A New Definition for High Speed and Accuracy
AD898 Features

Bonding System
- High speed - 320ms system cycle time
- XYZ bondhead with decoupled YZ motion
- Capable of handling die sizes between 10 x 10 - 1000 x 1000 mil (0.25 x 0.25 - 25.4 x 25.4 mm)
- Capable of handling multi-placement/matrix leadframes and leadframes with downset

Wafer Handling System
- Automatic wafer handling system with wafer cassette elevator for up to 8” (200 mm) wafer
- Motorized wafer expander with programmable expansion
- Ejector system with programmable ejector height

Workholder System
- Universal workholder with block design concept
- Linear motor indexer with flexible indexing clamp
- Motorized downset adjustment on workholder

Epoxy Writer System
- Real time position alignment
- 2-in-1 epoxy writing system with syringe dispensing capability
- Standard epoxy patterns provided with flexibility to generate customized pattern

Material Handling System
- Stack loader with interleaf paper separator
- Leadframe box handling capability

Vision System
- Multi-grey levels PR system
- CCD targeting systems with zoom lenses
- Automatic bad unit, pre-bond & post-bond inspection
- Advanced defect detection at wafer stage

Control System
- PC based control system
- Interactive menu driven control and data logging capability
- Process recipe storage on hard disk and/or floppy disk
- SECS I & II Communication
- Bar code reader for wafer mapping

Options
- Small die kit (10 x 10 mil - 200 x 200 mil)
- Stacked die kit including heater assembly
- BGA handling kit
- Boat handling kit (for SBGA)
- Waffle pack handling kit
- Rotary collet bond arm
- Wafer mapping protocol
- Strip marker with characters
- Air ionizer system
- Intelligent epoxy dispensing controller
- Multiple die attach process for MCM using cascade linkage concept
- In-line capability
- Multiple magazine input system
Advanced Wafer Inspection
- Detect all possible defects/features at wafer stage

Standard 2 in 1 Epoxy Writer
- Real time PRS
- Dispensing area
  - Maximum 3” for Y

Wafer Handling System
- Programmable wafer expander
- 5 minutes conversion
- Optional wafer ring and waffle pack holders

Bond Arm
- Decoupled YZ axis
- Large vertical clearance for premolded package
Modular Track Design

- Block by block conversion concept for universal configurations
  - anvil blocks
  - window clamps
  - press rollers
  - heater blocks

Configuration for Substrate Sensitive to Scratch
e.g. FlexBGA, Pre-molded LF

Configuration for Adhesive Tape Bonding e.g.
Stacked CSP Configuration for Singulated Unit e.g. CLCC

Flexible Anvil Block Assembly
- Optional pre-installed heater plate assembly
  - Good heat distribution control
  - Anvil block conversion only
  - Quick plug-in design

Configuration for Singulated Unit e.g. CLCC

Anvil Block for Elevated Temperature Bonding

Heater plate assembly fixed on track

Normal Substrate Anvil Block

Motorized Top Clamp

Anvil Block with Heating Plate

Motorized Up/Down Anvil Block

Workholder without Central Supporting Blocks

Carrier for CLCC

CLCC Device

Bonded Sample
Flexible Package Applications

Die Handling Capabilities

Requirement: High UPH

Die Handling Requirements

Thick | Thin | Small | Large | Long | Thin

358 mil x 21 mil (1:17)

Die thickness: 44 mil

800 mil x 800 mil

10 mil x 10 mil

Die thickness: 3 mil

Requirement: Control of die tilt

Requirement: Control of epoxy bleeding

Requirement: Control of placement accuracy

Die thickness: 3 mil

Die thickness: 44 mil
TCP/IP and/or RS232

**Manufacturing Automation**

- **Wafer Map**
- **Strip Map**
- **Post Bond Inspection with Real Time Data**
- **One Pass Multi-die Application**

**Customer CIM System**

- **Cell Controller**
- **GUI Design**
- **Database**
- **Equipment Drivers**

**CELL CONTROL MODULES**

- Connection Management
- Job (or Lot) Management
- Auto WIP Tracking
- Strip Map Management
- Equipment Management
- Statistical Data Collection
- Recipe & Wafer Management
- Alarm Management
## Specifications

<table>
<thead>
<tr>
<th>Die size</th>
<th>10 x 10 mil - 1000 x 1000 mil (0.25 x 0.25 mm - 25.4 x 25.4 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package handled</td>
<td>Leadframe, BGA</td>
</tr>
<tr>
<td>Ejector height</td>
<td>0° - 0.2° (0 - 5 mm) linear programmable</td>
</tr>
<tr>
<td>Leadframe size</td>
<td>Length: 6.0° - 11.4° (150 - 290 mm) Width: 0.6° - 3.15° (15 - 85 mm) Thickness: 3° (26.2 mm) Y-axis bond area 4 - 79 mil (0.1 - 2 mm) &gt; 0.75mm: require conversion</td>
</tr>
<tr>
<td>Magazine size</td>
<td>Length: 6.0° - 11.4° (150 - 290 mm) Width: 0.6° - 3.35° (15 - 85 mm) Height: 2.7° - 6.0° (70 - 153 mm)</td>
</tr>
</tbody>
</table>

### Speed

- **Cycle Time**: 320ms

### Wafer Stage

- **Wafer size**: Max. 8° (200 mm)
- **XY table travel**: 9.5° x 9.5° (237.5 x 237.5 mm)
- **Conversion**: 5 mins (Device only)
- **Conversion**: 15 mins (Full conversion)

### Epoxy Writer

- **XY travel**: 2" x 3" (50.8 x 76.2 mm)
- **Resolution**:
  - **XY**: 0.02 mil (0.5 µm)
  - **Z**: 0.15 mil (3.81 µm)

### Bondhead

- **Bond force**: 30 - 2000 g

### Pattern Recognition System

- **PRS model**: Multi-grey levels PRS
- **Camera resolution**: 512 pixels x 512 pixels
- **Grey scale**: 256 grey levels
- **Position accuracy**: ± 1/4 pixel
- **Angle accuracy**: ± 0.1°

### System Accuracy

- **XY placement**: ± 1 mil (± 25.4 µm) @ 3σ
- **θ rotation**: ± 0.5° @ 3σ

### Facilities Required

- **Voltage**: 110/220 VAC (pre-set at factory)
- **Frequency**: 50/60 Hz (pre-set at factory)
- **Compressed air**: 87 PSI
- **Power consumption**: Approx. 1800 W

### Dimensions & Weight

- **L x W x H**:
  - **w/o input mag.**: 50.0" x 43.3" x 68.9"
  - **[1270 x 1100 x 1750 mm]**
  - **w/ input mag.**: 58.7" x 43.3" x 68.9"
  - **[1490 x 1100 x 1750 mm]**

- **Net weight**: 2772 lb (1260 kg)

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*Technical details are subject to change without prior notice.*