



M P M ®

A C C U F L E X ™

Unparalleled
printing value, uncompromising
production flexibility.

MPM AccuFLEX™

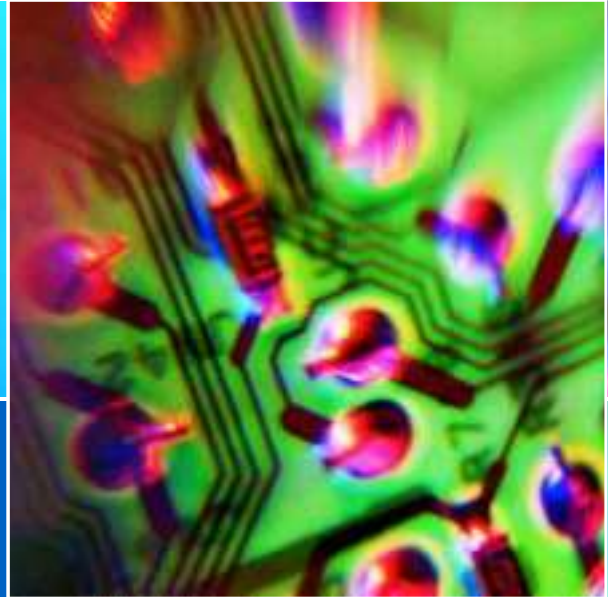
Unparalleled printing value,
uncompromising production
flexibility.

**The AccuFlex delivers all the features
required for moderate volume / high mix
printing, at a cost effective price.**

The AccuFlex is accuracy and flexibility in a compact footprint. It delivers clear value by providing only what's required for efficient, precise printing, while permitting the user to select from a full range of options to expand capabilities to meet current and future needs. It's an ideal introductory system and perfect for expanding production capacity.

**Tailored for today's needs - convenient
upgrade path for tomorrow's demands**

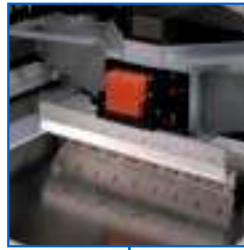
- 6 sigma accuracy ensures precise and repeatable printing capability
- 11 second cycle time enhances line productivity
- Large board capacity maximizes product flexibility: up to 23 x 20 in. (584 x 508 mm)
- Automated product changeover capability increases production line uptime
- Microsoft Windows 2000® operating system provides easy and intuitive user programming, and effective data management





MPM'S PATENTED AUTOMATIC BOARD-TO-STENCIL ALIGNMENT SYSTEM PROVIDES FAST AND PRECISE PRODUCT ALIGNMENT

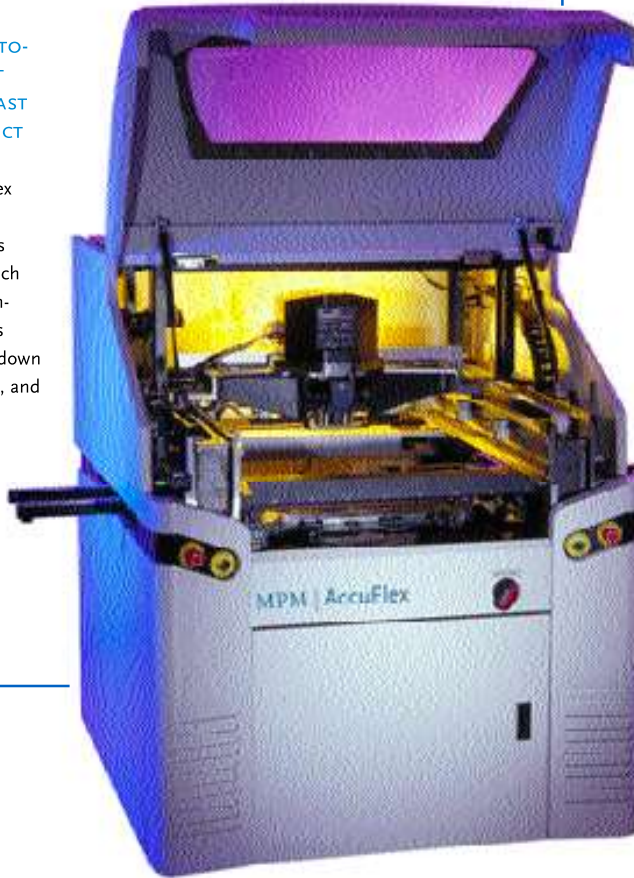
Standard on all AccuFlex printers, the alignment system ensures paste is accurately placed on each PCB pad. This is accomplished through MPM's patented look-up/look-down illumination and optics, and our vision-on-the-move software.



PROGRAMMABLE SELF-LEVELING PRINT HEAD CONTROL

The self-leveling dual squeegee print head provides years of accurate and consistent print results.

- Squeegee pressure, speed and stroke length are fully programmable.
- Optional real-time closed-loop pressure control system with individual pressure sensors for each squeegee to provide accurate control.
- Squeegee lift distance allows removal of stencil without removal of blades.



MICROSOFT WINDOWS 2000® GRAPHICAL USER INTERFACE

The Microsoft Windows 2000® based user interface combines ease-of-use for first time operators with advanced process and machine control features for improved productivity.

- Pull-down menus and interactive on-line Help features accelerate product setup.
- User profiling and access passwords ensure full security.
- Full on-board diagnostic features provide proactive and simple machine maintenance.
- Off-line product file editing capability to allow most of a product file to be created remotely.
- Real-time statistical process control, displayed during printer operation, provides a wide range of industry standard control charts with user definable warning and action limits (optional).



ROCK-SOLID STEEL CONSTRUCTION PROVIDES THE FOUNDATION FOR ROBUST AND RELIABLE PERFORMANCE

The AccuFlex welded and stress-relieved tubular frame, with over 15 castings, provides maximum mechanical integrity, while the modular system design provides unobstructed access for easy maintenance.

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*Windows 2000 is a registered trademark of Microsoft Corporation.

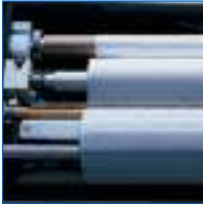
AVAILABLE OPTIONS



Automatic Support Pin Placement System

The AccuFlex support pin placement system automatically places support pins within a programmable pattern, ensuring a flat supporting surface, a must for superior print definition. This fully automatic option reduces product changeover time, and because it's not limited by fixed pin grids, makes initial setup on populated boards extremely simple.

- 48-pin carousel located in front of worknest area for easy access.
- Pins are automatically returned to the carousel between product changeovers, eliminating manual intervention.
- Eliminates the need for custom workholders for difficult double-sided PCBs.



UltraWiper Under-Stencil Cleaning System

The UltraWiper Under-Stencil Cleaning system provides unassisted cleaning of the bottom-side of the stencil using lint-free paper. The programmable vacuum system removes stubborn solder paste from stencil apertures, eliminating "opens" on the final assembly.

- Paper over plenum design reduces maintenance by filtering particulates within the paper.
- Low-noise vacuum pump resides within printer frame to reduce floorspace consumption.



Rheometric Pump™ Print Head Systems

MPM's Rheometric Pump printing system, a quantum leap in advanced stencil printing technology, features Variable Volume Actuator (V.V.A.) paste management.

- Round paste chamber ensures homogenous paste mixing, while allowing material to shear thin to its working viscosity.
- Optional real-time closed-loop pressure control system with individual pressure sensors for each squeegee. Provides accurate pressure control.
- Uses standard six-ounce cartridges, eliminating the need for special materials packaging and potentially messy bladder refills.

Integrated Post Print Analysis

Immediately following the print cycle, MPM's 2D verification tools provide quantitative performance measurements of paste coverage. Compared against user-defined control limits, the system verifies print performance and alerts the operator if adjustments are necessary.

- Supports all standard device layouts including QFPs, BGAs, and micro BGAs.
- Custom BGA programming utility.
- Software automatically calculates percentage of pad coverage.
- Automatic stencil cleaning on low paste coverage.
- Stencil Teach feature helps train even the most difficult devices.
- Device Prioritization Utility maximizes inspection utilization by ensuring that a board continues to be inspected in a prioritized order until the board is released downstream.

The table below details the actual times for specific device types. These cycle times, coupled with the path optimization feature and speed of the vision gantry (motion for alignment and travel between devices), result in the fastest 2D system in the industry.

Device Type	Device Pitch	Cycle time (seconds)	Pads / second
QFP 160	0.025"	8.2	20
QFP 208	0.020"	8.6	24
QFP 256	0.020"	8.6	30
QFP 176	0.012"	4.5	39
PLCC 28	0.050"	3.9	7
TSOP 32	0.020"	1.7	24
BGA225 (15 X 15)	0.060"	5.0	45
BGA 361 (19 X 19)	0.020"	2.1	174
BGA 361 (19 X 19)	0.025"	2.3	160
BGA 361 (19 X 19)	0.040"	5.1	71
BGA 196 (14 X 14)	0.050"	7.2	27
2 BGA's 2025 (45 X 45)	0.025"	23.5	172



Automatic Paste Dispensing System

Industry standard sealed cartridges release precise amounts of solder paste, adhesive, flux, encapsulants, or ink as a clean bead across the stencil. Operator friendly, the system stops the flow of material on command while containing the paste in a sealed environment to extend the paste's print life.

- Accommodates both 6 and 12-oz cartridges.
- Programmable deposition volumes, frequency and placement.
- Innovative paste retraction feature ensures no drips after dispensing.



Triple Track Conveyor System

The innovative Triple Track Conveyor System handles up to three boards at once to reduce board transport time. Separate input and output conveyors allow boards to enter and leave the printer as soon as up-line and down-line machines are ready, permitting simultaneous printing and board transportation.

- Available with multiple input and output conveyor rail lengths for convenient line integration.
- Extended stationary conveyor rails provide means to easily load and unload boards in off-line configurations.
- Fully programmable centermost hard boardstop maximizes conveyor speeds, minimizing cycle time.
- Integrated board clamping system ensures boards are firmly held in place for consistent print results.

STANDARD FEATURES	STANDARD CONFIGURATION	CHANGEOVER PLUS CONFIGURATION	YIELD PLUS CONFIGURATION	PRODUCTIVITY PLUS CONFIGURATION
Microsoft Windows 2000® Operating System	■	■	■	■
Patented Automatic Vision Alignment System	■	■	■	■
Off-Line Product File Editor	■	■	■	■
Multiple Image Capability	Manual	Automatic	Automatic	Automatic
Programmable Board Hard Stops	■	■	■	■
Configurable Light Tower	■	■	■	■
On-Line Help Utility	■	■	■	■
OPTIONAL Speed Enhancement Package			■	
OPTIONAL Triple Track Conveyor System				■
OPTIONAL 3-mm Bottom Side Edge Clearance				■
OPTIONAL Track Width Adjustment	Manual	Automatic	Automatic	Automatic
OPTIONAL Stencil Positioning System	Manual	■	■	■
OPTIONAL Print Head Systems	Self-Leveling	Self-Leveling	Closed-Loop	Rheometric
OPTIONAL Stencil Cleaning System	Wet/Dry Vacuum	Wet/Dry Vacuum	Wet/Dry Vacuum	Wet/Dry Vacuum
OPTIONAL Automatic Board Support Pin Placement System	Manual Pins	■	■	■
OPTIONAL Automatic Paste Dispensing System		■	■	■
OPTIONAL 2D Paste Coverage Verification System			■	■
OPTIONAL SPC Process Control Utility		■	■	■

ACCUFLEX™ PRINTER SYSTEM SPECIFICATIONS

BOARD HANDLING		VISION	
Maximum Board Size (X x Y)	23" x 20" (584mm x 508mm)	Vision Field-of-View (FOV)	0.40" x 0.40" (10mm x 10mm)
Minimum Board Size (X x Y)	3" x 2" (75mm x 50mm)	Fiducial Types	Standard shape fiducials. See SEMMA standards.
Board Thickness	0.03" to 0.20" including warpage (0.8mm to 5.0mm) 0.008" to 0.15" (0.2mm - 3.8mm) - Optional	Camera System	Single roving camera module with dual beam optics
Maximum Board Weight	10 lbs. (4.5kg)	PERFORMANCE	
Minimum Board Edge Clearance	0.19" (5mm) 0.12" (3mm) - Optional	Vision Alignment Repeatability	+/- 0.001" (+/- 0.025mm) at 6 sigma (Cp greater than or equal to 2.0*) verified with glass plate capability test**
Maximum Underside Clearance	0.59" (15mm)	Vision Alignment Accuracy	+/- 0.001" (+/- 0.025mm) at 6 sigma (Cp greater than or equal to 2.0*) verified with CeTaQ™ CmController™ capability test**
Transport Speed	Adjustable	Print Deposit Repeatability and Accuracy	+/- 0.002" (+/- 0.050mm) at 6 sigma (Cp greater than or equal to 2.0*) verified with CeTaQ™ CmController™ capability test**
Transport Height From Floor	34" - 38" (860mm - 960mm)	CYCLE TIME	
Transport Track Feed Direction	Left-to-Right, Right-to-Left, Left-to-Left and Right-to-Right	Standard Performance	16.2 seconds***
Triple Track Conveyor Lengths	52" (1320mm), 60" (1524mm), 68" (1727mm)	Speed Enhancement Package	12.5 seconds***
Method of Board Hold-Down	Positive edge-clamps (front and rear)	Speed Enhancement Package and Triple Track Conveyor System	11.0 seconds***
Method of Board Support	Independent, moveable magnetic support pins	FACILITIES	
PRINT PARAMETERS		Power Requirements	110 - 240V, 50/60Hz (+/-10%)
Maximum Print Area (X x Y)	22" x 19.6" (559mm x 498mm)	Air Supply Requirements ****	5 CFM at 90 psi, Clean Air Supply
Snap-off Speed	0.008" - 0.39"/sec (0.2mm - 10mm/sec)	Height	62" (1575 mm)
Print Speed	0.2" - 7.87"/sec (5mm - 200mm/sec)	Depth	57" (1448 mm)
Print Pressure	Up to 44 lbs (20 kg)	Width - Standard Performance	51.7" (1314 mm)
Print Stroke	20" (508mm)	Width - High Performance	52" (1320 mm), 60" (1524 mm) 68" (1727 mm)
Stencil Frame Size	29" x 29" (737mm x 737mm) standard		
Smaller Frame Accommodations	By use of optional Adapters		

* The higher the Cp, 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 Cp is greater than or equal to 2.0.

** The CmController™ test is an optional test that can be performed on request by a customer prior to the shipment of their printer.

**** Excludes process parameters such as print stroke. Determined by using 10.0" (254mm) x 8.0" (203mm) PCB with fiducials located in opposite diagonal corners.

***** Optional vacuum wiper requires 21 CFM (during the vacuum stroke only).

Cookson Electronics Equipment 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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Cookson Electronics EQUIPMENT

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