Support Group Application Note
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New features of RISC OS 3 Version 3.5

This document details the major differences between RISC OS 3 Version 3.10 and RISC OS 3 Version 3.5 which is supplied with the Risc PC range of computers.

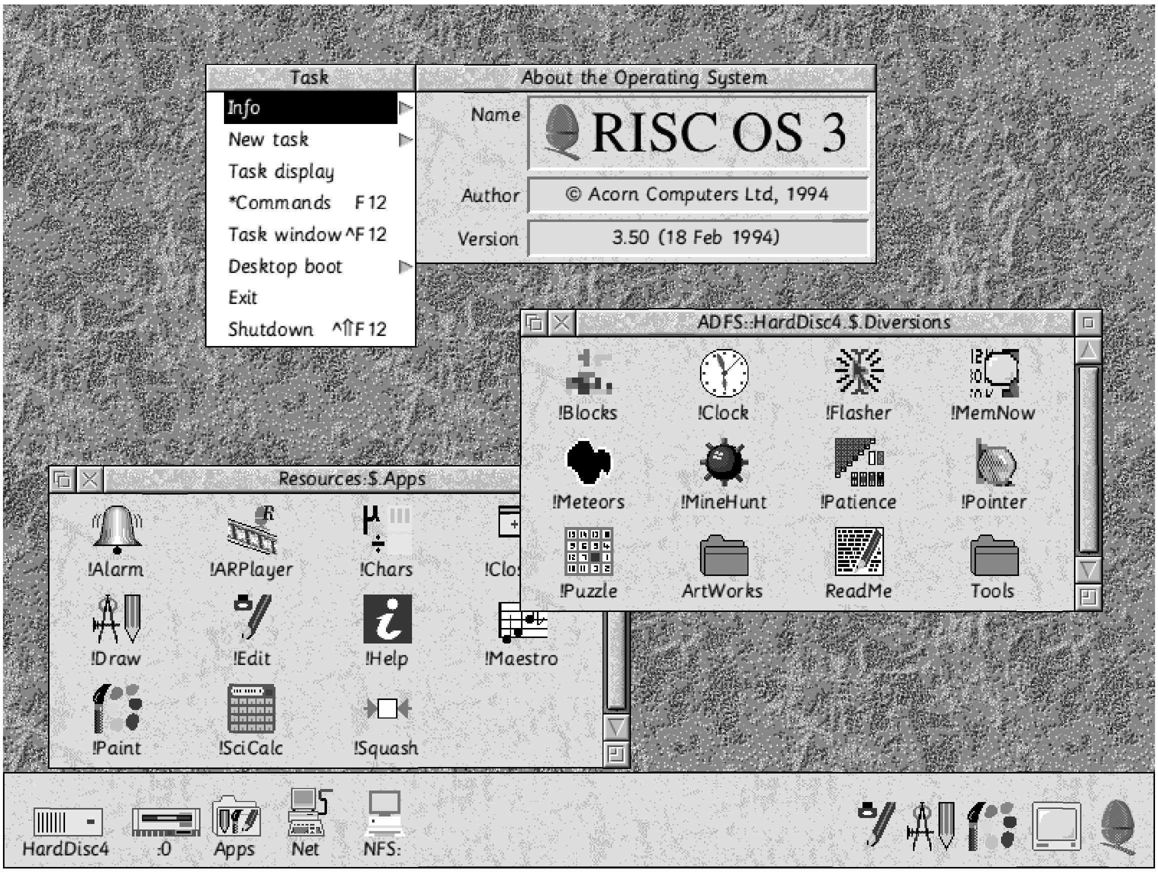
Applicable Hardware : Acorn Risc PC

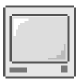
Related Application Notes:

Support Group
Acorn Computers Limited
Acorn House
Vision Park
Histon, Cambridge
CB4 4AE

Fonting WIMP

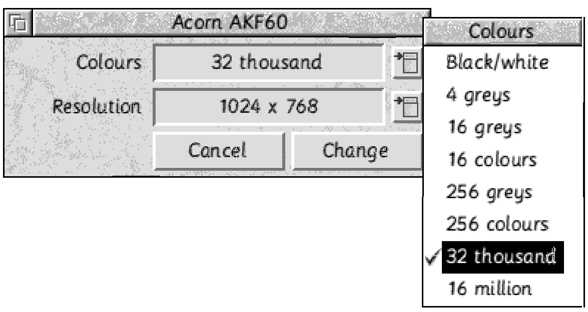
For the first time in it's history, the RISC OS Window Manager now supports the use of outline fonts. This will allow users to choose an alternative to the standard system font which has up until now been the only option open to the user. A small example of the fonting WIMP is shown below.



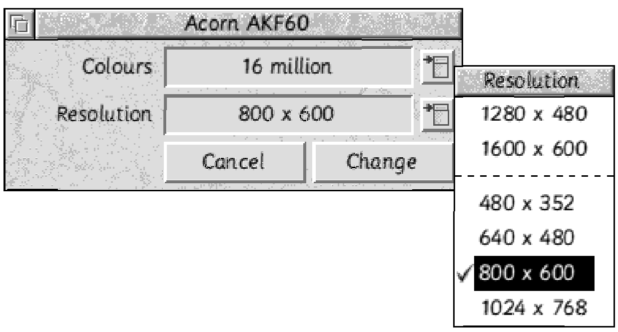

Display Manager

Video hardware in the Acorn Risc PC has been enhanced dramatically and can now provide screen modes which are capable of displaying up to 16 Million colours on screen at very high resolutions. Because of the versatility of the new hardware, it is no longer feasible to work with the system of mode numbers which has been used in all previous iterations of RISC OS. Instead, screen modes are now selected using a list of possible resolutions (display quality) and the number of colours on available.

The Colour Selector



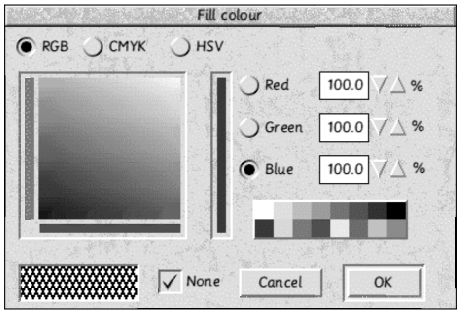
The Resolution Selector



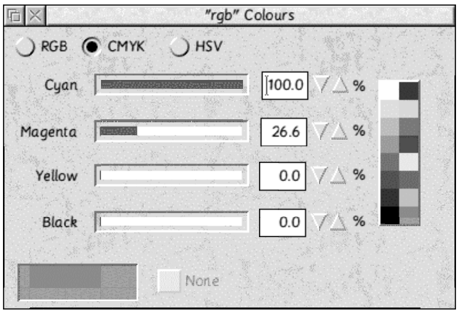
Colour Picker

With RISC OS now supporting up to 16 million colours on screen it was necessary to provide a more suitable means of selecting colours for use within applications. The new colour picker will allow the user to use three different mechanisms to choose a colour, RGB, CMYK and HSV.

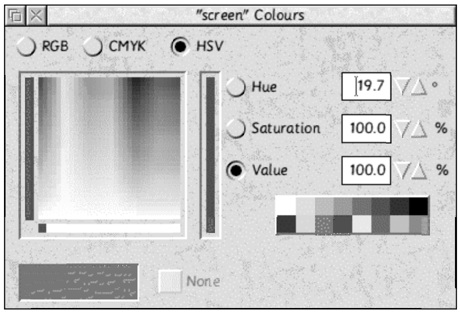
NOTE: In all models, it is still possible to choose one of the standard desktop colours using only one mouse click.



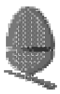
RGB is the traditional method of selecting a colour. Colours are displayed by mixing points of Red, Green and Blue light which are emitted from the monitor tube.



CMYK is the printers colour model - colour being made up of dots of Cyan (Blue), Magenta, Yellow and Black (Key) colours. This model would be used when producing colour separations to send to a printing bureau.



HSV (Hue, Saturation, Value) generates colour in a way similar to that used by artists mixing paint: the Hue is the basic colour, the saturation is the amount of white added and the Value is the amount of Black.



Task Manager

The new task manager is similar in most respects to older versions but differs in two areas. The first thing that users of previous versions of RISC OS will notice is that when dragging the slider bars to allocate memory, the slider will increment at greater steps as the memory slot increases. This is called logarithmic scaling and is there to prevent users having to use 10 feet of desk space when allocating the very large amounts of memory.

An entry has also been added for the Dynamic Areas. Dynamic Areas will be described later in this document.

New sprite manager

The sprite manager has been improved to handle the new 'deep sprite format' which will allow users to take advantage of the new 32K and 16M colour modes.

Sprites that have been created on machines using the Computer Concepts colour card should be compatible with the new machines. (Is this true of the State Machine graphics cards?)

Applications supplied with RISC OS 3 Version 3.5

As with all previous iterations of RISC OS, version 3.5 is being supplied with several applications as standard. The hard disc itself contains over 50Mb of applications and demo files. Of all the titles supplied, thirteen are new, these new titles are listed below. Because all Risc PC machines are now supplied with hard discs and due to the increasing size of RISC OS, the applications Alarm, Calc, Chars, Configure, Draw, Edit, Help and Paint have all been moved from ROM onto disc. With the exception of Configure these applications still appear in the Apps directory but can be removed quite easily if necessary.


!ARPlayer

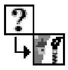
Acorn Reply Movie player, this application will allow Acorn Replay movies to be shown in the desktop in up to 32 thousand colours!


!AWViewer

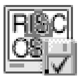
An application which will allow pictures generated in the Computer Concepts graphic design application ArtWorks to be shown in up to 16 Million colours (full 24 bit resolution).


!SlideShow

A rolling demo which will cycle through the 100 high quality JPEG images supplied with the machine.


!ChangeFSI

Acorns image conversion and manipulation application which will allow images stored using most of the industry standard formats to be displayed and saved as an Acorn Sprite file. This latest version of ChangeFSI has support for full 24bit graphics and the new Kodak PhotoCD format.


!Products

Acorns Risc PC product compatibility database. This database contains information on over 1,900 software titles and will allow users to find out (using a method of drag and drop) if current versions of existing software will work on the new machines.


!ResetBoot

An application that will allow the Risc PC's !Boot sequence to be restored to its factory default.


!SaveCMOS

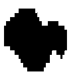
This application will save the machines current CMOS settings thus allowing the user to keep a backup copy of the machines current configuration.


!ShowScrap

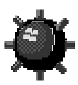
Running this application will open the current Scrap (temporary workspace) directory.


!Blocks

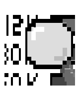
Desktop game based on Tetris.


!Meteors

Desktop game based on Asteroids.


!MineHunt

Desktop game.


!MemNow

A small utility that displays the amount of free memory in the icon bar whilst you work.

!Flasher

A utility that will make the desktop Caret (current text position pointer) flash.

!Pointer

A utility that can dynamically resize the mouse pointer to make it more visible in very high resolution screen modes.

!FSLock

A hard disc locking utility which is supplied as part of the !Configure application.

VProtect

A virus protection module which will detect and report attempted infections from all currently known viruses.

The standard RISC OS applications such as !Edit, !Paint, !Draw, !Alarm remain essentially the same.

!Draw

Now supports full 24bit colour and can display pictures in up to 16 Million colours. It is also possible to export Draw files in Postscript Format which will allow them to be imported by most PC Based drawing object based drawing programs such as Corel Draw.

!Paint

Paint is now capable of displaying full 24bit colour pictures but in all other respects, remains the same.

!Alarm

Some problems which were discovered in previous versions of the !Alarm have been fixed. In all other respects, !Alarm remains the same.

!Edit

No change.

The printer manager, !Printers version 1.22 now has been greatly improved and supports the following features;

- Background printing (For applications which use the RISC OS printer drivers as specified)
- Improved colour printing
- New and improved printer definition files
- More sensible default options
- PostScript printing improvements
- Support for Acorn Access (Acorns peer-to-peer networking system)
- New file output option
- Paper size editing
- Simpler definition file installation

Watchdog

A new application which is included as part of the new Operating System is Watchdog. This application will allow the user to 'kill' a rogue task which is preventing normal keyboard or mouse operation.

Desktop Filer

Several cosmetic changes have been made to the filer in version 3.5. The most noticable changes are evident when dragging files around the Desktop. A new system of transparant drags has been implemented. Whilst dragging a file, even though the user can see an image of the file which he or she is dragging, it is still possible to see what lies behind the icon, see figure 1. When dragging a selection of files the filer will no longer display a bounding box but will instead display a 'package' icon, see figure 2. Directories which are open are now represented by an 'open directory' icon, see figure 3. It is also possible now to close an open directory by Shift-Double-Clicking on it's directory icon.

Illustration of the new features of the RISC OS 3 Version 3.5 Filer

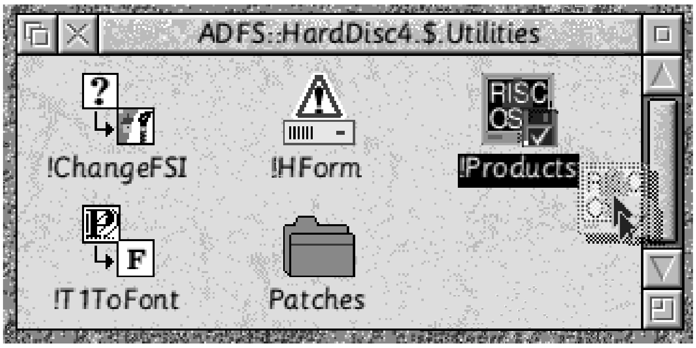


figure 1

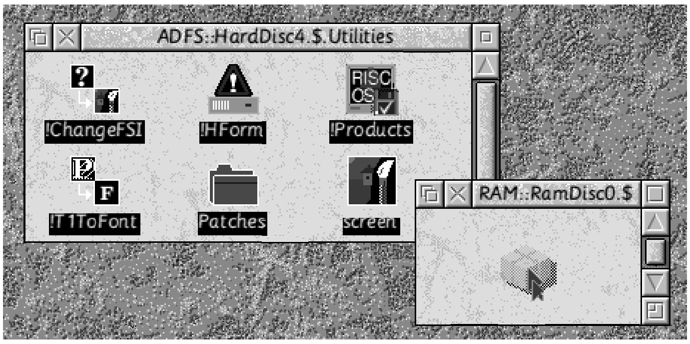


figure 2

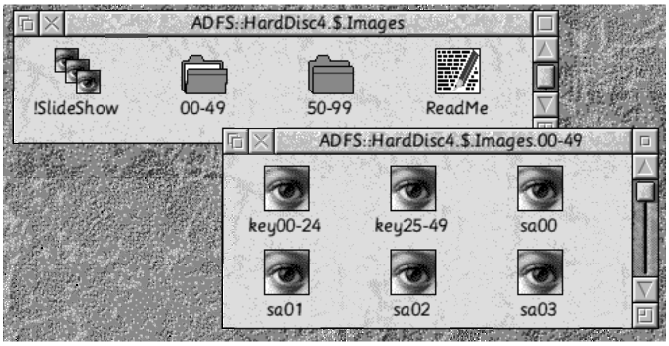


figure 3

PC Style keyboard

The Acorn Risc PC now uses an industry standard PS2 PC style keyboard. Because of the new modular design of the keyboard handler, it is now possible to write an alternative to the standard driver which is supplied with the operating system. This opens up the possibility of developing drivers for custom/special needs keyboards.

Mouse types supported

Three mouse types are now supported as standard;

- The standard RISC OS mouse
- Microsoft Serial mouse
- Mouse Systems serial mouse

Again, because of the new modular design, alternative mouse drivers can be added to the system easily.

Serial Port

The serial port device driver has been changed in version 3.5 to optimise its performance with the new hardware. It is now possible to transfer data through the serial port at speeds of up to 115K in the desktop.

Parallel Port

The parallel port now supports the 'fast parallel' protocol which will, if the printer supports it, increase the speed of transfers from the machine to the printer

Memory

RISC OS 3 Version 3.5 can support up to 256Mb of DRAM including 2Mb of VRAM (for high resolution graphics). The maximum memory supported by previous versions of RISC OS was 16Mb.

The page size has been reduced to 4K to help minimise memory used by RISC OS applications.
Support for a second bus-mastering processor to access system memory co-operatively has been added.

Please see the appendix for more information on the memory management system.

Improved error messages

The operating system error messages have been improved to be generally more friendly and informative to the novice user.

DMA Software interface

An API (applications programmer interface) to the DMA system has been added to help developers take advantage of this new hardware feature. Details on how to use this new interface can be found in the supplement to the Programmers Reference manual.

Please see the appendix for more information on the DMA system.

New expansion slots

The new architecture expansion card interface has been enhanced in several ways. It now supports (in addition to the existing facilities):

- 32bit wide data paths
- A new 16MB address space for each card
- A dedicated Network card interface
- Direct Memory Access

Appendices

Memory Managment

Memory managment now incorporates the following

- Up to 256MB DRAM and 2MB VRAM memory allowed.
- Direct memory access (DMA) control.
- Any second processor card can claim a chunk of memory.
- The physical RAM allocation does not have to be contiguous.
- The ARM6xx page table allocation.
- Expansion of the logical memory map 32 bit address space.
- Page size of 4K.

DMA

The DMA (Direct Memory Access) is controlled by four channels, these service a potentially large number of devices.

The DMA module:

- Performs the arbitration and switching between devices (with help from the device drivers).
- Provides a general purpose software interface to the DMA channel hardware.
- Isolates hardware from software so that changes to the hardware only affect the DMA manager and not DMA clients.
- Handles memory mapping and memory management so that any DMA clients are not concerned with logical to physical address translation or if a page is remapped during a DMA operation.

A DMA client registers itself with the DMA manager as the owner of a logical device. It then requests DMA transfers as and when necessary.