

# MPM

Electronic Assembly Equipment

TW EAE

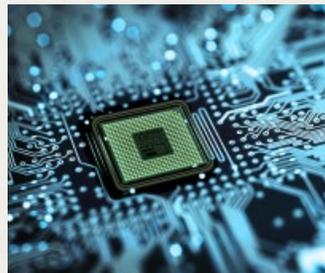
## Momentum<sup>®</sup> II BTB

Back-to-Back Printing System

**Momentum II**  
Fresh look and  
innovative new features  
for further enhancement  
in ease of use, yield,  
quality, productivity, and  
versatility.



**Higher Productivity from an Optimized Footprint**



# MPM

# Momentum® II BTB

## Momentum® II

BTB gives Momentum® II users greater flexibility in line configuration. Now you can leverage Momentum's superior print performance capabilities into dual lane output with an overall smaller footprint.

### Momentum's Patented Technology

- EnclosedFlow™ Print System
- Paste Management System
- EdgeLoc™ Board Clamping
- RapidClean™
- StencilVision™
- Closed-loop SPI Print Optimizer
- Benchmark™ 5.0



### Get More Throughput with Less Space and Less Investment

Momentum® II BTB features a smaller footprint than the standard Momentum platform. Back-to-Back configuration allows dual lane processing for higher throughput without increasing line length or capital investment. Dual lane provides the flexibility to print multiple products in a single SMT line, such as top and bottom side, same side, or mother/daughter boards making the BTB the most flexible model in the proven Momentum platform.

With the MPM® Momentum® II BTB, you get all the accuracy and performance that the proven Momentum platform is known for. Most of the features and options available for Momentum series printers are available with the Momentum II BTB. MPM Momentum II BTB printers are offered in two different throughput configurations for optimum flexibility in line balancing.

# Precision and Performance in a Compact and Flexible Configuration

## Space-saving Configuration without Compromise

The MPM Momentum® II BTB is a space-saving 200 mm shorter than the standard Momentum. Configured for Back-to-Back (BTB) processing, it enables dual lane processing with two machines, conserving floor space and creating a shorter manufacturing line length, but without sacrificing volume or yields. Momentum® II BTB is also designed with all-front access to the entire electrical system, solvent reservoirs, etc. so that no extra space is required for accessibility between the machines in BTB setup. MPM Momentum® II BTB printers feature the same 20 micron accuracy, with wet print accuracy of  $\pm 20$  microns @ 6 sigma, Cpk  $\geq 2.0$ , designed in and independently verified. MPM Momentum printers are fast, precise, and highly reliable, with performance unmatched by any other printer in their class.

## Optimizing Productivity through Flexibility

Momentum® II BTB optimizes operator utilization rates for dual lane lines, and utilization of factory floor space. What's more, individual units can be easily redeployed as needs change. Available with optional shuttle conveyors.

## Momentum® II BTB New Features

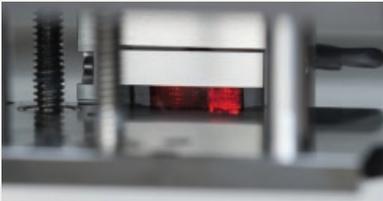
- ◆ Newly designed cover set with larger window and wider access inside the printer.
- ◆ Quick release squeegee for faster changeover.
- ◆ Adjustable stencil shelf for flexibility handling board varieties.
- ◆ EdgeLoc II and EdgeLoc+ for precise board clamping.
- ◆ New jar paste dispenser for increased productivity.
- ◆ Solder paste roll height monitoring and paste temperature monitoring for yield improvement and traceability.
- ◆ Upgraded Benchmark GUI with customizable production page and Quickstart program.
- ◆ Windows 10 operating system.



# MPM Momentum<sup>®</sup> II BTB

## Innovative Standard and Optional Features

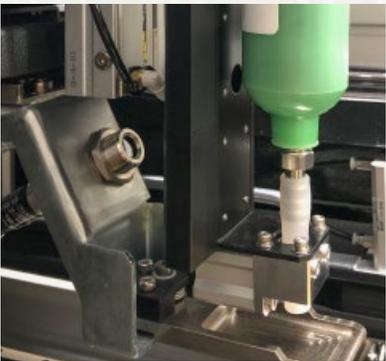
### NEW Paste Height Monitor



The Paste Height Monitor 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 is a non-contact solution that can automatically add more paste to the stencil as it is needed.

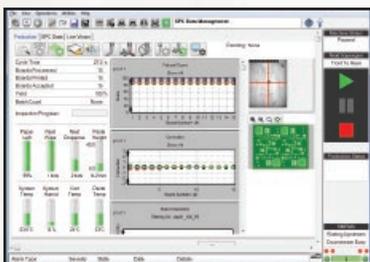
### NEW Paste Temperature Monitor



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

### Updated Benchmark<sup>™</sup> 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 to Windows 10 and new production tools and new Quickstart programming to make it even easier to use.

### OpenApps<sup>™</sup>

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.

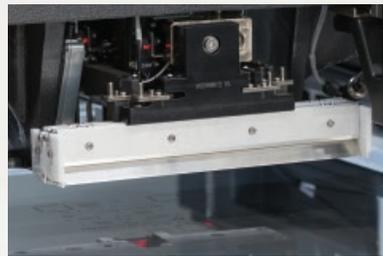
### NEW Automatic Paste Dispensing System



Dispense for standard cartridges or choose the new patent-pending 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.

### NEW Quick Release Squeegee



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

### NEW EdgeLoc<sup>™</sup> 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 can change between edge and top clamping simply through software.

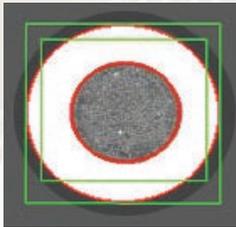
### NEW Adjustable Stencil Shelf

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.

# Momentum® II BTB

## Add Capability and Value to your Process

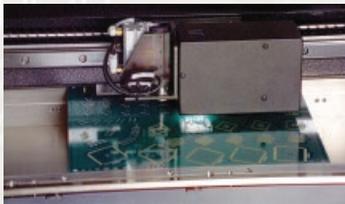
### AccuCheck Print Capability Verification



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.

### MPM Vision System & Inspection

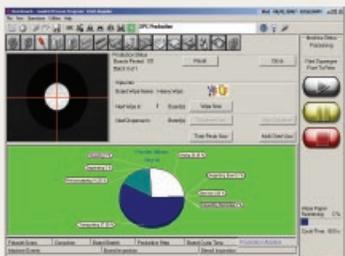


MPM's patented printer-based Vision and Inspection system is a cost-effective way to verify print and paste deposit results. It is flexible enough to handle

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.

### 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.

### 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.



### EnclosedFlow™

The MPM EnclosedFlow Print Head delivers uniform aperture filling and superb printing performance especially for fine pitch devices, with tremendous savings on solder paste over squeegee blade printing – in excess of 50% over blades for dramatically fast ROI. Printing fine features such as 01005s and 0.3mm pitch CSPs with up to 50% greater volume and 25% lower deviation than metal blades.



### 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.

### 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'.

## MPM MOMENTUM II BTB SPECIFICATIONS

### BOARD HANDLING

Maximum Board Size (X x Y)	609.6 mm x 508 mm (24" x 20") <i>A dedicated workholder is required for boards with an X size greater than 20"</i>
Minimum Board Size (X x Y)	50.8 mm x 50.8 mm (2" x 2")
Board Thickness	0.2 mm to 5.0 mm (0.008" to 0.20")
Maximum Board Weight	4.5 kg (10 lbs)
Board Edge Clearance	3.0 mm (0.118")
Underside Clearance	12.7 mm (0.5") standard. Configurable for 25.4 mm (1.0")
Board Hold-Down	Fixed top clamps, centernest vacuum
Board Support Methods	Magnetic pins Optional: Vacuum side dams, vacuum pins, support blocks, dedicated fixtures, patented auto tooling, Quik-Tool

### PRINT PARAMETERS

Maximum Print Area (X x Y)	609.6 mm x 508 mm (24" x 20")
Print Gap (Snap-off)	0 mm to 6.35 mm (0" to 0.25")
Print Speed	0.635 mm/s - 304.8 mm/s (0.025 in/s - 12 in/s)
Print Force	0 to 22.7 kg (0 lb to 50 lbs)
Stencil Frame Size	737 mm x 737 mm (29" x 29") Adapters available for smaller sizes

### VISION

Vision Field-of-View (FOV)	10.6 mm x 8.0 mm (0.417" x 0.315")
Fiducial Types	Standard shape fiducials (see SMEMA standards), pad/aperture
Camera System	Single digital camera - MPM patented look up/down vision

### PERFORMANCE

Total System Alignment Accuracy and Repeatability	±12.5 microns (±0.0005") at 6 sigma, Cpk ≥2.0*
<i>Qualification is performed using production environment process variables; print speed, table lift and camera movement are included in the capability figure.</i>	
Wet Print Deposit Accuracy and Repeatability	±20 microns (±0.0008") at 6 sigma, Cpk ≥2.0*
<i>Based upon actual wet printing with positional accuracy and repeatability verified by a 3rd party measurement system.</i>	
Cycle Time	
Momentum II BTB	9 seconds standard
Momentum II BTB HiE	7.5 seconds standard

### FACILITIES

Power Requirements	200 to 240 VAC (±10%) single phase @ 50/60Hz, 15A
Air Supply Requirements	100 psi at 4 cfm (standard run mode) to 18 cfm (vacuum wipe) (7 bar @ 5 L/s to 12 L/s), 12.7 mm (0.5") OD x 9.5 mm (3/8") ID line
Height (excluding light tower)	1494.10 mm (58.82") at 940 mm (37.0") transport height
Machine Depth	1423.5 mm (56.04")
Machine Width	1196.0 mm (47.09")
Minimum Front Clearance	508 mm (20.0")
Minimum Rear Clearance	508 mm (20.0")
BTB Configuration	10 mm (0.39")
Machine Weight	797 kg (1757 lbs)
Crated Weight	1090.5 kg (2404 lbs)

\* The higher the Cpk, the lower the variability with respect to the process specification limits. In a process qualified as a 6 sigma process (i.e., one that allows plus or minus 6 standard deviations within the specification limits), the Cpk is greater than or equal to 2.0.

Specification is subject to change without notice. Please consult factory for specifics.

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.

## MPM Printers – 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. The Momentum® II BTB's major assemblies are driven by precision ball screws, not belts, which eliminate the need for calibrations. The worknest and camera gantry are designed for optimum motion stability, shorter settling time, and faster board and stencil alignment. Momentum® II BTB's rigid frame is welded for low vibrations. This allows for higher repeatability and great reliability over time. Alignment is achieved with minimum motion; thus the PCB travels to the stencil more quickly.

ITW EAE is a division of Illinois Tool Works, Inc. It is a consolidation of all of its Electronic Assembly Equipment and Thermal Processing Technology. The group includes world-class products from MPM, Camalot, Electrovert (Speedline), Vitronics Soltec and Despatch.