### Machine configuration

**NPM-WX**

- Rear camera
- Mounting head
- Front camera

**NPM-WXS**

- Rear camera
- Mounting head
- Front camera

### Supply unit layout

<table>
<thead>
<tr>
<th>Layout 1</th>
<th>Layout 2</th>
<th>Layout 3</th>
<th>Layout 4</th>
<th>Layout 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 m taping 120</td>
<td>8 m taping 136</td>
<td>8 m taping 94</td>
<td>8 m taping 102</td>
<td>8 m taping 68</td>
</tr>
<tr>
<td>Tray</td>
<td>Tray</td>
<td>Tray</td>
<td>Tray</td>
<td>Tray</td>
</tr>
</tbody>
</table>

### Model ID

<table>
<thead>
<tr>
<th>Model ID</th>
<th>NPM-WX</th>
<th>NPM-WXS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>NM-EJM9D</td>
<td>NM-EJM2E</td>
</tr>
</tbody>
</table>

### PCB dimensions

- **Single-lane mode**
  - Batch mounting: L 50 m × W 50 m × L 750 m × W 610 m
  - 2 position mounting: L 50 m × W 50 m × L 350 m × W 610 m
- **Dual-lane mode**
  - Single transfer (Batch): L 50 m × W 50 m × L 750 m × W 500 m
  - Single transfer (2 position): L 50 m × W 50 m × L 150 m × W 500 m

### Electric source

- 3-phase AC 220 V, 220 V, 400 V, 420 V, 480 V, 3.0 kVA
- 3-phase AC 200 V, 220 V, 380 V, 400 V, 420 V, 480 V, 2.1 kVA

### Dimensions

- W 1 410 mm × H 1 444 mm × D 740 mm
- W 1 410 mm × H 1 444 mm × D 740 mm

### Placement accuracy

- Min. 0.5 MPa
- Min. 0.5 MPa

### Machine configuration

<table>
<thead>
<tr>
<th>Component</th>
<th>Placement head</th>
<th>Placement speed</th>
<th>Placement accuracy</th>
<th>Placement dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component dimensions</strong></td>
<td>Max. speed</td>
<td>Placement accuracy (Cpk/Κ1)</td>
<td>Placement accuracy (Cpk/Κ1)</td>
<td>Placement accuracy (Cpk/Κ1)</td>
</tr>
<tr>
<td>43 000 cph (0.384 / chip)</td>
<td>8 400 cph (0.291 / chip)</td>
<td>7 300 cph (0.270 / chip)</td>
<td>9 400 cph (0.383 / chip)</td>
<td>7 300 cph (0.270 / chip)</td>
</tr>
<tr>
<td>23 000 cph (0.155 / chip)</td>
<td>7 800 cph (0.262 / chip)</td>
<td>7 100 cph (0.357 / chip)</td>
<td>6 350 cph (0.387 / chip)</td>
<td>7 800 cph (0.262 / chip)</td>
</tr>
<tr>
<td>43 000 cph (0.384 / chip)</td>
<td>8 400 cph (0.291 / chip)</td>
<td>7 300 cph (0.270 / chip)</td>
<td>9 400 cph (0.383 / chip)</td>
<td>7 300 cph (0.270 / chip)</td>
</tr>
</tbody>
</table>

### 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.**

**Panasonic Connect Co., Ltd.**

Process Automation Business Division

3-1-1 Maeda-cho, Toyonaka City, Osaka 561-0854, Japan

All data as of April 25, 2022
“Autonomous Factory” Concept

A factory that immediately responds to every situation and continues to evolve autonomously

Ensuring the production of non-defective items through the integrated control of autonomous uninterrupted mounting lines and floors independent of any human intervention and judgment

Management

Maximize Decision Quality
- Maximize decision quality in investments that directly impact ROI-

With the goal of maximizing management effects with minimum investment, the plan development AI calculates the resources* that you need to accomplish the goal. It visualizes the differences between the goal and the reality of your current situation, which can contribute to your business decision making. Thus, it helps you to improve daily management figures, as well as to efficiently judge whether to receive any orders from new customers.

Entire factory

Maximize Resource Efficiency
- Maximize resource efficiency to reduce TCO-

With the objective of making maximum use of the resources* charged into your factory floor, the plan development AI monitors and manages the conditions of floor resources* relative to emerging floor variation factors, such as operational errors, machine problems or defective materials, and thereby minimizes such variations.

In addition, it also seeks to reduce TCO by providing the floor operators with on-target instructions, according to its optimal plan, for addressing daily variations.

Process control APC-5M

- Maximize O.E.E to be confident in achieving production plans-

With the aim of maximizing O.E.E, the hardware automatically detects mounting quality information, as well as the sign of any error or change in resource*, and then Production Implementing AI autonomously corrects the error or change on a line-wide level or notifies the operator of it. By using the outcomes that it has learnt, the AI will automatically identify responsible factors and make fine tuning of equipment, accordingly, which have so far belonged to the realm of Takumi know-how alone.

Automation/Labor-saving Solution + Improving Intelligence Solution to Achieve Manufacturing That Is Further in Line with Production Plan

iLN-based “Seamless SMT Line” Control

One of the industry’s largest alliance network

No. of companies having been actually network-connected in the past: 110 companies*

According to a survey by us as of Feb. 2022

Print: Automated supply

Perforated pot type automatic solder supply
- A perforated pot is used to enable automated solder supply during production.
- Used in combination with solder remaining detection sensor, it can keep the right amount of solder on metal mask.

Solder remaining detection sensor

Auto load feeder
- Automated tape parts setup that does not require any skills.
- Automated re-supply tape feeding that does not require any splicing.

Auto load feeder

Tray stocker
- Replacing / refilling with tray magazines without having to stop the machine
- Labor-saving by reducing the frequency of refilling of magazines

Realization of Autonomous Mounting Line

By monitoring real-time “5M conditions” and “machine operating conditions,” the AI detects any variations or changes in 5M for a line and performs more intelligent 5M process control and predictive maintenance of the line and, by that, realizes production of non-defective items and stable operation of in-line machines.

A factory that immediately responds to every situation and continues to evolve autonomously.
Developing high-quality, high-throughput unmanned floor

[1] Panasonic’s next generation of mounting production (X series) concept
“Smart manufacturing”
More line throughput, better quality and lower cost with fully automated mounting system floor

1 Stable operation based on the autonomic function
   Autonomous line control
   APC system and automatic recovery option

2 Labor-saving, improved utilization
   Concentrated control
   Floor management system and remote operation option

3 Reduced work variations
   Navigation/automated items
   Feeder setup navigation, component supply navigation and automated items

[2] NPM-WX, WX’s features
New platform to realize Smart Manufacturing

1 Evolved basic performance
   - Max speed: 86,000 cph
   - IPC9850(1608): 64,500 cph
   - Placement accuracy: ±25 μm

2 Maximized actual throughput

3 Minimization of human-dependent work
   - Improved ability to support components
   - Increased productivity/quality
   - Minimization of human-dependent work

Increased PCB adaptability
Increase in transportable PCB size (The following figures show increases compared to NPM-W2.)

Greater versatility in supply units
The feeder carts of both the NPM-W (30-input) and the NPM-D (17-input) series are now installable; in addition to that, the interchangeability between a feeder cart (17-input) and newly developed single tray feeder (24-product type) allows you to replace them by each other on your own.

It can handle 24 product types for production and stock the maximum number of 48 tray pallets, thus reducing the frequency of refilling of tray components.

*The dedicated tray feeder is necessary.
**Feeder maintenance**

**Parts supply navigator option**

**Navigation**

**Concentrated control**

**Automated items**

---

**APC system**

**APC-5M: Real-time unit monitoring**

APC-5M monitors the conditions of target units in real time and provides notification of the timing of maintenance of each unit or any error condition that could interrupt production, depending on variations in monitored unit values. This function enables you to conduct maintenance at optimal times.

**Feedback to the printing machine**

- **APC-FB**: Feedback to the printing machine
  - Monitors solder inspection results and corrects component placement positions.
  - Chip components: 0402C/R
  - Package components: QFP, BGA, CSP

**Feedforward to the placement machine**

- **APC-FF**: Feedforward to the placement machine
  - Adjusts solder inspection measurement data and corrects component placement positions.
  - Suitable for solder inspection: 0402C/R

**Automatic excess correction position.**

**Operating condition monitoring**

- **APC-MFB2**: Operating condition monitoring
  - Monitors the operating condition of the feeder.
  - Machine name: HMU

**Head maintenance unit**

- **Head diagnosis function**: Checks the pneumatic circuit.
- **Blow error detection**: Checks the placement blow status.

**Remote operation option**

**Component supply navigator option**

It is a support tool to navigate efficient setup procedures. 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.

**Parts supply navigator option**

It is a parts supply support tool to present an efficient sequence of parts supply. Taking into account the length of time before parts shortage occurs and the least time-wasting moving path possible, the tool provides the operator with instructions for parts supply. This makes parts supply more efficient.

**Placement head maintenance**

- **Good use is made of the machine's self-diagnosis function to automatically detect the maintenance timing of the placement head. In addition, the maintenance unit can be used to keep the placement head in working condition without requiring skills.**

**Automatic recovery option**

- **Automatic recovery option**
  - When pickup/recognition error occurred, the machine automatically corrects the pickup position without stopping production.

**Pickup position automatic teach in case of an error**

- **Pickup position automatic teach in case of an error**
  - In production
  - In case of a pickup error, retry pickup without feeding tape. It reduces discard components.
  - If a pickup/reognition error occurred, the machine automatically corrects the position without stopping production.
  - Programmable teach function

**Re-pickup of error component (retry)**

- **Re-pickup of error component (retry)**
  - No tape feed.

---

**Information on components judged NG by AOI is displayed both on AOI and NPM.**

- **Type**: Flip
  - NPM-3DX
  - NPM-WX
  - AOT
  - NPM-DX
  - NPM-DX
  - NPM-WX

**Load check-under development**

- **AOI Info Display option**
  - Information from AOI is displayed on the screen of the target mounting machine.

**Placement blow status**

- **Placement blow status**
  - Head maintenance unit
  - To automatically inspect and maintain the placement head.

**Inspection option before pick-up**

- **Inspect tray or reel components before pick-up to prevent misplacement.**
  - **Polarity inspection**
    - Detects wrong component orientation
  - **Component number inspection**
    - Detects wrong components, traces components.

---

**Remote operation**

- **Remote operation**
  - In case of a failure, the machine automatically corrects the pickup position without stopping production.

**Latest results**

- **Latest results**
  - Head fiber clamping
  - Nozzle holder sliding
  - Nozzle nozzle clamping
  - Nozzle tip condition
  - Feeder feed accuracy

---

**Feeder maintenance**

- **Independent of operator skill, the feeder maintenance unit automatically performs feeder performance inspections and calibrations. Its combined use with the PanaCIM maintenance module can automatically prevent the inclusion of non-conforming feeders into production.**

---

**Component number inspection**

- **Component number inspection**
  - Detects wrong components, traces components.
**Component Verification option**

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

- **Component verification function**
  - Batch Exchange Cart Setup: Provides power to all feeders in cart.
  - Feeder verification: Provides power to individual feeders.
  - Component verification: Navigator that indicates any location where a component is not mounted.

- **Power supply station**
  - The simple type of station composed of the batch exchange cart setup and the feeder setup features.

**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.**

**Automatic changeover option**

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

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

**Automatic changeover function**

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

**Required components**

- A computer must be purchased separately.
- *1* Requires input of component information with a component verification option.
- *2* Requires input of PCB information with automatic changeover option.

**NPM-DGS** (Model No. NM-EJS5A)

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.

- **Data Creation System**
  - Allows you to import CAM data and check priority, etc., on the screen.
  - **Component library**
    - Depth 1400 and 2400 page size
  - **PT200**
    - CAD import
  - **NPM-DX+NPM-T2Z Line**
    - DGS Automation option
  - **Component verification system**
    - *1* A computer is required separately.
    - *2* NPM-DGS has two management functions of floor and line level.

** Offline Camera option**

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

- **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 supply units. In order to reduce the required setup workload in such a case, this option reduces PDBs into similar component placement groups, selecting a reliably for setup and thus optimizing component placement operation. It contributes to improving setup performance and reducing production preparation time. Optimizes mounting various kinds of products in small quantities.

**Open interface**

- **Host communication option**
  - Event: Outputs a real-time event of equipment
  - Other company’s component verification: Communicates with your component verification systems
  - Component management data: Component renaming quantity data
  - Component renaming quantity data: Track data: Outputs data linked with component information (*1) and PCB information (*2)
  - *1* Requires input of component information with a component verification option or as other company’s component verification system (*1)
  - *2* Requires input of PCB information with automatic changeover option