

HW-T8-80F

Independent High-Speed Multi-Function SMT Pick and Place
Machine

Eight Heads · 80 Feeder Slots · High Precision

1. Product Overview

The HW-T8-80F is an independent high-speed multi-function SMT pick and place machine. It is equipped with eight high-accuracy placement heads and can hold up to 80 feeders (when using 8 mm tape feeders), making it suitable for both small-batch PCB proofing and continuous mass production.

The machine combines a HuaweiGuochuang-developed intelligent control system with imported high-precision mechanical components. It is designed for 24-hour non-stop operation, with mounting efficiency that addresses the needs of small- and medium-sized electronics manufacturers.

Key Features

- Eight independent high-precision placement heads with simultaneous picking
- 80 feeder slots (subject to 8 mm tape feeders); also supports 48 IC trays
- Mounting speed range of 12,000–13,000 components per hour
- Three-stage PCB entry: waiting, mounting, and exiting
- Automatic optimization of feeder layout, nozzle sequence, and mounting path
- Compatible with electric, pneumatic, and vibrating feeders and IC trays

2. Accuracy and Reliability

The HW-T8-80F is built around imported precision ball screws and linear motion guides, supporting accurate placement of components from 0201 up to QFP and BGA packages with a lead pitch ≥ 0.3 mm. All values are stated in accordance with international standards.

Parameter	Value
Mounting accuracy	0.05 mm
Positioning accuracy	0.01 mm
Repeated mounting accuracy	0.02 mm
Continuous non-stop operation	24 h

Accuracy values are typical figures under recommended operating conditions.

3. External Structure

The external layout is designed for safe operation, easy access to consumables, and clear status indication.

- **Warning light:** three-colour status indicator for run, idle, and alarm states.
- **Housing and shield:** sheet-metal housing with a transparent top shield over the working area.
- **Width-adjustable tracks:** automatic, electrically adjusted PCB conveyor tracks.

- **Feeder slots:** front-mounted slots for tape, vibrating, and tray feeders.
- **Electric control box:** located on the lower front, ventilated cabinet for drivers and PSU.
- **Industrial computer:** 17-inch display with keyboard, mouse, USB ports, power and emergency-stop buttons.
- **Heavy-load anchors:** reinforced levelling feet for stable operation under continuous vibration.
- **Oil-water filter:** pneumatic preparation unit for clean, regulated air supply.

Dimensions: 1410 × 1500 × 1540 mm. **Weight:** 850 kg.

4. Internal Structure

The motion platform is built on a stiff cast base with double linear motion guides and double ground ball screws on both X and Y axes.

- **Placement heads (8 pcs):** high-accuracy heads with independent Z and theta axes.
- **X and Y axes:** double linear motion guides plus double ground ball screws.
- **Servo motors:** AC servo motors with a high-speed DSP driver.
- **Cameras:** one 5 MP HD calibration camera, eight 1 MP fast recognition cameras, one mark camera.
- **Cable management:** German Igus drag-chain and flexible cable rated for 10 million motion cycles.
- **Vacuum supply:** Japanese CKD vacuum generator with high-speed vacuum-burst release.
- **PCB conveyor:** three zones — waiting area, mounting area, exiting area.
- **Safety:** anti-collision sensors and pneumatic support bar.

5. Software and Intelligent Functions

The machine runs an SMT control system based on Windows, developed by HuaweiGuochuang. The software reduces manual programming effort and is designed so that less than 15% of the program preparation needs human input.

Mounting Project Optimisation

- Path optimisation with synchronous picking by all eight heads
- Shortest-path routing with majority-priority for high-count components
- Automatic distribution of the nozzle installation sequence based on the BOM
- Global optimisation of the PCB mounting path
- Automatic slowdown over large components and lower priority for rarely used parts
- Automatic calibration of feeder picking coordinates (saves about 30% of programming time)

Operator Workflow

1. Create a production project, import the PCB coordinates CSV and BOM, set the four mark points; the program and feeder layout are generated automatically.
2. Install the feeders and nozzles in the positions assigned by the software.
3. Run the one-click automatic calibration of feeder picking coordinates.
4. Run a first-board trial; if it is stable, start mass production.

6. Technical Specifications

Complete specification of the HW-T8-80F configuration.

Parameter	Value
Model	HW-T8-80F
Number of placement heads	8 (high accuracy)
Number of IC trays	48
Number of feeders	80 (subject to 8 mm tape feeder)
Positioning accuracy	0.01 mm
Repeated mounting accuracy	0.02 mm
Mounting speed range	12,000–13,000 pcs/h
Applicable components	resistor, capacitor, chip, LED, etc.
Maximum PCB area	500 × 380 mm
Maximum component height	≤ 7 mm
Supported feeders	electric, pneumatic, vibrating, IC tray
Recognition devices	1 mark camera, 8 fast cameras, 1 high-precision camera
Recognition method	simultaneous recognition and picking by eight heads
PCB conveyance	three-stage entry, automatic left-to-right transfer
Mark positioning	manual / automatic
Programming method	automatic, after manual import of PCB coordinates
Control system	HuaweiGuochuang control system
Maximum XY step length	629 × 679 mm
XY axis structure	double linear motion guide + double ground ball screw
XY motion mode	intelligent acceleration/deceleration linkage, linear interpolation
Control computer	industrial PC with Intel high-performance processor
Track adjustment	electric
Nozzle buffer range	4.5 mm
Maximum Z-axis step length	50 mm
Component angle range	± 180°
Motor	AC servo motor
Driver	high-speed DSP driver
Air supply requirements	oil-water filter, ≥ 60 L, dust filter, pressure stabiliser
Nozzle vacuum supply	Japanese CKD vacuum generator with high-speed vacuum burst

Parameter	Value
Air supply pressure range	0.5–0.6 MPa
Operating system	Windows-based SMT intelligent OS (in-house development)
Display	17-inch industrial monitor
Cable	German Igus flexible cable, rated 10 million cycles
Power supply	220 V, 50/60 Hz
Average power consumption	800 W
Machine dimensions (H × W × D)	1410 × 1500 × 1540 mm
Machine weight	850 kg

7. Applicable Components

The HW-T8-80F can place a wide range of standard surface-mount components:

- Resistors and capacitors: 0201, 0402, 0603, 0805, 1206
- Diodes and transistors, SOT and SOP packages
- QFN packages (e.g. QFN28, QFN36)
- LQFP packages (e.g. LQFP48, LQFP144)
- BGA packages with a lead pitch ≥ 0.3 mm
- LEDs and pin-header connectors

Note: integrated circuits up to 40 × 40 mm with a lead-centre distance down to 0.5 mm are supported. Maximum component height is 7 mm.

8. Installation Requirements

Recommended site conditions for stable operation.

Parameter	Requirement
Air pressure	0.55-0.65 MPa
Air volume	according to the production line scale
Air conditioning	oil and water removed (clean, dry air)
Voltage (pick and place machine)	220 V
Voltage (reflow oven, if used)	380 V
Ambient temperature	17 °C - 28 °C
Relative humidity	45 % - 70 % RH