

# FULLY AUTOMATIC SCREEN PRINTER H4E (ON-LINE SYSTEM)



## Overview

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- Flexible Auto Clamp system.
- Stable machined cast structure.
- Auto conveyor width adjustment.
- Adjustable width/thickness for stencil frames.
- Stencil position memory function for easy and quick change over.
- Auto stencil cleaning(Dry/Wet/Vacuum).
- Automatic 2D paste inspection.
- Vision system: vision system with fiducious camera will determine whether the stencil & PCB aligned preciously, with small tolerance it will be desaster for final printing result.

- Stencil Cleaning: without a nice cleaning system to keep stencil in sharp, the stable printing performance is unexpected.
- Precision mechanical system: It's the foundation of a stable machine.
- Clean & Clear software.
- Stable electrical system.

## Advantage

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1. Arch bridge type suspending direct-connected squeegee.
2. Print head with the programmable and suspending self-adjusting stepper motor drive.
3. Four wheel positioning slide type with bilateral double sliders ensures the moving accuracy and stability when scraper is running back and forth.
4. Unique belt transmission system avoids being stuck or fall-off of PCB.
5. Programmable motor controls transport speed and puts PCB in the precise position.
6. The unit to clean is separated from CCD camera, which can minimize the load of motor and impulse, improve the positioning precision and speed and extend the service life.

7. With servo motor and lead screw, the direct connection UVW platform is featured with high precision, high rigidity and compact structure.

## Top Clamping (Option)

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Top clamping system can ensure PCB flatness before printing, 2 piece tableting press the edge of the PCB, twist and warpage would be eliminated.



## Vacuum Clamping (Option)

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Vacuum clamping is an option configuration of H4E, thin and flex PCB can be clamped by vacuum to ensure the quality of printing. During production, PCB will be supported by magnetic tooling pins and vacuum module, this system can hold the PCB to keep it evenly, this function is useful for thin, twist and flex PCB.

## Programmable print head

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It is designed to meet the need of different pressure at the front and rear squeegee and the requirement of squeegee's leveling stability, to prevent solder paste leakage and squeegee blade with certain flexibility clamping. Squeegee pressure can be independently programmed. This provides a stable leveling of the squeegees for precise solder paste transfer.



## Stable Electrical System

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All electrical parts with labels, customer can find out the problem depends on error message of PC and electrical drawing soon. H4E can detect the fault by red indicating light from I/O cards, bright is normal condition, dark is abnormal.

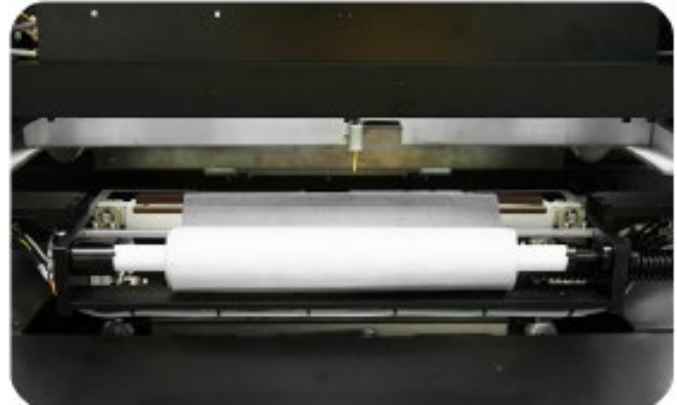
Integrated circuit and upgraded movement control card to make operation and maintenance more convenient H4E can modify printing parameter during production process.

## Linear slide rail

H4E use linear slide rail to provide higher printing accuracy

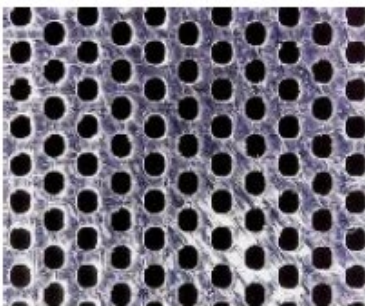
## Stencil Cleaning System

3 types of under stencil cleaning: dry, wet and vacuum. These 3 modes can be individually selected or combined for using. System allows manual cleaning within its operation menu which shortens cleaning time and improves production efficiency.



### BEFORE CLEANING

Blocked the opening of stencil by solder paste and choose 2 areas (IC and BGA )to check cleaning result.



### CLEANING RESULT

Conclusion: blocked holes and IC can be cleaned completely. Customer could set up cleaning module (wet, dry and vacuum modes) depends on difficulty of stencil to improve productivity and ensure cleaning quality.

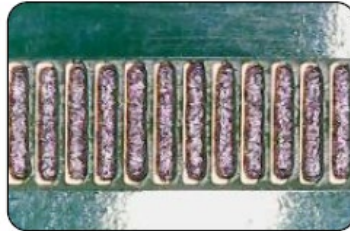
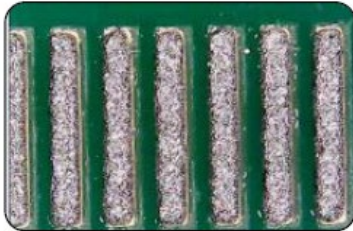
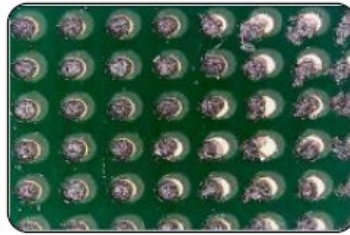
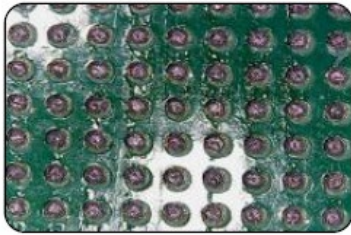


# Printing Result Comparison

500X Microscope Inspection

H4E

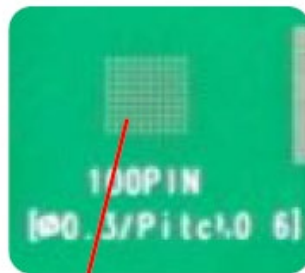
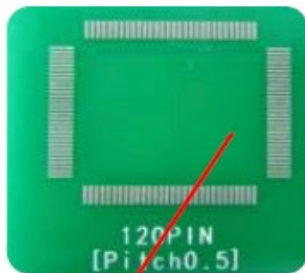
Other



Solder paste were covered BGA & IC completely

Solder paste were shifted on BGA and lacked on IC

Conclusion: Printing result is perfect, no misalignment, shift, solder bridge, lack solder, etc.



Use same sample to test H4E and other brand to check IC and BGA

## Printing Result Comparison (SPI)

SPI inspection



SPI inspection result

Production QTY: 192PCS  
Pass QTY: 189PCS  
Defective QTY: 3PCS  
Pass rate: 98.438%  
Defective rate: 1.562%



Conclusion: This PCB has many difficult IC and small pads , after inspection, result is good , H4E can ensure printing quality and accuracy in production line.

## Specification

Screen Frames	Min Size	470×370mm
	Maz Size	737×737mm
	Thickness	25~40mm
PCB Min Size		50×50mm
PCB Max Size		400×340mm
PCB Thickness		0.4~6mm
PCB Warpage		<1%
Transport Height		900±40mm
Transport Direction		Left-Right;Right-Left;Left-Left;Right-Right
Transport Speed		Max 1500mm/s (Programmable)
Board Location PCB	Support System	Magnetic Pin/Up-down table adjusted /support block
	Clamping System	Side clamping,vacuum nozzle, Automation retractable Z pressure
Printer Head		Two independent motorised printhead
Squeegee Speed		6~200mm/sec
Squeegee Pressure		0~15kg
Squeegee Angel		60°/55°/45°
Squeegee Type		Stainless steel (standard), plastic
Stencil Separation Speed		0.1~20mm/sec (Programmable)
Cleaning System		Dry、Wet、Vacuum (Programmable)
Table Adjustment Ranges		X:±10mm;Y:±10mm;θ±2 <sup>a</sup>
Solder Paste Inspection		2D Inspection(Standard)
Repeate Position Accuracy		±0.01mm
Printing Accuracy		±0.025mm
Cycle Time		<7s (Exclude Printing & Cleaning)

Product Changeover	<5Min
Air Required	4.5~6kg/cm2
Power Input	AC:220±10%,50/60HZ,3KW
Control Method	PC Control
Machine Dimensions	1220 (L) ×1530 (W) ×1500 (H) mm
Machine Weight	Approx:1200kg

## Options

- Automatic Dispensing
- Stencil Detection
- PCB Top Clamping
- Stencil (737\*737mm)
- Stencil Frame Adaptor (737\*737mm)
- Solder Paste Adding
- Constant Temperature and Humidity

All different types stencil can be used by stencil adaptor, suitable dimension is between 470\*370mm to 737\*737mm

