



schematic presentation of the measuring principle

**Measuring Principle**

The CWL is based on the principle of chromatic distance measurement. White-light is focused on the surface by a measuring head with a strongly wavelength-dependent focal length.

The spectrum of the light scattered on the surface generates a peak in the spectrometer. The wavelength of this peak is used to determine the height on the sample.

The sensor works on transparent, highly reflective or even matt black surfaces. It is extremely fast and has virtually no edge effects.

**Measuring Features**

- non-contact, non-destructive measurement
- very high resolution possible due to small spot, powerful und low-maintenance LED light source
- suited for use in difficult ambient conditions
- coaxial measurement, no edge effects
- small, wear-free sensor without moveable parts

**Technical Specifications**

measuring range z	300 µm	600 µm	1 mm	3 mm	10 mm	25 mm
working distance	4.5 mm	6.5 mm	20 mm	22 mm	70 mm	76 mm
max. resolution z <sup>1</sup>	3 nm	6 nm	10 nm	30 nm	100 nm	250 nm
resolution x, y	1-2 µm	1-2 µm	2 µm	5-6 µm	12 µm	14 µm
measuring angle	90° ± 30° <sup>2</sup>	90° ± 30° <sup>2</sup>	90° ± 40° <sup>2</sup>	90° ± 30° <sup>2</sup>	90° ± 20° <sup>2</sup>	90° ± 15° <sup>2</sup>

<sup>1</sup> maximum resolution based on reduced measuring range

<sup>2</sup> diffusive surfaces allow for wider measuring angles

**Non-contact, high-resolution and fast surface measurement**

**Typical Applications**

- quality checks in front-end and back-end fabrication of semiconductors (e.g. wafer, die, packages)
- R&D and quality control in micro systems engineering (e.g. MEMS, inkjet print heads)
- R&D and quality control in medical technology (e.g. stents, catheters, protheses)
- quality checks in the automotive industry (e.g. interior, cylinders, shafts)
- quality checks of circuit boards, injection moulding (micro-)parts, optical components (e.g. lenses)
- profile and 3D-measurements on heavily structured surfaces (e.g. tools, rollers, components)

**Scope of Delivery**

- passive measuring head
- configurable sensor electronics
- 2m optical fiber with plastic jacket, (optionally 10m, also with metal jacket)
- power cable, manual



CWL 300 with sensor electronics

## Reference Customers

ASE Inc.  
Audi AG  
Ball Packaging Europe GmbH  
Bayer AG  
Beiersdorf AG  
BMW AG  
Boehringer Ingelheim microParts GmbH  
Carl Zeiss SMT AG  
DAIMLERCHRYSLER  
Dow Benelux N.V.  
EKO Stahl GmbH  
Fraunhofer-Institute  
Freescale  
Fuji Magnetics GmbH  
General Electric Plastics B.V.  
Gillette  
HILTI AG  
Hoechst Trespaphan GmbH  
Human Optics AG  
IBM  
Infineon Technologies AG  
Lexmark International, Inc.  
MAN Roland Druckmaschinen AG  
Matsushita Electric Works  
Nortel Networks Optical Components (Switzerland) AG  
Océ-Technologies B.V.  
Optische Werke G. Rodenstock GmbH  
Philips Electronics Nederland B.V.  
Robert Bosch GmbH  
Schott Glas  
SGL Carbon AG  
SIEMENS AG  
Sulzer Innotec AG  
Texas Instruments  
Universities  
Voestalpine Stahl GmbH  
Volkswagen AG  
Western Digital Fremont, Inc.

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