LMI TECHNOLOGIES

ADEPT TURNKEY

SMARTER IMAGING FOR BETTER LIVES

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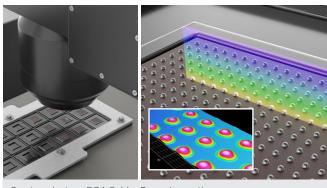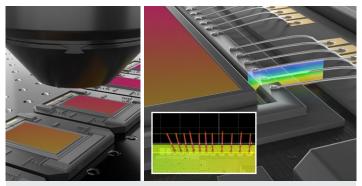
Gocator® 4000 Series

SMART 3D COAXIAL LINE CONFOCAL SENSORS

COAXIAL CONFOCAL

Semiconductor - BGA Solder Bump Inspection

CE - IC Wire Bond Inspection

The Gocator 4000 Series introduces **coaxial line confocal sensor technology** to complement LMI's existing Line Confocal product portfolio. These sensors provide high-speed, high-resolution, versatile and shadow-free 3D inline inspection performance with outstanding angular range (Max Slope Angle up to +/- 85 degrees) for manufacturing applications in Semiconductor, Consumer Electronics, EV Battery, and many more.

- **1920 Points per Profile for High-Resolution, Shadow-Free 3D Measurement and Inspection**
- **X Resolutions Up to 1.9 microns**
- **Fields of View Up to 5.0 millimeters**
- **Max Slope Angle Up to +/- 85 degrees**
- **Speeds Up to 16 kHz+ at Limited Measurement Range (With Gomax NX or PC Acceleration), 4 kHz+ at Full Measurement Range**
- **On-sensor Measurement Tools and I/O Connectivity**
- **Easy Mounting and System Integration**

PROFINET®   Modbus   EtherNet/IP™   ASCII

HIGH RESOLUTION. HIGH SPEED.

The Gocator 4000 Series delivers exceptional X-resolutions and optimal Z-performance for fine feature detection and precision 3D shape and 2D intensity measurement. This is paired with fast scan rates up to 16 kHz+ (with GoMax NX or PC acceleration) to meet inline cycle times and provide a proficient scanning and inspection solution for rapid deployment into your production line.

VERSATILITY TO HANDLE ALL MATERIALS, PARTS, AND FEATURES

Accurately scan any material type or part shape—everything from miniscule solder bumps on semiconductor BGAs to machined-metal cell phone housings and transparent glue path applications in wearable consumer electronics assemblies such as smart watches.

ZERO SHADOWING EFFECT. OUTSTANDING ANGULAR RANGE.

Coaxial optical design allows the sensor to scan simple and complex surface topologies with **zero shadowing effect** for improved data quality and more accurate measurement results on steep-angled features (e.g., step height of PCB chips), deep grooves (e.g., wafer die factures), and protruding components (e.g., IC wire bonds). The Gocator 4000 Series' optics also deliver **outstanding angular range** (Max Slope Angle up to +/- 85 degrees) for excellent performance on specular and highly curved surfaces (e.g., chamfer of cell phone display glass).

MEASUREMENT AND INSPECTION SOFTWARE INCLUDED

Gocator® 4000 sensors are built on LMI's leading smart sensor design architecture that includes an easy-to-use web-based interface with built-in measurement tools, I/O connectivity, and sensor acceleration using a GoMax NX Smart Vision Accelerator or PC.

4000 SERIES MODELS	4010	4020
Data Points / Profile	1920	1920
Scan Rate (Hz) *	4300 - 14 000	4500 - 16 000
Resolution X (µm) (Profile Data Interval)	1.9	2.6
Linearity Z (+/- % of MR) **	0.05	0.02
Repeatability Z (µm) **	0.12	0.25
Resolution Z (µm)	0.25	0.50
Clearance Distance (CD) (mm)	9.3 +/-0.2	27.8 +/-0.3
Measurement Range (MR) (mm)	1.05	2.5
Field of View (FOV) (mm)	3.5	5.0
Max Slope Angle (°)	45 - 85	30 - 85
Dimensions (mm)	183 x 82 x 459	183 x 82 x 428
Weight (kg)	10.4	9.6

ALL 4000 SERIES MODELS		
Interface	Gigabit Ethernet	
Inputs	Differential Encoder, Trigger	
Outputs	2x Digital output	
Factory Communication	PROFINET, Modbus, EtherNet/IP, ASCII, Gocator	* Speed ranges are from default configuration (full field of view and full measurement range) to high speed configuration (reduced field-of-view and measurement range, uniform spacing disabled, optimized data spacing and output)
Input Voltage (Power)	+24 to +48 VDC (77 Watts); Ripple +/- 5%	
Housing	Gasketed metal enclosure, IP50	
Operating Temperature (°C)	15 to 35	
Storage Temperature (°C)	-30 to 70	** These results are achieved with LMI standard target and optimized sensor configuration
Vibration Resistance	10 to 55 Hz, 1.5 mm double amplitude in X, Y, and Z directions, 2 hours per direction	
Shock Resistance	15 g, half sine wave, 11 ms, positive and negative for X, Y, and Z directions	
Scanning Software	Browser-based GUI and open source SDK for configuration and real-time 3D visualization. Open source SDK, native drivers, and industrial protocols for integration with user applications, third-party image processing applications, robots, and PLCs.	

4010

4020