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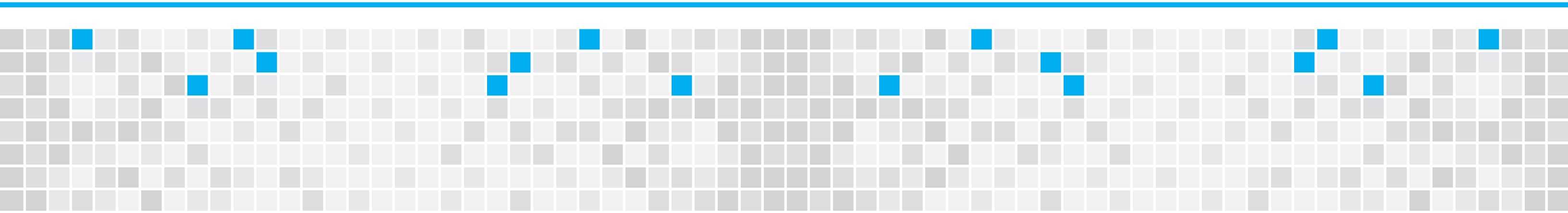
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MC-5792B 02/17

Generation 88HT



the enduring standard
for through-hole automation



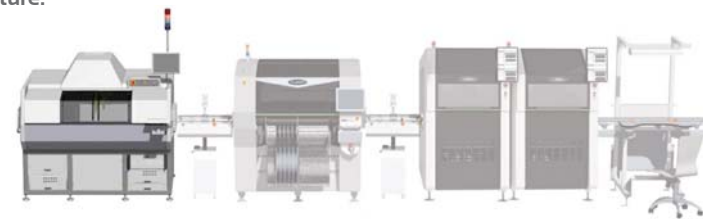
Proven History

Value-driven evolution

Designed to maximize your investment for long-term productivity

Through-hole technology remains vital in electronics manufacturing. The mobile market is driving power conversion, the "green" revolution is driving SSL and LED lighting, and emerging economies are driving white goods. Refined through decades of experience, Universal Instruments' through-hole lineup continues to stay one step ahead of the growing demands of the industry.

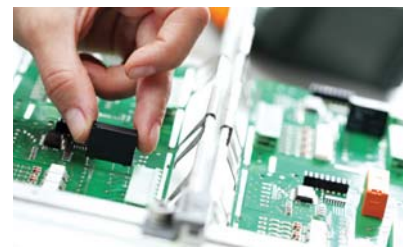
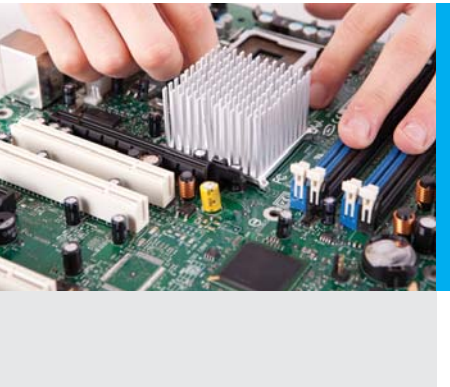
The Generation 88HT series is designed to meet the newest industry challenges head-on, built off the highly successful Generation 88 series with improvements yielding higher throughput, improved reliability and increased capability. These enhancements are also available as an upgrade package to preserve Universal's platform philosophy and provide best-in-class investment protection. Universal continues to ensure its solutions will meet the needs of today and into the future.



Leveraging the benefits of automation

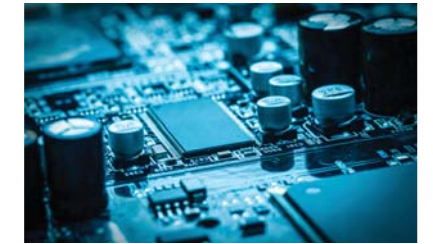
Product complexity is increasing and designs are rapidly evolving to meet performance demands, creating a fast-moving target for electronics manufacturers. In this new era of electronics assembly, manufacturers must take advantage of the cost, yield and productivity benefits afforded by automation.

Universal's Radial 88HT automates the insertion of tape-packaged radial components faster and more reliably than manual processes. In addition, Universal offers complementary pin-in-paste odd-form, surface mount odd-form, and complex back-end automation solutions to help alleviate the need for manual assembly processes in any production environment.



The enduring standard for through-hole automation

Easy to use and maintain with exceptional reliability built in – that's Generation 88HT. This stability is complemented by real speed and cost advantages delivered directly to your shop floor. And, with flexible machine configurations to exactly match your application requirements, you'll be sure to get the most out of your Universal through-hole solution.



Achieve high productivity in any environment

- Consistently high performance
- Flexibility to handle any application

Streamline changeover for high-mix

- Versatile machine configurations
- Flexible hardware and software tools

Maximize ROI

- Designed to thrive in low-utilization environments
- Superior to manual assembly

Enjoy lowest cost of operation and ownership

- Economical and environmentally friendly
- Built to maintain investment protection



Adaptable Performance

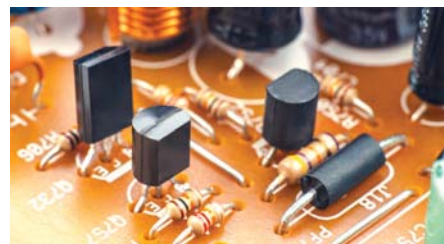
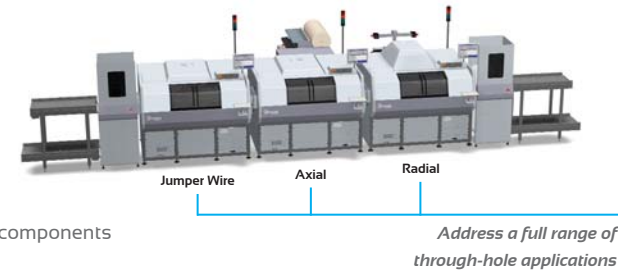
Achieve high productivity in any environment

Consistently high performance

- Industry's highest real throughput
- World-class reliability (300 ppm Radial, 200 ppm Axial, 75 ppm Jumper Wire)
- Double Index feeder – no speed de-rate for large components
- Alternate Feeder and Low Part Alert for continuous production
- Reels or ammo packs in any location enable sustained high-volume productivity

Flexibility to handle any application

- Automate non-traditional odd-form components in tape, including LEDs, terminals, connectors, fuse holders and power resistors
- Lead span capabilities from single to quad-span (including 3.5mm span)
- Multiple clinch configurations for standard and high-density applications
- Programmable clinch height avoids SM components on high-density boards
- Tallest radial part capability (up to 27mm)
- Tallest axial top-side clearance (20mm)
- 360-degree insertion in 1-degree increments



Streamline changeover for high-mix

Versatile machine configurations

- Up to 220 feeder locations enable multiple products on one machine
- Manual-load configuration improves product change efficiency

Flexible hardware and software tools

- Easy-load dispense heads expedite part changes
- Component verification validates product setups



Maximize ROI

Designed to thrive in low-utilization environments

- Achieve ROI in less than a year, even in low-utilization environments
- Typical machine can replace 4 or more operators per shift, application dependent

Superior to manual assembly

- Significantly higher throughput
- Component verification of component value and polarity before insertion, and automatic lead clinching deliver superior quality and yields
- Enhanced ability to meet changing production volume requirements

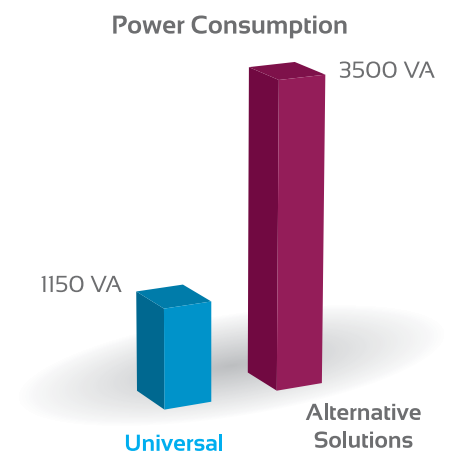
Enjoy lowest cost of operation and ownership

Economical and environmentally friendly

- 67% less electricity than alternative solutions
- True zero-scrap jumper wire insertion

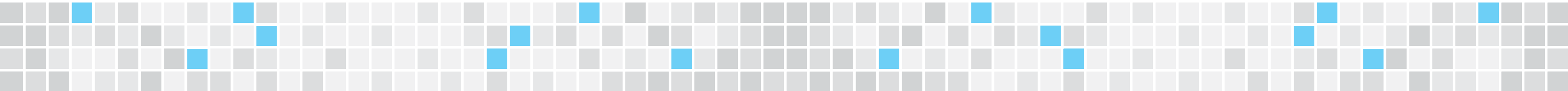
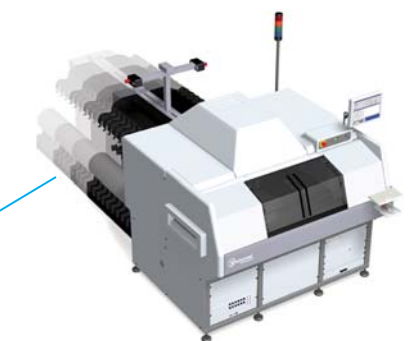
Built to maintain investment protection

- Upgradeable platform architecture with cost-effective, incremental enhancement packages (both hardware and software)
- Add-on/removable feeder stations to address changing production requirements
- Modular, quick-change tooling
- UPS Backup to protect against power spikes and brown-outs



Add or remove feeder stations in increments of 20 to align with production demands.

Radial 88HT: 20 to 100
VCD 88HT: 20 to 220



Optimized for today's growth markets

Universal's through-hole lineup and complementary, comprehensive technology portfolio will position you to efficiently build virtually any product. Grow your customer base and easily adapt to the ever-changing electronics market demands.



LED Signage / LED Illumination

- High-density 2.5mm-span
- Inward or outward clinching
- V-groove inward clinch reduces LED twist
- Alternate Feeder enables non-stop operation
- Component replenishment without machine stoppage
- Manual load supports boards up to 800mm x 800mm



LED Drivers / Fluorescent Ballasts

- Triple/Quad/3.5mm-span
- Programmable clinch and insertion heights
- 360-degree radial insertion
- Alternate Feeder enables non-stop operation
- Component replenishment without machine stoppage
- Alternate location on guide jaw for density improvement



Set-top Box / Game / Motherboard

- Triple/Quad/3.5mm-span
- Widest component range – up to 27mm tall, no derate
- Programmable clinch and insertion heights
- 360-degree radial insertion
- Alternate Feeder enables non-stop operation
- Verification of capacitor polarity for improved yields



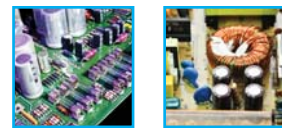
Appliance (White Goods)

- Triple & Quad-Span
- Widest component range – up to 27mm tall, no derate
- Programmable clinch and insertion heights
- 360-degree radial insertion
- Alternate Feeder enables non-stop operation
- Component replenishment without machine stoppage
- Alternate location on guide jaw for density improvement



Power Conversion

- Triple & Quad-Span
- Widest component range – up to 27mm tall, no derate
- Programmable clinch and insertion heights
- Alternate Feeder enables non-stop operation
- Component replenishment without machine stoppage
- Alternate location on guide jaw for density improvement
- High-power, large-lead axial tooling



High-Mix Environments

- Dual/Triple/Quad-Span
- Widest component range – up to 27mm tall, no derate
- Programmable clinch and insertion heights
- Expandable sequencer (20-station increments)
- Alternate Feeder enables non-stop operation
- Alternate location on guide jaw for density improvement
- Component verification for improved yields

Insert a full array of radial lead components

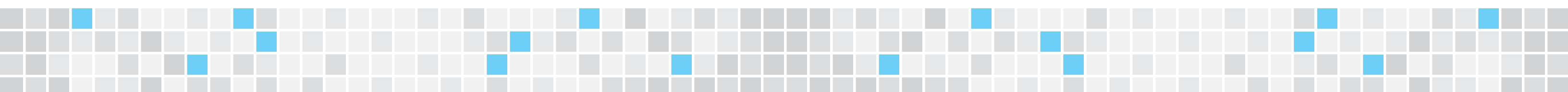
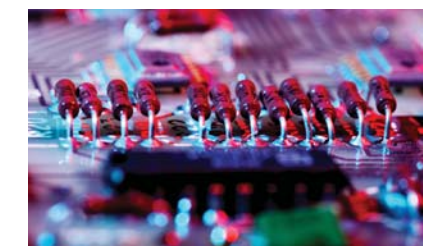
Maximize your efficiency, output and quality by eliminating manual insertion requirements. Single, Dual, Triple and Quad-Span configurations will have you tooled up for your next product, and you can keep on running by replenishing your components without a machine stoppage.

Connectors	Transistors	Tabs/Clips	E-Caps	Resistors	Adjustable Resistors	Capacitors	Veristors/MOVs	LEDs

Insert a full array of axial lead components and jumper wire diameters

Take on your next axial component with confidence, knowing that each insertion has been verified to ensure correct polarity and value.

Inductors	Resistors	Capacitors	Jumper Wire	Diodes



Best-in-Class Portfolio

Upgrade and Benefit



Radial 88HT

Flexible Radial sequencer/inserter for high productivity

The Radial 88HT brings a new level of productivity to radial component sequencing and insertion, offering consistently high throughput regardless of component type.

- Industry's highest real throughput (20,000 CPH)
- World-class reliability (300 ppm)
- Manual Load or Automatic PCB Load/Unload
- Multiple clinch options with programmable height to avoid damaging SM components
- Scalable production – 20 to 100 inputs, (In-Line or Straight-Back)
- Single, dual, triple, and quad-span tooling
- Full range of insertion spans from 2.5mm to 10.0mm, including 3.5mm
- Widest component range – up to 27mm tall with no derate
- Component value and polarity verification prior to insertion
- Intuitive, graphical operator environment

Radial 88HT Specifications	
Actual Throughput	20,000 cph
PCB Specifications (L x W)	Automated: 102 x 80mm to 483 x 406mm / Manual: 51 x 51mm to 600 x 600mm
Component Inputs	Expandable from 20 to 100 in increments of 20 (In-Line or Straight-Back configuration)
Insertion Pitch	Single-Span: 2.5mm Dual-Span: 2.5mm/5.0mm Triple-Span: 2.5mm/3.5mm/5.0mm or 2.5mm/5.0mm/7.5mm or 5.0mm/7.5mm/10.0mm Quad-Span: 2.5mm/5.0mm/7.5mm/10.0mm Programmable clinch and insertion height
Reliability	Single/Dual-Span: 300 ppm or better / Triple/Quad-Span: 400 ppm or better
PCB Exchange Time	Pass-Thru: 2 seconds / Manual: 0 seconds
Electrical Requirements	Single-phase AC 180–246 V, 1150 VA, 47–63 Hz with UPS backup

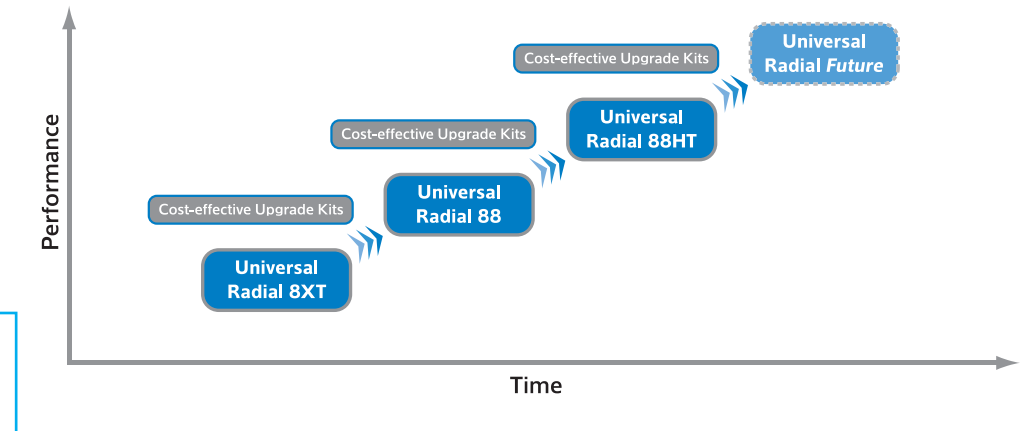
Protect your investment, grow your capabilities

Universal's platform philosophy helps you maintain your competitive advantage with incremental software, hardware and infrastructure upgrades that bring your insertion machines to highest level of performance and reliability at a fraction of the cost of purchasing new machines.



Seamlessly upgrade to:

- Latest software levels
- Latest hardware
- Latest productivity features
- Current support and warranty levels

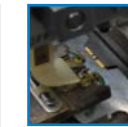


Servo-Driven Axis



- Radial 88HT utilizes servo-driven axis to improve speed, accuracy and reliability
- Maintains consistently high performance
- Reduces maintenance and setup requirements

Component Verifier



- On-line verification of value and polarity of the components prior to insertion
- Reduces the risk of inserting defective, out-of-sequence or incorrectly oriented components.

NEW for Radial 88HT



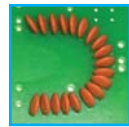
- 3.5mm triple-span and quad-span tooling
- Cardboard detector stops faulty components
- Precision pusher guides component during insertion
- Bad Clip Bypass

Sequencer Configuration Options



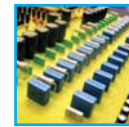
- Available in-line or straight-back configurations to accommodate a variety of factory layouts
- Expandable from 20 stations up to 100 stations in 20-station increments

360° Insertion Angle



- The insertion tooling may be rotated from 0° to 360° in 1° increments
- Insertion heads are servo-driven for precise and rapid component insertion

Radial Head Tooling Options



- Single-Span: 2.5mm
- Dual-Span: 2.5/5.0mm
- Triple-Span: 2.5/3.5/5.0, 2.5/5.0/7.5, 5.0/7.5/10.0mm
- Quad-Span: 2.5/5.0/7.5/10.0mm

Component Feeding



- Sequencer feeds components to machine from reels or ammo packs
- Jam-resistant design, alternate feeder and double-index feeders for higher speed and throughput

Green Machine



- Radial 88HT is the most economical radial insertion machine available with the lowest utility costs for electrical requirements
- 67% less electricity than alternative solutions

Odd-form Component Capability

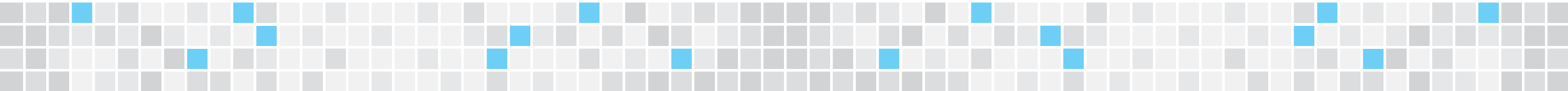


- Automate non-traditional odd-form components in tape, including LEDs, terminals, connectors, fuse holders, power resistors and eyelets
- Improve quality and output/floor space, reduce costs

Board Handling Options



- Automatic PCB load/unload reduces operator dependency for higher-volume environments
- Manual PCB load/unload streamlines high-mix production and supports extra-large PCBs



Best-in-Class Portfolio

Designed for Success



VCD 88HT

High-performance Axial sequencer/inserter for demanding production

The VCD 88HT combines established reliability and outstanding performance for fast, efficient sequencing and insertion of axial components and jumper wires in one process.

- Industry's highest real throughput (20,100 CPH)
- World-class reliability (200 ppm)
- Manual Load or Automatic PCB Load/Unload
- 20mm part top-side clearance on PCB
- Programmable clinch height to avoid damaging SM components
- Scalable production – 20 to 220 inputs
- Component replenishment without machine stoppage
- Dual-part detector to sense 2 parts on chain
- Component value and polarity verification prior to insertion
- Intuitive, graphical operator environment

VCD 88HT Specifications	
Actual Throughput	20,100 cph
PCB Specifications (L x W)	Automated: 102 x 80mm to 483 x 406mm / Manual: 51 x 51mm to 600 x 600mm
Component Inputs	Expandable from 20 to 220 in increments of 20
Insertion Span	High-Density: 5.00–22.02mm High-Reliability: 7.62–22.48mm (optional kit up to 24.00mm) Large-Lead: 7.62–21.77mm
Topside PCB Clearance	20.0mm
Clinch Angle	0° to 45°, programmable height
Reliability	200 ppm or better
PCB Exchange Time	Pass-Thru: 2 seconds / Manual: 0 seconds
Electrical Requirements	Single-phase AC 180–246 V, 1150 VA, 47–63 Hz with UPS backup



Jumper Wire 88

High-reliability jumper wire insertion with zero waste

The Jumper Wire 88 inserts a full range of wire spans from bulk input packages at industry-leading rates with zero wire scrap, delivering superior price performance and yields.

- Industry's highest real throughput (33,000 CPH)
- World-class reliability (75 ppm)
- Manual Load or Automatic PCB Load/Unload
- No waste, zero-scrap insertion
- Programmable clinch height to avoid damaging SM components
- Flexible production – wide range of wire spans without changing tooling
- Programmable clinch angles 25° to 75° from vertical
- Insertion spans from 5mm to 33mm
- Intuitive, graphical operator environment

Jumper Wire 88 Specifications	
Actual Throughput	30,300 cph
PCB Specifications (L x W)	Automated: 102 x 80mm to 483 x 406mm / Manual: 51 x 51mm to 600 x 600mm
Wire Diameter	0.6 and .8mm (optional 0.45, 0.50, 1.0mm)
Insertion Span	5.0–33.0mm
Topside PCB Clearance	6.0mm
Clinch Angle	25° to 75°, programmable height
Reliability	75 ppm or better
PCB Exchange Time	Pass-Thru: 2 seconds / Manual: 0 seconds
Electrical Requirements	Single-phase AC 180–246 V, 1150 VA, 47–63 Hz with UPS backup

Axial Head Tooling Options



- Any application, field reconfigurable
- High-density 5.0mm supports tighter spans
- High-reliability 7.62mm supports wide range of spans
- Large-lead 7.62mm supports larger wire diameters

Expandable Sequencer



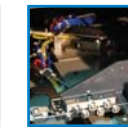
- Expandable from 20 stations up to 220 stations in 20-station increments
- Reduces changeover time for multiple products
- Supports changing production demands

Zero Scrap



- Utilizes a precise, servo-driven wire feed mechanism
- Feeds the exact length of wire required for insertion and clinching in the board without any scrap leads
- Eliminates waste and lowers productions costs

Servo-Driven Wire Feeding



- Delivers precise feed lengths into the insertion head to eliminate scrap
- Accommodates a complete range of wire diameters
- Provides reliable, repeatable performance

Multi-Component Sense



- Detects double-taped components, stops production and alerts operator
- Ensures consistently high outgoing board quality

Component Feeding



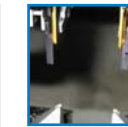
- Sequencer feeds components to machine from reels, ammo packs or jumper wire spools
- Enables component replenishment without machine stoppage

Wipe Clinch



- Wipe-only, servo-controlled clinch
- Programmable clinch angles from 25° to 75°
- NEW programmable clinch height avoids SM components on PCB bottom side

Long Tool Life



- Robust tooling endures an extensive life span
- Hardened carbon steel in high-wear areas
- 10M - 15M insertion cycles, depending on the material composition of the wire being utilized