PLACEMENT SOLUTION

RX-6 SERIES
High-Speed Compact Modular Mounter
RX-6 BASIC FEATURES

RX-6 SERIES
High-Speed Compact Modular Mounter

RX-6 is the perfect solution for high-mix / mid-volume productions with fast changeover procedures. RX-6 supports optimized line availability, material savings and reduced downtimes at highest accuracy, quality and flexibility.

- Chip component placement speed 52,000 CPH (optimum)
- Placement speed increased by 24% compared to previous designs
- Compact footprint of just 1.25 m
- Wide range of usable boards and components

JUKI’S LASER CENTERING TECHNOLOGY FOR HIGH-SPEED, ACCURATE PLACEMENT

The machine automatically identifies components of various shapes from ultra-miniature components such as 0402 (metric)/01005 (inch) chips up to 50 × 50 mm square components such as PLCCs, SOPs, BGAs, and QFPs. When the machine recognizes a component by laser, variations such as shape, color, and reflection do not matter.

Recognition algorithm

THE COMPONENT CHECK FUNCTION IMPROVES THE QUALITY OF COMPONENT PLACEMENT

The component check function improves the quality of component placement. The presence of components is monitored continuously by laser from the first pick to the final placement – deleting the risk of not detecting any missing or lost components completely.

1. On-the-fly component detection
   Laser beam detects presence of components.

2. Component orientation check

3. Component dimension check

4. Component monitoring
   Laser controls presence of component during head movement.

5. Release check
   Laser checks whether the component has been properly released on the board after placement.
HIGH QUALITY

**EPV (EMBEDDED PROCESS VERIFICATION) FUNCTION**

Six ultra-miniature cameras built into the head section capture component pick&place images without losing placement speed. An analysis runs for presence / absence in real time. This unique function prevents defective boards and potential rework while at the same time minimizing the time for analyzing the root cause of the error.

**Component presence check**
Images are analyzed automatically. In case a component is missing or lost, the machine displays an error message and stops automatically.

**Root cause failure analysis function**
Root cause failure analysis uses image analysis to quickly identify problems in the production process and reduce the time for corrective action.

**OFFSET PLACEMENT AFTER SOLDER SCREEN PRINTING (OPASS)**

The OPASS function uses the machine’s integrated camera to check the location of solder paste vs. the pads and corrects the placement accordingly. This function reduces defects caused by misalignment of the paste on the pads.

A printing misalignment occurs

Component upside down
In case a component is placed upside down by mistake, the machines displays an error message and stops automatically.

Component placed correctly
Component placed upside down
Error message and details displayed to operator

Tombstone error occurs

PCB before placement
PCB after component placement
Component placed correctly
Component placed upside down
Error message and details displayed to operator

The analysis includes the following items:
- date / time
- cause of an error
- nozzle
- feeder number
- head number
- barcode

With OPASS function
Placement based on solder paste location
OK

Without OPASS function
Placement based on pad location
NG
HIGH QUALITY

COMPONENT VERIFICATION SYSTEM (CVS)

By measuring the resistance, capacitance, or polarity before production starts, the machine can prevent incorrect components from being placed. The new CVS unit can check six components simultaneously, reducing the check and changeover times.

RELIABLE, HIGH-PRECISION RECOGNITION

Height measurement function
A non-contact laser sensor measures the height of the PCB to prevent excessive force on components and reduce the risk of damage. This sensor can also measure the pick height more accurately and faster than other methods.

Flexible lighting improves fiducial measurement accuracy
The OCC (Offset Correction Camera) is used for fiducial recognition and bad mark detection. Flexible lighting allows the machine to accurately recognize poor contrast fiducials and barcodes.

NEW ON-THE-FLY CENTERING SYSTEM

A new generation of laser sensor, LNC120, for an even more accurate placement.
MACHINE CONSTRUCTION FOR HIGH-MIX / MID-VOLUME PRODUCTION AT A VERY SMALL FOOTPRINT

Each machine is equipped with two head units each of which possesses its own on-the-fly centering system. Component positioning during head movement guarantees real high-speed placement with greatest accuracy.

52,000 CPH (optimum)

THE FOLLOWING IS APPLICABLE TO DUAL-LANE PRODUCTION

The board transport waiting time is reduced while increasing the effective production tact time at the same time.

TRAY SUPPLY DEVICE TR8S IN SPACE SAVING DESIGN

A space-saving design enables operators to apply tape feeders on the rear side as well as tray components at the same time.

When TR8S is attached
HIGH PRODUCTIVITY

VISION RECOGNITION TECHNOLOGY FOR HIGH-SPEED COMPONENT PLACEMENT

Dual camera for high speed
A dual camera enables high-speed placement of large and odd-shaped components.

Centering technologies
Multiple centering methods allow the machine to use the fastest and best method for each component type based on size, shape, and design.

Simultaneous component pick by six nozzles
Equipped with two cameras

High-speed non-stop vision recognition technology
Dual centering technology: each head includes an on-the-fly centering system. In addition, two camera systems capture images of large, fine-pitch or odd-shaped components individually.

Existing recognition
Non-stop vision recognition
Pause for each component recognition
Non-stop recognition for each component

INDEPENDENT Z- AND THETA-AXES CONTROL

Each nozzle has independent Z and theta control for increased flexibility, accuracy and maximum placement speed. The height and angle of each nozzle can be controlled individually.

A highly precise placement angle is possible thanks to the use of servomotors

0402 chip
HIGH FLEXIBILITY

<table>
<thead>
<tr>
<th>WIDE RANGE OF COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>The RX-6 6-nozzle system supports components from 0402 (metric)/01005 (inch) up to 50 × 50 mm (square). The 3-nozzle head configuration supports an even wider range from 0402 (metric)/01005 (inch) up to 100 × 100 mm (square) or up to 50 × 180 mm, respectively. The maximum supported component height is 33 mm.</td>
</tr>
</tbody>
</table>

![Component size diagram]

*Please contact us for availability.

<table>
<thead>
<tr>
<th>EASY LOAD CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precise placement control is possible using precision-designed nozzles along with a load cell. Placement with a force up to 50N is available for press-fit components.</td>
</tr>
</tbody>
</table>

![Placement with a force of up to 50N available.]

<table>
<thead>
<tr>
<th>FLEXIBILITY BY CHANGING THE HEAD UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>The rear head can be replaced by a 6-nozzle head and a 3-nozzle head, thus allowing for greater flexibility to configure the production line according to the current requirements.</td>
</tr>
</tbody>
</table>

![3-nozzle head and 6-nozzle head]

<table>
<thead>
<tr>
<th>POP (PACKAGE-ON-PACKAGE) SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D or Package-on-package (PoP) placement is possible using the optional fluxer units.</td>
</tr>
</tbody>
</table>

![PoP placement]

<table>
<thead>
<tr>
<th>SUPPORT OF LARGE BOARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board sizes up to 905 × 590 mm are supported as a standard.</td>
</tr>
</tbody>
</table>

![Board size diagram]
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Single-lane conveyor</th>
<th>Dual-lane conveyor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Board size</strong></td>
<td>50 × 50 ~ 905 × 590 mm</td>
<td>50 × 50 ~ 360 × 250 mm*</td>
</tr>
<tr>
<td><strong>Component height</strong></td>
<td>6 / 20 / 25 / 33 mm</td>
<td></td>
</tr>
<tr>
<td><strong>Component size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laser recognition</td>
<td>0402 (01005) ~ 50 mm</td>
<td>0402 (01005) ~ 50 mm</td>
</tr>
<tr>
<td>Vision recognition</td>
<td>Standard camera</td>
<td>High-resolution camera</td>
</tr>
<tr>
<td></td>
<td>3 mm ~ 33.5 mm</td>
<td>1005 ~ 20 mm</td>
</tr>
<tr>
<td><strong>Placement speed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chip</td>
<td>Optimum</td>
<td>IPC 9850</td>
</tr>
<tr>
<td></td>
<td>42,000 CPH</td>
<td>26,000 CPH</td>
</tr>
<tr>
<td><strong>Placement accuracy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laser recognition</td>
<td>±0.04 mm (Cpk:1)</td>
<td>±0.04 mm</td>
</tr>
<tr>
<td>Vision recognition*</td>
<td>±0.04 mm</td>
<td>±0.03 mm</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>200 ~ 415 VAC, 3-phase</td>
<td></td>
</tr>
<tr>
<td><strong>Operating air pressure</strong></td>
<td>0.5 ± 0.05 MPa</td>
<td></td>
</tr>
<tr>
<td><strong>Air consumption</strong></td>
<td>100 L / min</td>
<td></td>
</tr>
<tr>
<td><strong>Machine dimensions (W × D × H)</strong></td>
<td>1,250 × 2,095 × 1,440 mm</td>
<td>1,250 × 2,095 × 1,440 mm</td>
</tr>
<tr>
<td><strong>Mass (approximately)</strong></td>
<td>1,800 kg</td>
<td>1,830 kg</td>
</tr>
</tbody>
</table>

*Single-lane conveyor specification mode max 360 × 450 mm

*Under the JUKI condition

### OPTIONS

- **Recognition system**: High-resolution camera (27 mm view) / component recognition camera (54 mm view)
- **Inspection function**: Coplanarity sensor / Component Verification System (CVS) / Small Outline Transistor (SOT) detection check function
- **Conveyor**: Conveyor extension
- **Component handling and feeders**: Feeder trolley / electric tape feeder / electric stick feeder / high-speed matrix tray server TR7DN / matrix tray server TR8S / Integrated Circuit (IC) collection belt / trash box / tape reel mounting base / feeder stocker / splicing jig / feeder calibration jig with monitor tray holder / electric trolley power station / auto tape cutter
- **Software**: IS / JaNets / IFS-NX
- **Others**: Offset Placement After Solder Screen Printing (OPASS) / solder lighting / Flexible Calibration System (FCS) / calibration jig / placement monitor inspection function / fluxer unit / linear type / rotary type caster

### LINE CONTROL SOFTWARE

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Major functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS / JaNets</td>
<td>User definition / facility definition / component database / creating production programs / line optimization / line monitoring / CAD conversion / cluster optimization / etc.</td>
</tr>
<tr>
<td>IFS-NX</td>
<td>Full line traceability / intelligent feeder verification / component management / full maintenance control function / binning control / kitting control / Moisture Sensitive Device (MSD) control / open interface / Intelligent Storage Management (ISM) tower connection / feeder anywhere</td>
</tr>
</tbody>
</table>

Specifications and design subject to change without notice.