Model ID	NPM-VF	
	Standard conveyor	Anvil conveyor (Option)
PCB dimensions	L 50 ㎜ × W 50 ㎜ ～ L 510 ㎜ × W 460 ㎜	L 50 ㎜ × W 50 ㎜ ～ L 460 ㎜ × W 400 ㎜
Max. PCB mass *1	Up to 3 kg	
PCB thickness	0.3 ～ 8 ㎜	
PCB flow	Left ← Right / Left → Right (Flow direction is selectable)	
Insertion direction	360 ° （± 180 °） * 1degree unit	
Insertion push force	Up to 100 N	
PCB Exchange time	4.5 s	5.5 s
Clinch specifications	――――――――――	Clinch angle : 60 degrees outward clinch Clinch pitch : 2.5 to 40 ㎜ Lead bend angle : 10 ～ 40° Lead diameter : φ0.4 ㎜ ～ φ1.0 ㎜ (soft copper) φ0.4 ㎜ ～ φ0.8 ㎜ (hard copper / CP wire)
Applicable components	Max. dimensions : L 130 ㎜ × W 35 ㎜ × H 60 ㎜ ・ L 150 ㎜ × W 38 ㎜ × H 29 ㎜ / Max. component mass : 200 g	
Electric source	3-phase AC 200, 220, 380, 400, 420, 480 V 2.7 kVA	
Pneumatic source	0.5 ～ 0.8 MPa , 200 L / min（A.N.R.）	
Dimensions	W 1 866 ㎜ × D 2 332 ㎜ × H 1 554 ㎜(Main body only) W 2 166 ㎜ × D 2 332 ㎜ × H 1 554 ㎜(When downstream extension conveyor is connected)	Note: Excluding the monitor, signal tower and ceiling fan cover.
Mass	2 590 kg（Only for main body : This differs depending on the option configuration）	

Head Configurations		
3-station head	Body chuck + Nozzle + Nozzle	Tact: Max. 0.65 s ／ component *2、3、6
	Body chuck + Nozzle + Swing nozzle	
	Body chuck + Nozzle + Lead chuck	
	Body chuck + Swing nozzle + Lead chuck	
2-station head	Body chuck + Body chuck	Tact: Max. 0.9 s ／ component *2、3

Component Supply							
Stick	S	Max. component dimension : W 20 × L 80 × H 20 ㎜ / Max. stick width : 24 ㎜ / Max. component mass : 2 kg in total(including stick mass)					
	L	Max. component dimension : W 60 × L 80 × H 45 ㎜ / Max. stick width : 64 ㎜ / Max. component mass : 2 kg in total(including stick mass)					
Radial tape		Max. body dimension : Max. Φ20 × H 30 ㎜ / Lead pitch : 2.5 / 5.0 / 7.5 / 10.0 ㎜					
Tray		Max. tray dimension : L 230 × W 335 × D 69 ㎜ / Max. pallets per feeder : 20 / Max. mass : 20 kg (magazine + pallet + tray + components)					
Bulk *4		Customized spec					
Machine Configuration		Max. number of products to be loaded	Stick S	Stick L	Radial	Tray	
	Front	30-slot fixed supply unit *5	15	7	10	―	
	Rear	30-slot fixed supply unit	15	7	10	―	
		13-slot fixed supply unit + single tray feeder	6	3	4	20	
		Twin tray feeder	―	―	―	40	
		Single tray feeder + Bowl feeder × 2 *4	―	―	―	20	
		Bowl feeder × 4 *4	―	―	―	―	

System	
Programming and Software	NPM-DGS・AM-LNB・LNB、Option：PanaCIM、iLNB Note: Max. 3 NPM-VF can be connected to AM-LNB Up to 15 machines of the NPM series (including NPM-VF) or the SP series can be connected to LNB.
Optional functions	Component verification , Traceability , Automatic changeover , Host communication , iLNB line control including other company's machine

SMT components *7							
Applicable components	Min. dimensions: L 5 ㎜ × W 5 ㎜ or larger (For tape, embossed tape of 12 ㎜ or larger)						
Placement specs	Head: Nozzle only Placement accuracy: QFP ±0.05 ㎜ (Cpk ≧1) Max. tact time: 3000 cph (per head)						
Supply unit(embossed tape)	Tape feeder width	12 / 16 ㎜	24 / 32 ㎜	44 / 56 ㎜	72 ㎜	88 ㎜	104 ㎜
	30-slot supply unit	30	15	10	7	6	5
	13-slot supply unit	13	6	4	3	2	2

*Placement tact time may differ slightly depending on conditions.
*Please refer to the specification booklet for details.
*1 : PCB mass after insertion (including carrier mass)
*2 : Except when anvil is attached
*3 : During 2-head operation (configured similar to 2-beam specs) under optimum conditions
*4 : Custom specs･･･Connection via the host feeder
*5 : For front side configuration, select between 30 stations fixed supply unit (Std.) or feeder cart (Option)
*6 : For Body chuck + Nozzle + Nozzle
*7 : Standard conveyor specs

⚠ 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.

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panasonic.com/global/corporate/sustainability

Inquiries･･･

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All data as of April 1, 2022

Ver.April 1, 2022

●Changes in specifications and appearance may be made without notice for product improvement.
●Please contact us via our website at **https://industrial.panasonic.com/ww/r/fw**

Panasonic CONNECT

2022

Odd-form Component Insertion Machine

Electronics Assembly System
Catalogue

NPM
NEXT PRODUCTION MODULAR

Manufacturing Process Innovation

Model ID **NPM-VF**

Model No.NM-EJR9A

CE

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

NPM-VF

Innovating PCB assembly process via automation of odd-form components insertion

Features and aims of NPM-VF

1 Automation of odd-form components insertion process.
In addition , SMT specifications* are also supported.
*supports both SMT placement + odd-form insertion (developing)

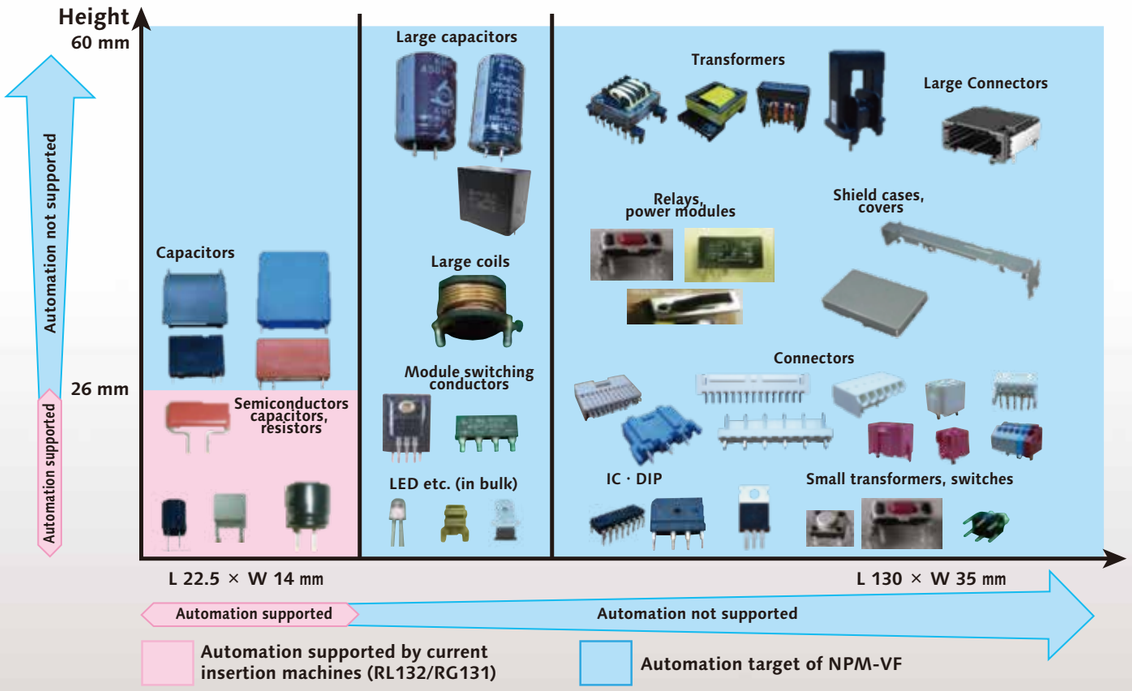
2 Versatile and flexible : various configuration of head tools and machine feeder configuration to adapt to different types of components

3 Contribute to manpower reduction and stable production with high productivity , flexibility , high quality insertion

Applicable Components

Tape | Stick, Tray, Bulk

2～3 pins | 4 pins and more



Automation supported by current insertion machines (RL132/RG131)

Automation target of NPM-VF

Support for SMT components

Supported range of the tape feeder
Embossed tape: 12 to 104 mm


Intelligent tape feeder

The multi-recognition camera is selectable from both types 1 (standard specs) and 3 (3D measurement function-ready). (Option)					
Examples of applicable components	Outline	Height	Minimum lead pitch / minimum ball pitch	Minimum lead width / minimum ball diameter	Minimum ball height
QFP·SOP	□5 mm ～	1.0 mm ～	0.5 mm	0.2 mm	–
BGA·CSP	□5 mm ～	0.3 mm ～	0.5 mm	0.3 mm	0.25 mm

Line Solution

Reduce manual insertion assembly process
Prevent human errors, improve quality

Discrete Components Assembly

CURRENT: Axial inserter → Radial inserter → Magazine → Manual Insertion Process → Magazine → Dip solder

Enhance Automation:
- Proposal1 : Standalone — Automate Manual Insertion Process
- Proposal2 : AI* Consistent Line — Reduce Lead-time & WIP**

*AI: Automatic Insertion **WIP: Work In Process

Convert manual insertion process to SMT inline process
Reduce processes / dip solder investment

SMT placement and odd-form components assembly

CURRENT: SMT mounter → Reflow solder → Magazine → Manual Insertion Process → Magazine → Dip solder

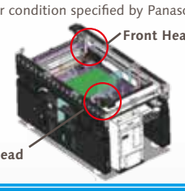
Enhance Automation:
- Proposal : SMT Consistent Line — Automate mounting and insertion of SMT & odd-form components; Batch reflow soldering for SMT & AI components

High Productivity

High speed insertion

Maximum tact of 0.65 s* is achieved by 2-beam 2-head structure. Compared to manual insertion , 1 NPM-VF is able to replace 3 to 5 operators. In addition, each head can hold up to 3 tools (chucks, nozzles), enabling effective movement of the insertion heads.

*Note: Under condition specified by Panasonic

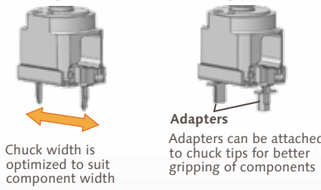


Non-stop Production

【Stackable stick feeder】
Sticks can be loaded during machine operation , reducing machine down time due to component exhaust

【Tray feeder】
Tray pallets can be replenished during machine operation

【Variable pitch body chuck】
Motorized body chuck varies chuck opening according to component size, greatly reducing dead space , chuck exchange time and increasing productivity.



Chuck width is optimized to suit component width

Adapters can be attached to chuck tips for better gripping of components

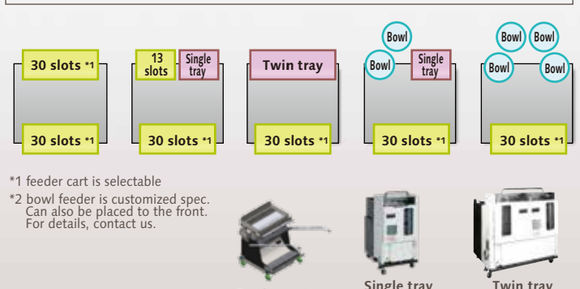
Versatility

Various tools to cater to different components

Various component feeding types

*Other maker's feeder is available when connecting via Host Feeder. Please contact us for details.
*Customized spec. (Connect via Host Feeder)

Flexible feeder configuration



*1 feeder cart is selectable
*2 bowl feeder is customized spec. Can also be placed to the front. For details, contact us.

Quality Insertion

Recognition correction and component inspection function

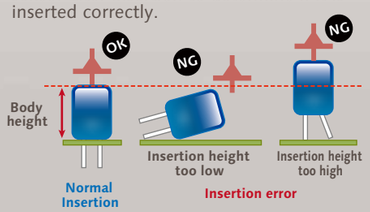
NPM-VF is equipped with 2 cameras (head camera and component camera) to scan PCB holes, PCB marks and component leads , ensuring high quality and stable insertion.

Component verification & Traceability (Option)

Prevents setting mistakes when exchanging parts and supports fabrication history management.

Insertion error detection system

Component height will be detected via sensor after insertion to determine if it is inserted correctly.



*It may not be possible to detect when component lead is too soft and would not support itself.

Recovery Operation

In the case of insertion error , PCB will automatically be flowed to the upstream extension conveyor for the operator to remove the error components.

Cut & Clinch Function (Option)

Function : prevent protrusion of components after insertion , improving insertion stability
Features: variable pitch clinch (2.5~40 mm) with piezoelectric detection system for insertion errors