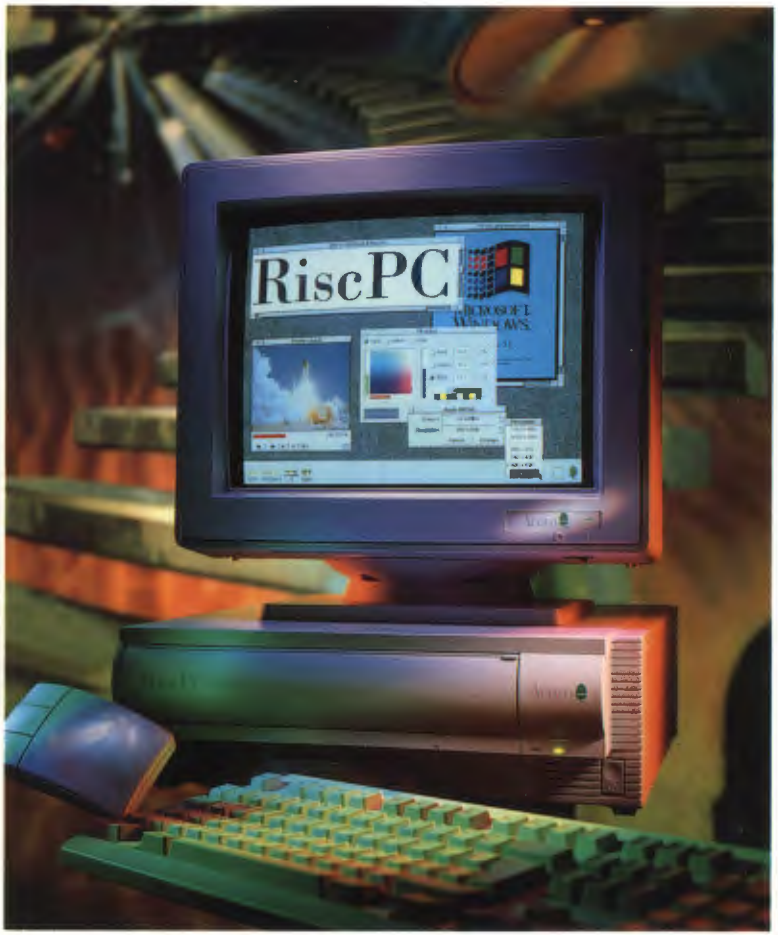
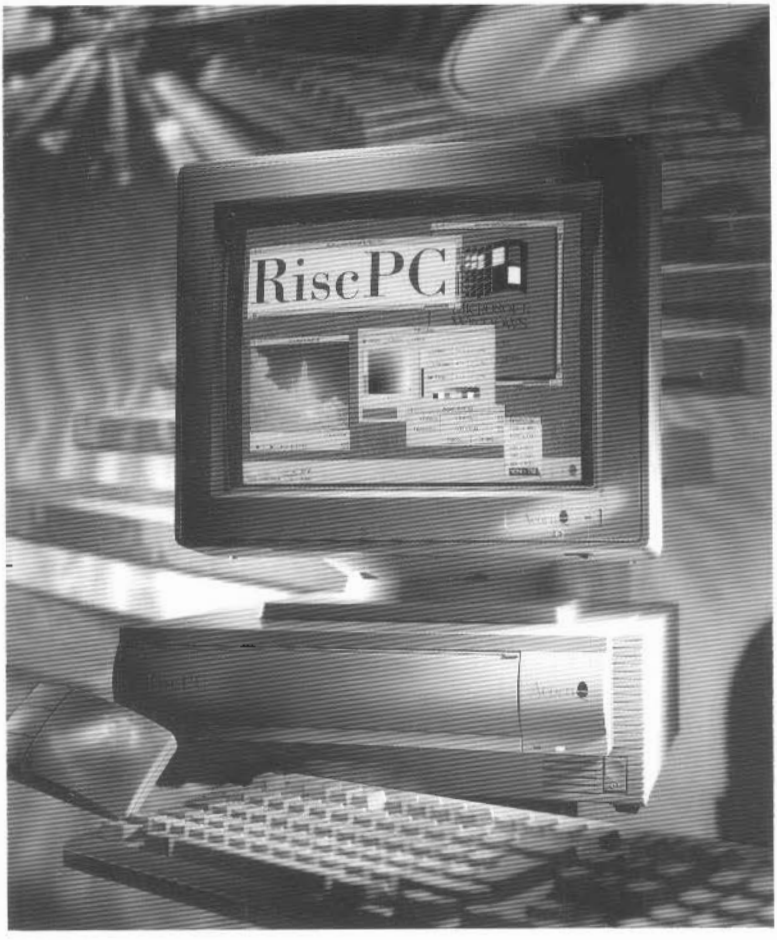
Risc PC x86 Card User Guide



Acorn

Risc PC x86 Card User Guide



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Contents

Introduction

The Risc PC 486 card and Risc PC x86 Second Generation Cards are second processor cards which fit all Acorn Risc PC computers. They allow you to run a PC environment, including standard DOS and Windows applications, from the RISC OS desktop (DOS is supplied with this product, but if you want to install Windows, you'll have to buy it separately). When running, such cards share the computer's resources (such as DRAM, CD-ROM drives) with RISC OS, making installation of PC-specific hardware unnecessary.

There are two variants in the Risc PC x86 Second Generation Card product range. The low-cost entry-level Risc PC x86 Second Generation Card is not processor-upgradable. The other cards in the range (Risc PC x86 Second Generation Card S) come with a socketed processor enabling them to be upgraded from a range of x86 processors.

If you have purchased an upgradable Risc PC x86 Second Generation Card S and want to upgrade your x86 processor, please phone 01223 254254 to arrange your upgrade. This involves returning your card to an authorised Agent, as the upgrade involves processor-dependent modifications to the board and application software. **Do not attempt to upgrade the card yourself**, as this will void the warranty of the product and is likely to cause damage to both the card and the processor.

- All further references to the Risc PC x86 Card apply to the Risc PC 486 Card and both variants of the Risc PC x86 Second Generation Card.
- Note that the Risc PC x86 Card, and its associated software, requires a minimum of 4MB of DRAM in which to run.
- If you are new to using PC DOS or Windows, we recommend that you buy one of the many books available on the subject, in addition to the manuals supplied with those products.

- You'll find references to the DOS and Windows operating systems throughout this guide. Although every effort has been made to ensure the guide is as complete as possible, some parts must inevitably assume a certain amount of knowledge about DOS or Windows. This is especially true of the later chapters, which deal with more advanced use of the Risc PC x86 Card. Always refer to the manual for the relevant operating system if you are in any doubt.

What's in this guide

Hardware installation on page 5 and *Basic software installation* on page 7 give you complete details on how to install the Risc PC x86 Card in your computer, and how to install all the relevant software.

Upgrading an existing system on page 25 tells you what to do if you've already got an existing version of the PC486 software installed, or if you need to re-install this latest PCx86 software.

Using the Risc PC x86 Card on page 27 gives you a basic introduction to using the Risc PC x86 Card.

Transferring files between DOS and RISC OS on page 33 discusses how you can get the most out of your Risc PC x86 Card by sharing files between the two environments.

Using Microsoft Windows on page 37 shows you how to install and use Microsoft Windows. Ignore this chapter if you're not going to use Windows on your computer.

Installing extra drivers on page 39 describes how to connect CD-ROMs, use 16-bit sound, use a Windows Screen driver and connect to a PC network.

Advanced use on page 49 discusses more advanced configuration options and programming details. You can ignore this chapter if you want.

Lastly, *Troubleshooting* on page 51 provides help in the event of a problem, and tells you where you can get support if you need it.

Packing list

You should have a box containing the following items:

- This User Guide
- Risc PC x86 Card software disc (or discs) containing
  - !Boot
  - !PCx86
  - !PCConfig
  - PCDrivers directory (actually a DOS partition) containing new device drivers
  - Readme file, containing any late changes or additions to the instructions in this manual

You'll also receive the following items if you buy the full product (they are not supplied with the Upgrade kit):

- Risc PC x86 Card
- PC DOS containing:
  - Five floppy discs
  - PC DOS 7 User's Guide
  - PC DOS Registration Card
- Owner Support Registration Card
- Product Warranty Policy (Australasia).

You should keep the box containing the card in case you need to return it for any future upgrades.

If any of these items are missing or damaged, please contact your Acorn Computers authorised dealer immediately.

Please take the time to fill in and return the Owner Support Registration Card. The information this provides is used to improve the quality of our products and services.

Operating systems supported

!PCx86 runs DOS, and Windows up to Version 3.11. Other operating systems may be supported in the future. Please contact Acorn on 01223 254254 for details.

Hardware installation

Precautions in use

To avoid electrostatic discharge when installing or removing the Risc PC x86 Card, avoid contact with the IC and connectors, and hold only the edge of the printed circuit board.

After extended use, the chip will become warm to the touch. If you find it necessary to remove the Risc PC x86 Card, make sure that the card has cooled down sufficiently before touching it.

Installing the Risc PC x86 Card in your machine

If you don't feel confident about carrying out this installation, take the Risc PC x86 Card and your computer to your supplier who will fit it for you. A charge may be levied by the supplier for installing the card; such a charge shall be entirely at the discretion of the supplier concerned.

Acorn Computers Limited cannot accept any liability for damage done to the product during installation of internal upgrades, whether or not carried out in accordance with the instructions in this document.

Note that you are advised not to have both a podule PC card and the Risc PC x86 Card installed on your Risc PC at the same time.

Remove the top cover of the computer

Before removing the top plastic cover of the computer

1 switch off the computer

2 remove the power lead from the wall socket.

Do not reconnect the power lead to the wall socket until you have replaced the cover of the computer.

Do not make any adjustments inside the computer while the power lead is connected to the wall socket.

To remove the top cover of your machine, follow the instructions in *Part 3: Inside the computer* of your Welcome Guide.

Fit the Risc PC x86 Card

1 Remove the Risc PC x86 Card from its packaging. Be careful to avoid touching the connector pins.

2 Check that all connector pins are straight. If any appear crooked or splayed, please contact your supplier.

3 Identify where the processor card slots are in the case of your Risc PC. There are two, next to one another, and their position is described in *Part 3: Inside the computer* of your Welcome Guide. The main processor card will be in one of the slots.

Important note: The Risc PC x86 Card **must** be installed in the processor slot nearest the back of the computer, to ensure that both processors have sufficient air flow to cool them. If you find that your main processor is in this slot, you must remove it and place it in the processor slot towards the front of the case before installing the Risc PC x86 Card.

4 Locate the Risc PC x86 Card over the processor card slot nearest the back of the computer, making sure that it is in the same orientation as the main processor card, with the board offset on your left (assuming that the front of the Risc PC is towards you).

5 Push the Risc PC x86 Card down firmly onto its socket.

Replace the top cover of the computer

Replacing the top cover of the computer is explained in *Part 3: Inside the computer* of the *Risc PC Welcome Guide*.

Basic software installation

Important!: The README file on the Risc PC x86 Card software floppy disc may contain changes or additions to the instructions given in this manual. Please read it.

Before you can use your Risc PC x86 Card you need to

- update your !Boot file
- install the Risc PC x86 Card software onto your computer
- use PCConfig to set up your Risc PC for PC use (this includes setting up a DOS partition on your hard disc)
- install PC DOS.

If you want to install any extra drivers (e.g. CD-ROM drivers, 16-bit sound drivers, Windows Screen driver or network software) you can do this later on. This is described in *Installing extra drivers* on page 39.

If you're familiar with RISC OS, and feel confident about performing the steps above, you might like to go to the end of this chapter and look at *Quick instructions* on page 24, where you'll find basic information which will get you started quickly. If you feel that you need more help, just follow the instructions below.

Updating !Boot

To update your copy of !Boot:

1 Insert the Risc PC x86 Card software disc into the floppy drive of your machine and click on the floppy disc icon to display the contents of the disc.

2 Click on the hard disc icon on the icon bar to open the root directory display.

3 Press Menu over the hard disc directory display and make sure the **Filer/Options** submenu settings are as follows:

Force	**Off**
Newer	**On**

4 Drag the !Boot application from the software disc and copy it into the root directory of your hard disc.

This will automatically add the new version of DOSFS to the `!Boot.Choices.Boot.PreDesk` directory.

It also adds the modules necessary to run PCConfig and provide sound DMA support to your existing !System directory.

Important!: You must **not** delete the Boot application from the root directory of your hard disc before copying the new version across. The version on the software disc is not a complete application.

5 If you want, reset the Filer/Options settings to where they were.

Installing the Risc PC x86 Card software

To install the PC software on your hard disc:

1 Make a new directory in your root directory called `PC`. Copy into it the PCx86 and PCConfig applications from the software disc.

PCx86 is the application which lets you use the Risc PC x86 Card. PCConfig is an application for configuring the way that PCx86 works, and is described in the next section.

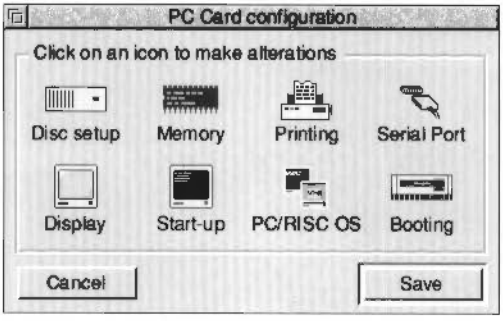
2 Remove the Risc PC x86 Card software disc from the floppy drive and reboot your machine (this is **important**).

Configuring your Risc PC for PC use

Now you need to use PCConfig to allocate hard disc space and memory, and set up a few other options:

1 Double-click on PCConfig. Its icon will appear on the icon bar.

2 Click on the icon bar icon to open the PC Card configuration window:



This application works in the same way as the Configure window you see when you double-click on !Boot: clicking on one of the icons will open up a window in which you can set relevant options.

The sections below describe each of PCConfig's windows. When you've set up using PCConfig, make sure you **Save** your settings as described in *Saving the configuration* on page 19.

Setting up disc space for the Risc PC x86 Card


Disc setup

In order for the Risc PC x86 Card to work, you need to set aside some hard disc space for it to use. This can take the following forms:

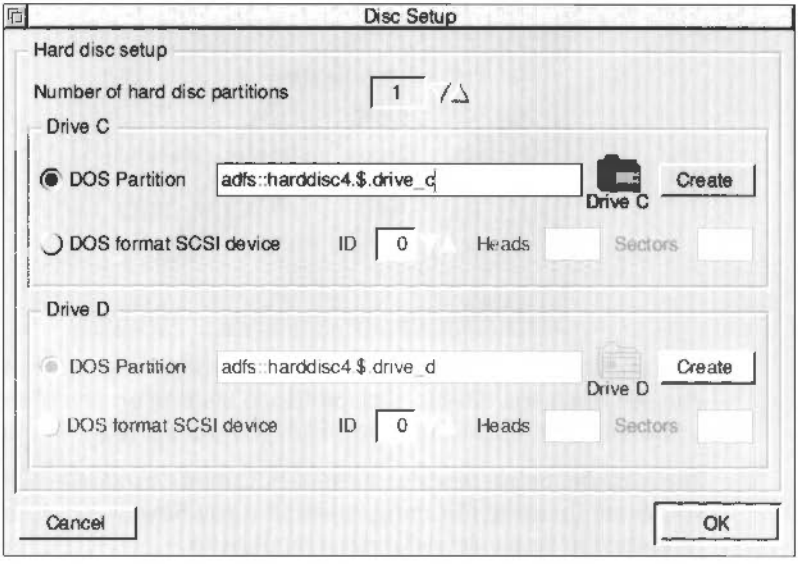
- DOS partition – **part** of a hard disc (SCSI, IDE etc) on your machine made to look like a blank, formatted PC hard disc.
- DOS format SCSI device – a **whole** SCSI hard disc which has been formatted under DOS.

  As there is no speed advantage to be gained in using a DOS format SCSI device over a normal DOS partition, we only recommend using this option for removable devices such as SyQuest drives.


Disc setup

You can specify up to two partitions. You **must** create one partition (or specify an existing one) for the Risc PC x86 Card to work, but the second is optional.

1 Open the Disc setup window:



2 Click on the up and down arrows at the top of the window to specify the **Number of hard disc partitions** you want to create. The default (which you'll probably want to use to start with) is 1. You can specify zero, one or two partitions.

3 Set the type of each partition:

- If you choose **DOS partition**, go to *Setting up a* DOS *partition* on the next page.
- If you choose **DOS format SCSI device**, go to *Specifying a* DOS *format* SCSI *device* on page 12.

Setting up a DOS partition

1 Specify the file name for the partition in the **DOS partition** box.

If you're happy with the default name suggested, and you're creating a new DOS partition, just leave this setting as it is.

If you want to use an existing DOS partition on your machine (e.g. one set up using PC Soft, the software-based PC emulator, or a previous installation of the Risc PC x86 Card) you should drag its icon into this box or type in its full pathname.

If you want to create a partition with a different name, do one of the following:

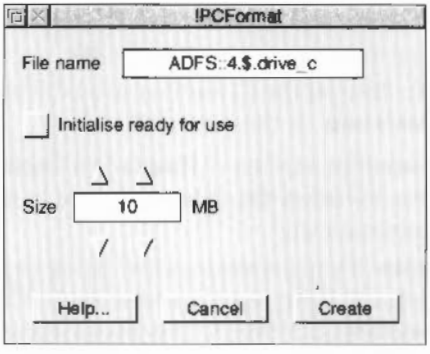
- delete the default name, type in a name for the partition and drag the Drive_C icon onto the directory display in which you want your partition to be created
- delete the default name and type in the full pathname for the partition.

2 If you're using an existing DOS partition, go straight to step 6. If you're creating a new partition, continue with step 3.

3 If you're setting up a DOS partition for the first time, click on **Create**.

Important: You must NOT do this if you are using an existing DOS partition, or you'll lose all information in it.

After clicking on **Create**, the PCFormat window will appear:



4 Use the arrows to specify the size of the DOS partition you want to create.

You'll need to specify at least 6MB in order to be able to install a minimal version of PC DOS. If you want to install the optional tools supplied with PC DOS, you'll need 18.5MB. You'll also need to allow space for your own personal files.

If you intend to install and use Microsoft Windows, please refer to *Using Microsoft Windows* on page 37 before deciding on the size of your DOS partition.

Note: The largest partition you can specify is dependent on hard disc size and the version of RISC OS, and is currently limited to 512MB by PCConfig.

5 When you've specified the size of the partition you want, ensure that the **Initialise ready for use** option in the dialogue box is switched on, and then click on **Create** in the PCFormat window.

The DOS partition file will be created. From within DOS and Windows, this partition will appear as drive C.

6 If you're creating a second DOS partition, repeat steps 1 to 5 above using the **Drive D** section of the Hard disc setup window.

7 When you've finished changing the settings in the Hard disc setup window, click on **OK**.

Specifying a DOS format SCSI device

If you have a SyQuest removable SCSI hard drive attached to your computer, you can elect to use this as one of your DOS hard discs:

1 Click on **DOS format SCSI device** in the Disc setup window.

2 Use the arrows to specify the **ID**.

(To find out the ID number of a SCSI device, press F12 and type `Devices` at the * prompt.)

3 Leave the number of **Heads** and **Sectors** blank or set to zero, as this will allow the PCx86 software to set these values automatically.

Note: If you get errors when trying to read or write to your SyQuest drive, you'll need to set the number of **Heads** and **Sectors** according to the drive's documentation.

4 When you've finished changing the settings in the Disc setup window, click on **OK**.

Formatting a SCSI hard disc under DOS

If your SCSI hard disc is **not** already formatted under DOS, you'll need to do the following **when you've finished using PCConfig** (it's described here for convenience):

1 Ensure that Drive C is set to **DOS format SCSI device**.

2 Start up the Risc PC x86 Card and boot DOS from a floppy disc (if you don't know how to do this, see the PC DOS *User Guide*).

3 Once DOS has booted, run FDISK to partition the drive.

4 Run FORMAT to format the drive.

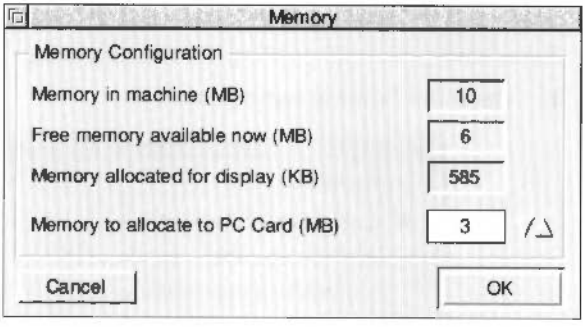
For details on the FDISK and FORMAT programs, please refer to the PC DOS *User Guide*.

Allocating memory to the Risc PC x86 Card

Memory

You need to allocate some RAM for the Risc PC x86 Card to use:

1 Open the Memory configuration window:



2 Use the arrows, or type in a number, to specify the amount of DRAM to be used by the Risc PC x86 Card.

You can specify the following numbers:

1,2,3,4,5,6,7,8,10,12,14,16,20,24,28, or 32.

You can actually type any number in the writable box, but the amount will be rounded down to the nearest legal value.

3 Click on **OK**.

Obviously, the amount you specify (3MB is the default) is dependent on the amount of DRAM in your Risc PC. You need to allocate at least 4MB to run Windows. It's best to allocate as much as you can spare (leave yourself enough to run RISC OS applications if you're multi-tasking). This will enhance performance.

Notes

- You should never normally specify a figure greater than the total amount of DRAM on your machine (but note that you can set PCConfig up for use on another machine).
- Small values limit the number of applications you can run.
- PCx86 will issue a warning if the amount of DRAM specified by the PC memory size is not available.

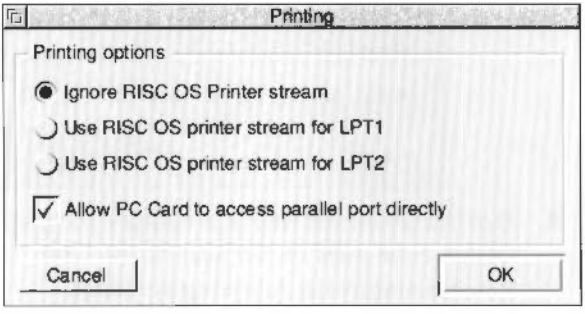
Configuring a printer connection


Printing

Normally, you shouldn't need to worry about this, as the default settings are designed to allow printing to most printers connected to the Risc PC parallel port to work automatically.

If you have problems printing, try the following:

1 Open the Printing options window.



2 Choose **Use RISC OS printer stream for LPT1**.

This will force any printing to LPT1: to go to the RISC OS printer stream. In this case, make sure you've run !Printers before you start up the Risc PC x86 Card (you can then quit it, if you're short of memory) as this defines where any print data is sent.

3 Click on **OK** when you've changed any settings in the window.

Here's what all the options mean in the Print options window:

- **Ignore RISC OS printer stream** will stop the PC card software from attempting to use the RISC OS printer stream.
- **Use RISC OS printer stream for LPT1** will force any printing to LPT1: to go to the RISC OS printer stream.
- **Use RISC OS printer stream for LPT2** will force any printing to LPT2: to go to the RISC OS printer stream.
- **Allow PC Card to access parallel port directly** will enable the PC Card to access the parallel port hardware directly. Selecting this will switch on **Ignore RISC OS printer stream**.

  Note: The parallel port is taken over by the Risc PC x86 Card and can't be used by RISC OS until you quit PCx86.

Notes

- If you use Acorn Access with a printer attached to your machine, other computers will not be able to access that printer.
- Printing over AUN to an Acorn printer spooler is not supported.

Configuring serial port usage


Serial Port

The Risc PC x86 Card can use the Risc PC's serial port directly, allowing you to use a serial device such as a modem. To enable this:

1 Open the Serial Port window.

2 Switch on **Allow PC Card to access the serial port directly**.

3 Click on **OK**.

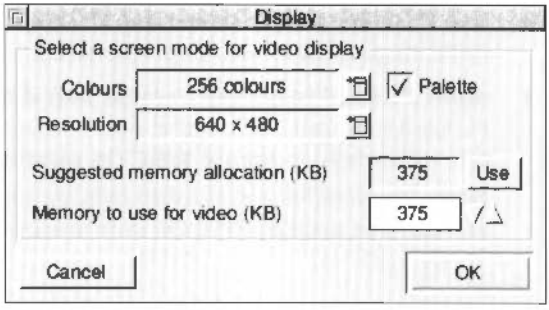
Note: When this option is on, the port is taken over by the Risc PC x86 Card and can't be used by RISC OS until you quit PCx86.

Configuring the video display


Display

You can use PCConfig to set both the screen mode used by Windows and the amount of memory to be allocated for use by the Windows display driver.

1 Open the Display window. This works in the much the same way as the RISC OS Display manager.



2 Use the menu icons to define the display **Colours** and **Resolution** used whenever Windows is run.

You can only choose square pixel modes having a resolution of 640 × 480 (or greater) and 16,256,32K or 16M colours.

Note: If the Monitor type option in !Boot's Screen configuration window is set to Auto, these options will be greyed out.

3 If you're using a 256-colour mode, it's best to allow Windows to use its own colour **Palette**.

4 Allocate screen memory by doing one of the following:

- Click on **Use** to use the suggested memory allocation.
  This is the amount of memory for the screen mode + 25%.
- Use the arrows, or enter a number in the **Memory to use for video** box, to allocate a different amount of memory.
  Entering higher values than the suggested figure (e.g. from 25%-100%) will enable Windows to run somewhat faster.

5 Click on **OK**.

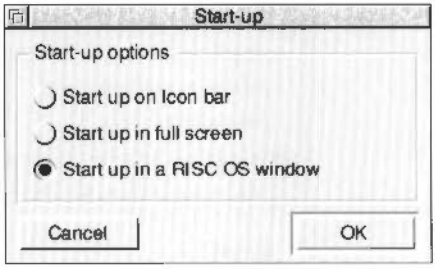
Note: If you're running short of DRAM, try configuring a lower resolution mode for Windows to run in.

Configuring the Risc PC x86 Card start-up behaviour


Start-up

You can specify how the Risc PC x86 Card will behave when you start it up by running PCx86.

1 Open the Start-up window.



2 Choose one of the following three options:

- **Start up on Icon bar** – no window will be displayed until you click on the icon bar icon.
- **Start up in full screen** – the PC will use the entire screen. This mode is single-tasking; the Risc PC x86 Card will run more quickly, but the RISC OS desktop won't be available.


PC/RISC OS

Once in this mode, you can return to the RISC OS desktop using the method currently set in the PC/RISC OS window – see below.

- **Start up in a RISC OS window** – the PC will appear inside a window on the RISC OS desktop. This mode is multi-tasking; you have access to both RISC OS and the PC, but the Risc PC x86 Card will run more slowly. This is the default setting.

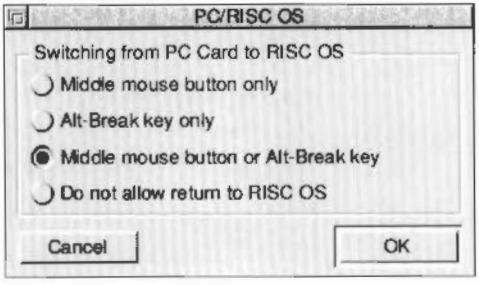
3 Click on **OK**.

Setting the RISC OS/PC Card switching options


PC/RISC OS

You can choose how to return to the multi-tasking RISC OS desktop from the PC Card (Single-tasking mode):

1 Open the PC/RISC OS window.



2 Choose one of the following options:

- **Middle mouse button only** – You can only return to RISC OS by clicking Menu.
- **Alt-Break key only** – You can only return to RISC OS by pressing Alt-Break.
- **Middle mouse button or Alt-Break key** – You can return to RISC OS by clicking Menu or by pressing Alt-Break.
- **Do not allow return to RISC OS** – This prevents you from switching back to RISC OS from Single-tasking mode.

3 Click on **OK**.

Booting from floppy disc


Booting

You can make the Risc PC x86 Card boot from floppy disc, if there is one in the disc drive, and from the hard disc if there isn't.

1 Open the Booting window.

2 Switch on **Allow PC Card to boot from floppy disc**.

3 Click on **OK**.

(You should ensure this option is enabled before you attempt to install PC DOS, but once installed, you can run PCConfig again and turn this option off if you want.)

Setting advanced options

PCConfig allows you to set certain advanced options, such as the cache used by the Risc PC x86 Card. By their nature, these options and their settings will depend on what type of processor chip is fitted to your Risc PC x86 Card.

Important!: Please refer to the `README` file supplied on the software floppy disc to find out which options are available for your particular Risc PC x86 Card, and how they should be configured.

To set these advanced options:

1 Click Menu over PCConfig's icon bar menu and choose **Open/Advanced configuration**.

2 Set any options in the Advanced configuration window, as described in the `README` file.

3 Click on **OK**.

Note: There are yet more advanced options, not normally visible in this window. To make these options visible in the Advanced configuration window, edit the file `!PCConfig.ConfData` to remove the `#` character from the start of the `title` string. Always make a backup copy of your existing `ConfData` file before you attempt to modify it directly.

Saving the configuration

When there are unsaved changes in any of PCConfig's windows, an asterisk will appear in the main PCConfig window's title bar. When you've finished setting options in PCConfig, click on **Save**.

Your settings will be saved into a configuration file inside PCx86.

You can run PCConfig at any time, if you want to change the configuration of your Risc PC x86 Card. Simply run PCConfig, make any changes and save the configuration as described above. The changes will come into effect next time you start up PCx86.

Maximising memory

You can free up some additional memory when you've finished using PCConfig by resetting your machine.

Installing PC DOS

Once you've configured a DOS partition you can install PC DOS by following the steps in the subsections below. For complete details on the PC DOS Setup program, refer to the PC DOS 7 *User's Guide*.

Run the DOS setup program

It's best to do this by booting from floppy disc:

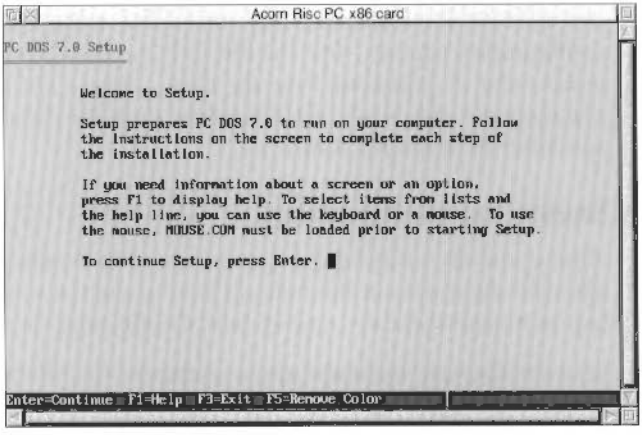
1 Make sure you've saved the **Boot from floppy** and **Start up in a RISC OS window** settings in PCConfig's configuration windows.

2 Put the PC DOS disc labelled Set-up Diskette into the floppy drive.


!PCx86

3 Double-click on PCx86 to load it.

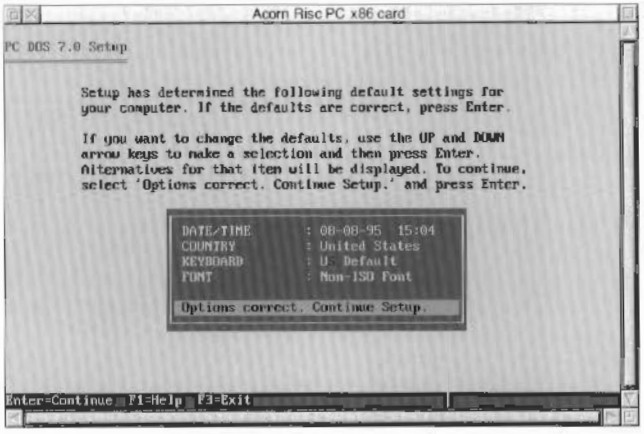
PC DOS will boot from the floppy disc, then the PC DOS Welcome screen will appear.



4 Press Return to continue.

Specify any international settings

After the DOS Welcome screen, a screen is displayed which lets you change the time, date, character set, keyboard layout and ISO font:



1 Use the Up and Down arrows to scroll through the list. Press Return on any setting you want to change and follow the on-screen instructions.

Note: The settings in this window should be as follows:

`Country:`	**`United Kingdom`**
`Keyboard:`	**`UK English`**
`Font:`	**`Non-ISO Font`**

This ensures that the keyboard gives the correct symbols – see *Using the keyboard with the* Risc PC *x86 Card* on page 32 for more details.

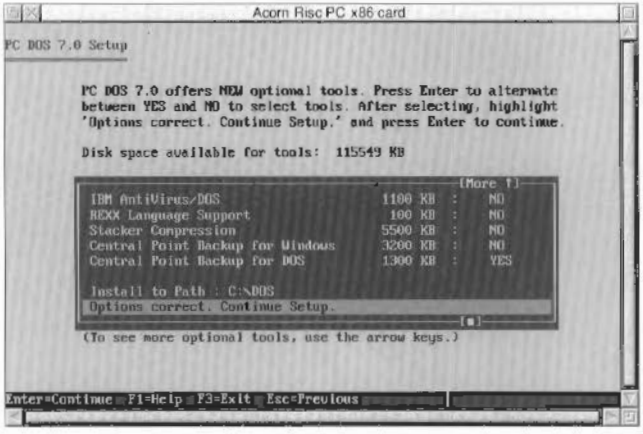
2 When you're satisfied with the settings, scroll down to

`Options correct. Continue Setup.`

and press Return.

Install any optional tools

The next screen allows you to choose which PC DOS tools to install. By default, only **Central Point Backup for DOS** is selected.



1 Use the Up and Down arrows and the Return key to select any other tools you want to install.

2 Scroll down to

```
Options correct. Continue Setup.
```

and press Return.

You don't have to decide which tools to install now, since you can install other tools at any time (see page 23). The PC DOS manuals give more details of which tools you can choose to install.

Back up any old versions of DOS

Note: If you created a new DOS partition when you ran PCConfig, or you don' t want to back up an old copy of DOS, ignore this section.

The next screen allows you to back up any old versions of DOS you may have onto floppy discs. Make sure you have some blank high-density floppy discs – you'll probably need about six (the backup program will format them for you automatically). Follow the instructions on screen.

Perform the installation

Simply follow the instructions on screen, inserting the remaining PC DOS installation discs when prompted.

A progress bar will be displayed, indicating how much of the installation is remaining. Depending on the number of tools you're installing, you may not need to use all five installation discs.

When the installation is complete, you'll be asked to remove any floppy discs from the drive and press a key to restart your computer.

What next?

If you've bought Microsoft Windows, now is a good time to install it. Follow the installation instructions in the Windows documentation, but see *Using Microsoft Windows* on page 37 for additional information on configuring Windows for use on the Risc PC x86 Card.

There's information on using your Risc PC x86 Card in the next chapter.

Installing optional tools at a later date

You can install any of the optional tools at a later stage:

1. Place the PC DOS disc labelled Set-up Diskette into the floppy drive.
2. Type **`a:setup /e`** at the DOS command line.

At the optional tools screen, select the tools you want to install and follow the on-screen instructions.

Quick instructions

If you're confident about installing the software supplied and using it to configure your Risc PC x86 Card and set up a DOS partition on your hard disc, follow these quick instructions. If you need help or get stuck, follow the more detailed instructions earlier in this chapter.

1. Copy the !Boot directory from the Risc PC x86 Card software disc onto the root directory of your hard disc.
2. Copy the !PCx86 and !PCConfig applications from the Risc PC x86 Card software disc onto your hard disc.
3. Remove the Risc PC x86 Card software disc from your disc drive and reboot your computer.

4. Run !PCConfig to configure your PC and set up a DOS partition. You can create a new DOS partition, or if you want to use an existing one, you can drag it onto the Disc setup window.

   For a full description of PCConfig, refer to *Configuring your Risc PC for PC use* on page 8.
5. **Save** any changes you've made and quit PCConfig.

You now need to install PC DOS, as follows:

1. Put the first PC DOS disc (labelled Set-up Diskette) into the floppy disc drive, and load the PCx86 application.
2. Click on the PCx86 icon on the icon bar. This will start up the Risc PC x86 Card and boot PC DOS from floppy disc. The PC DOS Welcome screen will be displayed.
3. Install PC DOS by following the on-screen instructions.
4. Go to *Using the Risc PC x86 Card* on page 27.

Upgrading an existing system

Upgrading existing PC486 software

Read the following notes and, bearing them in mind, follow the instructions in *Basic software installation* on page 7.

- Move your existing PCConfig and PC486 applications to an area that will not be 'seen' by the filer when you next start your machine (preferably to a floppy disc).
- You **must** reconstruct any customised configuration settings by using the new PCConfig. Don't attempt to short-cut the process by copying an existing Config file from PC486 to PCx86.
- When following the instructions in *Setting up a* DOS *partition* on page 11, you can specify your existing DOS partition instead of creating a new one. If you do this, you can also omit the section *Installing* PC DOS on page 20.
- If you use the AMOUSE.COM mouse driver, copy the latest version from the directory `PCDrivers.INSTALL.DOS` to the DOS directory on your hard disc partition (see *Using different mouse drivers with the* Risc PC *x86 Card* on page 31).

Installing extra drivers

If you want to install any of the extra drivers provided, follow the instructions in *Installing extra drivers* on page 39. **Don't** be tempted to use short-cuts, as this may result in an inconsistent Windows setup.

- If you've already installed the CD-ROM or 16-bit sound drivers, do not use the automated batch files (UPDATE.BAT). They'll result in multiple installations. Instead, follow the instructions in *Re-installing this version of* PCx86 below.
- If you've already installed CD-ROM drivers, then you need only replace A1CD.SYS with the one supplied on the floppy disc in directory `PCDrivers.INSTALL.CDROM`.

Re-installing this version of PCx86

If you need to re-install this version of PCx86, follow the instructions in *Basic software installation* on page 7, bearing in mind the notes in *Upgrading existing* PC486 *software* above.

CD-ROM drivers

If the CD-ROM drivers have installed correctly, the following lines should appear in your `CONFIG.SYS` file:

```
DEVICE=C:\DOS\A1CD.SYS /D:MSCD000
LASTDRIVE=Z (optional, depending on machine configuration)
```

and the following line should appear in `AUTOEXEC.BAT`

```
C:\DOS\MSCDEX /D:MSCD000
```

16-bit sound drivers

If the 16-bit sound drivers have installed correctly, the `SYSTEM.INI` file in the `WINDOWS` directory should contain the following lines once only:

```
[sndblst.drv]
port=220
int=7
midiport=330
dmachannel=1
hdmachannel=5
```

and

```
device=vsbpd.386
```

The line `device=vsbd.386` should **not** appear.

The file `AUTOEXEC.BAT` should contain the line

```
SET BLASTER=A220 I7 D1 H5 P330 T6
```

The following files should be in the `WINDOWS.SYSTEM` directory:

```
SBE16AUX.DRV
SBE16SND.DRV
VSBPD.386
```

Using the Risc PC x86 Card

Starting the Risc PC x86 Card

To start the Risc PC x86 Card, simply run the !PCx86 application from your hard disc:

1 Make sure there are no floppies in the disc drive.

2 Run PCx86 by double-clicking on its icon.

Note: You'll only need to follow the next step if you've changed the Start-up option in PCConfig from its default value (Start up in a RISC OS window).

3 Click on the PCx86 icon on the icon bar or choose **Single task** from its icon bar menu to start up the Risc PC x86 Card.

You'll see the Risc PC x86 Card start-up message followed by a memory test on the card. This is followed by the message `Booting from ...` and the floppy disc light will be illuminated briefly even if you are booting from a hard disc.

When PC DOS has booted, you'll see the DOS prompt:

```
C:\DOS>_
```

Now you can use the Risc PC x86 Card as you would a normal PC.

Possible problems

If your DOS hard disc partition is not bootable, or you have inserted a non-system DOS disc into the floppy drive, an error message to this effect will appear. Remove the floppy disc (or insert a system DOS disc) and try again.

Similarly, the Risc PC x86 Card will not start if your DOS partition is read-only (when viewed from RISC OS): ensure that you haven't locked the hard disc by using the **Lock** screen of the !Boot configuration window.

Using the Risc PC x86 Card

You can operate the Risc PC x86 Card in either single- or multi-tasking mode. By default, it starts up in the way you specified in PCConfig's Start-up window (see page 17).

Single-tasking mode

In single-tasking mode, the full speed of the Risc PC x86 Card is available; the whole screen appears as though you're just using a PC, and the RISC OS desktop is suspended.

Returning to Multi-tasking mode

You can return to multi-tasking mode and the RISC OS desktop using whichever methods you've set in PCConfig's PC/RISC OS window (by default, you can press Menu or Alt-Break).

Multi-tasking mode

In multi-tasking mode, the Risc PC x86 Card runs in a RISC OS window along with other RISC OS applications; the Risc PC x86 Card runs more slowly, but extra features are available.

When in multi-tasking mode, the PCx86 window must have the input focus (as indicated by its title bar being yellow) before you can use it. Click Select over the window to give it the input focus.

Important: While the PCx86 window has the input focus, you cannot access the RISC OS command line by pressing F12. To access the command line, either close the PCx86 window, or give the input focus to another RISC OS application (e.g. click Select over an Edit window).

Using the mouse in multi-tasking mode

When running in multi-tasking mode, up to two mouse pointers will be visible on your computer screen: the RISC OS pointer and the PC pointer (either DOS or Windows, depending on what software you are running).

The mouse can only drive one pointer at a time, so you need to choose **Connect mouse** from the Risc PC x86 Card window menu to be able to use the PC pointer. Click Menu to reconnect the mouse to the RISC OS pointer.

Entering single-tasking mode

If you double-click over the PCx86 window, it will switch to single-tasking mode; you can return to the desktop by pressing Menu or Alt-Break (or whichever method you've set in PCConfig's PC/RISC OS window).

When the mouse is connected to the PC pointer, you won't be able to switch from multi-tasking to single-tasking mode by double-clicking: reconnect the mouse to the RISC OS pointer first, by clicking Menu.

If you close the window whilst the PC is in multi-tasking mode you can restore it by either clicking Select on the PCx86 icon on the icon bar or choosing **Single task** from the icon bar menu.

Saving and printing the screen

Pressing Menu over the PC screen when in multi-tasking mode displays a menu which allows the screen to be saved in sprite (i.e. Paint) and text (i.e. Edit) formats. Note that in some PC applications you'll only be able to save data as a sprite.

You can also use the Print Scrn key on the keyboard to capture the PC screen.

Closing down the Risc PC x86 Card

There are two ways of closing down the Risc PC x86 Card:

- Suspending the Risc PC x86 Card.
- Shutting down the Risc PC x86 Card completely.

Suspending the Risc PC x86 Card

If at any time you want to return to RISC OS, but you don't want to shut down the Risc PC x86 Card completely, you can suspend it. This means that you can return to using the PC at any time without having to wait for it to reboot.

- To suspend the PC when in single-tasking mode click the Menu button. This returns control to RISC OS.
- To suspend the PC when in multi-tasking mode, move the input focus to another RISC OS window.

To return to the PC display again, click Select on the icon bar icon, or on the PC screen itself.

Shutting down the Risc PC x86 Card

Important!: Before quitting PCx86, always exit Windows and return to the DOS prompt. This will ensure all your work is saved. Failure to do this may result in an inconsistent hard disc, which could lead to data loss, or prevent you from using the Risc PC x86 Card properly.

When you've finished using the Risc PC x86 Card, shut it down completely to return full control to RISC OS.

1. If you're running Windows, quit any applications then **Exit** from the Program Manager (or press Alt-F4) to return to DOS.
2. Choose **Quit** from PCx86's icon bar menu.

Resetting the Risc PC x86 Card

Reset the Risc PC x86 Card by pressing Ctrl-Alt-Del. This will reboot your Risc PC x86 Card, and may take several minutes.

This is particularly important if you've altered your `CONFIG.SYS` or `AUTOEXEC.BAT` files and want the alterations to come into effect.

Configuring the Risc PC x86 Card

When the PC starts up, two files affect its configuration. These must be in the root directory of the DOS partition for DOS to work:

- CONFIG.SYS sets up the DOS operating system by defining data structures which determine how many files can be open, what languages can be displayed, and what device drivers are installed to access memory, CD-ROMs, etc. It is consulted by DOS when the Risc PC x86 Card starts up.
- AUTOEXEC.BAT is a standard batch file which contains executable DOS commands. It is read by the system after CONFIG.SYS, once DOS is running. It's here that standard programs which you always want to be run are started (e.g. mouse drivers, virus checkers). Environment variables are also specified here.

Setting up these files is beyond the scope of this manual, and you should refer to the chapter on *Configuring your system* in the PC DOS User's Guide for more details. The subject will also be covered in detail in any commercially available book on DOS.

Configuration of DOS applications

Whenever possible, you should run applications in 'DOS compatibility mode' to ensure that they work correctly with the Risc PC x86 Card. If an application has a **DOS compatible** option, you should use this in preference to other choices offered.

For example, the Central Point Backup facility supplied with PC DOS will only work when the **DOS compatible** option is selected.

Using different mouse drivers with the Risc PC x86 Card

There are a number of mouse drivers which you can use with the Risc PC x86 Card. One is installed automatically with PC DOS, and will be run by default whenever you start up DOS. You'll probably find that this mouse driver (called MOUSE.COM) is adequate for all your needs.

If you find that you run short of memory when using the Risc PC x86 Card, you might consider using an alternative mouse driver, AMOUSE.COM. This is supplied on the Risc PC x86 Card software disc (in the directory PCDrivers.INSTALL.DOS) and uses less memory than MOUSE.COM.

Once installed in your DOS partition, type AMOUSE at the DOS prompt to run it. Replace the relevant command in your AUTOEXEC.BAT file if you want to use this driver every time you use the Risc PC x86 Card.

Another mouse driver is supplied with Windows, and you might want to consider using this if you have Windows installed. Also called MOUSE.COM, it is more comprehensive but uses more memory.

Note: If you are asked by PC application software what sort of mouse your system uses, you should specify a BUS mouse, since this is the type that is emulated.

Using the keyboard with the Risc PC x86 Card

As long as you installed PC DOS according to the instructions given in *Installing* PC DOS on page 20, you should find that your keyboard works correctly with the Risc PC x86 Card.

To get the keyboard to give the correct symbols it must be configured as a UK English keyboard when you install PC DOS. A KEYB command will be added to your AUTOEXEC.BAT file during installation to ensure that all relevant DOS and Windows software behaves correctly.

Transferring files between DOS and RISC OS

Many file types are only useful or meaningful within the realms of one operating system. However, you can use some file types in both operating systems, with a little care.

Transferring files between DOS and RISC OS is best achieved using RISC OS. You can treat the DOS partition on your hard disc just like any other directory – simply double-click on it to see the files it contains. You can then move files between RISC OS and DOS directories as you would move them between RISC OS directories.

It's possible to transfer many types of data (such as images, text files and spreadsheet information) between RISC OS and PC applications, so long as a you save the data in a format which can be read by the destination application.

Restrictions

It's important to realise that there are some restrictions involved when transferring files between DOS and RISC OS:

- Before copying files from your DOS partition into your RISC OS file space you need to freeze the Risc PC x86 Card by choosing **Freeze** from the PCx86 icon bar menu.
- **Important!** Never try to change your DOS partition (or any files within it) from RISC OS when PCx86 is running. This means, for example, that you must quit PCx86 before using RISC OS to delete files from your DOS partition, not just Freeze it.

Translation of DOS and RISC OS filenames

DOS filenames are in "8.3" format, that is, a name of up to 8 letters, followed by a full stop, followed by an extension of up to 3 letters. The full stop and extension may be omitted, but in practice they rarely are.

- When moving a file from a DOS partition to RISC OS, the filename will automatically be changed. The full stop in a DOS filename will become a / character, and the filename will be truncated to 10 characters (including the /).
- When moving from RISC OS to DOS, only the first 8 letters of the filename will be used. DOS does not preserve case, unlike RISC OS, and will display names in upper case.

  For example, the DOS file `REPORT59.DOC` would become `REPORT59/D` in RISC OS, and the RISC OS file `NewReport` would become `NEWREPOR` in DOS.
- There are other characters with special meanings in either DOS or RISC OS. These will automatically be translated when transferring files between systems, as follows:

RISC OS	DOS
#	?
?	#
+	&
=	@
;	%
<	$
>	^

  Thus, a % character in a DOS file automatically becomes a ; when the file is transferred to RISC OS, and vice versa.
- In general it's best to use only alpha-numeric characters and the underscore character (_) for naming files which you want to transfer between file systems.
- You can use the command `*DOSMap` to specify mappings between DOS filename extensions and RISC OS filetypes. See the RISC OS 3 *User Guide* for details.

Transferring files from DOS to RISC OS

Text-based files

You can load any ASCII (text only) files created in DOS or Windows into a RISC OS text editor such as Edit. Note, however, that you should avoid editing DOS system files (such as `CONFIG.SYS` or `AUTOEXEC.BAT`) with a RISC OS text editor (it's best to use the DOS editor, E, as it preserves the necessary control characters).

You can load CSV files, such as those created by many DOS and Windows spreadsheets, into most RISC OS spreadsheet or database applications.

Bitmap images

Bitmap images from DOS or Windows can be in one of many different formats, such as TIFF, PCX, BMP or GIF. When moving images into RISC OS, you'll usually want to convert them into a sprite, so that you can view them in Paint or include them in any appropriate RISC OS application.

The ChangeFSI application, distributed with RISC OS, can convert many images into sprite or JPEG format. For full details about ChangeFSI, see the RISC OS 3 *User Guide*, and see the text files within the ChangeFSI application itself.

As a rough guide, when you convert an image to a sprite you should always display as many colours as your machine will allow and for best results try to use a square pixel mode such as 640 × 480.

Vector images

You'll usually have to save figures created in PC vector-based drawing applications (similar to Draw) in a format that ChangeFSI can read. Most such packages offer a number of output formats.

Transferring files from RISC OS to DOS

Text-based files

ASCII files will load into any DOS or Windows text editor, and CSV files created by RISC OS spreadsheet applications will load into most DOS or Windows spreadsheets.

Bitmap images

Some RISC OS applications can save bitmap images in formats understood by PC applications, such as GIF, TIFF or JPEG.

Saving bitmap and vector images as EPS files

Many PC applications can import EPS files. To create an EPS file of any sprite or Draw file, configure the Printers application so that a PostScript printer driver is active, and the output is written to **File**, rather than to a printer. On printing the sprite or Draw file, an EPS file will be created which you can move into your DOS partition and import directly into the application. The EPS image may only be visible when it is printed, however.

Note: You can create an EPS file from any RISC OS application which makes the SWI call PDriver_SelectIllustration (as opposed to PDriver_SelectJob) to start a single page print job. Contact the publisher of the application for more details.

For more information about Printers, see the RISC OS 3 *User Guide*.

Using ChangeFSI from the command line

ChangeFSI, when run from the RISC OS command line, can convert sprites into various formats recognised by DOS. In particular, it can create PBM (Portable Bitmap) files which many other systems recognise. For full information, refer to the text files in the ChangeFSI application itself.

Using Microsoft Windows

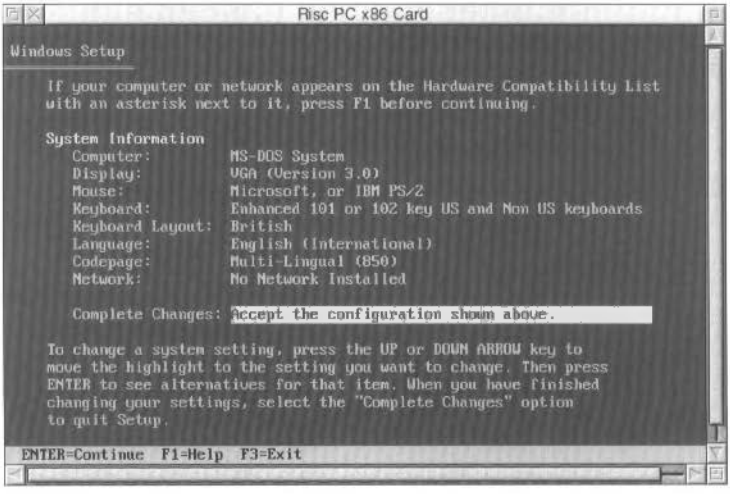
If you want to install Windows in your DOS partition, you should allow around 20MB for the Windows installation itself, and several MB for the swap file used by Windows. You'll also need space (typically 30MB) for each Windows application you want to install.

These figures can be reduced if you don't perform a full Windows installation: see the Windows documentation for more details. As a very rough guide, however, you need to specify a DOS partition of **at least** 80MB if you want to use Windows comfortably.

Things to note when installing Windows

In order to use the Risc PC x86 Card with Windows 3.1 or 3.11 you must do the following when installing Windows:

1 Choose **Custom Setup** in the Windows Setup window. The window will then change to allow you to set various options:



2 Go to the Display option and choose **VGA (Version 3.0)**.
Make sure the options in Windows Setup are as follows:

```
Computer:           MS-DOS System
Display:            VGA (Version 3.0)
Mouse:              Microsoft, or IBM PS/2
Keyboard:           Enhanced 101 or 102 key US and Non
                    US keyboards
Keyboard Layout:    British
Language:           English (International)
Codepage:           Multi-Lingual (850)
Network:            No Network Installed
```

After making these selections you can proceed with the installation as detailed in the Windows documentation.

Notes

- The Risc PC x86 Card can run Windows in any mode (Standard, Enhanced or Extended), although different amounts of RAM will be required for each mode. Note that you can only run Windows in Enhanced Mode if you have **at least** 4MB of PC memory free. 8MB is preferable, and additional RAM will increase performance accordingly.

  Before starting Windows, you **must** ensure that the amount of free memory on your Risc PC is equal to this value, plus the amount of memory needed to run PCx86, if you want to achieve reasonable performance.
- It is possible to run Windows in Standard Mode using less than 4MB of PC memory, but this is not recommended.
- You can install the Windows Screen driver, supplied on the Risc PC x86 Card floppy disc. This is described on page 39.
- You can run DOS applications in DOS boxes within Windows using the Risc PC x86 Card. To do this, set the execution options in the PIF file to exclusive, and not background.
- To improve file access with Windows for Workgroups, set file access to 32 bit in Control Panel/Enhanced/Virtual Memory.
- You **must** ensure you exit Windows completely before shutting down the Risc PC x86 Card.

Installing extra drivers

You can install extra device drivers at any time after installing PC DOS/Windows. This section tells you how to install

- Windows Screen driver
- CD-ROM drivers
- 16-bit sound drivers
- Network drivers.

For the most part, installing any of these drivers is automatic. All you need to do is copy the appropriate drivers into your DOS partition and follow simple setup and installation instructions.

Important!: These instructions assume that you have a standard PC setup, with **no** similar previously-installed software. If this is not the case, you'll need to follow the instructions given in the appropriate `README` file on the Risc PC x86 Card floppy disc (in the `PCDrivers.INSTALL` directories) to install the drivers by hand.

Copying the drivers to your DOS partition

Before you can install any of the extra drivers supplied, you need to copy them to your DOS partition:

1. If you're running PCx86, shut down the Risc PC x86 Card (see page 30).
2. Put the Risc PC x86 Card software disc in the floppy disc drive.
3. Click on the floppy drive icon and open the `PCDrivers` directory.
4. Open a directory display for your main DOS partition (`Drive_C`).
5. Copy the `INSTALL` directory from the floppy disc into your main DOS partition.

6 Choose **Dismount** from the floppy disc drive icon bar menu, then remove the floppy disc.

7 Start up the Risc PC x86 Card again, so that you can see the DOS prompt.

Now that you've followed the instructions in this section, you're ready to install the drivers. You don't have to install them all at once – for example, there's no point in installing the CD-ROM drivers if you have no CD-ROM drive connected to your machine.

Installing the Windows Screen driver

Note: During this process, you'll be asked to insert one of the Windows installation discs: make sure you have them to hand.

The Windows Screen driver accelerates Windows on the Risc PC x86 Card. The version supplied will work in modes using up to 16 million colours, at any resolution your monitor and computer are capable of displaying.

For example, the following table shows some of the modes an AKF60 monitor is capable of displaying, with differing amounts of VRAM in your computer.

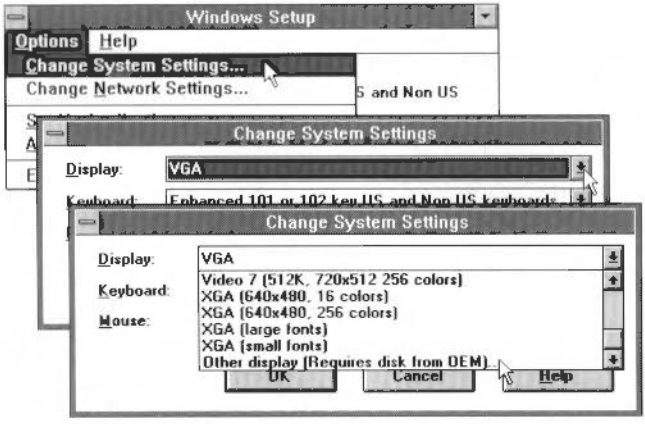
VRAM	VGA 640 × 480	SVGA 800 × 600	XVGA 1024 × 768
0MB	256 colours	256 colours	16 colours
1MB	32K colours	32K colours	256 colours
2MB	16M colours	16M colours	32K colours

Here's how to install the Windows Screen driver:

1 With the Risc PC x86 Card window showing the DOS prompt, type `WIN` to start Windows.

2 Start the Windows Setup application (in the Main work group) and choose **Options/Change System Settings...**.

3 Click on the arrow to the right of Display and choose **Other Display (Requires disk from OEM)...** at the bottom of the list.



4 Type in the location of the Windows Screen driver (`C:\INSTALL\WINDOWS`) and click on **OK**.

5 Make sure **Configurable ARM Driver (4,8,16,32 bpp)** is highlighted and click on **OK**.

6 Click on **OK** in the Change System Settings window.

7 You'll be asked to insert one of the discs you used when you installed Windows. Insert the disc and click on **OK**.

Note: The OEMSETUP/INF file supplied with this version has to assume a particular version of Windows when prompting for discs. Here it assumes version 3.11 (of both Windows and Windows for Workgroups). If you have a different version (3.0 or 3.1) or even a version supplied by a manufacturer other than Microsoft, some of the files may be on different discs (particularly `vddvga30.386`, which is on disc 1 in version 3.1 and disc 2 in version 3.11). Just insert the disc containing the requested file (shown in the bottom right of the setup screen) rather than the prompted disc, if this is the case.

8 When asked, type in the location of the screen driver ARMDRV.DRV (`C:\INSTALL\WINDOWS`).

9 When asked, click on **Restart Windows**.

The new driver will be loaded the next time you restart Windows, and a different hourglass shape is used to indicate its presence.

You need to specify the RISC OS screen mode and the amount of memory needed for the PC screen. Use PCConfig to do this – see page 8 for details.

If you experience problems with the screen display under Windows with some applications, try reverting to the **VGA (version 3.0)** driver using the Windows Setup window.

Installing CD-ROM drivers

It is possible to use CD-ROM drives attached to your machine from your Risc PC x86 Card. A CD-ROM extension was automatically installed when you installed DOS.

Note: Having followed these installation instructions, the drivers will work under both DOS and Windows.

Here's how to install the CD-ROM drivers:

1 With the Risc PC x86 Card window showing the DOS prompt, type

```
CD C:\INSTALL\CDROM
```

2 Next, just type

```
UPDATE
```

This runs an automatic installation program.

3 Type **Y** to run the update program.

(If you type N, see the `README` file in the directory `INSTALL.CDROM` for instructions on how to alter any files by hand. If you're unfamiliar with DOS, and editing text files from within DOS, you should consult the PC-DOS *User's Guide* that came with the Risc PC x86 Card.)

4 Shut down the Risc PC x86 Card (see page 30).

Configuring RISC OS to recognise CD-ROM drives

You need to set up RISC OS CDFS to recognise the CD-ROM drive:

1 Use !Boot's Discs configuration window to specify the number of CD-ROM drives present, otherwise PCx86 will refuse to work, displaying the error message:

```
No CD-ROM drives working
```

Note that the RISC OS CDFS does not actually require this (so you may not already have it correctly set).

2 Choose **Configure** from the CD-ROM's icon bar menu, and set the number of CD-ROM drives to 1 (or more if you have several CD-ROM drives) and then reset your machine using Ctrl-Break to bring the new configuration into effect.

When accessing a CD-ROM drive from DOS, you must ensure that additional DRAM is available, in addition to that already required by the Risc PC x86 Card and software. Typically, the amount of memory required is equivalent to the CD-ROM buffer size set from within RISC OS. To check this:

3 Click Menu on the CD-ROM icon on the icon bar.

4 Choose **Configure/Buffers** from the CDFS menu.

The current buffer size will be ticked on the **Buffers** menu.

Note: If this is set to **None**, CD-ROM performance will be poor. We recommend that it's set to at least 16K per disc in use.

Next time you use the Risc PC x86 Card, you should be able to access any CD-ROM drives fitted.

Note: CD-ROM drives not supported by Acorn may not work correctly. Contact Acorn, Aleph One or your supplier for help.

Installing 16-bit sound drivers

If you've got Acorn's 16-bit sound card, this upgrade will provide support for playback of WAV files under Windows. The device drivers provided with the Risc PC x86 Card support the sampled sound output requirements of MPC II, and access is available from software which adheres to the Microsoft Windows virtual sound interface.

These instructions tell you how to set up your machine so that the Risc PC x86 Card can access the 16-bit sound capabilities of the Risc PC.

Before you start, you need to have

- installed DOS
- installed Windows 3.1 or 3.11
- a machine with **no** previous sound software installed (remove any previously-installed drivers from your system).

Here's how to install the 16-bit Sound drivers:

1 With the Risc PC x86 Card window showing the DOS prompt, type

```
CD C:\INSTALL\SOUND
```

2 Next, just type

```
UPDATE
```

This runs an automatic installation program.

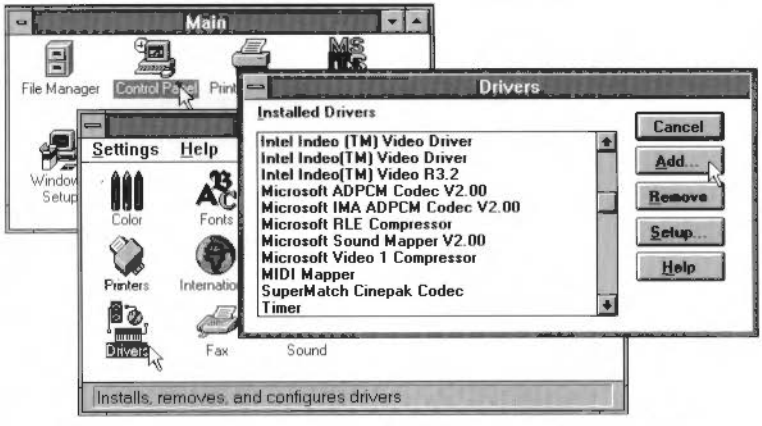
3 Type **Y** to run the update program.

(If you type N, see the `README` file in the directory `INSTALL.SOUND` for instructions on how to alter any files by hand.)

4 Type **WIN** to start Windows.

5 Run Drivers (from the Control Panel in the Main work group).

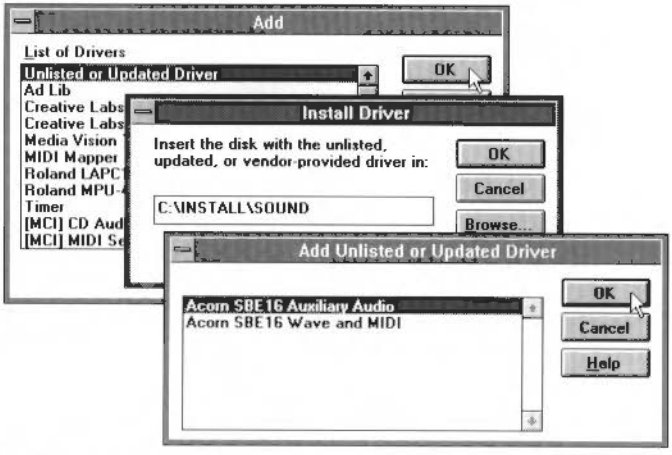
A list of drivers that are currently installed will appear in the Drivers window. You're going to install two new sound drivers.



6 Click on **Add**, make sure **Unlisted or Updated Driver** is selected and click on **OK**.

7 Enter the pathname of the directory into which you copied the sound drivers (**C:\INSTALL\SOUND**) and click on **OK**.

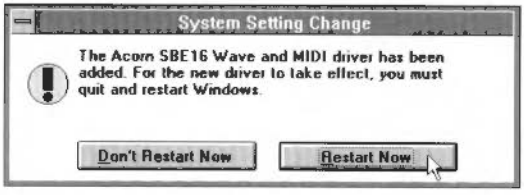
8 Select **Acorn SBE16 Auxiliary Audio** and click on **OK**.



9 Click on **Add**.

10 Repeat steps 7 to 10 to install the **Acorn SBE16 Wave and MIDI** driver.

11 Click on **Restart Now** to restart Windows to install both drivers.



Note: 16-bit sound is only available under Windows (it isn't fully-supported by PC DOS). However, the above procedure may allow some DOS games and applications to use 16-bit sound. For more information about 16-bit sound, see your Acorn dealer.

Testing the 16-bit sound drivers

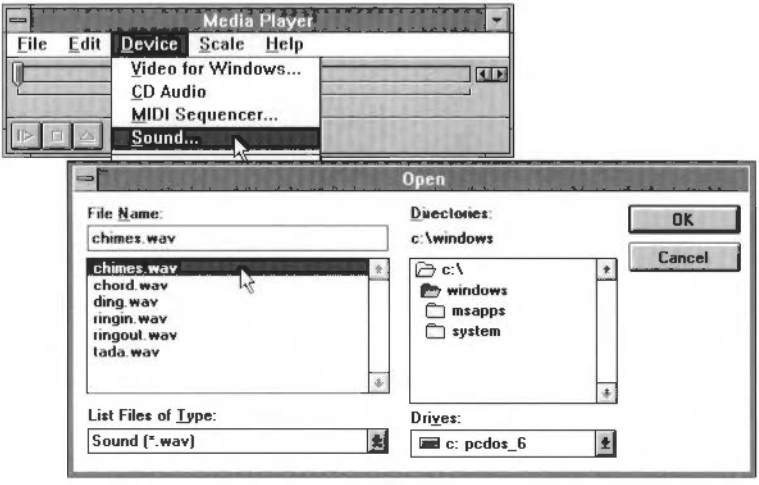
Here's how to check that 16-bit sound works:

1 Start Windows, if it's not already running.


Media Player

2 Load the Media Player (from the Accessories group).

3 Choose **Devices/Sound...** and choose a WAV file to play.



4 Click on the Media Player's Play button to play the WAV file.

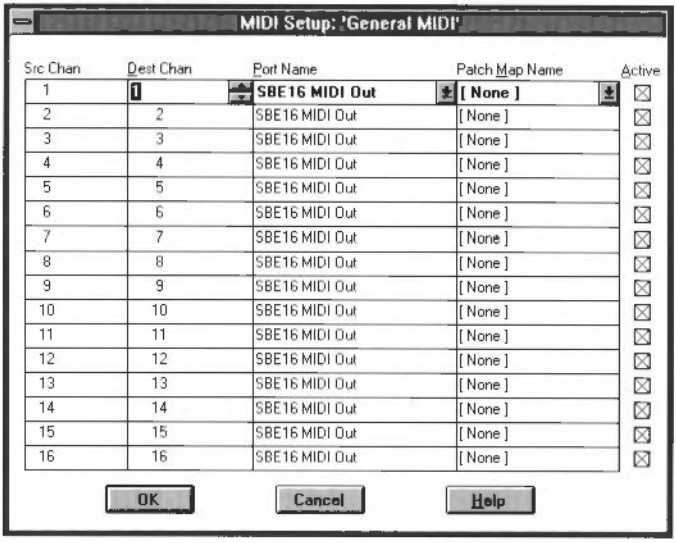
MIDI capability

If you have a MIDI card fitted to your machine, once you have followed the above installation instructions MIDI capability is available under Windows if you carry out the following procedure:

1 Run the MIDI Mapper from the Control Panel of the Main group.

2 Set **General MIDI**.

3 Click on **Edit** and set all the channels to use the Acorn SBE drivers, then click on **OK**.



To check MIDI works:

1 Under Windows, load the Media Player from the Accessories work group.

2 Choose **Devices/MIDI Sequencer...** and choose a MIDI file to play (if there are no existing MIDI files, you'll need to copy one into your DOS partition and then choose it using the MIDI Sequencer).

Networking your Risc PC x86 Card

It is possible to link your Risc PC x86 Card to PC networks and run it as a client, thus allowing you to communicate with other PCs. If you wish to do this, you should contact your Acorn dealer, who will be able to provide you with details of the additional software required and suitable network cards, together with price information.

Advanced use

This chapter describes some of the more technical features available with the Risc PC x86 Card.

Swapping to multi-tasking from DOS

You can stop !PCx86 or set it multi-tasking from DOS program control. The calls are

`Int 15h` with AX = `BA00h`: go into multi-tasking mode

`Int 15h` with AX = `BA01h`: quit !PCx86 (may not have immediate effect!)

Both return AX = `00BAh`, carry clear for success.

Note: You can disable the various methods used by !PCx86 to switch from single-tasking to multi-tasking mode by altering the `ConfData` file (see *Setting advanced options* on page 19).

New SWI to generate PC interrupts

`386PC_GenerateIRQ  0x4468E`

Enter with R0 = number of PC interrupt line to waggle (0-15). Some interrupt lines may be unavailable, depending on hardware. This SWI should be safe to call at any time; the interrupt to the PC may be postponed if it is not available.

Troubleshooting

Like any IBM-compatible computer, the Risc PC x86 Card may fail to run some PC application software perfectly: games and utility programs which drive PC hardware directly are the most notorious culprits. While every effort has been made to support such software it is impossible to guarantee that every available program will work.

If you do find that one of your programs does not run on the Risc PC x86 Card, please contact the appropriate support group, as described on page 54.

Generating debugging information on the Risc PC x86 Card

You can configure PCx86 to generate extensive and useful debugging information as follows:

1. Shut down the Risc PC x86 Card and quit PCx86.
2. Hold down the Shift key while double clicking on PCx86 to open a directory display on its contents.
3. Load the `Config` file into Edit and search for the line which reads

   ```
   Trace          Off
   ```

4. Change this line to read

   ```
   Trace          On
   ```

You will also need to direct the messages these tools generate to a file (otherwise they will appear on your screen). To save debugging messages in a file:

1 Load the `!Run` file into Edit and scroll to the end of the file. You will see two lines which begin with `Run...`, one of which is commented out with a vertical bar | at the start, and one of which is not.

2 Delete the vertical bar | from the start of the line which is commented out, and comment out the other line by inserting a vertical bar | at the beginning.

3 Save the file; this causes all trace information to go into a file called `TraceFile` inside the PCx86 application directory.

4 Reload PCx86 and run the problem program again. You may then examine it after you quit the application.

5 Copy the `TraceFile` onto a floppy disc and return it to your support hotline. Details about who to contact are given in *Where to go for support* on page 54.

Problems with insufficient memory

If the configured value for the PC memory size is slightly greater than the available DRAM on your Risc PC, running !PCx86 may cause the Risc PC x86 Card to crash, leaving the 386PCSupport module with almost all the available DRAM. If this occurs, you will have to reboot your Risc PC.

Error Messages from A1CD.SYS

The Risc PC CD-ROM driver uses several error messages to alert you to problems. These are as follows:

ERROR! Invalid line in CONFIG.SYS

This message means some of the text following `DEVICE=A1CD.SYS` in your `CONFIG.SYS` file is incorrect. Currently you may only have the phrase `/D:`*name* after this. *name* is the name by which the CD-ROM extensions will know the device driver; it should be no more than 8 characters long. If you do not specify *name* it will default to `MSCD000`. See *Installing CD-ROM drivers* on page 42 for full details about installing the CD-ROM device driver.

ERROR! Cannot find BIOS services

This means you are trying to run `A1CD.SYS` on a system which is not a Risc PC x86 Card, e.g. a normal DOS system or PC Soft.

ERROR! No CD-ROM drives working

PCx86 has been unable to find any working CD-ROM drives. This may be because the drive is switched off, or the Acorn CD filing system and driver (CDFS) is not loaded, or you have not configured at least one CD-ROM drive as noted above.

Monitor modes

By default, mode 27 is used for VGA: 640×480 display, and mode 31 is used for SVGA 800×600 display in DOS and Windows.

For some monitors, the default definitions of these modes may give a slow refresh rate and hence a flickering display. In this case, edit the monitor definition file (by commenting out the low-frequency 640×480 & 800×600 display mode) to give a better display.

Selection of modes for games

Applications (typically games) which program the video controller to generate unusual screen modes can only be supported if such a mode is provided by RISC OS. Where a mode does not exist, !PCx86 will revert to multi-tasking and show the Risc PC x86 Card display in a window. You can add RISC OS modes to your monitor definition file to allow such applications to single-task, but you should not attempt to do so unless you understand what you are doing.

An application note (number 254) is available from Acorn Customer Services, describing in detail how to do this.

PC applications using CMOS settings

PC CMOS settings are constructed when the Risc PC x86 Card is booted, not saved in the CMOS memory of the Risc PC. Any applications which save their status in the PC CMOS area will not retain these values after the PC card support software has been quit.

Where to go for support

In the event of a particular piece of software failing to function correctly on the Risc PC x86 Card, you should contact the following organisations, **in the order specified below**.

- The supplier of the PC software which is failing to function.
- Your On-Site Service and Hotline Support, as described on your guarantee card.
- Acorn Customer Services.

Before contacting any of these organisations, it will save a great deal of time if you have the following information to hand:

- Version numbers of all software (and modules) in use.
- The hardware in use.
- The hardware configuration settings used by the software.
- The trace information from the Risc PC x86 Card. See *Troubleshooting* on page 51 for details of how to produce this information.

Reader's Comment Form

Risc PC x86 Card, Issue 1
Part number 1411,003

We would greatly appreciate your comments about this Manual, which will be taken into account for the next issue:

Did you find the information you wanted?

Do you like the way the information is presented?

General comments:

If there is not enough room for your comments, please continue overleaf

How would you classify your experience with computers?

- ☐ **Used computers before**
- ☐ **Programmer**
- ☐ **Experienced User**
- ☐ **Experienced Programmer**

Cut out (or photocopy) and post to:

Dept RC, Technical Publications
Acorn Computers Limited
Acorn House, Vision Park
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Your name and address:

This information will only be used to get in touch with you in case we wish to explore your comments further

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