



Illustration of the measuring principle

Measuring Principle

The FRT CWL HR, just like the other sensors of the CWL family, uses the principle of chromatic distance measurement. Depending on the wavelength, the light is focused in different distances in front of the measuring head.

The light that is reflected from the object is captured and evaluated with regard to its wavelength. As the illustration shows, a characteristic peak can be observed in the spectrum, which allows to determine the height at the current measurement position.

Due to its modified optical setup and its superluminescent diode, the CWL HR provides the highest lateral resolution in the CWL family. It works on highly reflective as well as light absorbing and rough surfaces. It may even be used to measure the thicknesses of thin transparent films.

Technical Specifications

- measuring range z: 100 μm
- working distance: 5.8 mm
- resolution z: 10 nm
- resolution x, y: 0.7 μm
- measuring angle: $90^\circ \pm 40^\circ$
- measuring rate: max. 4000 Hz
- light source: SLD 830 nm
- interfaces: USB, RS-232, analog

Fast, non-contact measurements with excellent lateral resolution

Typical Applications

- fast measurement of profile and topography even on very sensitive surfaces
- measurement of fine structures in micro- and nanotechnology
- measurement of thin transparent films
- measurement of step heights, distances or angles in the field of electronics and semiconductors
- evaluation of geometries in micro injection molding
- surface characterization in medical technology and life sciences

Measuring Features

- non-destructive, non-contact measurement
- sub- μm lateral resolution (x, y)
- high numerical aperture (measurement of steep edges)
- coaxial measurement, no shading effects

Scope of Delivery

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



FRT CWL HR sensor with optical fiber and 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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