mtiinstruments

A worldwide leader in precision measurement solutions

High Speed

Laser Displacement

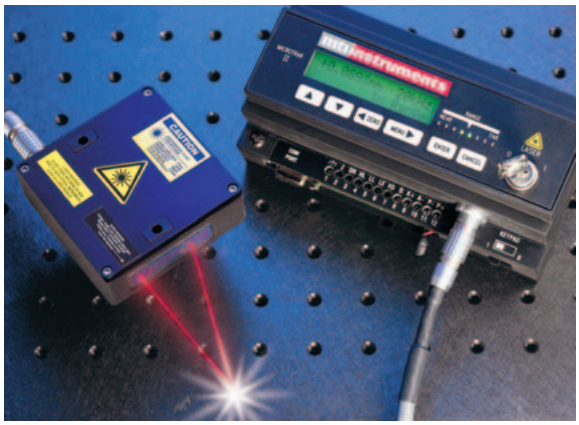
Sensor

MICROTRAK™ II

CMOS detection technology for fast, accurate and reliable measurements.

Microtrak™ II – Versatile, Reliable, Easy to Use

The Microtrak II features state-of-the-art CMOS laser triangulation technology for precise measurements of displacement, position, vibration and thickness. Up to four times faster than traditional CCD units, the Microtrak II is unaffected by surface texture, color or stray light. It can even take accurate measurements through the window of a vacuum chamber or other contained environment. The Microtrak II is the ideal solution for tough production applications across a wide variety of industries.

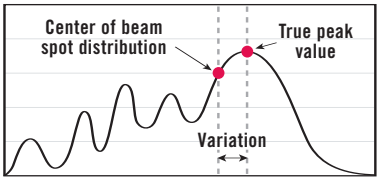


Application Solutions for Quality and Process Control

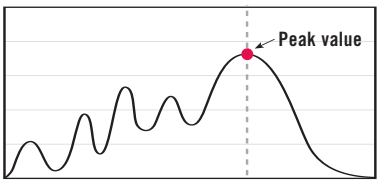
- Thickness
- Warpage
- Alignment
- Displacement
- Vibration
- Step Height
- Shaft Run-out
- Go/No-Go Decisions
- Presence
- Fill Height
- Flatness
- Profiling
- Thermal Expansion/ Contraction
- Structural Dynamics
- Dimensional Gaging

CMOS Sensing Technology

Conventional laser displacement sensors monitor the light distribution of a laser spot on a Position Sensitive Detector (PSD). The calculated location of the returned spot is used to determine the position of the target being measured. Uneven distribution of the laser, along with stray reflections from the target, skew the calculated spot location, causing variations in the measured value. CMOS detectors determine spot position more precisely by monitoring the intensity of light received on a pixel array. Lesser energy reflections from surface scattering are ignored, providing a more accurate and repeatable measurement result.



Spot on PSD

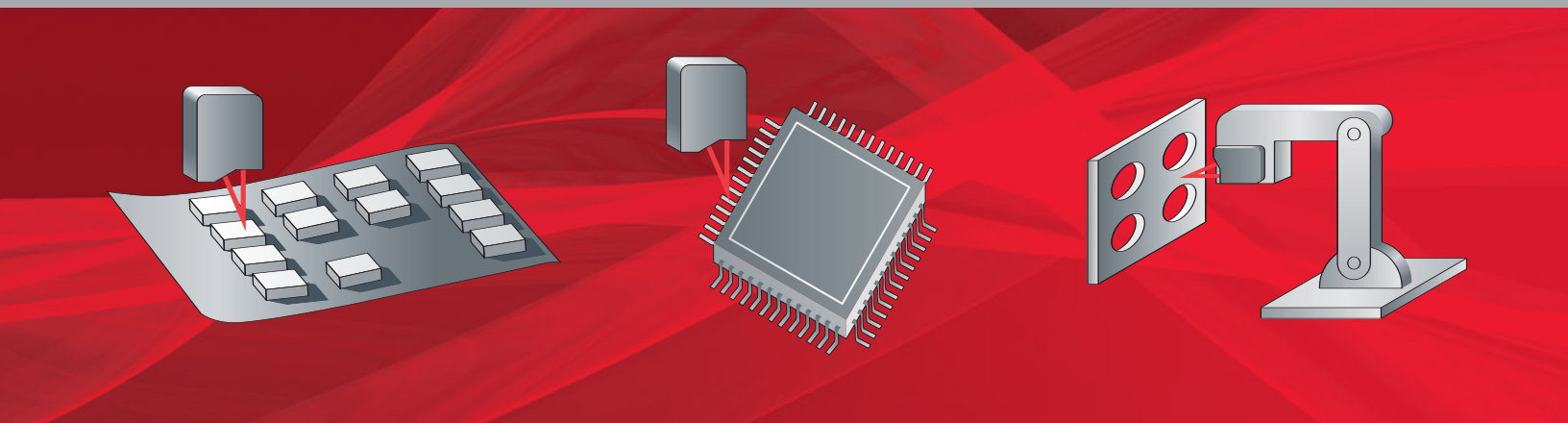


Spot on CMOS

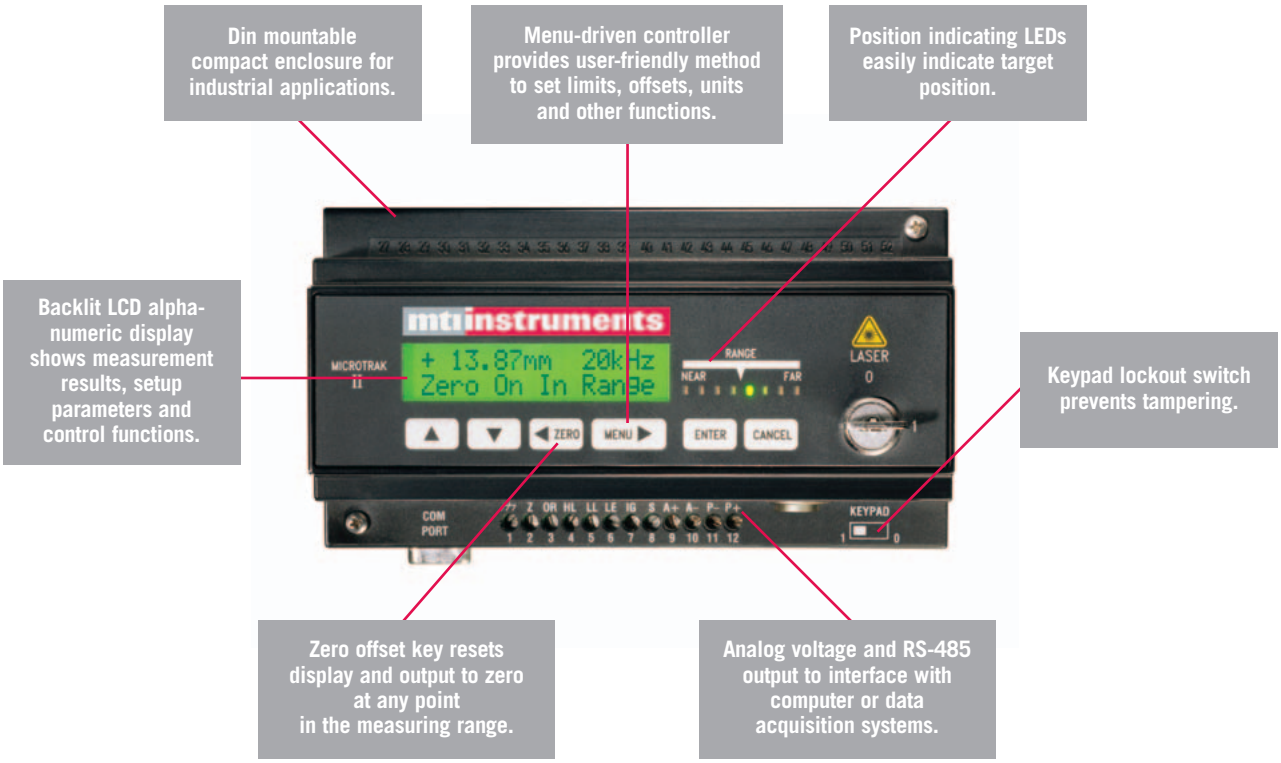
Production Quality Control Monitoring

Lead Position and Pitch on Integrated Circuits

Closed Loop Control of Robotic and Positioning Systems

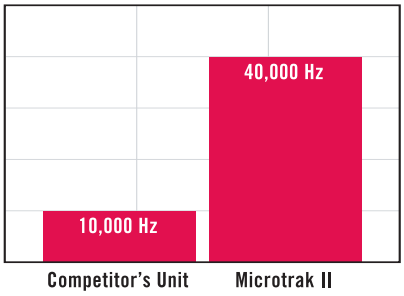


System Features & Advantages



- **DC to 20 kHz Frequency Response** with selectable filter settings down to 0.1 Hz
- **Visible Laser Spot** allows for easy positioning and alignment of laser head
- **Interchangeable Laser Heads** without the need to recalibrate
- **Auto Gain** adjusts laser current for measurements on highly reflective to dull surfaces
- **CMOS Technology** enables highly accurate measurement and is unaffected by scattered reflections from the target
- **RS-485** enables up to 15 devices to be networked

Up to 4 Times Faster Than Traditional CCD Units

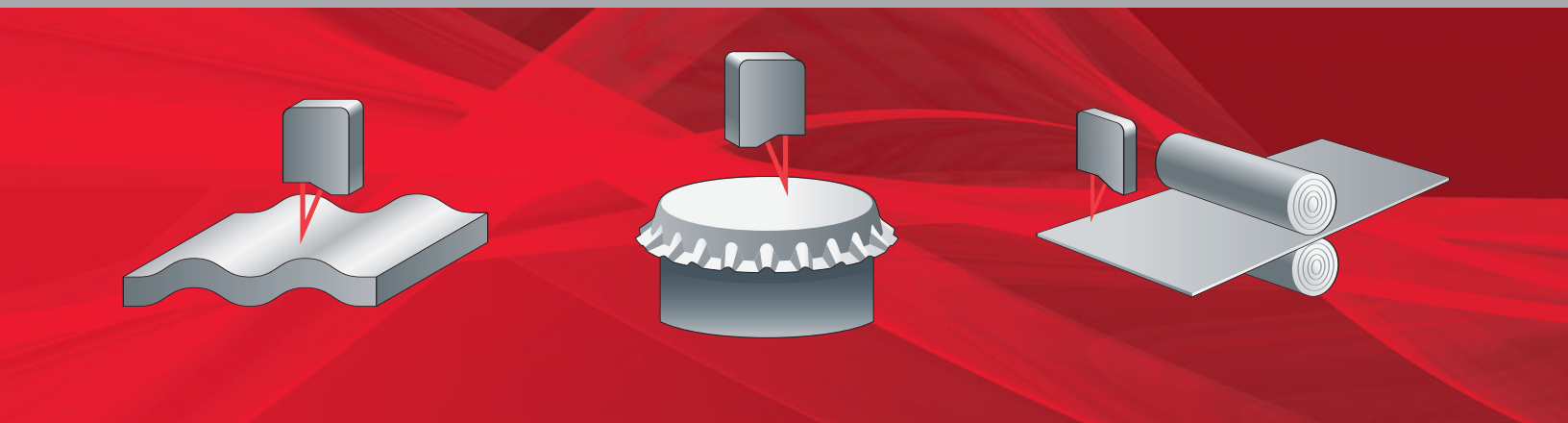


Sampling Frequency

Surface Profile of a Wide Variety of Materials

Vacuum Seal Integrity for Canning Industry

Sheet and Web Thickness



Specifications

- Power Requirement: 20-30 Vdc, 0.4 A max
- Analog Voltage Output: ± 5 Vdc
- Analog Current Output: 4-20 mA
- Digital Output: RS-485 interface
- Baud Rate: 230 kb asynchronous
- Frequency Response: 20 kHz max
- Filter Settings: 20 kHz, 4 kHz, 1 kHz, 200 Hz, 25 Hz, 1 Hz, 0.1 Hz
- Sampling Frequency: 40 kHz
- Laser Power: Class II and Class IIIA, 2-5 mW
- Laser Wavelength: 670 nm
- Laser Cable: standard 9', 20' optional
- Temp. Stability: 0.05% full scale/°C
- Ambient Temp.: 0-40°C
- Laser Head Enclosure: IP 67
- Controller Enclosure: IP 40
- Controller Dimensions: 90 mm H x 152 mm L x 64 mm D
- Linearity: 0.05% FSR or better

Performance Specifications

Head Model	Standoff	Range	Resolution*	Spot Size**	Laser Angle
LTC-025-02	25 mm	± 1 mm	± 0.12 µm	20 µm	45º
LTC-025-04	25 mm	± 2 mm	± 0.2 µm	20 µm	45º
LTC-025-04/S***	25 mm	± 2 mm	± 0.5 µm	30 µm	98º
LTC-050-10	50 mm	± 5 mm	± 1.25 µm	30 µm	30º
LTC-050-20	50 mm	± 10 mm	± 2.5 µm	30 µm	30º
LTC-120-20	120 mm	± 10 mm	± 2.5 µm	25 µm	20º
LTC-120-40	120 mm	± 20 mm	± 4 µm	25 µm	20º
LTC-200-100	200 mm	± 50 mm	± 9 µm	120 µm	12º
LTC-300-200	300 mm	± 100 mm	± 20 µm	130 µm	8º

* Resolution dependent on selectable filter setting ** Spot size at standoff distance *** Specular laser head for highly reflective mirror surfaces