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WILD VISION

!HawkV9 Application Software

for the Hawk V9 Real-Time Colour Video Digitiser

(with hardware dithering facility)

Issue 1.03

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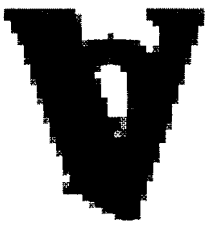

Before returning your registration card, please note the serial number of your digitiser here

Please read the enclosed instructions regarding the correct handling of your digitiser.
Please retain the original packaging for safe future transportation of the product.

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Introduction

The following information is intended as a guide to the use of the *!HawkV9* application. Further information about the Hawk V9 MkII digitiser and the *!FastGrab* application which is also supplied may be found in the accompanying guide.

!HawkV9 is a software application written by Computer Concepts for the Hawk V9 MkII real time colour digitiser with hardware dither facility (hereafter referred to simply as "the Hawk V9"). It will not work with the Standard version of the card, or with earlier versions of the Hawk V9 hardware. Please also note that RISC OS 3 or greater is required to run *!HawkV9.* Its purpose is to display real time video in a desktop window and to enable still images to be grabbed and saved in a choice of formats: It is ideal for use with any composite video source, moving or still, with special options being provided for capture from still sources such as the Canon Ion camera. Support is given for image grab in 15 bit per pixel format (requires a suitable graphics accelerator card to view), equating to images with up to 32,000 colours visible on screen. Indeed, the software also allows for images to be grabbed in a 24 bit per pixel Clear file format suitable for transporting to different platforms. For grey level image grabbing, options are provided from 6 bits per pixel (64 grey levels) for moving video images to 11 bits per pixel (2048 grey levels!) for still images.

More details on all the available options are given in the section below entitled **The !HawkV9 Preferences Box.**

Backing up and installing your software

The first action which you should take before using your new application is to make a back up copy of the disc: If your computer has a hard disc, you may wish to keep a copy of the application there: As your computer will use time and memory registering any applications which it sees upon start up, it is suggested that this is placed inside a secondary directory rather than in the root directory of your hard disc.

If your machine has a floppy drive only, your back up should be made onto a spare floppy disc. You can then work from the back up and put the original distribution disc in a safe place in case it is needed in the future.

You will need to ensure that a version of !System is seen by the computer before attempting to run the *!HawkV9* application. This is a utility provided by Acorn Computers within the support and applications suite of programs originally supplied with the computer. Failure by the machine to locate !System will give the message

```
"System resources cannot be found"
```

To install *!HawkV9,* simply double click with the select button on the *!HawkV9* icon:-

You will see the icon appear on the icon bar. Double click again on the icon bar icon, and a window will open on your screen. If a live video signal is connected to the video input connector of the Hawk V9, you should now see this being displayed in the window. If no live video signal is present, the window will be black.

Make sure you are operating in a 256 colour mode to get the best from your live display. (e.g. mode 15, mode 36). The Hawk V9 will operate equally well in multi-sync or non-Acorn modes such as those provided by ColourCard.

!Hawk V9 and !FastGrab

These two applications have been written at different times and by different people for use with the Hawk V9 real time colour video digitiser. Either program may be used at any one time for displaying a live picture, grabbing a still image and performing various functions on the image. **However,** it should be noted that attempting to run the applications at the same time or immediately one after the other will cause your computer to "hang". This is due to the nature of the modules used for each application.

If you wish to run *!FastGrab* after *!HawkV9* during a single session with the Hawk V9 digitiser, it will be necessary to reboot your machine between applications. Alternatively, you may operate an **RMKILL** instruction from the command line on the currently loaded module. To do this, press F12 and type

```
"RMKILL HawkV9Utils"
```

and press *Return* twice.

Controlling the live display

Control over the live video display occurs both from the panel at the side of the Hawk V9 Real Time Display window, and from the Preferences menu.

Live display control panel

This is the panel at the side of the live display window which looks like this:-

The brightness, contrast and colour saturation levels may be set here, with instant effect on the image being viewed. To change the levels, simply use your mouse and pointer to "turn" the dial to the chosen position. Clicking inside the white box beneath the dial will show the value of the current setting. As supplied, the default settings are

```
Brightness 9
Contrast 34
Saturation 32
```

These are not necessarily the best for your ambient conditions. You may need to alter the settings according to the nature of the live video display, e.g. whether it is a recording made outdoors or a view from indoors in artificial lighting. The final grabbed image will observe the settings shown in the control panel when **"Grab"** is clicked on.

Note that the **"Grab"** box on this panel is greyed out at present. The grab facility is only activated after a path has been set up for saving the image. More details are given in the section entitled **Grabbing an image.**

Live display control : the preferences menu

Further changes can be made to the way in which the live image is displayed from the preferences box, This is accessed by clicking the menu button, either over the live display window or over the icon bar icon, and then selecting **"Preferences:::"** with your left button. A large menu box is displayed, as illustrated on page 7.

The following are options which concern the way in which the live image is displayed.

"Show fps", when switched ON will indicate the number of video frames per second being displayed in the live display window, as portrayed across the title bar at the top of the window. Note that this operation itself will slow down the number of frames per second!

"1/2 size", when switched ON will scale the live display window to a window with horizontal and vertical dimensions half the full size. In effect this makes the area of the window one quarter of that which is displayed at full size.

Grabbing a still image

Upon viewing the live display and its control panel, you will notice that the **"Grab"** instruction box is initially greyed out. *!HawkV9* works by establishing the directory into which images are to be saved prior to the grab being executed. This ensures the image will be saved and not accidentally overwritten. To further aid this guarantee, *!HawkV9* has a clever file renaming system, which means that the destination directory does not have to be re-chosen for every grab, but that each time a grab takes place, a digit is added to the end of the filename. This is then incremented by 1 for each successive grab. File renaming is "intelligent", so that even if the filename has reached the maximum permitted 10 characters, the new image will always be saved under a different name so as not to overwrite existing files.

Set grab file

To set the path by which your grabbed image will be saved, first access the menu from the icon bar icon or by clicking the menu button while the pointer is over the live display. By sliding the pointer to the right of **"Set grab file",** a sprite icon appears, with a writable naming box beneath. The default name is "Sprite", but you may of course replace this with any name you choose up to 10 characters.

Hint:
Remember the RISC OS keyboard shortcut to delete filenames is to position the cursor within the namebox and type **Ctrl-U.**

Now drag the sprite icon to your destination directory. Nothing will happen at this stage, except that the *!HawkV9* application now remembers where to put grabbed sprites. Do not worry that the icon used is a sprite icon, even if you had wished to save a 24bpp Clear file (see **Grab Output,** below). When the time comes, the format of the file saved will be as you have selected in the *! Hawk V9* Preferences menu.

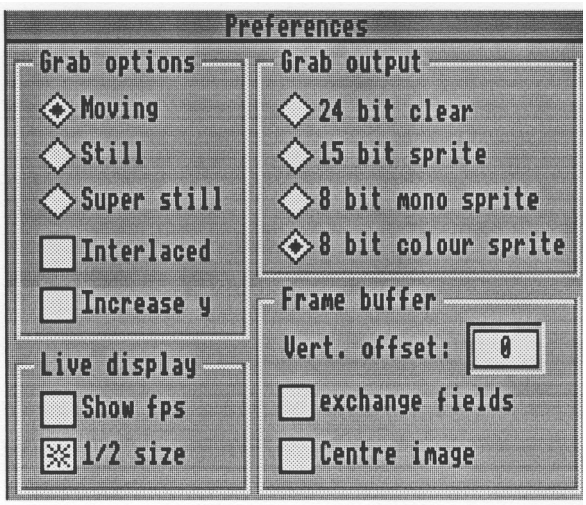
Grab
Once a destination directory is set up, the **"Grab"** option on the live display control panel becomes black, and clicking on this will now activate an image grab. The time taken to transfer the image to disc will depend upon which options are chosen from the Preferences menu. More detail on grab options are supplied under the heading **The !Hawk V9 Preferences box.**

While an image is being written to disc, the live window will pause on a single image. This is the preview image of the one you will be saving. The grab size of the image will always initally be the full 512 x 256 pixels (or 512 x 512 pixels if **"Interlaced"** is used), even if you are displaying the live image at half these dimensions. To scale this image up or down you will need to use an

alternative application such as *!ChangeFSI,* which is supplied on the RISC OS 3 Support disc.

Once grabbed and saved, your image is ready for use in !Paint, *!Draw* or any other application which uses an Archimedes sprite. See **Grab Output** for information on the use of image formats other than 8bpp sprites.

The !HawkV9 Preferences Box

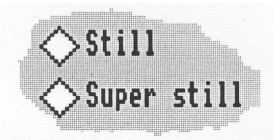


Grab Options

There are three options, one most suitable for grabbing moving images, while the other two are more suitable for still images.

To grab a moving image such as that obtained from a demodulated television channel signal, select **"Moving"**

To grab a still image such as that obtained from a Canon Ion camera, a better quality image can be obtained by selecting "Still" or **"Super still".**



When either of these two choices is made, the digitised image is processed in software to give greater picture quality. It takes longer to grab a frame with these options selected, because of the extra processing which is occurring. **"Super still"** will give greater digitised picture quality for a still image than **"Still"** but the grab process will take longer. If the speed of a grab is more important than picture quality, then **"Moving"** may still be used.

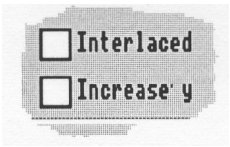
"Moving" corresponds to an image created from 6bpp for monochrome images and 16bpp for colour.
"Still" uses a multi-frame averaging technique to allow monochrome images to be built from 8bpp data, and colour images from 22bpp data.
"Super Still" operates in the same way but averages over a greater number of frames to provide

11 bpp monochrome and 31 bpp colour information.

HINT :

To work out how many colours or shades are used or created from the "bit per pixel" notation, use the formula < 2 to the power of n >, where n is the number of bits per pixel. For example a 6 bpp monochrome image will have 2-'6 shades of grey, which equals 64. It may be necessary to alter the settings for **"Interlaced"** and **"Exchange Fields"** to obtain the best results when grabbing an image.

The **"Interlaced"** switch only affects the vertical resolution of the grabbed picture, and should not be used if **"Moving"** is selected. When switched on, the vertical resolution will be approximately doubled giving a higher resolution and a higher quality picture.



Likewise, the **"Increase y"** option should *not* be used if **"Moving"** is selected. This switch will extend the size of the grabbed image vertically up to a maximum of 288 lines (if **"Interlaced"** is switched OFF) or 576 lines (if **"Interlaced"** is switched ON).

Otherwise, the size of the grabbed image will be 256 lines (if **"Interlaced"** is switched OFF) or 512 lines (if **"Interlaced"** is switched ON).

Grab Output

These four options select the output file format of the digitised image. The options available are: 8bpp colour sprite - the "standard" Archimedes colour sprite format; 8bpp monochrome sprite - an image which may be output with up to 256 levels of grey (but see note below); 15bpp colour sprite; and 24bpp Clear file.

It is important to point out that when a moving monochrome image is grabbed by selecting **" Moving"** under **Grab Options** and **"8 bit mono sprite"** under **Grab** Output then the monochrome image in this file will be defined in terms of 6 bpp. This means that the image will be composed of up to 64 levels of grey rather than the 256 levels possible with 8 bits per pixel. Full 8 bpp monochrome grabbed images are only possible for still images as this requires averaging over two frames.

Furthermore, despite monochrome images grabbed using this facility containing at least 64 levels of grey, the Archimedes desktop will only be capable of showing 16 of these grey levels at any one time, as this is the total provision for shades of grey in the 256-colour desktop palette. Some applications, such as Scan Light Plus and Impression II have in-built dithering facilities which simulate a greater numbers of greys to make the image look smoother on-screen. This also helps to give an idea of what the image will look like when printed out.

Alternatively, users of the ColourCard will be aware of the facility to load customised palettes.

One of the palettes supplied within the !FlipTop application is a 256-grey palette. This allows 256 grey levels to be seen on the desktop.

When performing an 8 bpp colour sprite grab, the image is dithered from between 16 and 31 bit per pixel colour data (according to which grab option is selected). The dithering technique used is similar to that provided by *!ChangeFSI.*

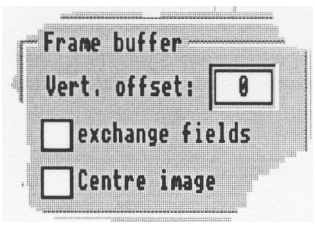
15 and 24 bpp formats
One of the great advantages of the Hawk V9 MkII lies in its capacity for grabbing images which are based on greater colour depth information than the Archimedes can actually display. While this may seem futile, owners of the ColourCard or other Archimedes graphics accelerator cards will appreciate that it is now possible to view such images **outside the desktop,** in specially defined modes. An application, *!Clearly,* supplied with the ColourCard, allows 15bpp sprite files or 24bpp Clear files to be dropped onto its icon and displayed. The currently defined modes only permit images up to 15 bpp (32,000+ colours) to be displayed, and therefore Clear files grabbed with the *!HawkV9* software will be dithered down to 15bpp for display.

The 24bpp Clear file format is also recognised by more recent versions of *!ChangeFSI,* and may be thus converted to a standard 8bpp sprite, scaled etc. Alternatively, of course, it may be exported to alternative platforms.

When grabbing 15 bpp or Clear file format files to be displayed using *!Clearly*, **"Interlaced"** must be ON otherwise the aspect ratio will be incorrect when they are displayed. This is not a problem with the Hawk V9 software - the problem lies with the Clear file format. For those who are technically minded, this is a very simple file format and does not provide any information in its header to indicate the aspect ratio of the pixels making up the image.

Frame Buffer

These switches relate to the way in which the digitised data is stored in the memory of the Hawk V9 MkII expansion card itself.



The **"Vert: offset"** window allows the the number of lines omitted from the top of the digitised picture to be changed. The effect of this will be seen in the live display window and in the grabbed image. This control is provided due to the fact that despite a TV picture having 288 lines, only 256 (or 512 lines if **"Interlaced"** is switched ON) can be stored in the frame buffer at one time. Inserting a number in the range 0-32 will omit that number of lines from the top of the picture thus allowing the user to scroll the area of the image to be digitised over the full vertical range available. The same effect can be achieved by holding the select button down on the mouse in the live display window and dragging the mouse up and down.

The **"exchange** fields" switch has two effects depending on the setting of **"Interlaced".**

With **"Interlaced"** switched OFF: **"exchange** fields" switched OFF will cause the odd field in the source image to be digitised. With **"exchange fields"** switched ON, the even field will be digitised.

With **"Interlaced"** switched ON: **"exchange fields"** switched OFF will cause the odd lines to be written to the screen and then the even lines will be written in between these odd lines.

"Exchange fields" switched ON will cause the even lines to be written to the screen and then the odd lines to be written in between these even lines.

Using the **"exchange fields"** switch can be used to try to improve the picture quality of certain images, particularly those containing a lot of horizontal lines or fine detail.

"Centre image"
With **"Centre image"** switched OFF the area of the digitised picture will be left of centre as is the case with *!FastGrab.* However, with **"Centre image"** switched ON the area of the picture to be digitised will be horizontally central.

IMPORTANT NOTE FOR THOSE CUSTOMERS RECEIVING THIS SOFTWARE AS AN UPGRADE:

Due to the way in which your Hawk V9 has been set up in the factory, it may not be possible to scroll the digitised image vertically over the full range of the picture using the **"Vert: Offset"** window in **Frame Buffer:**

Technical Background Information to the Preferences Box.

The following information is provided for those people who wish to have more technical detail on this software. It is not essential to understand this in order to make effective use of your Hawk V9 expansion card and this may be skipped if you wish.

Grab Options
The "Moving" option will generate a grabbed image defined in terms of 6 bpp (if it is a monochrome grab) or 16 bpp (if it is a colour grab).This is done using just one frame. The "Still" option will generate a grabbed image defined in terms of 8 bpp (if it is a monochrome grab) or 22 bpp (it it is a colour grab). It does this by averaging over three frames. The "Super Still" option will generate a grabbed image defined in terms of 11 bpp (if it is a monochrome grab) or 31 bpp (if it is a colour grab). It does this by averaging over 6 frames. This description assumes that "Interlaced" is switched off. If it is switched on then the number of frames required to generate a grabbed image will be doubled.

Increase y switch
With this switch off, only 256 lines of the picture are grabbed and displayed in the live window. This is because of the physical limit to the size of the memory buffer on the Hawk V9 expansion card: However, with "Increase y" switched on, 288 lines may be grabbed. This is done by grabbing 256 lines into the memory buffer and then immediately branching back into the digitising routine to grab the missing 32 lines *from the bottom of the next frame.* This is why it can only be used for still pictures.

The icon bar menu

Set grab file

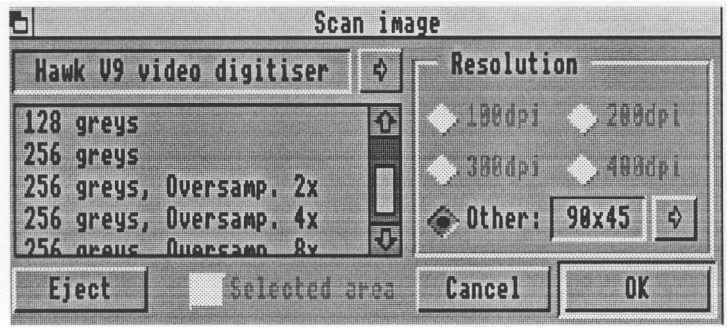
As previously described under **Grabbing a still image,** this menu option allows the destination directory for the image to be set prior to image grabbing.

Primary Palette

For 16-colour modes only. Re-defines the palette to try to give more realistic colours in the desktop preview display. To restore default palette, press menu over Risc OS palette icon and select default.

Hawk V9 MkII ScanLight Interface

To use the ScanLight Plus software, first load the *!Scanner* application. Clicking on the icon bar icon will open a scan dialogue box. There is no need to have *!HawkV9* loaded, although this of course makes it easier to grab the desired image as a live preview can then be displayed.



Hawk V9 video digitiser appears as an available scanner. There are 8 available options:

The following option is suitable for moving or still images.

1. 64 greys - single frame

Scanned using ONE frame only. Therefore, only 256 lines are available (i.e. one field.). Only 90 x 45 dpi option available.

All other ScanLight options use more than one frame to scan the picture and are consequently only suitable for still images. They have two dpi options - 90 x 45 (one field) or 90 x 90 (both fields, interlaced). They also scan all 288 lines of each field in the source image.

2.	64 greys	uses 2 frames
3.	128 greys	uses 2 frames
4.	256 greys	uses 4 frames
5.	256 greys, oversamp. 2x	uses 8 frames
6.	256 greys, oversamp, 4x	uses 16 frames
7.	256 greys, oversamp, 8x	uses 32 frames

Clicking on **"OK"** grabs an image and displays it at 512 x 256 (or 512 x 512) unless oversampling is chosen.

Further information on this aspect of image management and indeed on the full functionality of ScanLight Plus is provided in the accompanying ScanLight Plus manual.

Troubleshooting

This section is intended to help you identify potential causes for symptoms you may experience when using *!HawkV9.* For errors which occur during use of *!FastGrab* or ScanLight Plus, please refer to the appropriate user guide.

The podule is not recognised when I type `*Podules`
Do you have a backplane installed? If so, is the Hawk V9 expansion card pushed firmly into place in the expansion socket?
N.B. Always switch off your machine before installing or removing expansion cards from the expansion backplane, or indeed before removing the lid of the computer.
Are you using an A3000? A special version of the Hawk V9 is required for use with the A3000. This will be supplied if specified when ordering. If you need to use your Hawk V9 with an A3000 please contact Wild Vision.

"System resources cannot be found"
Refer to page 2/3 of this manual

Machine crashes when I try to load !FastGrab after !HawkV9
Refer to page 4 of this manual

ScanLight application will not load because it reports that the ScanLight podule (or GreyHawk or suitable ScanLight drivers) cannot be found
You require a later version of the ScanLight software which recognises the Hawk V9 MkII as a valid input device. Please contact Wild Vision.

My live display is black - with no visible picture
No video signal is being detected by the digitiser. Check that you are using a suitable video source. The signal must be a demodulated, composite signal. This means that if you are using TV as an input, the signal should be first played through a VCR. The correct output is commonly labelled " Video out" on VCRs and video cameras. A suitable signal is also available via a SCART connector, if your VCR has one fitted. If in doubt, you could bear in mind that if you are able to display the intended input signal on a TV using the aerial socket then you are using a modulated video source and not a suitable demodulated one. Secondly, make sure that the video input is properly connected to the "video in" socket on the digitiser, and any other relevant connections are being properly made. Finally, check that your video source is activated and has power going to it.

My live display is a grid of black and white stripes
As above

My live display is very dark and heavily pixellated - with a vaguely discernible picture
Are you in a 256-colour mode? If not, try clicking on **"Primary palette"** on the icon bar icon menu. This may slightly improve the live display, but it is in any case recommended that a 256-colour mode be used.

If you are in a 256-colour mode, try altering the brightness and contrast controls. If these appear

to be having no effect, please contact your supplier.

The live display is running very slowly
Under normal conditions, the display speed of the Hawk V9 MkII at full display size will be around 7 frames per second. At half size, this goes up to around 12½ frames per second (with ARM 3 - ARM 2 machines may be slower). Displaying the number of frames per second across the top of the window will inevitably slow down the display!

My grabbed image is "torn", made up from pieces of several pictures like a jigsaw!
Are you using a moving video source? Check that **"Interlaced"** is switched off, **"Increase Y"** is switched off, and that **"Moving"** is selected.

"No acknowledge from IIC device"
Ring Wild Vision for details.

If you are unable to get to the root of a problem, then you should in the first instance contact the person from whom you purchased the Hawk V9. If purchased from Wild Vision, please call for technical support between the hours of 2.00 p.m. and 4.30 p.m. on a Monday to Thursday, or between 9.30 a.m. and 12.00 midday on a Friday.

If for any reason it is necessary to return a card for repair, checking or replacement, you should first contact Wild Vision by telephone for a returns reference number. Products returned should be as complete as possible, and should be adequately packaged. This means that the PCB itself must be wrapped in anti-static packaging and the whole thing well protected in a robust cardboard outer packaging.

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