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ULTRAPRINT 1500



UNPARALLELED PRINTING VALUE,  
UNCOMPROMISING PRODUCTION FLEXIBILITY

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

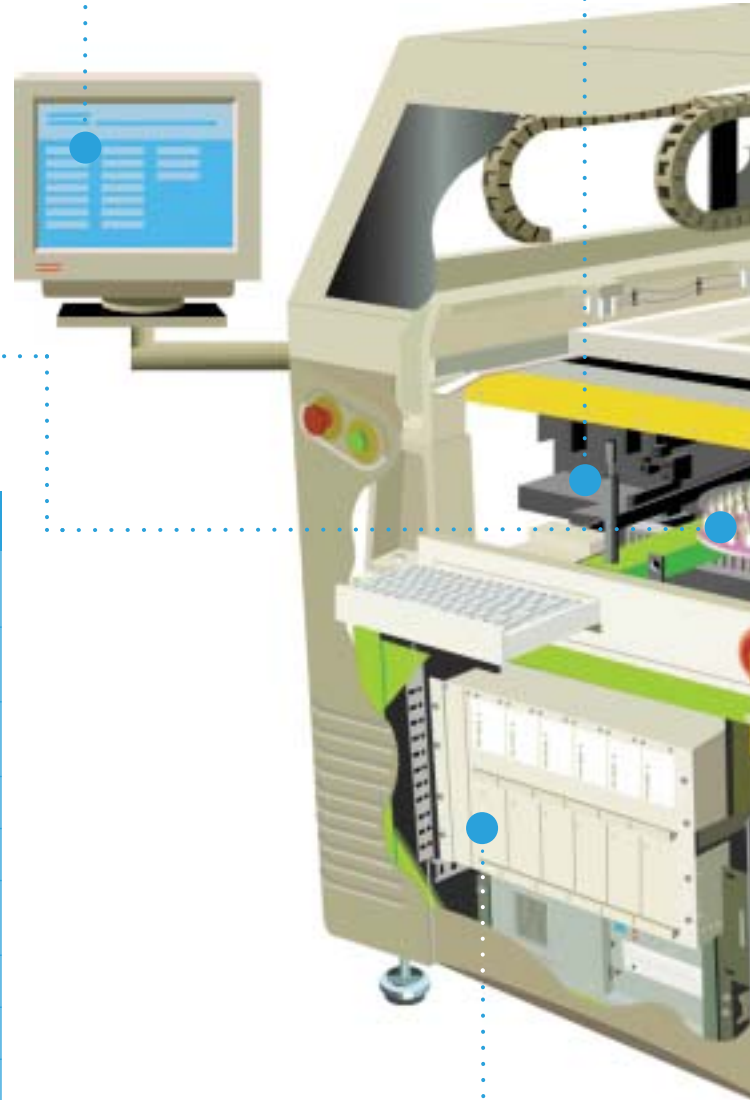
*Standard on all Ultraprint 1500 printers, this feature incorporates MPM's patented look-up/look-down illumination and optics to ensure the paste is accurately placed on each PCB pad.*

**MICROSOFT WINDOWS NT® USER-INTERFACE OFFERS SIMPLE PRODUCT PROGRAMMING AND REAL-TIME SPC CHARTING AND REPORTING**

*This intuitive user interface makes product setup effortless, even for first-time users, while real-time statistical process control tools provide instantaneous product and performance data to help manage the process.*

**AUTOMATIC PIN PLACEMENT SYSTEM REDUCES PRODUCT CHANGEOVER TIME**

*Board support for a typical 12" square PCB can be setup in less than 90 seconds, significantly reducing changeover time and freeing up an operator for other setup tasks.*



**FEATURES, OPTIONS AND RECOMMENDED CONFIGURATIONS**

Features & Options	Standard Configuration	Changeover-Plus Configuration	Yield-Plus Configuration	Performance-Plus Configuration
Microsoft Windows NT® Operation System	○	○	○	○
Patented Automatic Vision Alignment System	○	○	○	○
Off-line Product File Editor	○	○	○	○
Multiple Image Capability	Manual	Automatic	Automatic	Automatic
Programmable Hard Board Stops	○	○	○	○
Configurable Light Tower	○	○	○	○
On-line Help Utility	○	○	○	○
Track Width Adjustment	Manual	Automatic ●	Automatic ●	Automatic ●
Automatic Stencil Positioning System		●	●	●
Print Head System	Self-Leveling	Self-Leveling	Closed-Loop ●	Rheometric ●
Stencil Cleaning System	Wet/Dry ●	Vacuum ●	Vacuum ●	Vacuum ●
Automatic Board Support Pin Placement System		●	●	●
Automatic Paste Dispensing System		●	●	●
2D Paste Coverage Verification System			●	●
Triple Track Option			●	●
SPC Process Control Utility		●	●	●

Key: ○ = Included ● = Optional

**UNPARALLELED GLOBAL CUSTOMER SUPPORT MAXIMIZES PRINTER UPTIME**

*By combining the industry's most comprehensive set of customer support services with a printer that was developed with ease of maintenance as a priority, the Ultraprint 1500 will provide years of uninterrupted productivity.*



**REAL-TIME CLOSED-LOOP SQUEEGEE PRESSURE SYSTEM ENSURES ACCURATE AND REPEATABLE PRINT DEPOSITION**

*Print pressure is measured directly, using independent load cells at the point of stencil contact for quick and precise response, resulting in predictable prints every time.*

**RHEOMETRIC PUMP PRINT HEAD OFFERS SUPERIOR PASTE MANAGEMENT AND DEPOSITION VOLUMETRICS**

*MPM's Rheometric Pump printing system combines cutting-edge features and proven technology to yield the ultimate in materials deposition while also reducing waste by as much as 90%.*

**TRIPLE-STAGE BOARD TRANSPORT SYSTEM WITH AUTOMATIC RAIL WIDTH ADJUSTMENT INCREASES PRODUCTIVITY**

*This feature handles up to three boards at once to reduce board transport time, while the automatic rail width feature provides hands-free product changeover, all resulting in increased board production.*

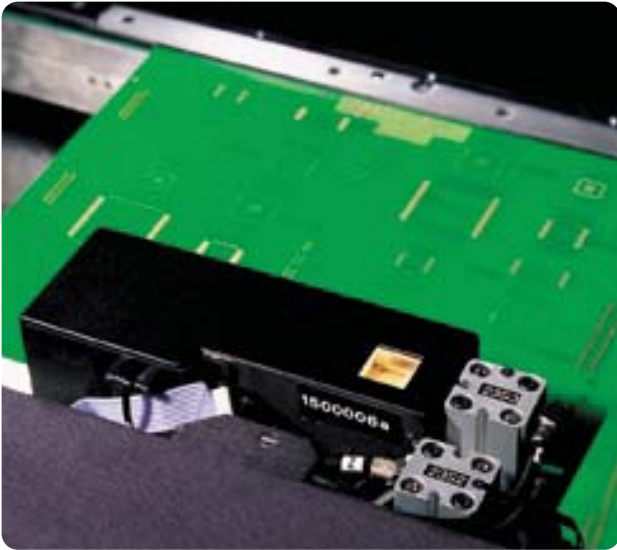
**ROCK-SOLID STEEL CONSTRUCTION PROVIDES THE FOUNDATION FOR ROBUST AND RELIABLE PERFORMANCE**

*The Ultraprint 1500 welded and stress-relieved tubular frame, plus over 15 castings provide maximum mechanical integrity, while the modular system design provides unobstructive access for easy maintenance.*

## Standard Features

### Superior Capability within a Compact Footprint

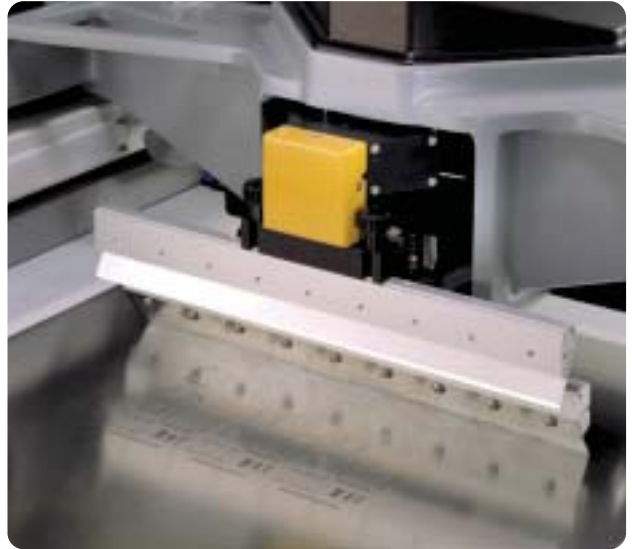
- > Large board capability 23" x 20" (584mm x 508mm).
- > Industry-standard stencil 29" x 29" (737mm x 737mm).
- > Welded and stress relieved tubular frame provides maximum mechanical integrity.
- > Boards are held with above-board rail clamps.



*Automatic Board-to-Stencil Alignment*

**Automatic Board-to-Stencil Alignment** Utilizing MPM's patented look-up/look-down illumination and optics technology, and incorporating direct drive motion control; board-to-stencil alignment is accurate and repeatable.

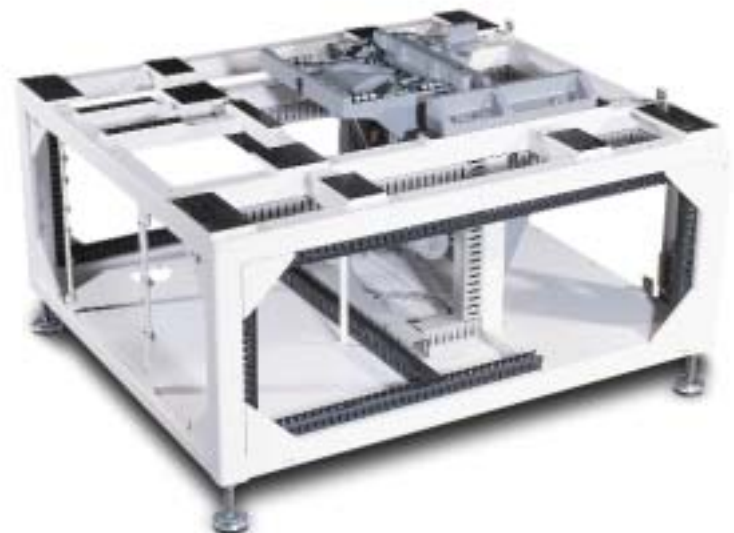
- > Unlimited image pattern recognition for superior flexibility.
- > No moving optical parts guarantee system durability and reliability.
- > Alternate vision recognition strategies handle the full range of product types.



*Programmable Print Head Control*

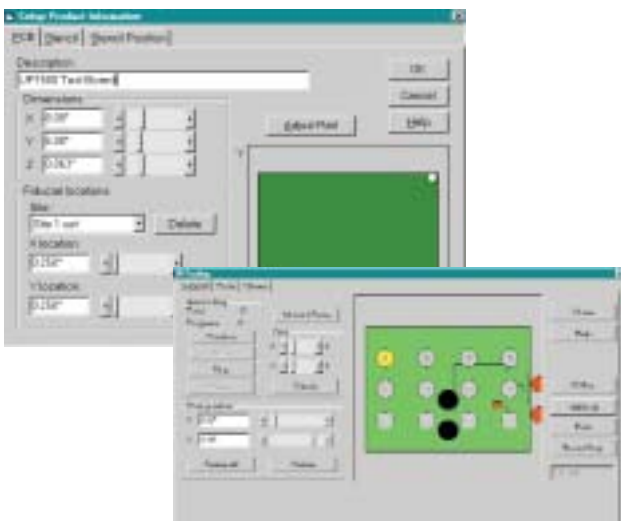
**Programmable Self-leveling Print Head Control** The self-leveling dual squeegee print head provides years of accurate and consistent print results.

- > Squeegee pressure, speed and stroke length are fully programmable.
- > Vertical board-from-stencil separation with programmable slow snap-off.
- > Squeegee lift distance allows removal of stencil without removal of blades.



**SigmaPro-NT Graphical User Interface** The Microsoft Windows NT® based user interface combines ease-of-use for the 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.
- > Local languages available for global integration.
- > 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).
- > Off-line product file editing capability to allow most of a product file to be created remotely.



*Microsoft Windows NT® Based User Interface*



## Standard Options



*Auto Pin Placement System*

**Automatic Support Pin Placement System** The Ultraprint 1500 support pin placement system automatically places support pins within a programmable pattern, ensuring a flat supporting surface, ideal for superior print definition. This fully automatic option reduces product changeover time, and because it is 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 carousel between product changeover, eliminating manual intervention.
- > Eliminates the need for custom workholders for difficult double-sided PCBs.

**Under-Stencil Cleaning System** The under-stencil cleaning system provides unassisted cleaning of the bottom-side of the stencil using lint-free paper to remove paste bleed-out. Independently 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 floor space consumption.

### Real-time Closed-loop Squeegee Pressure Control System

Unique closed-loop squeegee pressure control independently monitors front and rear squeegee pressure at the blade contact edge, utilizing the shortest possible feedback to deliver precise sensitivity for precise print results.

- > Direct measurement of pressure using independent load cells at the point of print for quick and precise response.
- > Graphical representation of print pressure profile helps identify potential problems caused by inconsistent board support.



*Rheometric Pump Print System*

**Rheometric Pump Print Head System** MPM's Rheometric Pump printing system, a quantum leap in advanced stencil printing technology, features Variable Volume Actuator (V.V.A.) paste management and deposition volumetrics.

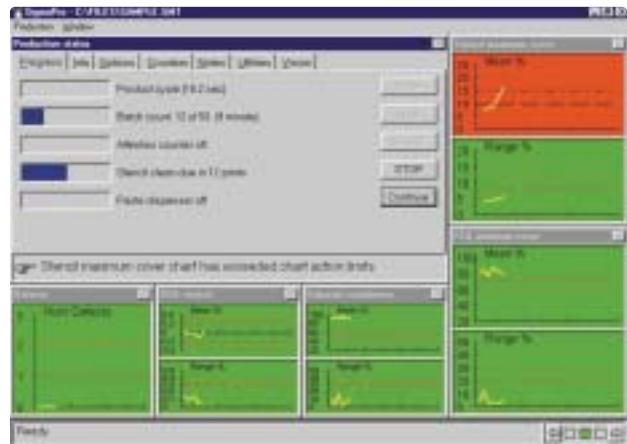
- > Round paste chamber ensures homogenous paste mixing, while allowing material to shear thin to its working viscosity.
- > V.V.A. technology improves chamber fluid dynamics for optimal material control.
- > New chamber input fan-out provides even distribution of pressure across the chamber opening, yielding balanced material deposition.
- > Utilizes standard six-ounce cartridges, eliminating the need for special packaging and messy refilling of bladders.

### Integrated Post Print Analysis and Adaptive Intelligence

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 and BGAs.
- > Software automatically calculates percentages of pad coverage.
- > Automatic stencil cleaning on low paste coverage or excessive stencil aperture clogging.



*Real-time SPC Charting and Reporting*

**Triple Stage Conveyor System** The Ultraprint 1500 multi-stage conveyor system manages up to 3 boards within the printer at one time 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.
- > Integrated board clamping system ensures boards are firmly held in place for consistent print results.

**Automatic Paste Dispensing System** Industry standard sealed cartridges release precise amounts of solder paste, adhesive, flux, encapsulents, or ink in 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 stencil life.

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



## MPM ULTRAPRINT 1500 SPECIFICATIONS

### BOARD HANDLING

<b>Maximum board size (X x Y)</b>	23" x 20" (584mm x 508mm)
<b>Minimum board size (X x Y)</b>	3" x 2" (75mm x 50mm)
<b>Board thickness</b>	0.03" – 0.2" including warpage (0.8mm – 5.0mm)
<b>Minimum board edge clearance</b>	0.19" (5mm)
<b>Maximum underside clearance</b>	0.59" (15mm)
<b>Transport speed</b>	adjustable to 22"/sec (559mm/sec)
<b>Transport height from floor</b>	34" – 38" (860mm – 960mm)
<b>Method of board support</b>	magnetic pin (dedicated tooling optional)
<b>Method of board hold-down</b>	above-board clamps (vacuum optional)
<b>Transport track configuration</b>	front or rear fixed
<b>Transport track feed direction</b>	left-to-left, right-to-right

### PRINT PARAMETERS

<b>Maximum print area (X x Y)</b>	22" x 19.6" (559mm x 498mm)
<b>Snap-off speed</b>	0.004" – 0.748"/sec (0.1mm – 20mm/sec)
<b>Print speed</b>	0.2" – 7.87"/sec (5mm – 200mm/sec)
<b>Print pressure</b>	up to 44 lbs (20 kg)
<b>Print stroke</b>	22" (558.8mm)
<b>Frame size</b>	29" x 29" (737mm x 737mm)

### VISION

<b>Camera field of view</b>	0.40" x 0.40" (10mm x 10mm)
<b>Fiducial types</b>	Standard shape fiducials. See SMEMA standards
<b>Camera system</b>	Single roving camera module with dual beam optics

### PERFORMANCE

<b>Alignment repeatability</b>	±0.001" (±0.025mm) at 6 sigma verified with capability test
<b>Cycle time</b>	15 seconds (includes options and excludes process parameters)
<b>User interface</b>	SVGA Monitor with Trackball

### FACILITIES

<b>Power requirements</b>	110 – 240V, 60/50Hz (±10%)
<b>Air supply requirements</b>	5 CFM at 90 psi clean air supply
<b>Height</b>	60" (1480mm)
<b>Depth</b>	56" (1420mm)
<b>Width</b>	51.7" (1314mm)
<b>Weight</b>	1550 lbs (700 kg)
<b>Crate weight</b>	2500 lbs (1140 kg)

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