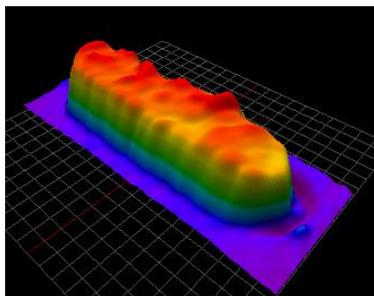
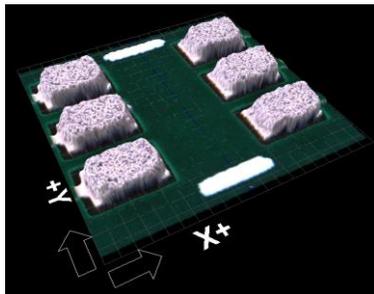


MS-11 3D SPI Series

- ▶ Exclusive 15MP/25MP CoaXPress Camera System
- ▶ Dual Projection Shadow Free Moiré Technology
- ▶ Precision Compound Telecentric Camera Lens
- ▶ Automated Z-Height Calibration System
- ▶ Automated PCB Under Board Support System
- ▶ Precision PCB Warpage Compensation
- ▶ Programmable Solder Repair System (SRS) Option
- ▶ Closed Loop Communication With Screen Printer
- ▶ Absolute Repeatability and Reproducibility
- ▶ INTELLISYS® Industry 4.0 Factory Automation System



MS-11 3D SPI Series Specifications

Standard Features:

- ▶ Intel® Multi-Core PC, 32" Flat Screen LCD Monitor, Windows 11™ OS, HDD, Mouse & Keyboard, Network LAN Card.
- ▶ Single Stage High-Speed Conveyor System with Programmable Width Control and Automatic PCB Support.
- ▶ Advanced High-Intensity RGB LED Lighting System.
- ▶ ePM-SPI Gerber Programming Software (One Seat Included with Purchase).
- ▶ Auto-Focus Moveable Z-Axis System with Automatic PCB Warpage Compensation.
- ▶ KTL - Calibration Target Fixture.
- ▶ Statistical Process Control (SPC) Software (Local System Software).

Options:

- ▶ 4MP CameraLink / 15MP CoaXPress / 25MP CoaXPress Top-Down Camera System (See Specifications).
- ▶ CAD Import Software: Option 1 - ePM-SPI Gerber Import Software / Option 2 - Valor Gerber Import Software w/ ODB++
- ▶ MS-11: Three (3) Stage High-Speed Conveyor / MS-11 XL / HV: Conveyor Rail Extension (See Specifications).
- ▶ 2D Bar Code Reader Options: Gun Type, Camera Type and External Mount.
- ▶ MS-11DL Shuttle Conveyor Options: Input Shuttle Conveyor, Output Shuttle Conveyor.
- ▶ Solder Repair System (SRS) - Programmable Solder Jetting System for Repair of Regions of Interest with Insufficient Solder.
- ▶ Remote PC - Software Purchased Separately.
- ▶ Remote Software: Statistical Process Control (SPC) Software,
- ▶ Total Remote Management Software (TRMS) - Requires Server Software for Remote PC and Client Software on All Machines.
- ▶ INTELLI-TRACK® Process Control Software - Requires Server Software for Remote PC and Client Software on All Machines.
- ▶ SVN Multi-System Version Control Software - Requires Separate PC Server.

System Specifications:

(Subject to change without prior notice)

PCB Inspection Area	
MS-11	50 mm x 50 mm to 510 mm x 510 mm (2.0" x 2.0" to 20.1" x 20.1") w/ PCB Indexing Option: 760 mm x 510 mm (29.92" x 20.1") Three Stage Conveyor Option w/ PCB Indexing: 1,020 mm x 510 mm (40.2" x 20.1")
MS-11DL (Dual Lane)	Single Lane: 50 mm x 50 mm to 460 mm x 590 mm (2.0" x 2.0" to 20.1" x 23.23") / Dual Lane: 50 mm x 50 mm to 460 mm x 300 mm (2.0" x 2.0" to 20.1" x 11.81")
MS-11 XL / MS-11 XL HV	50 mm x 50 mm to 870 mm x 690 mm (2.0" x 2.0" to 34.25" x 27.17") / 1,200 mm x 690 mm (47.24" x 27.7") w/ PCB Indexing / 1,600 mm x 690 mm (63" x 27.7") w/ PCB Indexing and Optional Conveyor Extension
MS-11 XL DL	Single Lane: 50 mm x 50 mm to 870 mm x 555 mm (2.0" x 2.0" to 34.25" x 22.85") Dual Lane: 50 mm x 50 mm to 870 mm x 300 mm (2.0" x 2.0" to 34.25" x 11.81")

Vision System (FOV Size)			
4MP CameraLink: (2,048 x 2,048 @ 180 fps)	Option 1	Pixel Resolution: 20 um	40.96 mm x 40.96 mm (1.61" x 1.61")
	Option 2	Pixel Resolution: 15.71 um	32.17 mm x 32.17 mm (1.27" x 1.27")
	Option 3	Pixel Resolution: 11.78 um	24.13 mm x 24.13 mm (0.95" x 0.95")
15MP CoaXPress: (3,904 x 3,904 @ 120 fps)	Option 1	Pixel Resolution: 15 um	58.56 mm x 58.56 mm (2.31" x 2.31")
	Option 2	Pixel Resolution: 10 um	39.04 mm x 39.04 mm (1.54" x 1.54")
25MP CoaXPress: (5,120 x 5,120 @ 72 fps)	Option 1	Pixel Resolution: 6 um	30.72 mm x 30.72 mm (1.21" x 1.21")
	Option 2	Pixel Resolution: 4 um	20.48 mm x 20.48 mm (0.80" x 0.80")

Inspection Technology	
3D Inspection Technology	Dual Projection Shadow Free Moiré Phase Step Image Processing
2D Inspection Technology	4MP CameraLink / 15MP CoaXPress / 25MP CoaXPress Camera System
Height Resolution	0.1 um
Height Accuracy on Calibration Fixture	± 1 um
Repeatability on Calibration Fixture	Height: ± 1 um / Volume: ± 1%
Maximum Inspection Height	4MP CameraLink & 15MP CoaXPress: 400 um / 25MP CoaXPress: 200 um
Minimum Inspection Height	4MP CameraLink & 15MP CoaXPress: 40 um / 25MP CoaXPress: 20 um
3D Inspection Item	Solder Deposition: Height, Volume, Area, Solder Bridge, X/Y Offset, Shape Deformity, etc.

Additional Specifications	
Lens Configuration	Precision Telecentric Compound Lens Design
Lighting System	Advanced High-Intensity RGB LED Lighting System.
Top-Side PCB Clearance	MS-11: 45 mm (1.77") / MS-11 XL: 45 mm (1.77") / MS-11 XL HV: 45 mm (1.77")
Bottom-Side PCB Clearance	MS-11: 50 mm (1.97") / MS-11 XL: 50 mm (1.97") / MS-11 XL HV: 43 mm (1.69")
PCB Top-Edge Clearance	MS-11: 3 mm / MS-11 XL: 3 mm / MS-11 XL HV: 5 mm
PCB Bottom-Edge Clearance	MS-11: 3.5 mm / MS-11 XL: 3.5 mm / MS-11 XL HV: 12 mm
Maximum PCB Warpage	±5 mm
Maximum PCB Weight	MS-11: 4 Kg (8.82 lbs) / MS-11 XL: 7 Kg (15.43 lbs) / MS-11 XL HV: 5 Kg (55.12 lbs)
PCB Thickness Range	MS-11: 0.5 mm - 5 mm / MS-11 XL: 1 mm - 5 mm / MS-11 XL HV: 1 mm - 5 mm
Robot Positioning System	Precision Closed Loop AC Servo Drive, Resolution: 1 um / Repeatability: ±10 um
Power Requirements	Single Phase 200~240V 50~60Hz; 1.1 KW, Breaker Capacity: 25 Amp
Air Requirements	5 Kgf / cm ² (0.5 Mpa); (71 PSI)

Machine Dimensions and Weight		
MS-11	Single Stage.: 1,080 mm L x 1,470 mm W x 1,610 mm H (42.5" x 57.87" x 63.39") Three Stage.: 1,630 mm L x 1,470 mm W x 1,610 mm H (64.17" x 57.87" x 63.39")	950 Kg (2,094 lbs.)
MS-11DL	1,080 mm L x 1,610 mm W x 1,610 mm H (42.5" x 63.39" x 63.39")	1,030 Kg (2,270.76 lbs)
MS-11 XL / DL / HV (Extended Conveyor not available w/ DL)	1,600 mm L x 1,580 mm W x 1,660 mm H (63" x 62.2" x 65.35") Standard Conveyor: 1,700 mm (66.93") / Extended - 2,400 mm (94.49")	1,700 Kg (3,747.86 lbs)