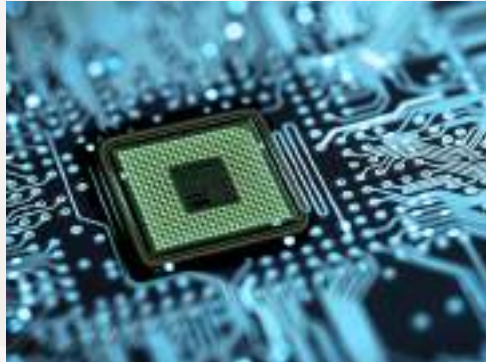# MPM® Electronic Assembly Printers

Proven high-performance printing in a flexible and easy to use platform.

Semiconductor

Designed to meet the demand for increasing throughput, yield and performance requirements from automotive, smart device and semiconductor manufacturers.

Automotive, Smart Device

MPM Electronic Assembly Printers

Today's MPM® printers are engineered and built to the highest standards. They are built on a solid foundation of proven technology and incorporate the most successful ideas and systems from prior MPM printer models. From new print head technology to vision system development, today's leading MPM family of printers are ready to meet the most exacting manufacturing challenges.

MPM is leading the way with integration technology that will enable the automated and connected factories of the future.

Industry 4.0

Built on a Solid Foundation

Strength and stability are prerequisites for accuracy and precision when system parts are in motion and moving about at high speed. MPM's major assemblies are driven by precision ball screws, not belts, which eliminates the need for calibrations.

MPM's rigid frame is welded for low vibrations. This allows for higher repeatability and great reliability over time. Board alignment is achieved with minimum table motion; thus the PCB travels to the stencil more quickly.

Industry 4.0 integration

MPM printers supports industry standards like CamX, SECS-GEM and SMEMA. Using OpenApps we can provide support for factory automation standards such as Hermes and Pulse and communication with Manufacturing Execution Systems (MES).

Edison™ II ACT

Fastest

Edison II ACT (Automated Changeover Technology) is integrated with automated changeover technology that is fast and consistent with reduced operator requirements resulting in error-free changeover, and increased yield, and throughput. This innovative and cost-effective solution can be implemented in progressive stages towards full automation.

Most Accurate

Momentum® II Elite

The MPM® Momentum® II Elite is the top-performer of the Momentum series, boasting the highest throughput and shortest cycle times of all. Its vision system is driven by servos for speed, and it's configured with a highly-efficient triple track rail system featuring an input buffer, a central processing section, and an output buffer.

Momentum® II HiE

The MPM® Momentum® II HiE is a single-rail printer with servo motors, rather than stepper motors, driving the vision systems x, y and z-axes at higher speed and thus increasing throughput and cutting cycle time.

High Performance

Momentum® II BTB

The MPM® Momentum® II BTB is a Back to Back configurable Momentum printer. BTB configurability allows dual lane processing for higher throughput, but without increasing line length or capital investment. It's the ultimate in flexibility in the proven Momentum platform.

Momentum® II 100

The Momentum® II 100 is a hard-working, value-priced printer utilizing the robust, reliable Momentum series platform that has been proven to be at the top of its class in facilities around the world. Featuring a modest footprint, it grows with the user; innovative patented features can be added on or retrofitted as needed as throughput and capability demands grow.

Production Value

Most Accurate

The most accurate printer in the market, with advanced technology needed for fine pitch applications.

Unmatched Accuracy and Throughput

NEW The MPM Edison II ACT (Automated Changeover Technology) was developed based on the proven MPM Edison platform, the industry's most accurate printer with advanced technology. With a built-in ±8 micron machine alignment, and ±15 micron wet print accuracy (≥2 Cpk @ 6 sigma, the Edison II ACT has a proven process capability greater than 2Cpk for 0201 metric components, an ideal solution to meet the increasing miniaturization and board component density challenges in Semiconductor, Automotive, Smart Devices and EMS.

Production line changeover is one of the most labor inten-sive, time consuming, and error prone tasks in the electronics manufacturing. This innovative MPM patented Automated Changeover Technology (ACT) provides a simple, cost-effec-tive and progressive solution toward the end goal for factory automation.

Automated Changeover Scope and capabilities

- 3 Paste cartridge
- Dedicated tooling plate
- 2 Squeegees
- Stencil
- Integral scanner for verification
- MES enabled

MPM solution differentiators

Adaptive

- Easy to use, simple to adopt
- Attractive ROI for users

Scalable

- Baseline machine ACT upgradeable
- Tiered offering - variety of use cases

Automated Stencil, Paste Cartridge, Squeegee and Tooling Changeover

Edison II ACT completely automates the changeover of the stencil, paste cartridge, tooling, and squeegees. It provides a fast and consistent changeover without opening the hood of machine to access inside. The operator removes the current run stencil from the printer and then loads a tray that holds the next run squeegees and tooling. The Edison II ACT then automatically removes the current run squeegees and support tooling and loads them onto the tray. The printer then automatically installs the next run items, and the operator removes the tray. Lastly, the next run stencil is loaded, and the changeover is complete. Edison II ACT eliminates operator error and reduces labor dependency.

Assist cart

The addition of a cart offers assistance with handling changeover items.

A proven, highly-productive printer platform with a new set of enhanced technologies.

Flexibility to meet growing demands

Momentum II is designed and built to be a no-nonsense production machine. Cost-efficient and featuring a modest footprint, it grows with the user; innovative patented features can be added on or retrofitted as needed as the user's throughput demands grow.

Momentum's alignment repeatability is ±11 microns @ 6 sigma, Cpk ≥2.   Wet print accuracy is ±17 microns @ 6 sigma, Cpk ≥2.   Tighter performance tolerances mean higher repeatability with fewer defects.

The Momentum II series is designed with production needs and the needs of the operator in mind. They're champion performers, meeting the demands of high throughput and accuracy, yet at the same time are easy to learn, easy to use, and offer user-friendly features including built-in wizards in the Benchmark software program that provide direction for all machine functions, utilities, and error recovery.

Momentum® II Features

◆ **Newly designed cover set with larger window and wider access inside the printer**

◆ **Solder paste roll height monitor for both upper and lower limits and out of range alert**

◆ **Solder paste temperature monitor measures on stencil and cartridge and has out of range alert**

◆ **Quick release squeegee for faster changeover**

◆ **Benchmark GUI with new production tools and easy to use Quickstart program**

◆ **Support pin placement and verification with bottom-side image alignment**

◆ **Jar paste dispenser for increased productivity**

◆ **Adjustable stencil shelf**

◆ **EdgeLoc+ edge and top board clamping**

Momentum® II Elite's Triple-Track Processing Speed and Efficiency

The Momentum II Elite is the only MPM printer with triple-track. All other MPM printers feature a single rail. With triple track, cycle time is shortened because boards don't have to move single-file through the printer. A new board can be indexed into the machine and positioned next to the center nest, readying to print, while the two others are being loaded and offloaded. Instead of one-board-at-a-time linear processing, cycle time can be shaved by buffering PCBs inside the machine.

Automated Support-Pin Placement

The Elite and HiE offers MPM's patented tooling solution automatically places support pins in a software programmable pattern simplifying both initial set-up and product changeover. The newly developed feature allows pin location to be easily identified and verified with a bottom side image whether placing pins automatically or manually.

Paste Height Monitor

The Paste Height Monitoring system is designed to prevent defects caused by inadequate volumes of paste on the stencil. It combines advanced software and sensor technology to accurately monitor the paste bead for volume consistency. Upper and lower limit roll-height monitoring eliminates insufficient or excess paste volumes. It's a non-contact solution that can automatically add more paste to the stencil as it is needed.

Paste Temperature Monitor

Patent-pending temperature monitoring ensures proper paste viscosity to avoid bridging and voiding. MPM paste temperature monitor allows paste to be measured in the cartridge and/or on the stencil.

Automatic Paste Dispensing System

Dispense for standard cartridges or choose the new jar dispenser. Paste is released in precise, measured amounts across the stencil in a clean, uniform bead. Deposition volumes, frequency, and placement are user-programmable.

Quick Release Squeegee

New quick release squeegee blades make changing blades quick and easy with no tools required. It takes less than 30 seconds to change the blade.

Adjustable Stencil Shelf

Provides the flexibility to handle all stencil sizes with a simple adjustment of the shelf. The robust design provides better stability on all stencil sizes.

EdgeLoc Board Clamping

The EdgeLoc system uses a side snugging technique that removes the need for top clamps which interfere with the PCB to stencil contact. The result is optimal gasketing and more volumetrically consistent edge-to-edge prints. With EdgeLoc II, robust flippers engage to secure the board across the top edge ensuring board flatness then move out of the way once the board is firmly gripped from the side. EdgeLoc+ board clamping is able to change between edge and top clamping simply through software.

EnclosedFlow Printhead

EnclosedFlow ensures optimal aperture filling for fine pitch devices and through-hole applications with crisp uniform printing and less waste. Solder paste is held within an enclosed chamber and is directly mechanically pressurized during the print stroke.

RapidClean

RapidClean is a high-speed stencil solvent cleaning innovation that slashes cycle time and improves stencil cleaning performance, especially for fine-pitch. RapidClean reduces 3 wipe strokes to 2 and cuts cycle time by 5 – 6 seconds per print cycle over the standard wiper. And because fewer cleaning cycles are required, RapidClean can save up to $10K USD per annum in paper savings per printer.

Camalot Inside™

Improve your production line's flexibility and productivity with Camalot patented dispensing technology inside the Momentum II Elite and HiE. Includes dual dispensing heads mounted to the wiper gantry.

MPM Vision System & Inspection

MPM's printer-based Vision and Inspection system is a cost-effective way to verify print and paste deposit results. It's flexible enough to handle the complete range of today's most challenging components. This system measures the amount of paste covering the target pad and compares it with the required coverage. 2D Inspection is integrated directly into the stencil printer to provide an immediate source of data.

SPI Print Optimizer

SPI Print Optimizer brings your Solder Paste Inspection (SPI) machine into communication with your MPM printer through a specially-developed common interface. When the SPI machine 'sees' X, Y and theta offset problems on a just-printed PCB, it analyzes the data virtually instantly and gives the printer instructions to correct those offsets, automatically, and 'on the fly'.

BridgeVision and StencilVision

BridgeVision is a patented method of analyzing bridge defects on circuit boards in the post-print inspection process. This innovative system utilizes texture-based image acquisition algorithms and a digital camera system with telecentric lenses to support the accurate identification of paste deposit defects. StencilVision utilizes texture-based technology to check the underside of a stencil for solder paste contamination. Wiper operation can be driven by the results obtained.

Best Performance Closed-loop Squeegee

An advanced print head features a single high precision load cell with closed-loop pressure control and motor drive system enabling precise and consistent squeegee force control across print stroke in both directions, which helps improve yields especially for challenging thin substrate printing.

AccuCheck Print Capability Verification

Accucheck Print Capability Verification allows the printer to measure its own print capability. Users can verify the machine's capability at any time or continuously on their own products. AccuCheck measures the actual print deposit position versus the target pad to determine a measured print offset. It is an inexpensive, reliable method of obtaining machine quality and process capability information to ensure repeatable results and optimum printing performance.
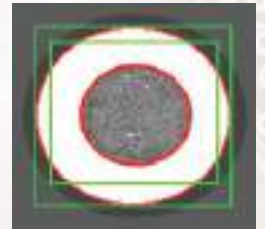
Benchmark™ User Interface

Easy to learn and use for the average operator, MPM's Benchmark software is powerful yet intuitive, and facilitates rapid setup, assists with operational tasks, and makes changeover quick and easy. The software has been upgraded with new production tools and new Quickstart programming to make it even easier to use.

OpenApps™

MPM's OpenApps is an open architecture source code which provides the capability of developing custom interfaces in support of Industry 4.0 initiatives and communication with Manufacturing Execution Systems (MES). ITW EAE is the first SMT company to offer open software architecture.

PrinTrack™

PrinTrack™ adds traceability, data harvesting, and reporting to your printing process. It can seamlessly integrate with other equipment and elements in the manufacturing cycle, such as MES and ERP, and can be expanded factory-wide.

MPM — Printer Specifications and Options

Complete Range of Solutions	Top Performance	Versatility & Flexibility		High Value	
Product Models	EDISON II ACT	MOMENTUM II Elite	MOMENTUM II HiE	MOMENTUM II BTB	MOMENTUM II 100
Accuracy & Repeatability @ 6 sigma, Cpk ≥2.0 (Certified by CeTaq)					
±8 microns (Alignment) ±15 microns (Print)	●				
±11 microns (Alignment) ±17 microns (Print)		●	●	●	●
Core Cycle Time					
15 seconds (including print and wipe)*	●				
6 seconds		●			
7.5 seconds			●		
9 seconds				●	
11 seconds					●
Maximum Print Area					
450 mm x 350 mm (17.7" x 13.8")	●				
610 mm x 508 mm (24" x 20")		●	●	●	●
Printer Dimensions — Width	1280 mm (50.4")	1675 mm (66.0")	1202mm (47.3")	1195 mm (47.1")	1195 mm (47.1")
Printer Dimensions — Depth	1440 mm (56.7")	1593 mm (62.7")	1593 mm (62.7")	1394 mm (54.9")	1394 mm (54.9")
Printer Dimensions — Height	1589 mm (62.5")	1638 mm (64.5")	1638 mm (64.5")	1589 mm (62.6")	1589 mm (62.6")
Standard Features and Options					
Productivity					
Automated Changeover (ACT)	O				
Auto-Tooling		O	O		
Triple Track/board staging	O	●			
Automatic Paste Dispenser (cartridge)	O	O	O	O	O
Quick Release Squeegee	●	●	●	●	●
RapidClean	●	O	O	O	O
RapidClean+		O	O		
Quality and Yield					
Closed-loop Squeegee	●	O	O	O	O
Paste Height Monitoring (upper & lower)	O	O	O	O	O
Paste Temp Monitoring		O	O	O	O
SPI Print Optimizer	O	O	O	O	O
2D Inspection		O	O	O	O
Stencil Vision		O	O	O	O
Versatility and Flexibility					
EdgeLoc+ Board Clamping (top and side)	O	O	O	O	
EdgeLoc II Board Clamping (side only)	●	O	O	O	
Camalot Inside Built-in Dispenser		O	O		
EnclosedFlow Printhead		O	O	O	
Adjustable Stencil Shelf	●	●	●	O	O
Back to Back Line Configuration	●			●	●
Industry 4.0					
Verification and Traceability	O	O	O	O	O
OpenApps 4.0	O	O	O	O	O

* Under specific set of test conditions, consult your MPM representative for details.
Specification is subject to change without notice. Please consult factory for specifics.

O = Optional; ● = Standard

ITW EAE maintains an ongoing program of product improvement that may affect design and/or price.
We reserve the right to make these changes without prior notice or liability.

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Electronic Assembly Equipment