

The **VCTA S820 / S820L** is an advanced, high-precision automated optical inspection (In-Line AOI) system engineered for continuous defect detection in high-mix, high-volume electronics assembly. Integrating an imported 5.0 MP German industrial imaging system with over 30 proprietary vector analysis algorithms, it delivers unmatched repeatability, rapid line integration, and an ultra-low false alarm rate.

INSPECTION STAGES IN THE SMT / ASSEMBLY LINE

STAGE 1 Paste Printing (2D) Immediate post-print solder paste volume, alignment, and bridging verification.	STAGE 2 Pre-Reflow SMD pick-and-place integrity: missing components, offsets, and polarity checks.	STAGE 3 Post-Reflow Comprehensive solder fillet quality, wetting, bridging, and alignment inspection.	STAGE 4 Wave / DIP Through-hole component (THT) lead inspection and post-wave solder joint validation.
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CORE TECHNOLOGICAL ARCHITECTURE

5.0 MP Industrial Camera (Imported: Germany) High-speed industrial digital camera paired with custom-designed telecentric optics. This design eliminates field-edge optical distortion and parallax errors, ensuring uniform measurement accuracy across the full field of view (FOV).	Multi-Vector Analysis Suite (>30 Algorithms) Comprehensive algorithm library including luminance boundary profiling, dynamic chip tracing, RGB & HSV color space analysis, matrix similarity matching, and high-accuracy optical character recognition (OCR/OCV).
Multi-Angle Circular RGB LED Lighting Multi-tiered, independently programmable RGB illumination highlights meniscus contours, separating shiny solder surfaces from PCB substrate and component bodies with zero shadow occlusion.	Entire PCB Global Matching High-throughput frame acquisition coupled with full-board background subtraction allows instantaneous detection of foreign matter, solder beads, laminate scratches, and unplaced stray components.

DEFECT DETECTION MATRIX

Solder Paste & Solder Joint Anomalies Paste (2D): Missing print, insufficient paste, excessive volume, smearing, bridging, aperture clogs. Solder Joints: Bridging / short circuit, insufficient solder, excessive solder, cold joints, lifted leads, solder voids, tin splashes.	Component Assembly Defects (SMD / THT) Placement: Missing part, X/Y positional shift, angular skew, wrong component orientation. Geometric: Tombstoning, billboarding, overturned component, lead deformation. Identification: Reversed polarity, incorrect part marking (OCR/OCV), body chipping and cracking.
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TECHNICAL SPECIFICATIONS & PARAMETERS

Category	Parameter	Specification / Standard VCTA-S820 & S820L
Vision & Optics System	Camera Sensor	Imported 5.0 Megapixel high-speed industrial digital camera (Germany)
	Lens & Lighting	High-resolution telecentric lens + Programmable multi-tier RGB LED ring light
	Resolution / FOV	Standard: 20 μm (Optional: 15 μm / 25 μm); Field of View (FOV): up to 40 × 40 mm
	Inspection Speed	0201 chip: < 7.6 ms Frame processing cycle: 220 ~ 450 ms
PCB Handling Capacity	PCB Dimensions	S820: 50×50 mm to 400×330 mm S820L: up to 510×460 mm (Custom sizes optional)
	PCB Thickness & Warpage	Thickness: 0.5 – 3.0 mm (max. 5.0 mm) Maximum allowable warpage: < 2 mm
	Component Clearance	Top side (TOP): ≤ 30 mm Bottom side (BOTTOM): ≤ 30 mm
	Conveyor System	Direction: L→R (optional R→L), standard SMEMA interface, height: 900 ± 20 mm
Motion & Kinematics	Drive Mechanism	AC Servo motor system, precision X/Y ballscrew and linear guideways
	Positioning Repeatability	< 10 μm (Micron-level positional repeatability)
	Traverse Velocity	Operating speed: 500 mm/s Maximum traverse speed: 800 mm/s
Control Unit & Software	Host PC & Display	Intel Core i7 quad-core processor, 16 GB RAM, 1 TB / 2 TB drive, 22"–23" TFT LCD
	Operating Environment	Microsoft Windows 7/10 64-bit; intuitive graphical visual programming suite
	CAD & Data Import	Offline programming, direct Gerber & CAD/BOM import, library auto-alignment
Utilities & Dimensions	Power Requirements	AC 220V ±10%, 50/60 Hz, 1-Phase, power consumption: 1000–1200 W (integrated UPS)
	Pneumatic Supply	Operating pressure: 0.5 MPa (5 bar), nominal air consumption: 40 ~ 70 cm³/min
	Dimensions & Weight	1050 × 1100 × 1560 mm (excl. signal light tower) Weight: approx. 750 kg

FACTORY INTEGRATION & CENTRALIZED CONTROL

Central Supervision System – "Multi Machines, One Operator"

The system features a centralized server architecture that links multiple in-line AOI units to a single dedicated NG Review and Repair Station. Quality engineers and operators can review flagged defects, verify false calls, and analyze real-time statistical process control (SPC) charts without stopping the SMT line. Connectivity is established via standard industrial Ethernet (RJ45), RS-232, and SMEMA protocols.

MANUFACTURER WARRANTY & TECHNICAL SUPPORT

VCTA Assurance & Service Program: Warranty: 1-year comprehensive free equipment and parts warranty from acceptance. Software: Lifetime complimentary software and vision algorithm updates.	Shenzhen Zhenhuaxing Intelligent Technology Co., Ltd. Bldg 10, 98 Industrial City, No. 3 Central Rd, Baoan District, Shenzhen, China Service Hotline: 400-9678-998
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