NEW PRODUCT!

Microsense II - 6810

High Resolution Linear Displacement Gauging Module

Advanced low noise design provides sub-nanometer measurement resolution

The ADE 6810 sets the new standard for ultra-high resolution, low noise displacement measurement

- State-of-the-Art performance - < 20 picometer-rms resolution
- Displacement measurement using capacitive sensing - target material or reflectivity has no effect on measurement accuracy
- High measurement bandwidth, up to 100 kHz - optimized for “high dynamic” applications
- Completely non-contact design for unlimited life

Ideal for Precision Linear Displacement Measurements and Position Sensing

ADE's model 6810 single channel capacitance gauging module is a high resolution distance measurement system, ideal for measurement ranges up to 2 millimeters. When combined with one of ADE's non-contact 6000 series capacitance sensors, the 6810 provides measurement resolution down to the sub-nanometer level. The 6810 features user selectable measurement bandwidth up to 100 kHz, and is optimized for "high dynamic" applications such as measuring axial and radial runout of high speed air bearing spindles, precision stages or fluid dynamic bearing motors.

Advanced Distance Measurement Technology

The 6810 is based upon ADE's patented ultra-low noise capacitance sensing technology. Capacitive sensing is the most precise means of electrically measuring linear displacement, providing resolution equivalent to a laser interferometer at a fraction of the cost. The 6810 can be used with any conductive target material, and special sensors are available for non-conductive targets such as glass or ceramic. Target material or target reflectivity has no effect on measurement accuracy. The 6810's advanced capacitance sensing circuitry provides precise displacement measurements even in applications with poorly grounded targets.

Standard Analog Output

The 6810 features an industry standard +/- 10 volt analog output, available through a convenient BNC connector on the front panel for connection to an oscilloscope, and through a rear panel connector for interface to an A/D card. A convenient output voltage meter and LED limit indicators are provided on the front panel of the 6810 for easy set up.

Features

High resolution, down to sub-nanometer level - 0.25 nanometer rms @ 5 kHz over 50 micrometer measurement range

User selectable measurement bandwidth - 1 kHz, 5 kHz, 20 kHz, 100 kHz

Measurement ranges from 10 micrometers up to 2 millimeters

Industry standard +/- 10 volt analog output

Certified, NIST traceable calibration accuracy - calibration certificate supplied with every unit

Extremely compact, includes ADE isolated Low Noise Power Supply

Also available in 3U Eurocard format

Compatible with ADE 6000 series sensors, available in a variety of sizes

Applications

Axial and radial runout measurement of high speed mechanisms including:
- Hard Disk Drive motors
- Air bearing spindles
- Machine tool spindles

Precision stage straightness, flatness and vibration measurement

Fast Tool Servo

Machine vibration measurement

Precision bearing measurement

Linear positioning sensing and servo feedback

Nanopositioning system feedback

ADE TECHNOLOGIES

Technical Specifications

Item	Specification
Description	Single channel capacitance gauging module for linear displacement measurement
Measurement Resolution	See table below, depends upon sensor size, bandwidth and measurement range
Standard Measurement Ranges	± 25 μm, ± 50 μm, ± 100 μm, ± 250 μm (calibration ranges from 10 μm up to 2 mm available)
Analog Output	± 10 volts full scale, single ended and differential (options - ± 5 volts, 0 - 10 volts)
Sensor Input	ADE 6000 series probes and sensors
Measurement Bandwidth (@ -3 dB)	1 kHz, 5 kHz, 20kHz, 100 KHz (jumper selectable)
Linearity	0.25% over full scale range
Stability	200 ppm/ºC
Target Material	Any conductive material (sensors for non-conductive materials such as glass or ceramic also available)
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 50ºC
Operating Humitity	< 85% RH, non-condensing
Power Requirements	90 to 240 VAC, 50/60 Hz
Slze	175 mm (L) x 110 mm (W) x 40 mm (H)
Weight	0.5 kg, power supply is 0.8 kg

Measurement Resolution

Typical measurement resolution in nanometers, r.m.s., by filter setting

Probe Model	Sensor Diameter	Measurement Range	1 kHz	5 kHz	20 kHz	100 kHz
6504-01	0.5 mm	± 25 μm	0.25 nm	0.25 nm	0.45 nm	1.00 nm
6504-01	0.5 mm	± 50 μm	0.35 nm	0.50 nm	1.00 nm	5.00 nm
6501	1.0 mm	± 100 μm	0.50 nm	0.80 nm	1.15 nm	5.00 nm
6501	1.0 mm	± 250 μm	2.75 nm	4.75 nm	12.00 nm	35.00 nm

Note - Probe to target standoff at center of range is equal to total measurement range

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