

esi® 5200 Laser μ Via Drill

*Diode-pumped UV:YAG
laser for high productivity*

Low laser maintenance

*High quality vias as
small as 1 mil*

*Continuous drill rates
over 20,000 vias/minute*



ESI's Model 5200 Laser μ Via Drill is the premier choice for high-quality micro-vias in small geometry circuit boards and electronic packages. The diode-pumped laser offers superior reliability and ease-of-use. The system requires only a low power single phase line input, and no water or gas supplies. The result is easy installation and low running costs. The Model 5200 produces vias that require no additional copper etching steps and are ready for plating. It can produce over 20,000 vias per minute in single-layer laminated materials up to 21" x 25", and these are continuous rates, not burst rates between time consuming beam stepping. The short wavelength and low average power of the laser won't burn organic board materials and leaves no carbon residue, making extra cleaning steps unnecessary.

The system can drill through top copper and stop on inner layer copper pads, eliminating the need for pre-etching. The Model 5200 can be used on all materials currently used in the PWB industry. Pull-down menus and a point-and-click interface make setup and operation easy. The Model 5200 represents the state-of-the-art in micro-via formation.

5200

Laser μ Via Drill

Laser Beam Positioning

Type: Cross-axis with galvanometer (Laser beam moves in XY, part moves in Y axis)

Field Size: 21" (533 mm) by 25" (635 mm)

Resolution: < 0.00004" (1 μ m)

Accuracy: \pm 0.0008" (\pm 20 μ m)

Maximum Average Velocity: 20"/s (500 mm/s)

Typical Point-to-Point Move Time: 1 ms (1,000 points per second)

Controller: DSP based, single-board 4 axis

Main Stage

Type: Cross axis

Motor Type: Brushless linear motors

Feedback: Steel scale encoder

Secondary Stage

Type: XY deflection

Motor Type: Moving magnet galvanometers

Feedback: High resolution capacitance transducers

Lens Type: Flat field, telocentric

Beam Angle from Vertical: < 2°

Programmable Z Stage

Resolution: 25 μ m

Accuracy: \pm 50 μ m

Maximum Average Velocity: >10mm/s

Repeatability: \pm 25 μ m

Type of Motor: DC Servo Motor

Travel: 1 inch minimum

Viewing and Automatic Alignment

Camera Field of View:

Coarse: 30 mm

Fine: 1.7 mm

Resolution: 570 x 485

Accuracy: \pm 5 μ m

Capture Time: <500 msec

Monitor: 15" flat screen SVGA

Camera Type: CCD, monochrome

Laser Power Control

Long Term Stability: \pm 2.5%

Repeatability: \pm 2%

Feedback: Closed Loop

Model 4579 Laser

Type: Diode Pumped, repetitively q-switched Nd: YAG

Operating Mode: TEM₀₀ (gaussian power distribution across the beam)

Wavelength: 355 nm

Peak Power @ 3 kHz: >15 kW

Pulsewidth @ 3 kHz: 30 nsec typical

Pulse Stability @ 3 kHz: 7%

Programmable Pulse Rate: 0-20 kHz

System Control Computer

Type: IBM PC Compatible

Processor: Pentium 233 Mhz, MMX

Memory: Minimum 32 Mbytes

Hard Disk: 2.1 Gbytes

Flexible Disk: 1.44 M byte 3.5"

Backup Device: 1/4" tape drive

Monitor: 15" flat-screen SVGA

Input Devices: Keyboard and trackball

System Software

Operating System: Real-time UNIX (LynxOS)

Operator Interface: X-windows/Motif

Network Compatibility: TXP/IP, NFS

Toolpath Generation Software: esiCAM

Toolpath File Compatibility: DXF, ASCII, Excellon I and II, Sieb & Meier and Gerber



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