



CHROCODILE CLS

Quality control via optical inspection



DISTANCE

THICKNESS

TOPOGRAPHY

HOW YOU BENEFIT

- ▶ Efficient: high speed ultraprecise non contact measurement
- ▶ Maintenance free
- ▶ Robust and easy to integrate into production lines
- ▶ Instantaneous inline profile measurement with interchangeable optical probes

CHRcodile

if time matters...



The CHRcodile CLS is industries best choice for ultra-fast 3D inspection of all materials, even in harsh industrial environments. The robust and highly integrated design is ideally suited for easy integration into production-line inspection machines.

Our chromatic confocal line sensor contains 192 inline measurement points with a data acquisition rate of 1.13 megapixels per second at 6 kHz. An outstanding large dynamic range and an exceptional signal-to-noise ratio make the CHRcodile CLS the optimum measuring tool for all materials, including polished and highly tilted surfaces.

By integrating ultra-high measuring speed and precision, this sensor opens up new dimensions in defect inspection of semiconductor wafers and chips, surface topography of aerospace materials and cosmetic inspection of high end watch components.

EFFICIENT

- ▶ High-speed
- ▶ Non-contact
- ▶ Ultra-precise

VERSATILE

- ▶ Instantaneous profile measurement
- ▶ Inline inspection
- ▶ Interchangeable optical probes
- ▶ Distance and thickness

USER-FRIENDLY & SAFE

- ▶ Maintenance-free
- ▶ Robust
- ▶ Easy to integrate into production lines

AVAILABLE CONFIGURATIONS



Available configurations: 90° angled



straight

OPTICAL PROBE

OPTICAL PROBE	CLS 0.2
Measuring range	200 μ m
Line length	0.96 mm \pm 0.01 mm
Pitch	5.0 μ m \pm 0.1 μ m
Working distance ²⁾	5.3 mm \pm 0.4 mm
Thickness measuring range ⁵⁾	20 μ m - 280 μ m
Axial resolution	20 nm
Linearity ³⁾	\pm 80 nm
Lateral resolution	1 μ m
Numerical aperture	0.7
Measurement angle to surface ⁴⁾	90° \pm 44°
Photometric efficiency ⁶⁾	7
Dimension: Length Diameter	70.4 mm 37 mm
Item number	5007993

HIGH-SPEED CHROMATIC LINE SENSOR

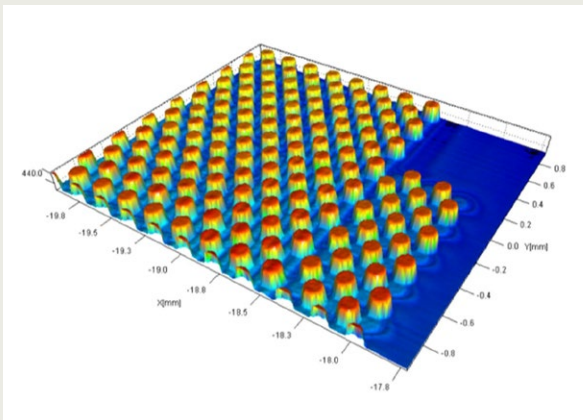
SENSOR	CHROCODILE CLS	CHROCODILE CLS HS
Measured value	distance, thickness	distance, thickness
Measuring rate [lines per second]	up to 2000	up to 6000 ¹⁾
Number of points / line	192	192
Synchronization with external devices	trigger input, synchronizing output, 5 encoder inputs	trigger input, synchronizing output, 5 encoder inputs
Interface	Ethernet, service ports: RS-422, USB	Ethernet, service ports: RS-422, USB
Transfer rate	100 Mbit (Ethernet), 9600 - 921600 Baud (RS-422), 921600 Baud (USB: virtual comport)	100 Mbit (Ethernet), 9600 - 921600 Baud (RS-422), 921600 Baud (USB: virtual comport)
Light source	LED	LED
Operating temperature	+5°C up to +50°C	+5°C up to +50°C
Dimension without probe (w x h x d)	391 mm x 100 mm x 114 mm	391 mm x 100 mm x 114 mm
Weight	4 kg	4 kg
Supply voltage	24 +/- 10% V DC (with separate power supply 100 - 240 V AC / 50 Hz - 60 Hz)	24 +/- 10% V DC (with separate power supply 100 - 240 V AC / 50 Hz - 60 Hz)
Rated power	20 W	40 W
Protection class	IP 50 (DIN 40050/ IEC 144)	IP 50 (DIN 40050/ IEC 144)
Note	SDK available .NET Framework 4 and higher compatible	SDK available .NET Framework 4 and higher compatible; four times more light enables faster measuring rate
Item number	5007994 (straight); 5007995 (90° angled)	5100387 (straight); 5100395 (90° angled)

CLS 0.5	CLS 0.5 LL	CLS 1	CLS 2	CLS 2.3	CLS 2.45	CLS 4
500 µm	500 µm	950 µm	2000 µm	2300 µm	2450 µm	3900 µm
1.43 mm ± 0.02 mm	4.5mm ± 0.05 mm	1.91 mm ± 0.02 mm	8.3 mm ± 0.1 mm	1.53 mm ± 0.02 mm	3.33 mm ± 0.03 mm	4.78 mm ± 0.04 mm
7.5 µm ± 0.1 µm	23.6 µm ± 0.3 µm	10 µm ± 0.1 µm	43.5 µm ± 0.5 µm	8.0 µm ± 0.1 µm	17.4 µm ± 0.2 µm	25.0 µm ± 0.3 µm
12 mm ± 0.4 mm	23.3mm ± 0.5 mm	18.5 mm ± 0.5 mm	27.5 mm ± 0.5 mm	15.6 mm ± 0.5 mm	33.0 mm ± 0.6 mm	36.4 mm ± 0.6 mm
40 µm - 700 µm	50 µm - 700 µm	75 µm - 1.35 mm	280 µm - 2800 µm	200 µm - 3.1 mm	220 µm - 3.4 mm	300 µm - 5.5 mm
50 nm	70 nm	80 nm	250 nm	200 nm	200 nm	320 nm
± 200 nm	± 280 nm	± 300 nm	± 1 µm	± 780 nm	± 800 nm	± 1.2 µm
1.5 µm	4.7 µm	2 µm	8.5 µm	1.6 µm	3.5 µm	5 µm
0.61	0.33	0.55	0.2	0.55	0.5	0.33
90°± 38°	90°± 20°	90°± 33°	90°± 11°	90°± 33°	90°± 30°	90°± 20°
10	75	12	50	3	19	22
75 mm 52 mm	66.5 mm 54 mm	93.3 mm 54 mm	84 mm 55 mm	99 mm 54 mm	127.4 mm 65 mm	120 mm 58 mm
5009885	5100239	5007895	5009888	5009128	5100907	5007896

¹⁾ with measuring range reduction for frequencies above 2 kHz | ²⁾ Bottom of optical probe to middle of measuring range | ³⁾ Perpendicular measurement on mirror at 20° C. Averaged value over all points along the line | ⁴⁾ Decreasing accuracy for large incident angles | ⁵⁾ Refractive index n = 1.5 | ⁶⁾ Estimated average signal intensity in % obtained on uncoated glass at 2 kHz, LED 100 %, in the center of the measuring range

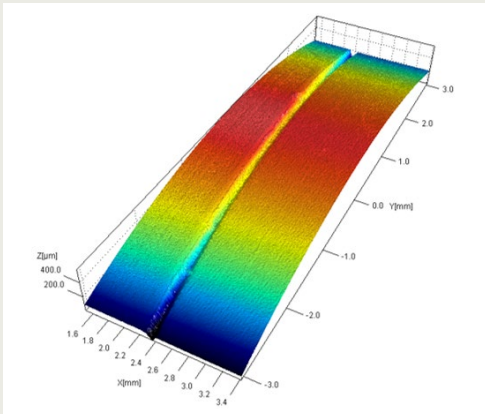
The given data was generated for a typical application and may be different given other circumstances. Furthermore misprints, changes and/or innovations may lead to differences in the listed measurements, technical data and features. Therefore all information is non-binding and technical data, measurements as well as features are not guaranteed.

SEMICONDUCTOR



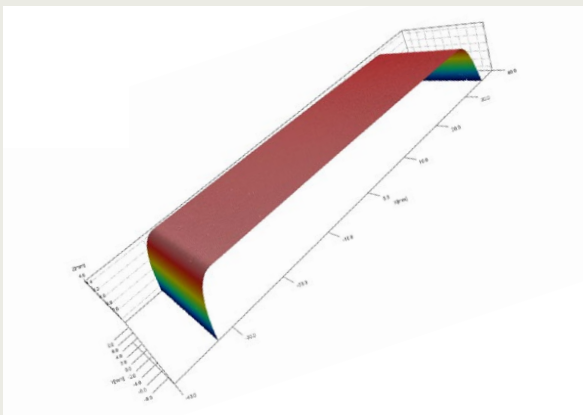
- Height and shape inspection on bumped wafer
- Area: 1.91 mm x 2.2 mm
- 42,240 points in one pass
- Scanning time 0.11 s

AUTOMOTIVE



- Analysis of form, depth and cracks of mechanical part
- Area: 1.91 mm x 6 mm
- Scanning time 1.5 s

CONSUMER GOODS



- Topography section 3D smart phone cover glass
- Measuring points, dimension of surface grooves and gap sizes between glass and surrounding frame at one shot
- Frequency up to 6 kHz i.e. 1.13 megapixel per second

Precitec Optronik - measure more precisely with light.