



Process Lens

Measure what matters – with exceptional
precision, speed and reliability

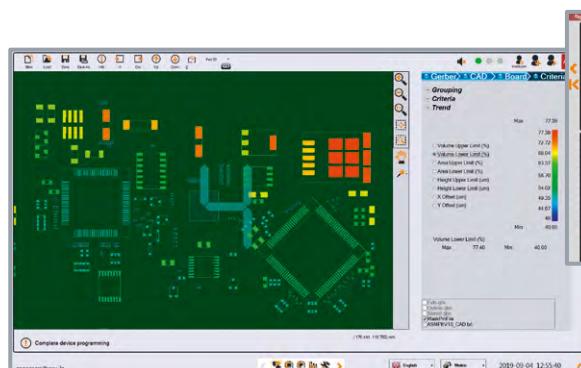
Process Lens

MORE PRECISION, SPEED, AND INVESTMENT PROTECTION

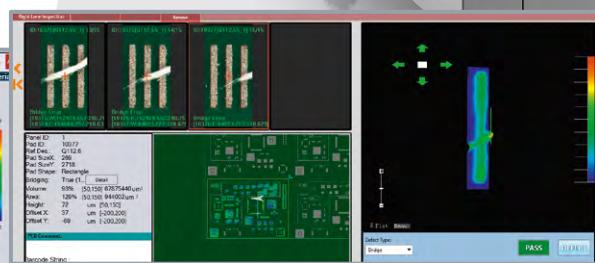
Process Lens is a highly precise, flexible, state-of-the-art 5D inline SPI system with on-the-fly 3D compensation for PCB warping. Designed for high-throughput environments, it delivers fast, accurate measurements without impacting cycle time. Thanks to its smart algorithms, Process Lens understands what it measures and interprets results intelligently. It focuses on what matters: solder paste deposits, glue, contamination, dust, and more – all while suppressing measurement noise from the circuit board.

The choice is yours: the Process Lens has a DLP chip with individually controllable micro-mirrors and a scanning field of 30 x 30 millimeters, while the Process Lens HD features independently controllable micro-mirrors and a scanning field of 50 x 50 millimeters. The Process Lens HD is up to 70 percent faster than traditional systems while maintaining a very high measurement accuracy, but with 80 percent fewer false calls. It also offers full flexibility, where users can switch between high-speed and high-resolution modes through software.

The bottom line: more stable printing processes, higher throughput rates, and significantly better yields. Unmatched and unbeatable by the competition – combined with maximum machine reliability.



Fast programming:
Component library recommends inspection criteria



2D and 3D images of solder paste deposits

The future awaits
Smart process optimization that's easy to retrofit

Absolutely unique: With the optional expert software WORKS Optimization you can upgrade your 5D SPI to the world's first self-learning inline expert system for optimizing your printing process.

The **WORKS Optimization** printing solution optimizes your printing process proactively with virtual prints, trend analyses and direct DEK printer control – optionally fully autonomously with no operator assists whatsoever. The expert software learns from each print cycle 24/7, 365 days a year, and never forgets a detail.

The WORKS Optimization application also forms closed loops with third-party printers and, in combination with end-of-line AOI systems now also supports operators in optimizing the placement process.



TOTALLY UNIQUE Process Lens



Process Lens utilizes the full potential of a highly connected and highly automated intelligent factory. Data is viewed holistically and processes are analyzed, integrated and optimized at all levels. With open industry standards, machine learning and artificial intelligence, manufacturing becomes even more productive and resilient.



All systems go: The WORKS Optimization application of the WORKS Software Suite ensures a consistently stable printing process.

Process Lens
(SPI)

WORKS Optimization
(Software)

DEK
(Printer)

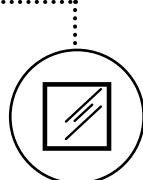
More about
Process Lens

Printing module for automated process optimization
(Self-learning Expert System)



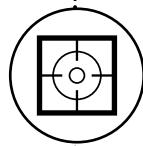
The most innovative measurement system

Moiré phase shifting with individually controllable micro-mirrors



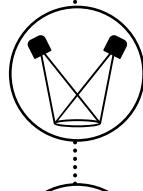
Maximum accuracy

Precise X/Y/Z positioning, combined 2D/3D measurements and on-the-fly compensation of board warpage



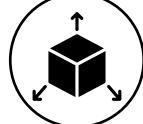
Shadow-free illumination

Multiple light sources



Comprehensive

Visualization of position, area, height, volume and shape of all solder deposits; checks for coplanarity and bridging



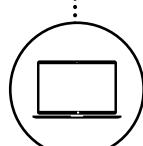
Maximum speed

Optimized for high-speed inline inspection



Easy operation

Quick programming with component library and recommendations of inspection criteria



Resilient

Stable machine performance with very high Mean Time Between Failure



Investment protection

Software-upgradeable with WORKS Optimization to inline expert system for autonomous process optimization



Process Lens / Process Lens HD

Machine type	Process Lens	Process Lens HD
System	Description	
DLP chip	individually controllable micro-mirrors	individually controllable micro-mirrors
Camera system	4 MP / Field of view 30 × 30 mm	25 MP / Field of view 50 × 50 mm
Pixel size	15 µm × 15 µm	10 µm × 10 µm (high-resolution mode) 20 µm × 20 µm (high-speed mode)
Vertical resolution	0.37 µm	
Height accuracy with calibration target	≤ 1 µm	
Paste height (max.)	1,000 µm	
Paste deposit size	90 µm × 130 µm	70 µm × 125 µm (high-resolution mode) 130 µm × 200 µm (high-speed mode)
X/Y gantry accuracy	± 12.5 µm (at ± 3σ)	
Inspection speed	Up to 30 cm ² /s	90 cm ² /s (high-speed mode)
Measurement	Shadow-free	
Solder paste measurements	Volume, area, height, X- and Y-offset, shape, bridging, coplanarity	
PCBs		
Dimensions – single lane	50 × 50 mm to 610 × 560 mm (L × W)	50 × 50 mm to 540 × 560 mm (L × W)
Thickness	0.5 mm to 4.5 mm*	
Minimum edge clearance	3 mm	
Maximum weight	3 kg*	
Maximum PCB warpage compensation range	-6.5 mm to +6.5 mm	
Conveyors		
Loading/unloading time – single lane	< 2.5 s	
Machine-to-Machine communication	IPC-SMEMA-9851, IPC-HERMES-9852, IPC-2591 CFX	
Machine dimensions		
Length × Width	1,130 × 1,300 mm	
Height (conveyor height: 950 mm)	1,600 mm	
Weight	780 kg	

* Increased thickness and weight options are available upon request

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