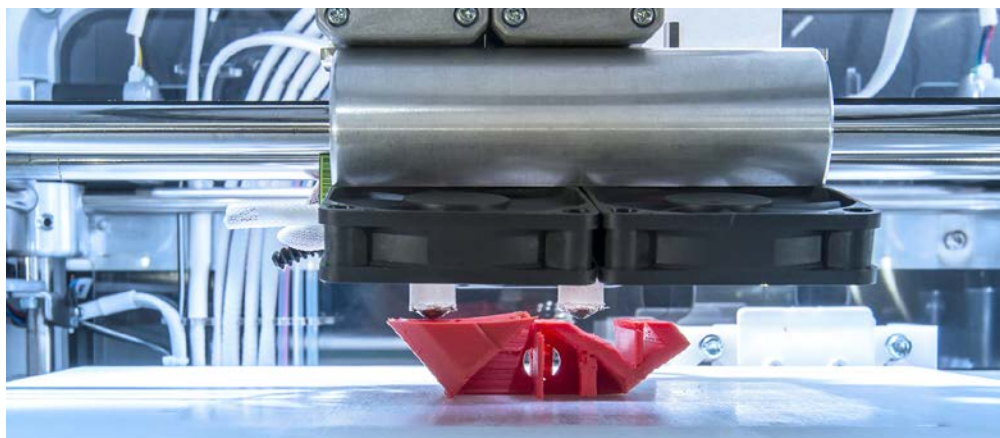
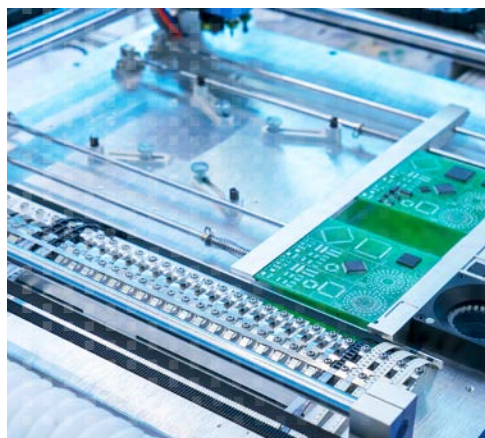


Sensors & Applications Electronics Production



More Precision



Miniaturization and increased production speeds together with rising economic efficiency are the determining factors in the electronics industry. Quality, function and touch-screen communications of the final product require reliable measurement and inspection procedures in every manufacturing stage.

Compact, high speed and easy to integrate sensors from Micro-Epsilon ensure highest reliability in almost any area where high precision is expected - from machine monitoring to fully automatic quality control of the final product.



scanCONTROL 29xx

High-end automation scanner for high precision profile measurements

Inline measurement of gap, profile, step, angle

Scanner with red or blue laser line

Measurement on numerous surfaces, also reflecting, transparent and mat

Scanner with 10mm laser line and highest resolution worldwide for detection of smallest details



confocalDT 2471 HS

Confocal chromatic sensors for distance and thickness measurement

Passive sensors with measuring ranges up to 30mm, vacuum-suitable models available

Nanometer accuracy distance measurement and one-sided thickness measurement of transparent materials

Axial beam path with extremely small light spot

Worldwide fastest controller for monitoring of dynamic processes



capaNCDT 6200

Capacitive multi-channel measurement system for machine position monitoring

Non-contact displacement and distance measurement with measuring ranges from 0.05mm to 10mm

Nanometer precision

High bandwidth for dynamic measurements

Ideal for long-term measurements



optoNCDT 1420

Compact laser triangulation displacement sensor for high speed, precision measurements

Non-contact displacement and distance measurement with large measuring ranges from 10mm to 500mm

High accuracy

High measuring rate for dynamic measurements

Compact design and easy installation

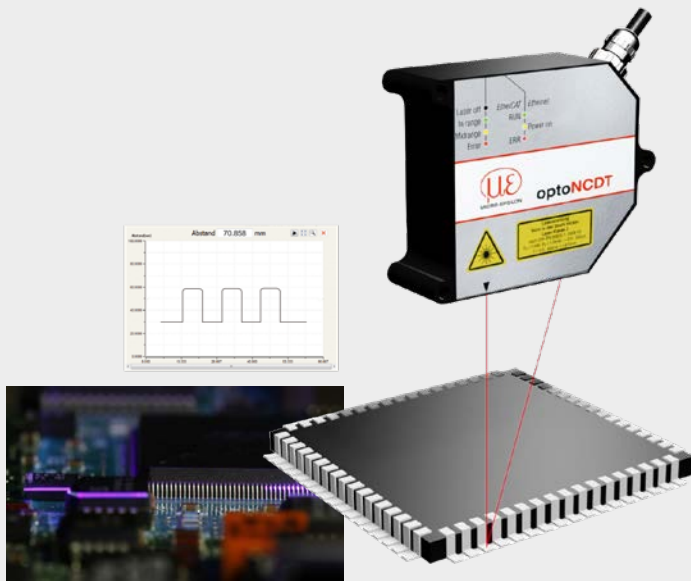
Small measurement spot for detection of smallest objects

PCB manufacturing Assembly



optoNCDT laser displacement sensors

- Small measurement spot
- Unmatched accuracy in this sensor class
- High measuring rate and adaption to rapidly changing surfaces
- Compact with integrated controller
- Red / blue laser



Coplanarity test of pins

In SMT and reflow soldering processes, the coplanarity of the pins has to be inspected in order to assure a perfect soldering quality and to avoid failures.

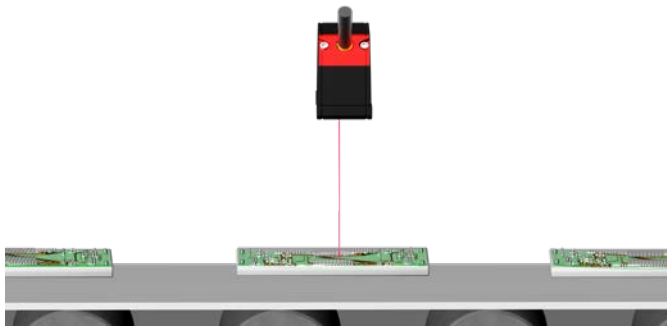
Sensor: *optoNCDT* | *scanCONTROL*



Presence monitoring of electronic components

Laser triangulation sensors are used in fully automatic presence inspection of components on printed circuit boards. Very small details can be detected reliably due to the small light spot.

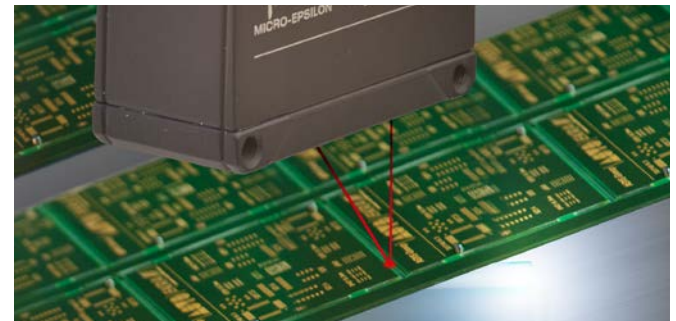
Sensor: *optoNCDT-2DR*



Warpage measurement on PCB board

To ensure a reliable assembly process, large format PCBs are inspected for warpage and curvature.

Sensor: *optoNCDT*



Measuring scribe lines on PCB panels

Scribe lines are pressed into printed circuit boards for separation purposes. Laser sensors inspect the line depth which should be consistent in order to ensure reliable separation.

Sensor: *optoNCDT*

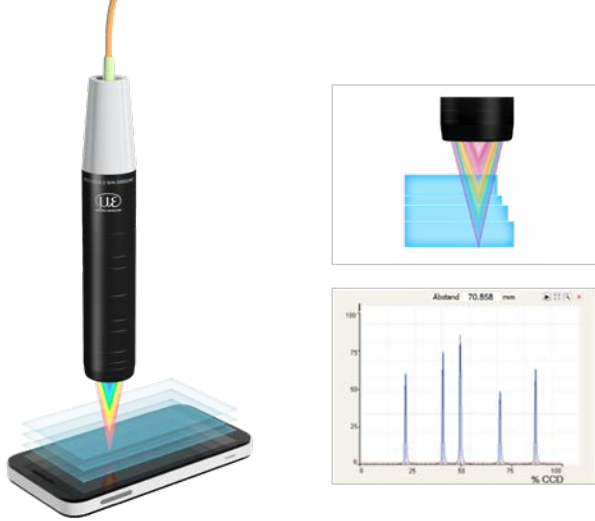
Production control of display glass



confocalDT

- Confocal sensors for measuring displacement and thickness
- Small measurement spot
- High reproducibility
- For dynamic measurements

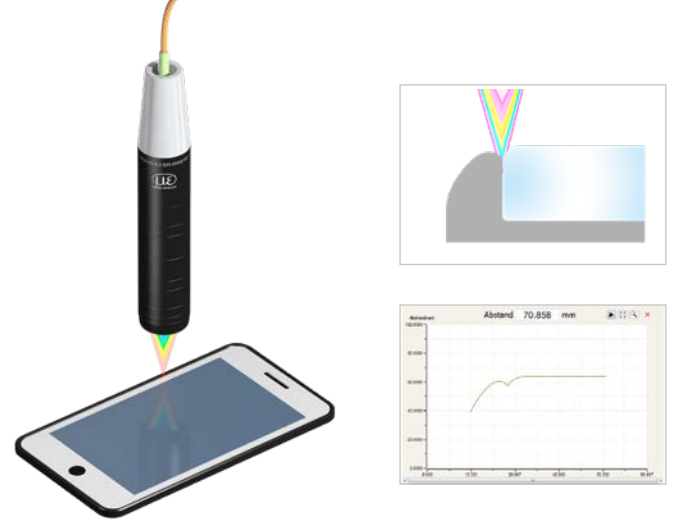




Display assembly gap and thickness measurement of multilayer transparent material

While the displays are fed into the line, a fast and automatic thickness measurement is carried out. In the smartphone industry, the different layers have a different refractive index. Several glass layers are measured with highest precision using only one confocal sensor.

Sensor: *confocalDT*



Measuring the mounting tolerance

After the assembly process, it is important to inspect the mounting tolerances of the components in order to achieve continuous quality in all production batches.

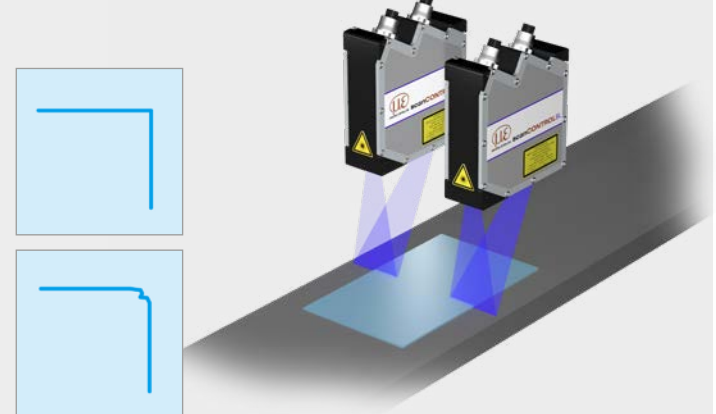
Sensor: *confocalDT*



Surface inspection of display glass

Fully-automatic defect detection on shiny surfaces is based on deflectometry systems. Extremely small inclusions or defects are detected reliably.

Sensor: *reflectCONTROL*



Detection of glass plate edges

During the control of incoming glass plates, their edges undergo a quality inspection. Blue Laser Scanners inspect the glass parts for defects and damaged areas down to micrometer range accuracy.

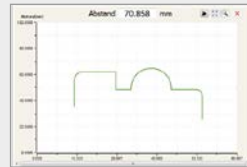
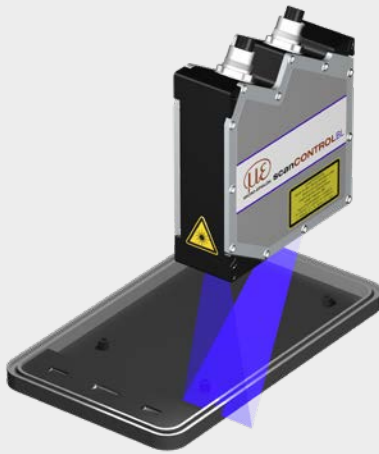
Sensor: *scanCONTROL BL*

Inline quality inspection



scanCONTROL

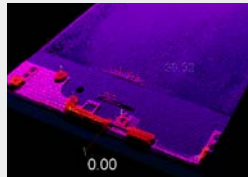
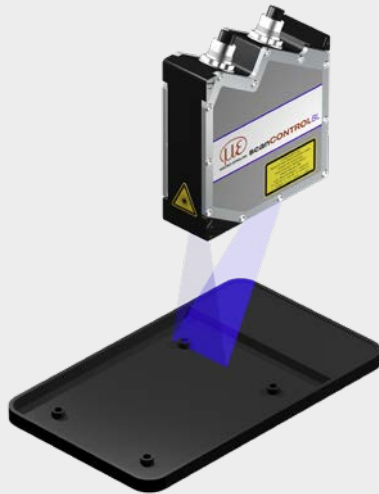
- 2D/3D laser scanner
- High resolution profile measurement
- Compact with integrated controller
- Red and blue laser



Gasket inspection

In assembly processes, the dimensions and the assembly gap of the gasket are inspected in order to ensure that the smartphone is resistant to water and dust.

Sensor: scanCONTROL BL



Dimensional measurement of extremely small, mechanical structures

While the components are fed into the line, the laser scanner detects the dimensions of the smallest of structures. Deviations in the micrometer range are reliably measured using a Blue Laser Scanner.

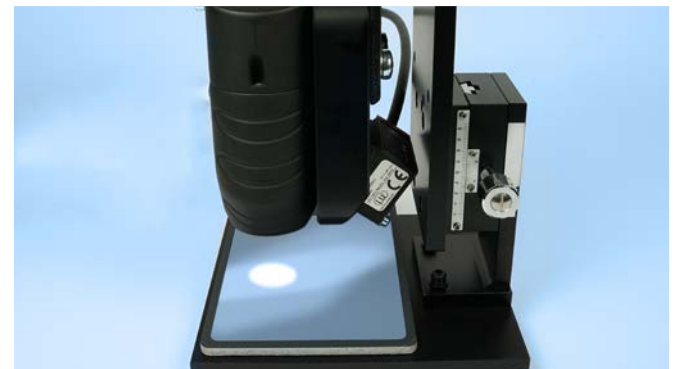
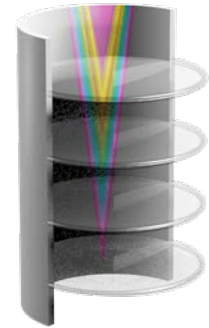
Sensor: scanCONTROL BL



Camera auto focus measurement

Confocal sensors measure the distances between the auto focus lenses to provide the camera with the highest possible image quality.

Sensor: confocalDT



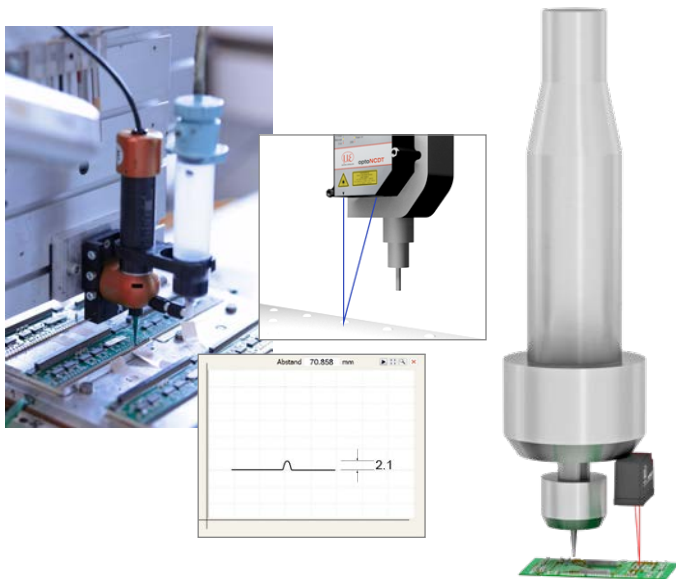
Color measurement of components

To ensure exact coloring when different batches are involved is a major challenge especially with shiny and curved surfaces. Color measurement systems from Micro-Epsilon detect the color with highest precision.

Sensor: colorCONTROL ACS

Production process control

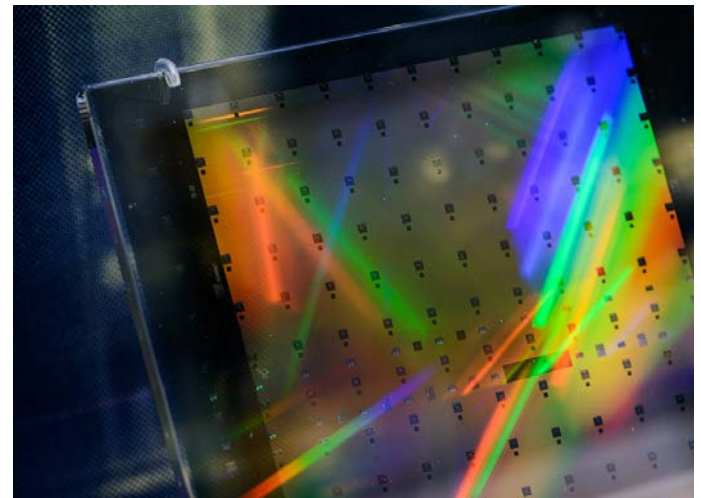




Glue bead measurement in dispensing systems

After the reflow soldering process, glue is applied on some points to protect the circuit. The glue bead thickness is a critical factor that is reliably inspected using laser sensors.

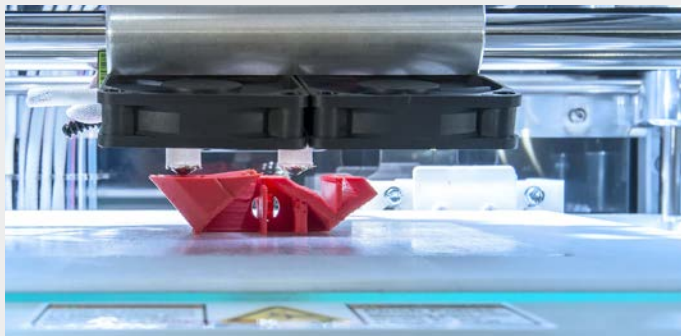
Sensor: *optoNCDT 1420*



Positioning of masks in lithography

Lithography processes require high resolution and long-term measurement of machine movements in order to achieve maximum precision.

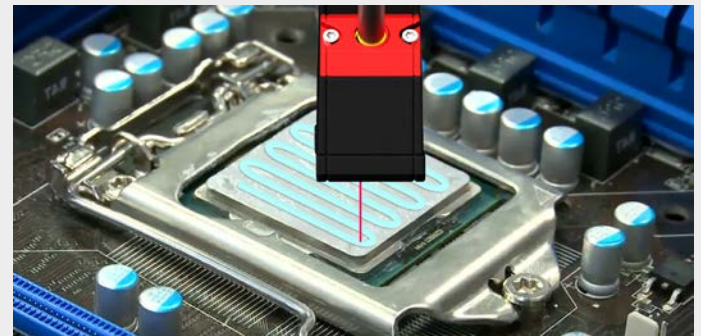
Sensor: *capaNCDT*



Print head positioning and focal point control

With printing and exposure processes, the exact height of the print head is a crucial factor for the quality of the final product. High-speed distance measurement against different material surfaces and reliable edge detection enable a fast readjustment process.

Sensor: *optoNCDT*



Heat conducting paste application

During the fully automatic application of heat conducting pastes, the correct dosage is a decisive factor. An overdosage of heat conducting paste impairs the thermal resistance, too little paste leads to thermal overload. The height of the paste bead is therefore detected using a laser triangulation sensor.

Sensor: *optoNCDT*

Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



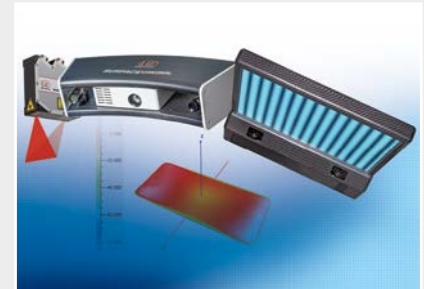
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection

More Precision

Whether it is for quality assurance, predictive maintenance, process and machine monitoring, automation or R&D – sensors from Micro-Epsilon make a vital contribution to the improvement of products and processes. High precision sensors and measuring systems solve measurement tasks in all core industries – from machine building to automated production lines and integrated OEM solutions.



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