PPM
Precision Placement Machines, Inc.

FLEXIBLE SOLUTIONS FOR Electronics Assembly Automation

QSP-2 Plus

High Speed Multifunctional SMT Assembler

The QSP-2 Plus is so versatile it offers you a whole new class of high-speed in-line solutions. You can configure it in your line as a single assembler, in tandem with a chip shooter, or as a more flexible chip shooter replacement. You're free to select the configuration that balances your high-speed line for optimum profit.

The QSP-2 Plus combines innovative technologies to provide the speed of a turret machine with the precision needed for fine pitch placement in one multifunctional assembler. Two independent P4 placement heads, each featuring dual placement systems, allow the QSP-2 Plus to place four components at the same time. It's all under control of our patent-pending in-process lead inspection and alignment system.

The result is truly astounding. Unlike other high-speed assemblers, the QSP-2 Plus has the remarkable ability to place all size chips at high speed without slowing down. No other high-speed assembler can match its flexibility for in-line process and productivity.

Features and Benefits

- Dual gantry design provides placement rates up to 14,000 cph takt time
- Handles board sizes from 3.2" x 3" to 15" x 18"
- In-process touchless centering from 0201* through QFP208 and BGA *(*requires optional ThinPRO Feeder)*
- Innovative P⁴ (Pick-Pick, Place-Place) head technology
- Exclusive QSOFT operating software with Windows ease of use
- Off-line programming without interruption of production
- Detachable feeder bases and carts for rapid changeover of all feeders in under 10 minutes
- Noncontact linear encoders
- Programmable transport
- Optional Intelligent Feeder System for setup verification
- 0.3mm ultra-fine pitch capable

www.goppm.com - email: ppm@goppm.com Phone: 603-895-5112; Fax: 603-895-5113
Precision Placement Machines Inc., 326 Main Street - Unit 11;

QSP-2 Plus - General Specifications

Maximum Placement Rate	14,000 cph takt time
Component Processing Range	0201† - 56mm 0.0118" (0.3mm) pitch with Vu12
In-Process Alignment	standard
Component Range	0201† - QFP 208
Maximum Component Thickness	0.4" (10mm)
Minimum Pitch	.0197" (0.5mm)
Lead Alignment	Standard
Feeder Capacity*	
8mm Feeders	134
Number of Placement Spindles	4
Number of Heads	2
Placement Repeatability	
Chips	0.0033" (85μm) @ 3 Sigma
Fine Pitch	0.0024" (60μm) @ 3 Sigma
Placement Force	210 - 360 grams
28" Feeder Base Capacity*	4
Machine Dimensions	
Length	84" (214cm)
Width	47" (120cm)
Height (without/light tower)	74" (188cm)
Floor Space Requirements	
Length (w/computer console)	110" (279cm)
Width (w/7" reels and computer console)	75" (191cm)
Power Requirements	
Input Line Voltage	208 - 240 VAC
Input Line Frequency	50/60 Hz
Power	4.4 KVA peak
Compressed Air Requirements	
Pressure	80 psi (5.5 bar)
Flow	7 SCFM maximum
Operational Temperature Range	55° - 90°F (13° - 32°C)
Relative Humidity	30% - 90% noncondensing relative
Shipping Dimensions (L x W x H)	92" x 53" x 85" (234cm x 135cm x 216cm)
Shipping Weight	3802 lbs (1725 kg)
Accessories Box	
Dimensions	42" x 42" x 42" (107cm x 107cm x 107cm)
Weight	300 lbs (135 kg)

** Consult applications department for other configurations*

Positioning System

X-Y Drive System	Brushless DC servo-motor
X-Y Encoder Type	Noncontact linear encoder
X-Y Axis Resolution	0.0002" (0.005mm)
X-Y Repeatability	±0.0008" (0.02mm)
X-Y Axis Accuracy	±0.001" (0.025mm)
X-Y Axis Maximum Velocity	60 in/s (1.5 m/s)
X Axis Acceleration	1.0g 32.2 ft/s/s (9.8 m/s/s)
Y Axis Acceleration	1.5g 48.3 ft/s/s (14.7 m/s/s)
Z Drive System	Brushless DC servo-motor, rack and pinion
Z Encoder Type	Glass, rotary
Z Axis Resolution	0.0002" (0.005mm)
Z Axis Repeatability	±0.001" (0.025mm)
Theta Drive System	Brushless DC servo-motor, direct drive
Theta Encoder Type	Glass, rotary
Theta Axis Resolution	0.0035°
Theta Axis Repeatability	±0.01°
Number of Nozzles	12, standard
Nozzle Changers	4, standard

† Requires optional ThinPRO Feeder

Board Handling

Board Size (typical)**	
Maximum (width x length)	15" x 18" (381mm x 457.2mm)
Minimum (width x length)	3.2" x 3.0" (81.3mm x 76.2mm) w/o Vu8
Maximum Thickness (including warpage)	0.200" (5.08mm)
Minimum Thickness	0.015" (0.381mm)
Weight	4.4 lbs (2 kg)
Conveyor	
Height	37.5" ± .5" (952.5mm ± 12.7mm) SMEMA
Board Flow	Left to right, right to left
Registration Type	Fiducial
Edge Clearance	0.125" (3.2mm)
Underside Board Clearance	0.75" (19mm)
Topside Board Clearance	0.59" (15mm)
Underside Board Support	Flexible magnetic vacuum fixture with lift table
Transport Speed	5"/sec - 20"/sec (programmable) (127mm/sec - 508mm/sec)

**Consult applications department for specific machine configurations

Control System

Programming Capabilities	
Machine Operating System	QSOFT
User Interface	Microsoft® Windows®
Camera Teach Capability	Standard
Array Programming Capabilities	
Multi-Image Panels	Standard
Rotated Board Images	Standard
Off-Line Programming Interface	
CAD / ASCII Data Input	Standard
Gerber Conversion	Optional - GC-Place
Board Scanning	Optional
Digitize	Optional - DigiCad
Feeder Setup Optimization	Standard - QSOFT
Placement Sequence Optimization	Standard - QSOFT
Line Balancing	Optional
Integrated PC Controller	Dual PC Controller

Vision System

Vision Engine	ICOS MVS 200, 256 grayscale
Downward Vision System	Standard
Fiducial Alignment Types	Panel, image, local
Fiducial Target Types	Any unique image (scene)
Synthetic Fiducial Capability	Square, circle, rectangle, etc.
Fiducial Processing Time (total w/move)	150ms (300ms)
Bad Image Rejection	Standard
Bad Image Target Types	Dark to light transition
Lighting Type	LEDs w/programmable intensity
Light Level adjust	Automatic
Field of View (FOV)	0.287" x 0.386" (7.28mm x 9.8mm)
Upward Vision System	Standard Vu12
Field of View	1.8" x 1.4" (46mm x 36mm)
Optics Type	Telecentric
Lead Alignment and Inspection	Pitch (0.3mm), lead-to-pad
Single Field of View	Component size up to 1.181" (30mm)
Multi Field of View	Component size 1.181" to 2.125" (30mm to 54mm)
BGA Alignment	Ball sizes down to 0.0118" (0.3mm)
BGA Inspection	Missing ball, ball pitch
Dark field Illuminator for BGA	Standard

Optional Equipment

Detachable Feeder Base and Cart	**Automatic Matrix Tray Handler**
Stationary Matrix Tray Holder	**Vibratory Stick Feeders**
IQ Feeder System Offline Loading Station	**IQ Feeder System Capability**

PPM Precision Placement Machines, Inc.

www.goppm.com - email: ppm@goppm.com
Precision Placement Machines Inc., 326 Main Street - Unit 11; Phone: 603-895-5122; Fax: 603-895-5113