Model ID	NPM-VF	
	Standard conveyor	Anvil conveyor (Option)
PCB dimensions	L 50 mm × W 50 mm to L 510 mm × W 460 mm	L 50 mm × W 50 mm to L 460 mm × W 400 mm
Max. PCB mass *1	Up to 3 kg	
PCB thickness	0.3 to 8 mm	
PCB flow	Left ← Right / Left → Right (Flow direction is selectable)	
Insertion direction	360 ° (±180 °) * 1 degree 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 mm Lead bend angle : 10 ～ 40° Lead diameter : φ0.4 mm to φ1.0 mm (soft copper) φ0.4 mm to φ0.8 mm (hard copper / CP wire)
Applicable components	Max. dimensions : L 130 mm × W 35 mm × H 60 mm ・ L 150 mm × W 38 mm × H 29 mm / Max. component mass : 200 g	
Electric source	3-phase AC 200 , 220 , 380 , 400 , 420 , 480 V 2.7 kVA	
Pneumatic source	0.5 to 0.8 MPa , 200 L / min (A.N.R.)	
Dimensions	W 1 866 mm × D 2 332 mm × H 1 554 mm (Main body only) W 2 166 mm × D 2 332 mm × H 1 554 mm (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 mm / Max. stick width : 24 mm / Max. component mass : 2 kg in total (including stick mass)	
Stick L	Max. component dimension : W 60 × L 80 × H 45 mm / Max. stick width : 64 mm / Max. component mass : 2 kg in total (including stick mass)	
Radial tape	Max. body dimension : Max. Φ20 × H 30 mm / Lead pitch : 2.5 / 5.0 / 7.5 / 10.0 mm	
Tray	Max. tray dimension : L 230 × W 335 × D 69 mm / 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 mm × W 5 mm or larger (For tape, embossed tape of 12 mm or larger)						
Placement specs	Head: Nozzle only Placement accuracy : QFP ±0.05 mm (Cpk ≧ 1) Max. tact time : 3 000 cph (per head)						
Supply unit (embossed tape)	Tape feeder width	12 / 16 mm	24 / 32 mm	44 / 56 mm	72 mm	88 mm	104 mm
	30-slot supply unit	30	15	10	7	6	5
	13-slot supply unit	13	6	4	3	2	2

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.

Panasonic Group products are built with the environment in mind. For details here Panasonic GREEN IMPACT

Inquiries…

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All data as of January 1, 2025
Ver.January 1, 2025

- 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

2025

Electronics Assembly System

Odd-form Component Insertion Machine

Catalogue

Model ID

NPM-VF

Model No.
NM-EJR9A

NPM
NEXT PRODUCTION MODULAR

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

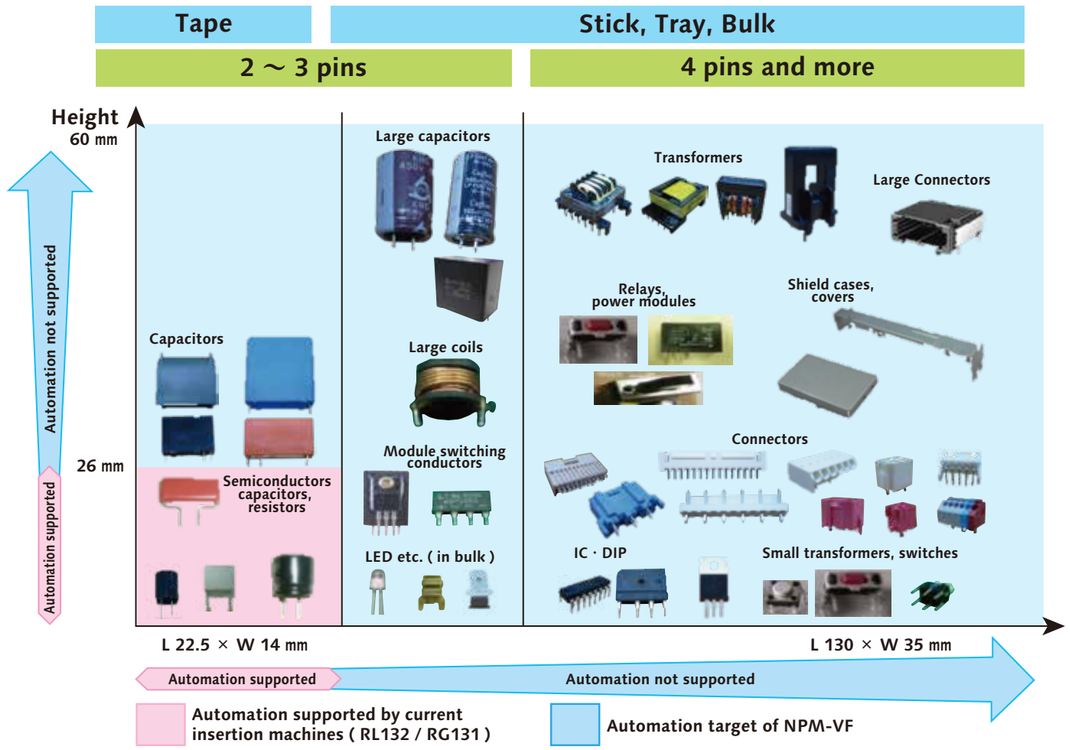
Features and aims of NPM-VF

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

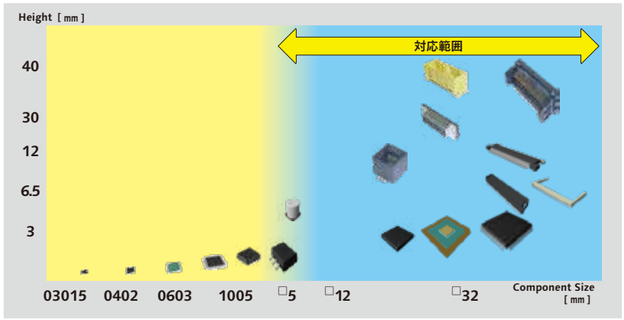
2 Versatile and flexible : various configuration of head tools and machine feeder configuration to adapt to different types of components.

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

Applicable Components



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

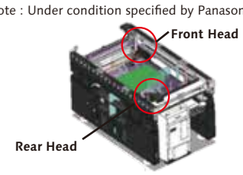
CURRENT: SMT mounter → Reflow solder → Magazine → Manual Insertion Process → Magazine → Dip solder

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.

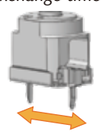


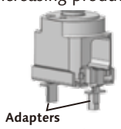
Non-stop Production

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

Versatility

Various tools to cater to different components


Body chuck
- Chuck Adapter changer available
- Push force up to 100 N


Nozzle
- Nozzle changer available
- Push force up to 100 N


Lead chuck


Swing nozzle

Various component feeding types


Tray Feeder

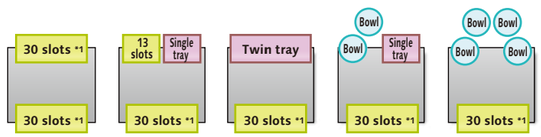

Stick Feeder
- Feeder width adjustable according to stick size


Radial Tape Feeder


Bowl Feeder *

*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.


Feeder cart


Single tray feeder


Twin tray feeder

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.


Head camera

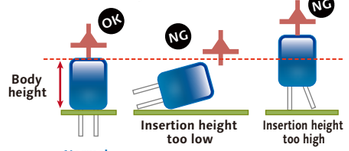

Component camera

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.


conveyor

Cut & Clinch Function (Option)

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