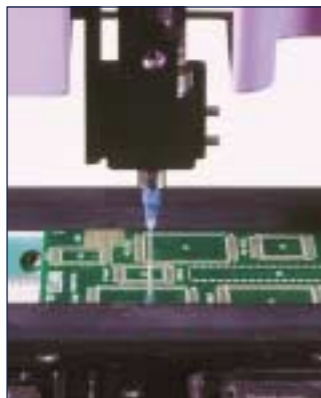


Spark 400

Machine Specifications

Dimension	Width	1,000mm
	Depth	1,300mm
	Height	1,600 mm
Weight	900 Kg	980 Kg Shipping Weight
	Power Supply	230VAC, 50 Hz. 32Amp. 110VAC, 60 Hz. 32Amp.
Pneumatics	80 PSI. 10 CFM, 280 liter/minute	Clean, Dry Filtered Air
	Control System	Pentium IV min. Color Monitor Keyboard and Track Ball
		Win 2K Operation System 15" Flat Panel Display Built-In

Specifications are subject to change without notice



Solder Paste Dispensing



Pick & Place



Local Representative:



Headquarters:

BeamWorks Inc., 15375 SW Beaverton Creek Court Beaverton, OR 97006, USA, Tel: +1-503-646-3224, Fax: +1-503-646-1654

Representative Companies:

USA, Canada, Mexico: see www.beamworks.com/contact.html or call headquarters

Benelux Countries: **W&S BENELUX BV**, Netherlands, Tel: +31-(0)-162-521677, Fax: +31-(0)-162-521520, www.wsbenelux.nl

Denmark: **INIMAR A/S**, Tel: +45-4593-6262, Fax: +45-4593-6206, www.inimar.dk

France: **MJB**, Tel: +33 (0)1-64-62-68-12, Fax: +33 (0)1-64-62-76-60, www.mjb.fr

Germany, Austria & Switzerland: **PETER JORDAN GmbH**, Germany, Tel: +49-69-89008-111, Fax: +49-69-89008-195, www.peterjordan.de

Hungary: **EURO PROCESS SOLUTIONS Ltd.**, Tel: +36-1-430-3120, Fax: +36-1-430-3124

Ireland: **IPT Ltd.**, Tel: +353-(0)-21-431-7201, Fax: +353-(0)-21-496-6380, www.ipt.ie

Italy: **CABIOTEC**, Tel: +39-02-6431832, Fax: +39-02-66119696, www.cabiotec.it

Sweden: **INIMAR AB**, Tel: +46-8555-40-905, Fax: +46-8590-71-781, www.inimar.dk

England & Scotland: **ANGLO PRODUCTION PROCESSES Ltd.**, Tel: +44-(0)-1527-578972, Fax: +44-(0)-1527-578156, www.appelectronics.co.uk

Israel: **ORTEC Ltd.**, Tel: 972-9-7602685, Fax: 972-9-7460160

South Africa: **ZETECH c.c.**, Tel: +27-11-789-3230, Fax: +27-11-789-3233, www.adec.co.za/members/Zetech.htm

China: **CHIP HUA EQUIPMENT & TOOLS Pte Ltd.**, Shanghai, Tel: +86-21-648-24683, Fax: +86-21-546-41633, www.chiphua.com
Shenzhen, Tel: +86-755-8384-9775, Fax: +86-755-8384-9841

India: **SUMITRON**, Tel: +91-11-25796783, 25793481, 25799519; Fax: +91-11-25891761, 25259550, 51410494, www.sumitron.com

Singapore, Malaysia: **CHIP HUA EQUIPMENT & TOOLS Pte Ltd.**, Singapore, Tel: +65-6298-3088, Fax: +65-6297-0029, www.chiphua.com

South Korea: **QUALMAX, Inc.**, Tel: +82-31-706-7680, Fax: +82-31-706-2359, www.qualmax.com

BeamWorks Ltd., POB 461, Ramat Gabriel Industrial Park, Migdal Haemek 23000, Israel Tel: +972-4-6041818 Fax: +972-4-6041717

E-mail: info@beamworks.com Web: www.beamworks.com

Spark 400

Automated Selective Assembly System

One of today's manufacturing challenges is to selectively add components to an already assembled PC board without impacting previously assembled components. Hand assembly not only increases cost but also reduces product quality. The industry, therefore, needs an automated selective assembly system that can selectively dispense solder paste, place components, and reflow the solder without impacting already assembled components.

BeamWorks' Spark 400 is a fully automated selective assembly system that performs all functions of a typical SMT line—solder paste dispensing, component placement, and laser soldering (using 4 lasers that work simultaneously and independently)—all in one system. As opposed to hot air systems, **Spark 400** does not impact previously assembled components during the process.

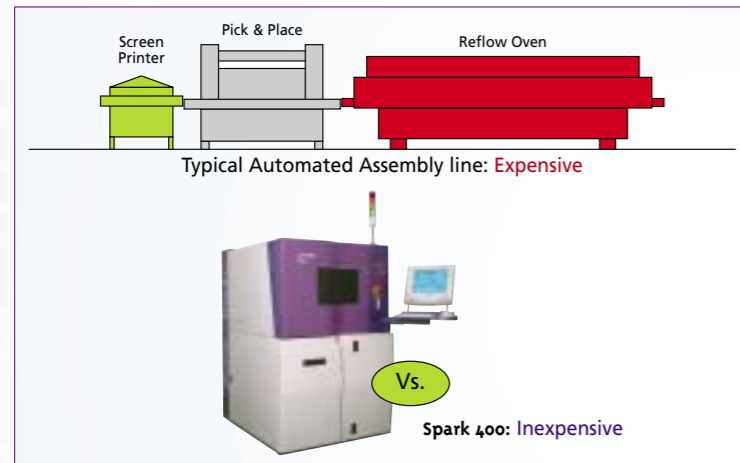
Spark 400 is a cost-effective system specifically designed for performing automatic rework and mass-rework, low-to-medium volume PCB lots assembly, and prototype assembly. The system uses fiducials for alignment and CAD data input for programming and has a short set-up time.

Spark 400 is **BeamWorks'** unrivalled tool with the capability to respond quickly to a wide range of production challenges. The system provides flexibility to react to last minute revision changes, bottlenecks, missing components, production scheduling and remanufacturing for product upgrades.



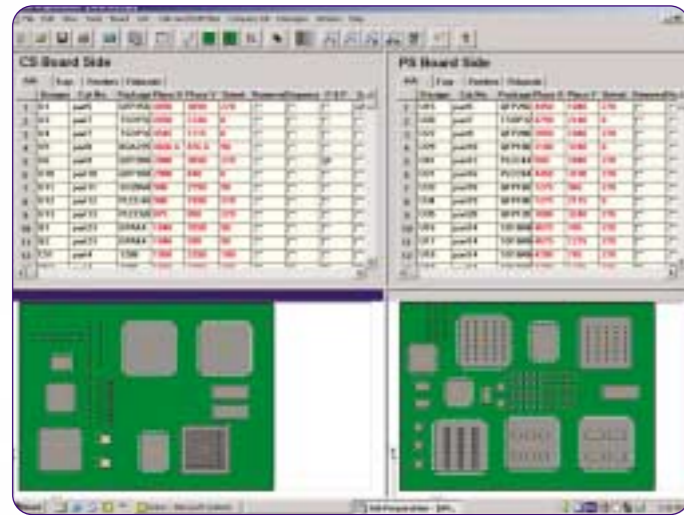
Spark 400

Ready to get a feel for success from BeamWorks Spark 400?



Main Benefits

- Closed Loop Temperature Controlled Soldering
- No Stencil Required
- Flexible Operation Allows for Fast Turn Around
- Precise Heating without Impacting Adjacent Components
- Auto Load of CAD and BOM Data
- Small Footprint
- Thin Intermetallic Layer for Improved Reliability
- No Baking of Moisture Sensitive Components



System Features

- Vision System for Auto Alignment Using Board Fiducials
- Using Standard CAD and BOM Files and Utilizing On-board Component Library of Components Geometry
- Win 2000 Operation System and Comfortable GUI
- Simultaneous Operation of 4 Lasers Provides High Soldering Throughput
- Full SMEMA Support Allows In-Line Operation
- Either Stand Alone or In-Line Operation

Typical Applications

- Quick Turn Prototype Assembly
- NPI and Small Lot Production
- Complete SMT Assembly Line for Engineering Labs
- Automated Mass Rework, Including BGAs
- Selective Assembly of Planned (and Unplanned) Missing SMT Components
- Selective Assembly of:
 - SMT Connectors (Single and Double Sided)
 - RF Shields
 - Through Hole Components (Paste in Hole Process)
 - Heat Sensitive Components
 - Optical Components & Smart Cards
 - Moisture Sensitive Components
- Lead-Free High Temperature Soldering
- Re-balling All Types of BGA
- Flip-Chip & CSP Assembly
- Unique & special Applications



Laser Soldering Module

Technical Specifications

Performance

Solder Paste Dispensing	Rotary Positive Displacement Pump with an Archimedean Screw	For Accurate and Controlled Paste Deposit
	Dispensing Capability	Line Dispensing: Down to 0.4 mm (0.016") Pitch Dot Dispensing: Down to 0.3 mm (0.012") in Diameter
	Capability to Dispense Solder Paste or Epoxy Dots and Lines	
Pick & Place	Feeder Slots	29 Standard
	Matrix Tray Handling	3 Standard (Configuration Dependant) Up to 20 in a Magazine Handler (Optional)
	Component Handling	Up to 75 mm (2.95") and Down to 0402
	Throughput	Up to 1,000 CPH
Laser Soldering Module	Vision Capability	Matrox Based Algorithms
	4 Laser Diodes	30 Watt Each
	Independent Optical System for Each Laser to Direct X,Y Movement Closed Loop Operation Utilizing IR Sensors to Control Solder Joint Temperature	
Input Data	Standard CAD Files	Also Requires BOM File
	Combined CAD & BOM	
	Converted P&P Machine File	Using On-Board File Converter
	Components Library Size	> 2000 SMT Components
	Jedec Tray Library Size	125 trays

General Specifications

Standards	SMEMA CE		
Board Alignment Vision System (Down Looking Camera)	Camera	EIA (RS 170) 768 x 494 Pixels	
	FOV	6 X 4 mm (0.24 x 0.16") Field Size	
	Depth of Field	8 mm (0.31")	
	Illumination System	Vertical Ring. Red LEDs	
Component Alignment Vision System (Up Looking Camera)	Camera	EIA (RS 170) 768 x 494 Pixels	
	FOV	14 X 10.5mm (0.55 x 0.41") Field Size	
	Depth of Field	8 mm (0.31")	
Conveyor System	Illumination System	Vertical & Oblique Ring. Red LEDs	
	Max Board Dimensions	Board Length: 508 mm (20") Board Width: Up to 406 mm (16") configuration dependant	
	Min Board Width	28 mm (1.10")	
	Min Board Thickness	1.0 mm (0.04")	
	Max Board Thickness	4.0 mm (0.16") - for greater board thickness use carrier	
	Edge Clearance	4.5 mm (0.18")	
	Top Side Clearance	46 mm (1.81")	
	Bottom Side Clearance	32 mm (1.26")	
	X-Y System	X-Y Mechanism	Linear Motor Driven System
		Motion Accuracy (3σ)	2 mil
	Motion Repeatability (3σ)	0.8 mil	
	Max Speed	1.5 m/sec (4.9"/sec)	
	Max Acceleration	4 m/sec ² (13"/sec ²)	

Programmable Power, Laser Heat Source

Laser Type (4 units)	CW (Continuous Wave) Diode Laser / Fiber Coupled	915-940 nm, 30W Max Power, 0.8 mm (0.03") Fiber Core Diameter
Cooling System	Thermo-Electric Based	Closed Loop Temperature Controlled
Laser Lifetime	10,000 Hours (Min)	
Laser Controller	Current source - Up to 100 Amperes	Computer Controlled

