

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

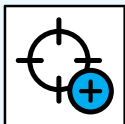


BENEFITS & VALUE



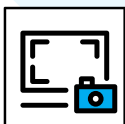
HIGH INSERTION QUALITY

Detect current changes, monitor insertion force to ensure quality



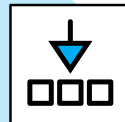
HIGH INSERTION ACCURACY

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



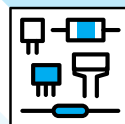
LOW REJECT RATE

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

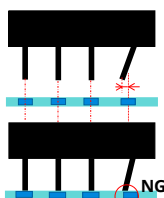


SUPPORT FOR A VARIETY OF COMPONENTS

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%**

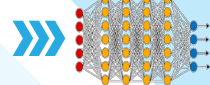
AI + AOI ALGORITHM

RAW NG IMAGE



Traditional insertion machine considers this NG image as reject

THROUGH AI MODEL

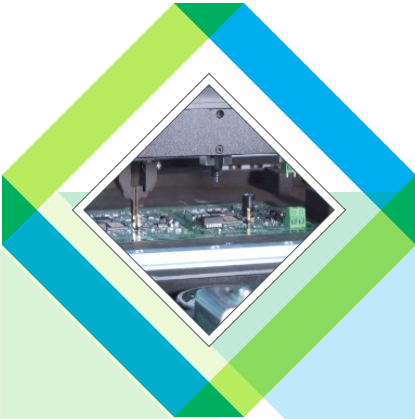


78% reduction in reject rate

AI + AOI ALGORITHM RESULTS



AI with AOI algorithm reduces background interference and precisely locates pins



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 Size⁴	diameter: 49mm; height: 40mm; weight: ≤200g
Max Weight of PCB & Carrier	5kg

Notes:

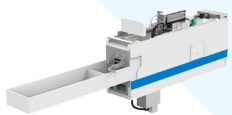
1. Using standard components and nozzles under optimal conditions
2. PWB hole ≥ component PIN diameter 0.5mm
3. Exclusive of faulty components
4. Insertion range may be limited by head and clinch range

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



AXIAL TAPE FEEDER



Square Capacitor



Electrolytic Capacitor



Y Capacitor



Film Capacitor



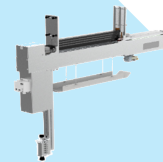
Thermistor



Capacitor



Solid Capacitor



TUBE FEEDER



4-Pin IC



Transformer



6-Pin IC



Power Crystal



8-Pin IC



Transformer



Relay



Inductor



Relay



LED



Filter



Fuse



Axial Resistor



Axial Resistor

