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FUZION™

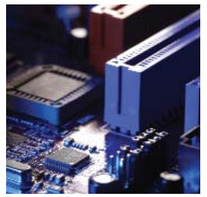
FuzionOF™ – odd-form assembly made standard

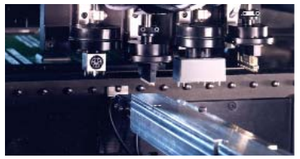
Differentiation Through Automation

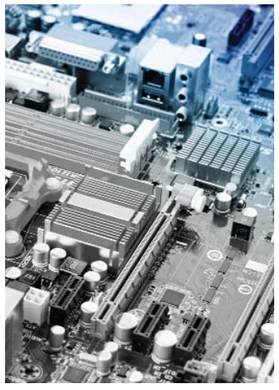
Mainstreaming odd-form for enduring profitability

A Shift in Focus – Adapting with Flexible Automation

With today's volatile labor rates, reduced time-to-market requirements, and greater product complexity, electronics manufacturers are being challenged to uphold margins and profitability. While the focus has historically been on optimizing upline efficiency, there is a significant opportunity to boost productivity by enhancing end-of-line odd-form assembly processes.







Comprehensive Odd-Form Automation Solutions

Universal Instruments delivers the most flexible customer-focused solutions for your automation challenges. Our years of implementing odd-form solutions on a standard surface mount platform continues today with the best-in-class capabilities of our flagship FuzionOF™ Platform.

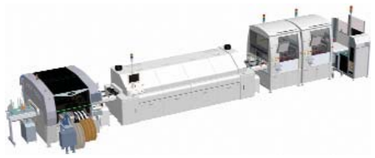
- Complete solutions for any market or application
- The industry's broadest experience/knowledge base – 20+ years
- The fastest and most versatile high-speed automation platform: surface mount, odd-form, pin-in-paste, and semiconductor
- Commonality with existing Universal platforms
- Complementary through-hole and complex automation platforms enable simplified single-vendor solutions

FUZION™

Build Better. Build More. Spend Less.

Transforming back-end assembly into a strategic advantage

Many manufacturers are still impeded by manual assembly or traditional automation solutions, which restrict productivity and competitiveness. FuzionOF offers a more economical, flexible and higher-performance solution that transforms new odd-form assembly challenges into quality end products that strengthen your bottom line.



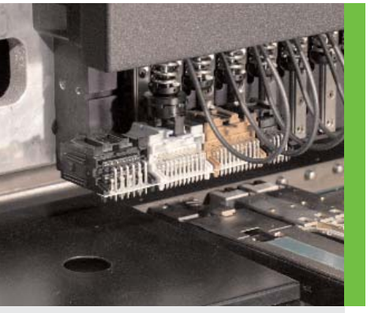
Minimize costs, maximize yield

- Minimize/stabilize labor costs and reduce floor space requirements
- Implement local "market-area" production versus low-cost labor regions
- Reduce WIP and improve inventory turns with consistent production rates
- Accelerate ROI with rapid payback
- Reduce defects, rework and waste (cost of non-quality) with precise, repeatable, closed-loop processes

Increase overall productivity

- Improve utilization and efficiency to bring new products to market quicker
- Realize 24/7 sustained productivity
- Eliminate bottlenecks for continuous production flow
- Quickly adapt to changing requirements while managing ECRs and smaller lot sizes
- Shorten cycle times and increase production volumes
- Maintain consistent and predictable throughput, regardless of complexity
- Minimize production downtime/disruptions

Process Versatility



Complete automation solutions for any environment

FuzionOF can be integrated as a powerful pre- and post-reflow enabler to eliminate bottlenecks and boost productivity with complementary capabilities for demanding production environments.

Fuzion2-60 Fuzion2-37 FuzionOF

Pre-reflow – *Medium-mix agility and versatility*

End-of-line SMT/odd-form intrusive (pin-in-paste) solder solutions with ultimate flexibility for lean manufacturing in medium-mix environments – ***Industrial, Medical, Military, White Goods***

Fuzion4-120 Fuzion4-120 Fuzion4-120 Fuzion4-120 FuzionOF PTF

Pre-reflow – *High-volume performance and yield*

End-of-line SMT/odd-form intrusive (pin-in-paste) solder solutions with essential capabilities for today's extreme requirements and beyond (finer density, full inspection, consistent force) – ***Automotive, Handheld Mobile, Lighting***

FuzionOF Radial 88HT Polaris Polaris Workstation

Radial 88HT FuzionOF FuzionOF

Post-Reflow – *Cost-effective productivity*

Flexible pre-wave/selective solder assembly solutions to reduce assembly costs and improve output and yields – ***Motherboard, Gaming, Power Supplies***

Focused Solutions

Optimized for today's growth markets

A fast-moving electronics landscape requires a solution that can easily transition from one product to the next.

FuzionOF solutions are ideally suited to help manufacturers excel across a diverse range of unique market challenges.

Pre-Reflow – Medium-Mix

- RF utility meters
- Smoke detectors
- Architectural lighting
- Power supplies
- Instrumentation
- White goods

Pre-Reflow – High-Volume

- Set-top boxes
- Automotive ECUs/PCMs
- Automotive ADAS systems
- Smartphones, tablets
- LED bulbs and downlighting
- Telecom

Post-Reflow

- Power supplies
- Power conversion
- Amplifiers
- Filters
- Motherboards
- Gaming

Place a full array of odd-form components

Take on any odd-form component with the same confidence as a standard surface mount component.

FuzionOF places these components quickly and accurately with a sustained production flow.

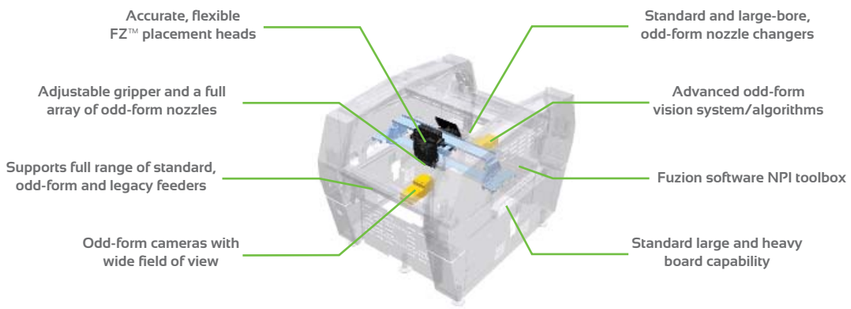
FuzionOF Specifications

Throughput (cph)	Accuracy (µm@≥1.00 Cpk)	Max Board Size	Max Feeder Inputs (8mm)	Component Range (mm)
16,500 (Max) 11,400 (1-Bd IPC Chips)	±38 (Chips) ±27 (ICs)	508 x 813mm 20 x 32"	120 (2 ULC)	(0201) .25 x .5 x .15 (Min) 150 square and up to 25 tall

Multi-Task Proficiency

Leading-edge odd-form technologies

FuzionOF is a versatile IC placement platform that excels at standard mutlifunction requirements while featuring specialized technology advantages to address any odd-form challenge.



Accurate, flexible FZ™ placement heads

- 7-spindle FZ7™: 0201 – 55mm square with single FoV, up to 25mm tall, 27µm accuracy, 5kg insertion force
- 4-spindle FZ4™: 0201 – 55mm square (SFoV), 150mm square (MFoV), 34µm accuracy, 5kg insertion force

Standard and large-bore odd-form nozzle changers

- Large on-line inventory of tools for any job
- 70-hole standard/specialty nozzles
- 48-hole odd-form changer (40 standard, 8 large-bore/gripper nozzles)

Adjustable gripper and a full array of odd-form nozzles

- Full range of nozzles for odd-form and large parts
- Industry-leading custom nozzle design and development services for all odd-form components
- Standard, custom and adjustable grippers

Advanced odd-form vision system/algorithms

- Full grey-scale recognition of all key features (body, bumps, pins, corners, holes) provides most complete inspections as well as orientation check
- On-the-fly vision recognition

Supports full range of standard, odd-form and legacy feeders

- A wide range of standard and odd-form component feeding solutions, including tape, strip tape, tube, tray, bowl, GPAX, radial, and label feeders
- Universal SM platforms support most legacy feeders

Fuzion software NPI toolbox

- Offline and online complex component teaching
- Dynamic production editing – no stoppages or scrap
- Part-to-pad/pin-to-hole validation
- Comprehensive library of common odd-form devices

Odd-form cameras with wide field of view

- Large field-of-view optics (single FoV up to 55mm, multiple FoV up to 150mm)
- Flexible lighting schemes for optimal contrast of key component features

Standard large and heavy board capability

- Server, motherboard and LED market-friendly
- 50mm x 50mm – 508mm x 813mm board size
- .5mm – 5.08mm board thickness
- Manual and automated board support options

Equipped to Excel

Versatile tooling solutions

Universal offers the fullest complement of component handling and input types in the industry, with a wide variety of standard tooling, and custom design and implementation services for all your manufacturing requirements.

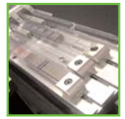
Tape Feeders

- 8-120mm tape widths, multi-pitch
- Pocket depths up to 25.4mm (1")
- 7"–22" reel holder options
- Continuous splice capability

Tray Feeders

- Handle JEDEC and non-standard vacuum-formed trays
- Random-access and direct-pick tray feeding
- SMA Stackable Matrix Tray Feeder
- Stationary Matrix Tray Feeder – parts to 28mm tall

Tube and Track Feeders



- From NPI/low-volume to high-volume options
- Multiple-input track – tubes with parts to 28mm tall
- Multi-tube, single-input ejects empty tubes while picking
- Four-lane track feeder supports up to four part numbers

Bowl Feeders

- Most economical form of bulk component handling and presentation
- 'Go green' – no component packaging and no waste from packaging materials

Odd-Form Nozzles and Grippers

- Full range of nozzles for odd-form and large parts
- Industry-leading custom design/development services
- Adjustable gripper handles multiple component types/sizes. Kits include tooling jaws, spacers, pushers.

Board Supports

- Compliant board support pins allow for height adjustment and offer a magnetic base to easily and securely mount
- Pneumatic support options for all Universal SM platforms
- Custom board support options available