



16 BIT STEREO/AUDIO SYSTEM FOR ACORN RISC COMPUTERS



Computer Concepts Ltd

# Lark

# User Guide



Computer Concepts Ltd

*Gaddesden Place, Hemel Hempstead, Herts HP2 6EX*

*Tel 0442 63933 — Fax 0442 231632*

*Entail — Info@CConcepts.co.uk*

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## **Acknow|edgements**

We would like to acknowledge the assistance of Acorn Computers Ltd. in the implementation of the Acorn M1D1 module, and in granting a licence to distribute the MID1 module.

Thanks also due to Clares Micro Supplies for permission to supply the sample MID1 files on disc 3.

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## About this manual

This manual describes the key aspects of the Lark package: the expansion card itself, hardware connections and peripherals, and the associated software. It describes in depth the use of software applications that are provided exclusively with this product. However, only the briefest details are given for 'stand alone' programs for which separate manuals exist. Information about using these applications can be found in the relevant user guides as listed in the section *What you should have received*.

It is assumed that you have a basic knowledge of the RISC OS conventions and are familiar with standard applications. If this is not the case, we suggest that you first read the *Welcome Guide* supplied with the computer.

## Typographic conventions

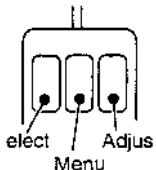
This manual uses these conventions:

Menu options are shown like this: *Preferences*.

Dialogue box switches are shown like this: *Mute*.

Where you use the keyboard for control, the name of the key is shown in *italics*. (For example, *Return*.)

## Mouse buttons



We use the Acorn convention for the three mouse buttons:  
the left-hand button is called **Select**,  
the middle button is called **Menu**,  
the right-hand button is called **Adjust**.

Where we say click on something but do not specify a mouse button, use **Select**.

# I

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# Introduction

## What the Lark can do:

It can record sound samples from an external source and manipulate them in a wide variety of ways. You can save the samples to disc in any of several different formats, some suitable for use on other types of computer.

The Lark provides a high-quality stereo sound output. Using this, you can output sound samples to, for example, a hi-fi system.

The Lark also includes a MIDI interface. This lets you interface third-party software on the computer to MIDI-compatible peripherals such as keyboards. The Lark's MIDI interpreter also enables you to use the card as a MIDI device in the same way as a synthesizer (though you don't get a keyboard).

As with all new software, the best way to gain an appreciation of the capabilities of these programs is to experiment. If you have any problems, refer first to the troubleshooting sections of your manuals. Remember that there are also separate *Audio Works* and *MIDI* manuals.

Please return your product registration card to ensure swift technical support and eligibility for any future software upgrades.

## System requirements

The Lark can be used with Acorn computers with standard, half-width expansion slots. (These include the A300/A400 series Archimedes, A540, A5000 and Risc PC computers. The A3000 is also suitable with certain limitations.) The Lark is **not suitable** for A3010, A3020, A4000 or A4 portable computers.

If your computer meets these system requirements:

- RISC OS 3.1 or greater,
- at least 2 Megabytes of RAM (memory),

then you can use Lark for:

- audio sample capture and playback through the stereo connector on the Lark,
- MID| connection.

Outputting sound samples through the Lark requires an ARM3 or faster processor. (Suitable processors are standard on the A540, A5000 and Risc PC; the ARM3 is available as an upgrade to other computers.) Use of the Lark with ARM2 is untested and thus not recommended.

## Possible extras:

Depending on which features of the Lark package you wish to use, you will also need some or all of the following:

- audio equipment with line-level input/output, such as hi-fi equipment, CD player, or amplifier,
- microphone,
- MIDI equipment,
- 'Active' or 'MultiMedia' speakers,
- ordinary speakers (connected via headphone socket),
- headphones.

## The internal speaker

On all except A3000 and early A300/A400 series Archimedes, you can connect the computer's internal speaker direct to the Lark. The speaker can then play samples at higher quality than the internal sound system provides.

If you do not connect the internal speaker to Lark, you can only play samples through the speaker using the internal sound system.

Audio playback using the Lark is always possible through external speakers via the stereo connector on the back panel of the card or the headphone socket.

## What's on the discs...

### Disc 1:

*lAudioCtrl*– this has two uses:

- to play audio samples, and
- to set-up audio parameters.

*!AudioWrks*– use this to record and play back audio samples.

For information on these applications, refer to the AudioWorks manual. For information on using *!AudioCtrl* to set up the Lark audio parameters refer to *4. The software suite*.

*!SysMerge*– this updates the *!System* directory on your computer. This is detailed later.

### Disc 2:

This disc contains a selection of audio samples.

### Disc 3:

Sample MIDI files, plus *Piano Voice*, an example of how to use your Lark as a synthesizer.

## Specification

**Input connectors:** 5-pin D1N connector (stereo line-level in).  
3.5mm jack socket (for external microphone) – see note below.

**Output connectors:** 5-pin D1N connector as above. 3.  
5mm jack socket for headphones.

**Extra connections:** 15-pin HD D-type connector with pig-tail attachment for MIDI connection.  
Ribbon cable attachment for internal connection to VIDC sound system (not on A3000).

**Suitable input spec:** 1V r.m.s. or 2V r.m.s. (link selectable)  
stereo or mono line-level up to 48 kHz sample rate.

**Max input without damage:** 6V p-p.

**Output formats:** Stereo line-level output, 1V r.m.s., 2.8V p-p

## *1. Introduction*

<b>On-board storage:</b>	<b>2 x 1KB F1FO</b>
<b>A-D conversion:</b>	16-bit
<b>File formats supported:</b>	8-bit, 12-bit, 16-bit, linear signed, linear unsigned, VIDC logarithmic, p-law logarithmic, mono and stereo samples, import/export of Microsoft WAV, Armadeus, Data-Vox, SoundTracker, and RawData formats.
<b>Power requirement:</b>	+5V from computer, -5V from computer or generated on card.

### **Note regarding jack sockets:**

There are two standard types of 3.5mm jack: European and Japanese. The jack sockets on the Lark are European specification (which is of higher quality). Computer Concepts can supply an adaptor if your equipment uses Japanese specification jacks. The adaptor is free; return the voucher enclosed with the package.

# 2 Installation

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## Caution!

Static electricity can damage the Lark expansion card. Store the card in its protective bag until you install it, and do not allow the card to come into contact with static-productive materials such as man-made fibres, wool, polystyrene or plastic bags not designated anti-static. If possible, handle the card by the back panel only and first discharge any static build up from your hands by touching one of the metal screws on the computer case.

No special skills are required to fit the Lark. However, the suppliers cannot accept responsibility for any damage that may result from incorrect installation. If in any doubt, consult your local supplier.

The Lark is suitable for installation in any Archimedes, A5000 or Risc PC with a backplane fitted. It may also be used with the A3000 using the external expansion slot. In all cases your attention is drawn to *System requirements*.

The card is **not suitable** for installation in the A3010, A3020, A4 portable or A4000, which cannot accept standard expansion cards.

## Tools

The only tool required is a No. 2 (medium) cross-head screwdriver.

## What you should have received

Check that you have received the following:

- Lark expansion card in anti-static packaging,
- this manual,
- AudioWorks manual,
- MID1 manual,
- three floppy discs,
- ribbon cable,
- MID1 cable,
- half-width blanking panel + T-piece,
- registration card.

The fitting instructions are divided into three sections dependent on which type of computer you have. The sections are for:

- Archimedes (A300 series, A400 series & A540) and A5000,
- Risc PC,
- A3000.

After following the appropriate set of fitting instructions, continue reading from *Initial testing (all computer types)* on page 16.

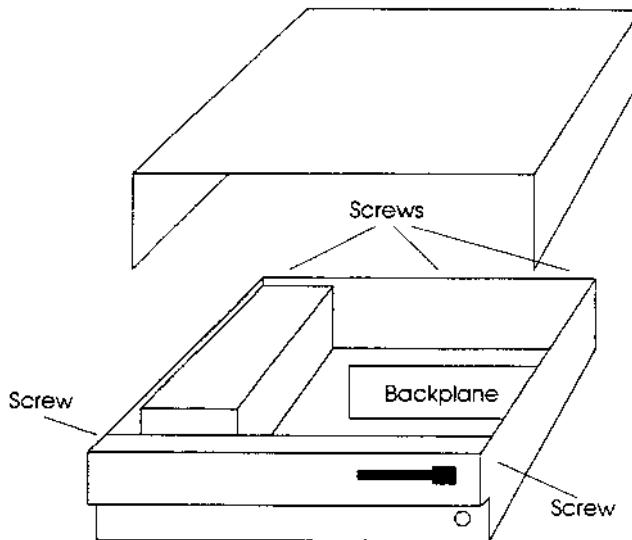
## Fitting the Lark card — Archimedes & A5000

### Disconnect power

Before installing the Lark, switch off the power to the computer. However, leave the power lead connected. Disconnect all other leads to the computer. Remove anything (such as a monitor) that may be on top of the case.

### Remove the computer's cover — Archimedes only

- 1 Remove the five screws that secure the cover:



- 2 Slide the cover back off the computer.

3 If you have an A305 or A310 computer – Ensure a backplane is fitted. This is a vertically mounted circuit card, positioned approximately half-way across the main circuit board. It provides two or four sockets into which expansion cards can be fitted.

Other types of computer – the backplane is already fitted.

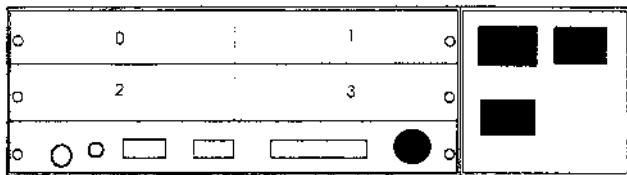
## Remove the computer's cover — A5000 only

The cover is secured by six screws (three each side) located underneath the case. Take care tilting or lifting the A5000 as the screw-heads can scratch a wooden or polished surface.

Remove all six screws. The cover should then slide back off the computer.

## The card position

With no expansion cards fitted, the rear panel of the main unit consists of three metal blanking plates, each secured to the case by screws at both ends.



The lowest plate (containing various sockets) is secured to the main circuit board. **Do not** remove this plate during expansion card installation. The upper two plates are temporary fitments that are removed when expansion cards, such as the Lark card, are installed.

One standard width expansion card occupies half the width of the back panel. The numbers 0...3 on the diagram above indicate the positions in which expansion cards may be fitted. With a two-socket backplane only positions 0 and 2 are available.

## Connecting the ribbon cable...

The ribbon cable supplied is for connecting the Lark to the computer's internal sound system.

Note that separate instructions are given for the connection of the internal speaker direct to the Lark. However, it is advisable to connect both sets of cables at the same time, if you are opting to do so.

**Caution!**

*Incorrectly connecting the ribbon cable can damage your computer.*

*Carefully follow the instructions in this manual and pay particular attention to the orientation of the cable. The suppliers of Lark cannot be held liable for any damage that results from incorrect installation. If in any doubt contact your local supplier.*

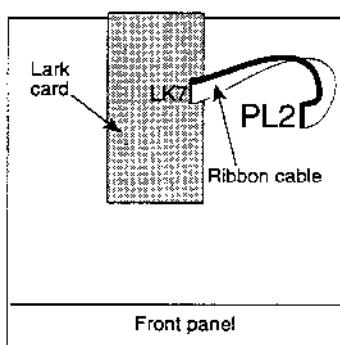
Because of hardware differences you need to know exactly which type of computer you have. The front panel of the computer shows the model number. The options are:

- Archimedes 300 & 400 series,
- Archimedes 400/1 series,
- Archimedes 540,
- A5000.

The ribbon cable may seem longer than necessary but this lets it reach any expansion card slot. Carefully fold any surplus cable under the expansion card to make sure it doesn't snag with the computer's cover.

If an existing expansion card is already fitted in the lower slot, the connector on the computer may be slightly obscured.

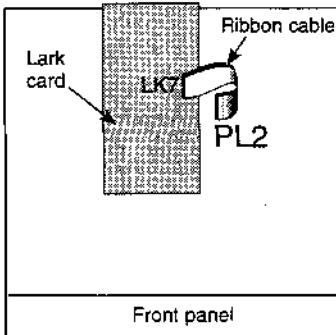
The dark band in the following diagrams denotes the red stripe on one edge of the cable.



...on an Archimedes 300 & 400 series

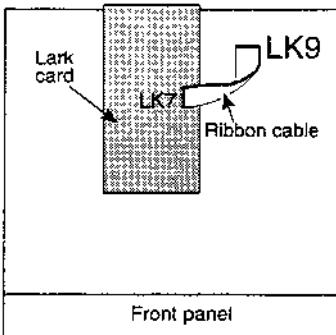
The cable plugs into connector PL2 on the far right of the Archimedes circuit board, partly under the right-hand expansion card (looking from the front of the machine). Note that the rearmost pin on the Lark card connects to the rearmost pin on the Archimedes circuit board.

There may be two plastic-covered links on PL2. Remove them but keep them in a safe place. You may need them in the future if you change your monitor. The Archimedes User Guide gives more details. (Look under *Connecting the monitor*.)



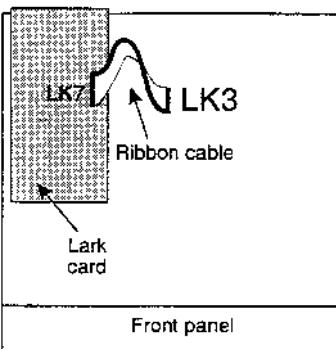
...on an Archimedes 400/1 series

This is similar to the 300 series except that PL2 is towards the centre of the circuit board, partly under the left-hand expansion card.



...on an Archimedes 540

The cable plugs into connector LK9, which is towards the rear of the Archimedes circuit board (looking from the front of the machine). Note the orientation of the cable as shown in the diagram.



...on an A5000

The cable plugs into connector LK3, which is towards the centre of the A5000 circuit board. Note that the cable is twisted through 180°; the rearmost pin on the Lark connects to the frontmost pin on the A5000 circuit board.

A component close to LK3 may prevent you plugging the ribbon cable fully home. In most cases you can still plug in the cable sufficiently to make good contact.

## Connecting the internal speaker

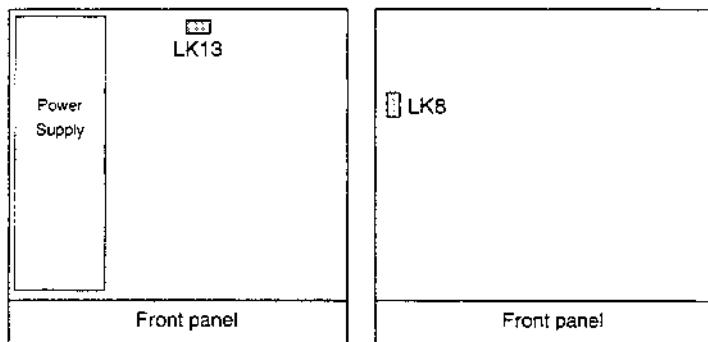
It is possible, but not essential, to use the internal speaker as an output device for the Lark. The speaker then plays back both the normal sound system from the computer and sounds from the Lark.

To do this requires:

- disconnecting the cable leading from the speaker to the motherboard of the computer and
- plugging the cable onto link LK5 on the Lark card. You can plug the cable in either way round.

The speaker cable may not be long enough to reach the Lark card. (This depends on the type of computer and which slot you plug Lark into.) In this case, return the voucher enclosed with Lark for a free extension cable.

The diagrams below indicate the location of the links on the motherboard of the A5000 and A540.



*Left: A540 Right: A5000*

If you have an A300/A400 series or A540 Archimedes, you cannot connect the speaker cable.

## Fitting the expansion card

Unscrew and remove the chosen blanking plate from the rear of the case. The Lark card can be fitted into any position.

The Lark expansion card may now be inserted (usually from the rear) and, whilst held horizontally, pushed into a corresponding backplane socket. The backplane is supported by a strong metal bar; however it is advisable to support it with one hand whilst

## *2. Installation*

pushing the expansion card into place with the other hand.

If the Lark expansion card is fitted adjacent to another card, bolt their rear panels together after installation using the T-piece provided. However, if no adjacent card is present, screw the half-width blanking plate supplied to the Lark rear panel.

Replace any screws that you removed from the blanking plate. Ensure that the Lark expansion card is screwed to an adjacent expansion card or to the half-width blanking plate.

The Lark card is now fitted ready for initial testing. Replace the cover by sliding it back onto the computer from the rear. Replace the securing screws.

## Fitting the Lark card — Risc PC

### Disconnect power

Before installing the Lark, switch off the power to the computer. However, leave the power lead connected. Disconnect all other leads to the computer. Remove anything (such as a monitor) that may be on top of the case.

### Remove the computer's cover

The cover is secured by two clips at the back of the case. Turn these. Lift the lid from the back and remove. (The Risc PC documentation details this operation.)

### Expansion card positioning

At the back of the Risc PC are two or more blanking plates. The best position for Lark is the bottom slot. (If necessary, move any expansion card to another slot.)

### Connecting the ribbon cable.

The ribbon cable supplied is for connecting the Lark to the computer's internal sound system.

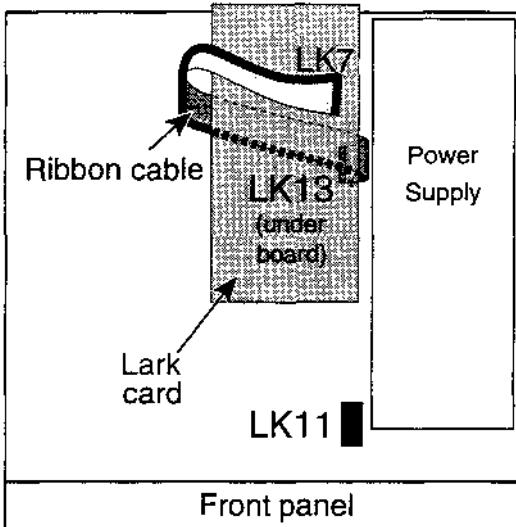
#### *Caution!*

*Incorrectly connecting the ribbon cable can damage your computer. Carefully follow the instructions in this manual and pay particular attention to the orientation of the cable. The suppliers of Lark cannot be held liable for any damage that results from incorrect installation. If in any doubt contact your local supplier.*

### Connecting the internal speaker

It is possible, but not essential, to use the internal speaker as an output device for the Lark. The speaker then plays back both the normal sound system from the computer and sounds from the Lark.

This operation is described below.



- 1 Unplug the ribbon cable from the Lark card.
- 2 LK13 is located close to power supply. Plug the ribbon cable into LK13 with the cable to the right (when viewed from the front of the Risc PC).
- 3 Thread the cable through the case work to the left so that it is clear of the expansion card slot.
- 4 If you wish to connect the internal speaker to Lark:**  
Unplug the speaker cable from LK11 on the motherboard.
- 5 Plug in the Lark card.
- 6 Plug the ribbon cable into LK7 on Lark. Note that the cable is twisted.
- 7 If you wish to connect the internal speaker to Lark:**  
Plug the speaker cable into LK5 on Lark.
- 8 Plug in any other expansion cards.

## Fitting the Lark card — A3000

**Before plugging Lark into an A3000 you must change two links on the Lark card. These are:**

### **LK6 and LK10**

**Change both links from pins 1-2 to 2-3. (Pin 1 is marked with a dot.) The position of these links is shown in 6. *Technical information.***

### Fitting the card

- 1 Disconnect the mains lead and all peripherals. You do not need to remove the top cover of the computer.
- 2 Plug the expansion card into the external socket at the back of the A3000.

Any expansion card plugged into an A3000 has little protection against accidental damage. We therefore recommend that you protect the card with a metal casing. Alternatively, Computer Concepts can supply an A3000 Expansion Box which provides three expansion sockets. Your A3000 then has a total of four expansion sockets, the same as the Archimedes and A5000. Contact Computer Concepts for further details.

There are no further connections to make, as you cannot connect the Lark to the A3000's internal sound system.

## Initial testing (all computer types)

Reconnect any previously connected peripherals, and switch power on to your computer.

When the computer has finished its initialisation, go to the command line (press *F12*) and type

Podules and press *Return*.

This lists the expansion cards fitted in the computer. In the list the following should appear:

Wild Vision/CC Lark A16 Vx.xx

where x . xx is the version number.

Press *Return* to return to the normal desktop display.

## Copying the software

We recommend copying the Lark applications onto a hard disc for normal use. After copying, store the original discs in a safe place.

## Updating *!System*

**Do not delete your existing version of *!System*.**

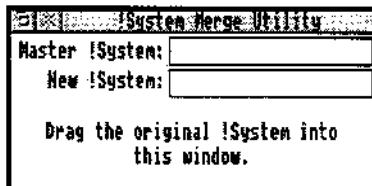
**Do not copy *!System* from the lark disc.**

Instead you must merge the two *!System* files. To do this:

- 1 On the AudioWorks disc is a program called *!SysMerge*.

Load this in the usual way by double-clicking on its icon.

This opens a small window:



- 2 Drop your existing *!System* icon onto the window. (*!System* is on your hard disc, if you have one, or your boot disc.)

3 Drop the *!System* icon from the Lark disc onto the window.

This creates a new, combined version of *!System* and automatically updates the existing version.

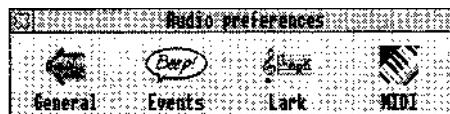
4 When the window shows **!System updated**, click on its Close icon to exit from *!SysMerge*.

## Before using Lark for the first time:

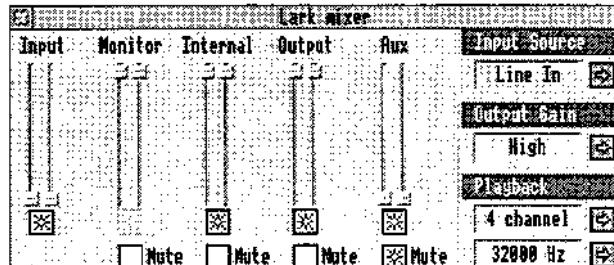
Before you can use Lark, you must set-up the default configuration. To do this:

1 Load *AudioCtrl*.

2 From the Icon Bar Menu choose *Show preferences*. This displays the preferences window.



3 Click on *Lark*. This opens the Lark mixer preferences window. Set the controls in the window as shown below:



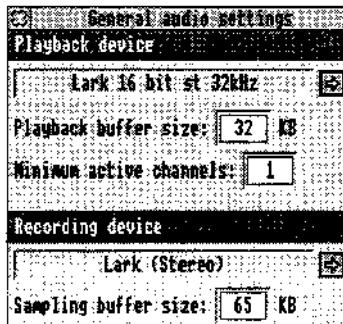
4 Close the mixer preferences window.

5 Display the preferences window again.

6 Click on *General*. This opens the audio settings dialogue box.

## 2. Installation

7 Make Lark the default device:



8 Close the window.

9 On the Icon Bar Menu choose *Save preferences*.

## Testing your Lark:

If you have problems with these initial tests refer to 5. *If problems occur...* There is more information on connecting to Lark in the next section (*Getting started*).

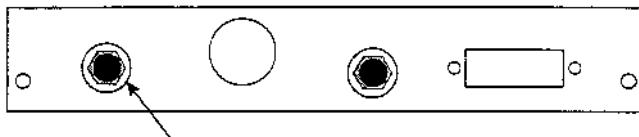
- 1 Drop *BellString* onto the *AudioCtrl* icon on the icon bar.  
You should hear a bell sound.
- 2 Load *Piano*. Drop a MID] file icon onto the *Piano* icon on the icon bar. This plays the melody in the MIDI file.  
*Piano* uses a lot of memory and so you should quit it when satisfied with this test.

# 3

# Getting started

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## Connecting a microphone



**Microphone (3.5 mm phono jack)**

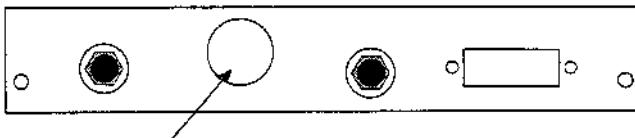
You can plug any standard microphone into the 3.5 mm phono jack on the left. Note that there are two kinds of jack plugs -Japanese and European specifications. If your microphone uses the Japanese type of plug, you can obtain an adaptor by returning the voucher included with Lark.

Some types of microphone require a preamp boost to give a satisfactory level. Lark has an optional +20dB gain. The option to select this is found in the *!AudioCtrl... Input Source* menu (described in *4. The software suite*). You also need to set links LK1 to LK4; refer to *6. Technical information* for details.

Alternatively, you may connect a microphone through an external amplifier to the line-level input.

## Connecting an audio input

The Lark has a 5-pin DIN socket for audio input and output.



**Stereo audio line-level connector  
(5-pin DIN)**

The pin-out of the socket is given in 6. *Technical Information*.

Suitable audio sources include: CD players, amplifiers, or hi-fi equipment. Microphones may be used as inputs to this socket if connected through an external amplifier or other equipment offering line-level output (such as a hi-fi). Some microphones are supplied with their own amplifier.

The input line-level is selectable as 1V or 2V r.m.s. (Links LK11 & LK12; refer to 6. *Technical information* for details.) You should check that the line-level for any equipment used does not exceed the selected line-level for the card.

## Connecting the audio output (active speakers)

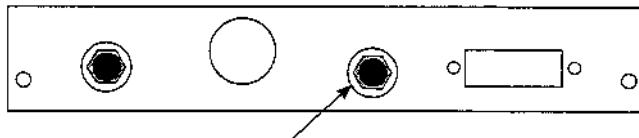
You can use the 5-way DIN socket to connect Lark's stereo output. The 5-pin DIN has both stereo input and output connections.

Suitable devices include: an amplifier and thence to stereo speakers; direct to "active" or "multimedia" speakers; a tape deck for recording; and so on.

The output line-level is 1V r.m.s. (or 2.8V p-p). Note that this is a high impedance line-level output. It is not suitable for devices intended for connection to a headphone socket. You should check the specification of your equipment for compatibility.

Use *!AudioCtrl* to set the variables affecting the level and quality of the sound being played back - refer to 4. *The software suite*.

## Connecting headphones or passive speakers



**Headphone connector (3.5mm phono jack)**

To connect headphones, simply plug into the jack socket indicated above. Note the comments on jack plug specifications in *Connecting a microphone*, above.

If the internal speaker *is* connected to Lark, plugging in headphones mutes it. All system sounds are heard through the headphones. (If the internal speaker is not connected to Lark, plugging in headphones has no effect on the speaker.)

You may also use this socket to connect non-“active” (“passive”) speakers.

## Playback using the computer's internal speaker

Play back through the computer's internal sound system using Lark's superior sound reproduction facilities requires the audio cable plugged into LK5 on the Lark. This is not possible on the A3000 (refer to *2. Installation*). Sound played back through the speaker in the computer is in mono only. This is a limitation of the computer.

When the speaker is connected in this way, the *Internal slider* controls the volume of the original (VIDC) sound system through the speaker.

## Playback using external speakers

If the audio ribbon cable is fitted, the computer's internal sound system can 'play' through the Lark. (The volume is controlled by *Internal* on the Lark mixer.)

### 3. Getting started

When using external speakers, you should turn off the computer's internal speaker:

- 1 Click on *Apps* on the icon bar. This opens a directory window.
- 2 Double-click on *!Configure* in the directory window. A computer-shaped icon appears on the icon bar.
- 3 Click on this icon.
- 4 Click once on the bell icon labelled 'Sound'.
- 5 Deselect the *Loudspeaker enabled* option.

This configures the computer to play only through Lark.

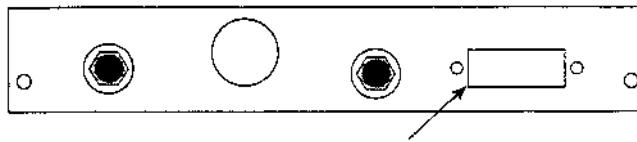
## Connection to MIDI

### **Caution! Use only the MIDI cable supplied.**

A cable has been supplied especially for use with the Lark's MID1 circuitry. This terminates in three 5-pin DIN sockets, for:

- **MIDI in** (blue band),
- **MIDI out** (red band) and
- **MIDI Thru** (yellow band).

The cable plugs into the 15-pin D-type socket on the Lark card.



**MIDI connector (15-pin D-type connector  
with cable to 3 x 5-pin DIN supplied)**

This cable should be connected into your MIDI system as required. Please refer to the separate manual for details of the Acorn MID1 support software. (This manual also includes more information on connecting M1DI devices.)

This connector is identical to the monitor connector on some Acorn computers. Do not plug a monitor into the M1D1 connector — this can damage the monitor or M1DI interface.

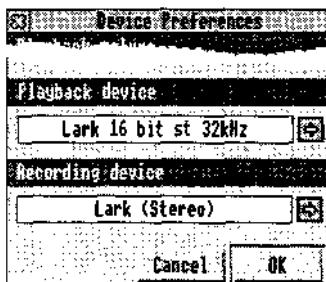


## The software suite

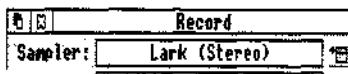
### AudioWorks

AudioWorks gives extensive audio manipulation options. It lets Lark users create and play back audio samples in stereo or mono and up to 16 bit in resolution. For detailed instructions refer to the AudioWorks manual. However, AudioWorks includes extra features when used in conjunction with Lark.

AudioWorks recognises Lark as an available input/output device in its *Preferences -> Devices* dialogue box:



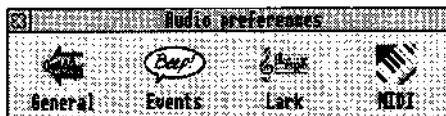
and in the recording dialogue box:



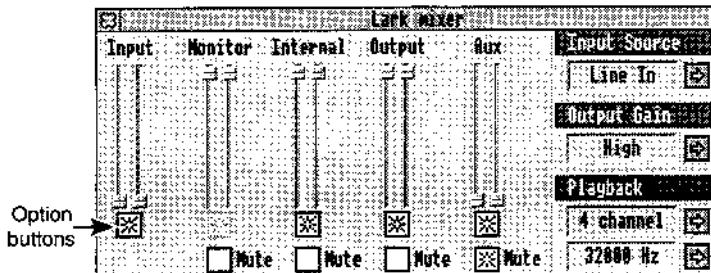
In these dialogue boxes you will find that two sampling devices are available for use: *Lark (Stereo)* and *Lark (Mono)*. Choosing the former uses the Lark as a stereo sampling source, while the latter uses only the left channel.

## AudioCtrl

When the Lark is installed in your computer, a Lark option appears in the *!AudioCtrl* preferences window.



Clicking upon *Lark* opens the mixer preferences window:



This window lets you adjust signal levels for the sound input and output channels. Each mixer option has a stereo slider associated with it — by dragging the left or right slider buttons up or down, you can increase or decrease the overall level of that input/output.

To alter the levels on the left and right channels independently, click on the option button at the base of the slider, and then drag the left or right slider as appropriate. Clicking again on this button links the channels together if you want them equal.

The five slider pairs control:

### *Input*

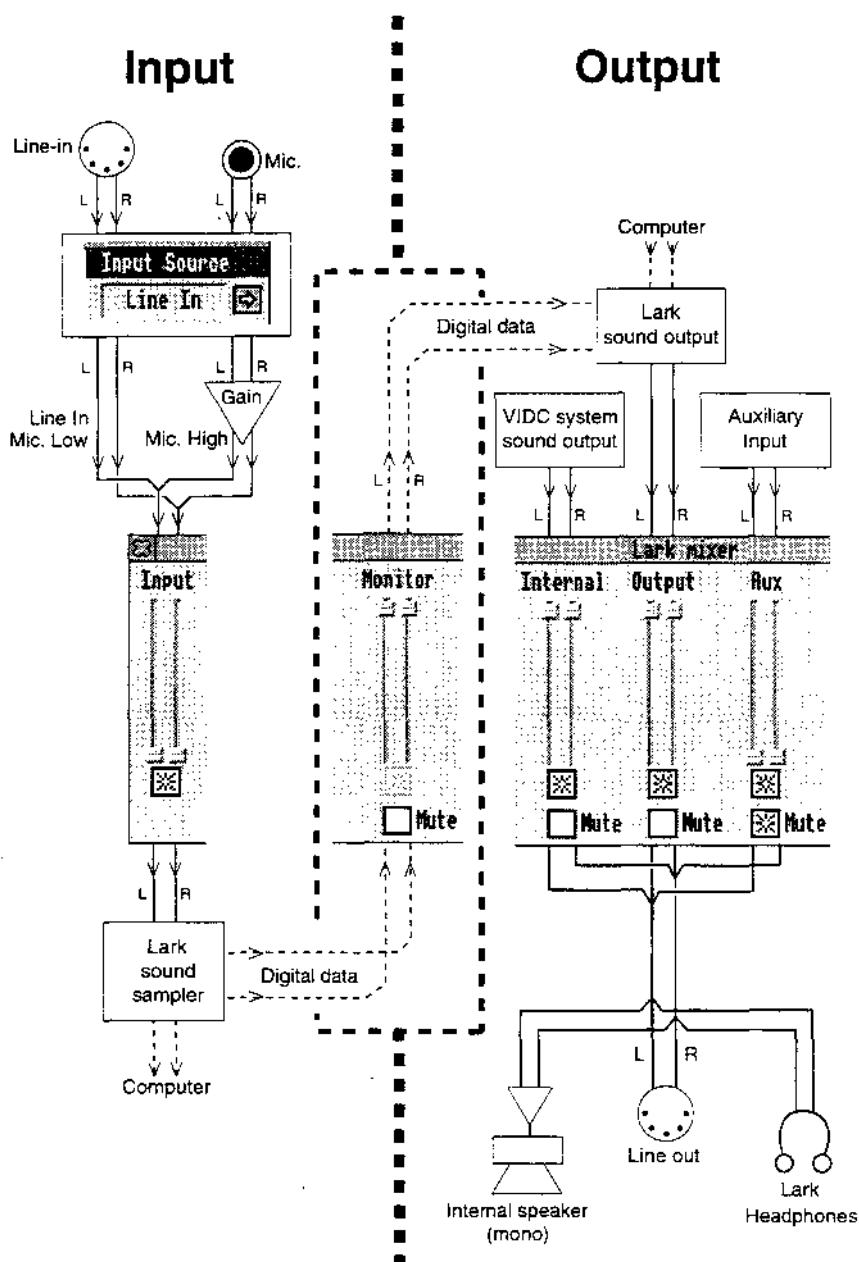
Sets the level of the extra gain (up to 23dB) on the input signal. Setting these sliders to the bottom (the normal position) applies no extra gain.

### *Monitor*

Sets the volume of the input sound mixed onto the output. Does not affect recording.

### *Internal*

Sets the volume of the internal sound system mixed onto the Lark output.



## 4. The software suite

### *Output*

Controls output volume of the Lark's synthesised sounds mixed with Lark's output.

### *Aux*

Controls the volume of the signal emanating from auxiliary expansion cards (if fitted). See 6. *Technical information* for connection details.

The *Input*, *Output* and *Aux* sliders control mixing of the three playback signal sources:

- the computer's internal (VIDC) sound system,
- the Lark card (when playing sound from the computer through the Lark), and
- sound from an auxiliary source.

### *Mute (Below each slider)*

This mutes the Lark card so that the variable concerned inputs or outputs no sound.

There are further options available at the side of the window:

#### *Input source*

Selects the current input source:

*Line in* — selects input from the 5-pin DIN socket.

#### *Mic low*

*Mic high* — these two options select input from the 3.5mm jack socket. *Mic high* adds a +20dB gain. The best option depends on the sensitivity of the microphone. We suggest initially using *Mic low*; if the level is too quiet, try *Mic high*. (You also need to change the links on the Lark card. Refer to 6. *Technical information* for details.)

#### *Output gain*

For synthesized sound, the output signal can be boosted with three different gain levels (Low, Medium, and High). Clicking on the icon to the side displays a menu allowing you to set a new gain level. If set too high, output is distorted.

#### *Playback*

**Note:** the input is sampled and digitally recreated. Thus, with monitor at maximum and 16-bit recording what you sample is really what you play back.

*Channels* defines the number of notes or samples that can be played simultaneously. (Each stereo sample uses two channels.) Usually 4 channels is sufficient.

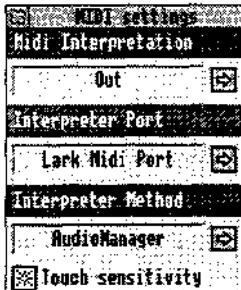
*Frequency* is the sampling frequency at which sound is played back. Higher frequencies give better results but require more processor time. This can slow down other applications.

Choose **Save preferences** from the main AudioCtrl menu to save the current settings as your permanent preferences.

To use your preference settings in the future, you can either:

- **Save preferences** from the main AudioCtrl menu, and run AudioCtrl each time before using the Lark card, or
- Save a desktop boot file including commands to set up the Lark card mixer according to the settings currently showing in the Lark mixer window. See *Desktop boot files* in your RISC OS 3 *User Guide* for more details on these files.

## MIDI



*AudioCtrl* can optionally interpret and play data on the MID1 in or out line.

Clicking on the MID1 option in the AudioWorks preferences window displays a dialogue box that lets you set preferences for MIDI playback.

### MIDI interpretation

This has three options:

- **Off** – data on the MIDI interface is not interpreted,
- **In** – data on the **MIDI in** line (on the MID1 compatible card) is interpreted,
- **Out** – data on the **MIDI out** line (from the M1DI compatible card) is interpreted.

Selecting either **In** or **Out** prevents Lark playing other sounds such as sound samples.

### Interpreter port

If your computer is fitted with more than one MIDI compatible card, this option selects which card to interpret data from.

## Interpreter method

The menu lets you select output through Audio Manager or the Acorn sound system. The Acorn option exists only in case any applications do not work with Audio Manager (we do not know of any such applications).

## Touch sensitivity

The M1DI protocol contains information on how hard keys on the keyboard are pressed. This switch lets you ignore this pressure information.

## Advanced MID| interpretation use

When using M1D1 interpretation, MIDI program changes are interpreted as requests for a different voice to be used. You can check which voices are installed by pressing *F12* and typing:

\*voice info (if the interpreter method is switched to  
AudioManager)  
\*voices (if the interpreter method is switched to  
Acorn)

The following applies only if the interpreter method selected is AudioManager (recommended).

AudioManager voices are like normal RISC OS voices (see your User Guide) but are different in format, offering far more flexibility (including higher quality sound, and output device independence).

You can change sound samples into AudioManager voices by doing *Save as Voice module* in AudioWorks. This saves your sample as a voice module so a middle C M1D1 note plays at the same frequency as AudioWorks would play the sample if you loaded it. The keyboard may be helpful to you in altering the playspeed of your sample to tune it before saving it.

If you have a repeat loop set in your sample when you save it, this loop is repeated whilst the M1DI note is held down.

You can load a voice module by double-clicking on it. Voices are loaded with sequential numbers. There are always two voices present:

- |                |                              |
|----------------|------------------------------|
| 1 WaveSynth    | A simple sine-wave generator |
| 2 AudioManager | A special voice - see below  |

Loading a new voice adds it to the list. To check which voice has which number type \*voi ceinf o as above.

Thus if you have MIDI Interpretation set to **in**, playing notes on your keyboard uses the Lark as a synthesizer. Initially notes are played using WaveSynth, but if you were to load another voice module, you could execute a program change on your synthesizer and use this new voice instead.

As a special case, if a MIDI program change *is* performed to the AudioManager voice (normally number 2) then the system performs slightly differently. When M1DI notes are received through MIDI, instead of playing them as notes on a single voice, the notes generate sound events (see page 50 of the manual for how to assign sound events). You may assign a different sound sample to each note of the octave (using sound events 'Midi Note C' etc.). These should be sound samples in AudioWorks format (like for any other sound event) and not voice modules. Each sample can be played from disk or from memory. Multiple samples may be played concurrently, but only one instance of any given sample may be played at once.

All of the above applies equally when using Midi interpretation on 'out' rather than 'in'. In this instance the notes and program changes come from your sequencer rather than your keyboard.

MIDI files can be dropped onto *!AudioCtrl* for playback. However, you get better results using *Piano*. Lark can also be used with any third-party M1DI software (such as Clares' *Rhapsody* and *Serenade*) that operates under RISC OS 3. You can also use *Maestro* (supplied with the computer on applications disc 2 – refer to the computer's *User Guide* for more information).

Note: *Piano* can require large amounts of memory to play M1D1 files and may not run on 2MB computers.

#### *4. The software suite*

# 5

## If problems occur...

### "System Resources cannot be found"

This message appears upon loading RISC OS applications if the *!System* folder has not first been seen by the computer. One way to avoid this happening on computer with hard discs is to install *!System* in the root directory of the hard disc, with applications stored in secondary folders so that *!System* is always "seen" before the application. Another is to build an instruction to run *!System* into an auto-boot file so that it is automatically "seen" and run whenever the machine is switched on or after a reset.

### Expansion card not recognised

If, upon typing *Podules* against the star on the command-line, Lark does not appear as a listed expansion card, you should switch off your computer, and check that the card is properly installed. In particular, check that the card is firmly pressed into the expansion card backplane.

Next, check whether the Lark ROM module has been unplugged for some reason. Press *F12* and type

*Rom.*

against the \*. A list of installed modules is run, and the Lark module is at the bottom against one of the expansion slot listings. On the right hand side the word "active" should appear, but if for any reason the module is "unplugged", type

*RMReinit Lark*

against the • and press *Return* twice to get back to the desktop.

**A3000 users:** have you changed the link settings on the Lark card (LK6 and LK10) to pins 2-3 ?

## 5. If problems occur...

Failing these suggestions, carefully remove the card from your computer and contact Computer Concepts.

### Lark icon does not appear in *!AudioCtrl* preferences box

As above (that is, the expansion card is not being recognised for some reason).

### Cannot record sound

The following procedures work only if the audio ribbon cable is connected. You therefore cannot use this test on an A3000.

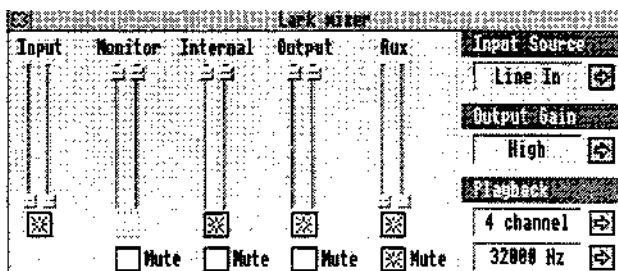
First try using *AudioWorks*:

- 1 load *AudioCtrl* and display the Lark mixer panel,
- 2 check the *Input Mute* button is not pressed.

If you have the internal speaker connected as described in *Installation*, follow procedure 1 Otherwise follow procedure 2.

#### Procedure 1

- 1 If fitted, remove headphones from the rear socket on Lark.
- 2 Check that the mixer preferences window is set up like this:



- 3 Check that the computer's sound system and speaker are switched on. To do this:

- i Click on *Apps* on the icon bar. This opens a directory window.
- ii Double-click on *!Configure* in the directory window. A computer-shaped icon appears on the icon bar.
- iii Click on this icon.

iv Click once on the bell icon labelled 'Sound'.

v Check *loudspeaker enabled* is selected.

vi Check the volume *is* high enough so you can hear the computer beep. The computer beeps every time you adjust anything in this dialogue box.

If you cannot hear the computer beep, either the audio cable or the speaker cable is wrongly connected to Lark. Check the cables against the diagrams in 2. *Installation*.

2 You should now hear the sound source.

If not, increase the *Input* slider until you can.

If you still cannot hear the sound source then refer to *Defective sound source* (below).

3 Select *Create new sample* in AudioWorks (a stereo sample *is* best for this test), and choose *Record*.

4 Ensure the stereo Lark sampler is selected in the record dialogue box.

5 Select *Continuous recording* and check that *High quality* is not selected.

6 Activate your sound source and click on *OK*.

You should continue to hear your sound source through the internal speaker. The incoming waveform should be displayed.

You can now adjust the volume of the incoming signal using *Input* on the mixer panel. Adjust this so that the waveform is *as* large as possible without 'clipping' (touching either the top or the bottom of the display).

- If you can no longer hear your sound source, then you have set up the mixer panel incorrectly.
- If you can hear the sound source but nothing appears in the AudioWorks sample display, then you have probably not set up AudioWorks properly.

When you are satisfied, click on *Stop*. Press *Play* and you should hear your sound sample played back.

## Defective sound source

If you cannot hear the sound through your internal speaker, then the source is either:

- **Silent.** Check that any controls on the sound source are correctly set.
- **Incorrectly connected.** Refer to the diagram of the stereo line-level socket in 6. *Technical information*.

## 5. If problems occur...

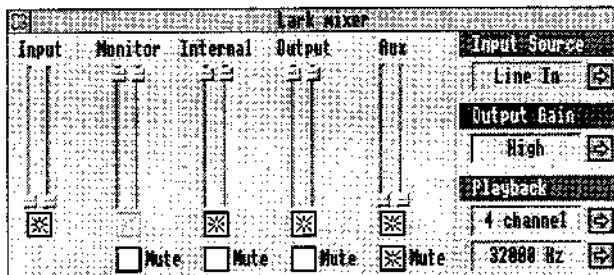
- **Unsuitable.** Note the requirements for sound input sources in *System requirements*. Note especially that a line level source is required. A normal microphone is **not** suitable, unless connected to the 3.5mm jack microphone socket, although you should note the comments regarding microphones in *Connecting a microphone* in 3. *Getting started*.

If the sound is too loud and distorted through the internal speaker, adjust *Input* on the mixer panel.

### Procedure ©

For this procedure, you should have an external amplifier connected to *LineOut* as a monitor and a sound source is connected to Lark.

- 1 Check that the mixer preferences window is set up like this:



- 2 You should now hear the sound source.

If not, increase the *Input* slider until you can.

If you still cannot hear the sound source then refer to *Defective sound source* (above).

- 3 Select *Create new sample* in AudioWorks (a stereo sample is best for this test).

- 4 Choose *Record*.

- 5 Ensure the stereo Lark sampler is selected in the record dialogue box.

- 6 Select *Continuous recording* and check that *High quality* is not selected.

- 7 Activate your sound source and click on *OK*.

You should continue to hear your sound source through the external speaker. The incoming waveform should be displayed. You can now adjust the volume of the incoming signal using *Input* on the mixer panel. Adjust this so that the waveform is as large as possible without 'clipping' (touching either the top or the bottom)

of the display).

- If you can no longer hear your sound source, then you have set up the mixer panel incorrectly.
- If you can hear the sound source but nothing appears in the AudioWorks sample display, then you have probably not set up AudioWorks properly.

When you are satisfied, click on *Stop*. Press *Play* and you should hear your sound source played back.

If you still cannot hear the sound source then refer to *Defective sound source* (above).

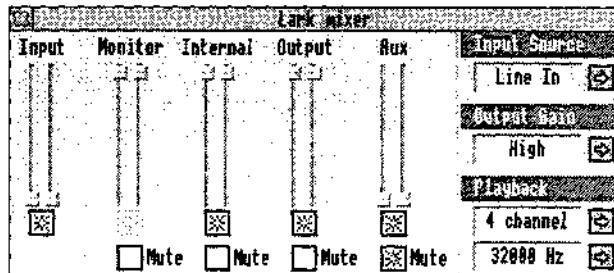
## Sound output does not work

Check that the MIDI interpreter (refer to *4. The software suite*) is off. If set to **MIDI in** or **MIDI out**, the normal sound output is disabled.

**The following test works only if the computer's internal speaker is connected to Lark. You can only do this on an A5000, A540 or Risc PC. For other models of computer try procedure OO in *Cannot record sound as this checks components of the sound output system*.**

- 1 Check the computer's internal sound system is switched on.  
See *Cannot record sound* for details.
- 2 Now load *AudioCtrl* and display the mixer controls.

3 Check that the mixer preferences window is set up like this:



- 4 Set the *Output gain* setting to *high*.
- 5 Now load *Audio Works*, and double-click on a sound sample such as *BellString*. This loads the sample into AudioWorks.
- 6 Click **Menu** on the AudioWorks icon and choose *Preferences*. A window should appear.

## 5. If problems occur...

- 7 Click on the *Devices* icon to open the *Device preferences* window.
- 8 Click **Menu** over the playback device, and select *Lark 44.1kHz st.* Click *OK*.
- 9 Now select *Repeat play* in the AudioWorks sample window and press *Play*. The play cursor should move indicating the sample is playing.

You should hear the sound playing through the internal speaker or headphones if you have these connected. If not, you have probably connected the audio connectors incorrectly or have setup the mixer panel incorrectly.

If you wish to test the connection of the Lark to an external amplifier from the 5-pin DIN socket, note that via *this connection* the Lark's output is at line level, and is **not** suitable for driving equipment designed for direct connection to a headphone socket. The pin-out of the connector is shown in 6. *Technical information*.

Whilst the sound is still playing through the internal speaker, increase the setting of the *Output* slider on the mixer (if you have an external amplifier connected). You should now hear the sound playing through your external amplifier. (It may now be helpful to disable the internal speaker using the *!Configure* application.) You may need to adjust the volume and/or input source on your amplifier. If you do not hear any sound, it is likely that your amplifier is incorrectly connected.

## Sound playback and/or recording are punctuated by bursts of noise

This is due to other expansion cards or other programs in the machine interfering with the correct operation of the Lark. The problem (in technical terms) is that the other product introduces too much 'IRQ latency' into the system.

To check that this is the problem, remove all other expansion cards from the machine. Switch-on the machine in such a way that it does not load any programs. (Depending on your setup, you might do this by holding down *Shift*.) Try the Lark software again.

If it works, then an expansion card or another program is interfering with the correct operation of the Lark. By a process of

elimination (gradually re-introducing elements back into the system), you should be able to tell which expansion card or software is at fault. If you wish to use the Lark card successfully you should remove the offending card or not run that program. Contact the supplier of the product that causes the problem.

This problem may occur as a result of not having ARM 3 installed in your computer. It can also occasionally occur in high bandwidth screen modes on some machines . The computer has to spend so much time handling the screen that there is insufficient time to handle the Lark card correctly. The solution to this problem is to switch into a lower bandwidth screen mode (try Mode 12).

Alternatively, you might consider purchasing a ColourCard from Computer Concepts. This reduces the processor bandwidth needed to display equivalent screen modes (as well as offering you greatly enhanced graphics performance).

## **Sound recording / playback is of poor quality and/or volume**

Sound recording quality improves if the sampling rate is raised, or if the number of bits per sample is increased.

If changing the sound format and rate does not cure the problem, check your sound source is of sufficient quality. Try listening to it directly through the internal speaker.

The sound quality of the internal speaker is limited — an external amplifier connected to the sound D1N connector on the Lark provides far better quality.

To adjust the volume, use the mixer controls. As well as the sliders, remember you can also alter the gain settings.

## 5. If problems occur...

### The sound output is "stumble" with sections missing

There is too much data for the computer to process. Therefore some of the data is lost.

- Reduce the rate or
- increase the number of channels.

### Input is distorted

- Check that the input source selected in the mixer preferences window is suitable for the source. Select *Line* instead of one of the *Mic* options.
- Alter the setting of the *Input* slider.

### Output is distorted

- Alter the setting of the *Output* slider.
- You may have the wrong playback gain setting.

### The computer runs very slowly

Lark is using most of the computer power to play a sample. Other tasks therefore run slowly.

- Reduce the rate or
- reduce the number of channels.

### AudiOWorks reports *All channels in use*

This happens when the MIDI interpreter is selected. The interpreter seizes all available channels ready to play a MID1 sample.

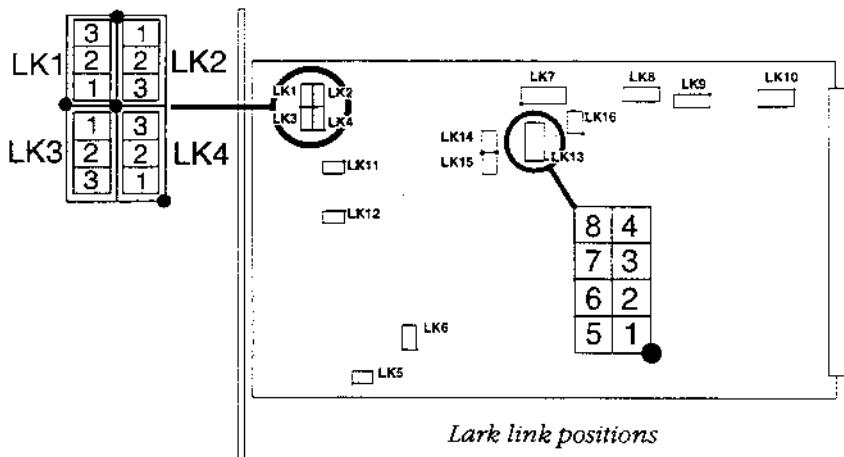
- turn off MIDI interpretation. Select Off in the MIDI dialogue box. (Described in 5. *The software suite*.)

# 6

# Technical information

## 1. Lark link positions

The following diagram illustrates the position of various links on the Lark which may or may not be shorted by default. **Do not alter any of these link settings unless you are sure what you are doing. If in any doubt, you should in all cases first contact Computer Concepts.**



Default link positions shown in bold.

LK1 Microphone Right Input Gain Select

1-2 : +23dB gain on audio input

2-3 : no additional gain

LK2 Microphone Right Input Source Select — set link as LK1

LK3 Microphone Left Input Gain Select — set link as LK1

LK4 Microphone Left Input Source Select — set link as LK1

## 6. Technical information

LK5 Internal speaker connection

LK6 **1-2** : +5V generated from 12V

2-3 : +5V from computer (must be set for A3000)

LK7 V1DC Header (Ribbon cable)

LK8 *for future use*

LK9 *factory set - do not change*

1-2 : 512KB/1MB EPROM

2-3 : 256KB EPROM

LK10 **1-2** : -5V from computer

2-3 : -5V generated on card (must be set for A3000)

LK11 left input level

**fitted** : 2V r.m.s.

not fitted : 1V r.m.s.

LK12 right input level – as LK11

LK13 Auxiliary input

Pins 4 & 8 GND,

Pin 5 Auxiliary Left,

Pin 6 Auxiliary Right.

This header can be used as another (internal) input to the Lark. This can be controlled using the 'Auk slider in ! *AudioCtrl*, but the input cannot be sampled.

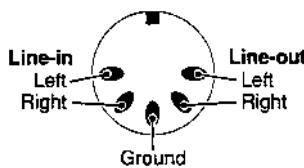
LK14 **fitted**; used for auxiliary input

LK15 **fitted**; used for auxiliary input

LK16 *for future use*

## 2. Stereo line-level socket: pin-out.

The following is the pin-out for the stereo audio line-level connector on the rear panel of the Lark, provided for those users needing to make up their own connecting cables.



*(Viewed from back panel with expansion card PCB held away*

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