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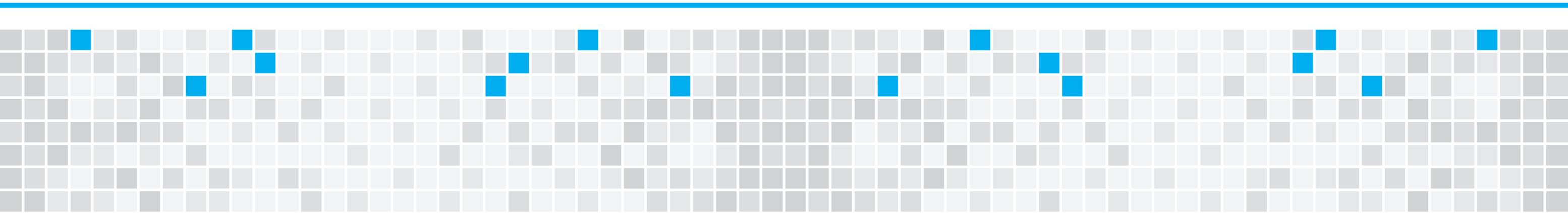
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MC-5792C 02/21

# Generation 88HTi



the enduring standard  
for through-hole automation



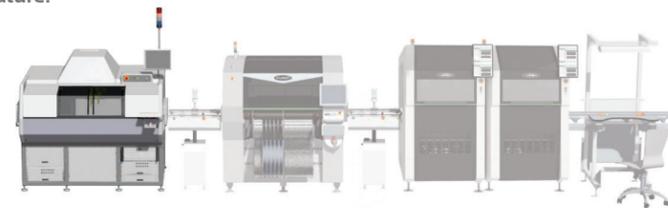
# Proven History

## 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.

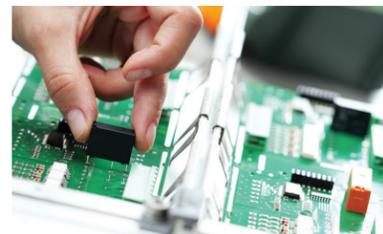
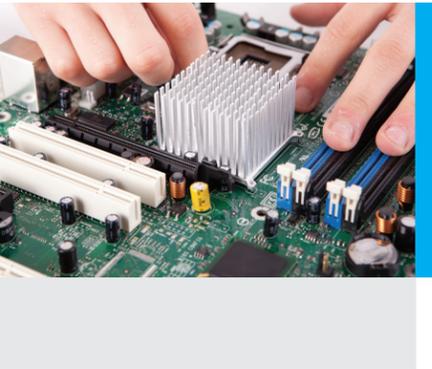
The Generation 88HTi series is designed to meet the newest industry challenges head-on, built off the highly successful Generation 88 series with improvements yielding higher throughput, improved reliability and increased capability. These enhancements are also available as an upgrade package to preserve 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

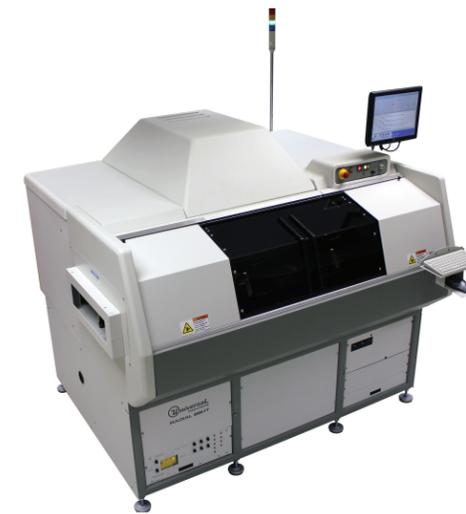
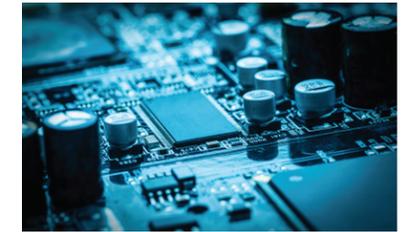
Product complexity is increasing and designs are rapidly evolving to meet performance demands, creating a fast-moving target for electronics manufacturers. In this new era of electronics assembly, manufacturers must take advantage of the cost, yield and productivity benefits afforded by automation.

Universal’s Radial 88HTi 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 88HTi. 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

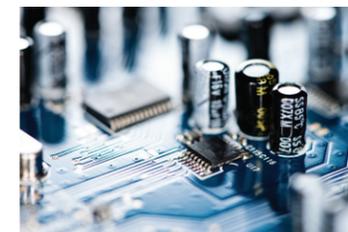
- Versatile machine configurations
- Flexible hardware and software tools

### 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

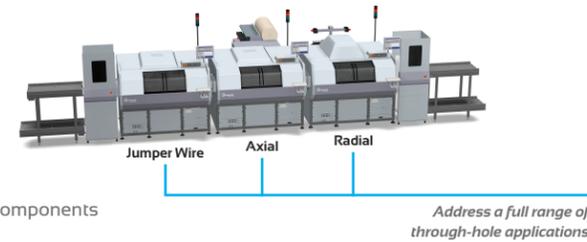
## Achieve high productivity in any environment

### 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

# Exceptional Returns

## 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



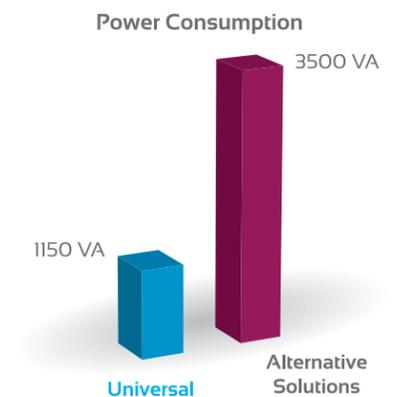
## Enjoy lowest cost of operation and ownership

### Economical and environmentally friendly

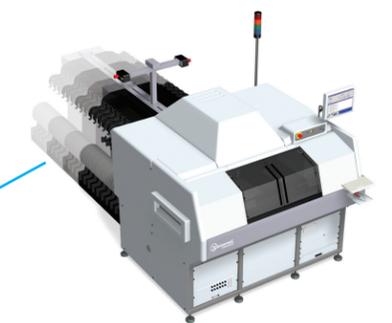
- 67% less electricity than alternative solutions
- True zero-scrap jumper wire insertion

### 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 88HTI: 20 to 100  
VCD 88HTI: 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

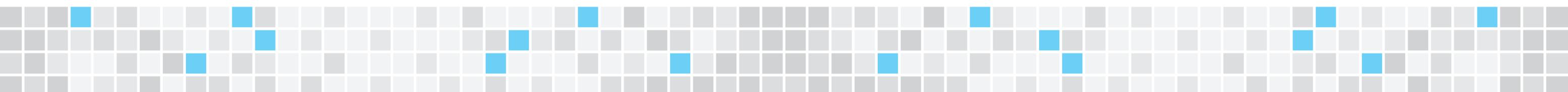
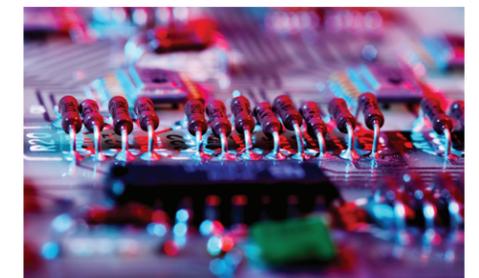
Maximize your efficiency, output and quality by eliminating manual insertion requirements. Single, Dual, Triple and Quad-Span configurations will have you tooled up for your next product, and you can keep on running by replenishing your components without a machine stoppage.

| 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



## Radial 88HTi

### Flexible Radial sequencer/inserter for high productivity

The Radial 88HTi 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 88HTi 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<br>Dual-Span: 2.5mm/5.0mm<br>Triple-Span: 2.5mm/3.5mm/5.0mm or 2.5mm/5.0mm/7.5mm or 5.0mm/7.5mm/10.0mm<br>Quad-Span: 2.5mm/5.0mm/7.5mm/10.0mm<br>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   |

# Upgrade and Benefit

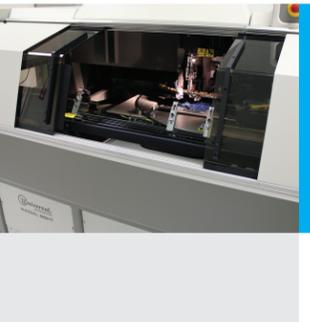
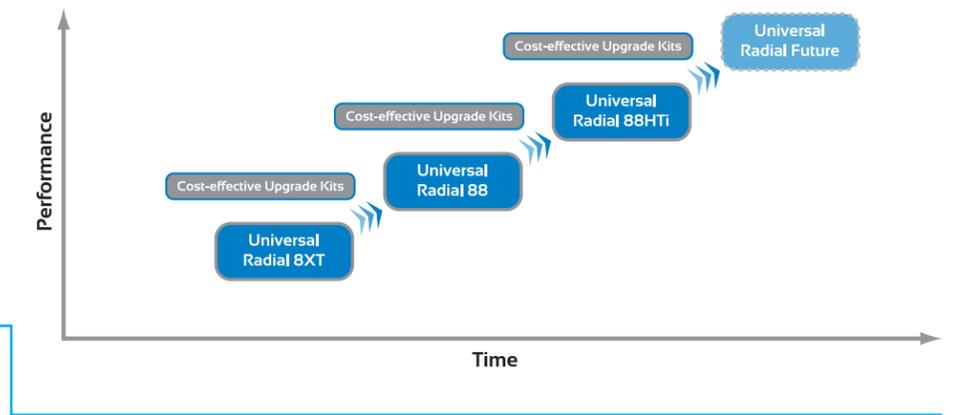


### Protect your investment, grow your capabilities

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 & warranty levels



#### Enhanced Rotary Table



- Low-profile locators for reduced wear and longer life
- Updated software delivers improved efficiency and increased throughput – especially for products requiring long table moves

#### Component Verifier



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

#### Windows® 10 Operating System



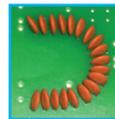
- Familiar and easy to use; Intuitive navigation
- Enables offline programming; Create products offline on any Windows PC without interrupting production
- Template-based programming is quick and efficient

#### 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 88HTi 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

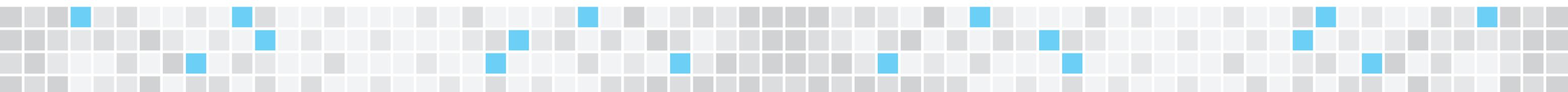


- Automate non-traditional odd-form components in tape, including LEDs, terminals, connectors, fuse holders, power resistors and eyelets
- Improve quality and output/floor space, reduce costs

#### 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 88HTi

### High-performance Axial sequencer/inserter for demanding production

The VCD 88HTi 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 88HTi 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<br>High-Reliability: 7.62–22.48mm (optional kit up to 24.00mm)<br>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



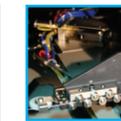
- Expandable from 20 stations up to 220 stations in 20-station increments
- Reduces changeover time for multiple products
- Supports changing production demands

### 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 production 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