

MicroSense 8810

High Resolution Non-Contact Capacitive Position Sensor

The MicroSense model 8810 is a non-contact precision capacitive sensor for detecting position and displacement. The 8810 is designed for best linearity and stability, with measurement bandwidth up to 10 kHz for fast response. The MicroSense 8810 features our latest low noise design, achieving very high position resolution, down to the sub-nanometer level. The probe, or sensor head, that detects the target contains no electronics, so the MicroSense 8810 is very stable. Standard probes with a variety of sensor sizes are available, to provide best performance based on the size and shape of the target being measured.

Applications

- Servo control feedback sensor
- Precision stage position sensor
- Wafer surface detection
- Thickness measurement
- Fast tool servo feedback sensor
- Vibration detection
- Precision machine alignment
- Bearing measurement and gauging
- Machine repeatability testing



Benefits

- Nanometer resolution with high accuracy over short ranges, up to 5 mm.
- Advanced low noise, high stability electronics design.
- Phase locking feature measuring poorly grounded targets.
- Completely non-contact
- Detects any grounded, conductive target, surface finish or reflectivity has no effect on measurement
- Essentially zero thermal dissipation from sensor head
- Wide variety of sensors including sensors for high vacuum operation available
- Fast response, up to 10kHz measurement bandwidth. 20 kHz version available.



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Available Models



Model 8810 – Single Channel Unit with Power Supply



Model 8800 – 3U Rack Mount

Specifications

Standard Measurement Ranges	$\pm 10\mu\text{m}$, $\pm 25\mu\text{m}$, $\pm 50\mu\text{m}$, $\pm 100\mu\text{m}$, $\pm 250\mu\text{m}$, $\pm 500\mu\text{m}$, $\pm 750\mu\text{m}$, $\pm 1000\mu\text{m}$ (calibration range is sensor size dependent, see chart below)
Analog Output	± 10 volts full scale, single ended and differential (options ± 5 volts, 0 – 10 volts)
Sensor Input	MicroSense 2800 series probes and sensors
Measurement Bandwidth (@ -3dB)	10 Hz, 100 Hz, 1kHz, 10kHz (jumper selectable), 20 kHz model available as an option
Linearity	Sensor and range dependent, see chart below
Stability	200 ppm/ $^{\circ}\text{C}$ typical, higher stability probes available
Target Material	Any conductive material – aluminum, steel, silicon, etc.
Over Range Detection	TTL outputs and front panel LEDs indicate near and far limit condition
Front Panel Adjustments	Scale factor, zero offset, limit settings
Operating Environment (Temperature)	0 to 50 $^{\circ}\text{C}$
Operating Humidity	<85% RH, non-condensing
Power Requirements	90 to 240 VAC, 50/60 Hz
Size	175mm (L) x 110mm(W) x 40mm (H)
Weight	0.5kg, power supply is 0.8kg

Measurement Resolution

Measurement resolution in nanometers, r.m.s., at 1 kHz filter setting

Probe Model	Sensor Size	Range	Standoff	Linearity	Resolution
2803	1.0 mm	+/- 25 μm	50 μm	0.04 μm	0.8 nm-rms
2804	2.0 mm	+/- 50 μm	100 μm	0.02 μm	1.5 nm-rms
2823	3.0 mm	+/- 50 μm	100 μm	0.01 μm	0.6 nm-rms
2823	3.0 mm	+/- 100 μm	200 μm	0.02 μm	1.8 nm-rms
2805	5.0 mm	+/- 250 μm	500 μm	0.12 μm	6 nm-rms
2820 - ceramic	5.0 mm	+/- 250 μm	500 μm	0.12 μm	6 nm-rms
2810	10.0 mm	+/- 500 μm	1000 μm	0.10 μm	5 nm-rms
2821 - ceramic	10.0 mm	+/- 500 μm	1000 μm	0.10 μm	5 nm-rms

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