ADVANCED DIRECT IMAGING
by ALTIX

ALDS-Power4™
High Power LEDs
High Resolution DMD

Direct Imaging with us!
Enhanced 4 LEDs Photo Heads for Higher Productivity and Printing Quality

From Conventional Dry Films to Ink and Solder Resists

Low Power Consumption

Minimum Service Maintenance Required

Best in Class Side to Side Registration

Panels Held by Vacuum Table and/or Clamping System

Rigid and Flex PCB Smooth Handling

ALDS-Power4™ Advanced High Power 4 LEDs with High Resolution DMD System

Fully Intuitive Human Machine Interface

Real Time Panel Dynamic Scaling and Partitioning

Compact footprint: All in one built-in system

High Accuracy Registration System
## ADIX Specifications

### Panel
- **Panel size**: From 228 x 254mm (9’’x10’’) up to 610 x 762mm (24’’x30’’)
- **Panel thickness**: 0.04 to 6mm | 1.6 to 236mils
- **Warp and twist**: 0.04 to 0.8mm | 1.6 to 31mils  •  panel thickness: 1% of the diagonal
- **Warp and twist**: 0.8 to 6mm | 31 to 236mils  •  panel thickness: 0.5% of the diagonal
- **Weight**: 6kg max (13.22lbs)

### Imaging
- **Resolution ADIX SA**: 25/25µm | 1/1mil (L/S) \(^{(1)}\)
- **Resolution ADIX SA-SM**: 25µm | 1mil (Dam) \(^{(1)}\)
- **Edge Roughness**: ± 1.5µm | ± 0.05mil
- **Depth of Focus ADIX SA**: ± 100µm | ± 4mils
- **Depth of Focus ADIX SA-SM**: ± 200µm | ± 8mils
- **Autofocus**: ± 8µm | ± 0.31mil
- **Image to panel registration**: ± 12µm | ± 0.47mil
- **Side to side registration**: ± 12µm | ± 0.47mil

### Throughput
- **Exposure time ADIX SA**: 14s with 30mJ/cm² resist for 457 x 610mm (18’’x 24’’) image size (6 heads) \(^{(2)}\)
- **Exposure time ADIX SA-SM**: 65s with 300mJ/cm² resist for 457 x 610mm (18’’x 24’’) image size (5 heads) \(^{(2)}\)

### Process
- **Imaging resist materials**: Conventional & DI/LDI specific dry films  •  Ink & Solder resists
- **Resist sensitivity**: From 10 to 1,000mJ/cm² and above
- **Exposure spectrum**: 4 wavelengths per Photo Head: 365/380/395/405nm
- **Applications**: PCB  •  FPCB / Flex  •  Photo Chemical Milling  •  Touch Panel  •  Photovoltaics
- **Production types**: Inner Layers  •  Outer Layers  •  Soldermask (PSR)

### Graphic User Interface
- **ALTIX Direct Imaging Suite™**: 22” touch screen, Intuitive software, Object oriented, SPC capabilities, Multilanguage
- **Data input**: Extended Gerber, ODB++ (others upon request)

### General utilities & Foot print
- **Power supply**: 220/400/480V  •  50/60Hz  •  4kW
- **Air supply**: 6 to 7 bars (1.5m³/min)
- **Water supply**: Water pressure 3~5 bars
  - Flow rate: 23l/min @ 12°C or 33l/min @ 14°C
- **Machine weight**: 4,600kg (10,141lbs)
- **Dimensions**: W: 1,750mm (69’’)
  - L : 2,870mm (113’’)
  - H : 1,870mm (74’’)

\(^{(1)}\) depending on photoresist, surface preparation & DES process  •  \(^{(2)}\) estimated time given as reference but can fluctuate according to the process adjustments
## ADIX’s Semi-Automatic & Fully-Automatic Direct Imaging Product Range

### Semi-Automatic

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADIX SA</td>
<td>Semi-Automatic Direct Imaging Solution for QTA, High mix low and medium volume production</td>
</tr>
<tr>
<td></td>
<td>Dedicated for all resists: Dry Film &amp; Soldermask</td>
</tr>
<tr>
<td>ADIX SA-SM</td>
<td>Semi-Automatic Direct Imaging, fully optimised for Soldermask process</td>
</tr>
<tr>
<td></td>
<td>Standard resists compatible</td>
</tr>
</tbody>
</table>

### External Automation

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Compact</td>
<td>The system is designed to automatically load and unload panels into an ADIX Direct Imaging system for either horizontal or angular cassettes. This compact automation is upgradable on site.</td>
</tr>
</tbody>
</table>

### Customized Solutions

ADIX units can be incorporated with various Customized “Smart Automation” solutions in order to allow full automatic operation. Customized solutions fit all specific Customer needs and are adequate for small lot sizes, high mix and high volume production.

### Integrated Automation

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADIX PT / F</td>
<td>Integrated Automation for Fully-Automatic Direct Imaging process</td>
</tr>
<tr>
<td></td>
<td>Pass Through side by side or Flip double side production</td>
</tr>
<tr>
<td></td>
<td>High mix &amp; medium volume</td>
</tr>
<tr>
<td></td>
<td>Dedicated for all resists: Dry Film &amp; Soldermask</td>
</tr>
</tbody>
</table>
**ALDS-Power4™**

Advanced high power LEDs with high resolution DMD System. The heart of the system is a creative combination of 4 high-density LEDs light sources through a unique optical device coupled to a high frequency (up to 20kHz) DMD coordinated with a graphic signal and projection lens. This combination enables our ADIX solution to perform high-resolution line and space down to 20µm and to print with a better edge roughness (+/- 1.5µm).

**Real time Scaling & Partitioning**

Highly accurate real time scaling and distortion compensation technology responds to the PCB material variations. Each panel can be scaled to measure its distortion. For each panel, different scale factors can be applied with dynamic imaging modes: linear (Trapezoidal scaling, Orthogonal scaling) and non-linear (Polygonal scaling).

**High Accuracy Registration**

A multiple CCD cameras vision system enables featuring image to panel registration down to ±8µm for high-end HDI designs. Our solution can align the panel via a through hole or various alignment marks. Our side-to-side registration for inner layers enables high accuracy alignment down to ±12µm thanks to our exceptional registration system with adjustable points fitting the panel size.

**Smart Vacuum & Clamping Technology™**

A unique Vacuum & Clamping mechanism offers an automatic selectable vacuum system. Vacuum and clamping are automatically monitored according to the panel size. This clamping system can safely hold warped PCBs and handle panel thickness from 40µm to 6mm. In addition with the autofocus function, it allows a perfect imaging compared to other systems having only a vacuum table without clamping mechanism.

**High dynamic Autofocus Function**

Highly precise and dynamic autofocus system is integrated inside each imaging head. The heads get real time feedbacks in order to take into account the warping and surface thickness variations of the board at ±8mm.

**Multi-wavelengths UV-LED**

The combination of different UV light wavelengths enables to polymerize a large range of dry film, ink and solder resists. With 4 LED wavelengths (365/380/395/405nm) and by adjusting the output ratio, it is possible to obtain the most efficient and fast printing for each type of dry resists or soldermask. UV-LED consumes less energy, generates less heat, and lasts much longer than typical laser diode or blue laser based on light sources.

**Number of Light Engines depending on your capacity. Upgradable on Site**

Our modular and flexible imaging technology ALDS-Power4™ can be adapted to your throughput requirements. Also, the number of photo heads can be chosen accordingly when defining your new Direct Imaging equipment. This number of photo heads can be enlarged from 1 to 6 anytime in the future to match with your expanding needs. This incremental investment enables to have a fully optimized system, which means a quicker Return Of Investment.

**Human Machine Interface (HMI)**

Fully intuitive interface enables a friendly-user utilization for the operators. A state of the art touch screen graphical user interface enables an easy operating such as: quick job setups, parameters monitoring, full diagnosis, or process optimization.

Our powerful software “ALTIX Direct Imaging Suite™”, offers more with multilingual capabilities and our statistical module “Altix Statistical Process Control Module”.

**Advanced Features**

Advanced high power LEDs with high resolution DMD System. The heart of the system is a creative combination of 4 high-density LEDs light sources through a unique optical device coupled to a high frequency (up to 20kHz) DMD coordinated with a graphic signal and projection lens. This combination enables our ADIX solution to perform high-resolution line and space down to 20µm and to print with a better edge roughness (+/- 1.5µm).