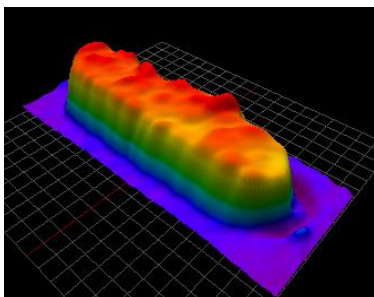
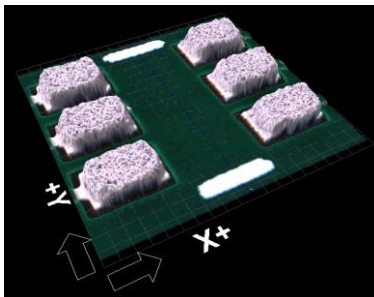


## MS-11e 3D SPI Series

- ▶ 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
- ▶ Closed Loop Communication With Screen Printer
- ▶ Absolute Repeatability and Reproducibility
- ▶ INTELLISYS® Industry 4.0 Intelligent Factory Automation System



WINNER  
**2019**  
GLOBAL  
TECHNOLOGY  
AWARDS  
GLOBAL  
SMT PACKAGING

# MS-11e 3D SPI Series Specifications

## Standard Features:

- ▶ Intel® Multi-Core PC, 32" Flat Screen LCD Monitor, Windows 10™ 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).
- ▶ ePM-SPI CAD Import Software. ODB++ Import Module Sold Separately (Requires ePM SPI).
- ▶ 2D Bar Code Reader Options: Gun Type, Camera Type and External Mount.
- ▶ MS-11DL Shuttle Conveyor Options: Input Shuttle Conveyor, Output Shuttle Conveyor.
- ▶ 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-11e	50 mm x 50 mm to 510 mm x 460 mm (2.0" x 2.0" to 20.1" x 18.1")
MS-11e (Extended PCB Size)	50 mm x 50 mm to 510 mm x 510 mm (2.0" x 2.0" to 20.1" 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-11em (Small-Footprint)	50 mm x 50 mm to 330 mm x 280 mm (2.0" x 2.0" to 12.99" x 11.02")

Vision System (FOV Size)			
4MP CameraLink: (2,048 x 2,048 @ 180 fps)	Option 1	Pixel Resolution: 15 um	32.17 mm x 32.17 mm (1.27" x 1.27")
	Option 2	Pixel Resolution: 10 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: 7.7 um	39.42 mm x 39.42 mm (1.55" x 1.55")

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	±1 um
Height Accuracy on Calibration Fixture	± 1%
Repeatability on Calibration Fixture	Height: ± 1% / Volume: ± 2%
Inspection Height	Maximum: 500 um / Minimum: 40um
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.
PCB Surface Clearance	Top-Side Clearance: 20 mm / Bottom-Side Clearance: 50 mm
PCB Edge Clearance	Top-Edge Clearance: 3 mm / Bottom-Edge Clearance: 3.5 mm
Maximum PCB Warpage	±2 mm
Maximum PCB Weight	Standard: 4 Kg (8.82 Lbs.)
PCB Thickness Range	Standard: 0.5 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 <sup>2</sup> (0.5 Mpa); (71 PSI)

Machine Dimensions and Weight		
MS-11e	1,080 mm W x 1,470 mm D x 1,500 mm H (42.5" x 57.87" x 59.1")	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-11em	900 mm L x 1,290 mm W x 1,660 mm H ( 35.43" x 50.79" x 65.35")	870 Kg (1,918.02 lbs)