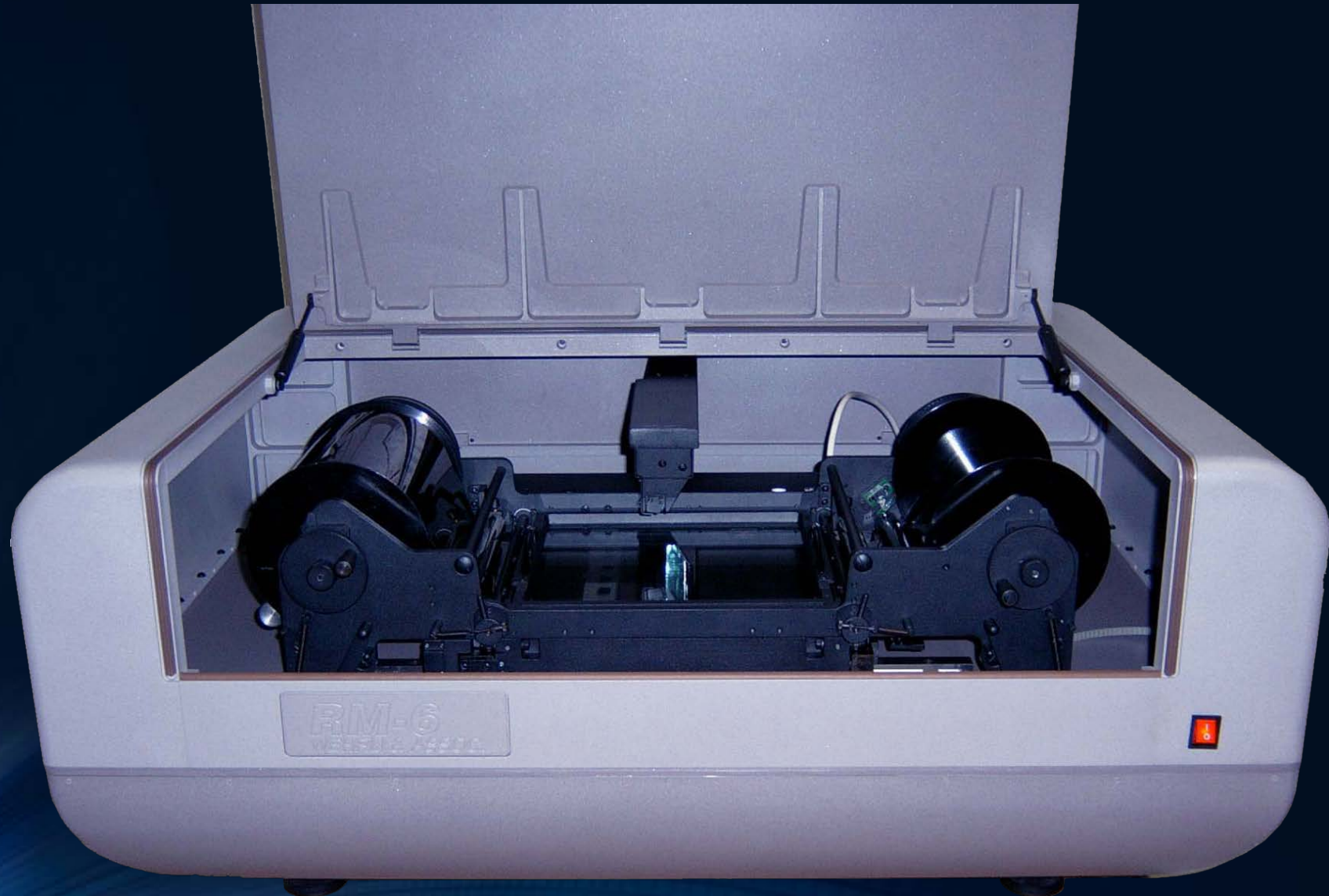


RM-6 AutoScanner

A WEHRLI/GEOSYSTEM INSTRUMENT

Photogrammetric Scanning



Reel Features



- ❖ Roll film or individual frame (cut sheet) scanning
- ❖ Color, Black/White or Infrared film – Glass plates
- ❖ Motorized spools for automated film advancement
- ❖ Automatic fiducial or image edge detection to find next frame
- ❖ Auto rewind film when scan session complete
- ❖ Pressure plate & film lifted during transport to prevent scratching of film

Illumination Features



- ❖ Cool LED illumination system – no heat
- ❖ Full spectrum light source
- ❖ Calibrated for even light levels – no banding
- ❖ Long lasting – 30,000 hours

Project Management



- ❖ Multiple setups/jobs; scan/skip frames; rotate frames
- ❖ File names count up/down; user defined prefix or mask
- ❖ Histogram Analysis – brightness, contrast, gamma
- ❖ Scan parameters defined automatically for best tonal correction and image quality
- ❖ Auto rewind film when scan session complete
- ❖ Image Editor: rotate, resample, pyramids, remove camera vignetting, etc.

Dust/Scratch Removal Module: The only way to truly get clean images



Image With Dust & Scratches

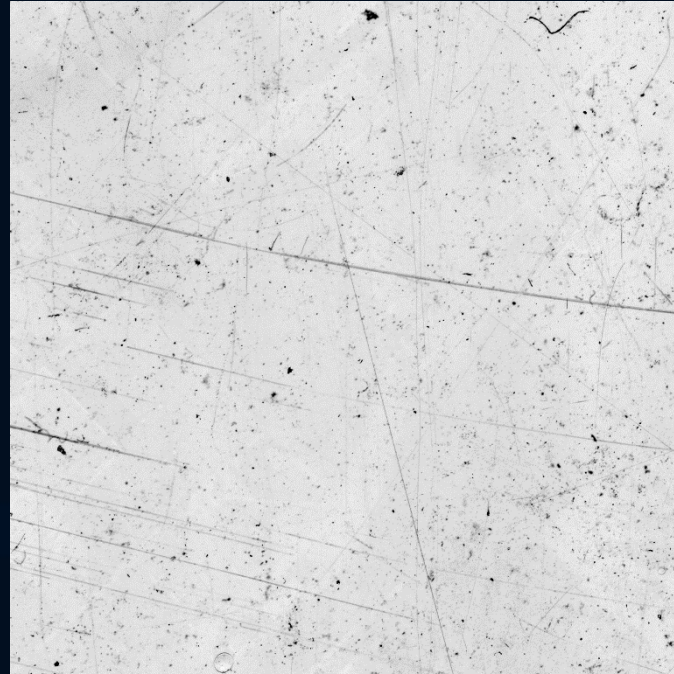


Image Of Only Dust & Scratches



Clean Image - No Dust or Scratches

HOW IT WORKS:

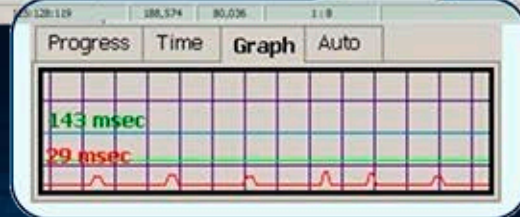
The image is scanned twice – once with RGB light and once with IR light. The IR image is used to detect exactly where and what is foreign from the original image. Software then utilizes surrounding image information to remove the foreign matter from the original RGB image

Operational Software:



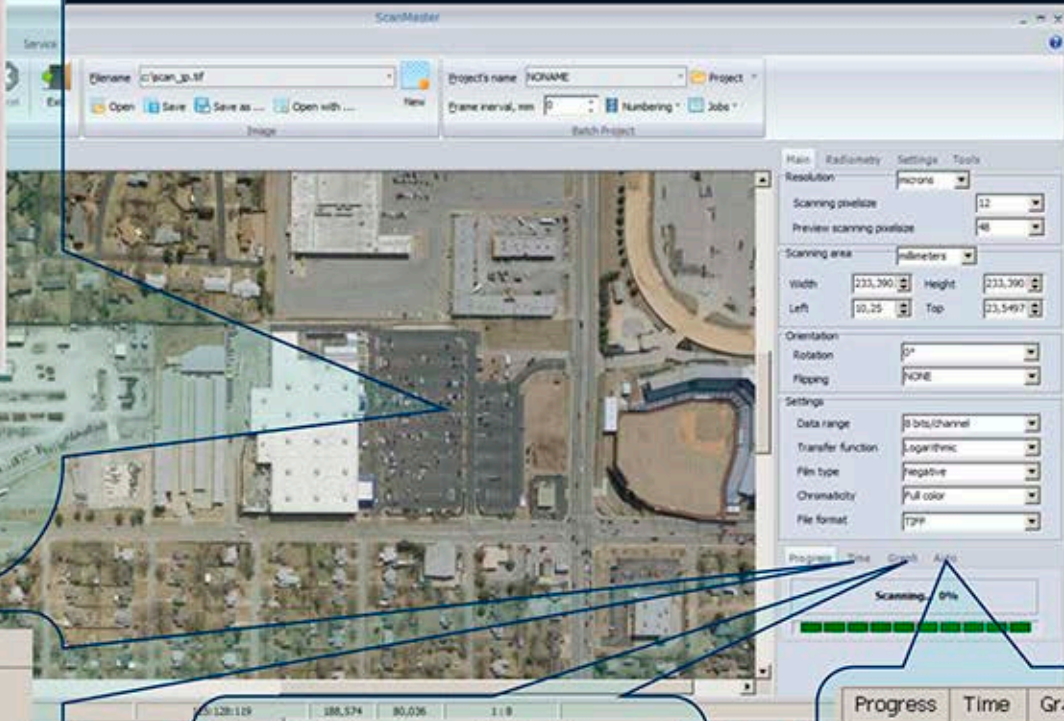
Online preview of scanned data

Progress	Time	Graph	Auto
Time left	00:00:30		
Elapsed time	00:09:18		
Total time	00:09:49		



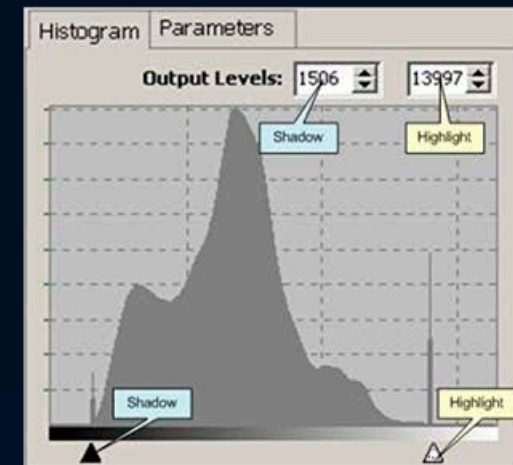
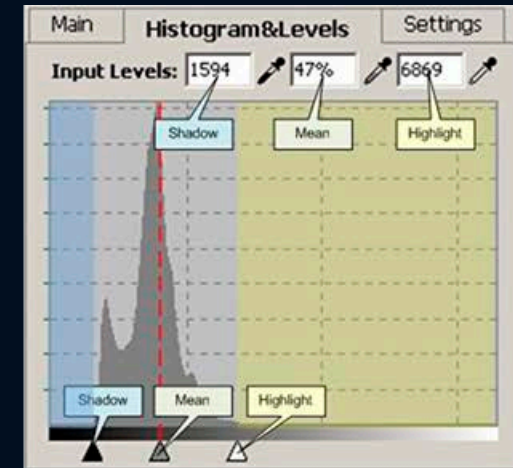
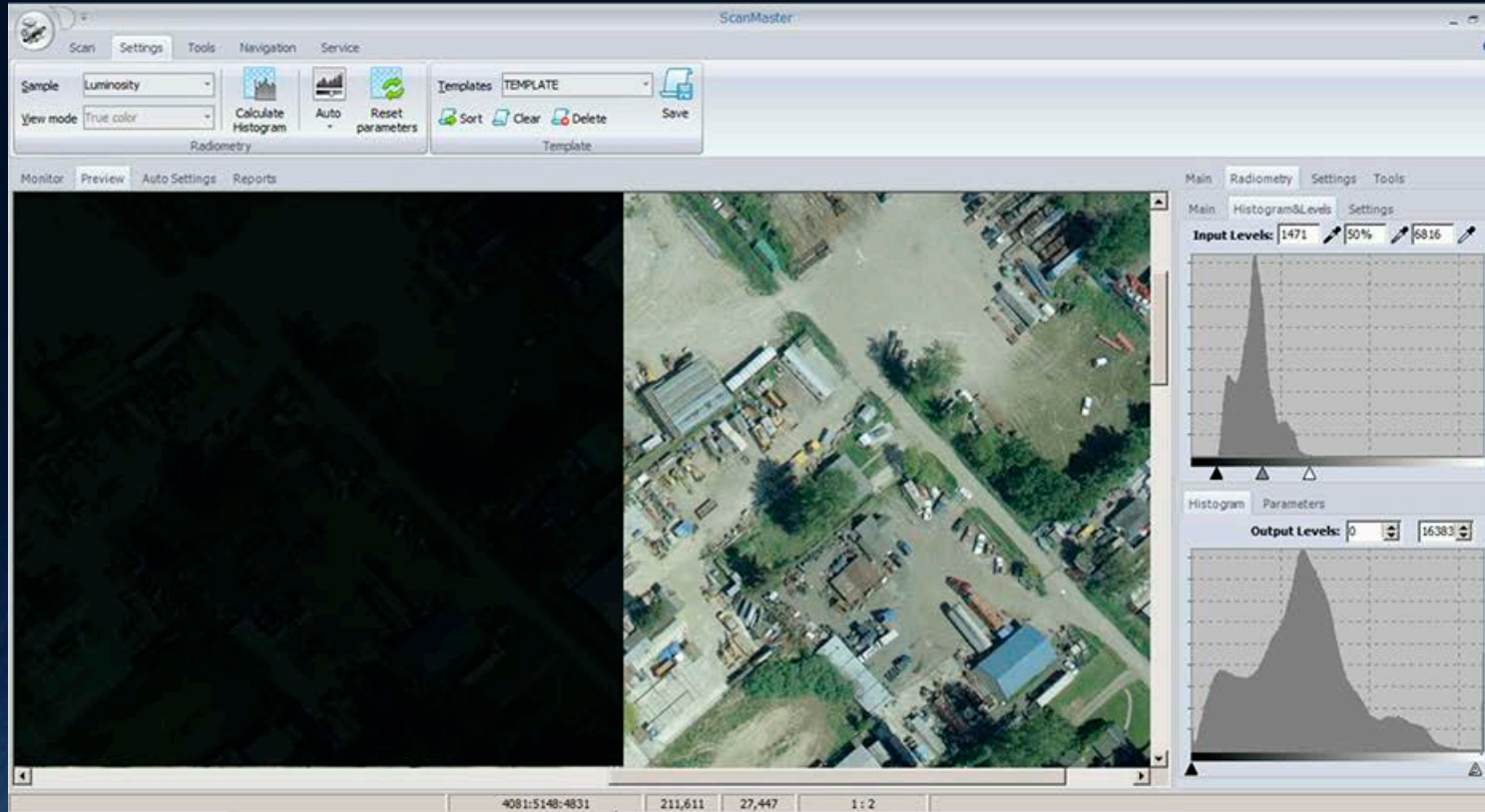
Modern User Interface:

- ❖ Templates for quick, easy setup
- ❖ Progress reporting
- ❖ Single window with multi-tabs
- ❖ Real time preview of scanned image



Progress	Time	Graph	Auto
Time left	05:16:38:31	Numbers left	390
Total time	06:05:57:21	Total numbers	428
			8%

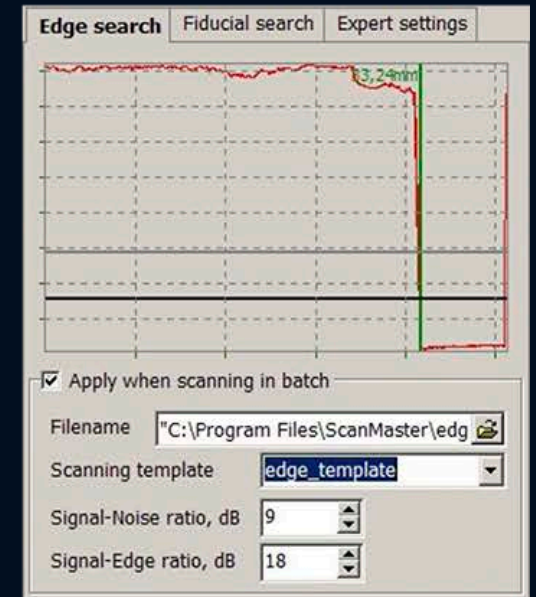
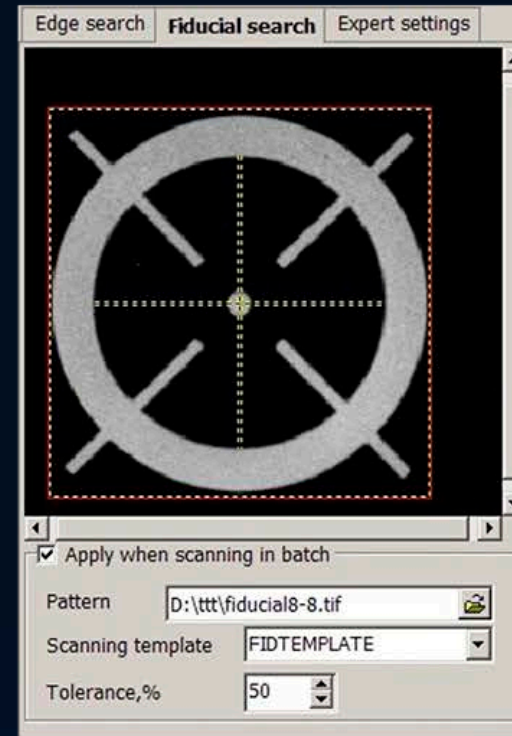
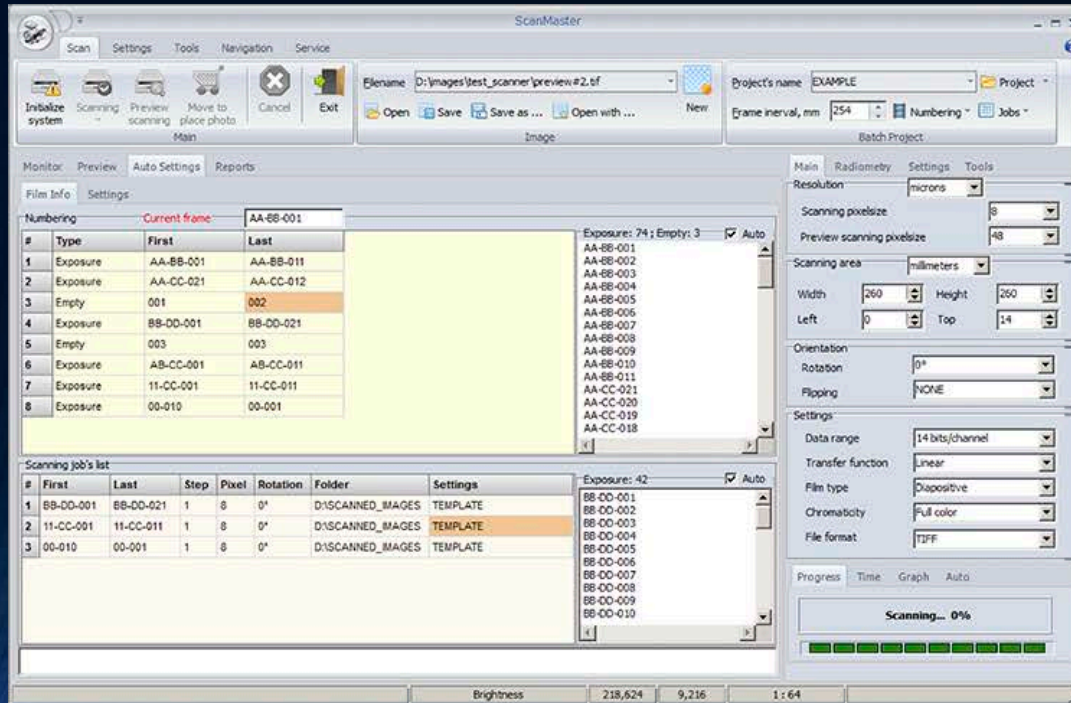
Operational Software:



Easy Scanning Setup:

- ❖ Histogram analysis - Automatic adjustment processing tools such as AutoLevels and AutoColors
- ❖ Preview for adjustment of radiometric parameters – maximize histograms
- ❖ Input / Output levels analysis for image correction

Operational Software:



Automatic Scanning Features:

- ❖ Easy and complete multi-frame scanning session setup
- ❖ Detect next frame via Fiducial or Image Edge
- ❖ Wizards walk operator step-by-step for setting up scan session

Operational Software:

The screenshot displays the 'Operational Software' interface. The main window is titled 'Scans Report' and contains a table of scan data. The table has columns for Start, Total, File Name, Left, mm, Top, mm, Width, mm, Height, mm, Pixel size, um, and a column with a small icon. The data rows show scan sessions from 3/27/2010 4:08:25 PM to 7:14:07 PM. A smaller window titled 'System Log' is visible in the background, showing a list of system events. At the bottom of the main window, there are buttons for 'Print', 'Find', 'New report', 'Save into file', 'Load from file', and 'Rescanning'.

Start	Total	File Name	Left, mm	Top, mm	Width, mm	Height, mm	Pixel size, um	
3/27/2010 4:08:25 PM	00:04:43	I:\groups\scanning\14568\305.tf	12.3959944014603	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:14:25 PM	00:04:43	I:\groups\scanning\14568\304.tf	12.6519048246255	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:20:24 PM	00:04:43	I:\groups\scanning\14568\303.tf	13.1317368886353	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:26:24 PM	00:04:43	I:\groups\scanning\14568\302.tf	14.0114289489532	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:32:23 PM	00:04:43	I:\groups\scanning\14568\301.tf	13.323669881592	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:38:22 PM	00:04:43	I:\groups\scanning\14568\219.tf	12.5879272189942	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:44:22 PM	00:04:43	I:\groups\scanning\14568\218.tf	12.2520447883174	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:50:21 PM	00:04:43	I:\groups\scanning\14568\217.tf	11.9801399634918	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 4:56:21 PM	00:04:43	I:\groups\scanning\14568\216.tf	13.4966081022228	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:02:20 PM	00:04:43	I:\groups\scanning\14568\215.tf	13.7395241241277	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:08:19 PM	00:04:43	I:\groups\scanning\14568\214.tf	13.323669881592	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:14:19 PM	00:04:43	I:\groups\scanning\14568\213.tf	12.3959944014603	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:20:18 PM	00:04:43	I:\groups\scanning\14568\212.tf	13.1477312700956	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:26:18 PM	00:04:43	I:\groups\scanning\14568\211.tf	12.8278432408891	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:32:17 PM	00:04:43	I:\groups\scanning\14568\210.tf	13.6915409197467	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:38:17 PM	00:04:43	I:\groups\scanning\14568\209.tf	13.4966081022228	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:44:16 PM	00:04:43	I:\groups\scanning\14568\208.tf	12.4759664087619	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:50:16 PM	00:04:43	I:\groups\scanning\14568\207.tf	12.8278432408891	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 5:56:15 PM	00:04:43	I:\groups\scanning\14568\206.tf	12.8598320438098	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:02:14 PM	00:04:43	I:\groups\scanning\14568\205.tf	13.6915409197467	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:08:14 PM	00:04:43	I:\groups\scanning\14568\204.tf	12.4119888029006	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:14:13 PM	00:04:43	I:\groups\scanning\14568\203.tf	12.8598320438098	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:20:12 PM	00:04:43	I:\groups\scanning\14568\202.tf	13.803501729969	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:26:12 PM	00:04:43	I:\groups\scanning\14568\201.tf	13.0997486657146	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:32:11 PM	00:04:43	I:\groups\scanning\14568\108.tf	13.6275633139054	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:38:11 PM	00:04:43	I:\groups\scanning\14568\107.tf	12.8758264452701	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:44:10 PM	00:04:43	I:\groups\scanning\14568\106.tf	12.5719328175239	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:50:09 PM	00:04:43	I:\groups\scanning\14568\105.tf	11.8261900903489	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 6:56:09 PM	00:04:43	I:\groups\scanning\14568\104.tf	12.5399440146033	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 7:02:08 PM	00:04:43	I:\groups\scanning\14568\103.tf	14.1073953577152	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 7:08:07 PM	00:04:43	I:\groups\scanning\14568\102.tf	12.2040615839364	15.55	233.39	233.39	47.9832058779427	25
3/27/2010 7:14:07 PM	00:04:43	I:\groups\scanning\14568\101.tf	13.1797200730163	15.55	233.39	233.39	47.9832058779427	25

Log Reports:

- ❖ List of captured images with all scan parameters
- ❖ Log of system status, errors and warnings
- ❖ Thumbnails of scanned image per session

Technical Specifications

Resolution	8 μ m optical (3175 ppi) 12,16,20,24,...128 μ m in real time by binning Other sizes by post process
Media	Roll Film (manual/automatic) - Individual Frame Positive or Negative - B/W or Color transparency
Geometric Accuracy	$\pm 3\mu$ m RMSE <i>without resampling image data</i>
Geometric Precision	1 μ m resolution
Radiometry	14 bits/channel
Optical Density	0.001 to 3.7D
Dynamic Range	3.4D
Illumination	Computer controlled LED - 30000 hours
Sensor	Tri-linear CCD, Sony 5300, Fully compensated
Scanning Range	Roll Unit 260x240mm - Cut Sheet 260x260mm
Image Format	Tiled TIFF, Strip TIFF, TIFF 6.0 JPEG, JPEG 2000 Output 8/10/12/14 bits per channel-user selectable (FULL)
Operating System	Windows 7 (32 or 64 bit) [™] , Windows XP [™]
Dimensions	0.83x1.10x1.00 M
Weight	165 Kg.

Sample Scan Times for Full Frame

MODE	PIXEL SIZE	TIME
B/W	8 μms	8 minutes
B/W	12 μms	6 minutes
B/W	16 μms	5 minutes
B/W	20 μms	4 minutes
B/W	24 μms	3.5 minutes
Color	8 μms	14 minutes
Color	12 μms	10 minutes
Color	16 μms	8 minutes
Color	20 μms	7 minutes
Color	24 μms	6 minutes

World Wide Scanner Installations

<u>COUNTRY</u>	<u>UNITS</u>	<u>COUNTRY</u>	<u>UNITS</u>	<u>COUNTRY</u>	<u>UNITS</u>
Argentina	1	Iran	5	Russia	83
Armenia	1	Israel	2	Scotland	1
Australia	4	Italy	2	Serbia	2
Azerbaijan	1	Jordan	1	South Korea	4
Belarus	2	Kazakhstan	2	Spain	9
Botswana	2	Korea	1	Sudan	2
Bulgaria	2	Laos	1	Sweden	4
Burkina Faco	1	Malaysia	1	Turkey	7
Canada	5	Mexico	9	Turkmenistan	1
China	19	Mongolia	1	UAE	4
Croatia	2	Morocco	2	Ukraine	38
Egypt	1	Nigeria	1	USA	37
France	1	Nouth Korea	1	Vietnam	8
Ghana	1	Poland	3	Zimbabwe	1
Greece	1	Portugal	1		
India	2	Romania	2		

Company Profile

Gregory R. Wehrli
Managing Director
greg@wehriassoc.com



Wehrli & Associates, LLC. was incorporated in 1991 with the aim to develop, manufacture and sell photogrammetric instruments worldwide. Founded by Hans Wehrli after serving 35 years as Director of Photogrammetry and CEO of the North American branch of Kern & Co. (now part of Leica GeoSystem).

Wehrli and Associates Inc. main advantage has always been its ability to take its user knowledge base and parlay that into the development of a useful, high quality photogrammetric tool. Our philosophy has always been to utilize a COTS strategy (components off-the-shelf) thereby letting larger industries absorb the cost and time developing those components.

Our instrumentation and software packages are used worldwide whether they be industry-ready or custom made instrumentation. Products analytical stereoplotters, RasterMaster (RM) photoscanners series, aerial stabilization platforms, digital aerial cameras, forward motion compensators and automatic 3D mapping software package for ready-to-fly drones.

Since 2000, Wehrli and Associates Inc has partnered with Geosystem SSPE (Vinnitsa, Ukraine) in the R&D and marketing of photogrammetric instrumentation. This has been most successful, as the marriage of our technical and marketing knowledge base aligned with a low-cost manufacturing source has enabled us to reach a broader worldwide base and provide better instrumentation to the market place.

Scanning Process

