



Global Network

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<https://www.sakicorp.com/en/>

3D Automated Optical Inspection (AOI) Systems

3Di Series

SAKI's 3D AOI Series is designed
for the Smart Factory Connection

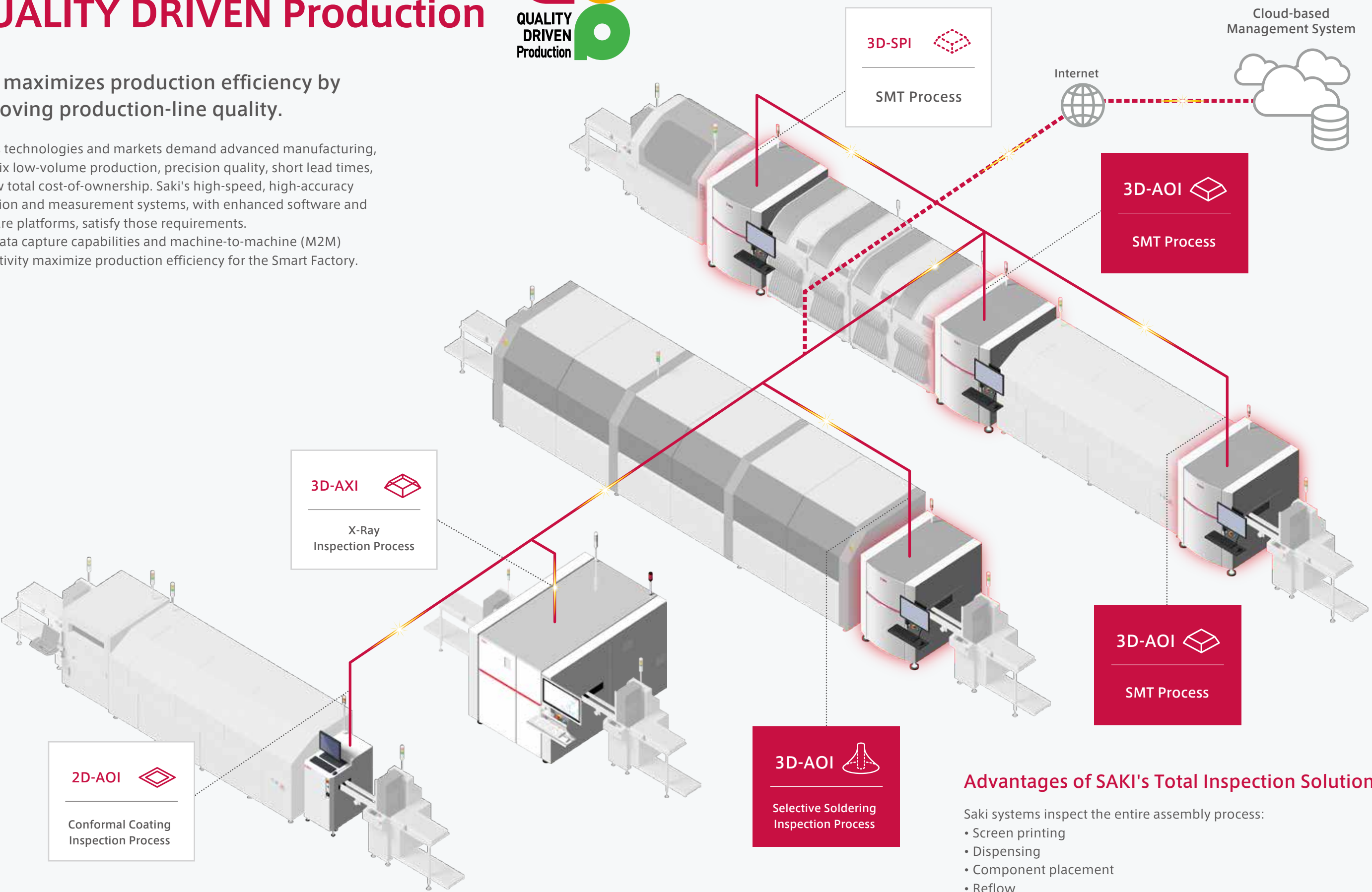


QUALITY DRIVEN Production



SAKI maximizes production efficiency by improving production-line quality.

Today's technologies and markets demand advanced manufacturing, high-mix low-volume production, precision quality, short lead times, and low total cost-of-ownership. Saki's high-speed, high-accuracy inspection and measurement systems, with enhanced software and hardware platforms, satisfy those requirements. Saki's data capture capabilities and machine-to-machine (M2M) connectivity maximize production efficiency for the Smart Factory.



Advantages of SAKI's Total Inspection Solutions

- Saki systems inspect the entire assembly process:
- Screen printing
 - Dispensing
 - Component placement
 - Reflow
 - Selective soldering
 - Conformal coating

※ SPI: Solder Paste Inspection AOI: Automated Optical Inspection

Quality First



Saki's 3D-AOI systems improve process quality, efficiency, and productivity to improve profits.



Benefits provided with Saki's 3D-AOI series



Saki combines proprietary hardware and software to produce a stable, highly accurate system that improves production and maximizes process efficiency and product quality.

Key Factor 1 Advanced Hardware Features

Machine Stability and Accuracy

- Self-diagnostic functions
- Rigid gantry structure and dual motor drive system
- High resolution linear scale for accurate positioning
- CoaXPress camera for faster inspection & measurement process



Flexible Configurations for Diverse Requirements

- Accurate 3D inspection & measurement for entire PCBA
- Scalable optical resolutions of 7 μm, 12 μm, and 18 μm
- Flexible gantry for M/L/XL PCBA sizes and dual lanes
- Side Cameras
- Saki's innovative Z-axis optical-head control feature is now available with 3Di Series inline AOI systems



Key Factor 2 Advanced Software Features

Programming

- One common platform supports 3D-SPI, 3D-AOI, and 3D-AXI
- Saki Self-Programming (SSP) Software
- Compliant with IPC standards
- Job Data Convert Function automatically converts Pick-and-Place machine data to inspection machine data. This function greatly reduces the time required to create inspection data. ※ 1 ※ 2



Measurement Inspection & Tuning Function

- Offline-debugging with real-time program adjustments
- Height and extra component detection (ECD) functions
- Through-hole device solder inspection

Verification

- History Management System for data logging and history
- Golden & Silver Sample Check Function for process verification
- Side cameras capture areas missed by overhead cameras



※ 1 Get in touch to ask about details of the machines on which it is available.
※ 2 Optional function.

Key Factor 3 Applied Technology

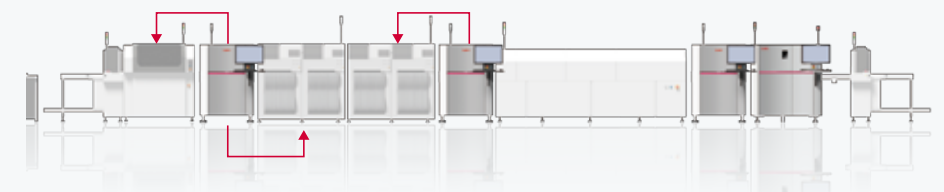
Machine-to-Machine Systems

- Feed-back from SPI to printer
- Feed-forward from SPI to Pick-and-Place
- Feed-back from AOI to Pick-and-Place



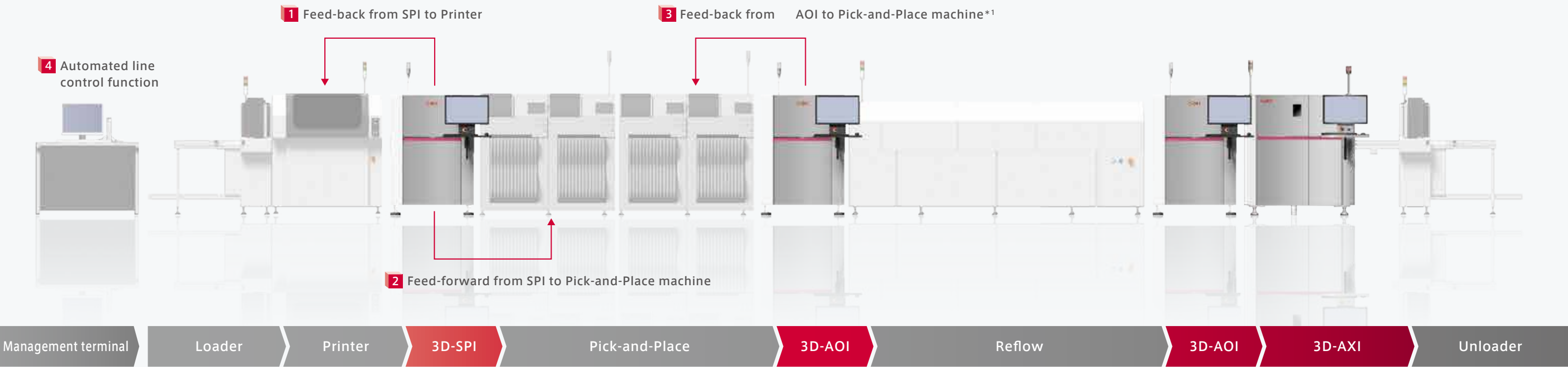
Stand-alone Systems

- RMS remotely manages multiple BF2-Monitors with one PC
- MPV lets operators see every inspection result in real time



Solution

Saki's QUALITY DRIVEN Production Solution

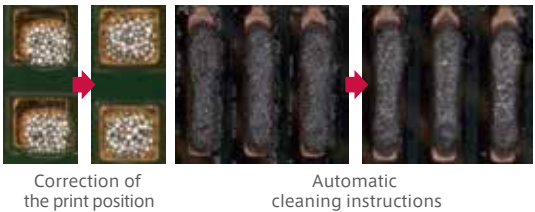


Key Factor 3 Applied Technology

M2M Solution

1 Feed-back from SPI to Screen Printer.

Feeds back misalignment data and prevents print errors by automatically alerting the user when the stencil needs cleaning.



2 Feed-forward from SPI to Pick-and-Place machine

Measures the degree the printing position shifts to correct placement positioning. A NG board skip function improves efficiency, quality, and cost.



3 Feed-back from AOI to Pick-and-Place machine

Feeds back placement position and location data from AOI to pick-and-place and feeds forward data from SPI to improve quality and efficiency.

*1 factory installed option



4 Automated line control function

Automates control of the assembly line to reduce rework and waste and increase throughput.

※1~4 Saki partners with the leading PCB equipment manufacturers. Ask us which products we connect with.

Options

BF2-Editor

Create data and debug the process offline

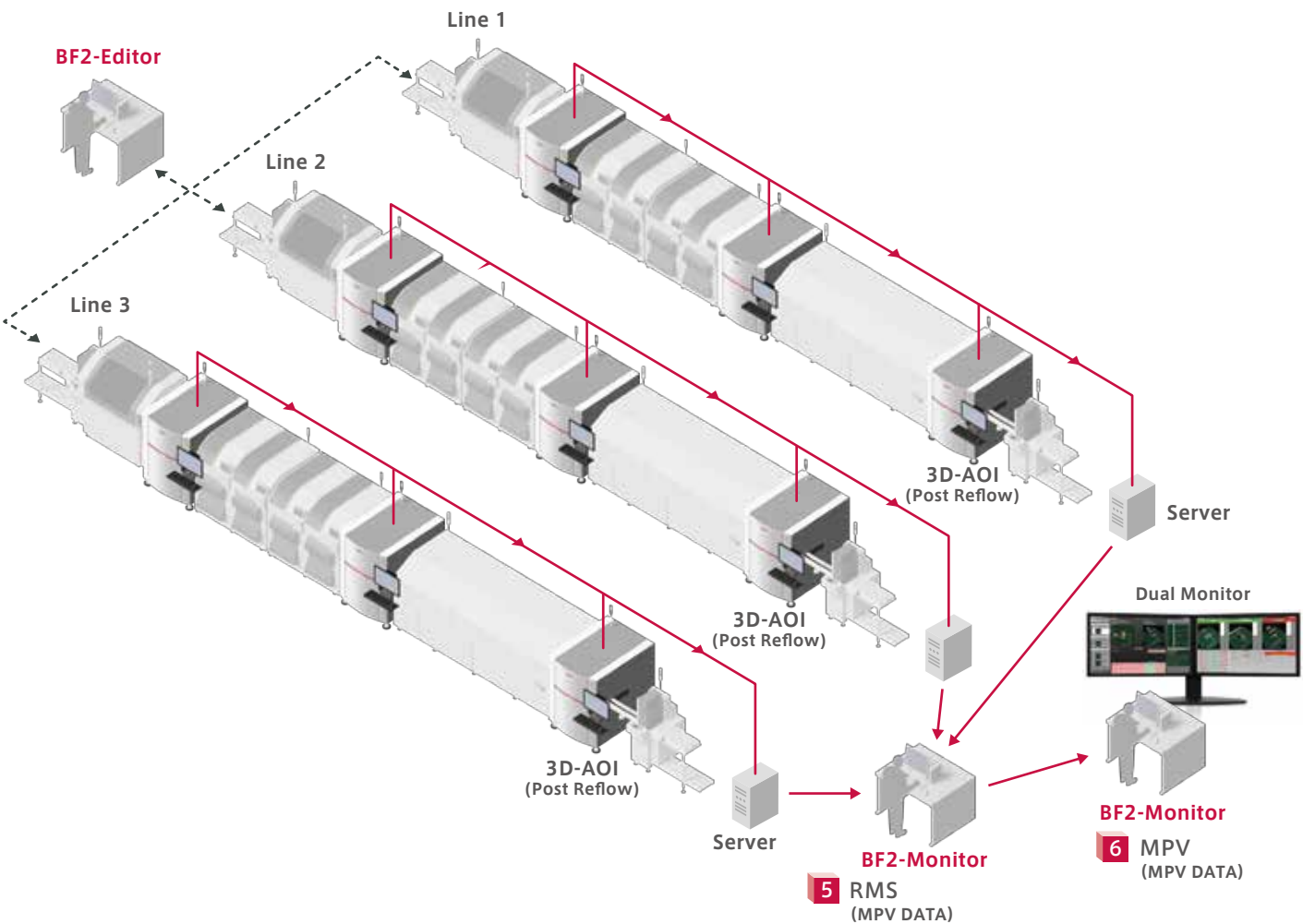
BF2-Monitor (Offline verification terminal)

5 RMS (Remote Management System)

Remotely control multiple BF2-Monitors with a single PC. Reduces assembly-floor personnel. Moreover, the production status of each device can be confirmed.

6 MPV (Multi Process View)

The BF2-Monitor shows the results of all inspection processes (SPI, pre-reflow, and post reflow) on one screen in real time for operator review, simplifying the verification process and making it less subject to error. It is also useful for analyzing the cause of a defective board.



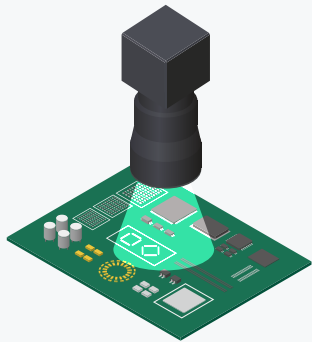
3Di Series Product Specifications

Dual-lane system can inspect 2 different PCBAs simultaneously

Dimensions	M Single lane		M Dual lane		L Single lane		L Dual lane		XL Single lane
Model Name	3Di-MS2		3Di-MD2		3Di-LS2		3Di-LD2		3Di-ZS2
Size (W) × (D) × (H) (mm, in.)	850 × 1430 × 1500, 33.46 × 56.30 × 59.06				1040 × 1440 × 1500, 40.94 × 56.69 × 59.06				1340×1440×1500, 52.75×56.69×59.06
Weight	850kg, 1873.93lb				900kg, 1984.16lb				
Electric Power	Single Phase ~ 200-240V+/-10%, 50/60Hz								
Air Requirement	0.5MPa, 5L/min (ANR)								
PCB Size (mm, in.)	—	Single mode	Dual mode	—	Single mode	Dual mode	—		
	50×60~330×330, 1.97×2.36~ 12.99×12.99	50×60~ 330×330, 1.97×2.36~ 12.99×12.99	50×60~ 320×330, 1.97×2.36~ 12.60×12.99	[7 μm camera head]	[7 μm camera head]		50×60~686×870, 1.97×2.36~27.00×34.25		
				50×60~330×330, 1.97×2.36~12.99×12.99	50×60~ 330×330, 1.97×2.36~ 12.99×12.99	50×60~ 320×330, 1.97×2.36~ 12.60×12.99			
				[12/18 μm camera head]	[12/18 μm camera head]				
				50×60~500×510, 1.97×2.36~19.68×20.07	50×60~ 500×510, 1.97×2.36~ 19.68×20.07	50×60~ 320×510, 1.97×2.36~ 12.60×20.07			
PCB Clearance	Top : 40mm, 1.57in. Bottom: 60mm, 2.36in.	Top : 40mm, 1.57in. Bottom: 50mm, 1.96in.		Top : 40mm, 1.57in. Bottom: 60mm, 2.36in.	Top : 40mm, 1.57in. Bottom: 50mm, 1.96in.		Top : 40mm, 1.57in. Bottom: 60mm, 2.36in.		
Front View (mm, in.)									
Side View (mm, in.)									

● 3Di-ZS2 supports the optical unit with resolution of 18μm.

3Di Series Optical Unit Specifications



Wide selection of cameras based on various optical resolutions and speeds

Resolution	7 μm	12 μm	18 μm
Height measurement range	4mm, 0.15in. 	10mm, 0.39in. 	20mm, 0.78in.
Image capture time	1,063mm²/s 1.64in.²/s	3,600mm²/s 5.58in.²/s	5,700mm²/s 8.83in.²/s
Major characteristics	Meets requirements for production of advanced smart phones, wearable devices, and devices and modules for IoT. Capable of 0201mm (008004in.) component inspection.	Well balanced system offering both high speed and the inspection of the industry's smallest components.	Saki's new optical sensor increases speed by 170% delivering the industry's highest throughput.
<div>← High definition</div> <div>→ High speed</div>			

Substantially improves inspection speed

Comparison between BF-3Di and 3Di-LS2 using an optical unit with 18 μm resolution and PCB size 330x250mm(12.99x9.84in.).

