LASER SCRIBER

AS-0201_50W

Purpose

This machine was design to accurately scribe the score lines on ceramic substrate for 0201 chip resistors on 60mm x 50mm or larger ceramic substrates.

To achieve this application, the machine output high speed synchronize-phase focusing laser pulse to remove specific material on ceramic substrate.

Application

The laser scriber provides high speed full automatically scribing on ceramic substrates via a dual axles high accurate linear motors to position substrates and cooperate with the high power IR laser to perform high stability, uniformity scribe lines.

Optimum Result

(Depend on scribing pattern and hardness of substrates)
Speed : 100~150 mm/sec (depend on depth, at this speed achievethe depth 60~75µm)
Depth : 75µm (depend on speed, at speed 100~150 mm/s gets the depth 60~75µm)
Accumlated difference for top / bottom score lines: < 5um

LASER SCRIBER AS-0201_50W - SPECIFICATIONS

Laser System

Yb Fiber IR laser head
- **Wavelength (nm):** *1060~1070nm / IR/ TEM00*
- **Average Power (watt):** *CW mode Max 50 Watt*
- **M-square:** *< 1.2*
- **Beam Diameter(mm):** *6~7mm*
- **Path Diameter(µm):** *25~45µm after focus*
- **Diode life time (hr):** *2 year or 20,000 hrs (Optimum)*

Laser power supply and Synchronize system
- **Laser Synchronous system:** *Programmable Synchronized(PSO)*
- **Optical fiber number:** *1*

Laser safety switch
- **Safety switch:** *2 safety switches on cover*

Positioning Mechanism

XY dual axis linear Servo motor system
- **Stroke:** *300mm x 150 mm*
- **Resolution:** *0.1 um*
- **Accuracy:** *+/- 3 um*
- **Speed (mm/s):** *Max. 400 mm/s*
- **Mechanism:** *Linear motor*
- **Feedback:** *Linear scale*
- **Controller:** *Full closed loop feedback*
- **Driver:** *Copely driver*

Substrate clamping table
- **Mechanism:** *Side clamping*
- **Theta:** *Programmable theta 15°*
- **Table:** *Stainless Steel with vacuum chuck top*

Substrate auto loader / un-loader
- **Magazines:** *2 pc x 400 pcs each*
- **Suction:** *Vacuum with vacuum sensor meter*
- **Capacity:** *400 pcs /magazine*
- **Magazine size:** *Adjustable, standard 49.5x60mm (60x70 or 80x84mm)*

Air blower and exhaust system
- **Exhaust:** *Air blower 1/3 HP*
- **Air Nozzer:** *2 mm Airject >3 kg/cm2*

Dimension

- **Dimension(LxWxH):** *1290 x 1160 x 1700mm*
- **Weight (kg):** *830kg*

Optical Section

Accuracy optical elements
- **Beam expender:** *built-in expander 2~10X*
- **Focus lens:** *50mm*
- **Turn mirror:** *2" IR coating*

Motor drive auto focusing system
- **Focus auto-adjust:** *servo motor drive*
- **Resolution:** *1 um*

Monitor and image system
- **Monitoring:** *dual CCD camera system*
- **Positioning:** *bottom by cross hair, Top by edge*
- **Lighting:** *LED lighting*

Software and Control

Computer control system
- **Computer:** *Pentium CPU*
- **Motion and Laser Interface:** *PCI PC base communication interface*

Application software
- **OS:** *Windows 2000*
- **Application software:** *Visual-basic User GUI*

Pattern input interface
- **Pattern input Interface:** *AUTO CAD .dxF.dwG file auto transform system*

Inspection and align section

Pattern recognition system
- **Pattern recognition system:** *system error < 1 um*

Monitor and image system
- **Monitor:** *Image show on LCD monitor*
- **Lighting:** *LED lighting*

Environment

- **Temperature:** *21 ± 5°C (60° to 80° F)*
- **Humidity:** *RH 20% - 50%;*
- **Air condition quality:** *Class100,000*
- **Shaking/vibration:** *avoid servere shaking*
- **System line power:** *220VAC 20A/ single phase for system*
- **AIR flow:** *10 CFM (100 l/min)*
- **AIR quality:** *Water, Oil, Particle free air (<0.5fim)*
- **AIR pressure:** *80 psi (5.6 kg/cm2)*

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