD player, via XLR connectors.

**Analogue Inputs**

When an Elements integrated is used in a stereo system, inputs 1, 2 and 3, may be used to connect stereo analogue sources, for example a tuner, tape player or set top box.

If the Elements integrated is part of a multi-channel system, in 1, 2 or 3 can be used for the multi channel source's front left and right outputs

**Pre-Amp Output**

This output may be used for bi-amping or for feeding a multi room installation.

**Power Inlet**

Ensure that the specification indicated above the connector is correct for your area. Voltage rating is not user adjustable.



## Connections

### Analogue Input connections

**BALANCED**> The Elements Integrated amplifier features a stereo balanced input facility via two XLR type connectors on the rear panel. These can be used to connect any balanced output equipped source, such as the Elements CD player.

**IN 1/IN 2 /IN 3**> The analogue inputs should be connected directly to the analogue outputs (usually marked left/right and colour coded white/red) of any suitable analogue source, such as a CD player or Tuner. Each individual input's name can be edited in the setup menu, to display the source component's name on the LCD display when changing inputs (see page 12).

**Jack**> The Elements Integrated's **Jack** input, on the front panel, can be connected directly to any line level analogue stereo output. Some devices such as MP3 or hard disk based portable players have a comparatively low output which will require the Elements Integrated's volume control to be set at a higher position than would normally be required.

**WARNING:** The assigned AV DIRECT input **MUST NOT** be used with sources that are not equipped with an independent volume control, e.g. most CD players and DVD players. This feature is designed to be used only with an external surround sound processor that has an independent volume control.

**AV DIRECT**> The AV DIRECT facility is provided for those using a dedicated external multi-channel processor equipped with a volume control. Sources with fixed output levels such as CD and DVD players, **MUST NOT** be set to AV Direct. When an input assigned as AV Direct is selected, the volume setting defaults to a low level and then slowly rises to a pre-set unity gain point. Great care should be taken when using the AV DIRECT menu editor, since an excessive volume level could easily result. However, unlike other systems, the volume control on the Leema system is still active and can be adjusted away from the pre-set point as a safety feature. The AV DIRECT function can be assigned to any individual analogue input. Selecting another input on the Elements Integrated Amplifier and then re-selecting the AV DIRECT enabled input, will reset the unity gain point.

## Digital connections.

**Only available if digital board option fitted. Please consult the digital board section (page 21) for full user instructions.**

**OPT 1/OPT 2 / OPT 3.** These inputs may be connected to digital optical outputs carrying a SPDIF (PCM) **stereo** data stream, such as satellite TV boxes, Freeview TV boxes, games machines etc. Ensure that the data stream is not multi-channel, such as AC3. The DAC can decode all data rates up to and including 24bit/192kHz.

**SPDIF** > This input may be connected to digital coaxial outputs carrying a SPDIF (PCM) **stereo** data stream, such as satellite TV boxes etc. Ensure that the data stream is not multi-channel, such as AC3.

**USB** > A computer may be connected here for playback. The USB decoder supports formats up to 24 bit/192kHz. It may be used for streaming playback. Please refer to page 21 for more details.

## Output connections

**PRE OUT** > Outputs are provided which mirror the selected input e.g. CD player or tuner. These outputs are controlled by the Elements Integrated's volume control and can be used for a variety of uses. Examples include feeding an amplifier in another room for a simple multi-room system, or as a line level feed to a subwoofer. They can also be used for bi-amping, where an Elements Integrated amplifier is used to drive the tweeters in the loudspeakers and an Elements Power amplifier is used to drive the woofers. This offers an increase in clarity by reducing intermodulation distortion. The loudspeaker no longer draws bass current from the amplifier feeding the tweeter, resulting in cleaner high-frequencies etc. The loudspeakers must be suitable for bi-amping, this is normally the case where there are two pairs of binding post connections available on the rear of the loudspeaker cabinets. When bi-amping, it is **VITAL** to remove the bridging links from the connection panel on the rear of the speakers, otherwise the outputs of the two stereo amplifiers will be connected together, which will result in considerable damage. If you are considering bi-amping, please contact your dealer or Leema Electro Acoustics Ltd. for advice.

**HEADPHONE OUT**> A headphone output is available on the front panel. The output uses a 3.5mm mini-jack as found on personal stereo headphones. Headphones should have a minimum impedance of 32 ohms. When this output is in use, the loudspeakers are muted. It is advisable to unplug headphones before powering down the amplifier.

### **LIPS connection**

LIPS cables are directional and have one black end and one red. If the Elements integrated is controlling other units, the black connector should be plugged in to either LIPS socket on the Elements integrated and the red connector plugged in to the next component. If the Elements integrated is to be controlled, the black connector is connected to the master device and the red connector is plugged in to either LIPS socket on the rear of the Elements integrated.

### **Loudspeaker terminals**

There are two pairs of low profile loudspeaker terminals on the rear panel, one pair for the left loudspeaker and one pair for the right loudspeaker. They are designed for industry standard 4mm banana type plugs. They are not suitable for bare wire connection. Due to the Elements Integrated's unique circuit topology, neither of the Black sockets are earthed.

### **Cables**

Never underestimate the importance of good quality speaker cables, bell wire or lighting flex will simply not do. The higher the system resolution, the more easily the differences between cables can be discerned. Leema recommend the use of high quality bi-wire cables with your new amplifier to ensure optimum fidelity. However, a single high quality run is always superior to two runs of inferior cable. If your budget is tight, get the best quality single run you can afford. Leema recommend Leema Linx cables for optimum system synergy.

## Front panel controls

### Power

The Power button toggles the Elements Integrated between Power On and Off. If a LIPS connection is used, the power status of any other Leema components connected via LIPS will also be controlled.

### Source selection and Volume Control

The input source is selected with the rotary Volume/Input control. The default setting for this control is "Volume" and the display highlights the current selected volume level with a chevron >. However, simply pressing the knob once, switches the control over to Input selection, again highlighted with a chevron >. The input options are shown sequentially on the display when the volume/input knob is rotated. To switch back to volume, simply leave the control alone and after a few seconds the volume function will be enabled. If you wish to action the selection sooner, press the knob to return to volume mode.

The Volume control adjusts the volume via an Analogue Devices precision attenuator under microprocessor control. This method of volume control permanently ensures the highest fidelity without the gradual degeneration of conventional motorised volume controls. The volume control also regulates the pre-out volume.

**Note:** Small clicks in the audio during volume changes are normal.

### Mute

Pressing the Mute button while the system is playing will rapidly dim the volume to zero. Simply re-press to restore the volume.

### Menu

Pressing the Menu button will enter the setup menu. The button will illuminate while in the menu pages. Press again to leave the setup menu and save your selections.



## Elements remote control amplifier commands

### Power

There are two power buttons. The red button (ALL) turns all the units in a Leema Elements system on or off simultaneously. The blue power button (IND) allows units within an Elements system to be turned on or off independently by first selecting the required device button (CD, AMP or DAC) then pressing the blue power button. When powered on, the unit initialises then, if applicable, the previous input selection will be restored and the volume set to a low level.

### Mute

Pressing the mute button once while the system is playing will cause the volume to rapidly fade to zero; --- is then displayed. A second push of the button will restore the volume level.

### Input

The input left and right buttons cycle through the available input sources one-button push at a time. The audio mutes for a fraction of a second between selections. Inputs may also be selected directly by using the numeric buttons. Note that the AMP button must have been pressed previously for these buttons to address the amplifier.

### Volume

Two buttons, one for up and one for down, control the volume. Short presses on the volume buttons will change the volume in small increments. Press and hold the volume up or down buttons to smoothly raise or lower the volume.

### AV

This button directly selects the designated AV input, defined in the setup menu.

## Setup Menus

### 1 > DAC HD RATE

Options :

1 :176.4 kHz

2 :192 kHz

Explanation > This choice affects the SPDIF Optical inputs .The SPDIF format does not define sample rates above 96kHz ,only that the rate is higher than 96kHz .The DAC therefore has no way of knowing what sample rate is being used if it is above 96kHz . If the sample rate is 96kHz or less ,the system is fully automatic and the DAC will be configured accordingly . If the sample rate is 176.4kHz or 192kHz ,the user must know what sample rate is being played and must set this menu option appropriately .If the wrong setting is in use ,either no audio or garbled audio will result.

### 2 > INPUT NAMES

All input names are fully editable .

Explanation > The rear panel is labeled BALANCED ,IN1 ,IN 2 ,IN 3 ,etc These are the default names used by the firmware , however ,the name may be changed as the user requires to make it easier to identify an audio source .

For example ,if a CD player is connected to the BALANCED input ,this input could be renamed to ' CD ' .

## EDITING AN INPUT NAME

Press the MENU button .

Using the volume knob ,locate item 2 , INPUT NAMES "

Rotating the volume knob ,locate the input name to be edited .

Press the volume knob .

The display will now show :

EDIT input name >

ALIAS : Original name >

Notice that the first letter of the input name is flashing as a block .

To change the letter ,press the volume knob .The letter will now be underlined .Rotating the volume knob will scroll through the available letters and symbols .These are : ~~ABC~~DEFGHIJKLMNOPQRSTUVWXYZ0123456789\\_-+; ,

When the required letter or symbol has been located ,press the volume knob .This will return the display to a flashing block .The volume knob can now be used to locate the next letter to edit .Repeat the process until the name is displayed as required .

Finally ,press the MENU button to exit the editor and once again to exit the MENU function .

During the edit process ,the original name as (used on the rear panel )is shown as ALIAS for reference .

### 3 > AV INPUT SETUP

Options :

- 1 :NO AV INPUT
- 2 :BALANCED
- 3 :INPUT 1
- 4 :INPUT 2
- 5 :INPUT 3

Any of the analogue inputs j e BALANCED ,IN 1 ,IN 2 or IN 3 may be selected as the Audio Visual Direct input .

Explanation > The Elements Integrated may be used to power the front channels in an AV system .Normally a fixed gain input will be required ,as the Elements Integrated will be fed from the pre amp outputs of an AV amp or processor having its own volume control .

Setting an input as AV Direct changes how it behaves when it is selected .In this case ,when the input is selected ,the volume control will slowly rise to a fixed level .This volume ramp may be interrupted at any point by turning the volume control or pressing a remote button .This protects the speakers in a case where the AV processor has been left set at a high volume level .

If an AV Direct input is not required ,select NO AV INPUT.

USE THIS SETUP CAREFULLY. UNEXPECTED HIGH VOLUMES CAN RESULT IF SET INCORRECTLY.



#### 4 > LCD OFF TIME

Options :

- 1 ALWAYS ON
- 2 OFF 5 SECS
- 3 OFF 10 SECS
- 4 OFF 30 SECS

Explanation > Many users prefer to turn off LCD displays on audio or aesthetic grounds .It is possible to define an automatic shutdown period for the LCD display .The LCD will then shutdown after the preset period has elapsed following the use of any controls .If a control is used subsequently the display will power back up for the defined period .

Note that the display is locked on when using the menu system .

#### 5 > LIPS ID number

Options :

- 1 ID =0
- 2 ID =1

Explanation > This is an advanced option that is only required when the Elements Integrated is used with an Elements AV Controller .

For normal use select ID =0 .

## **6 > INPUT VOLUME DROP**

Options :

- 1 DROP IP VOL
- 2 DON'T DROP

Explanation > By default all Leema amplifiers reduce their volume to a low level when the input is changed .This protects the speakers (and user )from unexpected high volume levels .

Some users prefer the input level not to drop when the input is changed however . In this case select DON'T DROP, however, this mode should be used with caution.

## **7 > SYSTEM RESET**

Options :

- 1 DON'T RESET
- 2 LEAVE NAMES
- 3 RESET ALL

Explanation > Allows the system to be quickly reset to factory defaults .

Option 1 will not reset and will exit the reset sub menu.

Option 2 will reset all menu options but leave edited input names .

Option 3 will reset all menu options and reset input names to defaults .

## **DAC**

The high-performance DAC uses a class leading Wolfson digital receiver in conjunction with Leema's usual choice of Crystal CS434x DAC. The DAC is followed by analogue filters which are optimised for time, as well as amplitude, performance. Leema do not use variable filter characteristics for high sample rate audio. The reason for such high bit rate recordings is to get more data and therefore more audio information in to the audio band as perceived by humans. Allowing high levels of ultra sonic audio through the system is a nonsense unless you are a bat.

The DAC offers 24bit/192kHz performance with excellent audio quality and very low jitter.

## **USB CODEC**

Please refer to the Leema digital board section of this manual, starting on page 21.

The following section is intended for installers, system integrators and third party manufacturers.

## **What is LIPS?**

LIPS or Leema Intelligent Protocol System, facilitates communication between various items in a Leema audio system. It allows units such as the Elements Integrated and Tucana II, to control other items in a chain. Leema's 5.2 surround system is a good example, where a Tucana II controls a Hydra II and Corvus. Key information including volume level, input selection and power control is passed through the bus enabling other units to operate in synchronisation. Intelligence is added within each receiving unit, for example, a Hydra II installed as part of a surround system 'knows' that it won't be required when listening to a stereo source such as CD. Therefore, when the Hydra II 'sees' the CD input, it powers itself down.

Each Leema unit can be controlled via the LIPS bus. Controlling an Elements Integrated externally for example, enables it to be used within a home automation system.

## **LIPS Specifics**

The LIPS bus is driven by an open-drain output. Leema can supply a full RS232 interface if required. The communication standard follows the common RS232 format of No Parity, 8 data bits and 1 stop bit. The baud rate is 38400.

## **LIPS Packets**

Each communication on the LIPS bus contains a packet of four data bytes as follows:

First a header is sent with a value of 255. This alerts the receivers to incoming data.

Next, a command header is sent. For a volume command, this would be 40. (see below for details).

Next, a value relating to the command is sent. For volume this would be 0 to 248.

Finally a tail byte is sent with a value of 0.

**LIPS codes** For further information, please contact Leema Technical Support.

### Elements Integrated IR codes

Format = Sony 12 bit

IR DEVICE = 16 (Amplifier)

IR Commands:

0 to 9 = Numeric entry, 16 = INPUT UP, 17 = INPUT DOWN, 18 = VOLUME UP, 19 = VOLUME DOWN, 20 = MUTE TOGGLE, 21 = POWER TOGGLE, 22 = TRAY (CD), 32 = 0 (numeric entry), 39 = 10+ (numeric entry), 42 = AV DIRECT, 44 = REPEAT (CD), 48 = PREV (CD), 49 = NEXT (CD), 50 = PLAY/PAUSE (CD), 51 = SCAN BACK (CD), 52 = SCAN FWD (CD), 56 = STOP (CD), 84 = DISPLAY TOGGLE

## Audio Specifications

Power Output: 8 Ohms: 55 Watts RMS per channel, 4 Ohms: 110 Watts RMS per channel,  
2 Ohms: 160 Watts RMS per channel

Minimum load impedance: 4 ohms.

Output Current: greater than +/- 12 Amps

Frequency response +0/-3dB @ 1W: 5Hz - 80KHz

Noise (A weighted, volume control minimum): -105dBm

Signal to Noise ratio (A weighted, ref: 150 Watts RMS 4 ohms): -110dB

THD (10 Watts RMS 8 ohms, 1KHz): 0.015% (Measured AES 17)

Maximum DC offset: +/- 15mV

DAC: 24bit/192kHz with low jitter receiver. Leema USB-M1 24/192 Module.

Specifications subject to change without notice.

## WEEE Scheme



### **Disposal of Electronic Equipment in the European Union and other countries with collection procedures:**

The wheeled bin symbol on this product indicates that it shall not be treated as household waste. It should be disposed of via a collection point for the recycling of electrical and electronic equipment. Leema is fully registered under WEEE/HK 0757 ZX

# HANDBOOK

## Leema Acoustics Elements Digital Interface Board



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## Environmental Issues

Leema operates a 100% recycling program. All waste materials generated as part of the manufacturing process at Leema's headquarters are recycled via a licensed specialist company.

Although Leema electronics operate in standby mode as opposed to being fully switched off, the power drain has been optimised to a negligible level. Contrary to popular audiophile practice, we do not recommend leaving our products permanently powered. All Leema products have been designed to attain full operational specifications and sound quality within a few minutes of switch-on.

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## Made in the UK

Leema electronics are designed and manufactured in the UK. This includes metalwork and packaging.

## Contact Us

Leema may be contacted via our website: [www.leema-acoustics.com](http://www.leema-acoustics.com) or by telephone: +44 (0)1938-559021



## Introduction

Congratulations on your purchase of Leema's class-leading Digital Interface board.

The Leema range of products has been painstakingly engineered in the United Kingdom to offer genuine state-of-the-art performance.

Partnered with suitable equipment, Leema products will provide audio performance far beyond that of their competitors and will equal or better the performance of products costing many times their purchase price.

The Elements Digital Interface Board provides playback of SPDIF and USB digital sources. The board comprises two separate interfaces, one for SPDIF sources and one for USB playback. The SPDIF interface offers one co-axial input via an RCA (cinch) connector and three optical inputs using standard TOSLINK type connectors. Both interfaces offer all common sampling rates from 32kHz to 192kHz at 16 and 24 bit resolution. The USB interface operates in asynchronous mode using Leema's own hardware platform and firmware. The interface provides full electrical isolation from the source computer, ensuring that noise from the computer's power supply does not degrade the audio performance. Both interfaces feature ultra-low jitter, due to their precision master clocks.

Purchasers should read and follow this instruction manual, paying particular attention to the hardware and driver installation sections.

This manual has been written to enable you to achieve the very best performance and maximum listening pleasure from your investment.

We wish you many years of pleasurable listening... Move Your World!

With best regards  
The Leema Team.



## Hardware Installation

The Digital Interface Board can be ordered at the time of purchase of the Elements Integrated Amplifier, in which case it will be fitted at the factory. Alternatively, it can be supplied separately as an upgrade. In this case, it must be fitted by an approved Leema dealer. The following section is intended for dealers only; end users must not attempt to install the hardware.

If the Digital Board is not factory fitted, the amplifier will have a blanking plate fitted behind the digital connector cut-outs.

- Step 1. Ensure that the unit is not connected to the mains power supply.
- Step 2. Remove all screws securing the unit's lid. Screws are located on the rear panel and underside.
- Step 3. Carefully remove the lid by sliding it away from the front panel. The front lip of the lid has a small strip of foam tape to stop it vibrating against the front panel - try not to damage it while drawing the lid past the heatsink.
- Step 4. Remove the blanking plate.
- Step 5. Install the Digital Board and secure with the three screws provided.
- Step 6. Fit the ribbon cable between the amplifier mother board and the digital board.
- Step 7. Replace the lid and secure.



## Windows® USB Driver

A driver is provided for use with the Microsoft Windows® operating system. The driver supports all versions of Windows from XP to Win7 in 32 bit and 64 bit versions (with current service packs). If the user has an option, Win7 is preferred. The driver must be installed if the Digital Board is used with Windows, otherwise the board will not be installed correctly by the operating system.

Apple OSX® and Linux® operating systems do not require an additional driver.

## Driver Installation

The driver is supplied on CD.

Step 1. Ensure that the USB port on the rear of the Elements Integrated Amplifier is connected to a high speed USB port on the computer. Note that the port must be high speed - the Elements digital interface cannot be used on a full speed port.

Step 2. Ensure that the Elements Integrated Amplifier is powered on.

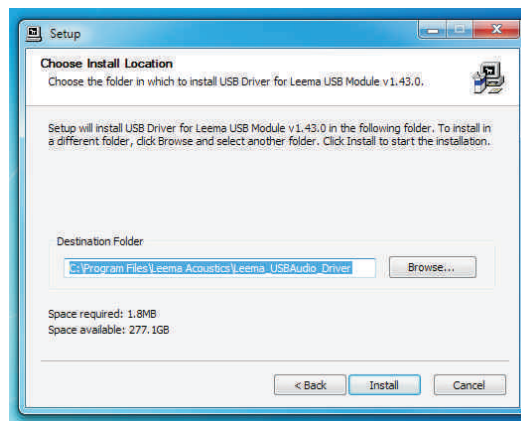
Step 3. Insert the CD into the computer's CD drive and navigate to the Leema\_USBAudio\_Driver folder.

Step 4. Double click 'setup.exe' and follow the instructions.

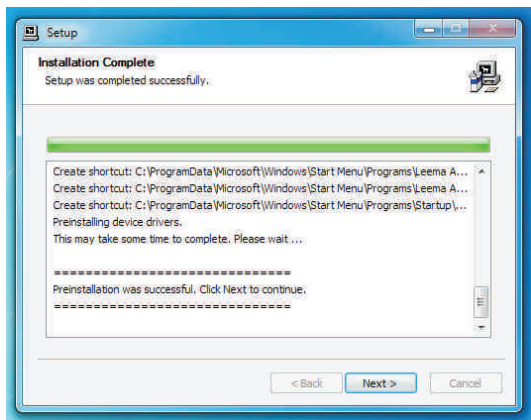
The following screen shots show a Windows 7 installation. Installation in other Windows versions is similar.



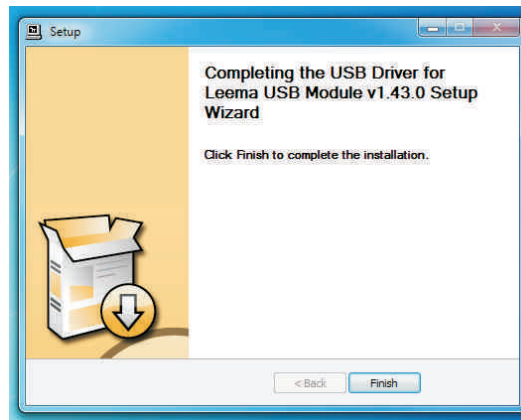
The Installation Welcome Screen

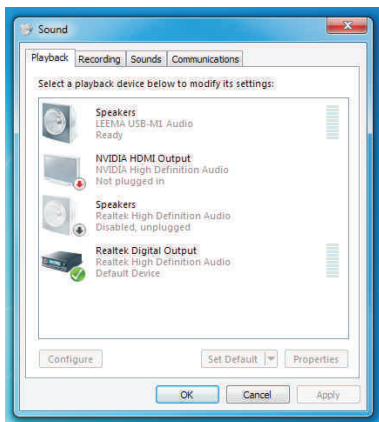


Choose a location for the installation

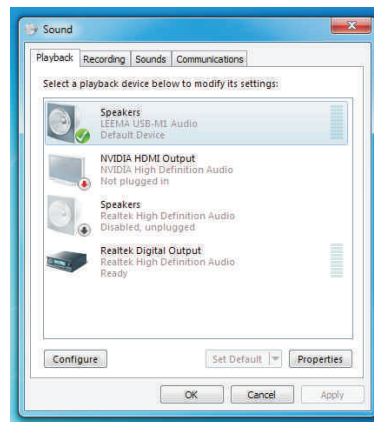


Completing the installation

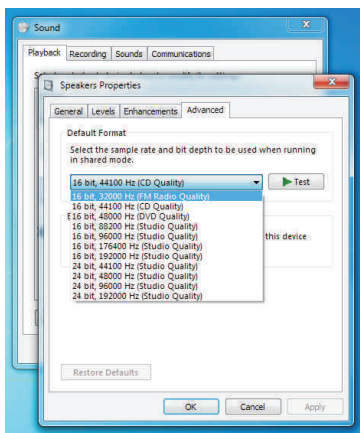




Leema USB-M1 shown in audio devices



Select USB-M1 and set as default



Available sample rates shown in Windows 7

Note: In Windows XP, the sample rate cannot be changed in Properties. In this version of Windows, the sample rate can only be selected in the application in use.

To ensure that Windows does not re-sample the audio causing a loss in quality, select a sample rate which matches the audio material to be played.

If the program is able to use an ASIO driver, select the Leema ASIO driver in the application.

Using the ASIO driver will give the best quality playback.



## Finalising Driver Installation

In some versions of Windows, the machine must be re-booted after driver installation, so this is recommended. If the Leema USB-M1 is still not found, switch off the amplifier and then switch back on. This will cause the USB device to detach and re-attach. The operating system should then find it and configure the driver.

## Using the USB interface

The USB interface can be used for playing audio from media players such as Windows Media Player etc. It may also be used to render audio playback from applications such as Spotify™ and Napster™.

Note that the USB interface is a playback only device - It is not possible to record using the USB connection. To assemble recordings on the PC, it is better to RIP CDs or use downloads including the high resolution offerings from companies such as HD Tracks.

The USB interface can be used with all sample rates from 32kHz to 192kHz at 16 or 24 bits.

## SPDIF Interface

The SPDIF interface offers one co-axial RCA (cinch) input and three optical inputs. All inputs may be used with sample rates from 32kHz to 192kHz at 16 or 24 bits. All sample rates from 32kHz to 96kHz are configured automatically without user intervention. However, due to a shortcoming in the SPDIF standard, the interface cannot identify sample rates above 96kHz automatically.

## Cables

Use a dedicated SPDIF or video cable to connect an SPDIF source. Using an audio cable will degrade the data.





## Using Sample Rates above 96kHz

If the audio to be played is recorded at a sample rate above 96kHz, the user must know what the sample rate is.

This inconvenience arises because the original SPDIF format specification did not foresee the advent of sample rates above 96kHz. The format does not contain enough information to tell the hardware what to do.

To get around this problem, the Elements Digital Interface offers a choice of two high speed sample rates; 176.4kHz and 192kHz.

To play a source at one of these rates, it is first necessary to pre-select the expected sample rate. This is achieved via the "DAC HD RATE" menu option in the Elements Integrated Amplifier.

Set the option to the expected sample rate. If the rate is not correct, the audio will either be garbled or absent.

In this case, simply select the other option in the amplifier's menu.

Please refer to the Elements Integrated Amplifier manual for more details.



# EC Declaration of Conformity

In accordance with EN ISO 17070-1:2004

We

Leema Electro Acoustics Limited

of

Llanfair Caereinion  
Welshpool  
Powys  
UK

in accordance with the following Directive(s): 2006/95/EC The Low Voltage Directive

2004/108/EC The Electromagnetic Compatibility Directive

hereby declare that: Equipment: Digital Audio Interface Model Name: USB - M1

is in conformity with the applicable requirements of the following standards

Standard. No.	Name	International Equivalents
BS EN60065; 2002	Electrical Safety Requirements	EN60065; 2002 / IEC60065; 2001
BS EN 55020; 2002	EMC Immunity	EN55020; 2002 / CISPR 20; 2002
BS EN 55013; 2001	EMC Emissions	EN55013; 2001 / CISPR 12; 2001
BS EN 61000-3-2; 2001	EMC Limits for Harmonic Emissions	EN61000-3-2; 2000 / IEC61000-3-2; 2000
BS EN 61000-3-3; 1995	EMC Limits for Voltage Fluctuations	EN61000-3-3; 1995 / IEC61000-3-3; 1994

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives and Standards.

Signed by: .....

Name: Mallory Nicholls  
Position: Technical Director  
Done at: Leema Electro Acoustics Ltd.  
On: 31/8/2011





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