QSX-1

High Precision SMT Assembler

The Quad QSX-1 features the industry's most advanced placement technology, setting a new standard in ultra-fine pitch precision.

Every aspect of the QSX-1's platform is built to sustain fast, accurate placement in stand alone or in-line environments. It's rigid frame provides unsurpassed mechanical stability. Unique linear servo direct-dive motors provide an operational smoothness.

To further enhance performance, the QSX-1 combines Quad's high-resolution vision system and patent-pending QuadAlign component lead inspection and alignment technology. Simply put, the QSX-1 is the most accurate, repeatable assembler available. It offers cutting edge technology to meet your production requirements.

Features and Benefits

- Single gantry design provides placement rates up to 7,000 cph takt time
- Process monitoring with adaptive control
- In-process QuadAlign touchless centering from 01005 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
- Magnesium alloy carriage assembly
- Programmable transport
- Optional Intelligent-Quad (IQ) Feeder System for setup verification
- Designed for optimized torsional stiffness with inherently damped structures

QSX-1 - General Specifications

Maximum Placement Rate	7,000 cph takt time
Component Processing Range	01005 - QFP400
	0.0457" (0.4mm) pitch with Vu 8
In-Process Alignment	
Component Range	01005 - QFP 400
Maximum Component Thickness	0.4" (10mm)
Minimum Pitch	.0197" (0.5mm)
Lead Alignment	Standard
Feeder Capacity*	
8mm Feeders	120
Number of Placement Spindles	2
Number of Heads	1
Placement Repeatability	
Chips	±0.0024" (0.061mm)
Fine Pitch	±0.0012" (0.031mm)
Placement Force	210 - 360 grams
16" Feeder Base Capacity*	6
Machine Dimensions	
Length	84" (214cm)
Width	50" (127cm)
Height (without/light tower)	54" (137cm)
Floor Space Requirements	
Length	102" (259cm)
Height (without/light tower)	90" (229cm)
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)	96" x 52" x 72"
	(240cm x 130cm x 180cm)
Shipping Weight	4200 lbs (1890kg)

* Consult applications department for other configurations

Positioning System

X-Y Drive System	Brushless DC servo direct drive
X-Y Encoder Type	Linear encoder
X-Y Axis Resolution	0.00005"
X-Y Repeatability	± 0.0004" (0.010mm)
X-Y Axis Accuracy	± 0.0008" (0.020mm)
X-Y Axis Maximum Velocity	80in/s (2 m/s)
X Axis Acceleration	1.5g 48.3 ft/s/s (14.72m/s/s)
Y Axis Acceleration	1.5g 48.3 ft/s/s (14.72m/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)	19.3" x 25" (490mm x 635mm)
Minimum (width x length)	3" x 3" (76mm x 76mm)
	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	0.125" (3.2mm)
Underside Board Clearance	0.787" (20mm)
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 Intel 486 Processors
	with SVGA monitor

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 Vu8
Field of View	2.2" x 1.7" (56mm x 43mm)
Optics Type	Telecentric
Lead Alignment and Inspection	Pitch (0.4mm), lead-lead
Single Field of View	Component size 1.5" (38.1mm)
Multi Field of View	Component size 1.5" (38.1mm)
	up to 2.2" (56mm)
BGA Alignment	Ball sizes down to 15 mils
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**