## Specification

<table>
<thead>
<tr>
<th>Item</th>
<th>High-Speed Modular Mounter FX-3RAL</th>
<th>High-Speed Modular Mounter FX-3RAXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board size</td>
<td>L size (410 x 360mm)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>L-Wide size (510 x 360mm)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>XL size (610 x 560mm)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Applicability to long PWB **</td>
<td>800 x 360mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800 x 560mm</td>
</tr>
<tr>
<td>Component height</td>
<td>60mm</td>
<td>60mm</td>
</tr>
<tr>
<td>Component size</td>
<td>Laser recognition</td>
<td>0602 (0105) — 389.5mm</td>
</tr>
<tr>
<td>Placement speed (chip)</td>
<td>Optimum</td>
<td>0.54sec/chip (80,000chips/hr) **</td>
</tr>
<tr>
<td></td>
<td>IPC3850</td>
<td>80,000chips/hr **</td>
</tr>
<tr>
<td>Placement accuracy</td>
<td>Laser recognition</td>
<td>±0.25mm (±0.001)</td>
</tr>
<tr>
<td>Component loading quantity</td>
<td>Max. 240 in case of 8mm tape (on a Electric double tape feeder)</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>200 to 415 VAC, 3-phase</td>
<td></td>
</tr>
<tr>
<td>Apparent power</td>
<td>7.5kVA **</td>
<td>8.5kVA **</td>
</tr>
<tr>
<td>Operating air pressure</td>
<td>0.5 ± 0.05MPa</td>
<td></td>
</tr>
<tr>
<td>Air consumption</td>
<td>Max. 150L/min</td>
<td></td>
</tr>
<tr>
<td>Machine dimensions</td>
<td>L size</td>
<td>2,650 x 1,650 x 1,030mm</td>
</tr>
<tr>
<td></td>
<td>L-Wide size</td>
<td>2,890 x 1,650 x 1,030mm</td>
</tr>
<tr>
<td></td>
<td>XL size</td>
<td>2,980 x 1,850 x 1,030mm</td>
</tr>
<tr>
<td>Mass (approximately)</td>
<td>L-L-Wide size</td>
<td>3,500kg</td>
</tr>
<tr>
<td></td>
<td>XL size</td>
<td>3,750kg</td>
</tr>
</tbody>
</table>

**1** L-Wide size. Applicability to long PWB is optimal.  
**2** This speed does not apply in XL-Wide size.  
**3** With mechanical header tank  
**4** With electronic header tank  
**5** Height described is for component height 389.5mm

*Please refer to the product specifications for details.*

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**JUKI**

MAKERS/TOWER: JUKI CORPORATION

ROBOTS: JUKI AUTOMATION SYSTEMS CORPORATION

http://www.juki.co.jp
High-Speed Modular Mounter

FX-3RA

- High speed, high reliability modular mounter
- Improve productivity, reduce rework
- Designed to work with KE Series machines to form a high speed, flexible production line

Placement speed: 90,000 CPH (Optimum)

Touch screen user interface
2 stations, 4 gantries, 4 placement heads, 24 nozzles
Linear servo motor XY drive with full closed-loop control

I Accurate
II Efficient
III Expandable
IV Reliable

- Improve quality management and production efficiency
- Various kinds of option for your needs
- Sample production line

On-the-fly centering using integrated laser
Holds up to 240 components
Electrical or mechanical feeder trolley
1 Basic structure for high quality

- **Linear servo motor**
  X and Y axes both use linear servo motors.
  Guaranteed stability, low noise, and high speed.

- **Full closed-loop control**
  Linear encoders provide true positional feedback for precise placement over the life of the machine.

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2 JUKI laser centering for flexibility and quality

- **Accurate and reliable laser centering**
  Component range from 01005 (0.402 mm) to 39.5 mm square.
  Laser centering is immune to component variations such as lead shape, color, and reflection.

  - **Wide variety of component shapes**

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3 Unique JUKI features for higher placement quality

- **Root Cause Failure Analysis (Placement Monitor)**
  Sub-miniature cameras integrated into the placement head take pictures in real time of pick and placement.

- **Reduction errors due to solder paste alignment**
  OCC camera calculates the offset of the solder paste from the pads and places the components centered on the paste, not pads. This function reduces the errors caused by solder paste mis-print and reduces solder defects.

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4 Avoid component loading errors using Component Verification (CVS)

  Resistance, capacitance, and polarity can be measured before production to ensure the correct components have been loaded. The new CVS can check 6 components at the same time, reducing the check time and improving efficiency during changeover.

5 3 lead transistor polarity check function

  OCC camera confirms the polarity of 3 leaded SOIs before production and after reel replacement to reduce defects caused by incorrect orientation.

6 Auto-correct pick position

  Pick position offset data is sent to the feeder. The feeder self-adjusts to align the pick position for gang picking.

7 Fiducial marking lighting

  Multi-directional and programmable lighting improves recognition of a wide variety of fiducial types and materials.
4 Features for reliable picking and placement

**Placement error correction function**
Using FCS, the mounter can measure placement offsets and self-adjust to improve accuracy. Achieve accurate and reliable placement.

**Height Measurement System (HMS)**
Automatically and precisely measure the pick height using non-contact laser. Adjusts pick height or placement height to prevent component or PCB damage.

**Automation Nozzle Changer (ATC)**
Automatically replace nozzles according to component dimensions.

**Bad mark detection function**
OCR detects bad marks on the PCB to skip placement of components on defective circuits. Faster bad marking checking is possible with optional sensor.

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1 Head configuration for high-speed production

Laser sensor is integrated into the placement head for on-the-fly centering. Head moves directly from the pick position to the placement position for the shortest possible head travel and maximum placement speed.

2 Simultaneous on-the-fly component centering for high-speed production

3 Efficient change-over

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**Dual-lane electronic feeder**
Holds up to 240 component.

**Cluster Optimization**
Cluster optimization can be used to combine the setup of several different boards for faster change-over.

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**Increase production line efficiency**
- Production according to demand
  On-demand production enables the production line to automatically change between jobs by reading a barcode on the PCB prior to starting production.
- Continuous download
  The system automatically uploads upon completion and the next file is downloaded as soon as the machine is ready.
- Automatic change-over function
  Trolleys are available for rapid change-over for both mechanical and electronic feeders. System recognizes which type of feeder trolley and feeders have been installed automatically (electronic or mechanical).
- Quick-change feeder trolleys
  Offline setup of complete trolleys for faster change-over.
- Splicing function
  Replenish components without stopping.
Expandable

1 LED placement

- Long Board (option)
  - Long boards for LED lighting are supported.

- LED nozzle expertise
  - Standard Nozzles
  - Specific Nozzles recommended for LED

- Remaining component quantity management
  - To prevent variations of LED brightness due to lot differences, the number of parts remaining in the feeders is checked prior to starting production. If there are not enough parts to complete the board using the loaded feeders, an alarm is displayed.

2 LED diffusion lens placement

- Detect pin orientation for high-precision placement
  - Placement of diffusion lenses with pins requires Centering the pins, but in our line, JUKI laser centering can use pins on diffusion lenses for more accurate placement.

Reliable

1 Production Preparation

- Easy data entry
  - Component data can be created quickly by entering overall dimensions, component type, and packaging appearance. Editing directly on the mounter is also possible.

- Asset utilization
  - JUKI mounters use common parts across many different models for better asset utilization.

2 Large touch screen monitor (15 inch)

- Familiar, easy to use display
  - Graphical user interface (GUI) designed for touch screen, simple to learn and operate, even for new users. Operation from the rear is possible with the rear-side operation option.

- Multi-language support
  - Languages: Japanese, English, Chinese, Korean. Language can be changed from LCD display, operation is possible from rear side also.

Improve quality management and production efficiency

Parts verification

- The parts verification function confirms that the correct part has been placed in the correct location on the feeder bank. An interlock prevents production until the parts are properly verified, thereby preventing defective boards from being assembled.

- With RFID System
  - The location of every feeder is automatically detected when the feeder is placed on the machine. It helps the operator’s efficiency and provides a double check of the location.

Management of feeder maintenance history

- IPS-NX records and manages feeder maintenance and inspection history: Maintenance schedules are created and warnings can be set based on actual usage including pick cycles, hours of operation, and mispick rates. Helps to decrease bottlenecks and improves quality.

- With RFID System
  - The Intell feeder calibration (optional) automatically recognizes and records feeder IDs and the date when the feeders are inspected, decreasing the work and increasing accuracy for maintenance personnel.

Component inventory control - Feeder location search

- Components can be stored in registered locations to improve stock control and the component count is always maintained by the IPS-NX even during production.

- With RFID System
  - The Intell stocker (optional) shares the location for stored feeders with the entire system making it easier to find reels when you need them.

- Off-line setup function
  - Off-line setup using feeder trolleys enables verification of component locations and prevents human errors.

- With RFID System
  - The location of every feeder is automatically detected when the feeder is placed on the Intell trolley. It helps the operator’s efficiency and provides a double check of the location.

- Traceability
  - The component lot numbers can be recorded during production and linked to the serial number of the PCB they are placed on for a complete and accurate traceability record.
1 Supports a wide range of components

In addition to high speed, the FX-3RA is very flexible and easily integrates with other KE series machines for a powerful production line.

**High-Speed Flexible Mounter KE-3020V**
- Laser recognition
- Vision recognition

**Component range**
- From 01005 to 33.5mm

**FX-3RA**
- Laser recognition

2 Options

- **Placement quality**
  - Placement Monitor → P4
  - Component Verification System (CVS) → P4
  - Offset Placement After Solder Screen-printing → P4
  - Bad mark reader → P5
  - FCS calibration jig → P5
  - Solder lighting → P7
  - Component quantity control → P7
  - SOT detection check function

- **LED applications**
  - Applicability to long PWB → P7
  - Solder lighting → P7
  - Component quantity control → P7

- **Safety features**
  - Ground-fault interrupter
  - Conveyor safety cover

- **Operation**
  - Main line filter
  - Ground-fault interrupter

- **Component Supply**
  - Mechanical feeder (Tape feeder, Stick feeder, Bulk feeder)
  - Electric feeder (Tape feeder, Stick feeder)
  - Tape reel mounting base
  - Feeder stocker
  - Connector bracket
  - Splicing jig

- **Production efficiency**
  - Bad mark reader → P5
  - IS (Poor productivity improvement support system) → P6
  - Feeder trolley → P6
  - EPU

- **Quality management and production efficiency**
  - F-3A-NX → P7,8

- **Operability**
  - Rear-side operation unit → P8
  - Feeder position indicator → P8
  - PWB stopper 180mm
  - Handheld Operation Device (HOD)
  - Conveyor extension
  - Tape cutter
  - Trash box

- **Component Supply**
  - Mechanical feeder (Tape feeder, Stick feeder, Bulk feeder)
  - Electric feeder (Tape feeder, Stick feeder)
  - Tape reel mounting base
  - Feeder stocker
  - Connector bracket
  - Splicing jig

Sample production line

With many options available and compatibility with the KE Series machines, the FX-3RA is flexible enough to handle a wide variety of production needs.