

**ADAT3XF DS - DIE SORTER (IN-LINE)**

## Future-ready for next-generation die

Gain maximum productivity at the lowest costs. At 20% faster than anything in the market, this is the die sorter for wafer-level CSP/micro CSP applications. It handles the smallest die with automatic wafer change. The ADAT3 XF DS also inspects all six sides of the die without any speed penalty, securing quality in this critical last process step - without compromising productivity or cost.



### Key features

#### Performance

- Up to 60,000 units per hour
- Supports 8 to 12 inches wafer on frame film carrier

#### Tape width

- 8 - 12 mm
- Sidewall inspection

#### Die size

- Minimal: 0.2 x 0.4 mm
- Maximal: 5 x 5 mm
- High throughput at high-volume manufacturing rate
- APR auto-product replace
- In-tape inspection
- Automatic reel changer: optional
- Full die traceability: tape - wafer
- Auto recipe download (MES interface)
- SECS/GEM interface with E142

### Specifications

#### Speed

- Up to 60,000 units per hour flip or non-flip

#### Die Range

- Length, width: 0.4 x 0.2 mm to 5 x 5 mm
- Aspect Ratio: 1:1 - 1:3
- Thickness: 50 - 400  $\mu$ m

#### Tape handling

- Width: 8 - 12 mm
- Pitch: 2 - 8 mm
- Thickness: 0.18 - 0.5 mm
- Tape specification: embossed carrier tape with pocket hole, punch tape, paper tape, surf tape
- Hot sealing: maximum temp 200 °C, maximum force 10 - 80 Newton (N)
- Auto reel change, auto tape cutter

#### System accuracy

- Small die (< 1 mm): XY:  $1 \sigma xy \leq 5 \mu$ m. Rotation:  $1 \sigma \phi < 1^\circ$
- Large die (> 1 mm): XY:  $1 \sigma xy \leq 5 \mu$ m. Rotation:  $1 \sigma \phi < 0.3^\circ$

#### Wafer handling

- Wafer size: 6 - 12 inches
- Wafer frame: 8 - 12 inches
- Steel/Plastic Film Frame Carrier (FFC)
- Foil Tension: programmable expander (8 inches: 1 - 10 mm, 12 inches: 1 - 15 mm)
- Automatic wafer change and expander
- Automatic barcode reader

#### Imaging system

- Number of cameras: 5
- Resolution/Field of View (FOV) pick-up and backside: 5.0 MP camera (2.3  $\mu$ m/pixel), FOV 5.6 x 4.7 mm
- Resolution/ Field of View (FOV) post-bond: 5.0MP camera (4.6  $\mu$ m/pixel), FOV 11.3 x 9.4 mm
- Resolution/ Field of View (FOV) sidewall: 12.3MP camera (2.3  $\mu$ m/pixel), FOV 9.4 x 6.9 mm
- Resolution/ Field of View (FOV) Die ON FLIP: 5.0 MP camera (2.3  $\mu$ m/pixel), FOV 5.6 x 4.7 mm
- Resolution/ Field of View (FOV) post-seal inspection: 1.3 MP (3.7  $\mu$ m/pixel) FOV 9.7 mm
- Post-seal inspection: seal-line, index hole, empty, tilted, body outline, product code, marking, chipping
- Minimal object detection: 10 micrometres ( $\mu$ m)
- Lighting: red ring, coaxial, and back panel light

#### Inspection categories

- Program mode: fast programming for common reject criteria
- Reject treatment: strip-tape map (E142) and reject bin
- Inspection view: 5 cameras, (1) pre-pick, (2) back and sidewall, (3) front/bump, (4) post-bond, (5) post-seal

#### Inspection items

- Die top-related: top chipping, backside chipping
- Damaged. Die size/die ratio. Scratch. Cracked die
- Discoloration. Bump inspections (size/connected/missing)
- Backside related: Die alignment (position, size, and rotation). Backside chipping
- Surface inspection: Punch through inspection. Laser mark inspection. Pin A1

#### Automation

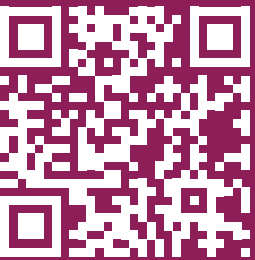
- Wafer map SEMI E142 format, SECS-GEM mpa exchange
- Start and reference die functionality
- Automatic product replacement
- MES Interface including auto recipe download
- Monitoring of critical process parameters during production
- Automatic stop function when parameter out of control
- Servo, bond-force and vacuum auto-diagnostics functionality to check health status of the machine

#### Machine dimensions

- Length, width, height: 2200 x 2100 x 1250 mm<sup>3</sup>
- Net weight: 1850 kg



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