

SOFTWARE

LASER PHOTO PLOTTERS

DIRECT IMAGERS

Calibr8tor nano^{II}

A Photo plotter family with "Glass Master" accuracy



- Makes glass master obsolete
- Resolutions up to 50,800 ppi
- Line widths down to 5 microns
- Unsurpassed accuracy
- Load up to 3 film magazines
- 100% automatic operation
- Highest plot speed in class
- Unrivalled uptime record

"Glass master" accuracy

Imaging BGA and chip-scale PCBs and micro-miniaturized lead-frames needs "glass-master" accuracy – but not at the cost of reduced film throughput. The new Calibr8tor nano combines fastest-in-class plot throughput with ultra-precise image quality at resolutions up to 50,800 ppi on line-widths down to 5 microns.

Line widths down to 5µm

Two unique imaging technologies, synthetic modulation and pixel placement at 200,000 ppi, provide the accuracy needed for very fine line imaging, eliminating the pixel jump ("micro-banding") errors found on conventional plotters and holding line-width accuracy under 1µm. Using high-resolution film the Calibr8tor nano images 5µm lines at all angles.

Minimized non-linear distortion

Ultra-precise fine-line imaging needs the highest geometric accuracy and minimal non-linear distortion. The Calibr8tor nano's dynamic beam positioning accurate to 0.25µm and the uncompromising designing-out of every source of mechanical variation ensures accurate and repeatable pixel placement. The horizontal load/unload mechanism, the drum vacuum system, and internal thermal management eliminates film stress and minimizes non-linear distortion.

Productivity and reliability

The Calibr8tor nano uses new optics, electronics and FlashRip software to deliver the highest throughput in the market for extreme fine-line plots. The new GCS system compensates any process distortions. For maximum flexibility and cost control load the Calibr8tor nano with 450 sheets of film up to 3 different sizes. The drive system delivers unparalleled levels of uptime and long-term reliability combined with a compact footprint.

Compatibility

With its ability to accept plot instructions directly in Gerber, DPF, ODB++, extended Gerber, Image 5000 (Expert) or MDA formats, the Calibr8tor nano perfectly integrates in any CAM environment. The Calibr8tor nano opens up new extreme fine-line manufacturing technologies for the most demanding HDI PCB manufacturers, packaging manufacturers, photo-fabricators and plot service bureaus alike.

MARKETS

- Rigid PCB Mfr ✓
- Flex PCB Mfr ✓
- Flex-Rigid PCB Mfr ✓
- HDI PCB Mfr ✓
- PCB Masslam Mfr ✓
- PCB Equipment Mfr
- PCB Traders
- PCB Designers
- PCB Test Centers
- IC Packaging ✓
- Chemical Milling ✓
- High Resolution Graphic Arts ✓
- Flat Panel Display ✓

PRODUCT FAMILIES

- CAM
- PreCAM and Engineering
- Electrical Test
- Equipment Front Ends
- Format Converters & RIP's
- OEM Software

- Laser Photo Plotters ✓
- Direct Imagers

Calibr8tor nano^{II}

Technical Data

Resolutions		
Imperial	16,000 up to 50,000 ppi	
Metric	1.6 up to 0.5 μm	
Minimum line width	0.2 mil	5 μm
Productivity for an 18" x 24" exposed panel ⁽¹⁾		
16,000 ppi (in films / hour)	16.2	
25,400 ppi (in films / hour)	11.7	
32,000 ppi (in films / hour)	9.8	
40,000 ppi (in films / hour)	8.2	
50,800 ppi (in films / hour)	6.7	
Film Requirements		
	Imperial	Metrical
Film format along the drum	18" – 32" in 1/2" steps	457 – 813 mm
Film format around the drum	24" – 29" in 1" steps	610 – 736 mm
Max. image format along the drum	0.2" (5 mm) less than film format	
Max. image format around the drum	0.9" (23 mm) less than film format	
Sheet tolerance	$\pm 0.02"$	$\pm 0.5 \text{ mm}$
Accuracy		
	Imperial	Metrical
Geometric plotter accuracy	< 0.16 mil	< 4 μm
Geometric plotter repeatability	< 0.08 mil	< 2 μm
Global positioning accuracy	0.01 mil	0.25 μm
Geometric film accuracy ⁽²⁾	< 0.4 mil	< 10 μm
Geometric repeatability on film	< 0.4 mil	< 10 μm
Line width variation	< 0.04 mil	< 1 μm
Scaling adjustments in steps of	0.005 mil	0.127 μm
Scaling adjustment range	$\pm 5\%$	
Machine Characteristics		
	Imperial	Metrical
Loading capacity	Up to 3 magazines. 150 sheets of film in each	
Light source	Red HeNe laser, 632.8 nm, 5 mW	
Dimensions (W x D x H)	72.8" x 61" x 54.3"	
Weight	3300 lbs	1500 kg
Room temperature during operation	70° F \pm 2°	21° F \pm 1°
Relative humidity during operation	50% \pm 2%, no condensation	
Relative humidity rate of change	Max 6% per hour	
Electrical Power Supply	2 x 230 VAC, 2000 VA	
Heat dissipation	2,000 W (1,725 kcal/h)	
Compressed air supply	87 – 145 PSI	6 – 10 bar
Compressed air quality	Free of oil and water	0.01 mg/m ³
Compressed air volume	88 ft ³ /hour	2500 l/hour

⁽¹⁾ Assuming nominal plotting using factory settings – ⁽²⁾ 3 σ , FTF radial

SOFTWARE

AutoCAM
 FaultStation 4
 FixGenius
 FlashRip
 Format Converters
 Geometric Correction System
 Integr8tor
 Mult Job Panelizer
 OEM Software
 SmartAOI
 SmartPlate
 SmartTest
 Ucam CAD Review
 Ucam CAM++
 Ucam Chemical Milling
 Ucam ET+
 Ucam SmartView
 Ucam uFlex
 UcamX

For more information on any of our products or services please contact us:

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High resolution linear scale



Linear motor



Granite & Air bearings

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