

Full Scale Monochrome Scanners

Operator's Guide

Internet info:<http://www.contexscan.com>

Contex document no.: FSS/USM/004 (2.1)

©Copyright Contex A/S, Denmark, August 12, 1999

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher. Contex A/S reserves the right to modify the information given in this publication without prior notice.

Preface

The Contex Full Scale Monochrome Scanners provide a complete solution for scanning drawings, documents and pictures for use with CAD, DTP, COPY and Drawing Archival applications.

The built-in dedicated high-speed Digital Signal Processor (DSP) performs image processing and enhancement in real time.

The fast industry standard SCSI I/F and WIDEimage software makes the Full Scale Scanner truly multi-platform.

The WIDEimage scanning software is available in WINDOWS-98 and WINDOWS-NT editions for PCs.

This guide explains how to operate and maintain the Full Scale Scanner. It assumes a basic knowledge of your computer and operating system and does not repeat material from their documentation.

SYSTEM REQUIREMENTS

- WIDEimage scanning software
- PC that fulfils WIDEimage's minimum requirements
- SCSI interface kit matching your workstation.

RELATED PUBLICATIONS

The "OPERATIONS GUIDE" which came with your computer.

The "OPERATING SYSTEM USER MANUAL" for your workstation.

The "WIDEimage USER's GUIDE".

The "README.TXT" file on the distribution diskettes. Use your text editor to look for latest news and updates.

How To Use This Guide

This guide contains six chapters, and six appendices. Make sure you read the chapter on: "Installation" , before attempting to install or use the Full Scale Scanner and software described in this guide.

Chapter 1. Is an introduction to the Full Scale Scanner and gives an overview of its use with different professional applications.

Chapter 2. Gives an overview of the Full Scale Scanner system and features.

Chapter 3. Describes the functions and the use of the Full Scale Scanner operator panel and indicators.

Chapter 4. Discusses the Full Scale Scanner's operating modes.

Chapter 5. Describes installation of the Full Scale Scanner onto your system.

Chapter 6. Describes how to perform user maintenance on the Full Scale Scanner.

Appendix A. Lists the Full Scale Scanner Specifications.

Appendix B.. Contains a glossary.

Appendix C. Contains the regulations applicable for the Full Scale Scanner.

Appendix D. Full Scale Scanner License Agreement.

Appendix E. Important safety information.

Appendix F. Index.

Table of Contents

1. Introduction	1-1
1.1 Computer Aided Design	1-2
1.2 Copying	1-3
1.3 Desk Top Publishing Systems	1-3
1.4 Drawing Archival and Management	1-4
1.5 Satellite Photo Scanning	1-4
2. System Overview	2-1
2.1 Software	2-3
3. Operator Panel and Indicators	3-1
4. Operating Modes	4-1
4.1 Line Mode	4-1
4.2 Graytone Mode	4-3
4.3 Photo Mode	4-3
5. Installation	5-1
5.1 Installation of the SCSI board in the PC.	5-2
5.2 Installation Verification	5-2
5.3 Scanner DIL-switch Setup	5-3
5.4 SCSI Termination on FSS Scanners	5-5
6. Maintenance	6-1
6.1 Cleaning the Original's Scanning Area	6-1
6.2 Adjusting the height of the CCD Cameras	6-2
6.3 Camera Out of Light Error	6-5
7. Appendix A: Specifications	7-1
8. Appendix B: Glossary	8-1
9. Appendix C: Regulations	9-1
9.1 FCC Regulations	9-1
9.2 EU Regulations	9-2
10. Appendix D: Program License Agreement	10-1
11. Appendix E: Important Safety Instructions	11-1
12. Appendix F: Index	12-1

List of Illustrations

Figure 1-1 Full Scale Scanner	1-2
Figure 2-1 Full Scale Scanner System Overview	2-2
Figure 3-1 Operator Panel	3-2
Figure 3-2 Original's Insertion Slot and Ruler	3-4
Figure 6-1 Opening the front cover	6-1
Figure 6-2 Camera Height Adjustment	6-2
Figure 6-3 Height adjustment (turn clockwise)	6-3
Figure 6-4 Height Adjustment (correctly aligned)	6-3
Figure 6-5 Height Adjustment (turn counter clockwise)	6-3

1. Introduction

The Contex Full Scale Scanner **x300** models: **FSS18300^{DSP}**, **FSS12300^{DSP}**, **FSS8300^{DSP}**, **FSS8300PLUS^{DSP}** and **FSS4300^{DSP}** are monochrome scanners and their drawing width size and resolution ranges vary as follows:

- **FSS18300^{DSP}**: E-Size(A0) scanning width and up to 1800 dpi resolution.
- **FSS12300^{DSP}**: E-Size(A0) scanning width and up to 1200 dpi resolution.
- **FSS8300^{DSP}** : E-Size(A0) scanning width and up to 800 dpi resolution.
- **FSS8300PLUS^{DSP}**: E-Size(A0) scanning width and up to 800 dpi resolution. Very high scanning speed. The resolutions can be set in 1 dpi increments. Includes Area Diffusion Logic (ADL).
- **FSS4300^{DSP}**: E-Size(A0) scanning width and up to 400 dpi resolution.

The Full Scale Scanner line is produced by Contex, the leading manufacturer of large format scanners, with many thousands of installations world-wide.

The Full Scale Scanners are designed to work with all types of technical scanning applications.



Figure 1-1 Full Scale Scanner

1.1 Computer Aided Design

The Full Scale Scanners (FSS) offer CAD-Systems users easy access to architectural, civil and mechanical drawings, bridging the gap between CAD and hard-copy drawing media.

The FSS with its WIDEimage program scans hard-copy originals directly into the workstation. Formats up to E-Size(A0) can be scanned, allowing you to capture drawings for modification, storage, or transmission, or to bring hard-copy drawings on-line.

The FSS scans original line art, maps, blueprints, sepias, vellum and mylar drawings in high resolution. The Full Scale Scanners have a built-in white, spring-loaded background pressure platen to support scanning of transparent originals.

The unique two-dimensional 2D-Adaptive Thresholding and built-in high-speed Digital Signal Processor provides clean crisp scans from

poor quality drawings on-line, without the need for pre-scan. It automatically adapts to the drawing, compensating for varying background, faded areas and stains.

CAD-systems such as AutoCAD, VersaCAD, etc., can make full use of the Full Scale Scanners, either directly or together with raster-editors, archiving, overlay or raster-to-vector conversion programs. The FSS is a time saving way to capture the machine-drawn or hand-drawn originals onto an electronic medium.

1.2 Copying

Using the FSS and WIDEimage with a laser printer provides an inexpensive and convenient way to transform any large format technical drawing into standard-sized copy for enclosure in reports or documentation; or you can output them to an inkjet or laser plotter for a full size copy.

1.3 Desk Top Publishing Systems

With the FSS you can now scan originals of almost any size into the computer so their images can be included in technical documents, user manuals, sales brochures, spare parts catalogues, proposals, bids, etc., using popular desk top publishing applications such as Aldus PageMaker or Ventura Desk Top Publisher.

Through WIDEimage the FSS is compatible with most software and standard DTP file formats. The FSS Window Scan feature allows you to cut and crop areas of interest out of larger drawings.

With its ease of use and flexibility regarding original sizes and file formats, the FSS is the scanner of choice for the technical publishing office.

1.4 Drawing Archival and Management

Many of an organization's resources are held in its archives. Electronic Drawing Management Systems allow on-line access and control of vital company assets such as scanned mechanical drawings, electrical schematics and facility plans on hard- or optical disks.

A single CD-ROM can store 800 to 1000 E-Size drawings, meaning that your archives could contain several hundreds of thousands of drawings.

Electronically accessing, viewing, modifying, converting and printing or plotting your drawings saves you time and money.

The FSS supports the Computer Acquisition and Logistics (CAL) and ISO-ODA standard CCITT Group4 (MIL 28002) drawing archival formats.

1.5 Satellite Photo Scanning

Use the Full Scale Scanners' graytone scanning capability of 256 levels, together with applications like CADOverlay GS, to directly overlay satellite photos in AutoCAD, with image correction facilities.

2. System Overview

The Full Scale Scanner uses single, dual, triple, or quadruple 8000 pixel CCD Cameras with individual adaptive light compensation on each pixel. The FSS includes the following features:

- **FSS18300^{DSP}**: Up to 1800 dpi scan resolution at all original sizes; 64.800 dots at 1800 dpi, scanned at the max. scan width 36" (914 mm), by graytone interpolation and re-sampling of the physical 32.000 pixels (four cameras).
- **FSS12300^{DSP}**: Up to 1200 dpi scan resolution at all original sizes; 43.200 dots at 1200 dpi, scanned at the max. scan width 36" (914 mm), by graytone interpolation and re-sampling of the physical 24.000 pixels (three cameras).
- **FSS8300^{DSP}**: Up to 800 dpi scan resolution at all original sizes; 28.800 dots at 800 dpi, scanned at the max. scan width 36" (914 mm), by graytone interpolation and re-sampling of the physical 16.000 pixels (two cameras).
- **FSS8300PLUS^{DSP}**: Up to 800 dpi resolution, setable in 1 dpi increments, at all original sizes; 28.800 dots at 800 dpi, scanned at the max. scan width 36" (914 mm), by graytone interpolation and re-sampling of the physical 16.000 pixels (two cameras).
- **FSS4300^{DSP}**: Up to 400 dpi resolution at all original sizes; 14.400 dots at 400 dpi, scanned at the max. scan width 36" (914 mm), by graytone interpolation and re-sampling of the physical 8.000 pixels (one camera).
- Connection to the computer via standard SCSI Interface
- Scanning area sized from A5 up to A0 and E-Size (from 152 mm up to 914 mm wide). Media size: 152 to 1016 mm.
- Image processing and enhancement options include: 2D-Adaptive thresholding, histogram analysis, and on-line threshold variation.
- On-line de-skewing and de-speckling, during simultaneous scanning of the drawing, producing perfectly horizontally aligned and speckle-free scans.

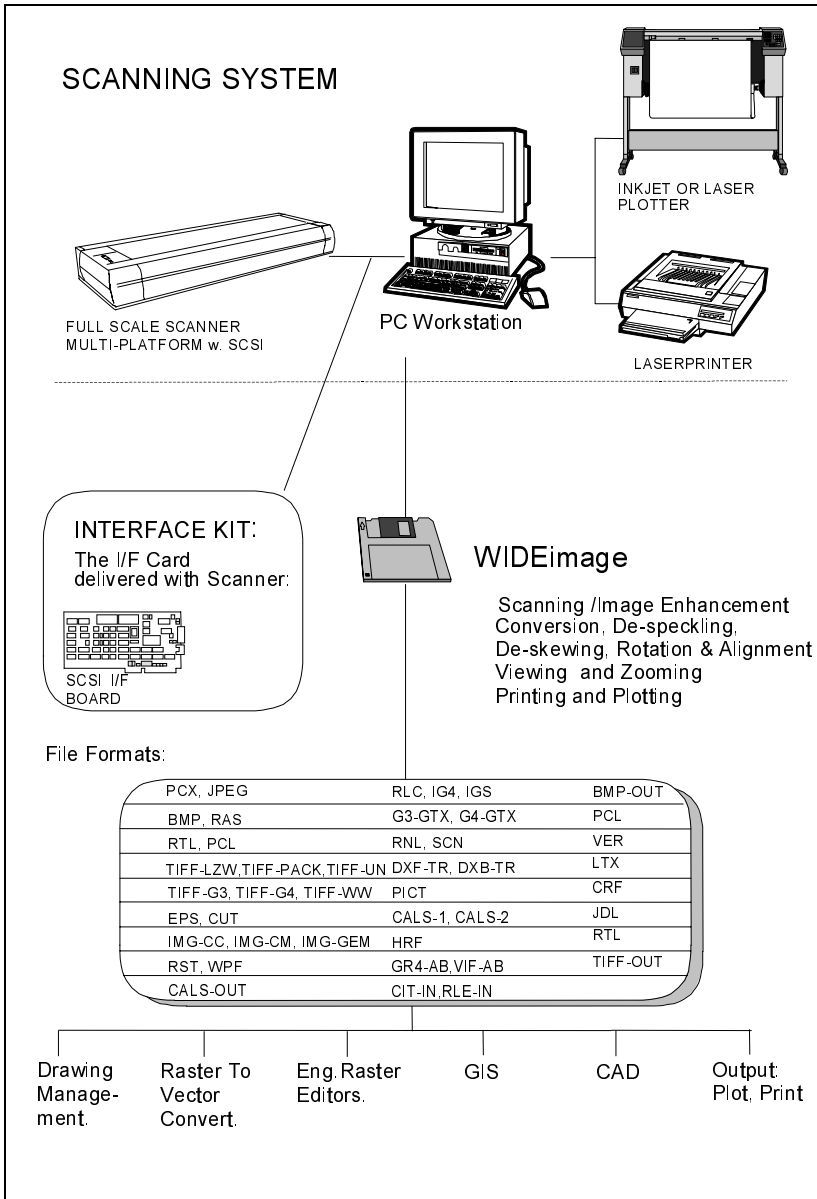


Figure 2-1 Full Scale Scanner System Overview

- 256 graytone levels (1 Byte, 8 bit per pixel).
- WIDEimage interface software: Scanning, Conversion, Rotation, Cropping, Alignment, View, Zoom and Print/Plot of large format drawings to/between/from multiple industry standard file formats.

SCSI Interface. The supplied interface kit contains a SCSI-PC extension board that interfaces between the PC bus connector and the Full Scale Scanner.

2.1 Software

WIDEimage : This scanning software is the latest in the range of Contex scanning software and the successor to the CADImage/SCAN line. WIDEimage incorporates all the advanced scanning features of CADImage/SCAN plus many additional features in a newer and faster user interface.

The program produces a multitude of standard output image file formats compatible with CAD, Raster-Editor, Digitize, Overlay, Archiving and Raster-to-Vector programs for Editing, Storing, Conversion and Print/Plot of scanned drawings, maps, etc., to be used with CAD and DTP systems.

WIDEimage supports electronic Rotation and Alignment, as well as Batch processing, Converting, Viewing, Zooming and Print/Plot of scanned drawings.

3. Operator Panel and Indicators

The Full Scale Scanner's Operator Panel layout shown overleaf is divided into two keys and four indicators. The two operating keys are positioned at the top: The *Paper Reverse* key (C), and the *Paper Feed/Forward* key (A) with a *Ready Indicator* (B) attached. Three indicators at the bottom: *Power on* (D), *Wait* (E), and *Diagnostic* (F). The detailed function of the keys and indicators are as follows:

A, B : Paper Feed/Forward Key and Ready indicator.

Insert the drawing face down into the scanner's insertion slot. The green *Ready Indicator* (B) turns on (lights) when the drawing is correctly positioned. Now press the *Feed Forward* key (A), and the drawing will move into the start-of-scan position. The *Ready Indicator* stays on (lighted), signifying that the scanner is ready to be controlled from the computer.

During scanning the *Ready Indicator* blinks.

At end of scanning the *Ready Indicator* is again turned on (lighted without blinking) signifying that scanning can be repeated from the computer, or else terminated by the operator if the *Paper Feed/Forward* key is pressed to eject the drawing from the scanner.

Pressing the *Paper Feed/Forward* key during scanning, stops the current scanning process and feeds the original as long as the key is held down.

NOTE : If the drawing is removed from the scanner manually without pressing the *Paper Feed/Forward* key to eject, the *Ready Indicator* will stay on. This condition can be reset by pressing the *Paper Feed/Forward* key.

C : Paper Reverse Key.

The reverse key stops the current scanning process and reverses the original as long as the key is held down.

D : Power On Indicator

Lights up when the scanner power is on.

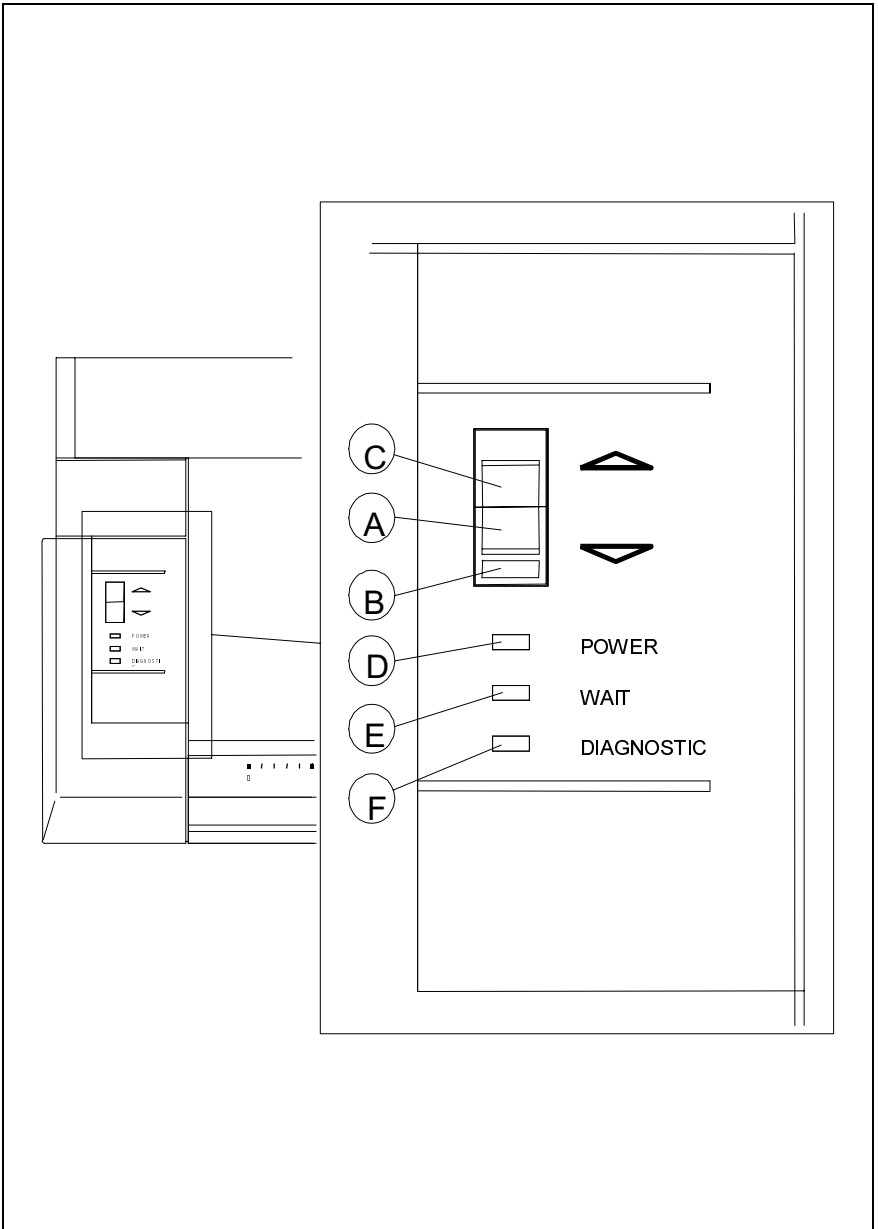


Figure 3-1 Operator Panel

E : Wait Indicator (Warm Up).

Lights up when the Full Scale Scanner's power is turned on. The light stays on during the internal diagnostic and stabilization phase. Keyboard input is prevented during this time.

F : Diagnostic Indicator.

Flashes if an error is detected by the built-in diagnostic. If both the *Diagnostic* and the *Wait* (Warm Up) indicators flash then an inadequate amount of light is registered by the cameras. This is probably because the height of the camera brings it out of the light's range and must be adjusted. See the chapter: "Maintenance" for instructions.

Original's Insertion Slot and Ruler

The original's insertion slot shown below is marked with a measurement ruler from 0 to 8.5. The units correspond to the scan-width setup options in the WIDEimage scanning application dialogs. A second centered ruler is positioned on top, for optional centered paper loading with standard sizes.

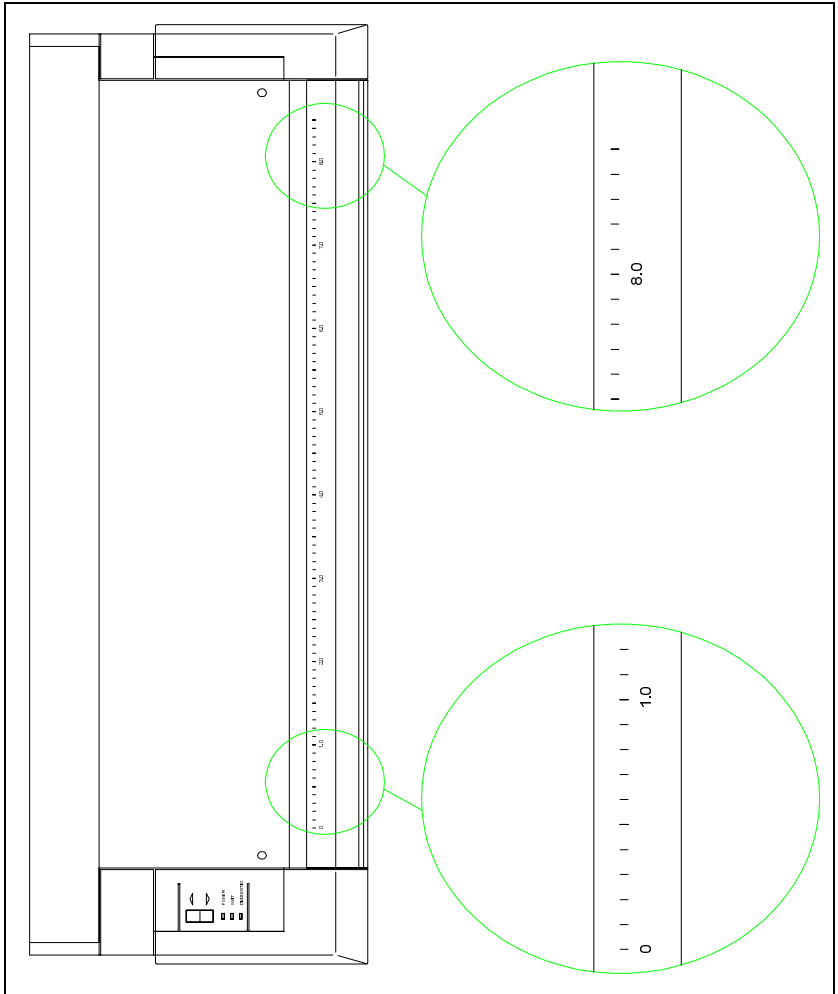


Figure 3-2 Original's Insertion Slot and Ruler

4. Operating Modes

The Full Scale Scanners work in three operating modes:

- Line mode (bitmapped, 2-level)
- Graytone mode (256 graytones)
- Photo mode (halftone dither)

4.1 Line Mode

In this mode, the Full Scale Scanner will output each scanned pixel as a single bit, either black (1) or white (0) depending on whether its gray level is below or above the threshold level.

For CAD usage : The distance (both horizontal and vertical) between each pixel at different resolutions* is given below:

200 dpi:	0.1270 mm
300 dpi:	0.0846 mm
400 dpi:	0.0635 mm
600 dpi:	0.0423 mm
800 dpi:	0.0317 mm
1200 dpi:	0.0212 mm

*Lower and higher resolutions are also available.

The resolution in dpi is always set from the WIDEimage application.

The scan-width is likewise set from WIDEimage, measured by the ruler units printed on top of scanner near the original's insertion slot.

Insertion (loading) alignment of the original can be either left side aligned or centered. Left or center loading is selected through WIDEimage. The lower (front) ruler is used with side-aligned loading (the ruler with zero at its left side), and the upper ruler is used with centered loading.

The following table shows the number of pixels per scan line resulting from various combinations of resolution and scan-width on the side-aligned (lower) ruler:

Resolution:	600 dpi	400 dpi	300 dpi	200 dpi
Scan-width:				
8.5	21,600	14,400	10,800	7,200
8.0	20,352	13,568	10,176	6,784
6.0	15,240	10,160	7,620	5,088
4.0	10,176	6,784	5,088	3,392
3.0	7,620	5,080	3,810	2,544
2.0	5,088	3,392	2,544	1,696

The following table shows some common drawing widths and their required scan-width settings:

Scan-width:	Original Drawing Width*:	
	Minimum media size of the FSS	6.0"/152mm
1.4	Minimum Scan-Width (A5)	6.0"/152mm
2.0	A-Size (letter) and approx. A4	8.5"/216mm
2.6	B-Size (11")	11.0"/280mm
2.8	A3 (297mm)	11.9"/302mm
3.0	Approx. A3 and approx. B-Size	12.7"/323mm
3.9	A2 (420mm)	16.5"/420mm
4.0	C-Size and approx. A2	17.0"/430mm
5.2	D-Size (22")	22.0"/560mm
5.5	A1 (594mm)	23.3"/592mm
6.0	Approx. A1 and approx D-Size	25.4"/646mm
7.8	A0 (841 mm)	33.1"/840mm
8.0	E-Size and approx. A0	34.0"/862mm
8.5	Maximum Scan-Width of the FSS	36.0"/914mm
	Maximum Media size of the FSS	40.0"/1016mm

*The required setting for an original drawing can be measured when the originals are inserted into the FSS using the ruler printed on top of the original insertion slot on the Full Scale Scanner.

4.2 Graytone Mode

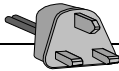
In Graytone mode, the actual gray level of each pixel is scanned; 256 levels are recognized, corresponding to 1 Byte (8 bits) per pixel. This results in graytone files that are 8 times larger than uncompressed files scanned in Line mode at the same resolution. For example, an E-Size drawing scanned in Graytone mode at 300 dpi has a file size of 150 MByte, compared with typical 0.4 -1.0 MByte for a compressed file in Line mode).

4.3 Photo Mode

In Photo mode, the gray levels of the scanned pixels are converted into halftones by dithering. This results in very high density Line mode files that are many times larger than uncompressed files scanned in Line mode at the same resolution.

5. Installation

The Full Scale Color Scanner should be placed on a table in such a way that the front of the machine overhangs the table's edge by approximately 1 cm. This ensures that the scanned original can hang freely from the exit slot at the front of the machine. The table should be placed a few centimeters from the wall, to allow large sized originals to hang down freely behind the table. You can also place the FSS scanner on the specially designed stand-alone floor stand which can be purchased separately.



Important: Before connecting the power cord to an electrical outlet, ensure that the voltage selector switch (just above the mains inlet) is set to the correct voltage.

Make sure that power is turned off, and connect the SCSI cable that came with your interface kit to one of the two SCSI connectors found at the back of the Full Scale Color Scanner.

If the scanner is the last device on the SCSI bus, turn on the built-in active SCSI terminator (see Scanner SCSI DIL-switch setup), otherwise make sure it is turned off.

You must install the SCSI interface board on your PC. The SCSI interface board is part of your interface kit that came with your scanner. Read carefully the following sections and the documentation that came with interface kit. If your PC already has a built in ASPI compatible SCSI board you might be able to use that instead. For best performance, we strongly recommend that you use the board delivered with the Full Scale Color Scanner.

For UNIX workstations with a built-in SCSI interface, simply turn power off and connect the scanner SCSI cable.

Set up the SCSI address of your scanner. See instructions on SCSI DIL-switch setup at the end of this chapter.

Install the WIDEimage scanner software. Installation instructions are described in the WIDEimage User Manual.

5.1 Installation of the SCSI board in the PC.

1. Set the PC-system unit power switch to OFF.
2. Set any external option power switches to OFF (such as printers, displays etc.).
3. Unplug the PC-system unit and all other options from the wall outlet.
4. Remove the cover of your computer to expose the expansion slots.
5. Align and insert the SCSI host adapter board into an empty slot, and use the expansion slot panel screw to secure the host adapter to the computer frame.
6. Connect the SCSI cable from the FSS Scanner to the connector on the SCSI board back panel.
7. Set the scanner DIL Switch as described overleaf in the section: "Scanner SCSI address setup ".

For further installation description and installation of SCSI driver* please see the documentation that came with your interface kit.

***Note:** SCSI driver installation will be dependent on your operating system e.g. Windows 95 or NT.

5.2 Installation Verification

Install the WIDEimage program as described in the WIDEimage User Guide that came with the software package.

Run the Height Adjustment of the CCD Cameras as described in this guide's Chapter 6 on "Maintenance" to verify the above installation.

5.3 Scanner DIL-switch Setup

The DIL-switch is used for setting up the scanner's SCSI connection port, and for selection of the "Scanner test" modes and the "Scanner forced boot start up" mode.

Turn off the power to the computer and scanner when setting the SCSI device number, as the switch settings are only read from the DIL-switch during the scanner's power up.

Set up the SCSI device no. on the DIL-switch found besides the SCSI connectors on the scanner to an unused SCSI device address no. according to the table below:

Switch no:	1	2	3	4	5	6	7	8
SCSI device no. 0	ON	ON	ON	X	X	X	X	X
SCSI device no. 1	OFF	ON	ON	X	X	X	X	X
*SCSI device no. 2	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
SCSI device no. 3	OFF	OFF	ON	X	X	X	X	X
SCSI device no. 4	ON	ON	OFF	X	X	X	X	X
SCSI device no. 5	OFF	ON	OFF	X	X	X	X	X
SCSI device no. 6	ON	OFF	OFF	X	X	X	X	X
SCSI device no. 7	OFF	OFF	OFF	X	X	X	X	X
Built-in SCSI termination	X	X	X	ON	X	X	X	X
No Synchronous transfer	X	X	X	X	OFF	X	X	X
No disconnect	X	X	X	X	X	OFF	X	X
Force boot start up	X	X	X	X	X	X	OFF	X
Continuous test mode	X	X	X	X	X	X	X	OFF

* Factory Default

X: Insignificant

If the scanner is the last device on the SCSI bus, make sure the built-in active SCSI termination is turned on (switch 4 above). If it is not the last device make sure switch 4 is turned off (see following section on SCSI termination for details).

Make sure that none of the troubleshooting and test switches are on (switches 5, 6, 7 and 8).

Turn on power to the computer and the scanner, and verify the installation.

Description of the troubleshooting and test switches:

Switch 5. No synchronous transfer: Disables SCSI synchronous transfer mode (reverts to asynchronous transfer). Use this mode only for tests as it slows the scanner down.

Switch 6. No disconnect: Disables the SCSI disconnect command. Use this mode only for tests as it slows the scanner down.

Switch 7. Force boot start up: If a malfunction occurred during an update of the scanner firmware, this switch forces the scanner into firmware boot mode, enabling you to download the firmware again.

Switch 8. Continuous test mode: The continuous test mode is only used for maintenance and renders the scanner inaccessible.

5.4 SCSI Termination on FSS Scanners

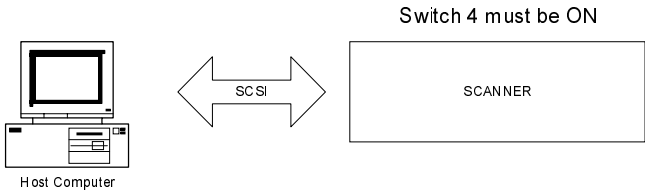
The FSS scanners have a built in active SCSI termination that works better than a passive terminator at the high transfer rates such as performed by this scanner.

The built in active termination is enabled by setting switch 4 on the SCSI switch to ON and disabled by setting it to OFF.

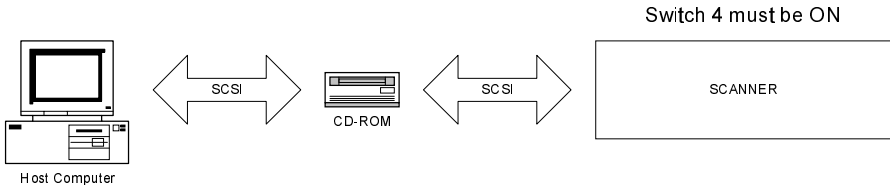
Note: Never set switch 4 to ON and use a terminator block at the same time.

The following 3 scenarios shows how to terminate the SCSI bus correctly:

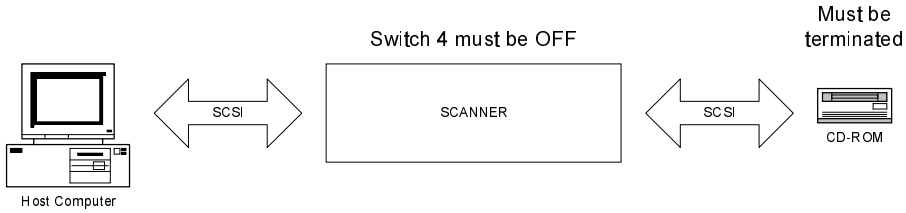
A. The Scanner is the only external device on the SCSI bus



B. The Scanner is the last device on the SCSI bus



C. The Scanner is *not* the last device on the SCSI bus



Note: If the scanner is connected to an existing SCSI controller board that is used together with an internal SCSI device (f.ex. a hard disk), make sure that the on-board SCSI termination is removed before attaching the scanner.

6. Maintenance

The main maintenance tasks involve :

- Cleaning the original's scanning area
- Adjusting the height of the CCD-cameras at regular intervals

6.1 Cleaning the Original's Scanning Area

Make sure you turn the power switch OFF and disconnect the power plug when cleaning the original's scanning area .

1. Open the scanner's front cover by gently pulling at its top.
2. Remove the original's guide plate and gently wipe the glass plate and the white area on the original's guide plate until they are clean.

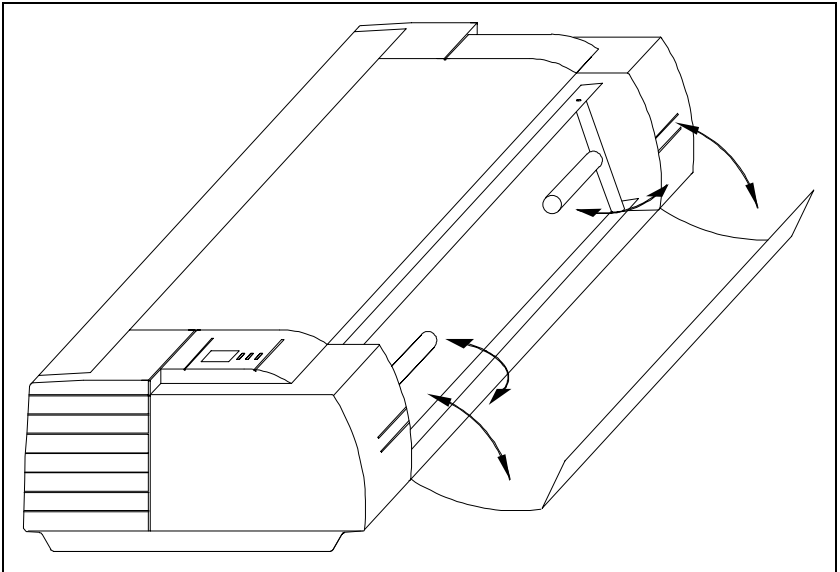


Figure 6-1 Opening the front cover

6.2 Adjusting the height of the CCD Cameras

The steps for camera height adjustment vary from model to model. Find your model in the sections below:

The FSS8300 :

1. Insert the Height Alignment Chart delivered with the scanner into the original's insertion slot and press the *Paper Feed/Forward* key. In WIDEimage select a scan-width size of 8.5, and start prescanning by clicking WIDEimage's *Forward* button in the scan dialog. Click *Halt* to stop the prescanning operation when it comes over the horizontal lines in the chart. Set the application's "detail window" so you view the area in the middle of the "overview window". The "detail window" should show an image similar to one of the three figures overleaf.
2. Use a slim screw-driver to turn the height adjustment screw through the hole (1) on the top of the FSS (see figure overleaf). Screw clockwise or counter-clockwise so that the lines from the left and right CCD-Cameras make a continuous line on the "down-scans" on the screen:
 - Clockwise: Line at right side of screen moves down.
 - Counter Clockwise: Line at right side of screen moves up.

Note: To omit angle errors, only judge camera height adjustments on the repeated "down-scans" on the screen.

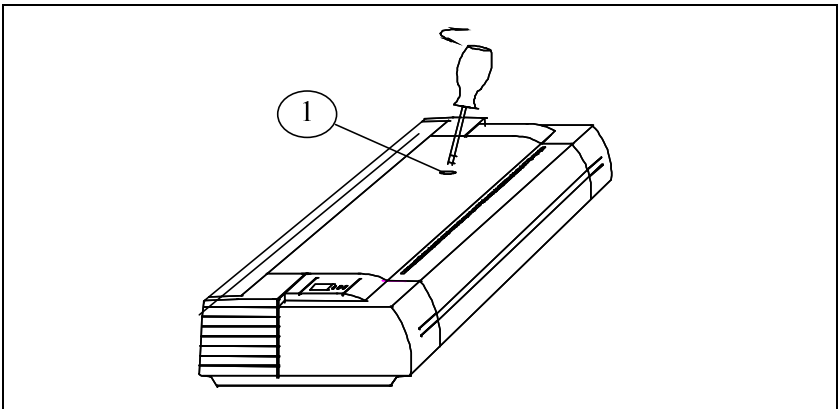


Figure 6-2 Camera Height Adjustment

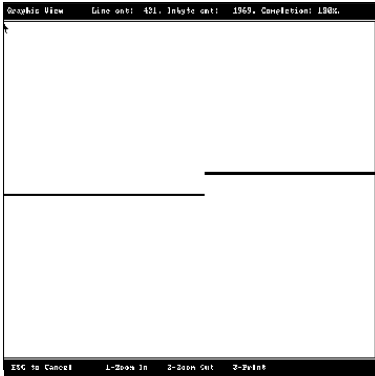


Figure 6-3 Height adjustment (turn clockwise)

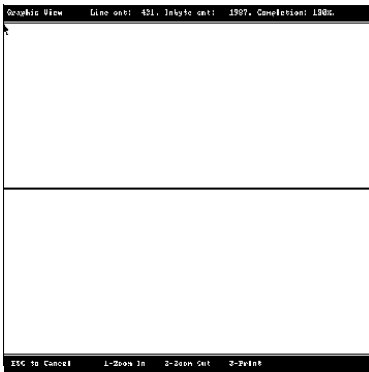


Figure 6-4 Height Adjustment (correctly aligned)

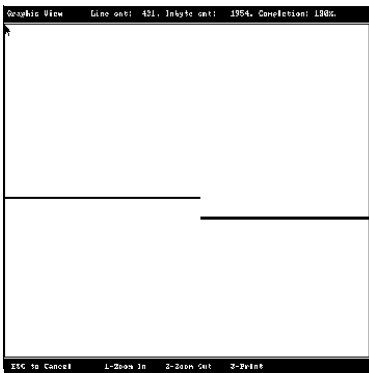


Figure 6-5 Height Adjustment (turn counter clockwise)

FSS12300 Models:

1. For adjusting the left CCD Camera (when facing the front of the scanner), follow the procedure given above for the FSS8300 models, but select a "detail window" centered about one-third in from the left in the "overview window".
 - Clockwise: Line at Left side of Screen moves Down.
 - Counterclockwise: Line at Left side of Screen moves Up.
2. For adjusting the right CCD Camera, follow the procedure given above for the FSS8300 models, but select a "detail window" centered about two-third in from the left in the "overview window".
 - Clockwise: Line at Right side of Screen moves Down.
 - Counterclockwise: Line at Right side of Screen moves Up.

FSS18300 Models:

1. For adjusting the left CCD Camera (when facing the front of the scanner), follow the procedure given above for the FSS8300 models, but select a "detail window" centered about one-quarter in from the left in the "overview window".
 - Clockwise: Line at Left side of Screen moves Down.
 - Counterclockwise: Line at Left side of Screen moves Up.
2. For adjusting the third CCD Camera (second adjustment knob) follow the procedure given above for the FSS8300 models, but select a "detail window" centered about halfway in from the left in the "overview window".
 - Clockwise: Line at Right side of Screen moves Down.
 - Counterclockwise: Line at Right side of Screen moves Up.
3. For adjusting the right CCD Camera, follow the procedure given above for the FSS8300 models, but select a "detail window" centered about three-quarter in from the left in the "overview window".
 - Clockwise: Line at Right side of Screen moves Down.
 - Counterclockwise: Line at Right side of Screen moves Up.

Remember: To omit angle errors, only judge the camera height on the repeated "down-scans" on the screen .

6.3 Camera Out of Light Error

If both the *Diagnostic* and *Wait* (Warm Up) indicators start blinking on the Operator Panel, then one of the CCD cameras has moved out of range while making adjustments or during transportation. This means that the camera receives an inadequate amount of light.

The number of flashes per second on the *Wait* indicator shows which camera is "out of light" and needs readjustment. The camera numbers given below are indexed starting from the left side of the machine when facing its front:

- Camera 1: 1 flash per period.
- Camera 2: 2 flashes per period.
- Camera 3: 3 flashes per period.
- Camera 4: 4 flashes per period.

Before proceeding with the CCD camera height adjustment procedures, carry out the following for the indicated camera that is "out of light":

1. Turn its height adjustment screw completely clockwise.
2. Turn its height adjustment screw one quarter of a turn counter clockwise
3. Turn the scanner's power off, and then on. If the error is still displayed by the blinking indicators, then repeat step 2 and 3.

- FSS4300: Camera not user adjustable.
- FSS8300: First Camera (1), not user adjustable.
- FSS12300: Middle Camera (2), not user adjustable.
- FSS18300: Second Camera (2) from the left, not user adjustable.

After clearing the "Camera out of light error", proceed with the CCD camera height adjustments described in the previous section.

7. Appendix A: Specifications

To ensure state of the art products and design, Contex reserves the right to change specifications at any time.

Model	FSS18300^{DSP}	FSS12300^{DSP}
Sensors:	Quadruple CCDs 32.000 pixels	Triple CCDs 24.000 pixels
Image Resolution (dpi):	1800, 1600, 1400, 1200, 1000, 800, 600, 500, 400, 300 200, 150, 75, 50 & 25	1200, 1000, 800 600, 500, 400, 300 200, 150, 150, 75, 50 & 25
Image Size:		
Media Width:	6.0 to 40.0" (1016mm.)	6.0 to 40.0" (1016mm.)
Scan Width: (max.)	36 Inches (914 mm)	36 Inches (914 mm.)
Scanner Measurements (inches/mm):		
Width:	47.25"/1200	47.25"/1200
Depth:	15.0"/380	15.0"/380
Height:	7.9"/200	7.9"/200
Power:		
Consumpt.:	130W	
Voltage:	100/115/220/240V-50/60Hz	
Weight:	44 kg.	43 kg.
Light Source:	Stabilized Fluorescent Lamp	
Interface:	Industry standard SCSI-2 I/F	
Graylevels:	Up to 256 levels recognized (1Byte, 8Bits per pixel).	
Window Scan:	Adjustable Horizontal and Vertical Offset and scan-window size.	
Image Processing:	Digital Signal Processor, 2D-Adaptive Threshold. On-line threshold, deskewing, despeckling and holefilling. Individual pixel adaptive ampl. correction and graytone interpolation. Image rotation, alignment, mirroring and reverse. On-screen view, zoom, and print functions. More than fifty industry standard image file formats supported. Side-aligned or centered insertion of the original.	

Model	FSS8300^{DSP}	FSS4300^{DSP}
Sensors:	Dual CCDs 16.000 pixels	Single CCD 8.000 pixels
Image Resolution (dpi):	800, 600, 500, 400, 300, 200, 150, 75, 50 & 25	400, 300, 200, 150, 75, 50 & 25
Image Size:		
Media Width:	6.0 to 40.0" (1016mm.)	6.0 to 40.0" (1016mm.)
Scan Width: (max.)	36 Inches (914 mm)	36 Inches (914 mm.)
Scanner Measurements(inches/mm):		
Width:	47.25"/1200	47.25"/1200
Depth:	15.0"/380	15.0"/380
Height:	7.9"/200	7.9"/200
Power:		
Consumpt.:	130W	
Voltage:	100/115/220/240V-50/60Hz	
Weight:	42 kg.	42 kg.
Light Source:	Stabilized Fluorescent Lamp	
Interface:	Industry standard SCSI-2 I/F	
Graylevels:	Up to 256 levels recognized (1Byte, 8Bits per pixel).	
Window Scan:	Adjustable Horizontal and Vertical Offset and scan-window size.	
Image Processing:	<p>Digital Signal Processor, 2D-Adaptive Threshold. On-line threshold, deskewing, despeckling and holefilling. Individual pixel adaptive ampl. correction and graytone interpolation. Image rotation, alignment, mirroring and reverse. On-screen view, zoom, and print functions. More than fifty industry standard image file formats supported. Side-aligned or centered insertion of the original.</p>	

Model FSS8300PLUS^{DSP}

Sensors: Dual CCDs
16.000 pixels

Image Resolution (dpi):
25 to 800
Setable in
1 dpi incre-
ments.

Image Size:
Media Width: 6.0 to 40.0"
(1016mm.)
Scan Width: 36 Inches
(max.) (914 mm)

Scanner Measurements(inches/mm):
Width: 47.25"/1200
Depth: 15.0"/380
Height: 7.9"/200

Power:
Consumpt.: 130W
Voltage: 100/115/220/240V-50/60Hz

Weight: 42 kg.

Light Source: Stabilized Fluorescent Lamp

Interface: SCSI-2 I/F (Workstation)

Graylevels: Up to 256 levels recognized (1Byte, 8Bits per pixel).

Window Scan: Adjustable Horizontal and Vertical Offset and scan-window size.

Image Processing:

High Scanning speed (dependent on dpi setting and host)
Digital Signal Processor, 2D-Adaptive Threshold.
Advanced "Area Diffusion Logic (ADL)" preserves tones of grey in copies, maintains compact print-ready files.
On-line threshold, deskewing, despeckling and holefilling.
Individual pixel adaptive ampl. correction and graytone interpolation.
Image rotation, alignment, mirroring and reverse.
On-screen view, zoom, and print functions.
More than fifty industry standard image file formats supported.
Side-aligned or centered insertion of the original.

8. Appendix B: Glossary

Adaptive thresholding

Advanced 2-D Adaptive Thresholding estimates the background gray level in a window area around each pixel. The difference between the actual pixel value and the background is then compared to the adaptive settings to determine if a pixel is thresholded as a black or a white pixel.

Additive Colors

The additive primary colors are red, green and blue. These additive primaries represent the three main components of white light. Used individually or together, these three colors of light can be mixed to create nearly all colors. When these three primary colors are mixed in equal parts they produce white. Additive color is used in scanners and computer displays.

Bitmapped Image

A bitmapped image is a computer file representing a line-art image that was scanned with a scanner. Refers to the pattern (map) of bits that are either black or white.

Black Point Adjustment

An adjustment made that will determine the amount of shadow detail in an image. It is considered proper to set the black point so that the darkest part of an image will only just have zero detail.

Blueprint

A process of photographic printing used mainly for copying architectural and mechanical drawings, produces blue lines on a white/bluish background.

Blur

The averaging of pixel elements.

Brightness Adjustment

An adjustment on a scanner that allows the user to compensate for a light or dark original.

Calibration

Adjusting equipment so that it performs in accordance with an established standard e.g scanner calibration, minimizing color deviation between scanned ANSI IT8 reference color patches and the known color reference values.

Cals

Computer-aided Acquisition and Logistics Support (CALS) standard, a U.S. Defense Department and industry initiative that addresses the design, manufacture, and support issues of generation, access, management, and use of technical data in digital form.

CCD

Charge Coupled Device, the CCD is the image sensor in the scanner that converts light to voltages. These voltages are converted by the scanner into the image.

CCITT Group 3

Standard runlength compression format used with FAX transmission. It utilizes modified Huffman coding to further compress the runlength numbers. Most scanner file formats are dialects of this format.

CCITT Group 4

Two-dimensional compression format, giving very compact image files. Standardized by CALS (MIL 28002) and ISO-ODA for Drawing Archival and Interchange.

CIE

Centre Internationale d'Eclairage (CIE) is an international organization that establishes methods for measuring color. These color standards for colorimetric measurements are internationally accepted specifications that define color values mathematically. The first color space model, the CIE xyz, was developed in 1931. CIE defines color as a combination of three axes: x, y and z. The two color spaces released in 1978 are CIE Lab and CIE Luv. The goal was to provide an accurate and uniform reference of visual perception.

CIE LAB

A device independent color space specified by CIE, used in modern color management software to facilitate conversion of data from a scanner to a display, or from a display to an output device.

CMYK

The subtractive printing colors. Cyan, Magenta, Yellow, Black.

Color

Electromagnetic energy that exists in the form of wavelengths creates the perception of color. There is a huge difference between the visible spectrum we can see with our eyes and the colors which can be reproduced on a computer screen and then printed on a color printer. The total number of colors that a device can produce is called its color gamut. The visible spectrum is larger than the color gamut of a color monitor, which in turn is larger than that which can be reproduced by a color printer. No system can produce all the colors visible to the human eye.

Color bit depth

The simplest pixel has two options: black or white. (A pixel with two choices is known as a one-bit image, or two raised to the power of one). Adding more bit information increases the number of color options. The number of potential color options for a pixel is called color bit depth. For example a four-bit pixel would have 16 color options, and an eight-bit pixel would have 256 color options, while a 24-bit pixel would have 16,777,216 color options.

Color Cast

An image is said to have a color cast if its colors are not true. A color cast will usually be described by stating the particular color predominant in the image e.g. the grass appears to have a red color cast.

Color Correction

Correcting for, and eliminating an unwanted color cast.

Color Management System

Color Management System (CMS) software increases the accuracy of color interchange between scanners, displays and printers based on profiles for each device. The CMS is a layer of software resident on the computer that negotiates color reproduction between the application and color devices. The CMS performs the color transformations necessary to exchange accurate color between diverse devices. The Color manager needs access to characterization data for the device, the format and content of such device profiles is standardized by the International Color Consortium (ICC.)

Color Separation

Converting an RGB color image into CMYK color image. Color separation is a technical function during which critical settings such as GCR, black ink limit and total ink limit are applied to the image.

Color Space

A color space is a particular language used to describe color. Examples of color spaces are: RGB, CMYK, HSV, CIE LAB.

Compressing

Reducing file sizes of images by encoding the data (see also Run Length Encoding and CCITT Group 3 and 4).

Contrast

The range between light and dark in an image. Proper contrast is important for an image to appear realistic.

Density

The light stopping ability of a film. Density is inversely proportional to the amount of light reflected or transmitted by an image.

Density units

Photographers and printers measures transmission in base-10 logarithmic density units, where transmission of unity corresponds to a density of 0, transmission of 0.1 corresponds to a density of 1, transmission of 0.01 corresponds to a density of 2 and so on

Device Dependent Color Space

For example RGB. A device dependent color space e.g the same scan file will appear different when viewed on different computer displays.

Device Independent Color Space

For example CIE LAB. A device independent color space is one in which color values are absolute e.g defined by CIE standard. CIE LAB is the central color space in color management systems (CMS) and is used to translate between different device dependent color spaces such as scanner RGB and display RGB.

Device Profile

A file used as part of a Color Management System (CMS). A device profile contains information about the characteristics of a scanner, computer display or printer. The format for device profiles (Win95, Colorsync. Etc.) is standardized by ICC (International Color Consortium).

Display

Also called Graphic display or Monitor. The computer screen attached to your computer, or to the portion of a drawing image, menu, etc. shown on the screen

Dithering

A printing or display device may have only a small number of greyscale or color values for each device pixel. However if the viewer is sufficiently distant from the printed page or display, the value of neighboring pixels can be set so that the viewer's eye integrates several pixels to achieve an apparent improvement in the number of levels or colors that can be reproduced.

DPI

Dots Per Inch, equivalent to Pixels Per Inch. An expression of resolution of a scanned image.

DSP

Digital Signal Processor, does image enhancement in real-time while scanning

Dynamic Range

A measurement of scanner quality, the density difference between highlights and shadows.

Equalizing

Distributing all color or tone equally along a density range.

File

Image, text or program information stored on a computer disk, with a file name for retrieval (an extension to the name is often added to distinguish between different types of files).

Folder

An organizational aid on a hard disk. Like office folders it allows a user to group related files together.

Foreground

Foreground when scanning raster data (black and white, or monochrome data) refers to the pixels that represent data of interest (background refers to everything

else). Typically, lines and shapes are represented by black pixels (foreground) and empty space is represented by white pixels (background).

When scanning grayscale data, background means the gray level of a region of pixels that surrounds some desired foreground data.

Gamma Adjustment

An adjustment that makes the tone distribution lighter or darker in an image.

Gamut

The color range scanable, printable or displayable by a device e.g. if some of the displayable colors are outside of the gamut of the printer they cannot be printed.

Gamut Transformation

Color Management System function, where out of gamut colors are converted to colors within the gamut of the targeted device e.g a printer.

GCR

Grey component replacement. A color separation setting used on color photographs where cyan, magenta and yellow inks are replaced by black ink (in a balance that would yield a grey value). The advantages are a reduction in overall ink usage and some increase in image detail.

Gigabyte

Computer storage equal to 1024 megabytes

Grayscale

A term for a black and white photographic image or a scanner setting. Refers to the range of 256 grey tones that make up the image.

Grey Balance Adjustment

A color correction adjustment to insure that grey elements within a scanned image appear as a neutral grey. It is generally considered proper technique to adjust the image so that neutral grey elements appear neutral gray. If this is done, it will usually be true that other elements within the image will also have true color reproduction.

Halftoning

The processes of offset printing and laser printing are intrinsically bilevel. However, these devices can reproduce a range of tone levels by halftoning e.g. an array of widely spaced dots produces the perception of light gray, and an array of tightly spaced dots produces dark gray. Halftone dots are usually placed in a regular grid. In color printing it is conventional to use cyan, magenta, yellow and black grids that have exactly the same dot pitch but different carefully-chosen screen angles.

Histogram

A bar graph representing the statistical distribution of graytones or colors in an image. Each column represents the number of pixels at that gray level or color.

HLS

A color space with the three variable of Hue, Lightness, Saturation. See HSV.

HSV

A color space with the three variables of Hue, Saturation Value. Hue means color (as in the color wheel.) Saturation is an indication relating to the richness or vibrancy of the color. Value is a term best related to the intensity of light illuminating the object.

Hue

A measurement of color as can be related by pointing towards a certain color on the color wheel. Hue indicates the relative redness, blueness, greenness, yellowness, etc. of a color.

ICC

The International Color Consortium (ICC) was formed to address the need for a common color framework. The ICC has developed a standard device profile that contains information about how various devices render color. This concept is supported by Apple (Colorsync), Microsoft for Windows 95, Sun for Solaris, and by Silicon Graphics for Irix.

ICS

Integrated Component Scanner, integrates copying function into an existing plotting environment.

Indexed color

Indexed color (or pseudo-color), is the provision of a relatively small number, say 256, of discrete colors in a colormap or palette. For each pixel in the image the index number of a color is then stored. When retrieving the image, a lookup table uses the index to retrieve red, green and blue components that are then sent to the display. In graphic file formats such as PCX or TIFF, an indexed color image is accompanied by its colormap.

Ink-Jet Plotter/Printer

Inkjet Plotters/printers transfer color to a page by squirting cyan, magenta, yellow and black liquid ink onto the page. The ink dries on the paper through evaporation.

Interpolation

Using the interpolation method of resampling, generates values for points in between the actual pixels by looking at the surrounding colors or intensities. In a scanner resolution is increased beyond the actual number of CCD cells. As each line of pixel data arrives from the cameras, new interpolated pixels are added between original pixels. The added pixels enhances line edge definition.

JPEG Compression

Joint Photographic Experts Group Compression. A method to save storage space by compressing files. JPEG achieves a high degree of compression by discarding non-important picture detail.

Kilobyte

Computer storage equal to 1024 bytes of computer information.

Laser/LED Plotter/Printer

Laser/LED plotters/printers transfer toner to a page by discharging an electrostatically charged drum by the information modulated light from a laser or LED (Light Emitting Diodes) array. Toner then attaches to the remaining charged areas of the drum and is subsequently transferred to the paper

Lossless Compression

File compression and subsequent de-compression without any loss of data.

Lossy Compression

File compression that will compress data to a high degree. When subsequently un-compressed data will have been lost.

LZW

Method of lossless compression used with many file formats, developed by Lempel, Zev and Welch.

Megabyte

Computer storage equal to 1024 kilobytes.

Monochrome

An image composed of a single color.

Neutral

An area of no color; white, gray or black.

Noise

A term used to describe the occurrence of pixels within an image that contain random colors

Palette

The set of colors available for an image.

Pixels

The word pixel is a combination of the two words picture and element, it is the smallest building block within a scanned line-art or photographic image. A pixel is the small square picture element that is filled with a color, black or white.

The value of a pixel depends of the luminance of the area and is either a single bit for a black and white image, or multi-bit for a color or gray-tone image.

Pixels come in various sizes and their size is expressed in terms of resolution. Resolution is measured in pixels per inch (ppi) or the equivalent dots per inch (dpi.)

Plotter

A physical device that receive information of a digital image and reproduced it on paper (see also Inkjet and Laser/LED plotter).

Printable Color

A color that falls within the gamut of a particular output device.

A printable color will output as expected. Compared to a color that falls outside the gamut which will print as an unexpectedly different shade. See also Gamut.

Printer

A physical device that receive information of a digital image and reproduce it on paper (see also Inkjet and Laser/LED printer).

PROM

Programmable Read Only Memory

RAM

Random Access Memory. RAM is a computer resource, having more RAM in a computer makes it faster and more capable.

Raster File

Also called Raster Image or Bitmapped Image. A picture composed of individual dots (picture elements, pixels) the way a scanner perceives it. The rows in a high-resolution raster file typically contain 200 or 300 dots per horizontal inch of the original drawing, and there are typically 200 or 300 rows per vertical inch. As each of these dots is defined by location, and by whether it is on or off, raster images generally have large data files.

Resolution

Defines the level of detail that can be captured or shown by a scanner, display, or output device. For scanners, the resolution is defined by the number of dots (pixels) per inch (dpi) that can be captured horizontally and vertically, e.g. 300 dpi equals 90,000 pixels per square inch.

Resolution of a Scanner

Expressed as dpi (dots per inch) or the equivalent ppi (pixels per inch) The higher the resolution of a scanner, the smoother the scanned images.

RGB

Red, Green, Blue. These additive primary colors are the basic elements of white light. By mixing them on a computer monitor or in a scanned image file, other colors can be created. For instance, Red and Green produces Yellow, and equal amounts of all three produces grey.

RIP

Raster Image Processor. A RIP is a special software that converts scanned images into a color dithered (halftone) image that can be output directly. An image must be 'ripped' before it can be output on a CMYK device e.g. a inkjet plotter.

Runlength Encoding

A method of compressing raster or bitmap data by representing "runs" of white or black dots along a scanned line as the number of dots in each run. Many variations exist of this scheme, with varying compression efficiency. Typically

runlength compression formats yield a file 20-25% the size of an uncompressed file.

Saturation

Saturation is one attribute of color in the color space called HSV (Hue Saturation, Value). Saturation is a characteristic indicating the vibrancy or intensity of a hue. A color with high saturation will appear more intense than the same color with less.

Scanning

The process of running a hardcopy original through an optical scanner. The scanner produces a digital image (raster image) of the hardcopy drawing, which is then stored in RAM or on a disk.

SCSI

Small Computer System Interface specification of interface to computer equipment like disks, printers, scanners etc.

Shadow Detail

The amount of detail contained in the dark parts of an image. It is desirable to maintain shadow detail but there is a risk of decreasing overall contrast if one lightens the shadow too much in an attempt to expose additional detail. If an image is scanned without shadow detail, it will be impossible to regain detail using an image editing program.

Sharpness

An attribute of a scanned image and also an attribute of scanner quality.

Stitching

In large format multiple CCD camera scanners, electronic stitching adjusts for overlap in the field of view of adjacent cameras. Automatic stitching at start of scan, ensures that each camera captures the correct number of pixels independently of mechanical and thermal changes.

Subtractive Colors

The subtractive primary colors: cyan, magenta, yellow. As ink applied to a piece of paper by a printer, these colors absorb light and alter the colors seen by looking at the printed paper. Cyan ink absorbs the red third of the spectrum, magenta ink absorbs the green third, and yellow ink absorbs the blue third. This should theoretically cause the viewer to see a black color, but due to unavoidable impurities in the inks, there is still light reflected and the viewer sees a muddy brown. The absence of CMY pigments results in white.

TIFF File Format

Tagged Image File Format. One of the most common graphic file formats for line-art and photographic images.

Tonal Distribution

Tonal Distribution describes the distribution of various bright or dark tones within an image. During the scanning or image editing stage, tones can be redistributed lightening a dark image or darkening a light one.

Tone

Any color or neutral that is denser than white.

Tone Compression

A term used in scanning and image editing that refers to compressing the broad range of tones and colors in an image down to the narrower range available on a printer.

Tone Curves

The shape of the tone transfer curves can be adjusted by the user to alter color or tone correction. The lower left end of the curve typically represents the dark portions of a picture and an upward bend will typically lighten the shadows. Similar capabilities exist by working with the middle or highlight parts of the curve. In this way it is possible to alter only certain tonal ranges of an image without making unwanted changes to other parts of the image.

True color

True color systems provide eight bits for each of the three components (red, green and blue). Therefore true color is often referred to as 24-bit color.

UCR

Under Color Removal. A color separation setting used on color photographs where cyan, magenta and yellow inks are removed from dark, neutral areas and substituted by black ink. The advantages are a reduction in overall ink usage. See also GCR.

Vector File

Also called Vector drawing. Consists of mathematically defined elements, such as "Line from A to B", "Circle with center and radius", etc. CAD systems use vector drawings because of their accuracy, relatively low memory requirement and data-file sizes compared to raster images.

Vectorization

Also called raster-to-vector conversion (RTV). The process of automatically converting a raster (bit-mapped) image into a vector (CAD) drawing.

Video Card

Expansion card installed inside the computer. Different types of video cards support varying monitor sizes and number of displayable colors.

Viewing Conditions

Different light sources affect the colors that you see. For instance, a color viewed under fluorescent light will look radically different when viewed under incandescent light. Fluorescent light adds green to colors while incandescent light adds red. For this reason the printing industry developed a standard viewing condition known as

the D50 (5000 Kelvin) light source in addition to a neutral gray background surround. This light source replicates daylight with equal parts of red, green, and blue.

White Point Adjustment

An adjustment made that will determine the amount of highlight detail in an image. The white point should be set so that the lightest part of an image will only just have zero detail

XYZ

The CIE system is based on the description of color as a brightness (luminance) component Y (as described above), and two additional components X and Z. The spectral weighting curves of X and Z have been standardized by the CIE, based on statistics from experiments involving human observers. XYZ tri-stimulus values can describe any color.

Zoom

Changing the size of the viewing area, to examine a larger or smaller area in greater detail.

9. Appendix C: Regulations

9.1 FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device. Pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can generate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- You may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

9.2 EU Regulations

DECLARATION OF CONFORMITY

Manufacturer's Name: CONTEX A/S

Manufacturer's Address: Svanevang 2
DK-3450 Allerod
Denmark

Declares that the products:

Category: Large Format Scanners

Model/Type: FSS 18300, FSS 12300,
FSS 8300, FSS 8300PLUS,
FSS 4300

Conforms to the following standards:

EMC: EN55022(1987)-Class A
EN50082(1994)

Safety: EN60950

Following the provisions of Council Directive 89/336/EEC (EMC)
and Council Directive 73/23/EEC (Low Voltage).

Allerod 971023 Asbjorn Smitt, Mng.Director

10. Appendix D: Program License Agreement

You should carefully read the following terms and conditions before opening the diskette package. Opening the diskette package indicates your acceptance of the terms and conditions. If you do not agree with them you should promptly return the package unopened, and your money will be refunded.

Contex provides this program and licenses its use. You assume responsibility for the selection of the program to achieve your intended results, and for the installation, use and results obtained from the program.

License:

1. You may use the program on a single machine.
2. You may modify the program and/or merge it into another program for your use on the single machine.
3. You may copy the program into any machine readable or printed form for backup or modification purposes in support of your use of the program on the single machine.
4. You may not use, copy, modify or transfer the program, or any copy, modification or merged portion, in whole or in part, to another party, except as expressly provided for in this license. If you do so you terminate your license.

Term:

The license is effective until terminated. You may terminate it at any time by de-destroying the program together with all copies. The license will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of the Agreement. You agree upon such termination to destroy the program together with all copies, modifications and merged portions in any form.

Limited Warranty:

This program is provided as is, without warranty of any kind, either stated or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. The entire risk as to the quality and performance of the program is with you. Should the program or hardware provided with the program prove defective, you (and not Contex or an authorized dealer) assume the entire cost of all necessary servicing, repair or correction.

Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights; you may also have other rights which vary from state to state. Contex does not warrant that the functions or the operation of the program will be uninterrupted or error free.

However, Contex warrants the diskette on which the program is furnished to be free from defects in materials and workmanship under normal use for a period of one (1) year from the date of delivery to you, as evidenced by a copy of your receipt.

Limitations of Remedies:

Contex's entire liability and your exclusive remedy shall be:

The replacement of any diskette not meeting the Contex "Limited Warranty" and which is returned to Contex or an authorized Contex dealer with a copy of your receipt, or If Contex or the dealer is unable to deliver a replacement diskette which is free of defects in materials or workmanship, you may terminate this Agreement by returning the program and your money will be refunded.

In no event will Contex be liable to you for any damages including any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use such program, even if Contex or an authorized Contex dealer has been advised of the possibility of such damages, or for any claim by any other party. Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

General:

You may not sublicense, assign or transfer the license of the program except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign or transfer any of the rights, duties or obligations hereunder is void.

This Agreement will be governed by the laws of Denmark. Should you have any questions concerning this Agreement, you may contact Contex.

You acknowledge that you have read this Agreement, understand it, and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement, oral or written and any other communications between us relating to the subject matter of this Agreement.

CONTEX

11. Appendix E: Important Safety Instructions

Read all of these instructions and save them for later use. Please follow all warnings and instructions marked on the scanner.

A. Do not place the scanner on an unstable surface, stand, cart, or table. Serious damage can be caused if the unit falls.

B. Turn off all power to the unit before cleaning. Do not use liquid cleaners or aerosol cleaners.
Use a damp cloth for cleaning.

C. The scanner should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

D. The scanner is equipped with a three-wire grounding type plug. This plug will fit only into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat or ignore the purpose of the grounding-type plug.

E. Do not allow anything to rest on the power cord. Do not locate the scanner where people may walk over or step on the cord.

F. If an extension cord is used with the scanner, make sure that the total of the ampere ratings of the products plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

G. Slots or openings in the cabinet at the back or bottom are provided for ventilation. These are to ensure reliable operation of the product and to protect it from overheating. The openings must never be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar soft surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

H. Never push objects of any kind into the scanner through cabinet slots since they may touch dangerous voltage points or short out parts that could result in a fire or electrical shock. Avoid spilling liquid of any kind on the scanner and keep liquids far from the unit.

I. Do not attempt to service the scanner yourself. Any covers that require tools to get opened or removed, may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to authorized service personnel.

J. Unplug the scanner from the wall outlet and refer servicing to authorized service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the scanner.
- If the scanner has been exposed to rain or water.
- If the scanner does not operate normally when operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore this product to normal operation.
- If the scanner has been dropped or the cabinet has been damaged.

If the scanner exhibits a distinct change in performance, indicating a need for service

12. Appendix F: Index

2D-Adaptive Threshold.....	1-2, 7-1	Media Width.....	7-1
Aerosol cleaners.....	11-1	Mirroring	7-1
Alignment.....	7-1	Mylar.....	1-2
Area Diffusion Logic	1-1, 7-3	On-line threshold.....	7-1
Blueprint	1-2	Operating Modes	4-1
Camera out of Light error	6-5	Operator Panel	3-1
CCD-Cameras	6-1	Original Scanning Area.....	6-1
Computer Aided Design	1-2	Paper Feed/Forward Key	3-1
Desk Top Publishing	1-3	Paper Reverse Key	3-1
Deskewing	7-1	Photo Mode	4-3
Despeckling.....	7-1	Pixel adaptive ampl. correction	7-1
Device number	5-3	Power	7-1
Diagnostic Indicator.....	3-3	Power On indicator	3-1
Drawing Archival.....	1-4	Power source.....	11-1
Drawing widths	4-2	Program License Agreement.	10-1
EC Regulations.....	9-2	Ready indicator	3-1
FCC Regulations	9-1	Resolution	2-1, 4-2, 7-1
File formats.....	7-1	Reverse	7-1
Format	9-2	Rotation	7-1
Glossary	8-1	Ruler.....	3-4
Graylevels	7-1	Safety	11-1
Graytone Mode.....	4-3	Satellite Photo	1-4
Grounding-type power outlet .	11-1	Scan Width	7-1
Height adjustment.....	6-2, 6-3	Scanner DIL-switch	5-3
Holefilling.....	7-1	Scanner Measurements	7-1
Image Processing.....	7-1	Scan-width settings	4-2
Installation	5-1	SCSI	2-3, 5-1, 5-2, 5-3, 5-4, 5-5
Installation verification	5-2	SCSI Termination	5-5
Interface	7-1	Sepias	1-2
Light Source	7-1	Vellum.....	1-2
Line Mode.....	4-1	Wait Indicator (Warm up).....	3-3
Liquid cleaners	11-1	Weight	7-1