## Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>KE-3020L / KE-3020XL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Board size</strong></td>
<td></td>
</tr>
<tr>
<td>L size (410×360mm)</td>
<td>○</td>
</tr>
<tr>
<td>L-Wide size (510×360mm)</td>
<td>○</td>
</tr>
<tr>
<td>XL size (810×660mm)</td>
<td>○</td>
</tr>
<tr>
<td><strong>Component height</strong></td>
<td></td>
</tr>
<tr>
<td>12mm</td>
<td>○</td>
</tr>
<tr>
<td>20mm</td>
<td>○</td>
</tr>
<tr>
<td>25mm (XL size only)</td>
<td>○</td>
</tr>
<tr>
<td><strong>Component size</strong></td>
<td></td>
</tr>
<tr>
<td>Laser recognition 01005 (0402 metric) - 33.5mm</td>
<td>○</td>
</tr>
<tr>
<td>Vision recognition</td>
<td></td>
</tr>
<tr>
<td>Placement speed <strong>Chip</strong></td>
<td>15,100CPH</td>
</tr>
<tr>
<td>Placement speed <strong>IC</strong></td>
<td>5,800CPH**</td>
</tr>
<tr>
<td>Placement accuracy</td>
<td></td>
</tr>
<tr>
<td>Laser recognition</td>
<td>±0.05mm (Cpk + 1)</td>
</tr>
<tr>
<td>Vision recognition</td>
<td>±0.03mm (Cpk + 1)x0.04mm when using MNVC</td>
</tr>
<tr>
<td>Feeder inputs</td>
<td>Max. 80 on 8mm T/F – 180 Dual Lane Electronic**</td>
</tr>
<tr>
<td>Power supply</td>
<td>200 to 415 VAC, 3-phase</td>
</tr>
<tr>
<td>Apparent power</td>
<td>2.24kVA</td>
</tr>
<tr>
<td>Operating air pressure</td>
<td>0.5±0.05Mpa</td>
</tr>
<tr>
<td>Air consumption</td>
<td>50L/min</td>
</tr>
<tr>
<td><strong>Machine dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>(WxDxH)**</td>
<td></td>
</tr>
<tr>
<td>L size</td>
<td>1,675×1,690×1,530mm</td>
</tr>
<tr>
<td>L-Wide size</td>
<td>1,975×1,690×1,530mm</td>
</tr>
<tr>
<td>XL size</td>
<td>2,131×1,890×1,530mm</td>
</tr>
<tr>
<td><strong>Mass (approximately)</strong></td>
<td></td>
</tr>
<tr>
<td>L size</td>
<td>2,100kg</td>
</tr>
<tr>
<td>L-Wide size</td>
<td>2,250kg</td>
</tr>
<tr>
<td>XL size</td>
<td></td>
</tr>
</tbody>
</table>

**Options**

- Recognition system: MNVC / Bad mark reader / High-resolution camera
- Operation system: Rear-side operation unit / Touch panel
- Conveyor: Automatic board width adjustment / Conveyor extension
- Inspection system: Coplanarity sensor / Component Verification System (CVD) / SOT detection checker function
- Electrical protection: Ground-fault Interrupter
- Others: FCS calibration / Feeder position indicator / Offset placement after solder screen-printing / Non-stop operation / Caster / Super foot / Mini signal light tower / lonizer / Pin reference / Placement force control / Fluxer unit
- Software: IS/EPU
- Component handling and feeders: Matrix tray server TR-6 / Matrix tray changer TR-4 / Matrix tray holder / Dual tray server TR-1 / Tape feeder / Bulk feeder** / Stick feeder / Feeder trolley / IC collection belt / Trash box / Tape cutter / feeder stocker

**Notes**

- Options up to high-resolution camera and MNVC function.
- Apparent power When using both high-resolution camera and MNVC (option).
- Placement speed indicates an achievement value obtained when the machine places 36 QFP (100 pins or more) or 256 balls or more on a M size board.
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- Feeder inputs, maximum number of feeders may change max: 190/380.
- Dimensions of machine described are for conveyor height 900mm.
- Please refer to the product specifications for details.
High-speed flexible mounter

KE-3020

The latest leading edge technology from JUKI for improved flexibility and production quality.

Along with the FX-3 the KE-3020 supports electronic and mechanical tape feeders and 22" x 24" board size.

Options for improved production quality

IONIZER

The ionizer adjusts the ion balance inside the machine and removes static electricity from the board and/or components.

Component Verification System (CVS)

Component certification measures the resistance, capacitance or polarity of each component before the start of production or after replacing components. This option prevents placement of incorrect components. The new inspection unit features simultaneous measurement of six components, reducing changeover time.

Fluxer

The fluxer is a device used to apply flux or dip-paint solder paste to CSP and flip chip components before placement. The linear fluxer uses a precise cavity to ensure the proper depth of flux.

Placement force control

Using a built-in load cell, the placement force of each nozzle can be measured and controlled during the process. The placement force can be set individually for every component.

Compatible with mechanical and electronic feeders

As mechanical and electronic feeder trolleys are completely interchangeable, customers can make effective use of existing machinery assets. Using only necessary components fed through an electronic tape feeder (fully interchanged) produces superior cost performance.

Highly versatile vision system for a wide range of components

Flexible vision centering technology

Centering method can be selected based on component type, shape, size and material. Laser centering is used for high-speed placement of smaller components. Vision is used when lead or ball inspection is needed or when the component is too large for the laser. Many nozzles are available for odd-shaped components providing unsurpassed component handling.

Vision program now made easier

General Vision Function – Used to support a wide variety of today’s unusual vision centered components. Complicated programming of odd-shaped components is made easier by following step-by-step guidelines, reducing programming time significantly.

BGA Auto Teach Function – Advanced vision system allows the operator to automatically “learn” the ball or lead pattern for faster programming and more accurate placement.

High speed vision placement

MNVC (Multi-Nozzle Vision Centering)

Vision centering by the multi-nozzle head nearly doubles the placement rate for smaller components, including CSPs, BGAs, and smaller QFPs.

Placement speed: 17,100CPH (IPC9850)

2,200CPH: IC (vision centering / effective tact),

5,800CPH: IC (vision centering / with MNVC option)

One multi-nozzle laser head (6 nozzles) plus one high resolution head (1 nozzle)

From 01005 (0402 metric) to 74mm square components or 50×150mm

Vision centering system (featuring bottom, side, and back lighting, all ball recognition and split recognition)

As mechanical and electronic feeder trolleys are completely interchangeable, customers can make effective use of existing machinery assets. Using only necessary components fed through an electronic tape feeder (fully interchanged) produces superior cost performance.

Compatible with mechanical and electronic feeders

As mechanical and electronic feeder trolleys are completely interchangeable, customers can make effective use of existing machinery assets. Using only necessary components fed through an electronic tape feeder (fully interchanged) produces superior cost performance.
Laser Centering Technology
JUKI's original technologies results in high-speed and high-quality placement

Laser Sensor: LNC60

6 nozzle head greatly improves speed and efficiency
Simultaneous picking and on-the-fly batch recognition with 6 nozzles are realized by the laser sensor, LNC60. Also, the placement tact is greatly improved compared with conventional machines which use 4 nozzles.

Unrivaled placement range from (01005) 0402 to 33.5mm square components
The LNC60 brings a new concept in laser centering to the market. This sensor has the unique ability to center components from (01005) 0402 to 33.5mm square parts. From ultra-small, ultra-thin, chip-shaped parts to small QFP, CSP, BGA, a wide range of parts can be mounted by the laser recognition system at high-speed and with high-accuracy.

A New Concept in Component Centering that is Capable of On-the-Fly Centering of 6 Components Simultaneously.

Tangential Line Centering™ achieves both a wider component range and higher accuracy all at the same time. The LNC60 accurately measures the component’s center, dimensions, and angular correction all in a single sweep. The optical design has been simplified to give higher reliability in a thinner and lighter package.

Component Check Function Improves Placement Reliability
Since the laser is mounted on the head, it can be used to monitor the presence of components the entire time from pick to placement. This is difficult to accomplish with vacuum detection only. The placement reliability is also improved because the release of the component is confirmed after placement.

Equipped with Standard Features that Support Diverse Manufacturing Requirements

Fast and Easy Setup, Low Defect Ratio
Auto Teaching of Pick Position
Auto teaching of pick position reduces changeover time and mis-picks.

HMS (Height Measurement System)
The HMS is used to quickly and accurately measure the component pick height. A laser sensor measures the distance instantly without any physical contact.

Fiducial Recognition
The OCC lighting system supports a wide variety of board materials including FPC (Flexible Printed Circuit board). Programmed brightness and directional lighting improves fiducial recognition.

Camera Bad Mark Detection
Bad mark detection is performed using the machine’s standard downward looking camera (also used for fiducials and teaching), which accurately detects a wide range of marks on various substrates, including flex circuits.

Function to Support Operators
This function assists operators in the preparation for new production. By simply checking each set up menu from “1 - Automatic Width Adjustment” to “8 - Production Program Check”, an operator can see the set up state of operation.

Simplified Programming
Ease-of-Operation Improved by Automatic Component Measurement
Component data can be programmed just by typing approximate dimensions, type and packaging information. Accurate dimensions, number of leads and lead pitch are measured and programmed by the machine automatically.

Electronic Tape Feeders - ETF Series
High Precision, High Quality

Simple Switch of Feed Pitch
Just pressing a button can switch feeding pitch.

Status is Displayed with Seven Segment LED
Before production, electronic feeders communicate with the main unit to verify the consistency with the production program: type of feeder and feed pitch. Should there be any discrepancy, LED display flashes on and off. LED display also alerts the operator to running out of components and wrong feeder position. During the machine operation LED display shows its feeder position.

Automatic Correction of Pick Position
The variance of the position from the center of each component is detected by the machine head when centering. This information is transmitted to each electronic feeder so that each electronic feeder automatically adjusts feeding for more stable pick position and for more chance of simultaneous pick.
Wide Range of Supportive Parts
Enabling You to Build Highly Operational Production Lines

FX-3 can widely recognize and place angular parts ranging from 0402 to 33.5mm. By combining it with the High-Speed Flexible Mounter KE-3020, placement parts are effectively sorted and highly operational production lines can be built.

Mechanical Feeders
• Tape Feeders
• Stick Feeders
• Bulk Feeders
• ATF (Splicing tape feeder)

Tray Feeding Devices
Matrix Tray Server
Rear Type TR-5DNR
Side Type TR-6DNR

Dual Tray Server (Rear Type)
TR-15SNR

Software
Floor Productivity Improvement Support System

IS raises production preparation, scheduling, quality and monitoring to a new level by bringing together several related functions into one comprehensive software package. IS gives managers, supervisors, and engineers the tools they need to run the most efficient production possible, thus reducing cost and improving productivity. Various tools allow workers at different levels to perform the tasks they need within a single software package.

System overview
IS is comprised of five software functions within a single application. A client-server architecture connects the IS server to clients throughout the factory via Ethernet for factory wide control.

Consolidated management of information Sharing information stored in the server. Prevention of defects caused by inaccurate communication. Security by registration allows operation privileges to be specified for each user group.

Variable data format Production files are saved in an open XML format for easy editing. Data can be transferred easily to other applications.

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Compatibility
Reduced Costs by Maintaining Compatibility

Many parts and accessories are compatible between the KE-3020 and other Juki placement machines.

*Please ask for details.

Options

High Quality
• FCS (Flex Calibration System)
JUKI’s highly regarded easy maintenance just got even easier! The optional FCS calibration jig is a simple to use system to re-calibrate placement accuracy. The machine automatically picks and places jig components, then measures the error and adjusts all necessary calibrations (optional).

Fast Setup and Changeover
• Feeder Position Indicator
LEDs on the feeder bank indicate which feeder needs to be replaced or which feeder has an alarm, indicate location of feeders to be set during changeover, and help simplify feeder setup.

• IC Collection Belt
A conveyor belt provides a safe way to handle valuable rejected components. Components gradually index away from the machine and the operator is notified when the belt is full.

Software
Intelligent Shop Floor Solutions

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