

i-PULSE

Miex

MOUNTING CENTER



M6ex

Cost-effective Mounting Center

The M6ex is the latest evolution of the current M-Series. While maintaining the Scan Camera for zero-time-lost processing, the new, faster TOTAL MACHINE SYSTEM handles 01005, allows faster placement speeds and more stable, trouble-free recognition of all components.

The M6ex is the ultimate cost-effective mounting center.

IPC9850 Standard



3 New Features

- Scan camera covering a wider range of components
- Rear fixed cameras covering a wider range of components with faster recognition speed
- Faster placement speed for chips and large IC components




Max. CHIP placement speed	0.14 sec/CHIP
Max. TSOP placement speed	0.38 sec/TSOP
Max. QFP placement speed	0.65 sec/QFP
Feeder inputs	120 lanes (8mm Tape conversion)
CHIP placement accuracy($\mu+3\sigma$)	50 μm
QFP placement accuracy($\mu+3\sigma$)	35 μm
Component height	15 mm

 6-axis Full Servo

 120 Feeder inputs

 Fast vision processing

 Two-way On-the-fly Scanning

 0201 as standard, 01005 as option

 Intelligent Feeder System



6-axis Full Servo Head

Z-axis 6, Rotation 2, Scan 1 total 9-servo head.

The 6-head independent Z-axis drive provides free control of placement height and speed. High precision placement is also assured with the P nozzles.



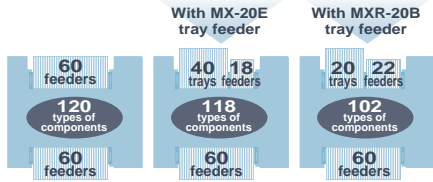
Head pitch 30mm



Feeder capacity

120

120 Feeder inputs (8mm Tape conversion)



Two-way On-the-fly Scanning

On-the-fly scanning, the specialty of i-PULSE, realizes high-speed placement.

The standard on-the-fly scan camera, the specialty of i-PULSE, provides high-speed vision processing for 0201 chips to maximum 20mm square components including BGA and CSP while the head travels from the pickup point to the placement point. The two-way scanning method assures high placement speed. The drawback check can also be done with on-the-fly vision system.



Fixed camera with non-stop recognition and coaxial illumination

(Option)

Tact time 0.65sec/QFP100

Placement accuracy +/- 0.035mm

Non-stop recognition system newly developed remarkably improves placement speed. Coaxial illumination system realizes more stable recognition of mirror surface components.



Basic Optimizer on Machine

Machine software is equipped with the following functions for on-the-machine use.

Function

Basic optimizer

Tact simulator

Basic CAD Converter



Intelligent Feeder System (Option)

A glance/ Colors/ Instantly can tell!!

Zero defect, Zero inventory

Component Setup Verifier

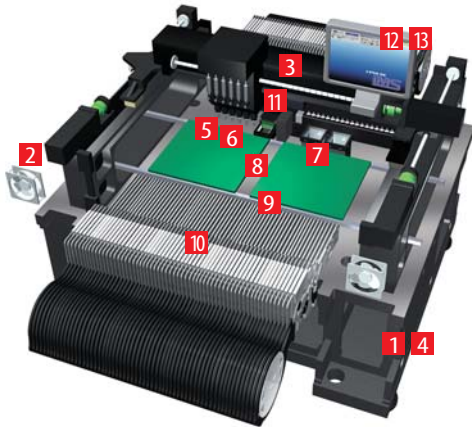
Avoids wrong feeder setting and assists inexperienced workers to set feeders correctly

Feeder Relocatability

Regardless of the actual feeder location, the machine automatically recognizes each feeder and component, contributing to a reduction of changeover time.

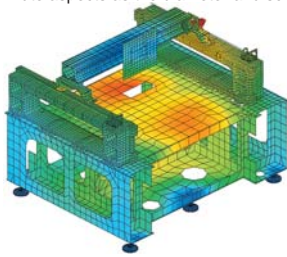


High specifications support speed, accuracy, and reliability.



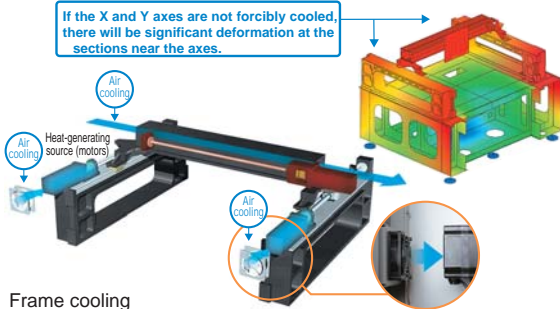
1 Rigid machine frame of low vibration

The M6ex is made with a monocoque frame of welded iron plates designed by using structural analysis. High rigidity is factored into the design in such minute aspects as the diameter and screw pitch for leveling bolts.



2 Frame cooling

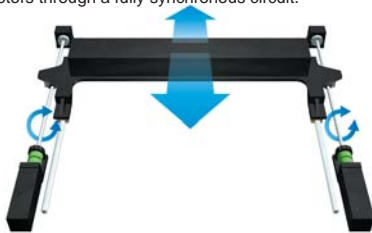
Forced air cooling is employed in X and Y axes in consideration of heat deformation.



Frame cooling
World's first XY axes forced cooling for mid-range machines

3 Dual drive system

To reduce the residual vibration when stopping at pickup and placement points, a dual drive system is introduced in Y-axis which controls a pair of servo motors through a fully synchronous circuit.



Dual drive
Controlling two servo motors through a fully synchronous circuit

4 Assembling precision in micron order

Skilled workers realize assembling precision in micron order by means of scraping and lapping techniques. There is no need of shim adjustment.



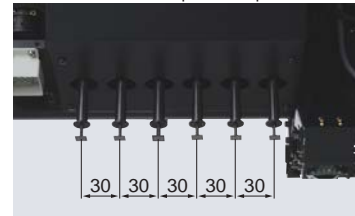
Scraping



Lapping

5 Head unit holding ultra-small chips to 20mm square components at the same time

The market proven 6-axis full servo head unit is employed. 30mm nozzle pitch layout enables all 6 heads to hold 20mm square components at the same time.



6 Component height 15mm

Maximum 15mm height component can be handled.



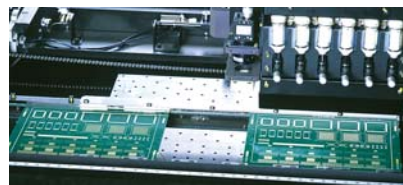
7 Newly developed fixed cameras (Option)

Components larger than 20mm square are handled by the newly developed fixed camera at high speed and high accuracy. Maximum 2 units can be installed.



8 Minimum board transfer time (Option)

The optional buffer stopper can change its position according to the board size to minimize board transfer time. (Not available when the Board Clamp Conveyor option is installed.)



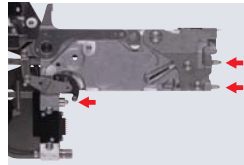
9 i-TERMINAL for Intelligent Feeder functions

Communication port for checking feeder presence or the intelligent feeder function (option).



10 Reliable feeder locating system

With 3-point locating pins and clamp lever system, feeders are firmly set on the feeder bank, realizing reliable and stable component pickups.

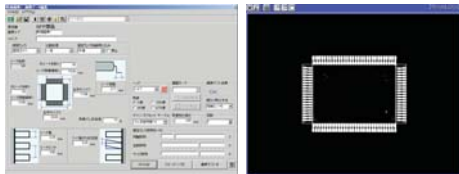


11 Drawback check

Drawback check is done by vision in addition to the conventional vacuum check. It is done by the scan camera while the heads are traveling back to the next pickup point. Effective for the 01005, 0201 and 0402 chips.

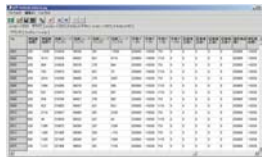
12 Automatic vision data creation

ADA (Automatic Data Acquisition) function is accommodated to create complicated vision data automatically.



12 Log file in hard disk

All machine actions are real-time logged in hard disk, allowing a step-by-step study of machine operation in service field.



12 Windows XP

Windows XP is installed as operating system. In addition to the multi-task and network abilities of usual Windows, multi-languages (Japanese, Chinese, Korean, and English) can be used in the OS.



13 Board Identification and Production Information Transfer Software (Option)

Production program can be switched over with an identification code put on the board. Also, the bad mark from the upstream can be transferred to the downstream. As it is not necessary to check the bad mark in the

QR Code Recognition Software to recognize QR code with the fiducial camera

Automatic Production Program Switchover Software to switch production program automatically with an identification code

Production Information Transfer Software to transfer production information from upstream to downstream

1 Board information recognition 2 Production information transfer 3 Production information transfer

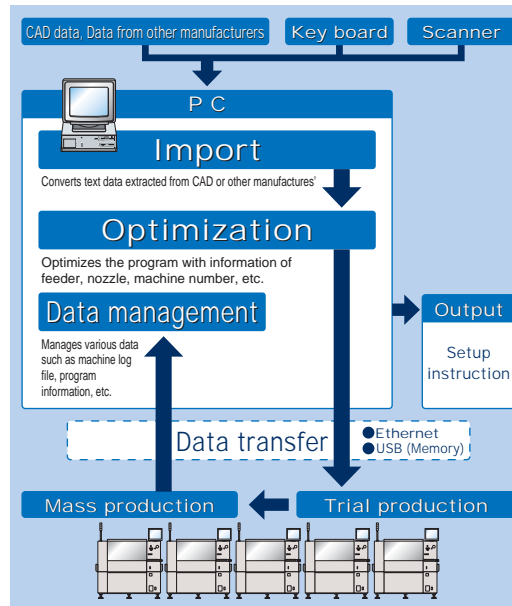
Recognition with fiducial camera
QR code / bad mark

Recognition with other reading systems
Conventional barcode reader applicable

Tact time improved

SOFTWARE OPTION Off-line programming system iOS II

Easily converts CAD or other manufacturers' data into the board data. And supports operators with creating placement program for optimum head movement and higher operation rate for the machine.



- Input of source data
 - CAD data (text data)
 - Data from other manufacturers (text data)
 - Keyboard
 - Scanner
- Interface
 - Ethernet (LAN)
 - USB (Memory)
- Operating system
 - Windows 2000/XP

Function	IP-14	Data edit & optimizing	Editing and optimizing programs Image teaching (scanner) Printing setup instruction Auto data download
	IP-11	Line balance & optimizing	Line balancing (max. 5 units)
	IP-12	Tact simulation	Tact simulation
	IP-16	Basic CAD converter	Import of basic information of components location
	IP-13	CAD converter	IP-16 + import of further information
	IP-15	Net management	Automatic data update between the machine and iOSII

OPTION

ANC

Simultaneous change of 6 nozzles available. Max. 20 nozzles can be installed.



Fixed Camera

NEW

Odd-form components such as 54mm square or maximum 80 x 34mm are recognized at high speed. The newly developed illumination system enables stable recognition of BGA, CSP and mirror surface components.



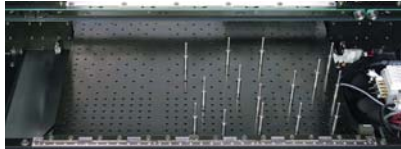
Laser Lead Coplanarity Sensor

Checks floating leads using a laser beam with high-speed.



Matrix Backup Clamp

Recommended for the board to be clamped at a high level of flatness. Magnet pin is also usable.



Extra Teach Camera EXC1

Teaching the pickup points which the standard board camera can not reach.



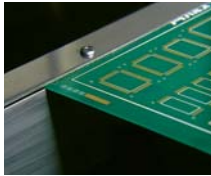
Feeder Setting Bench

A bench for setting reels on tape feeders.



Board Clamp Conveyor

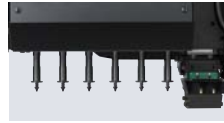
The board is firmly clamped with its edges from top and bottom.



01005 Recognition

NEW

01005 handling capability by on-the-fly scan camera, which covers maximum 12mm square components.



Feeder Bank Change

A trolley to change feeders of entire 60 lanes in a batch. CFB-3 includes auto offset function.



PCB Locating Pins

The fixed locating pin has a pin position fixed at 5mm from the board edge. The adjustable locating pin can adjust the pin location in Y direction to accommodate an irregular tooling-hole position.



Fixed pin

Adjustable pin

Light-weight Compact P Nozzles

The P nozzles provide stable placement accuracy. The built-in buffer spring for ultra-small chips reduces the shock load on the component.



Feeder Stocker PFS-3

The feeder stocker can store 120 8mm feeders. Can also check the feeder operation with the drive unit (option) installed.



Parts Feeders

Stable tape feeding by self-drive method.



Feeder models

Model		Component Carrier	Remarks
Standard	Intelligent		
	F2-82M Motor cam feeder	8mm tape	0402 (01005) 2mm index for 0603 (0201) 1005 (0402) } Common use
F1-82-0603	F2-82-0603	8mm tape	2mm index for 0603 (0201)
F1-82-1005	F2-82-1005	8mm tape	2mm index for 1005 (0402)
F1-84	F2-84	8mm tape	4mm index
F1-12	F2-12	12mm plastic tape	4-12mm index
F1-16	F2-16	16mm plastic tape	4-16mm index
F1-24	F2-24	24mm plastic tape	4-24mm index
F1-32	F2-32	32mm plastic tape	4-32mm index
F1-44	F2-44	44mm plastic tape	4-44mm index
F1-56	F2-56	56mm plastic tape	4-56mm index
PS-T1S		Stick (single)	Max. component W13xL19xT4.5mm
PS-T1M		Stick (single)	Max. component W31xL31xT4.5mm
PS-MS3		Stick (multi)	A number of sticks can be set.

F2-82M

Intelligent motor-cam feeder. Smooth yet stable placement of micro components



Tray Feeder

- MX-20E...20 pallets, 40 trays
- MXR-20B...20 pallets, 20 trays
- MX-ST2...1 pallet, 2 trays (manual slide)
- MX-RT1E...1 pallet, 2 trays (manual)



MX-ST2



MX-RT1E



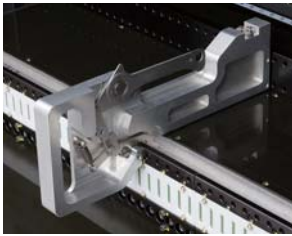
MXR-20B



MX-20E

Feeder Pickup Point Adjustment Jig

Jig for check and adjustment of feeder pickup point. The PCJ-1 can also be used on the feeder bank.



PCJ-1



FPJ-1

Tape Splicer

Non-stop reel replenishment by splicing tapes. (8mm paper tape)



Waste Tape Box

The waste tape box stores tapes discharged from feeders.



Standard Accessories and Options

	Description	Standard
	In-line 6-head	●
	Two-way scanning	●
	BGA/CSP scan recognition	●
	Board edge clamp	●
	ANC20	●
	Signal tower, 3 colors	●
	USB2.0 (2ports)	●
	ADA (Automatic Data Acquisition for vision data)	●
	PCA (Placement point Check and Adjustment by teach camera)	●
	APC (Automatic Pickup point Correction)	●
	Intelligent feeder bank	●
	15-inch LCD monitor	●
	Transport direction : Left to Right	●
	Conveyor reference : Front side	●
	Matrix backup clamp	●
	Basic CAD converter, Basic optimizer, Tact simulator	●
	0201 - 20mm sq. scan camera	○
	01005 - 12mm sq. scan camera	○
	Fixed camera FC05-3 for 0.5mm lead pitch, 0.4mm ball	○
	Fixed camera FC04-3 for 0.4mm lead pitch, 0.3mm ball	○
	Fixed camera FC03-3 for 0.3mm lead pitch, 0.25mm ball	○
	Extra teach camera EXC1	○
	Lead coplanarity sensor	○
	Magnet backup clamp	○
	Buffer stopper, input & output	○
	Conveyor extension 200mm, input	○
	Conveyor extension 200mm, output	○
	Fixed locating pin ϕ 3.0/3.5/4.0mm	○
	Adjustable locating pin ϕ 3.0/3.5/4.0mm	○
	Transport direction : Right to Left	○
	Conveyor reference : Rear side	○
	Board clamp conveyor 2	○
	Auto width adjusting conveyor	○
	Component Setup Verifier (Basic)	○
	Feeder Relocatability (Enhanced)	○
	Extra barcode reader	○
	QR Code Recognition	○
	Automatic Production Program Switchover	○
	Production Information Transfer	○
	Offline software iOSII (refer to another page)	○
Feeders	Feeder bank changer CFB-2	○
	Feeder bank changer CFB-3	○
	Feeder setting bench	○
	Tape splicer for 8mm paper tape	○
	Joint tape	○
	Reject conveyor RC-54	○
	Waste tape box TB-2A/5A/8	○
	Feeder pickup point adjustment jig FPJ-1 (includes PCJ-1, monitor)	○
	Set master PCJ-1	○
	Feeder stocker PFS-3	○
	No rear side feeder bank	○
	Tape feeder (refer to another page)	○
	Stick feeder (refer to another page)	○
	Tray feeder (refer to another page)	○
Others	Uninterrupted power supply UPS-3	○
	Rear side operation with LCD monitor	○
	Rear side operation	○
	Antistatic Acrylic Cover, full	○
	Antistatic Acrylic Cover, short	○
	FDD (USB connection)	○
	CE marking	○

● : Standard ○ : Option

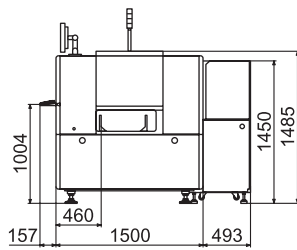
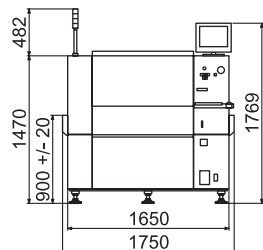
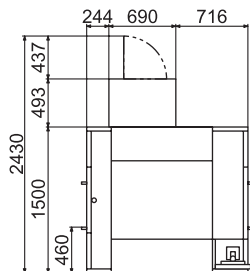
Specifications

Item	Specifications
Board size	L50 x W50mm - L460 x W410mm
Board thickness	0.5 - 2.0mm
Flow direction	Left-to-Right (Right-to-Left Option)
Conveyor speed	Max. 420mm/sec, soft stop function
Placement speed A (Note1)	0.14 sec/CHIP, 0.38 sec/TSOP32 (32pin)
Placement speed B (Note2)	0.65 sec/QFP (100pin)
Placement accuracy ($\mu + 3\sigma$)	CHIP ± 0.05 mm, QFP ± 0.035 mm
Placement angle	$\pm 180^\circ$, resolution 0.022°
6-head Z-axis control	AC Servo Motor, resolution 0.006mm
Component height	15mm (Preplaced components Max. 10.5mm)
Components applicable	01005 (option) - SOP, PLCC, QFP, BGA, CSP, connectors, odd-form components, etc
Component carriers	8-56mm tape, stick, tray
Drawback check	Vacuum check and vision check
Multi language display	Japanese, Chinese, Korean, and English
Board locating method	Board edge or tooling hole (option), front reference
Component types	120 types (8mm tape conversion)
Board transfer height	900 \pm 20mm
Dimensions, weight	L1,750 x D1,500 x H1, 485mm, approx. 1,800Kg
Power	3phase 200, 208, 220, 240, 380, 400, 415, 440V \pm 10% 50/60Hz
Power consumption, capacity	0.77kW (Max. power consumption) 2.01kVA (power capacity)
Air and consumption	0.5MPa or more, 69N ℓ /min A.N.R.

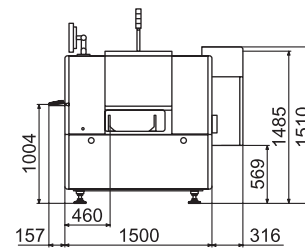
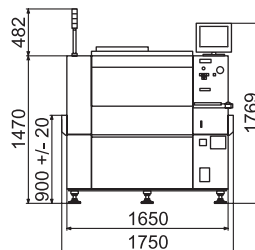
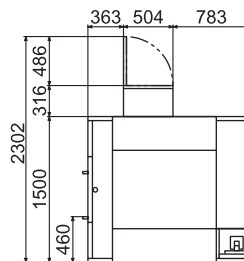
Note1 : Simultaneous pickup by 6 heads, individual placement, with scan camera, under optimum conditions.
 Note2 : Consecutive pickup by 6 heads, individual placement, with fixed camera, under optimum conditions.

External dimensions

M6ex (With MX-20E)



M6ex (With MXR-20B)



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● The products shown in the photographs in this catalog may differ slightly from the standard specifications.
 ● Specifications and appearance are subject to change without prior notice.