

Standard of Mid-class

# SM Series

Specifications



| Model Name         |               |                             | SM471 PLUS            | SM481 PLUS                                                                             | SM482 PLUS                       | SM485                                                                                   |
|--------------------|---------------|-----------------------------|-----------------------|----------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------|
| Alignment          |               |                             | Fly Camera            | Fly Camera + Fix Camera (Option)                                                       | Fly Camera + Fix Camera          | Fly Camera + Fix Camera                                                                 |
| Number of Spindles |               |                             | 10 Spindes x 2 Gantry | 10 Spindes x 1 Gantry                                                                  | 6 Spindes x 1 Gantry             | 4 Spindes x 1 Gantry                                                                    |
| Placement Speed    |               |                             | 78,000CPH (Optimum)   | 40,000CPH (Optimum)                                                                    | 30,000CPH (Optimum)              | 22,000CPH (Optimum)                                                                     |
| Placement Accuracy | Chip          |                             | ±40μm@±3σ             | ±40μm@±3σ                                                                              | ±40μm@±3σ                        | ±40μm@μ±3σ                                                                              |
|                    | QFP           |                             | ±50μm@±3σ             | ±30μm@±3σ                                                                              | ±30μm@±3σ                        | ±30μm@μ±3σ                                                                              |
| Component Range    | * Fly Camera  | Chip IC, Connector BGA, CSP | 0402 ~ □ 14mm         | 0402 ~ □ 16mm                                                                          | 0603 ~ □ 22mm (** 0402 ~ □ 14mm) | 0402 ~ □ 21mm                                                                           |
|                    | ** Fix Camera | IC, Connector BGA, CSP      | -                     | □ 16mm ~ □ 42mm (Standard)<br>□ 42mm ~ □ 55mm (MFOV)<br>L55mm ~ L75mm Connector (MFOV) |                                  | □ 16mm ~ □ 42mm (Standard)<br>□ 42mm ~ □ 55mm (MFOV)<br>L75mm ~ L150mm Connector (MFOV) |
|                    | Max. Height   |                             | 12mm                  | 10mm (Fly)<br>15mm (Fix)                                                               | 12mm (Fly)<br>15mm (Fix)         | 15mm (Fly)<br>26mm (Fix)                                                                |

\* SM471 PLUS, SM481 PLUS, SM485 Fly Camera Spec. : Based on Mega FOV 24mm (SM482 PLUS Fly Camera Spec. : Based on Mega FOV 25mm)  
\*\* SM481 PLUS, SM482 PLUS, SM485 Fix Camera Spec. : Based on Mega FOV 45mm (Mega FOV 35mm : Option)  
\*\*\* SM482 PLUS can mount 0402 ~ □ 14mm when Fly Camera Mega FOV 16mm is applied.

| PCB Size (mm)                  | Min.            |             | 50(L) x 40(W)                                          |                                                                                                            |                                                                                                            |                                                  |
|--------------------------------|-----------------|-------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|                                | Max.            | Single Lane | 510(L) x 460(W)<br>610(L) x 460(W) (Option)            | 460(L) x 400(W)<br>510(L) x 460(W) (Option)<br>610(L) x 510(W) (Option)<br>Max. 1,500(L) x 460(W) (Option) | 460(L) x 400(W)<br>510(L) x 460(W) (Option)<br>610(L) x 510(W) (Option)<br>Max. 1,200(L) x 510(W) (Option) | 460(L) x 400(W)<br>Max. 740(L) x 460(W) (Option) |
|                                |                 | Dual Lane   | 460(L) x 250(W)<br>610(L) x 250(W) (Option)            | -                                                                                                          | -                                                                                                          | -                                                |
|                                | PCB Thickness   |             | 0.38 ~ 4.2                                             |                                                                                                            |                                                                                                            |                                                  |
| Feeder Capacity (8mm standard) |                 |             | 120ea/112ea (Docking Cart)                             |                                                                                                            |                                                                                                            |                                                  |
| Utility                        | Power           |             | AC200 / 208 / 220 / 240 / 380 / 415V (50/60Hz, 3Phase) |                                                                                                            |                                                                                                            |                                                  |
|                                |                 |             | Max. 5.0kVA                                            | Max. 3.5kVA                                                                                                | Max. 3.5kVA                                                                                                | Max. 3.5kVA                                      |
|                                | Air Consumption |             | 0.5 ~ 0.7MPa (5.0 ~ 7.0kgf/cm <sup>2</sup> )           |                                                                                                            |                                                                                                            |                                                  |
|                                |                 |             | 350Nℓ/min<br>50Nℓ/min (Vacuum Pump)                    | 160Nℓ/min<br>50Nℓ/min (Vacuum Pump)                                                                        | 180Nℓ/min<br>50Nℓ/min (Vacuum Pump)                                                                        | 180Nℓ/min<br>50Nℓ/min (Vacuum Pump)              |
| Mass (kg)                      |                 |             | Approx. 1,820                                          | Approx. 1,655                                                                                              | Approx. 1,600                                                                                              | Approx. 1,600                                    |
| External Dimension (mm)        |                 |             | 1,650(L) x 1,690(D) x 1,485(H)                         | 1,650(L) x 1,680(D) x 1,530(H)                                                                             | 1,650(L) x 1,680(D) x 1,530(H)                                                                             | 1,650(L) x 1,680(D) x 1,530(H)                   |

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• Please note that specifications and product information in this catalog are subject to change without notice.



Experience Your **SMART FACTORY**



Standard of Mid-class

# SM Series



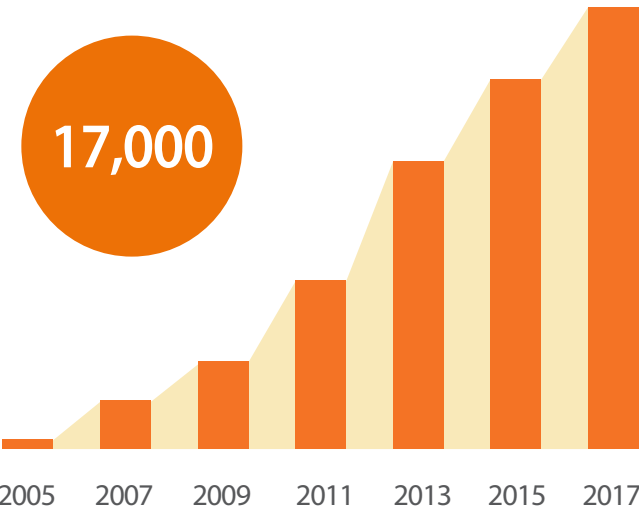
# Hanwha Bestseller

## Know-how Accumulated over 30 Years!

With 17,000 sets having been sold since its market launch in 2005, the SM series component placers Hanwha's best selling products. Please experience Hanwha's know-how with the SM series component placers verified by many customers worldwide.



### Accumulated production of 17,000 sets

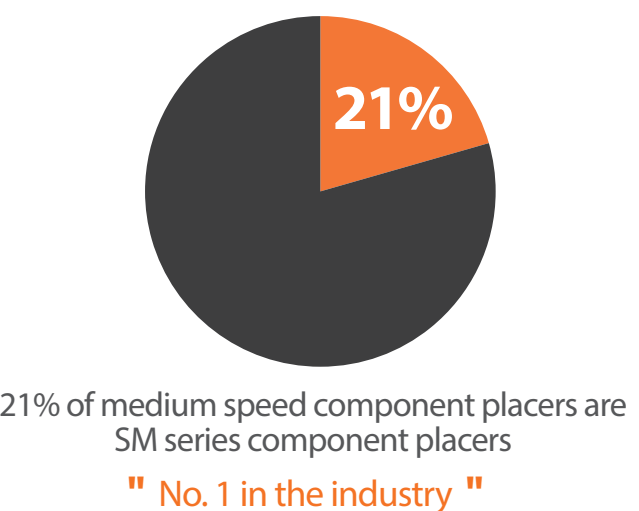


### Outstanding Cost Performance

As a standard of medium speed component placers, SM series component placers provide all essential functions necessary for PCB production at a reasonable price, allowing investment to be returned in a short period of time.



### No. 1 in the industry of medium speed component placers



### The highest performance among the component placers of the same class

Optimized to various production environments with a line-up of the highest speed/accuracy among component placers of the same class.

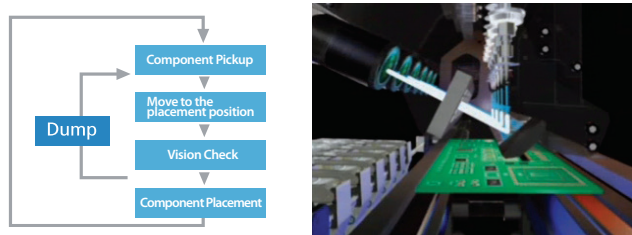
| Description |         | SM471PLUS  | SM481PLUS  | SM482PLUS  |
|-------------|---------|------------|------------|------------|
| Speed       | Optimum | 78,000 CPH | 40,000 CPH | 30,000 CPH |
| Accuracy    | 0402    | ±40μm      | ±40μm      | ±40μm      |
|             | BGA/QFP | ±50μm      | ±30μm      | ±30μm      |

# SM Series Common Feature

Convenient in-line operation through unification of main modules and in-line platform

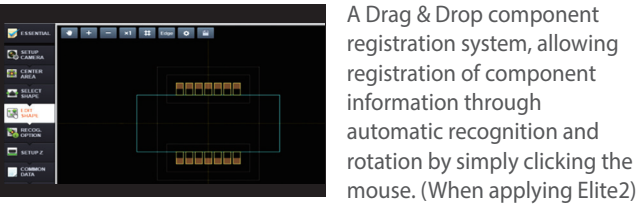
## On-the-fly Placement Method

Owing to Hanwha's own On-the-fly image recognition technology which allows component recognition without stopping while moving after component pickup, placement speed is maximized by minimizing the moving time between the pickup position and placement position and reducing the recognition time to zero.



## Added a new function maximizing the operational convenience of customers

### Easy Component Registration New Part Editor



In addition, user convenience is further reinforced by unifying the on-line/off-line component registration systems.

### Panorama View Function



Since large-sized components are not viewed in one screen, it is hard to adjust their pickup or placement positions. In order to remove such inconvenience, the panorama view function is added to allow large components to be viewed within the FOV of a camera.

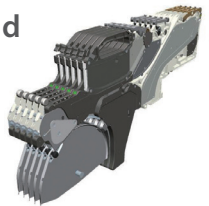
## The highest applicability to long and large PCBs among machines of the same class

| Description | Single Lane         | Dual Lane         |
|-------------|---------------------|-------------------|
| SM471PLUS   | Max.610(L)x460(W)   | Max.610(L)x250(W) |
| SM481PLUS   | Max.1,500(L)x460(W) | -                 |
| SM482PLUS   | Max.1,200(L)x510(W) | -                 |
| SM485       | Max.740(L)x460(W)   | -                 |

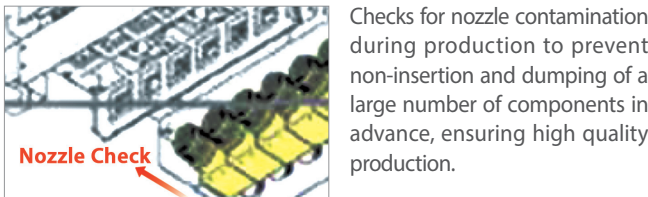
※When applying an option for a large PCB

## Mixed Use of Electric Feeder and Pneumatic Feeder

Mixed use of electric and pneumatic feeders in the same feeder base is available for SM series component placers. The investment in production can be minimized by using these feeders along with existing feeders.



## Component Monitoring before/after Placement



**Time of inspection** - Before/after ANC; before/after component placement; and after component dumping

## Multi-Vendor Component Management Function

| No. | IO | Part  | SubPart |
|-----|----|-------|---------|
| 1   | ○  |       |         |
| 2   | ○  |       |         |
| 3   | ○  |       |         |
| 4   | ○  |       |         |
| 5   | ○  | R1005 | R1005.1 |
| 6   | ○  | R1005 | R1005.2 |
| 7   | ○  | R1005 | R1005.3 |
| 8   | ○  |       | None    |
| 9   | ○  |       | R1005.1 |
| 10  | ○  |       | R1005.2 |
| 11  | ○  |       | R1005.3 |

When the same components are supplied from different component supply devices, this function allows components to be used without changing a PCB file and downloading a new PCB file.



Fast Chip Shooter

SM471PLUS

The SM471PLUS is a high performance chip shooter which applies two gantries equipped with 10 spindles per head as well as a new Fly Camera system. Compared to the existing SM471 model, its placement speed is increased further to 78,000CPH, which is the highest in the world among chip shooters of the same class. In addition, it is basically applicable to components from 0402 (01005inch) chips to maximum □ 14mm IC components. Its actual productivity and placement quality is improved by applying high-speed and high precision electrical feeders. With two gantries and dual lane, the SM471PLUS supports various production modes to maximize the productivity of SM series machines.

Features

|                      |                                                              |
|----------------------|--------------------------------------------------------------|
| Placement Speed      | Chip 78,000CPH (Optimal)                                     |
| Applicable Component | 0402(01005inch)<br>~ Max. □ 14mm (h12mm)                     |
| Placement Accuracy   | ±40 <sub>μm</sub> @μ±3σ/Chip,<br>±50 <sub>μm</sub> @μ±3σ/QFP |
| Applicable PCB       | L510xW460 (Standard)<br>L610xW460 (Option)                   |

Dual lane and shuttle conveyor maximizes the productivity of **SM series** component placers

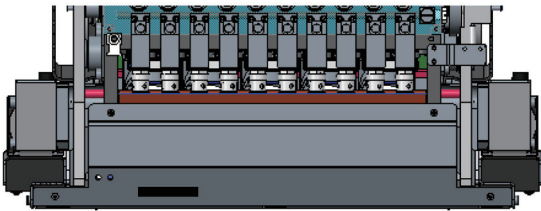
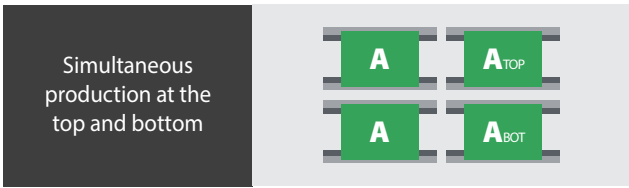
Dual lane production maximizes the productivity of small boards and the shuttle conveyor ensures extensibility to the production of large boards.



Supports for various production modes according to production characteristics

|             |                                                                     |
|-------------|---------------------------------------------------------------------|
| Join Mode   | Common use of front and rear feeders (less than D 250mm)            |
| Single Mode | Production of medium- and large-sized boards (greater than D 250mm) |
| Twin Mode   | Separate placement at front and rear sides (less than D 250mm)      |

Even when a problem occurs to one placement head or when the components in the feeder runs short, another head can help place components, allowing continuous production without stopping the machine



10Spindle x 2Gantry



Flexible Placer

SM481PLUS

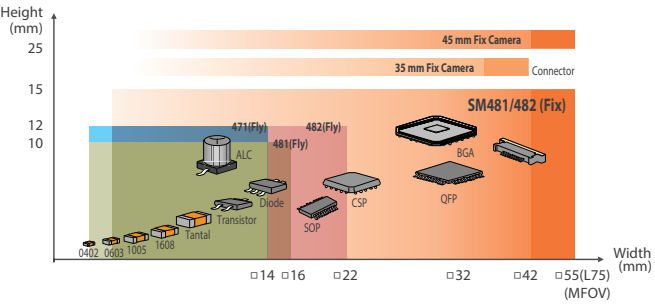
The SM481PLUS can perform high-speed placement of chips at 40,000CPH and QFPs at one per 1.1 seconds, respectively (each at optimum speed) by applying the on-the-fly recognition technology patented by Hanwha, which enables component placement at the highest speed among all medium speed component placers. With one-gantry structure having a high-speed piano head with 10 nozzles, the machine can be operated with minimum manpower using one side of the machine. Being able to produce long boards with lengths of up to 1,500mm, the machine boasts of its applicability to the largest PCBs among SM series component placers.

Features

|                      |                                                                |
|----------------------|----------------------------------------------------------------|
| Placement Speed      | Chip 40,000CPH (Optimal)                                       |
| Applicable Component | 0402 ~ □ 16mm (h10mm) (Fly)<br>~ Max. □ 55mm,L75 (h15mm) (Fix) |
| Placement Accuracy   | ±40 <sub>μm</sub> @μ±3σ/Chip,<br>±30 <sub>μm</sub> @μ±3σ/QFP   |
| Applicable PCB       | L460xW400x1Lane (Standard)<br>L1,500xW460x1Lane (Option)       |

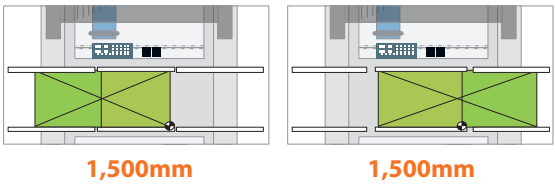
Production speed and component **coverage** suitable for general-purpose high-speed placement

General-purpose high-speed machine among SM series component placers, which applies a high-speed piano head with 10 nozzles and an option for an upward camera.



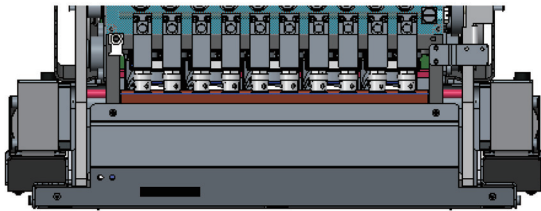
1,500mm long board

Two-staged placement using an extended conveyor allows production of long boards with lengths of up to 1,500mm. (The SM482PLUS can produce boards with lengths of up to 1,200mm)



One-side operation

With single gantry and single lane structures optimized for machine operation using only one side of the machine, the production area and manpower can be utilized efficiently.



10Spindle x 1Gantry

