TOTAL SOLUTIONS FOR LED PACKAGING
Total Solutions For Light Emitting Diode (LED) Packaging

### Die Level Scribing, Inspection, Sorting
- LS100
- ES100
- MS100 Plus
- AS899

### Epoxy Die Attach
- AD830 / AD830R
- AD838L
- AD880
- AD881 Series
- AD100
- AD819-PD

### Eutectic Die Attach
- AD211 / AD212
- AD220
- AD819-LD

### Curing Oven
- COE139 / R
- SR902W

### Gold / Copper Ball Wire Bonding
- Harrier Xtreme
- iHawk Xtreme
- Eagle60X2L
- iHawk-V
- iHawk-02
- Eagle60AP-LD

### Aluminium Wedge Wire Bonding
- AB559A Series
- AB530
- Cheetah

### Gold Stud Bumping
- Hummingbird

### Silicon Liquid Molding
- IDEALcompress™
- IDEALab™ - WLP

### Encapsulation / Phosphors Application
- DS500 Series
- DS520 Series

### Package Sorting / Taping
- SLS230 / S
- SLS230T Plus
- SLT400
- IP360 Series

### Testers
- TLB203
- TLC203
**Laser Scribing System**

**LS100**

*Applications:* Scribing die, e.g. LED, laser diode, etc.
- High speed laser scribing driven by latest actuating system
- User-friendly interface
- Flexible to implement with various laser with different wavelengths for different substrates

**Map Sorter**

**MS100 Plus**

*Applications:* Sorting die, e.g. blue LED, white LED, laser diode, etc. according to wafer map information
- High speed sorting driven by
  - Dual heads sorting system
  - Direct drive rotary (DDR) motor and linear motor system
- User-friendly interface with Windows® operating system
- Extra large bin area
- Supporting pre-scan capability

**Automatic AOI System**

**ES100**

*Applications:* Automatic advanced optical inspection system for die, e.g. LED die
- High speed and accurate inspection performance
- True color inspection capability
- Supporting pre-scan capability
- Picking “No-Good (NG) die” capability (option)

**Die Scribing, Inspection, Sorting**

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**Automatic High Speed Die Bonder**

**AD830 / AD830R**

*Applications:* High density substrates, e.g. chip LED, top LED, side view LED, SOIC, SOD, etc.

- High speed performance
  - Implementing patented bond head design
  - Supporting dual dispensing system
- Widely implementing linear motor systems
- Graphical user interface with multi-language support
- AD830R for reel form materials handling
- Up to 8” wafer handling capability (option)

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**Automatic High Speed Epoxy Die Bonder**

**AD838L**

*Applications:* Direct substrate indexing, e.g. ceramic substrates for high power LED, etc.

- Strategic direct indexing algorithm suitable for direct ceramic indexing or other materials handling
- Implementing excellent precision with
  - Various inspection systems during bonding process
  - Patented bond head design
- Extra large bonding area: up to 4” width substrate handling capability
- Excellent substrate warpage control
- Implementing latest global substrate alignment

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**Automatic Die Bonder**

**AD880**

*Applications:* Suitable for large area epoxy die bonding process

- Extra large bonding area: 8” x 8” substrate handling
- Providing high speed die attach with DDR bond head system
- Implementing excellent flexibility – capability of handling various substrates with corresponding carrier design
- 6 mil small die handling capability
- Graphical user friendly interface with MS Windows® operating system

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**Automatic Die Bonder**

**AD881 Series**

*Applications:* Flexible of handling various substrates, e.g. metal cans, bent lead frames, etc.

- Wide range of substrates handling capability
- Excellent flexibility
  - AD881M: up to 3 wafers handling capability (with similar die sizes)
  - AD881H: automatic materials handling
  - AD881MH: up to 3 wafers and automatic substrate handling capability
- Providing extremely high speed die attach with DDR bond head system
- Powerful inspection system providing excellent bonding quality
  - Wafer PRS with PR look ahead capability
  - Advanced die surface defect inspection at wafer stage

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*Remark: All machine performance data are package dependent*
High Speed Epoxy Die Bonder
(for Vertical Lead Frame Application)

**AD100**

**Applications:** Vertical LED, photo transistors, infrared diodes, etc.
- World’s fastest epoxy die bonding system with patent pending technologies – dual shuttling system
- Pro-longing MTBA with new inputting / outputting systems
  - Inputting system: dual stack loading inputting system / multi-magazine inputting elevator system
  - Outputting system: multi-magazine outputting elevator system
- Precise epoxy stamping capability with pre-bond inspection
- Getting advantages between quality control and bonding speed with latest post-bond inspection system

Automatic High Precision Epoxy Die Bonder
(for Photo Diode Application)

**AD819-PD**

**Applications:** Metal can packages, e.g. photo diodes on stem, etc.
- High precision epoxy die bonding with
  - 2-in-1 stamping and bonding system
  - Widely implementing linear motor systems
  - Full range of PR inspection at various stages for precision bonding
- Carrier free metal cans handling design
- Supporting various configurations to fit different applications
  - Programmable lifting workchuck for PD application
  - Rotary workchuck for VCSEL application (option)

Eutectic Die Attach

Automatic Eutectic Die Bonder

**AD211 / AD212**

**Applications:** Panel form of high power LED packages, e.g. ceramic/wafer submount for direct eutectic process
- Implementing patented technologies
  - Double decoupling bond head system
  - Heated collet die attach process
- Extra large bonding area:
  - AD211: up to 4" x 4" bonding area
  - AD212: up to 8" x 8" bonding area
- Providing excellent oxygen level control
- Excellent void control with mature process know-how
- Minimizing thermal shock with pre-heat and post-heat stations
- Automatic materials handling for AD211

Automatic Eutectic Die Bonder

**AD220**

**Applications:** Strip form of high power LED lead frames for direct eutectic die attach process
- Implementing patented technologies
  - Double decoupling bond head system
  - Heated collet die attach process
- Providing excellent oxygen level control
- Excellent void control with proven heat tunnel design and mature process know-how
- Automatic die theta alignment with precision stage
- Automatic lead frame input and output handling capability

*Remark: All machine performance data are package dependent*
Automatic High Precision Eutectic Die Bonder
(for Laser Diode Application)

AD819-LD

**Applications:** Metal can packages, e.g. one pass LD and submount on stem
- Precision placement with
  - Widely implementing linear motor systems
  - Full range of PR inspection at various stages for precision bonding
- Carrier free metal cans handling design
- Individual bonding system for submount and LD attach
- Providing consistent eutectic environment
  - Excellent oxygen level control with nitrogen gas supply
  - Programmable temperature profile on various stations
- Anti-thermal shock with pre-heating and post-heating stations

Snap Curing Oven

**COE139 / COE139R**

**Applications:** Curing process for die attached substrates in either strip or reel form, e.g. SOT, top LED, etc.
- Excellent oxygen level control with
  - N₂ curtains at oven’s input and output sides
- Consistent curing temperature control with 6 temperature control zones
- Selectable for various substrates handling
  - COE139: strip form substrate handling
  - COE139R: reel form substrate handling
- In-line capability, e.g. AD830 or other die attach system (option)

Gold / Copper Ball Wire Bonding

Extreme High Speed Wire Bonder

**Harrier Xtreme**

**Applications:** QFN, SMD LED, HP LED, high density discrete packages, etc.
- Dual high speed wire bond heads system
- Highest output per square foot area
- User-friendly, intelligent Windows® based interface
- Innovative algorithm for high speed PR
- Supporting copper wire bonding & copper BSOB (option)
Gold / Copper Ball Wire Bonding

High Speed Wire Bonder
(for Discrete/Opto Applications)

**iHawk Xtreme**

**Applications:** Gold ball wire bonding, QFN, SMD LED, HP LED, high density discrete packages, etc.
- Innovation in optics & PR system for smaller dice
- Advanced PR algorithm with PR look ahead capability
- Faster package conversion with fully motorized material handling system

Ultra High Speed Wire Bonder
(for Hybrid Application)

**Eagle60X2L**

**Applications:** One pass solution for large bond area packages, e.g. multi-chip modules, SiP, etc.
- Ultra fast speed: up to 12 wires/sec with extreme precision
- Compact and low inertia digitally controlled bond head with built-in features
- Advanced loop algorithm with superior looping trajectory profile and auto-tuning technology
- Bond process monitoring with post-bond inspection, free air ball formation monitoring and non-stick detection monitoring
- Extra large bonding area
  - Up to 54 mm x 102 mm for LF width < 125 mm

Automatic Gold Ball Wire Bonder
(for Vertical Lead Frame Application)

**iHawk-V**

**Applications:** Gold ball wire bonding on vertical lead frames
- Innovative dual track design enhancing bonding speed
- Long MTBA with latest input / output magazine handling
- Innovation in optics & PR system especially for smaller LED dice

Automatic Gold Ball Wire Bonder
(for Bent Lead Frame Application)

**iHawk-02**

**Applications:** Bent lead frame handling capability, e.g. piranha LED application
- High speed wire bonding capability
- Long MTBA with latest input / output magazine handling
- Saving cost of ownership by direct bent lead frame indexing

*Remark: All machine performance data are package dependent*
**Gold / Copper Ball Wire Bonding**

### Automatic Gold Wire Bonder
**Eagle60AP-LD**

**Applications:** Metal can packages with three dimensional bonding, e.g. LD assembly, etc.
- Rotary workholder system for multi-plane bonding
  - 0° to 90° programmable rotation
- One pass LD and submount bonding
- Specially designed for photonics and optoelectronic application
- Custom-made top plate and carrier for large range of laser diode products

### Aluminium Wedge Wire Bonding

### Rotary Bondhead Wedge Bonder
**AB559A Series**

**Applications:** Chip-on-board, multi-die, LED display, chip-on-flex, chip-on-glass, ceramic, etc.
- Fine pitch capability for advanced packages
- Large effective bonding area
- Vision Lead Locator (VLL) to adapt lead width variation
- Dual colour (red-blue) LED lighting for different substrates surface reflection
- Gold wire wedge bonding application (option)
- 60° wire feeding angle capability (option)

### Automatic Ultrasonic Wedge Bonder
**AB530**

**Applications:** Chip-on-board, multi-die / multi-PCB, high lead count, etc.
- High speed bonding
- Fine pitch capability for advanced packages
- Cost saving by widely implementing linear and DDR motor systems
- Multi-unit / multi-PCB bonding capabilities

### Automatic Ultrasonic Wedge Bonder
**Cheetah**

**Applications:** suitable for leaded substrate, e.g. dot matrix display, numerical display, etc.
- High speed bonding
- Up to 4" diameter bonding area
- Saving cost of ownership by widely implementing linear and DDR motor system
- Multi-unit / multi-PCB bonding capability

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*Remark: All machine performance data are package dependent*
**Gold Stud Bumping**

**Hummingbird**

*Applications:* Gold / copper stud bumping on wafer
- High speed bumping performance
- Excellent bumping control
  - Fine pitch bumping capability
  - Stack bumping capability
- Implementing flexibility
  - Large bumping area: up to 12” wafer handling capability
  - Supporting gold / copper stud bumping
  - Automatic wafer loading system (option)
  - Equipping with pre-heat / post-heat system (option)

**IDEALab™ - WLP**

*Applications:* WLP, wafer level LED, exposed solder ball WLP, Cu bump pillar WLP, embedded wafer ball grid array, redistributed chip package
- Tape assisted to release
- Dispensing options
  - Liquid epoxy
  - Clear silicone
  - Granular powder
- Quick change mold chase concept with aid of IDEALTrolley™

**Silicon Liquid Molding**

**IDEALcompress™**

*Applications:* Large substrate molding: W150mm x L300mm, LED
- Ideal for high-mix, low volume manufacturing
  - Small lot assembly
  - Compact
- Ideal for eco-friendly manufacturing
  - No material wastage
  - No mold cleaning required
- Various dispensing applications, including liquid epoxy, clear silicone, granular powder dispensing

**Encapsulation / Phosphors Application**

**IDEALab™ - WLP**

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- Dispensing options
  - Liquid epoxy
  - Clear silicone
  - Granular powder
- Quick change mold chase concept with aid of IDEALTrolley™

**Precision Dispensing System**

**DS500 Series**

*Applications:* Die coat, adhesive dispensing, sealing, gel coating, underfill dispensing, etc.
- Excellent encapsulant placement repeatability and dispensing quality
- Extra large dispensing area with gantry table design
- Glob top, dam and fill dispensing mechanism
- Custom programmable dispensing patterns & parameters
- Automatic substrate handling capability with input / output elevator systems (option)
- Dual dispensing heads with adjustable pitch (option)
- Reel-to-reel handling capability (option)

*Remark: All machine performance data are package dependent*
精度喷射系统
DS520系列
应用：将封装材料喷射到各种基板上，包括磷光粉混合硅酮在LED封装等。
- 极高喷射速度，使用自主研发的喷射系统
- 出色性能
  - 高精度与可重复性
  - 容易操作和维护
- 耐用耗材
- 维持流体均匀性通过战略性激振系统
- 支持单双工位控制
- 自动材料处理与DS520M
- DS520V用于垂直引线框架应用

自动LED（SMD）分拣系统
SLS230 / S
应用：LED芯片，侧视LED设备等。
- 出色性能通过实施专利设计
- 防止混料设计通过检测箱体移除和自动标签打印箱体数据
- 选配视觉检测系统用于多片LED，筛选出缺失芯片、缺陷芯片等，以便分拣
- 广泛的应用范围
  - SLS230：芯片LED设备，如0402、0603、0605、0805、1206等。
  - SLS230S：侧视LED设备，如008、010、020、215、335等。

自动LED（SMD）分拣系统
SLS230T Plus
应用：顶视LED，如3014、3020、3528、5050等。
- 防止混料设计通过检测箱体移除和自动标签打印箱体数据
- 长寿命性能，使用最新XY表计设计
- 增加容量以适应大批次
- 选配视觉检测系统用于多片LED，筛选出缺失芯片、缺陷芯片等，以便分拣

自动LED（SMD）贴装系统
SLT400
应用：LED芯片，顶视LED，侧视LED设备等。
- 自研发直接驱动旋转电机和上下直线电机，最大限度提高系统吞吐量
- 先进的检测算法，用于高准确检测
- 保证贴装优质元件，支持测试点接触技术
- 简单易操作，使用基于Windows®的系统
- 广泛的应用范围
  - LED芯片设备：0402、0603、0805等。
  - 顶视LED设备：3014、3020、3528、5050等。
  - 侧视LED设备：008、010、020等。

*注：所有机器性能数据取决于封装类型。

 PATENT PENDING
Ingenious (LED) Packing System

IP360 Series

Applications: Ceramic, silicon molded LED
- One-stop solution for test, sort and output with good traceability
- In-house developed direct drive rotary motor and linear up down motor to maximize system throughput
- Flexible materials handling input material handling
  - Input system: wafer frame / bowl feeding system
  - Output system: tape-and-reel output, bin frames and / or bins
- Powerful inspection capability
  - Wafer inspection
  - Tape-and-reel in-pocket inspection, etc.
- Optional input barcode scanning, unit map, label printing and output file generation package for good tractability of devices

LED Tester System

TLB203

Applications: Measuring electrical and optical characteristics on wafer prober or handler, e.g. AS899, SLS230 series, IP360 series, etc. for die / package level sorting
- Large range of power supply
- Precision measurement
- Flexible implementation
  - Supporting up to two testing stations simultaneously
  - Multiple drivers and photo-detectors handling capability

LED Full Function Checker

TLC203

Applications: Measuring both electrical and optical characteristics such as VF, IR, polarity and CIE1931 (x,y) of LED and detect discrepancy before taping the work pieces to taping system. All test items can be programmed by user. This checker is designed as standalone system and communicate with SLT400 taping system or any 3rd party system through I/O.
- Driving source range
  - Current: up to 100 mA
  - Voltage: up to 10V

*Remark: All machine performance data are package dependent