LMI TECHNOLOGIES

Gocator® 5500 Series
3D SMART LINE CONFOCAL SENSORS

The Gocator® 5500 series adds patented line confocal imaging (LCI) technology to the Gocator® family of 3D smart sensors. These line confocal sensors deliver high speed, wide coverage line scanning with simultaneous generation of **3D topography**, **3D tomography**, and **2D intensity data**. This allows Gocator® 5500s to scan practically any material type—including multi-layered, transparent/translucent, curved edge, shiny/specular, high-contrast textured, mixed, and many more—with submicron precision, and at a level of quality and speed that outperforms competing confocal technologies.
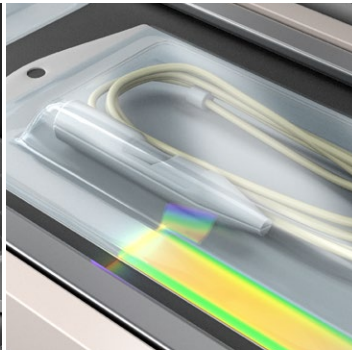

Multi-layer phone display inspection and its software output
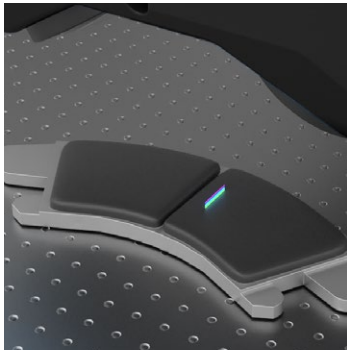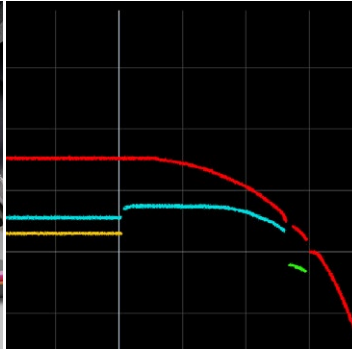
Brake pad roughness inspection

Medical seal integrity inspection

- **Simultaneous Generation of Multiple Profiles from Multi-Layer Structures**
- **Generates 1792 Data Points per Profile**
- **Scan Rates Up to 40 KHz (with Acceleration)**
- **Handles Wide Variety of Material Types**
- **Dual-Axis Optical Design Provides Higher Signal Quality**
- **Runs LMI's Next Generation Measurement and Inspection Software**

DUAL-AXIS OPTICAL DESIGN TO DETECT FINER FEATURES
Gocator 5500 Sensors use a dual-axis optical system that improves noise immunity and provides higher signal quality. This makes it possible to scan difficult surfaces and very fine features.

GENERATES 3D TOMOGRAPHY, 3D TOPOGRAPHY, AND 2D INTENSITY DATA
Gocator® 5500 sensors simultaneously generate 3D tomography, 3D topography, and 2D intensity data for each layer of a material, making it possible to measure the thickness of individual layers or detect defects on secondary layers.

HIGH SPEED. HIGH RESOLUTION
Gocator® 5500 sensors feature a custom high-speed imager and high-performance electronics to deliver metrology-grade inspection at speeds up to 40 kHz (with GoMax or PC acceleration), with scaling fields of view, X resolutions up to 2.5 microns, and Z repeatability up to 0.05 microns.

MEASUREMENT AND INSPECTION SOFTWARE INCLUDED
Gocator® 5500 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 multi-layer profiling support accelerated using a PC.

5500 SERIES MODELS	5504	5512	5516
Scan Rate (Hz) [1]	2100 - 39 000	4200 - 40 000	3800 - 38 000
Data Points / Profile	1792	1792	1792
Resolution X (μm) (Profile Data Interval)	2.5	6.5	9.9
Linearity Z (+/- % of MR)	0.03	0.07	0.04
Repeatability Z (μm) [2]	0.05	0.2	0.25
Resolution Z (μm)	0.16	0.72	1.50
Clearance Distance (CD) (mm)	7.8	19.1	61.3
Measurement Range (MR) (mm)	1.1	3	5.5
Field of View (FOV) (mm)	4.3	11.6	17.0
Max. surface slope on mirror (deg)	± 15.0	± 20.0	± 13.5
Dimensions (mm)	60 x 190 x 303	91 x 354 x 419	113 x 358 x 440
Housing	IP67	IP55	IP50
Weight (kg)	5	19	21

ALL 5500 SERIES MODELS

Interface	Gigabit Ethernet
Inputs	Differential / Single Ended Encoder, Trigger
Outputs	2x Digital output
Factory Communication	PROFINET, Modbus, EtherNet/IP, ASCII, Gocator
Input Voltage (Power)	Gocator 5512/5516: +24-48 VDC (+/- 5%) @ 62 W, Gocator 5504: +24-48 VDC (+/-5%) @ 48 W
Operating Temperature	15 to 35°C
Storage Temperature	-30 to 70°C
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.

(1) Speed ranges are from default configuration (full field of view and full measurement range) to high speed configuration (optimized imager readout, reduced field-of-view and measurement range).

(2) These results are achieved with LMI standard target and optimized sensor configuration.

5504

5512   5516

DATASHEET_Gocator_5500_US-1.9