

High-speed modular mounter

FX-3

JUKI®

*NOW Supporting Electronic & Mechanical
Tape Feeders and 22" x 24" Board Size*



LOWEST COST OF OWNERSHIP

High-speed Modular Mounter

FX-3

NOW Supporting Electronic & Mechanical Tape Feeders and 22" x 24" Board Size

From the pioneer of the modular assembly line comes the latest technology in high volume production at the lowest cost of ownership. Offering an interchangeable electronic and mechanical feeder solution combined with a new 22" x 24" board size, the continuously evolving FX-3 offers the utmost in flexibility, reliability, and ease of use for both high speed and high mix manufacturing environments.

- IPC9850 (chip): 60,000CPH*
 - Four multi-nozzle laser heads (24 total nozzles)
 - Components from (01005) 0402 to 33.5mm square
 - Feeder inputs: Max. 120 using 8mm Tape feeders
- *Actual throughput may vary.

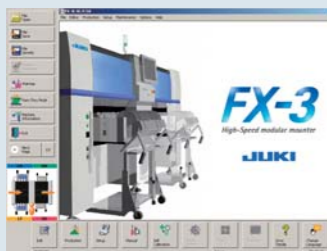
User-friendly Operation

15-inch Touch-panel Color LCD Display

- ◆ Easy teaching realized by only touching the pointer you want to move while looking at the OCC image.



- ◆ The highly visual touch panel color monitor with excellent operability is provided as standard design.

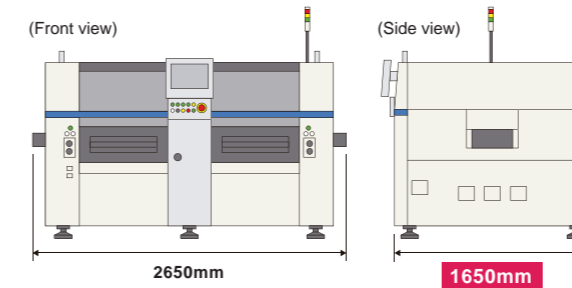


- ◆ The language can be changed by one-touch even while operating or displaying the error screen.



High-speed Placement: Supporting Customer Needs

High Volume with a Minimal Footprint



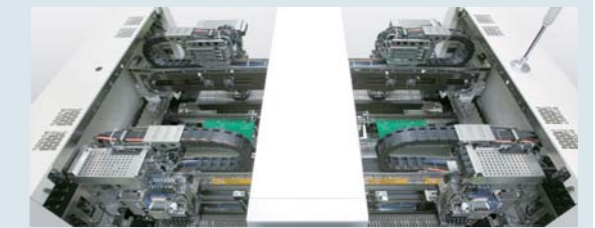
Placement Speed

60,000_{CPH}
(IPC9850)

High-speed Technology

1 Two Stations - 4 Beams - 4 Head Configuration

The FX-3 can reach placement rates of up to 60,000cpH (IPC9850) using four independent beams, each with a 6 nozzle placement head at two placement stations.



2 X-Y Linear Servomotors

Linear servomotors are used for all of the X-Y axes. Best-in-class performance is achieved by using high-accuracy, incredibly responsive cutting-edge axis control technology.



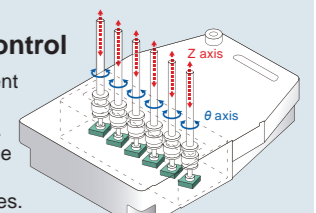
3 On-the-fly Simultaneous Centering using the 6-nozzle Multi-laser Head

Up to six components can be picked and then centered simultaneously using high-resolution on-the-fly laser centering for high-speed placement.



Independent Z / θ control

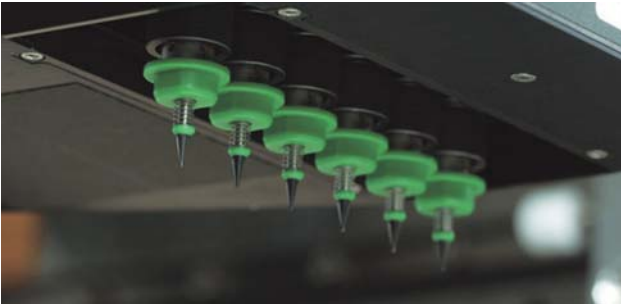
Each nozzle has independent Z and θ motors for high reliability and high accuracy. Precise control of each nozzle is possible without affecting components on other nozzles.



Note: The right station parts shown as an enhanced view.

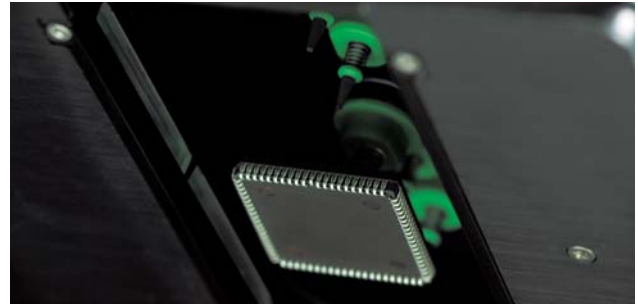
Laser Centering Technology / JUKI's original technologies realize high-speed and high-quality placement.

Laser Sensor: LNC60



Chip placement tact is improved by 20% compared with conventional machines

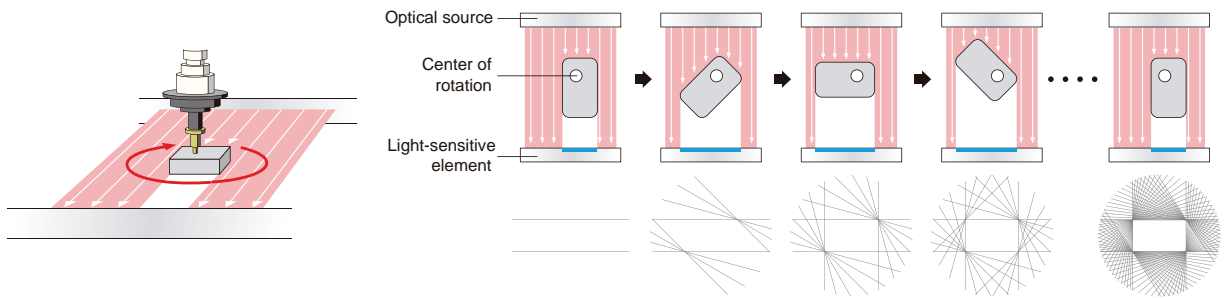
Simultaneous picking and on-the-fly batch recognition with 6 nozzles are realized by the laser sensor, LNC60. Also, the placement tact is improved by 20% compared with conventional machines which use 4 nozzles.



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.

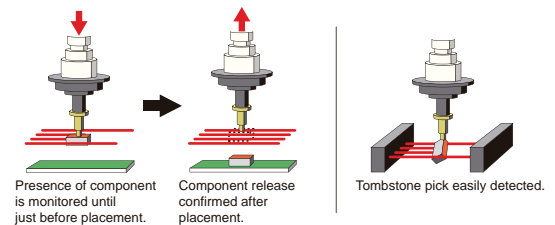


Tangential Line Centering™ achieves both a wider component range and higher accuracy all at the same time. The LNC60 accurately measures the component's center, dimensions, and angular correction all in a single sweep. The optical design has been simplified to give higher reliability in a thinner and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

Low Loss Ratio

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.

Flexible

Fiducial Recognition



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

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

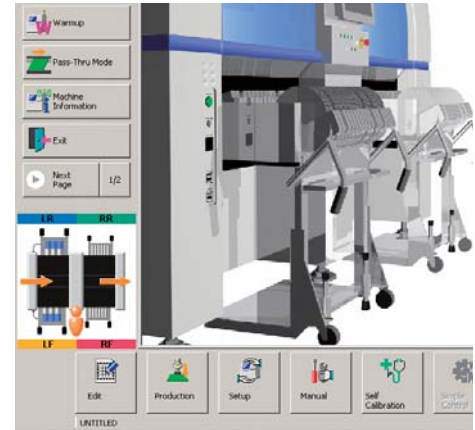


Bad mark detection is performed using the machine's standard downward looking camera (also used for fiducials and teaching), which accurately detects a wide range of marks on various substrates, including flex circuits.

Electronic & Mechanical Tape Feeders can be Switched by the Feeder Trolley

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.

When feeder trolleys are set to four feeder banks, the mounter automatically recognizes whether electronic tape feeders or mechanical tape feeders are set.



Electronic Tape Feeders - ETF Series / High Precision, High Quality



A motor driven electronic feeder capable of feeding a component steadily and fast.

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.



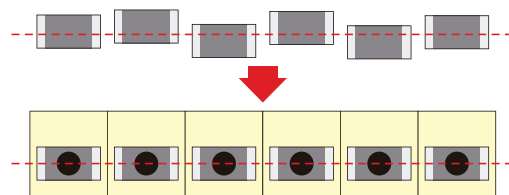
Simple Switch of Feed Pitch

Just pressing a button can switch feeding pitch.



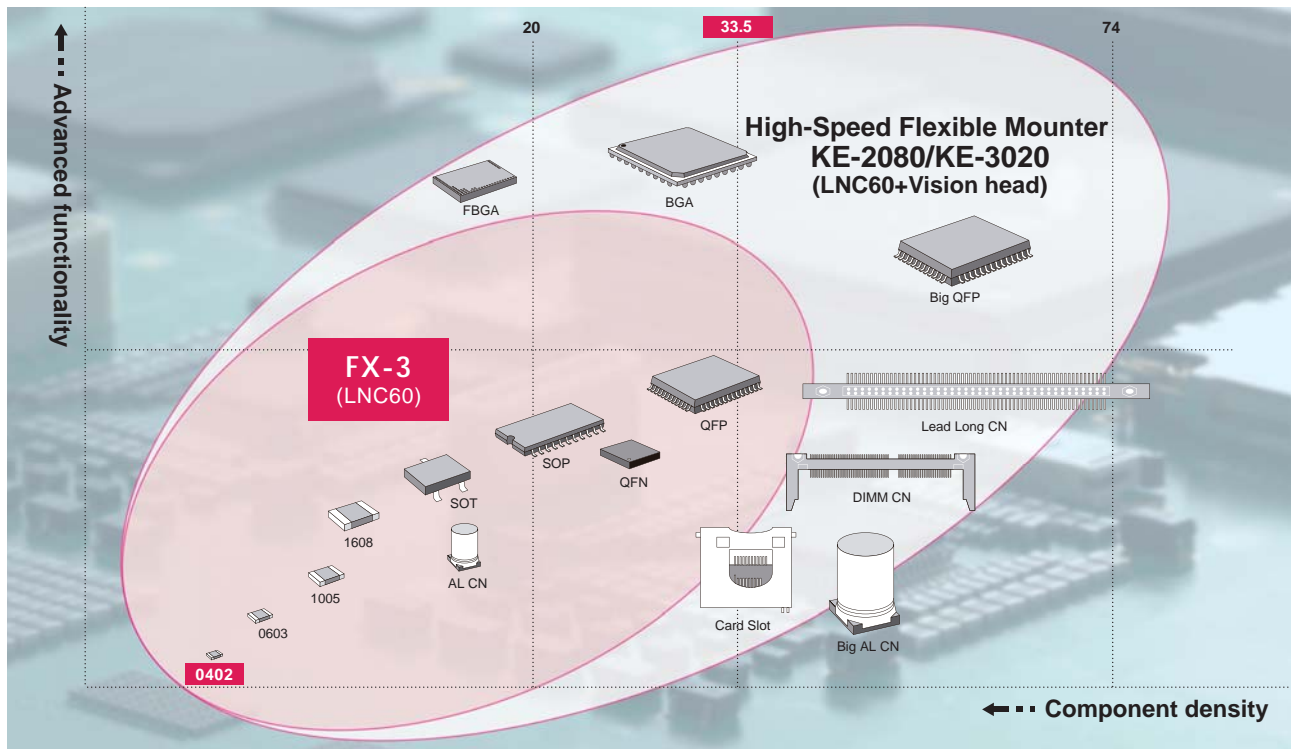
Automatic Correction of Pick Position

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-2080/KE-3020, placement parts are effectively sorted and highly operational production lines can be built.



Mechanical Feeders

• Tape Feeders



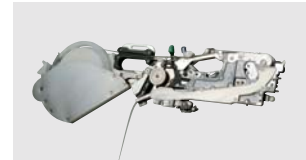
• Stick Feeders



• Bulk Feeders



• ATF (Splicing tape feeder)



Easy to Operate / Ultimate Pursuit of Easy Operation

Function to Support Operators

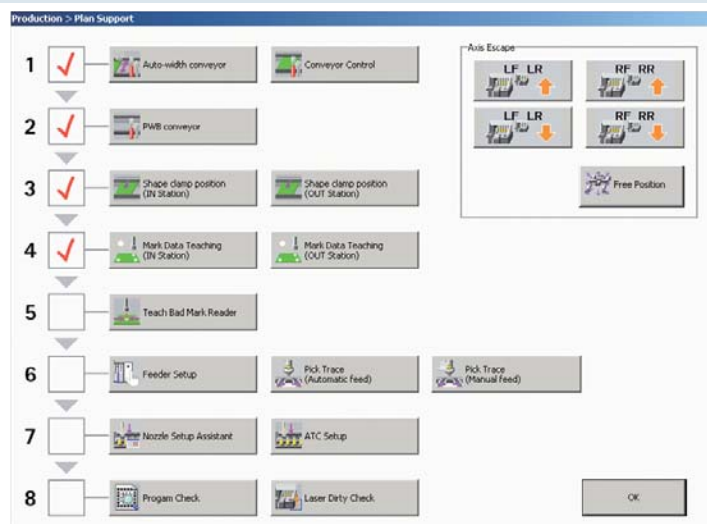
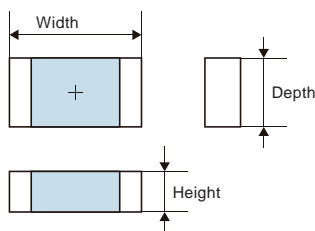
This function assists operators in the preparation for new production. By simply checking each set up menu from "1 - Automatic Width Adjustment" to "8 - Production Program Check", an operator can see the set up state of operation.

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.

Component Dimensions:



Compatibility / Reduced Costs by Maintaining Compatibility

Many parts and accessories are compatible between the FX-3 and other Juki placement machines.

*Please ask for details.

Nozzles



Mechanical Feeders



IS – Intelligent Shop Floor Solutions Software

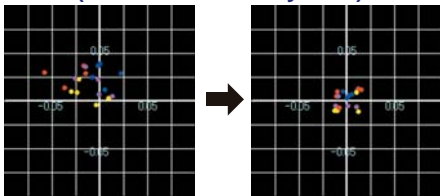


Wide Variety of Options

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)

• Feeder Trolley

Industry leading design for easy replacement of an entire bank of feeders in seconds. Single switch release / lock and no feeder reteaching required.



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.



• Component Verification System (CVS)

Measures electrical resistance, capacitance or polarity to verify components have been loaded correctly on the machine.



• Bad Mark Reader

Detects "bad circuit" marks on matrix type boards and skips placement of parts on all defective circuits, preventing waste.

• SOT Direction Check Function

When the 3-terminal SOT is placed on the SOT direction check table, the parts feeding angle is checked by the OCC.

Software

IS Floor Productivity Improvement Support System

Intelligent Shopfloor Solutions

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.

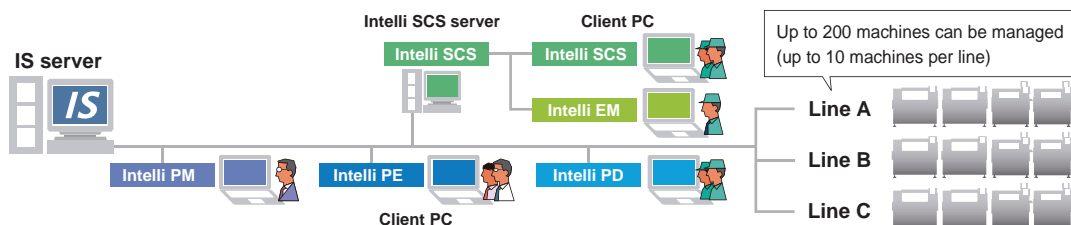
System overview

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 — User registration allows operation privileges to be specified for each user group.

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



Specifications

Item	Model	High-speed modular mounter FX-3
Board size	L size (410x360mm)	○
	L-Wide size (510x360mm) ^{*1}	○
	XL size(610×560mm)	○
Component height	6mm	○
Component size	Laser recognition	(01005) 0402~33.5mm
Placement speed (chip)	IPC9850	60,000CPH ³
Placement accuracy	Laser recognition	±50μm (Cpk≥1)
Feeder inputs		Max. 120 on 8mm T/F
Power supply		200 to 415 VAC, 3-phase
Apparent power		7.6kVA ⁴ / 9kVA ⁵
Operating air pressure		0.5±0.05Mpa
Air consumption		Max.150L/min
Machine Dimensions (WxDxH ²)	L size	2,650 X 1,650 X 1,530mm
	L-Wide size ^{*1}	2,880 X 1,650 X 1,530mm
	XL size	2,880 X 1,850 X 1,530mm
Mass (approximately)	L, L-Wide size	3,500kg
	XL size	3,750kg

*1: L-Wide size is optional

*2: Height described is for conveyor height 900mm

*3: This speed does not apply to XL board size.

*4: With mechanical feeder bank

*5: With electric feeder bank

Options

Recognition system	Bad Mark Reader
Operation system	Rear-side Operation Unit / Handheld Operating Device (HOD)
Inspection function	Component Verification System (CVS) / SOT Direction Check Function
Others	FCS Calibration Jig / Feeder Position Indicator / Pin Reference
Software	IS / HLC ^{*1} / Board Viewer / EPU / Flexline CAD / SCS ^{*1}
Component handing and feeders	Mechanical Feeder Trolley / Mechanical Tape Feeder 8~56mm / Mechanical Adhesive Tape Feeder 32mm /
	Mechanical Stick Feeder / Mechanical Bulk Feeder / IC Collection Belt / Trash Box / Tape Reel Base /
	Connector Bracket / Electric Tape Feeder 8~56mm / Electric Feeder Trolley

*1: Electric Feeder Specifications are unsupported.

*Please refer to the product specifications for details.

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JUKI CORPORATION HEAD OFFICE

Juki Corporation operates an environmental management system to promote and conduct the following as the company engages in the research, development, design, sales, distribution, and maintenance services of industrial sewing machines and industrial robots, etc. and the research, development and design of household sewing machines, and in the provision of sales and maintenance services for data entry systems:

- (1) The development of products and engineering processes, which are safe to the environment
- (2) Green procurement and green purchasing
- (3) Energy conservation (reduction in carbon-dioxide emissions)
- (4) Resource saving (reduction of papers purchased, etc.)
- (5) Reduction and recycling of waste
- (6) Improvement of logistics efficiency (modal shift and improvement of packaging, packing, etc.)

<http://www.juki.co.jp>

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