

Colortrac Scanner Software

CopyWorks – CopyWorks Plus

User Manual

© Colortrac 1999

This document should not be copied without prior written permission from:

Action Imaging Solutions
Kings Hall
St. Ives Business Park
St. Ives
Huntingdon
Cambridgeshire
PE17 4WY
United Kingdom

Tel: +44 (0) 1480 464618
Fax: +44 (0) 1480 464620

Colortrac Ltd makes no warranty with respect to this documentation and disclaims any implied warranties of merchantability or fitness for a particular purpose. Information in this document is subject to change without notice. Colortrac Ltd assumes no responsibility for errors that may appear in this document

ACTion Imaging System is the trading name for Colortrac Ltd and Colortrac Inc, incorporating Tangent and ANATech.

CONTENTS

COPYWORKS – COPYWORKS PLUS	1
A SIMPLE INTRODUCTION TO COLOUR COPYING	6
1. SOFTWARE INTRODUCTION	8
2. SOFTWARE FEATURES	8
2.2 Document Copying	8
2.3 Full Colour Copying	8
2.4 Mono Copying.....	9
2.5 Copy Manipulation	9
3. GETTING STARTED	10
3.1 Software Installation	10
3.2 Initial Configuration	10
4 THE ORIGINAL PAGE	11
4.1 Original Width.....	11
4.2 Original Length.....	12
4.3 Standard Paper Sizes	12
4.4 Orientation.....	12
4.5 Auto Sizing.....	12
4.6 Colour Mode.....	12
4.7 Original Style	13
4.8 Image Source	13

5. THE OPTIONS PAGE.....	14
5.1 Scanner Profile	14
5.3 Scanner Media Handling	15
5.4 Scanner Functions.....	15
6. THE SCAN PREVIEW PAGE	16
6.1 Zooming the preview	16
6.2.Cropping.....	16
6.3.Logo Insertion (CopyWorks Plus only).....	17
6.4.Mask Insertion (CopyWorks Plus Only)	17
7. THE LOGO PAGE (COPYWORKS PLUS ONLY).....	19
7.1 Logo Details.....	19
8. THE COPY PAGE	20
8.1 Copy Width.....	20
8.2 Copy Length.....	20
8.3 Scale.....	20
8.4 Maintain Aspect Ratio.....	21
8.5 Standard Paper Sizes.	21
8.6 Output Devices	21
8.6.1 Printer 1	21
8.6.2 Printer 2 (CopyWorks Plus Only)	21
8.6.3 File.....	21
8.7 Number of Copies	21
8.8 Nested Copies.....	21

9. THE PRINTER PAGES.....	22
9.1 Name	22
9.2 Printer Profile.....	23
9.3 Paper Width.....	23
9.4 Output Quality.....	23
9.5 Tiled.....	23
9.6 Resolution	23
9.7 Brightness.....	23
9.8.Black Point	24
9.10 Colour Output Control.....	24
(CopyWorks Plus Only).....	24
9.11.Colour Settings.....	24
10. THE COPY CONTROL PANEL	25
10.1 The Copy Button	25
10.2 The Preview Button.....	25
10.3 Delete Preview	25
10.4 Stop	25
10.5 Rewind.....	26
10.6 Eject	26
10.7 Units.....	26
11. HOW TO ?.....	27
11.1 How to do a Preview from a Colortrac Scanner.....	27
11.2 How to do a Copy with crop from a Colortrac Scanner	27

11.3 How to do a Preview from a File	28
12.0SUPPORTED SCANNERS	28
13.0 SUPPORTED FILE TYPES.....	28

A Simple Introduction to Colour Copying

CopyWorks and CopyWorks Plus will produce large format copies when used as part of a system consisting of a scanner, PC, monitor and a printer.

A scanner 'sees' documents in the three primary colours, so that the digital data produced for each pixel is in quantities of Red Green and Blue (RGB). The scanner sends 24 bits of colour information for each pixel to the PC for processing, which means that each primary colour can have 256 levels of intensity i.e. there are 256 different shades of red, green and blue. These shades of RGB are subsequently mixed together to reproduce the original colour, so therefore the scanner can reproduce:-

$$256 \times 256 \times 256 = 16777216 \text{ colours } (> 16 \text{ million colours}).$$

CopyWorks enables this image to be viewed on the monitor of the PC. The PC/monitor can also reproduce 24 Bit colour, but this is not to say that the 16 million colours produced by the monitor are exactly the same as the 16 million colours reproduced by the scanner, since there will be differences in the characteristics between the devices. This is where the colour management system within CopyWorks comes in. The colour management system is responsible for ensuring that the colours reproduced by the scanner are 'mapped' to the monitor. That is to say that colours that are out of the colour gamut (colour gamut – all the colours a device can reproduce) of a device are corrected to the nearest colour that is found in the original. The CopyWorks preview also takes into account the colour gamut of the selected printer, so that the colours previewed on the monitor correspond to the colours that will be produced by the printer.

The next step is to send data to the printer. Inkjet printers supported by CopyWorks all use Cyan (C), Magenta (M), Yellow (Y) and Black (K) inks – this is known as CMYK printing. A CMYK printer is far more limited in the numbers of colours it can reproduce (i.e. it has a smaller gamut). This is primarily due to whereas the scanner and monitor can produce many shades of a primary colour, a printer can only produce 2 – either it lays ink onto the surface of the paper or it does not. Also, since there is no standard formula for the make up of

the paper being used this can alter the way in which the inks are laid down, resulting in the colours produced varying from what was expected. Furthermore, the CMYK inks can vary slightly in shade between different printer manufacturers. Once again, this is where the colour management system within CopyWorks plays a vital role. Any colours in the original that cannot be reproduced by the printer will be replaced with the closest colour match that is within the printer's capabilities.

The colour management system uses mathematical models of the colour reproductive capabilities of each device in order to map colours from one device to another. These mathematical models are called Image Colour Matching Profiles (icm files). CopyWorks is supplied with the ICM profiles for Colortrac scanners and the various printers it supports (NB. monitor profiles can usually be obtained from the manufacturer). When using CopyWorks it is advisable to switch off any alternative colour management support to the printer or monitor so that it cannot interfere with the colour reproduction.

1. Software Introduction

CopyWorks is primarily a simple to use solution for large document copying. It supports a range of popular large-scale printers and the Colortrac range of large format scanners (see supported scanners). It can produce high quality full colour or monochrome copies quickly and easily. The size of the document copied from a scanner is only limited by the free disk space and a 2-gigabyte limit temporary file size imposed by the operating system.

2. Software Features

2.1 Document Source (Image Source)

Copyworks can copy documents from either a Colortrac Large Format Scanner or from file. When copying from file a large number of file formats are supported (see supported file types).

2.2 Document Copying

CopyWorks can preview the copy on screen, select an area of the document to copy, then copy to single printer, and make multiple copies from a single original in a single pass. The copies may be enlarged or reduced (changing the aspect ratio if required). CopyWorks includes a set of embedded image enhancement functions that are optimised for copying certain types of documents (e.g. Photographic, Maps, Text documents).

In addition CopyWorks Plus can make copies to a second printer and/or to file simultaneously, insert text or a bitmap logo into the copy and tile a copy into two parts when the copy is too wide for a printer.

2.3 Full Colour Copying

Copyworks' colour corrected copying is achieved by the use of industry standard ICC profiles. ICC profiles map the colour reproduction from the scanner (or file), onto your monitor when previewing, and finally to the printer. A set of ICC profiles for supported scanners and printers (and their associated paper types) are included with the software.

2.4 Mono Copying

Mono copies can be produced by two methods, namely Bilevel and Dithered Bilevel. The Bilevel method produces solid black areas in the copy and the Dithered Bilevel gives a greyscale copy.

2.5 Copy Manipulation

CopyWorks allows the brightness of a copy to be changed and any brightness changes are displayed on the screen preview. It can also produce mirror copies of the original.

Copyworks Plus can also manipulate the individual quantities of CMYK (cyan, magenta, yellow and black) inks being printed on the copy; again these changes can be previewed on screen.

3. Getting Started

Before installing the scanning software you should read the Installation and Operating Manual and the scanner should be connected to your computer, the SCSI chain properly terminated (for Colortrac Gx Plus range of scanners) and the scanner switched on. You should have also installed the software for your SCSI interface card. If in doubt please consult your supplier.

Ensure that the provided software protection device (dongle) is connected to the parallel port of your PC.

3.1 Software Installation

3.1.1 System Requirements software

The minimum specification for the PC is as follows:

Microsoft™ Windows™ 98

Pentium™ processor.

1024 * 768 64k colours graphics card.

64 Mb memory.

70 Mb of disk space.

NB. Considerably more disk space may be required for spool files created during the copying process.

3.1.2 Software Installation

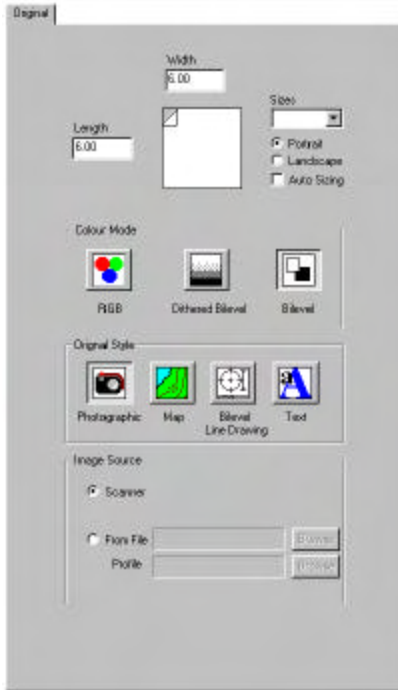
- To install the software, insert the CD into the drive.
- Auto Run the CD.
- Follow the onscreen instructions to install the dongle drivers.
- Follow the onscreen instructions to install the CopyWorks Software.

3.2 Initial Configuration

- Install the standard Windows printer drivers for any printers that are going to be used with CopyWorks.
- Reboot the system first making sure that the printer and scanner are connected and turned on.
- Increase the printer timeouts in the Windows printer driver to at least 800 seconds. The printer timeout value can be found on the details tab of the Windows printer properties dialog.
- Start the CopyWorks program and Application will appear.

4 The Original Page

The Original Page is split into four sections. These are Original Size, Colour Mode, Original Style and Image Source.



Note that when a document is to be printed from a file the Width and Length are set automatically from the file. CopyWorks assumes that all graphic files have a resolution of 300 dpi.

4.1 Original Width

This edit box allows the width of the document to be selected. The units may be inches or mm depending on the type selected. See **Units** to see how to change working units.

4.2 Original Length

This edit box allows the length of the document to be selected. The units may be inches or mm depending on the value selected. See **Units** to see how to change working units.

4.3 Standard Paper Sizes

The *Sizes* list box has a list of standard sizes. When one of the standard sizes is selected the Width and Length edit boxes are updated to reflect the selected standard size.

It is possible to define up to three customised user sizes on the options page.

4.4 Orientation

The *Portrait* and *Landscape* radio buttons change the orientation (i.e. swap the Length and Width Values).

4.5 Auto Sizing

When checked, this option turns the system into auto sizing mode i.e. the system will determine the size of the original. To use the system in this mode the original should be placed in the **centre** of the scanner with a minimum offset of 10mm (3/8"). Both the original width and length edit boxes, and the copy width and length edit boxes will be greyed out to prevent modification. The copy may, however, be scaled using the scaling edit box. On pressing the copy button the Copy Manager system will attempt to compute the width of the original. In a small number of cases it may fail to do this, then width and length of the original should be set manually.

Note: Auto sizing will not work on documents longer than 1.3 metres when using a HP plotter.

4.6 Colour Mode

This selects the colours to be used during scanning and printing.

<i>RGB</i>	gives a full colour copy.
<i>Dithered Bilevel</i>	gives a greyscale copy.
<i>Bilevel</i>	gives a Black and White only copy.

Note that when a document is to be printed from file the colour mode is automatically set.

4.7 Original Style

This enables the use of the most appropriate image enhancement features according to the type of the original:

Photographic best used for photographs, posters etc...

Map best used for maps etc...

Text best used for text documents.

Bilvel Line Drawing is a mode that uses a Intelligent Adaptive Thresholding technique which is used for unevenly shaded images, with different background levels across the image can be scanned. For a normal bilevel image, there is a threshold (set by the brightness control) of 'greyness' below which any shade is rendered as a black pixel, and above which any point is rendered as a white pixel. This threshold is changed dynamically to lie somewhere between the general background shade and the general foreground shade for a particular area, thus distinguishing the two.

4.8 Image Source

This selects the source of the document to be copied.

Scanner should be selected to use a Colortrac Scanner (see supported scanners).

Note when scanning a document, the document should be placed **centre justified** in the scanner.

Copy Work Plus Only:

From File should be selected to copy a document from file. When this radio button is selected a file open dialog box will appear to select the document you wish to copy. To copy from a 24-Bit colour file an input colour management profile for that file is required. If you do not have a suitable profile available it is recommended that you use the "sRGB.icm" profile supplied. To select a profile press the browse button and a file open dialog box will appear. Select the appropriate profile then press the Open Button.

5. The Options Page

	Width	Length
User 1	46.77	33.07
User 2	33.07	23.39
User 3	23.39	16.54

5.1 Scanner Profile

If you wish to use your own input profile for your Colortrac scanner select *Use profile from disk*. Either type the path and filename of the profile into the edit box or press the browse button.

If you wish to use the supplied factory standard default profile select the *Use default profile* radio button.

5.2 Monitor Profile

When previewing an image CopyWorks uses a colour management monitor profile to ensure what you see on the screen is a close match to the copy that will be produced by the printer. To select a monitor profile, either type the path and filename of the profile into the edit box or press the browse button and select the appropriate profile.

5.3 Scanner Media Handling

Media Staging allows an offset to be applied to the document when scanning begins. The offset may be +/- 12.7mm (+/- 0.5 inches).

When the *Full eject* radio button is selected the media is ejected totally from the scanner when the Eject button is pressed.

When the *Eject to Media End* radio button is selected the media is ejected so that the end of the document remains in the exit rollers of the scanner.

5.4 Scanner Functions

The *Recalibrate* button resets the scanner's black and white points. It requires the glass to be cleaned and the profile target to be inserted before starting (see your scanner's Handbook for more details).

The *AutoStitch* button re-stitches the scanner. It requires the auto stitch target to be inserted into the scanner before operation (see your scanner's Handbook for more details).

6. The Scan Preview Page



When the preview button is pressed this page is automatically selected, and once scanning (or file reading) has finished a preview of the document will be displayed in the preview window.

6.1 Zooming the preview

Once an image has been displayed you can zoom in and out on the preview using the zoom buttons.

6.2.Cropping

Once a preview has been created you may select an area of the preview to print; setting the crop rectangle does this.

Initially the crop rectangle is set to the full size of the preview. The crop rectangle can be edited by the following methods.

1. With the mouse in the preview window press and hold down the left-hand mouse button, drag out over the area you wish to copy and then release the button.
2. Changing the values in the Length, Width, X-Offset, and Y-Offset edit boxes.
3. Using the fine adjustment buttons. By pressing the centre button of the fine adjust buttons you can choose to either move the top left corner or the bottom right corner of the crop rectangle. When a direction button is pressed the chosen corner of the crop rectangle then moves in the direction indicated by the arrow.

Once a crop rectangle has been set the Width and Length edit boxes on the 'Original' Front Page cannot be altered. To change these values the preview must be deleted (by pressing the *Delete Preview* button)

6.3. Logo Insertion (CopyWorks Plus only)

When this check box is selected and a preview has been created, the logo (selected on the Logo Page) is shown in the top left corner of the crop area. 'Dragging and dropping' may alter the logo's position.

6.4. Mask Insertion (CopyWorks Plus Only)

Mask insertion is used to mask a rectangular area of the original in the final print. To insert a mask, firstly select the *insert mask* check box. To select the area to mask click the mask area button.

The mask area button.



The area to be mask can then be selected by dragging out the required rectangle in the preview view or using the width, length, x-offset, y-offset boxes edit boxes. The size of the mask area can be adjusted by use of the fine adjustment buttons. Once the size of the box has been set press the OK button situated below the preview window.



To change the colour of the mask, click the mask colour button.

The mask colour button.



If the preview is for an RGB colour mode copy, the colour of the mask can be selected by either pointing and clicking at the appropriate colour in the preview or changing the CMYK edit colour boxes at the under the preview window.

If the preview is for Bilevel or Dithered Bilevel copy then the mask can be either black or white and can be set by selecting the required colour from the radio buttons shown under the preview window.

Once the colour of the mask has been selected press the OK button at the under the preview window.



7. The Logo Page (CopyWorks Plus Only)



7.1 Logo Details

This describes the logo to be inserted into the copy. The logo may be either text or bitmap based. If a text logo is to be inserted select the *Text* radio button and type the required text into the text box below.

If multiple lines of text have been entered, they may be aligned with each other by using the (*Left*, *Right* or *Centre*) align radio buttons.

If a bitmap logo is to be inserted select the *Bitmap* radio button and enter or browse for the bitmap file you wish to insert.

The Transparent background button when checked makes all white (RGB 255,255,255) in the logo transparent.

See Logo Insertion 6.3 on how to insert the logo and position it in the copy.

8. The Copy Page

The copy page is split into two sections: the Output Size and the Output devices.

The image shows a 'Copy' dialog box with the following controls:

- Dimensions:** 'Length' and 'Width' text boxes, both containing '5.00'. A small square icon with a diagonal line is positioned between them.
- Scale:** A 'Scale' dropdown menu and a 'Mirror' checkbox with a red indicator.
- Radio Buttons:** '1 to 1' (selected) and 'Scale'.
- Scale Value:** A text box containing '100' with a percentage symbol.
- Maintain Aspect Ratio:** A checked checkbox.
- Output Section:**
 - Three checkboxes: 'Printer 1: # copies', 'Printer 2: # copies', and 'File'. Each has an adjacent text box.
 - 'Filename' text box with a 'Browse' button.
 - 'Nesting' section with a checked 'Nested Copies' checkbox and a 'Next Spacing' text box.

8.1 Copy Width

This edit box allows the width of the copy to be selected. The units may be inches or mm depending on the dimensions selected. If the Maintain Aspect Ratio box is checked the copy length box will be automatically updated as this box is updated.

8.2 Copy Length

This edit box allows the length of the copy to be selected. The units may be inches or mm depending on the dimensions selected. If the Maintain Aspect Ratio box is checked the copy width box will be automatically updated as this box is updated.

8.3 Scale

This edit box allows a scale to be selected instead of using the copy width and length. The scale may range from 1% to 500%. As the

scale value is changed the copy width and length will be automatically updated.

The *One to one* radio button changes the scale back to 100%.

8.4 Maintain Aspect Ratio

Checking this box forces the aspect ratio of the original to be maintained regardless of the overall scale of the copy. Deselecting this box allows a copy to be scaled by different values in width and in length.

8.5 Standard Paper Sizes.

The *Sizes* list box has a list of standard sizes. When one of the standard sizes is selected the Width and Length edit boxes are updated to reflect the selected standard size.

Three user sizes are definable; these maybe defined on the options page.

8.6 Output Devices

To send the copy to a device it must have its check box selected.

8.6.1 Printer 1

To send a copy to the printer 1, select its check box. When the copy button is pressed a copy will be sent to the printer described on the Printer 1 Page.

8.6.2 Printer 2 (CopyWorks Plus Only)

To send a copy to the printer 2, select its check box. When the copy button is pressed a copy will be sent to the printer described on the Printer 2 Page.

8.6.3 File

When selected sends a single copy of a scan to file. (Note the file output is not modified through the colour profile software). The output path/filename should be entered in the box or selected with the browse button.

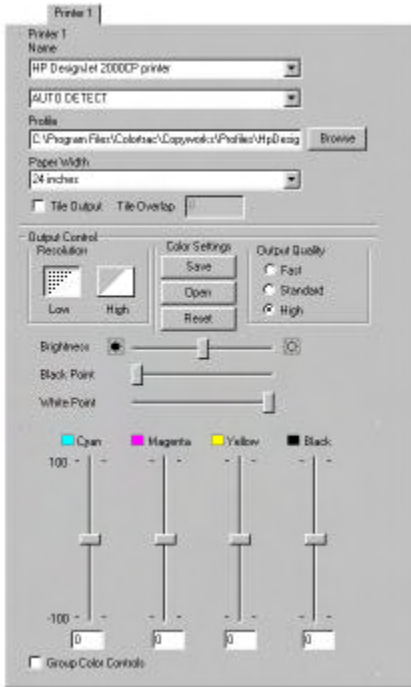
8.7 Number of Copies

This option allows the number of copies to be sent to a particular printer to be changed. The number of copies must be between 1 and 20.

8.8 Nested Copies

This is a paper saving feature that allows a number of copies to be positioned side by side on the printout. Altering the value in the Nest spacing edit box can change the margin between each copy.

9. The Printer Pages



9.1 Name

This drop down box displays all the currently installed Windows printers. It allows the appropriate printer to be chosen for CopyWorks. Although CopyWorks allows you to select any installed Windows printer it only has specific knowledge of a small number, for all other printers it will use a generic controller. Typically using the generic controller rather than a specific controller will mean that CopyWorks may not be able to fully control the quality level and any other unusual features of the printer. It is always advisable to use a specific controller if at all possible.

The drop down box below the printer name display shows how CopyWorks will send printer codes and printer languages to the printer. Auto Detect attempts to detect the printer from its driver name if this fails it is possible to enforce CopyWorks to treat the driver as any one the printers in the drop down list.

9.2 Printer Profile

The printer profile file name may either be entered directly into the edit box or located using the browse button. This icc profile file name should be of the form “*.icm”, typically the name part of the file name will indicate the printer type and model number along with the paper and ink used. It should be noted that no profiles are necessary for mono only printers.

9.3 Paper Width

This option allows the current paper width to be selected. This value is only used in the calculation of the number of nested copies.

9.4 Output Quality

This option allows the output quality of the copy to be selected. The control allows the selection of one of three variables: Fast, Standard or High. CopyWorks automatically maps these generic terms to the output capabilities of specific printers. Generally the quality should be set to high.

9.5 Tiled

When selected this allows prints that are larger than the paper width to be fitted onto two pages. When this box is checked a box is drawn in the preview that may be subsequently moved in order to select the position at which the copy will be split.

9.6 Resolution

This option allows the selection of the output resolution. Generally the higher the resolution the better the result, but please note that using High resolution will result in 4 times the amount of disk space being used than would be required for low resolution. The control allows standard or high resolution to be selected, these generic terms are mapped to the output capabilities of specific printers. Generally standard will map to 300 dpi and high to 600 dpi. The default value for this control is standard.

Note: High resolution is not available on all printers.

9.7 Brightness

This will adjust the brightness of the copy. It is applicable for mono, greyscale and colour copies.

Any changes shall be shown on the preview if the printer is selected on the *Copy Page*.

9.8.Black Point

The black point slider sets the colour value used as a cut-off point, below which any colours with lower values are interpreted as black. (Note this slider is active for RGB and Mono Line drawing modes only).

9.9 White Point

The white point slider sets the colour value used as a cut-off point, above which all values are interpreted as white. (Note this slider is active for RGB and Mono Line drawing modes only).

9.10 Colour Output Control (CopyWorks Plus Only)

In the Colour control section there are four slider controls and four associated edit boxes. Each of the control pairs is assigned an output colour (i.e. Cyan, Magenta Yellow and Black). When a colour copy is being produced then these controls can be used to add or subtract colour as required.

The *Group Controls* check box makes the controls act as group.

9.11.Colour Settings

The *Save* button saves the positions of the colour controls.

The *Open* button opens a set of saved colour controls.

The *Reset* button resets all the sliders back their default positions

10. The Copy Control Panel



10.1 The Copy Button

The large green copy button starts the copy process. While scanning (or reading from file) it turns red and is inactive. When it turns green again another copy may be performed even though the printer may not have stopped printing.

10.2 The Preview Button

Previews the copy.

10.3 Delete Preview

Deletes the preview image on the *Preview Page*.

10.4 Stop

Stops the copying process.

10.5 Rewind

Rewinds the document in the scanner.

10.6 Eject

Ejects the document from the scanner.

10.7 Units

The dimensions on the various pages can be changed to the desired units by selecting *Inches* or *mm*.

11. How To ?

11.1 How to do a Preview from a Colortrac Scanner

Check List

1. If the Image is to be scanned you need to select the scanner profile or select *Use Default Profile* on the *Options Page*,
2. If you wish to see a colour-matched preview, set up your printer and printer profile - see *Printer Page*. Select the printer's check box on the *Copy Page* and select the monitor profile on the *Options Page*.
3. Set the Width of your document in the width edit box on the *Original Page*.
4. Set the Length of your document in the length edit box on the *Original Page*.
5. Set the Colour Mode (RGB, Dithered Bilevel (greyscale), Bilevel (Black and White) of the scan on the *Original Page*.
6. Set the Original Style (Photographic, Map, or Text).
7. Enter your document into the scanner.
8. Press the *PREVIEW Button* on the *Copy Control Panel*.

11.2 How to do a Copy with crop from a Colortrac Scanner

Check List

1. If the Image is to be scanned you need to select the scanner profile or select *Use Default Profile* on the *Options Page*,
2. Set up your printer and printer profile – see *Printer Page*. Select the printers check box on the *Copy Page* and select the monitor profile on the *Options Page*.
3. Set the Width of your document in the width edit box on the *Original Page*.
4. Set the Length of your document in the length edit box on the *Original Page*.
5. Set the Colour Mode (RGB, Dithered Bilevel (greyscale), Bilevel (Black and White) of the scan on the *Original Page*.
6. Set the Original Style (Photographic, Map, or Text).
7. Enter your document into the scanner.
8. Press the *Copy Button* on the *Copy Control Panel*.

11.3 How to do a Preview from a File

Check List

1. If the document is from file you need to select the file and input profile on the Original Sheet.
2. If you wish to see a colour matched preview, set up your printer and printer profile - see *Setting up a Printer*, and then select the printers check box on the *Copy Page*. Select the monitor profile on the *Options Page*.
3. Press the *PREVIEW Button* on the *Copy Control Panel*.

12.0 Supported Scanners

Colortrac 360 Gx, 380 Gx, 380 Gx Plus, 360 Gx Plus, 340 Gx Plus

13.0 Supported File Types

TIF,CLP,DCX,JPG,PCT,PCX,PNG,SGI,XWD,BRK,CALS,IMT, and XWD files.