SANMOTION Application Case

Chip Mounter

SANYO DENKI

Description

Chip mounters are robotic machines used to place surface-mount devices (SMDs) onto printed circuit board (PCB).

Structure:

Tape feeder

Tape feeder feeds chips (SMDs) to mounter. Feeders are mounted next to each other horizontally.

Tape feeding, winding

Conveyor

PCB conveyor

X-Y Robot

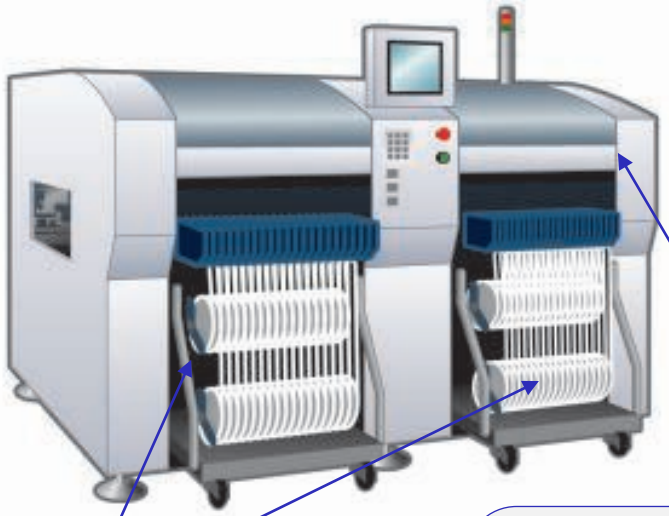
Moving mounter in X, Y directions.

X-axis, Y-axis

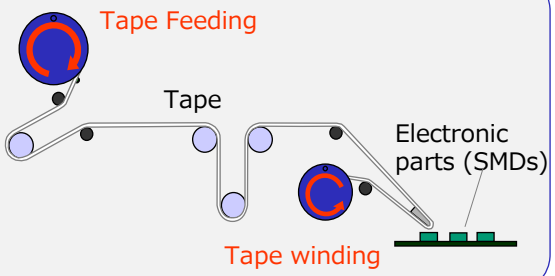
Mounter head

Picking up electronic parts sent from the feeder and placing them onto the PCB.

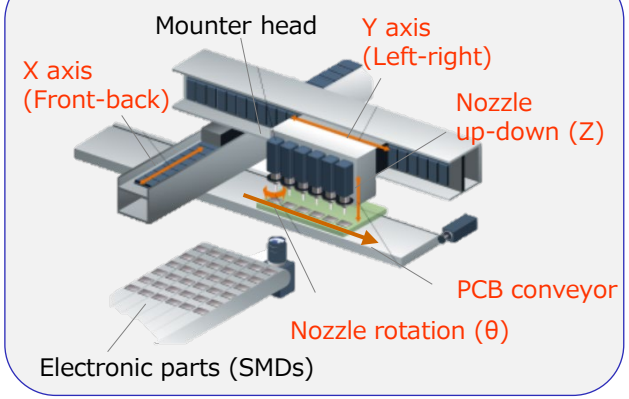
Nozzle Z-axis, θ-axis



Tape feeder structure



Mounter structure



SANYO DENKI Proposal

Tape feeding	SANMOTION F2	F2 Compact stepping motor	42 mm sq. (Several axes)
Tape winding	SANMOTION F2	F2 Compact stepping motor	56 mm sq. (Several axes)
PCB conveyor	SANMOTION Model No.PB	Closed-loop stepping motor	42 mm sq. (4 axes) / 56 mm sq. (2 axes)
X axis, Y axis	SANMOTION R	AC servo motor	60 mm sq. (400W, 4 axes) / 86 mm sq. (1kW , 2 axes)
Nozzle up-down (Z)	SANMOTION R	Servo motor	20 mm sq. (20 W, 20 axes)
Nozzle rotation (θ)	SANMOTION F5	F5 stepping motor	28 mm sq. (20 axes)

Amplifier, driver: AC servo amp. R 3E Model 30A-50A / 48 VDC servo amp. / F5 stepping driver / PB driver

Features

・2-Phase thin stepping motor [Feeding, winding]
The compact thin stepping motor has the highest level torque among similar products in the industry.

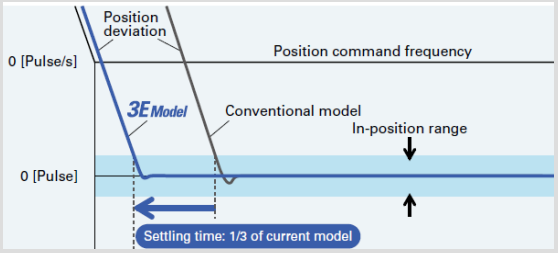
42 mm sq. (Width: 11.6mm)		50 mm sq. (Width: 11.4mm)	

・20 mm sq. servo motor + amp. [Nozzle axis (Z)]
The 20 mm sq. motor is compact, light-weight, high torque and has the industry's leading acceleration.

・F5 stepping motor + driver [Nozzle axis (θ)]
5-phase stepping system has higher accuracy, lower vibration and heat generation than 2-phase stepping system. It helps improve acceleration performance.

・PB motor + driver [Conveyor axis]
Feedback and closed-loop control are available with PB models. It makes stable stops without vibration as it contains holding torque when it is stopped.

・AC servo motor + amp. [Front-back(X), left-right(Y)]
The 3E Model has a speed frequency response of 2.2 kHz, approximately twice that of our conventional product. Positioning time is 66% faster.



Merits

- **Choosing the best product for customers' application from wide variety of products**
- Servo, stepping and closed-loop stepping motors are available.
- Single sourcing helps improve maintainability.

SANMOTION CLOSEDLOOP STEPPING SYSTEMS Model No.PB

- **High precision and reliability**
- 2-, 3-, and 5-phase stepping motors are available in our product lineup. Customers can chose the best product that suits their equipment requirement.
- Device reliability could be improved using closed-loop PB motors as it eliminates step-out caused by sudden changes in speed and overload.

- **Higher productivity**
- High speed and accurate positioning of servo motors makes it possible to shorten machine cycle time.
- Thin stepping motor and compact servo motor makes it possible for customer to load more feeders in the machine, thus increase productivity.
- It also enables downsizing of machine and improves space efficiency.