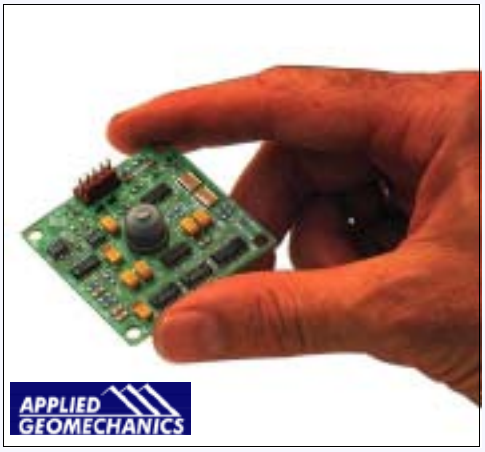
Biaxial Clinometer

Model 2711-AG-900 Series

FEATURES

- ***Measures rotation in two orthogonal vertical planes***
- ***Detailed 21-point calibrations supplied for each axis***
- ***No mechanical moving parts to break or wear out***
- ***Optional temperature sensor***



General

The dual-axis Applied Geomechanics Model 900 is an inexpensive, gravity-referenced clinometer (tiltmeter) with wide dynamic range. Its small size and high precision make it a versatile choice for many measurement and control applications.

Model 900 measures angular position with respect to the most stable of all external references: the vertical gravity vector. Its advanced design assures high repeatability over a standard 40 degree measurement span (90 degree optional span).

Model 900 also features a wide input voltage range and signal conditioned analog outputs.

Just install Model 900 and connect it to your voltmeter or data acquisition system. You are ready to begin your measurements!

Description

Model 900 is a low-cost biaxial clinometer for a wide variety of industrial and scientific applications. A precision electrolytic transducer comprises the sensing element. The clinometer consists of a printed circuit assembly with four mounting holes. It is designed for easy mounting or repackaging in customer products or systems. Linear and polynomial calibrations for both tilt axes are provided with each clinometer. A temperature sensor, mounted in the circuit, is available as an option.

The sensing element within Model 900 is a glass vial half-filled with a conductive liquid. When the sensor is level, fluid covers five internal electrodes to equal depths. When the sensor tilts, the depth of fluid on each electrode changes, altering the electrical resistance between matched pairs of electrodes. Model 900's surface-mount electronics measure these changes, converting them to DC outputs proportional to the tilt angle.

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FOR FURTHER INFORMATION
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Specifications

OUTPUT CHANNELS	Two orthogonal tilt angles, ± VDC per channel (single ended); one temperature channel(optional), -0.4 to +1.0 VDC
ANGULAR RANGE	Standard: ±20 degrees (40 deg. span). Optional: ±45 degrees (90 degrees span)
RESOLUTION	0.01 degree of arc
REPEATABILITY	<0.02 degree of arc at constant temperature
HYSTERESIS	<0.02 degree of arc
LINEARITY	±20 degree unit: 1% over half span; 2.5% over full span. Use of factory supplied polynomials can improve linearity by factor of 10
TEMPERATURE COEF.	Span: -0.05% of voltage reading per ^{0}C typical
SCALE FACTORS	Tilt (±20 degree unit): 10 degrees/volt ±20%. Temperature: 0.1ºC/mV, ±0.75º accuracy
TIME CONSTANT	*T*0.25 second; output is proportional to $1 - e^{-t/T} - 0.001e^{-t/5000T}$ where t is time in seconds
NATURAL FREQUENCY	10 Hz
OUTPUT IMPEDANCE	270 ohms, short circuit protected
POWER REQUIREMENTS	+8 to +24 VDC @ 7 mA, 250 mV peak-to-peak ripple max., reverse polarity protected
ENVIRONMENTAL	-10º to +50ºC operating and storage, 0-80% humidity
SIZE & WEIGHT	2 x 2 x 0.64 inches (51x51x17 mm), 0.5 oz (15 grams); 18 inch (450 mm) cable with connector
MOUNTING	Four 0.125 inch (3.2 mm) no.4 mounting holes, one in each corner
MATERIALS	Liquid filled glass sensor, fibreglass PC board, unpotted assembly

Angle Conversion Chart

	radians	degrees	Arc minutes	Arc seconds	Micro radians
radians	1	57.30	3438	206265	10^6
degrees	0.01745	1	60	3600	17453
Arc minutes	2.909×10^{-4}	0.01667	1	30	290.9
Arc seconds	4.848×10^{-6}	2.778×10^{-4}	0.01667	1	4.848
μ radians	10^{-6}	5.730×10^{-5}	3.438×10^{-3}	0.2063	1

Ordering Information

Model 900	±20° range
Model 900T	Adds temperature sensor
Model 900-45	±45° range
Model 900-45T	Adds temperature sensor

Due to on-going design improvements and reviews, we reserve the right to amend product and specifications without prior notice

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