### Specifications

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Board size</td>
<td>M size (300x250mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>L size (410x350mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>L-wide size (500x400mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>E size (500x400mm)</td>
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</tr>
<tr>
<td></td>
<td>E-wide size (610x510mm)</td>
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</tr>
<tr>
<td></td>
<td>6mm</td>
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<tr>
<td>Component height</td>
<td>1.2mm</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>2.0mm</td>
<td>C</td>
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<tr>
<td></td>
<td>2.5mm</td>
<td>C</td>
</tr>
<tr>
<td>Component size</td>
<td>Laser recognition</td>
<td>0.402 (30.005)&lt;83.5mm</td>
</tr>
<tr>
<td></td>
<td>Vision recognition</td>
<td>Standard camera</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.5mm ~ 83.5mm or 50 ~ 150mm</td>
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<tr>
<td>Placement speed</td>
<td>Chip</td>
<td>0.165Sec/chip(23,300CPH)</td>
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<tr>
<td></td>
<td>KIC</td>
<td>16,300CPH</td>
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<tr>
<td></td>
<td></td>
<td>4.000CPH</td>
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<tr>
<td>Placement accuracy</td>
<td>Laser recognition</td>
<td>±0.05mm</td>
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<tr>
<td></td>
<td>Vision recognition</td>
<td>±0.04mm</td>
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<tr>
<td>Power supply</td>
<td>200 to 410 VAC - 3-phase</td>
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<td>Apparent power</td>
<td>3kVA</td>
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<tr>
<td>Operating air pressure</td>
<td>0.5±0.05Mpa</td>
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<tr>
<td>Air consumption</td>
<td>345L/min (Std: Vacuum Pump 50L/min)</td>
<td>403L/min (Std: Vacuum Pump 50L/min)</td>
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<tr>
<td>Machine dimensions</td>
<td>M size (W×D×H)</td>
<td>1,400x1,300x1,455mm</td>
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<tr>
<td></td>
<td>L size</td>
<td>1,500x1,500x1,455mm</td>
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<tr>
<td></td>
<td>E size</td>
<td>1,730x1,600x1,455mm</td>
</tr>
<tr>
<td>Mass (approximately)</td>
<td>M size</td>
<td>1,550kg</td>
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<td></td>
<td>L size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E size</td>
<td></td>
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</table>

**Please refer to the product specifications for details.**

- **M size**: 330×250mm
- **L size**: 410×360mm
- **L-Wide size**: 510×360mm (option)
- **E size**: 510×460mm

**Dimensions of machine described are for conveyor height 900mm.**

**When using MNVC.**

**When using both high-resolution camera and MNVC.**

**When using high-resolution camera.**

**Effective tact**: The IC placement speed denotes an estimated value obtained under the machine places 36 QFP (100 pins or more) or BGA components (256 balls or more) on a M-size board.

**Estimated value when using MNVC (option) and picking up components simultaneous with all nozzles.**

**Display is not included in height.**

**Effective tact**: 

- **KE-2070**: When using both high-resolution camera and MNVC. (option)
- **KE-2080**: When using high-resolution camera. (option)

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**Effective tact**: 

- **KE-2070**: When using both high-resolution camera and MNVC. (option)
- **KE-2080**: When using high-resolution camera. (option)
High reliability platform combined with high speed.

JUKI, pioneer of “modular” introduces
Ultra flexible mounters for today’s advanced production requirements

KE-2070 and KE-2080
The KE series meets the needs of a wide variety of applications with the highest performance.
High-speed, high-accuracy component centering using unique laser technology and powerful vision processing.

High area productivity and wide component range

New laser sensor: LNC60

A 23% improvement in throughput in the same footprint
The new LNC60 laser head is capable of picking and centering 6 components simultaneously. It can reach speeds of up to 18,300 CPH (IPC-9850), a 23% improvement over the previous generation. A variety of different nozzles can be attached at the same time, decreasing the nozzle change time. With the optional MNVC (multi-nozzle vision centering), the throughput for high accuracy devices is increased a remarkable 40%. And all of these features are found in a remarkably compact machine for unparalleled productivity.

Unrivaled placement range from 0402 (01005) 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 0402 (01005) 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 laser 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.

Incomparable stability created by advanced basic design

Ultra-rigid frame
A high-rigidity frame made by cast metal molding integrates the Y axis frame. It has excellent anti-vibration characteristics that support high-speed operation.

Dual XY drive system & independently driven heads
X-Y drive system features JUKI’s original “Full closed loop control” using AC motors and magnetic linear encoders. Dual motor drive of both X and Y achieves high-speed, and highly reliable placements unaffected by dust and temperature variations. Independent Z and U motors improve accuracy and robustness.

The KE series meets the needs of a wide variety of applications with the highest performance.
High-speed, high-accuracy component centering using unique laser technology and powerful vision processing.

Advanced functionality
Component density

The KE series meets the needs of a wide variety of applications with the highest performance.
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Ultra-flexible performance assures the best return on investment for any application from high-speed, high-accuracy mounting of very small parts to handling of odd-shaped parts. This mounter supports a wide variety of component types, each designed for high versatility and flexibility. High-precision image recognition placement of an IC component realizes superior versatility. The multi-nozzle laser head recognizes a component from 0402 (01005) to 33.5mm square components with highly precise image recognition. Placement accuracy is maintained within ±50µm (Cpk ≥ 1) even 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.

High-accuracy technology for "ultra-small" 0402 (01005) chip

Accurate
Highly reliable head unit and high-resolution axis control
The head unit has a laser sensor and control system for Z and \( \theta \) motors designed for efficiency and ease of maintenance. High-speed serial communication is used for data transfer. The simple design reduces the number of cables, even with the increased number of nozzles, and increases reliability. Improvement on all axes results in more accurate placements, time after time. The KE-2070 and KE-2080 feature 1 \( \mu \)m linear encoders on the X and Y axes. New encoders employed for the Z and \( \theta \) axes have a resolution of 280,000 pulses per revolution, a significant improvement in precision. These enhancements combined result in an improvement of the placement accuracy to ±0.5µm (Cpk ≥ 1).

High quality

No-blow placement technology
JUKI’s original vacuum self-calibration function eliminates the need for a vacuum “blow-off” during placement, which can disturb neighboring components or solder pastes.

Highly versatile vision system for a wide range of components

Flexible
Vision centering technology
Centering methods can be selected based on component type, shape, and material. Laser centering is used for high-speed placement of smaller components. Vision is used when head 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.

General vision

General vision function is used to support a wide variety of today’s unusual vision centered components. After programming is complete, the data can be verified by picking and test centering a component.

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. (Option)

MNVC is also available on the KE-2070.

User-friendly design

Ease of operation
Graphical user interface
Easy to use and easy to learn programming and operation makes the KE series a good choice for new or experienced operators. Add the optional touch panel or rear side operation panel for even greater convenience.

Easy maintenance

New head unit design
The head unit is designed specifically for easy maintenance. Vacuum filters have been moved for better access and require no adjustments or calibrations after replacement.

Independent \( Z / \theta \) control
Each nozzle has independent \( Z \) and \( \theta \) motors for high reliability and high accuracy. Precise control of each nozzle is possible without affecting components on other nozzles.

No-blow placement technology
JUKI’s original vacuum self-calibration function eliminates the need for a vacuum “blow-off” during placement, which can disturb neighboring components or solder pastes.

High density placement without “blow-off” Possible effects of “blow-off”
JUKI original technology for high-density placement

Laser centering technology
- High accuracy, high-speed mounting
- High reliability
- Centering errors prevented by self check

A high resolution laser is mounted on the head to center components in all directions including angle. Centering is done on-the-fly, allowing high speed placement of components from small chips to SOPs.

Laser contamination is checked prior to the production. If contamination is detected, an alarm is given to prevent centering errors.

Adaptable centering
Centering accommodates component variations

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.

Simplified data entry
Ease-of-use improved by automatic component measurement

Component data can be completed entering just approximate dimensions, type and packaging information. The exact dimensions and lead count / pitch are measured by the machine and automatically entered into the component data.

Component check function improves placement reliability

Component data is updated after automatic measurement.

JUKI software supports expandability and productivity at upper level

Advanced features for increasingly sophisticated and diversified applications
- High quality
- Fast and easy setup, Low defect ratio
- Flexible
- Maximum throughput
- High density placements

IS server
- IS server
- IS server

Software
- Intelligent Shopfloor Solutions
-Floor productivity improvement support system

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.

JUKI will continue from now on to evolve to be Easier, More Economical and More Expansive.

3E EVOLUTION

JUKI introduced the 3E Modular Concept in 1993. JUKI will continue from now on to evolve to be Easier, More Economical and More Expansive.

3E EVOLUTION
- Easy to use
- Economical
- Expandable

Evolution
- Evolving into even more attractive products.
- Evolving further for sales and services.
- Aiming to achieve even more enhanced customer satisfaction.
- Together with our customers, we will continue evolving even further.

Software
- IS
- HLC (Host Line Computer)
- EPU (EPU series)
- FLEXLINE CAD

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.

Camera Bad Mark Detection

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

Simultaneous Pick Priority Mode

Users can now select the best pick mode to suit their production requirements. For the maximum possible throughput, simultaneous pick priority mode will try to pick as many components as possible in a single pick sequence.

High density placements

For high density component placement, pick position priority always picks components at the tightest pick location.

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.

IS leverages 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.

HLC is the line control software that makes the modular concept work. On HLC a line, considering each machine’s capabilities as it does. The result will be a file optimized and balanced over the entire line.

EPU is off-line programming software designed for a single machine. Using EPU software, the best feeder layout and optimal placement order can be achieved with the highest production efficiency. Like the FX series and the KE-2000 series, it has a component database to further decrease programming time.
High value added system aiming at the quality management which is one step ahead of today

Placement Monitor (option)

The "Eyes" of the Mounting Process
By attaching newly developed, ultra-small cameras directly to the placement machine head, imaging and storage of the pickup and placement of each component can now be carried out in real time. When a defect occurs, cause analysis can be carried out visually by the operator based on the stored image data.

Camera: 12" touch sensitive color LCD (includes monitor, keyboard, and mouse)
Software: Standard for use with placement monitor
Mounter: Ultra-small Cameras × 6
PC for use with the placement monitor

Longer sized PWB in X axis (option)
Capable of placing a longer board up to 800 mm x 360 mm with KE2070/80L or L-Wide, or up to 800mm x 460 mm with KE2070/80E by automatically indexing the board twice. As a result, the production of a long PWB board twice.

Solder Recognition Lighting (option)
The solder print can be recognized as BOC mark when there is no BOC mark on the PWB or the circuit. When the twice-fed long PWB is transported, the solder print can be recognized as BOC mark when there is no BOC mark on the PWB or the circuit. When the twice-fed long PWB is transported, the solder print can be recognized as BOC mark when there is no BOC mark on the PWB or the circuit.

Component Quantity Control (option)
The list of the product (PWB) where the components (LED components etc.) are placed is managed. When a PWB is loaded, it is checked whether components required to complete a production of the PWB remain in the feeders with components in different lots not being mixed in a PWB. If components are not enough, a warning is displayed before the placement starts.

Cost saving
Production efficiency is improved by affluent product variation

Matrix Tray Changers and Servers

Matrix Tray Server (P1 Type)
TR-5SNR, TR-5DNR

Matrix Tray Change (Side Type)
TR-5SNR, TR-5DNR

Dual Tray Server (P1 Type)
TR-2070

Matrix Tray Holder

Feeder Calibration Jig with Monitor

ATF (Splicing tape feeder)

Splicing tape feeder ATF is featuring tape splicing for easy component replenishment during production. Like previous generations, the ATF is fully backwards compatible with all KE and FX series models.

Feeder Calibration Jig

Recognition system
MNVC

Operation system
Rear-side Operation Unit

Inspection function
Coplanarity Sensor

Conveyor
Automatic Board Width Adjustment

Electrical protection
Ground Fault Interrupter

Others

Software

Component handling and feeders

Matrix Tray Server TR-6

Component Quantity Control

KE-2070 KE-2080

Option list

<table>
<thead>
<tr>
<th>Recognition system</th>
<th>MNVC</th>
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<tbody>
<tr>
<td>Operation system</td>
<td>Rear-side Operation Unit</td>
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<tr>
<td>Inspection function</td>
<td>Coplanarity Sensor</td>
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<td>Conveyor</td>
<td>Automatic Board Width Adjustment</td>
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<tr>
<td>Electrical protection</td>
<td>Ground Fault Interrupter</td>
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<td>Others</td>
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<tr>
<td>Software</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Component handling and feeders</td>
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</tbody>
</table>

For details of feeders, matrix trays, changers, servers, please refer to our catalogue of "Feeder series" and "TR-series".

Option

± Some size is not applicable.