

# Our Solutions, Your Value

# Panasonic

2013  
**Electronics Assembly System**  
**catalog**  
 PRODUCTION MODULAR



Model ID	NPM-D						
Front head	Rear head	16-nozzle head	12-nozzle head	8-nozzle head	2-nozzle head	Dispensing head	No head
16-nozzle head		NM-EJMID				NM-EJMID-MD	NM-EJMID
12-nozzle head							
8-nozzle head							
2-nozzle head							
Dispensing head		NM-EJMID-MD					NM-EJMID-D
Inspection head		NM-EJMID-MA					NM-EJMID-A
No head		NM-EJMID				NM-EJMID-D	
PCB dimensions*1	Dual-lane mode	L 50 mm × W 50 mm ~ L 510 mm × W 300 mm			PCB exchange time	Dual-lane mode	0 s* *No Os when cycle time is 4.5 s or less
	Single-lane mode	L 50 mm × W 50 mm ~ L 510 mm × W 590 mm				Single-lane mode	4.5 s
Electric source	3-phase AC 200, 220, 380, 400, 420, 480 V 2.5 kVA						
Pneumatic source*2	0.5 MPa, 100 L / min (A.N.R.)						
Dimensions *2	W 835 mm × D 2 652 mm *3 × H 1 444 mm *4						
Mass	1 600 kg (Only for main body. This differs depending on the option configuration.)						

Placement head	16-nozzle head (With Dual Heads)	12-nozzle head (With Dual Heads)	8-nozzle head (With Dual Heads)	2-nozzle head (With Dual Heads)
Placement speed/Max. speed	70 000cph (0.051 s/chip)	62 500cph (0.058 s/chip)	40 000cph (0.090 s/chip)	8 500cph (0.423 s/QFP)
IPC9850(1608)	53 800cph *5	48 000cph *5		
Placement accuracy(Cpk≥1)	±40 μm / chip	±40 μm / chip	±40 μm / chip ±30 μm/QFP □12 mm ~ □32 mm ±50 μm/QFP □12 mm Under	±30 μm / QFP
Component dimensions (mm)	(01005*)0402 chip *6 to L 6 × W 6 × T 3 (01005*)0402 chip *6 to L 12 × W 12 × T 6.5 (01005*)0402 chip *6 to L 32 × W 32 × T 12 (0201*)0603 chip to L 100 × W 90 × T 28			
Component supply	Tape : 8 / 12 / 16 / 24 / 32 / 44 / 56 mm 8 mm tape : Max. 68 (double feeder, small real) Stick, Tray Stick: Max. 8, Tray : Max. 20 (per tray feeder)			

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)	3.75 s/component (Condition: 30 mm x 30 mm corner dispensing)
Adhesive position accuracy(Cpk≥1)	± 75 μm/dot	± 100 μm/component
Applicable components	1608 chip to SOP, PLCC, QFP, Connector, BGA, CSP	SOP, PLCC, QFP, Connector, 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 *8 : 0.35s/View size Component Inspection *8 : 0.5s/View size	
Inspection object	Solder Inspection *8 : Chip component : 100 μm × 150 μm or more (0603 / 0201* or more) Package component : φ150 μm or more Component Inspection *8 : Square chip (0603 / 0201* or more), SOP, QFP (a pitch of 0.4mm or more), CSP, BGA, Aluminum electrolysis capacitor, Volume, Trimmer, Coil, Connector, Network resistor, Transistor, Diode, Inductor, Tantalum capacitor, Melf	Chip component : 80 μm × 120 μm or more (0402 / 01005* or more) Package component : φ120 μm or more Component Inspection *8 : Square chip (0402 / 01005* or more), SOP, QFP (a pitch of 0.3mm or more), CSP, BGA, Aluminum electrolysis capacitor, Volume, Trimmer, Coil, Connector, Network resistor, Transistor, Diode, Inductor, Tantalum capacitor, Melf
Inspection items	Solder Inspection *8 : Oozing, blur, misalignment, abnormal shape, bridging Component Inspection *8 : Missing, shift, flipping, polarity, foreign object inspection *7	
Inspection position accuracy (Cpk≥1) *9	± 20 μm	± 10 μm
No. of inspection	Solder Inspection *8 : Max. 30 000 pcs./machine (No. of components : Max. 10 000 pcs./machine) Component Inspection *8 : 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 : As board transfer standard differ, it cannot be linked with dual-lane spec. NPM (NM-EJM9B).  
 \*2 : Only for main body.  
 \*3 : Dimension D including tray feeder : 2 683 mm  
 Dimension D including feeder cart : 2 728 mm  
 \*4 : Excluding monitor and signal tower  
 \*5 : It is the reference value of the tact time by the IPC9850 conformity.  
 \*6 : The 0402 chip requires a specific nozzle/feeder.  
 \*7 : Foreign object is available to chip components.  
 \*8 : One head cannot handle solder inspection and component inspection at the same time.  
 \*9 : 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.

**eco ideas** Panasonic Group products are built with the environment in mind.  
<http://panasonic.net/eco/>

**ISO 14001** Panasonic Group builds Environmental Management System in the factories of the world and acquires the International Environmental Standard ISO 14001:2004.

Inquiries...

**Panasonic Factory Solutions Co., Ltd.**  
 Corporate Sales Division  
 1375 Kamisukiawara, Showa-cho, Nakakoma-gun, Yamanashi 409-3895, Japan  
 TEL +81-55-275-9148  
 FAX +81-55-275-6269

**All data as of April 1, 2013**  
 Ver. April 1, 2013

©Panasonic Factory Solutions Co., Ltd. 2013



Model Name **NPM-D**

Model No. NM-EJM1D

Model No. NM-EJM1D-MD

Model No. NM-EJM1D-D

Model No. NM-EJM1D-MA

Model No. NM-EJM1D-A

LNB conveyor + 3 production modulars in-line setup



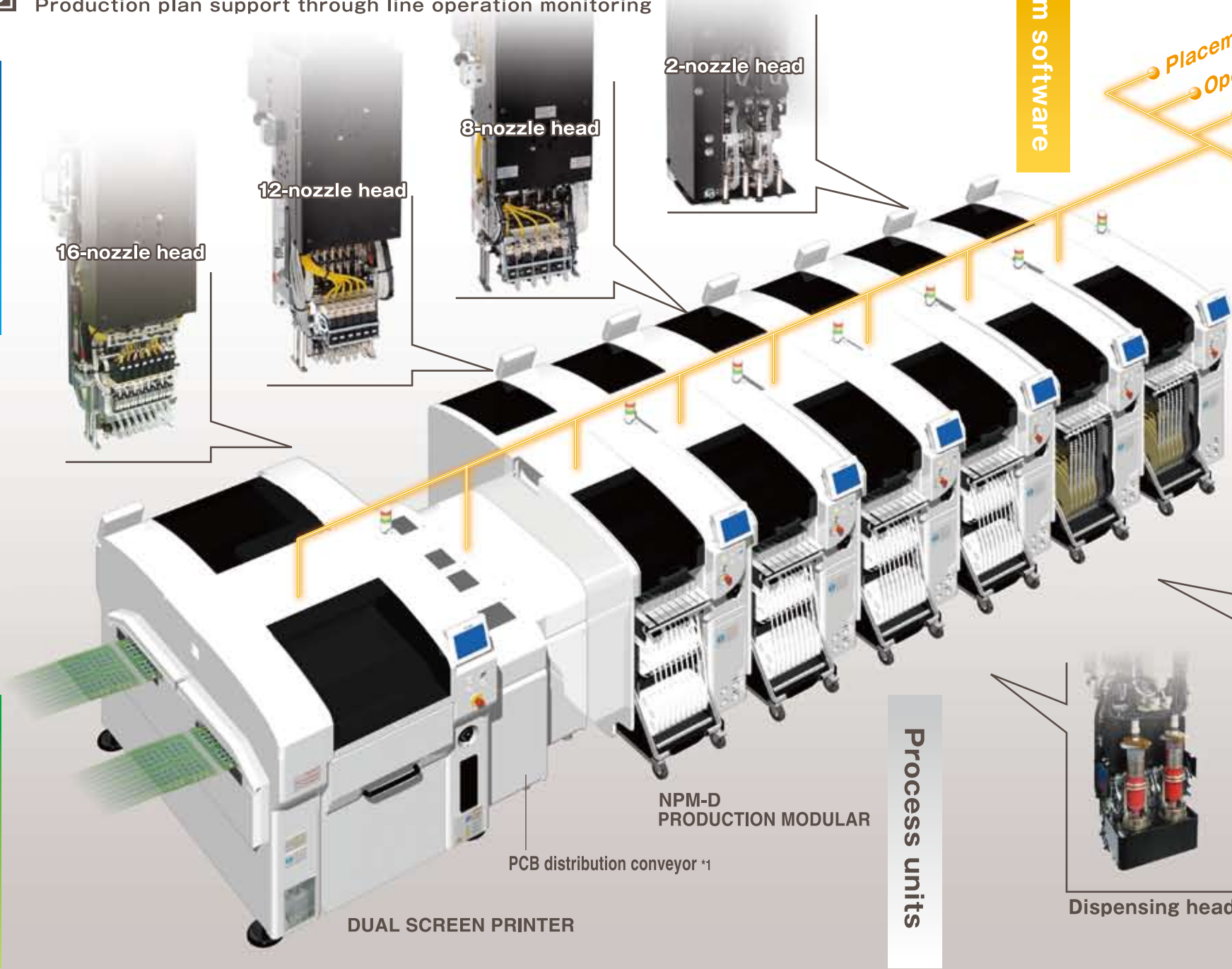
\*It may not conform to Machinery Directive and EMC Directive in case of optional configuration and custom-made specification.



- 1 High area productivity with total mounting lines**  
Higher productivity and quality with printing, placement and inspection process integration
- 2 Configurable modules allow flexible line setup**  
Head location flexibility with plug-and-play functions
- 3 Comprehensive control of lines, floor and factory with system software**  
Production plan support through line operation monitoring

Placement heads

Dual printer



System software

- Placement height control system
- Operation navigation system
- APC system
- Component Verification option
- Automatic changeover option
- Host communication option

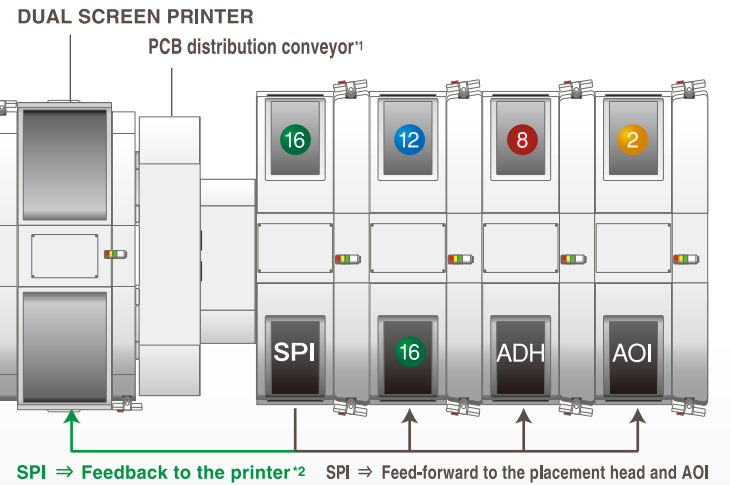


NPM-DGS Data Creation System

## Total line solution

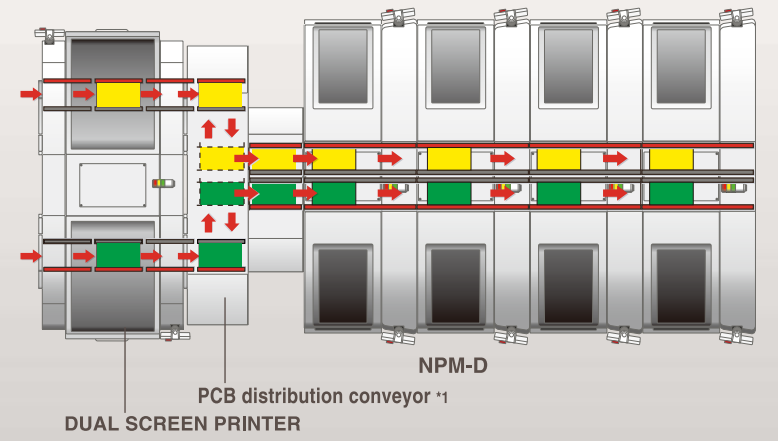
### Smaller-footprint modular lines by installing inspection heads

- Provides high-quality manufacturing with in-line inspection
- 16 ... 16-nozzle head      ADH ... Adhesive dispensing head
  - 12 ... 12-nozzle head      SPI ... Solder Inspection
  - 8 ... 8-nozzle head        AOI ... Component Inspection
  - 2 ... 2-nozzle head



### Multi-Production Line

Mixed production with different type substrates on the same line is also provided with the dual conveyor.



Supply units



\*1: Please prepare the PCB distribution conveyor from other companies  
\*2: SPD, SP70 can be connected to APC system



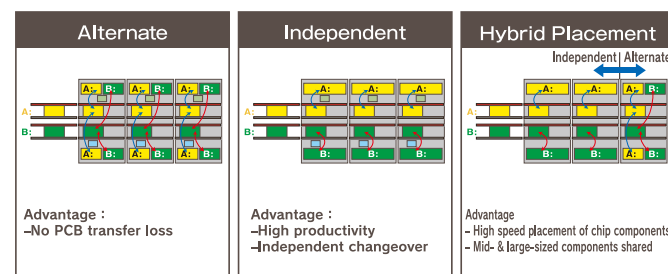
### High productivity

### Employs dual mounting method

#### Alternate, Independent & Hybrid Placement

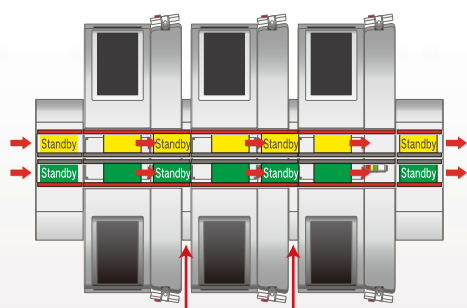
Selectable "Alternate" and "Independent" dual placement method allows you to make good use of each advantage.

- **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.



#### In-between Standby Conveyor (option)

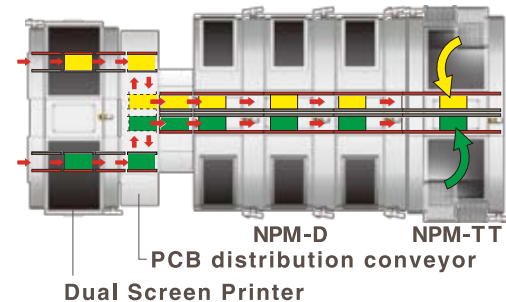
Enable PCB standby between machines with in-between conveyor. Increasing productivity by absorbing operation loss time as a buffer function between machines, as well as by reducing PCB transfer time.



In-between Standby Conveyor

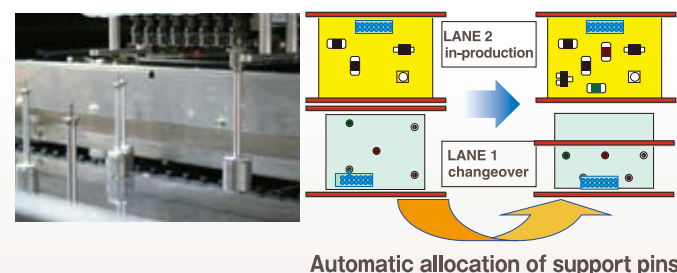
#### High productivity through fully independent placement

Achieved independent placement of tray components by directly linking with NPM-TT. Capable of fully independent placement of tray components improving cycle time of mid-, large-size component placement with 3-nozzle head. Output of entire line is enhanced.



#### Automatic replacement of support pins (option)

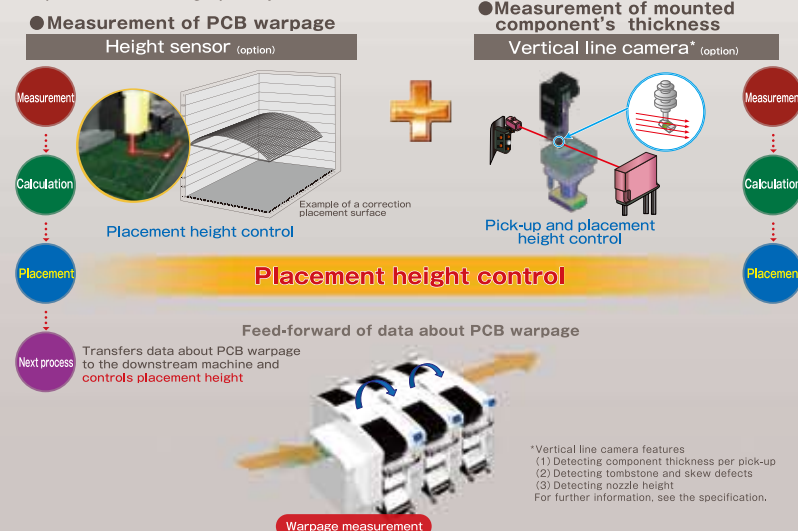
Automate position change of support pins to enable non-stop changeover and help save man-power and operation errors.



### 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).

### Solder Inspection (SPI) · Component Inspection (AOI) Inspection head

#### Solder Inspection

- Solder appearance inspection



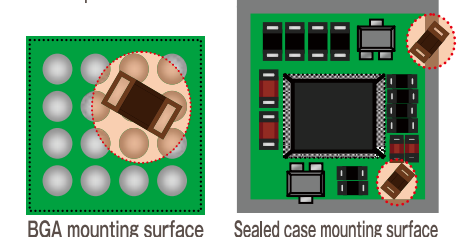
#### Mounted component Inspection

- Appearance inspection of mounted components



#### Pre-mounting foreign object\*1 inspection

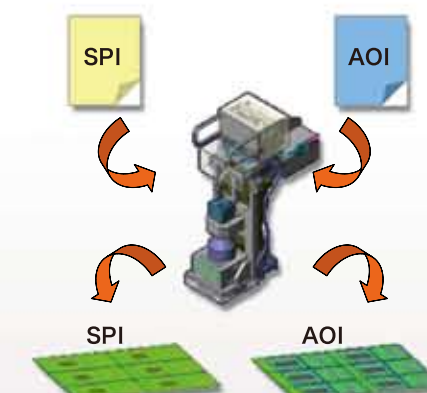
- Pre-mounting foreign object inspection of BGAs
- Foreign object inspection right before sealed case placement



\*1: Foreign object is available to chip components.

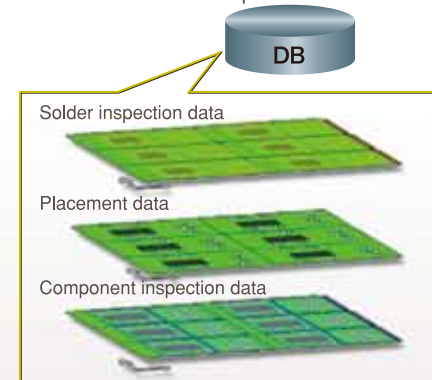
#### SPI and AOI automatic switching

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



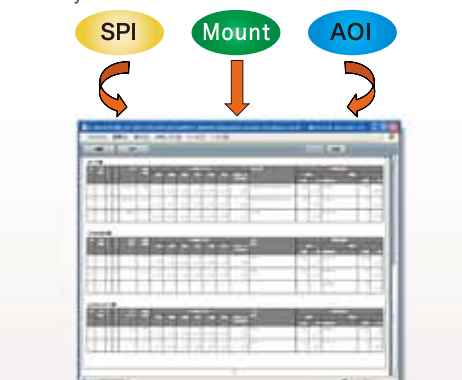
#### Unification of inspection and placement data

- 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

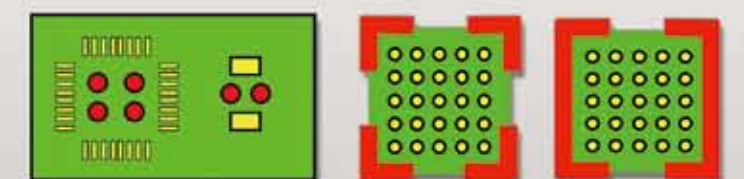
### Dispensing head

#### Screw-type discharge mechanism

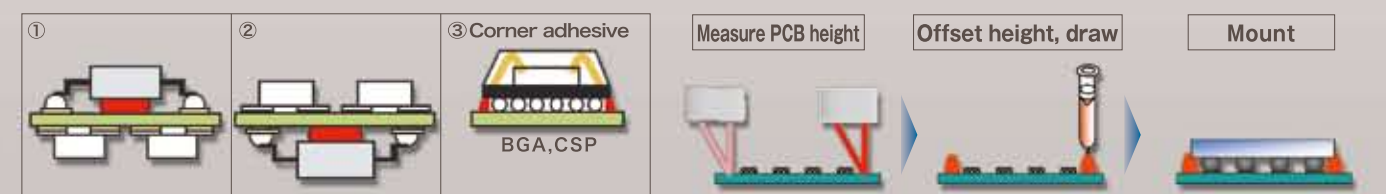
- Panasonic's NPM has the conventional HDF discharge mechanism, which ensures the high-quality dispensing.



#### 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.



\* Pre-demonstration is required.

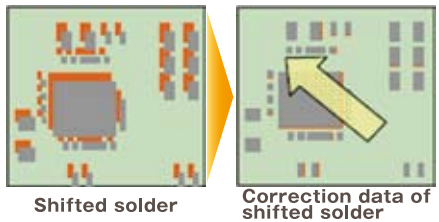


### High-quality mounting

### APC system\*

#### Feedback to the printing machine

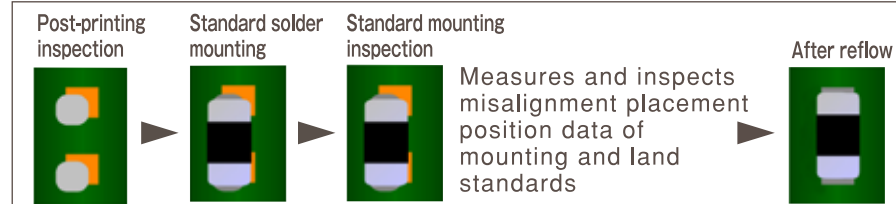
• Based on the analyzed measurement data from solder inspections, it corrects printing positions. (X, Y,  $\theta$ )



\*3D inspection equipment of another company can be also connected. Please inquire with your sales representative for more details.

#### Feedforward to mounting heads

• Solder position measurement and feedforward  
Chip components (0402C/R ~)  
Package component (QFP, BGA, CSP)

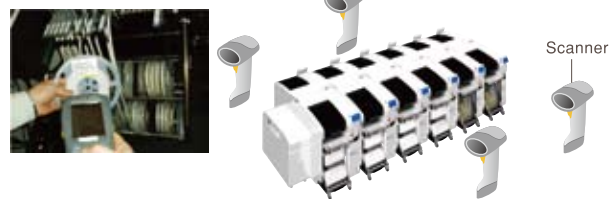


#### Feedforward to AOI

• Position inspection on APC offset position

### Component Verification option

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

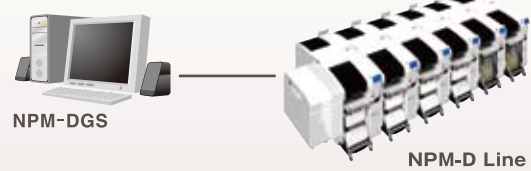


- Component setup error prevention  
Prevents setup errors through verifying the NPM-D downloaded production data and component barcode data
- Array data activesync function  
There's no need to select array data; data is verified with the NPM-D
- Interlock function  
Equipment stops when it has an incorrect and/or incomplete verification
- Navigation function  
Clearly provide a verification task with data display and Intelligent feeder performance in sync
- Scanner selection  
Users can choose either a wired or wireless scanner (PDA)

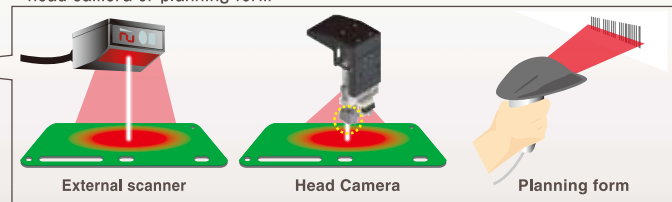
### High productivity

### 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



### Off-line setup support station

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

● Two types of Support Stations are available.

#### ① Power Supply Station:

Batch Exchange Cart Setup – Provides power to all feeders in cart. Feeder Setup – provides power to individual feeders.



#### ② Component Verification Station:

Additional to the power supply station, Component Verification feature is added to this model. The station will navigate you to the location where feeders need exchange.



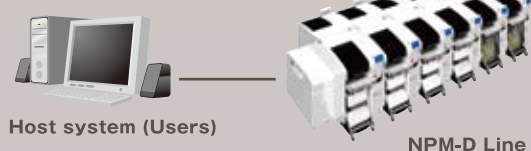
Example of system configuration)



### Open interface

### Host communication option

Able to standardize the interfacing with your systems currently used. Provides data communication with our standard interfaces.

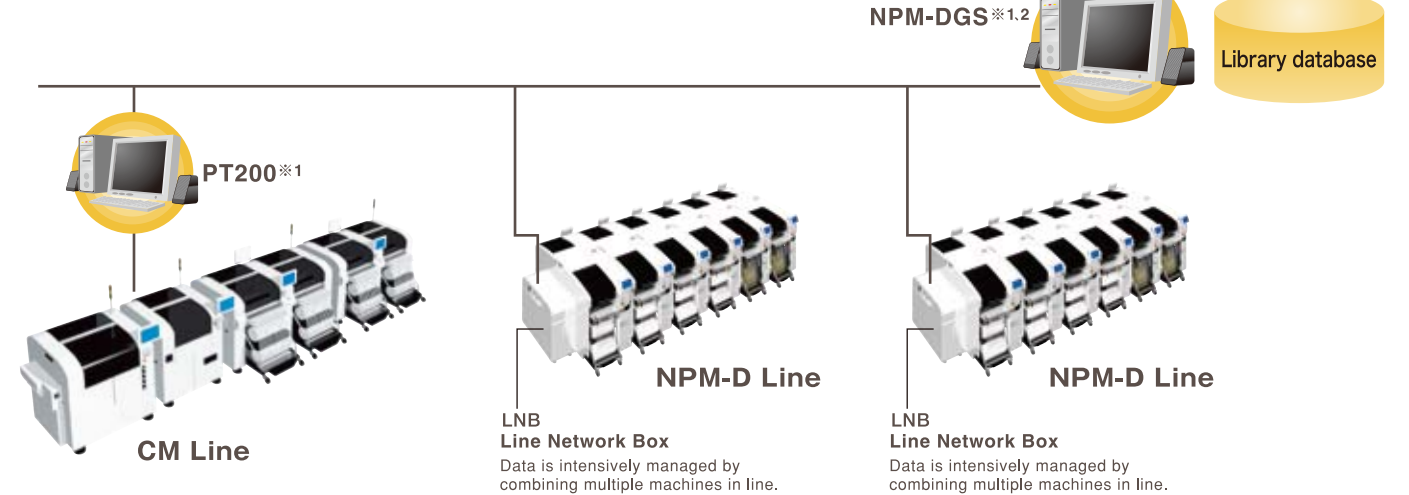


- Events  
Outputs a real-time event of equipment
  - Other company's component verification  
Communicates with your component verification systems
  - Component management data  
• Component remaining quantity data: Outputs component remaining quantity data  
• Trace data: Outputs data linked with component information (\*1) and PCB information (\*2)
- (\*1) Requires input of component information with a component verification option or an other company's component verification system I/F  
(\*2) Requires input of PCB information with automatic changeover option

### Data Creation System

### NPM-DGS (Model No. NM-EJS9A)

The software package helps to achieve high productivity through integral management of creation, editing and simulation of production data and library.



\*1: A computer must be purchased separately.

\*2: NPM-DGS has two management functions of floor and line level.

#### Multi-CAD import



Almost all CAD data can be retrieved by macro definition registration. Properties, such as polarity, also can be confirmed on screen in advance.

#### Simulation



Tact simulation can be confirmed on screen in advance so that line total operation ratio can increase.

#### PPD/LWS Editor



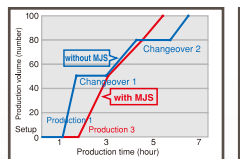
With quickly and easily compiling placement and inspection head data on the PC display during operation, time loss can be minimized

#### Component library



A component library of all placement machines including the CM series on floor can be registered to unify data management.

#### Mix Job Setter (MJS)



Production data optimization allows the NPM-D to commonly arrange feeders. Feeder replacement time reduction for changeover can improve productivity

#### Off-line component data creation option

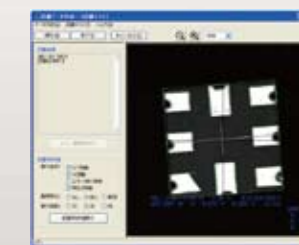


With creating off-line component data using a store-bought scanner, productivity and quality can be improved.

### Offline Camera Unit (option)

Minimizes time on machine for parts library programming and assists equipment availability and quality.

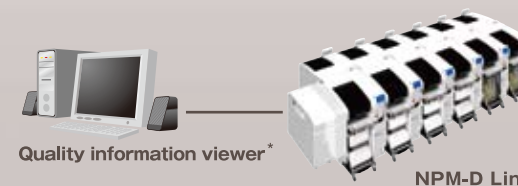
Parts library data is generated using the line camera for NPM-D. Conditions not possible on a scanner such as illumination conditions, and recognition speeds, can be checked offline assuring quality enhancements and equipment availability.



### Quality improvement

### Quality information viewer

This is software designed to support a grasp of changing points and analysis of defect factors through the display of quality-related information (e.g., feeder positions used, recognition offset values and parts data) per PCB or placement point. In case of our inspection head introduced, the defect locations can be displayed in association with quality-related information



\*PC is required for every line.



Example of use of quality information viewer

Identifies a feeder used for mounting of defect circuit boards. And if, for example, you have many misalignments after splicing, the defect factors can be assumed to be due to:  
1) splicing errors (pitch deviation is revealed by recognition offset values)  
2) changes in component shape (wrong reel lots or vendors)  
So you can take quick action to the misalignment correction.