Automating Odd Form Component Placement and Final Assembly Processes

Polaris™
Assembly Cell

Odd Form/Final Assembly Division of Universal Instruments
Automation in Electronic Assembly
Universal Instruments is a global provider of innovative electronic circuit assembly technology and equipment, integrated systems solutions, and process expertise. Universal serves the top manufacturers in every category of the electronics industry worldwide through more than 65 sales, service, product training, and parts distribution centers in more than 30 countries.

Universal has an installed base of more than 18,000 machines worldwide — including surface mount, through hole, odd form, and advanced semiconductor assembly equipment — and certification to quality standards of ISO 9001 and the QS-9000/TE Supplement. Universal is well-positioned to offer the service and expertise that only a truly innovative and global organization can support.
If you need a solution for automating reflow odd form assembly, wave solder odd form assembly, or final product assembly, it is now available in one compact, cost-effective package: the Polaris Assembly Cell from Universal Instruments.

By automating these functions, the Polaris Assembly Cell makes your assembly process faster and more efficient. It is a reconfigurable platform that can integrate multiple tasks across a number of identical workcells. When combined with Universal’s feeders, tooling, and product handling options, it can become an integral part of a complete solution for reducing the total cost of production.

The Polaris Assembly Cell not only helps increase your profitability but pays back your investment quickly. Its advanced automation process provides better quality and higher throughput than manual assembly. Its high machine utilization levels, flexibility, and reconfigurability, combined with user-friendly design, add up to significantly greater productivity. And the Polaris Assembly Cell’s platform design ensures you can always keep it up-to-date, protecting your investment.

Employing a combination of state-of-the-art component placement technology derived from Universal’s proven GSM® Platform, and the latest advances in mechanical parts handling, the Polaris Assembly Cell bridges the gap between robotics and standard PCB assembly equipment. You get the best of both worlds, all in one moderately-sized and -priced machine.
THE BEST OF BOTH WORLDS

The Polaris Assembly Cell incorporates some of the key advantages of both robotics and PCB assembly equipment. From robotics, it offers these benefits:
• Cost-effective production
• Open architecture
• Multi-level assembly capability
• Customizable tooling

It also provides these benefits from PCB assembly equipment:
• Easy-to-use interface
• CAD-driven placements
• Vision inspection and orientation
• Flexibility to handle wide component range
**Key Features**

- **Flat-Panel Display** adjusts and tilts to suit operator preferences.
- **Servo Gripper Head**, with patented floating end effector technology, adapts to a wide variety of components through programming. Provides insertion detection for through hole devices and optional vacuum spindle for additional picking flexibility.
- **Modular Trackball and Keyboard** incorporate ergonomic design for user-friendly interface.
- **Caster Wheels** provide mobility during installation and factory reconfiguration.
- **Downward-Looking Camera** inspects PCBs or products for placement orientation.
- **GSM® Platform-Style Feeder Interface** provides thirty-two 8 mm tape feeder slots.
- **Optional Tool Changer** provides for two additional sets of gripper fingers to handle special components.
- **Upward-Looking Vision System** inspects through hole and surface mount components, and mechanical devices.
- **Adjustable Tooling Pin Registration** can be used when fiducials are not available, and to increase throughput.
- **Feeder Interface** allows maximum flexibility for custom and third-party feeding solutions. Universal feeders provide solutions for handling the widest range of component packaging, including tubes, tape-and-reel, trays, and other feeding technologies.

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**Front View**

**Interior View**

**Rear View**
Total Support

Universal backs all its high-quality products with extensive full-service product support, including: field engineering services; telephone consultation with technical specialists; applications engineering; integration and systems consulting; training; compatible software; worldwide spare parts; and process expertise from Universal’s Advanced Process/Surface Mount Technology Laboratory (SMT Lab).

Specifically, Universal offers “total solution” support for the Polaris Assembly Cell:

Technological Leadership: The SMT Lab provides unsurpassed research and process expertise, to solve specific process-related problems quickly. For applications using process or technologies with some degree of risk, Universal conducts an Odd Form Capability Study to provide a complete evaluation of any proposed automated solution, and recommendations to determine how to automate your assembly process most efficiently.

Systems Integration: Universal Odd Form Application Engineers provide total project management, taking complete responsibility for understanding your processes and developing solutions tailored to your needs. They work with you to optimize board designs, ensure the integrity of assembly process design, integrate multi-vendor equipment, and provide system modeling and simulation for maximum throughput. In addition, Universal can provide turnkey solutions for specific products.

Process and Product Support: Universal also offers around-the-clock parts service, customer training on three continents, and a global network of more than 300 direct field engineers. In addition, you can access Web-based tools including the Odd Form Component Catalog and parts ordering 24 hours a day.
The Polaris Assembly Cell integrates into virtually any assembly line or manufacturing situation requiring either placement of odd form components or final assembly of small electronic products. It cost-effectively automates these previously manual processes, to reduce defects and lower the total cost of production.

Please visit our Web site to download additional product information at:

www.uic.com/info/polarisspec

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**Polaris Assembly Cell Dimensions**

- Max. 2387.6 mm (94.00")
- Min. 2336.8 mm (92.00")
- Max. 2006.6 mm (79.00")
- Min. 1955.8 mm (77.00")
- Max. 2286.0 mm (90.00")
- Min. 2235.2 mm (88.00")

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**Head Specifications**

**Component Range - Servo Gripper Head**

- Minimum Width/Diameter: —
- Maximum Width/Diameter: 38.1 mm (1.50")
- Minimum Length: —
- Maximum Length: 127.0 mm (5.00")
- Minimum Height: 1.5 mm (0.06")
- Maximum Height: 50.8 mm (2.00")
- Minimum Weight: 450 g (1 lb.)

**Component Range - Servo Gripper with Vacuum Spindle**

- Minimum Height: 0.508 mm (0.020")
- Maximum Height: 50.8 mm (2.00")
- Minimum Weight: 35 g (0.077 lb.)

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**Machine Dimensions**

- Length: 1,200 mm (47.25")
- Depth: 1,854 mm (73.00")
- Height: Max. 2006.6 mm (79.00")

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**Service Requirements**

- Electrical: 208 or 230 VAC configured at factory, nominal ± 10%
- Pneumatics: 169.9 liters/minute @ 6.21 bar (6 cfm @ 90 psi)

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**Environmental Requirements**

- Operating Temperature: 4.4° C (40° F) to 32° C (90° F)
- Operating Humidity: 10% noncondensing to 80% noncondensing