PPM
Precision Placement Machines, Inc.

FLEXIBLE SOLUTIONS FOR Electronics Assembly Automation

QSV-1 Plus

High Precision SMT Assembler

The Quad QSV-1 Plus assembler is the perfect mainstream solution for automated SMT assembly operations. It combines fine pitch component placement technology, large-board capability, and 117 feeder capacity – all at an affordable price.

The QXV-1 Plus features the same high-end QuadAlign touchless in-process optical component alignment technology that is available in all Q-Series assemblers. The QSV-1 Plus also offers Quad's P4 head technology in a single gantry design for throughput rates up to 7,000 cph, as well as the ability to handle components from 0201 through 2.2". And it manages to deliver these high-performance capabilities at a moderate cost.

The QSV-1 Plus can stand alone or in-line with your chip shooter. It is the flexible, economical assembler for your SMT production requirements.

Features and Benefits

- Single gantry design provides placement rates up to 7,000 cph takt time
- Handles board sizes from 3.2" x 3" to 18" x 24"
- In-process QuadAlign touchless centering from 0201 through QFP208 and BGA
- Quad's innovative P^4 (Pick-Pick, Place-Place) head technology
- Exclusive QSOFT operating software with Windows ease of use
- Detachable feeder bases and carts for rapid changeover
- Noncontact linear encoders
- Programmable transport
- Optional Intelligent-Quad (IQ) Feeder System for setup verification
- 0.3mm ultra-fine pitch capable

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Precision Placement Machines Inc., 326 Main Street - Unit 11;

QSV-1 Plus - General Specifications

Maximum Placement Rate	7,000 cph takt time
Component Processing Range	0201† - 56mm 0.0118" (0.3mm) pitch with Vu12
In-Process Alignment	
Component Range	0201† - QFP 208
Maximum Component Thickness	0.4" (10mm)
Minimum Pitch	.0197" (0.5mm)
Lead Alignment	Standard
Feeder Capacity*	
8mm Feeders	117
Number of Placement Spindles	2
Number of Heads	1
Placement Repeatability	
Chips	0.0033" (85µm) @ 3 Sigma
Fine Pitch	0.0024" (60µm) @ 3 Sigma
Placement Force	210 - 360 grams
16" Feeder Base Capacity*	6
Machine Dimensions	
Length	73" (185cm)
Width	52" (132cm)
Height (without/light tower)	54" (137cm)
Floor Space Requirements	
Length (w/computer console)	78" (198cm)
Width (w/7" reels and computer console)	74" (188cm)
Power Requirements	
Input Line voltage	200 - 240 VAC
Input Line Frequency	50/60 Hz
Power	3 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 57" x 76" (234cm x 145cm x 194cm)
Shipping Weight	3504 lbs (1590 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 ft/s/s (9.8 m/s/s)
Y Axis Acceleration	1.5g 48 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	6, standard
Nozzle Changers	2, standard

† Requires optional ThinPRO Feeder

Board Handling

Board Size (typical)**	
Maximum (width x length)	18" x 24" (457mm x 610mm)
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 35.4" ± .8" (900mm ± 20mm) JEDEC
Board Flow	Left to right, right to left
Registration Type	Fiducial
Edge Clearance	0.120" (3mm)
Underside Board Clearance	0.71" (18mm)
Topside Board Clearance	0.59" (15mm)
Underside Board Support	Magnetically Configurable
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" (7.3mm 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**

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