Automated Device Bonder

The FC150 offers the latest evolution in assembly techniques. Available as an automated system to level, align and bond components, from 0.2 to 100 mm, the FC150 supports a wide range of assembly applications, including optoelectronics & MCMs.

With manual to fully automated configurations, the FC150 provides development and production capabilities on a single upgradeable cost-effective platform.

For each packaging challenge, SET works in collaboration with the end user to implement the optimum solution. The versatile design of the FC150 makes it ideal for developing a broad range of applications through innovative technologies.

Features & Benefits

- ± 1 μm @ 3 sigma post-bonding accuracy and 20 μradian leveling guarantee high yields on the most advanced products
- Air bearing and granite structure ensure long-term stability and reliability
- Compression, Z-control and temperature profiling, together with process monitoring, maximize process control
- Optical automatic leveling and alignment enables hands-off operation for production applications
- Graphic interface ensures user-friendly operation



Bonding Processes

- Die Bonding, Flip Chip Bonding
- Mass Reflow, In-situ Reflow and Fluxless Eutectic Bonding
- Thermocompression, Ultrasonic and Adhesive Bonding
- Gold, Gold/Tin, Indium, UV or Thermal Cure Adhesive, Polymers...
- Fragile Material Compatibility: InP, GaAs, MCT...

Applications

- Chip-to-Chip, Chip-to-Substrate Bonding, 3D-IC, Chip Stacking
- Optoelectronic & Photonic Devices Assembly
- MOEMS, MEMS, MCM...
- Nanoimprint Lithography: Aligned UV-NIL and Hot Embossing on Wafer





Technical Specifications

Process station

Component Size

0.2 ~ 100 mm

(Upper Component) Thickness up to 2 mm

Substrate 0.5 ~ 150 mm (option 200mm)

(Lower Component) Thickness up to 6 mm

Bonding Arm: Universal Bonding Arm

Placement Accuracy ± 1 µm @ 3 sigma

1 ~ 3 µm* Post-bonding Accuracy ± 0.57 degrees Leveling Travel

Resolution 2 µrad

Z Travel 178 mm, Resolution 0.5 µm

Force

(1000 and 2000 N optional)

Bonding Arm: SET Reflow Arm

Post-bonding Accuracy ± 1 µm @ 3 sigma*

Leveling Travel ± 0.5 degrees

Resolution 0.05 µrad

Z Travel 162 mm, Resolution 0.5 µm

0.2 - 4 N Force

Alignment Stage

300 x 250 mm XY stage Travel

Resolution 0.1 µm

Theta Travel ±7 degrees

Resolution 8.3 µrad

Z Travel 11 mm, Resolution 0.25 µm

Bonding Heads

Room Temperature Up to sq. 100 mm Heating

sq. 22, 50, 100 mm

RT to 450°C, Resolution 1°C

Ultrasonic 55 - 65 kHz, 40 W max U۷ 80 mW/ cm² @ 365 nm

Substrate Chucks

Room Temperature Up to sq. 150 mm (option 200 mm) sq. 22, 50, 100, 150, 200 mm Heating

RT to 450°C. Resolution 1°C

Optics

XY Inspection Travel 100 x 95 mm

Resolution 1 µm

Autocollimator 20 µrad on mirror

Sensitivity (component roughness and

reflectivity dependent)

Field of View 320 x 240 µm Pattern Recognition Cognex ™

System Resolution 0.42 µm per pixel

Options

Advanced Laser-Leveling System

Automatic Alignment for Hands-off Operation

Process Recording

Chip Solder Flux or Epoxy Coating Unit

Gas Confining Enclosure for Mass Reflow

Chip Flipper (configuration dependent)

Dispensers (Time/Pressure, Positive Displacement

Pump, Jet)

Formic Acid Vapor Bonding Environment Nanoimprint Lithography Configuration

General Characteristics

Machine Footprint 1500 x 980 mm

Machine Height 2170 mm

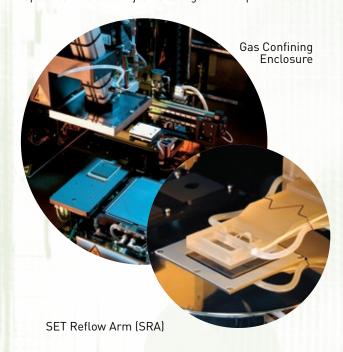
Machine Total Weight 800 kg

Electrical Power Supply 200 V/220 V - 2 kVA

50/60 Hz - 1 phase

*Process or Configuration Dependent.

Data, design and specifications depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this datasheet are not legally binding. Specifications are subject to change without prior notice.



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