Model ID		NPM-W2					
Front head \ Rear head		Lightweight 16-nozzle head	12-nozzle head	Lightweight 8-nozzle head	3-nozzle head V2	Dispensing head	No head
Lightweight 16-nozzle head		NM-EJM7D				NM-EJM7D-MD	NM-EJM7D
12-nozzle head							
Lightweight 8-nozzle head							
3-nozzle head V2							
Dispensing head		NM-EJM7D-MD				———	NM-EJM7D-D
Inspection head		NM-EJM7D-MA					NM-EJM7D-A
No head		NM-EJM7D				NM-EJM7D-D	———
PCB dimensions	Single-lane *1	Batch mounting	L 50 mm × W 50 mm ～ L 750 mm × W 550 mm		2-positin mounting	L 50 mm × W 50 mm ～ L 350 mm × W 550 mm	
	Dual-lane *1	Dual transfer (Batch)	L 50 mm × W 50 mm ～ L 750 mm × W 260 mm		Dual transfer (2-positin)	L 50 mm × W 50 mm ～ L 350 mm × W 260 mm	
		Single transfer (Batch)	L 50 mm × W 50 mm ～ L 750 mm × W 510 mm		Single transfer (2-positin)	L 50 mm × W 50 mm ～ L 350 mm × W 510 mm	
Electric source		3-phase AC 200、220、380、400、420、480 V 2.8 kVA					
Pneumatic source *2		0.5 MPa、200 L /min (A.N.R.)					
Dimensions *2		W 1 280 mm *3 × D 2 332 mm *4 × H 1 444 mm *5					
Mass		2 470 kg (Only for main body:This differs depending on the option configuration.)					

Placement head	Lightweight 16-nozzle head (Per head)		12-nozzle head (Per head)		Lightweight 8-nozzle head (Per head)	3-nozzle head V2 (Per head)
	High production mode[ON]	High production mode[OFF]	High production mode[ON]	High production mode[OFF]		
Max. speed	38 500cph (0.094 s/ chip)	35 000cph (0.103 s/ chip)	32 250cph (0.112 s/ chip)	31 250cph (0.115 s/ chip)	20 800cph (0.173 s/ chip)	8 320cph (0.433 s/ chip) 6 500cph (0.554 s/ QFP)
Placement accuracy (Cpk≧1)	±40 μm / chip	±30 μm / chip (±25 μm / chip*6)	±40 μm / chip	±30 μm / chip	±30 μm/ chip ±30 μm/QFP □12 mm ～ □32 mm ±50 μm/QFP □12 mm Under	± 30 μm /QFP
Component dimensions (mm)	0402*7 chip ～ L 6 × W 6 × T 3	03015*7*8/0402*7 chip ～ L 6 × W 6 × T 3	0402*7 chip ～ L 12 × W 12 × T 6.5		0402*7 chip ～ L 32 × W 32 × T 12	0603 chip to L 150 × W 25 (diagonal 152) × T 30
Component supply: Taping	Tape : 4 / 8 / 12 / 16 / 24 / 32 / 44 / 56 mm				Tape : 4 to 56 mm	Tape : 4 to 56 / 72 / 88 / 104 mm
	Max.120(Tape: 4、8 mm)				Front/rear feeder cart specifications : Max.120 (Tape width and feeder are subject to the conditions on the left) Single tray specifications : Max.86 (Tape width and feeder are subject to the conditions on the left) Twin tray specifications : Max.60 (Tape width and feeder are subject to the conditions on the left)	
Component supply: Stick	———				Front/rear feeder cart specifications : Max.30 (Single stick feeder) Single tray specifications : Max.21 (Single stick feeder) Twin tray specifications : Max.15 (Single stick feeder)	
Component supply: Tray	———				Single tray specifications : Max.20 Twin tray specifications : Max.40	

Dispensing head	Dot dispensing	Draw dispensing
Dispensing speed	0.16 s/dot (Condition : XY=10 mm, Z=less than 4 mm movement, No θ rotation)	4.25 s/component (Condition: 30 mm x 30 mm corner dispensing) *9
Adhesive position accuracy (Cpk≧1)	± 75 μm/dot	± 100 μm/component
Applicable components	1608 chip to SOP,PLCC,QFP,Connector,BGA,CSP	BGA、CSP

Inspection head		2D inspection head(A)	2D inspection head(B)
Resolution		18 μm	9 μm
View size		44.4 mm × 37.2 mm	21.1 mm × 17.6 mm
Inspection processing time	Solder Inspection *10	0.35s/ View size	
	Component Inspection *10	0.5s/ View size	
Inspection object	Solder Inspection *10	Chip component : 100 μm × 150 μm or more (0603 or more) Package component : φ150 μm or more	Chip component : 80 μm × 120 μm or more (0402 or more) Package component : φ120 μm or more
	Component Inspection *10	Square chip (0603 or more), SOP, QFP (a pitch of 0.4 mm or more), CSP, BGA,Aluminum electrolysis capacitor, Volume, Trimmer, Coil, Connector *11	Square chip (0402 or more), SOP, QFP (a pitch of 0.3 mm or more), CSP, BGA,Aluminum electrolysis capacitor, Volume, Trimmer, Coil, Connector *11
Inspection items	Solder Inspection *10	Oozing, blur, misalignment, abnormal shape, bridging	
	Component Inspection *10	Missing, shift, flipping, polarity, foreign object inspection *12	
Inspection position accuracy (Cpk≧1) *13		± 20 μm	± 10 μm
No. of inspection	Solder Inspection *10	Max. 30 000 pcs./machine (No. of components : Max. 10 000 pcs./machine)	
	Component Inspection *10	Max. 10 000 pcs./machine	

*Placement tact time,inspection time and accuracy values may differ slightly depending on conditions
*Please refer to the specification booklet for details.
*1 : Please consult us separately should you connect it to NPM-D3/D2/D. It cannot be connected to NPM-TT and NPM.
*2 : Only for main body
*3 : 1 880 mm in width if extension conveyors (300 mm) are placed on both sides.
*4 : Dimension D including tray feeder : 2 570 mm
Dimension D including feeder cart : 2 465 mm
*5 : Excluding the monitor, signal tower and ceiling fan cover.
*6 : ±25 μm placement support option. (Under conditions specified by Panasonic)
*7 : The 03015/0402 chip requires a specific nozzle/feeder.
*8 : Support for 03015 mm chip placement is optional.
(Under conditions specified by Panasonic : Placement accuracy ±30 μm / chip)
* 9 : A PCB height measurement time of 0.5s is included.
*10 : One head cannot handle solder inspection and component inspection at the same time.
*11 : Please refer to the specification booklet for details.
*12 : Foreign object is available to chip components. (Excluding 03015 mm chip)
*13 : This is the solder inspection position accuracy measured by our reference using our glass PCB for plane calibration. It may be affected by sudden change of ambient temperature.

⚠Safety Cautions

●Please read the User's Manual carefully to familiarize yourself with safe and effective usage procedures.

●To ensure safety when using this equipment, all work should be performed according to that as stated in the supplied Operating Instructions. Read your operating instruction manual thoroughly.

Panasonic Group products are built with the environment in mind.

Please check the homepage for the details.
panasonic.com/global/corporate/sustainability

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●Homepage https://industry.panasonic.eu/factory-automation/smart-factory-solutions

Panasonic
INDUSTRY

2021

Electronics Assembly System catalog

PRODUCTION MODULAR

NPM
NEXT PRODUCTION MODULAR

Manufacturing Process Innovation

Model Name **NPM-W2**

Model No.NM-EJM7D
Model No.NM-EJM7D-MD *Model No.NM-EJM7D-D*
Model No.NM-EJM7D-MA *Model No.NM-EJM7D-A*

*Photograph is NM-EJM7D

CE

*It may not conform to Machinery Directive and EMC Directive in case of optional configuration and custom-made specification.

NPM System evolution according to mounting changes NEW CONCEPT MACHINE

NEXT PRODUCTION MODULAR

1 Higher productivity and quality with printing, placement and inspection process integration

Depending on the PCB you produce, you can select High-speed mode or High-accuracy mode.

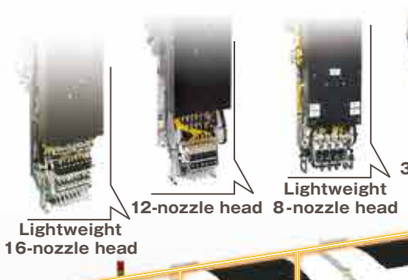
2 For larger boards and larger components

PCBs up to a size of 750 × 550 ㎜ with component range up to L150 × W25× T30 ㎜

3 Higher area productivity through dual lane placement

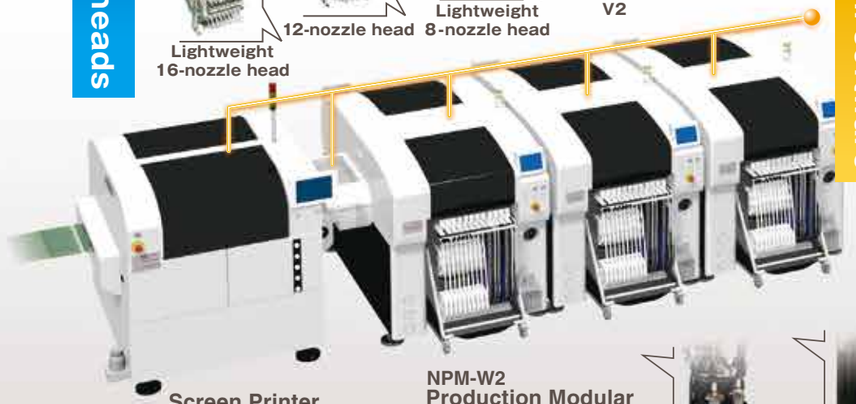
Depending on the PCB you produce, you can select an optimal placement mode – “Independent” “Alternate” or “Hybrid”

Placement heads



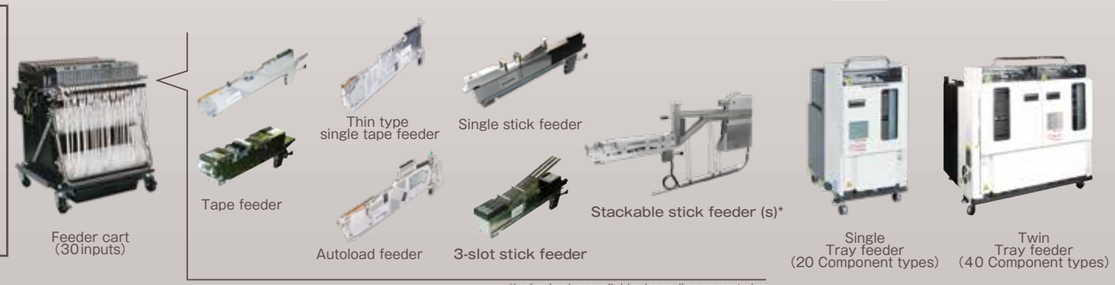
System software

- APC system
- Component Verification option
- Automatic changeover option
- Feeder Setup Navigator option
- Parts Supply Navigator option
- PCB information communication function
- Data Creation System(NPM-DGS)
- Optimization of setup option
- Placement height control system
- Host communication option



Process units

Supply units



*L size is also available depending on part size

Features

Simultaneous realization of high area productivity and high-accuracy placement

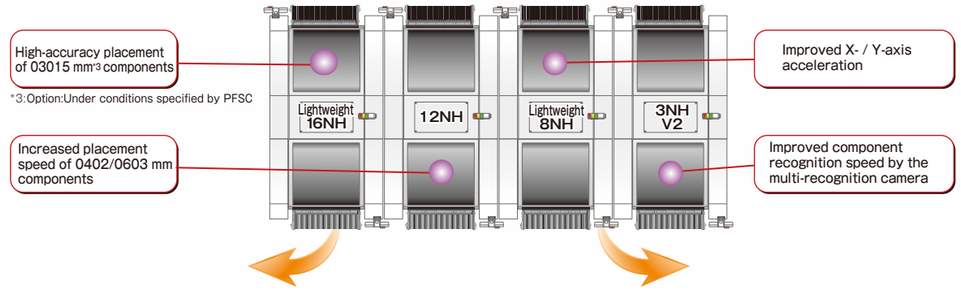
◆**High production mode** (High production mode: ON)

Max. speed: 77 000 cph[*1] **(IPC9850 (1608) : 59 200cph**[*1]**) / Placement accuracy: ±40 μm**

◆**High accuracy mode** (High production mode : OFF)

Max. speed: 70 000 cph[*1]**/ Placement accuracy: ±30 μm (Option : ±25μm**[*2]**)**

*1:Tact for 16NH × 2 head
*2:Under conditions specified by PFSC

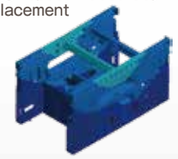


New placement head

・lightweight 16-nozzle head

New high-rigidity base

・High rigidity base supporting high-speed / accuracy placement



Multi-recognition camera

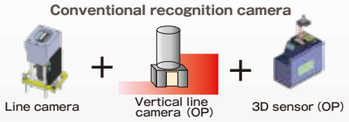
・Three recognition functions combined into one camera

・Faster recognition scan including components height detection

・Upgradable from 2D to 3D specifications

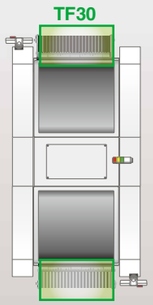
Multi-recognition camera

Conventional recognition camera



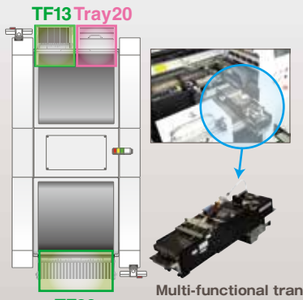
Machine Configuration

Rear & Front Feeder Layout



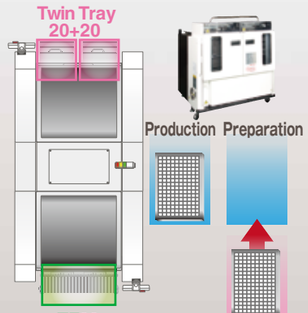
60 different components can be mounted from 16mm tape feeders.

Single Tray Layout



13 fixed feeder slots are available. PoP tray mounting is possible via a transfer unit.

Twin Tray Layout



While one tray is used for production, the other tray can simultaneously be used to setup the next production in advance.

Automation units

Automatic tape splicing unit

Feeder maintenance unit

*The "Thin type single tape feeder" and "Autoload feeder" require the "Master jig for thin type single feeder" and "Attachment for thin type single feeder".

Head maintenance unit

NPM NEXT PRODUCTION MODULAR

Higher area productivity through dual lane placement
Placement Heads

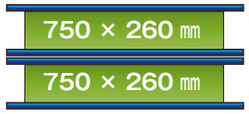
Versatility

Large Board

Single-lane specifications(Selection spec.)

Large Board up to 750 × 550 ㎜ can be handled

Dual-lane specifications(Selection spec.)

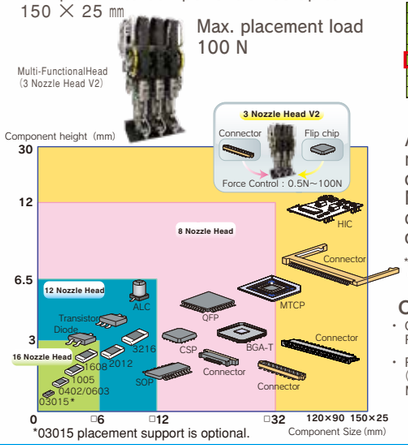


Large boards(750 × 260 ㎜) can be handled collectively.
Boards(up to a size of 750 × 510 ㎜) can be handled collectively during single transfer.

Large Components

Compatible to component sizes up to 150 × 25 ㎜

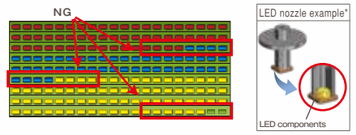
Max. placement load 100 N



*03015 placement support is optional.

LED Placement

Brightness Binning



Avoid mixing of brightness and minimizes component and block disposal.
Monitors remaining component count to avoid component exhaust during operation.

*Please ask us for nozzles that support LED components of various shapes

Other functions

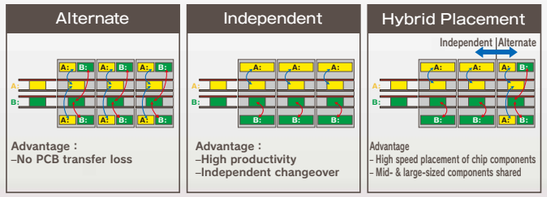
- Global bad mark recognition function
  Reduces in travel/recognition time to recognize bad marks
- PCB standby between machines
  (with the extension conveyor attached)
  Minimizes the PCB(750 mm)change time

High productivity / Employs dual mounting method

Alternate,Independent & Hybrid Placement

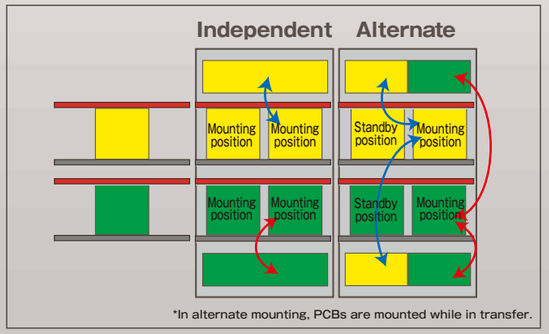
Selectable "Alternate" and "Independent" dual placement method allows you to make good use of each advantage.

- Alternate:Front and rear heads execute placement on PCBs in front and rear lanes alternately.
- Independent:Front head executes placement on PCB in front lane and rear head execute placement on rear lane.



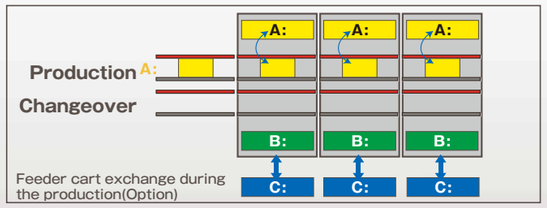
PCB exchange time reduction

Two PCBs can be clamped on one stage (PCB length: 350 mm or less).And Higher productivity can be realized by reducing PCB exchange time.



Independent changeover

In the independent mode, you can conduct a changeover on one lane while production continues on the other lane.You can exchange the feeder cart during the production also with Independent changeover unit (option). It supports automatic support pin replacement (option) and an automatic changeover (option) so that it provides the best changeover for your production type.



Automatic replacement of support pins (option)

Automate position change of support pins to enable non-stop changeover and help save man-power and operation errors.

Quality improvement

Placement height control function

Based on PCB warpage condition data and thickness data of each of the components to be placed, the control of placement height is optimized to improve mounting quality .

Operating rate improvement

Feeder location free

Within same table, feeders can be set anywhere.
Alternate allocation as well as setting of new feeders for next production can be done while the machine is in operation.

Feeders will require off-line data input by support station (option).

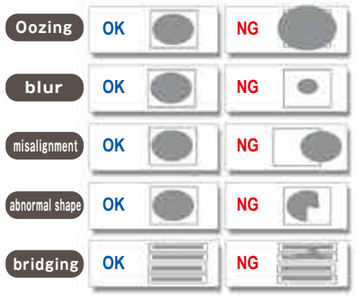
NPM NEXT PRODUCTION MODULAR

In-line dispensing,inspection achieve high-quality mounting
Dispense & Inspection Head

Solder Inspection (SPI)・Component Inspection (AOI) / Inspection head

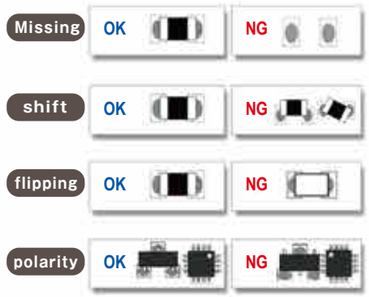
Solder Inspection

- Solder appearance inspection



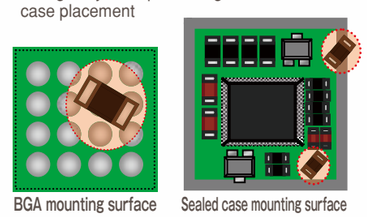
Mounted component Inspection

- Appearance inspection of mounted components



Pre-mounting foreign object*1 inspection

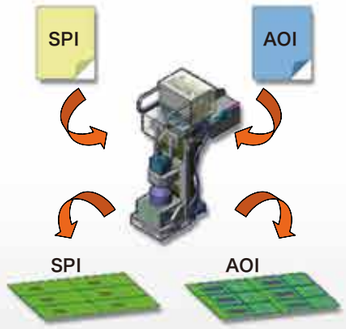
- Pre-mounting foreign object inspection of BGAs
- Foreign object inspection right before sealed case placement



*1: Foreign object is available to chip components.

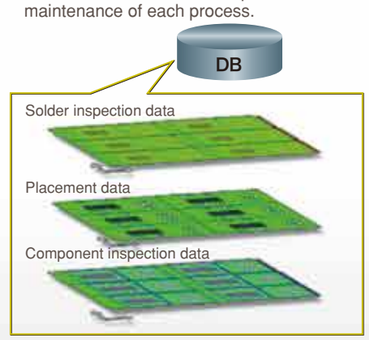
SPI and AOI automatic switching

- Solder and component inspection is switched automatically according to production data.



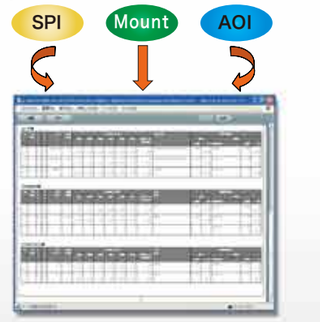
Unification of inspection and placement data

- Centrally managed component library or coordinate data does not require two data maintenance of each process.



Automatic link to quality information

- Automatically linked quality information of each process assists your defect cause analysis.

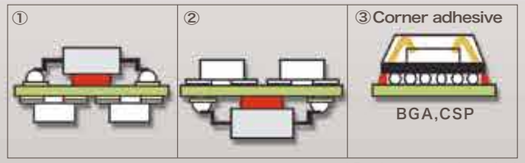


Adhesive Dispensing / Dispensing head

Screw-type discharge mechanism

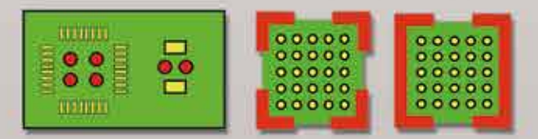
- Panasonic's NPM has the conventional HDF discharge mechanism, which ensures the high-quality dispensing.

①Misalignment prevention of the large-sized component at board transferring
②Drop prevention of the back side component at reflowing
③Adhesive reinforcement of BGA and CSP*



* Pre-demonstration is required.

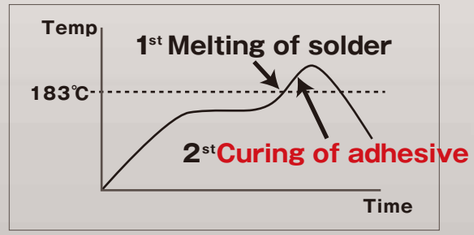
Supports various dot/drawing dispensing patterns



- High accuracy sensor (option) measures local PCB height to calibrate dispensing height, which allows for non-contact dispensing on PCB.

Self-Alignment Adhesive

Our ADE 400D series is a high-temperature curing SMD adhesive with good component self-alignment effect.
This adhesive is also suitable for use in SMT lines to fix bigger components.



After the solder melts, self-alignment and component sinking occurs.

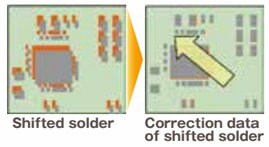
NPM NEXT PRODUCTION MODULAR
Total management by system software
System Software

High-quality placement / APC system

Controls variations in PCBs and components, etc. on a line basis to achieve quality production.

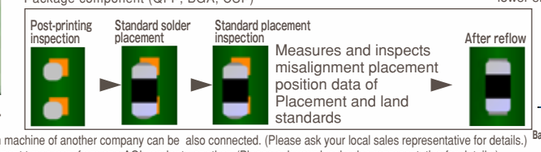
APC-FB*1
Feedback to the printing machine

・Based on the analyzed measurement data from solder inspections, it corrects printing positions. (X,Y,θ)



APC-FF *1
Feedforward to the placement machine

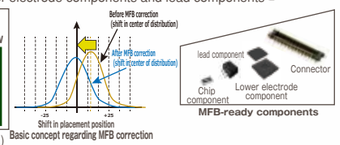
・It analyzes solder position measurement data, and corrects component placement positions (X, Y, θ) accordingly.
Chip components(0402C/R ～)
Package component (QFP, BGA, CSP)



APC-MFB2
Feedforward to AOI / Feedback to the placement machine

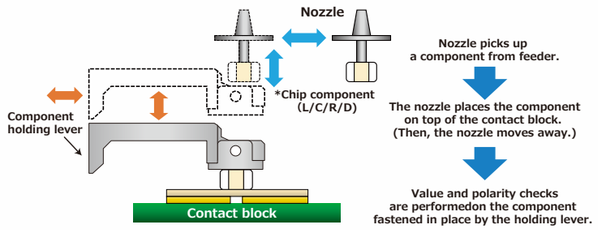
・Position inspection on APC offset position

・The system analyzes AOI component position measurement data, corrects placement position (X, Y, θ), and thereby maintains placement accuracy.
Compatible with chip components, lower electrode components and lead components*2



*1:APC-FB (feedback)/FF (feedforward): 3D inspection machine of another company can be also connected. (Please ask your local sales representative for details.)
*2:APC-MFB2 (mounter feedback2): Applicable component types vary from one AOI vendor to another. (Please ask your local sales representative for details.)

Misplacement prevention / LCR checker option



At the start of production, or during component supply or product changeover, it checks mounted component values. This helps improve machine availability through a reduction in time spent on component checks, as well as preventing misplacement due to loading of components on wrong feeder, defective components, or mislabeled reels, and thereby contributes to manufacturing conforming items.
In addition, since checked value data is output to a file on LNB (FA PC), you can subsequently use the data to keep track, for example, of any changes or histories of mounted components.

Component size	0402 ～ □6 mm
Component	Resistance, Capacitor, Inductor, Diode

Component Verification option

Prevents setup errors during changeover Provides an increase of production efficiency through easy operation

*Wireless scanners and other accessories to be provided by customer

●**Preemptively deters component misplacement**
Prevents misplacement by verifying production data with the barcode information on changeover components.
●**Automatic setup data synching function**
The machine itself does the verification, eliminating the need to select separate setup data.
●**Interlock function**
Any problems or lapses in verification will stop the machine.
●**Navigation function**
A navigation function to make the verification process more readily understandable.

Off-line setup support station

With the support stations, offline feeder cart setup is possible even outside of the manufacturing floor.

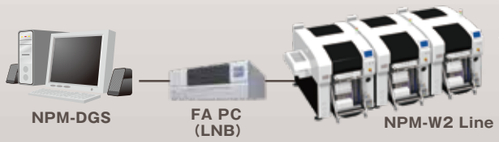
●**Two types of Support Stations are available.**

①Component verification station
・Batch Exchange Cart Setup: Provides power to all feeders in cart.
・Feeder setup: Provides power to individual feeders.
・Component verification: Navigator that indicates any location where feeders need exchange.

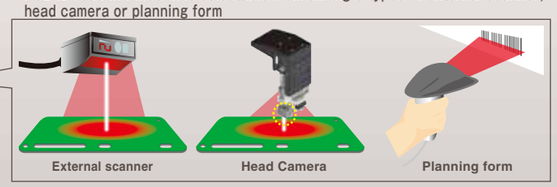
②Power supply station
The simpler type of station composed of the batch exchange cart setup and the feeder setup features.

Changeover ability / Automatic changeover option

Supporting changeover (production data and rail width adjustment) can minimize time loss



●**PCB ID read-in type**
PCB ID read-in function is selectable from among 3 types of external scanner, head camera or planning form



Feeder setup navigator option

It is a support tool to navigate efficient setup procedure. The tool factors in the amount of time it takes to perform and complete setup operations when estimating the time required for production and providing the operator with setup instructions. This will visualize and streamline setup operations during setup for a production line.

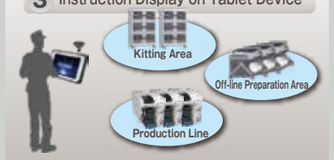
1 Gross Production Time Estimate

Production completion time is estimated based on setup time and available human resource

2 Feeder preparation process instructions

Instructs cart/machine preparation process in three steps: load, remove, and relocate

3 Instruction Display on Tablet Device



Instructions can be checked from anywhere

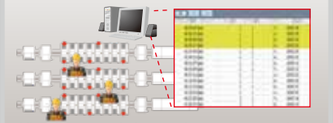
Operating rate improvement / Parts supply navigator option

A component supply support tool that navigates efficient component supply priorities. It considers the time left until component run-out and efficient path of operator movement to send component supply instructions to each operator. This achieves more efficient component supply.

1 Wireless scanner indication of supply priorities

Considers the time left until component run-out and efficient path of operator movement to send supply priority instructions.

2 Visualization of supply statuses



Visualizes supply instructions sent to each operator on the main troubleshooting console.

3 Cut down of redundant work and waiting times

Components are supplied per operator to prevent any overlaps.

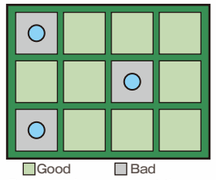
*PanaCIM is required to have operators in charge of supplying components to multiple production lines.

PCB information communication function

Information of mark recognitions done on first NPM machine in line is passed on to downstream NPM machines.
Which can reduce cycle time utilizing the transferred information.

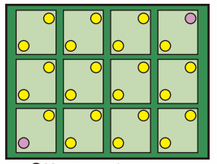
[Subject for communication]

Bad mark recognition



Bad mark is scanned at the first machine.

Pattern mark recognition

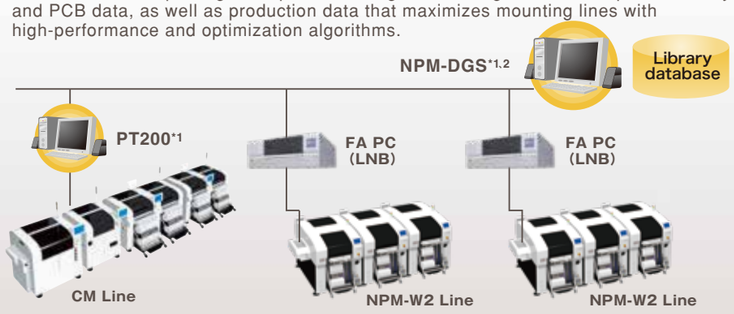


All marks are recognized at the first machine and downstream machines only recognize master marks.

*Please refer to "Specification" booklet for details.

Data Creation System / NPM-DGS (Model No.NM-EJS9A)

This is a software package that provides integrated management of component library and PCB data, as well as production data that maximizes mounting lines with high-performance and optimization algorithms.



*1：A computer must be purchased separately.
*2：NPM-DGS has two management functions of floor and line level.

CAD import

Allows you to import CAD data and check polarity, etc., on the screen.

Optimization

Realizes high productivity and also allows you to create common arrays.

PPD editor

Update production data on PC during production to reduce the loss of time.

Component library

Allows unified management of the component library including mounting, inspection and dispensing.

Offline Camera(option)

Component data can be created offline even while the machine is in operation.

Use the line camera to create component data. Lighting conditions and recognition speed can be confirmed in advance, so it contributes to the improvement of productivity and quality.

Offline Camera Unit

DGS Automation(option)

Automated manual routine tasks reduce operation errors and data creation time.

Manual routine tasks can be automated.
By collaborating with the customer system, the routine tasks for creating data can be reduced, so it contributes to a significant reduction in production preparation time.
It also includes the function to automatically correct the coordinates and angle of the mounting point (Virtual AOI).

Example of entire system image:

Automated tasks (excerpt)
・CAD import
・Offset mark setting
・PCB chamfering
・Mounting point misalignment correction
・Job creation
・Optimization
・PPD output
・Download

Optimization of setup(option)

In production involving multiple models, setup workloads are taken into account and optimized.

For more than one PCB sharing common component placement, multiple setups may be required due to a shortage of suppy units. In order to reduce the required setup workloads in such a case, this option divides PCBs into similar component placement groups, selects a table(s) for setup and thus automates component placement operation. It contributes to improving setup performance and reducing production preparation time for customer manufacturing various kinds of products in small quantities.

Example: