Universal Instruments
A Delta Group Company

omni

OMNI INSERTER

INTELLIGENCE. EASE OF USE. SIMPLICITY.

Universal Instruments' Value Series brings cost-effective intelligence, ease of use and simplicity to back-end electronics assembly automation. The Omni Inserter™ leverages a linear motor positioning system and a host of intelligent features to deliver accurate, high-speed insertion of axial, radial and other odd-form components. It supports a range of feeder types and features an active clinch and controlled insertion force.

The Omni Inserter provides single-process efficiency to complement multi-process cells. Features include:

- Four independent insertion heads with standard active clinch
- High-force & programmable insertion; force monitoring
- Four cameras utilizing AI & AOI vision algorithms
- Best-fit insertion algorithm
- CAD data import
- Independent pick & place sequences
- Portfolio of standard feeders; on-the-fly replenishment
- Board shuffle mode

VIDEO

BENEFITS & VALUE

HIGH INSERTION QUALITY
Detect current changes, monitor insertion force to ensure quality

HIGH INSERTION ACCURACY
Best fit algorithm compensates for PCB positioning and component pin variations; Insertion rate **>99.5%**

FAST INSERTION RATE
Components are inspected and positioned simultaneously, shortening the cycle time; Optimal path algorithm

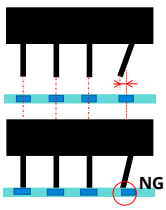
LOW REJECT RATE
AI and AOI algorithm enhance image, reduce background interference, improve pin positioning, and reduce reject rate to **<1%**

FAST NPI PROCESS
Offline programming optimizes the sequence of insertion heads and feeders to create streamlined products

SUPPORT FOR A VARIETY OF COMPONENTS
Full range of reliable feeding solutions accommodate a variety of components and packaging

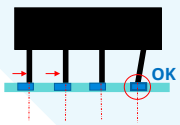
BEST-FIT ALGORITHM

TRADITIONAL INSERTER



Skewed pins = high reject rate

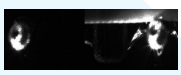
OMNI INSERTER



Best-Fit algorithm increases the success rate of insertion to >99.5%

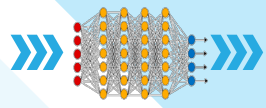
AI + AOI ALGORITHM

RAW NG IMAGE



Traditional insertion machine considers this NG image as reject

THROUGH AI MODEL



78% reduction in reject rate

AI + AOI ALGORITHM RESULTS

AI with AOI algorithm reduces background interference and precisely locates pins

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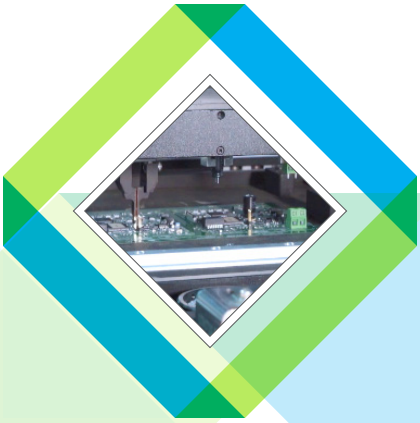


Omni Inserter Specifications	
Positioning System	Single-gantry linear motor
Insertion Heads	4 heads, independent Z and theta rotation
Component Picking Method	Pneumatic gripper, vacuum nozzle
Cameras	4 ULCs for components, 1 fiducial camera
Feeder Inputs	6 inputs
Insertion Rate	1.35 seconds/pc[1]
Throughput	2,600 cph
Insertion Success Rate	>99%[2]
Insertion Accuracy	±50µm
Reject Rate	<1%[3]
PCB Dimensions (W x L)	Minimum size: 100mm x 50mm Maximum size: 394mm x 400mm (standard), 394mm x 530mm (optional)
PCB Thickness	Bare board 0.8–3.0mm; Carrier <=10mm
Max Component Size[4]	diameter: 49mm; height: 40mm; weight: <=200g
Max Weight of PCB & Carrier	5kg

Notes:
1. Using standard components and nozzles under optimal conditions
2. PWB hole ≥ component PIN diameter 0.5mm
3. Exclusive of faulty components
4. Insertion range may be limited by head and clinch range

Modular design. Independent control. Full range of feeders.

The Omni Inserter supports a complete portfolio of component presentation options. Regardless of what components you're inserting or how they're packaged, we offer cost-effective feeders for your product mix.

RADIAL TAPE FEEDER


Square Capacitor


Y Capacitor

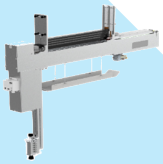

Thermistor


Solid Capacitor


Electrolytic Capacitor


Film Capacitor


Capacitor



TUBE FEEDER


4-Pin IC


6-Pin IC


8-Pin IC


Relay


Transformer


Power Crystal

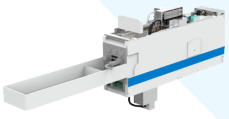

Transformer


Inductor


Relay


LED


Filter



AXIAL TAPE FEEDER


Fuse


Axial Resistor


Axial Resistor

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