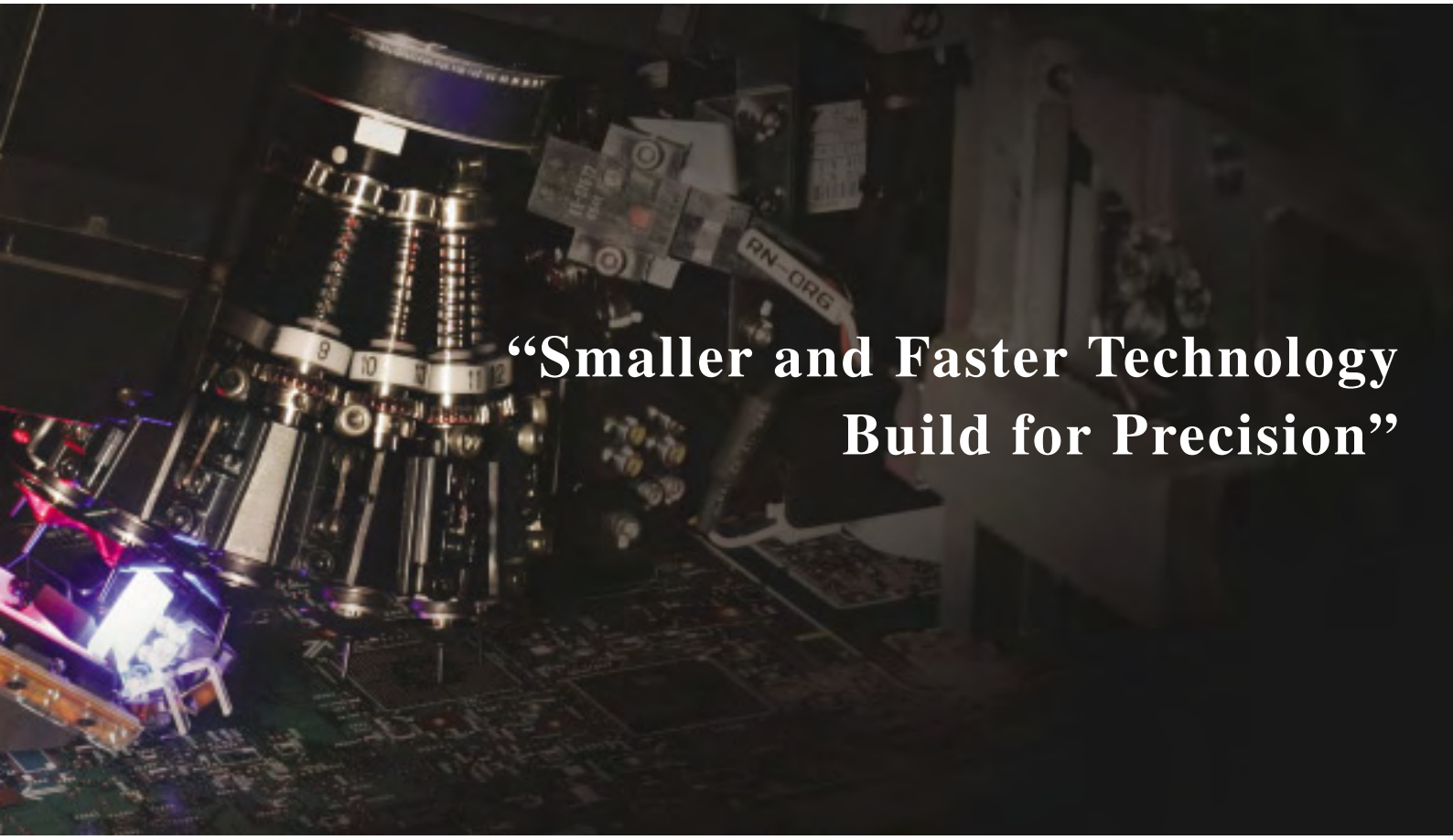
SONY

Compact-sized, Electronic Part Mounter
SI-F130AI
Compact-sized, Fine-pitch Electronic Part Mounter
SI-F209



CELLULAR MOUNTER

Sony Manufacturing Systems Corporation


40%

Cellular Mounters Have Entered the High-Speed Realm!

40%* increase in performance to establish more strategic production systems!

(*as compared to our prior model SI-Eseries)

Sony's cellular mounter series,

legendary in the leading-edge electronics part mounting field, has evolved even further.

The SI-F130AI high-speed mounter boasts a placement tact time of

0.139 seconds the SI-F209 fine-pitch mounter

features state of art precise mounting and high-speed.,

Experience the high performance and efficiency that answer the needs of this era.

Compact-sized, Electronic Part Mounter

SI-F130AI

Compact-sized, Fine-pitch Electronic Part Mounter

SI-F209

0402 support … Fullfil your Future Standards

Sony's cellular mounters – leaders in mounting management and having an excellent next-generation strategy – make 0402 chip mounting possible.

SI-F130AI

Planet head realizes 25,900 CPH

Equipped with a “Planet Head”, a patented rotary head incorporating a new overlap function., The SI-F130AI achieves even higher mounting speed.
As the head rotates freely in two directions, the sequences for part pickup and mounting can be set automatically and optimally, minimizing effective tact time.
Additionally, the use of fully closed servo control ensures the highest level of precision.

New mechanism that drastically extends the maintenance intervals

SI-F130AI adopts a new mechanism using a ball’s rolling motion for the nozzle shaft and the valve to dramatically extend the maintenance intervals (about three times longer than the conventional SI-F130 head). High rigidity is also achieved by this new mechanism.
In addition, the newly optimized sequence guarantees a high level of accuracy.

Significant improvement of the mounting accuracy. Drastic extension of the maintenance intervals. The astonishing high speed and the high mounting accuracy revolutionize what’s expected from a compact mounter.

SI-F130AI

Placement tact time of 0.139 sec

The SI-F130AI is a compact-sized high-speed mounter. By achieving a placement tact time of 0.139 seconds and eliminating the cycle loss time when changing PWBs, production performance has been improved by 40% (as compared to our model SI-E series). Functions contained within the compact body of this machine is superior to those other large-size machines.

Automated pickup position correction

The part pickup position is corrected automatically to achieve a higher pickup rate.

Flying vision

The part recognition camera is mounted on the head to monitor and to eliminate any decrease in mounting precision due to temperature fluctuation.

Part thickness recognition camera

Part thickness recognition is also implemented with a CCD camera so that ultra small chip components, which tend to be picked up in a standing position, are detected.

SI-F209

Nonstop operation

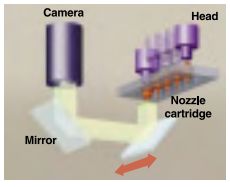
The SI-F209 is a compact-sized fine-pitch component mounter suited for high precision mounting. By leveraging its placement tact time of 0.49 seconds, this machine can be used for nonstop operation in order to boost production performance. The flying vision and flying nozzle change functions developed for this purpose maximally reduce the actual tact time loss during part pickup and mounting.

Flying vision

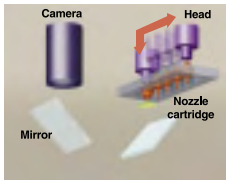
Part recognition is performed as the head moves after part pickup. It is unnecessary to waste time by moving the head to the position of the part recognition camera.

Flying nozzle change

The nozzle is changed automatically as the head moves after part pickup. It is not unnecessary to manually move the head to the position of the nozzle changer. Saves more time.



Flying Vision

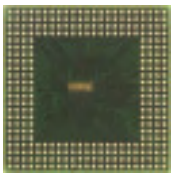


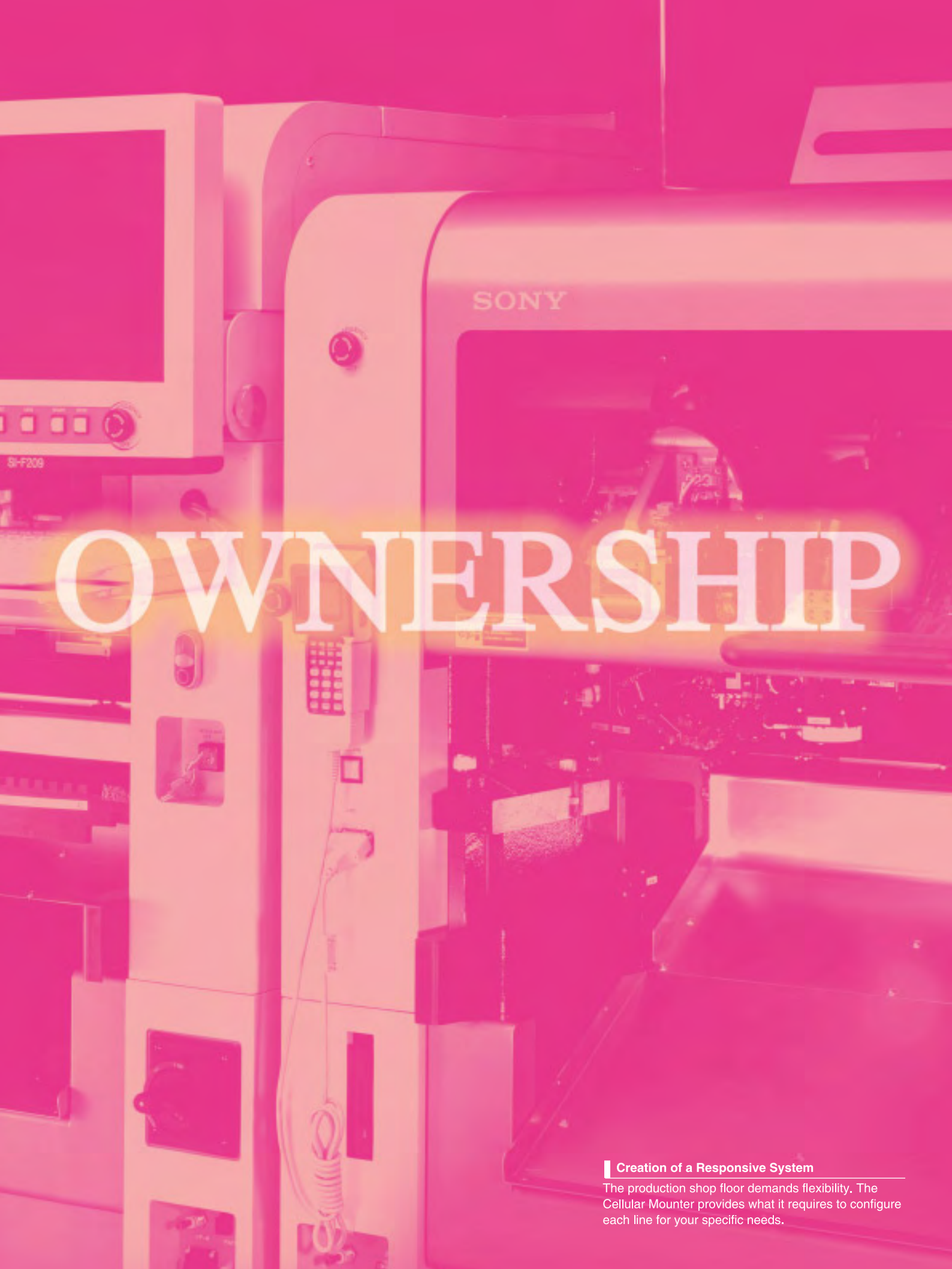
Flying Nozzle Change

SI-F130AI SI-F209

High mounting precision

The SI-F130AI and SI-F209 use CCD cameras for all part recognition cameras. The use of a proprietary image processing algorithm makes it possible to mount the latest electronic parts with ease. Part recognition, image processing and high density mounting technology enable these products to meet the requirements for high density PWBs.

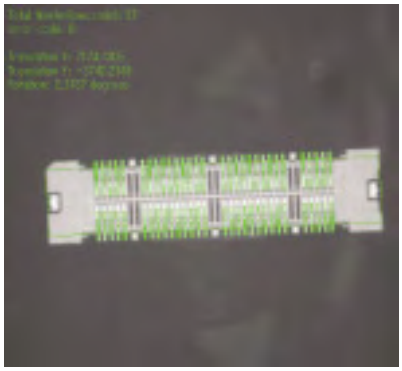




OWNERSHIP

Creation of a Responsive System

The production shop floor demands flexibility. The Cellular Mounter provides what it requires to configure each line for your specific needs.



Automatic generation of recognized objects

A newly developed image processing system is installed to provide an extremely sophisticated shape recognition function that can rapidly generate image data for complex new parts.

Flexibility that provides the capability to handle both small-sized and large irregular-sized parts, and enables the production line to be configured as needed. Excellent production performance and economic efficiency.

The need for flexible line configuration capability is enhanced to handle ultra small parts, to mount with high precision parts having irregular shapes, and to support your strategic production plans.
The cellular mounter is a leader in providing both high functionality and a high cost-performance ratio.

Flexible and adaptable line configuration enables more efficient use of space

The cellular mounter dramatically reduced installation floor space. When a production model is changed and production capacity is decreased, the number of cellular mounters may be reduced quickly.
Unused machines can be relocated to other production lines and used efficiently to form a strategic production system.

Splicing

A splicing cassette is provided to avoid stopping of the equipment when supplying parts.

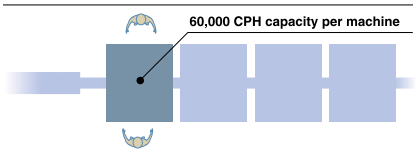
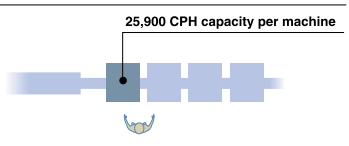
Cassette alternation

Even without a splicing cassette, the alternation function swaps cassettes that have run out of parts during operation to achieve nonstop operation.

Dual tray

The rear of the SI-F209 is equipped with a dual tray system as standard feature. In addition to providing the capability to hold multiple large trays, this configuration reduces run-time loss since if parts run out on one side, the pickup operation can continue automatically from the other side.

■Realization of greater production performance in a small space

	Large modular mounter (competitor's machine)	Cellular mounter (SI-F130AI)
		
Production performance per unit area:	9,000 CPH/m^2	15,000 CPH/m^2
Part supply:	Both sides	One side/ both sides
Cassette capacity:	80 cassettes/ 60,000 CPH	80 cassettes/ 25,900 CPH

Support tools

DAS
(Program auto creation software)

Sony's proprietary DAS (Data Arrangement Software) software system is behind the efficient operation of networked cell machines. A conventional networked system (combination of modular mounters) is incapable of responding flexibly to changes in the production model or quantity because the control programs for each machine must be optimized independently. The time and labor required for this programming work increases with the number of machines. The DAS software eliminates these problems by automatically programming the optimal nozzle assignment, cassette position and mounting sequence.

Cellular program station (CPS) is a software program that creates a mounting program offline. DAS is included within CPS.

■Specifications

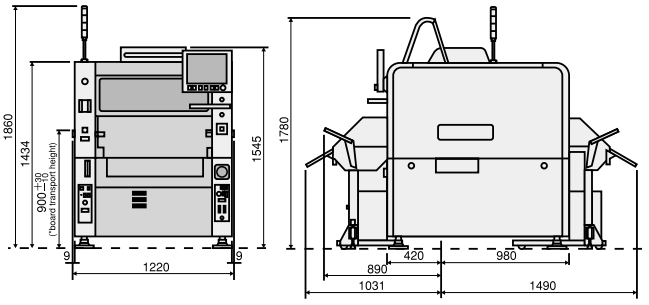
	SI-F130AI
PWB size	50mm × 50mm to 460mm × 360mm (no 3-stage feature for boards longer than 330mm) PWB thickness：0.5mm to 2.6mm
PWB transport direction/ reference	Right to left or left to right/front
PWB exchange time	1.6sec (optimal conditions)
Head configuration	12 nozzles / 1 head
Components size	0402 (01005) up to 12mm square (Movable camera) 6mm square to 25mm square (fixed camera/ optional) components height : Max. 6mm Unit;mm(inch)
Placement tact time (optimum conditions)*1	0.139sec(25,900CPH) (movable camera)
Placement precision *2	50μm(Cpk 1.0 or greater)
Cassettes type	Sony cassettes (for SI-Eseries and SI-Fseries)
Cassettes loading capacity *3	40 front cassettes + 40 rear cassettes (80 cassettes total)
Operational controls	Front: Color LCD touch panel display and handy console; Rear: Handy console
Image processing method	Reflective imaging/transmissive imaging (may be used concurrently)
Components release detection	Components thickness inspection by camera (Movable camera only)
Operating temperature	25℃±5℃(no condensation)
Additional features	Automatic conveyor width adjus tment function
Main options	Cassettes trolley, handy console, fixed camera, 8mm splicing cassettes
Power supply/ consumption	AC 3-phase 200V±10%, 50/60Hz, Approx. 2.3kVA (can optionally support voltages above 200V)
Air pressure/consumption *4	0.49Mpa 50L/min. (A.N.R)
External dimentions	1,220(W)mm × 1,400(D)mm × 1,545(H)mm (Machine status light height 1,860mm)
Mass *5	1,560 Kg

	SI-F209
PWB size	50mm × 50mm to 460mm × 360mm (no 3-stage feature for boards longer than 330mm) PWB thickness：0.5mm to 2.6mm
PWB transport direction/ reference	Right to left or left to right/front
PWB exchange time	1.6sec (optimal conditions)
Head configuration	6 nozzles / 1 head
Components size ranges	2012 (0804) up to 32mm square (Movable camera/reflective imaging) 2012 (0804) up to 19mm square (Movable camera/transmissive imaging) 2012 (0804) up to 18mm square (fixed camera/reflective imaging) 18mm square to 43mm square (fixed camera/reflective imaging, medium view range, batch) Up to φ150mm (fixed camera/reflective, medium/large view , range, division into 4) components height : Max. 7mm/movable camera;Max. 25mm/fixed camera Unit;mm(inch)
Placement tact time (optimum conditions)*1	0.49sec(7,350CPH) (movable camera),1.4sec(2,500CPH)(fixed camera)
Placement precision *2	60μm(Cpk 1.0 or greater)(chip)　50μm(Cpk 1.0 or greater)(VQFP 208 pins)
Cassettes type	Sony cassettes (for SI-Eseries and SI-Fseries)
Cassettes loading capacity *3	40 front cassettes + 40 rear trays × 2 (40 cassettes + 80 trays total)
Operational controls	Front: Color LCD touch panel display and handy console; Rear: Handy console
Image processing method	Reflective imaging/transmissive imaging (may be used concurrently)
Components release detection	Vacuum detection method
Operating temperature	25℃±5℃(no condensation)
Additional features	Automatic conveyor width adjus tment function
Main options	Cassettes trolley, part reject conveyor
Power supply/ consumption	AC 3-phase 200V±10%, 50/60Hz, Approx. 2.3kVA (can optionally support voltages above 200V)
Air pressure/consumption *4	0.49Mpa 100L/min. (A.N.R)
External dimentions	1,220(W)mm × 1,700(D)mm × 1,573(H)mm(Machine status light height 1,950mm)
Mass *5	1,800 Kg

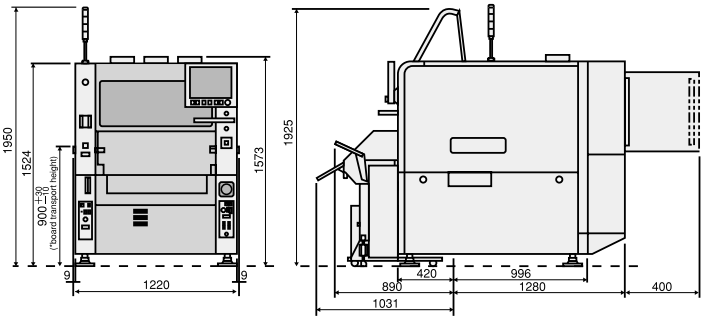
*1 according to our regulations condition
*2 according to our specificated components
*3 8mm cassettes
*4 Only for main body
*5 Standard configuration
* Placement tact time and accuracy may vary depending on operating conditions
* Please refer to the 'Specifications' for details

■External Dimentions

SI-F130AI



SI-F209



(Unit;mm)

⚠ Safety notice: Prior to use, be absolutely certain to read and understand the Operating Instructions to ensure proper use of this product.

●Specifications and dimensions listed in this brochure are subject to change without notice due to product improvement.

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