

Model 520 Geodetic Platform Tiltmeter

(Biaxial)

Our top performer, Model 520 is designed for projects demanding the maximum in resolution and stability. Applications include leveling and alignment of antennae, measurement of earth tides and crustal deformation,

volcano monitoring and telescope pointing. With resolution smaller than 10 nanoradians, Model 520 is excellent for use in all static applications, or as a sensitive low-frequency accelerometer.



Model 520 Geodetic Platform Tiltmeter

MEASURE NANORADIANS WITH UNRIVALED EASE AND PRECISION

Model 520 uses the vertical gravity vector as its stable reference. Electrolytic tilt sensors measure rotations in two orthogonal vertical planes. The sensors can be described as electronic spirit levels, each containing a bubble in a conductive liquid. As the instrument tilts, platinum electrodes in the sensor walls move into or out of the bubble and the area covered by liquid changes. This effect changes the electrical resistance between opposing electrodes so

that the sensor behaves as a precision voltage divider, capable of detecting even the smallest rotational movements. Hand assembly and use of the highest-quality, low-noise components result in unrivaled sensitivity, stability and dynamic range.



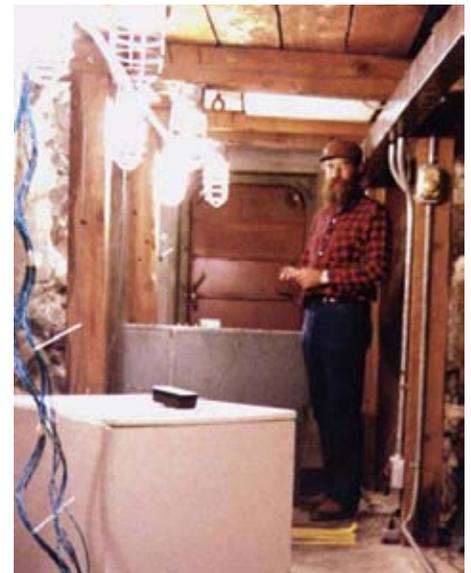
Low-noise components are used throughout

PRACTICAL AND PROVEN

Model 520 is not only sensitive, it is field-proven and simple to use. Each system consists of the tiltmeter itself, a rugged fiberglass switch box and a 3-meter interconnect cable. Leveling and user calibration of the tiltmeter are performed with built-in micrometer or worm gear legs. Three different scale factors and two low-pass Butterworth filters are user-selected with switches in the switch box.

Connections to external power and recorders are made via a highly reliable 10-position terminal strip. The tiltmeter, cable and switch box are sealed throughout for operation in damp environments.

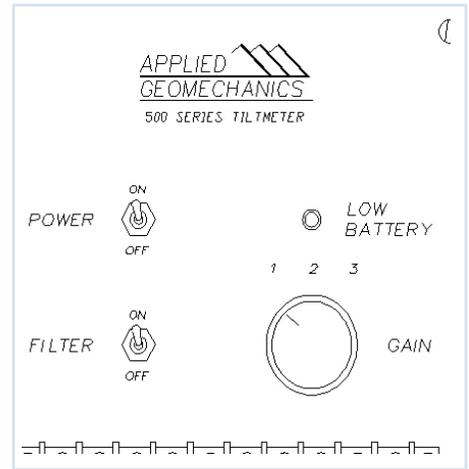
For the ultimate in quality and unequalled performance, invest in the most sensitive production tiltmeter in the world today - a Model 520 Geodetic Platform Tiltmeter.



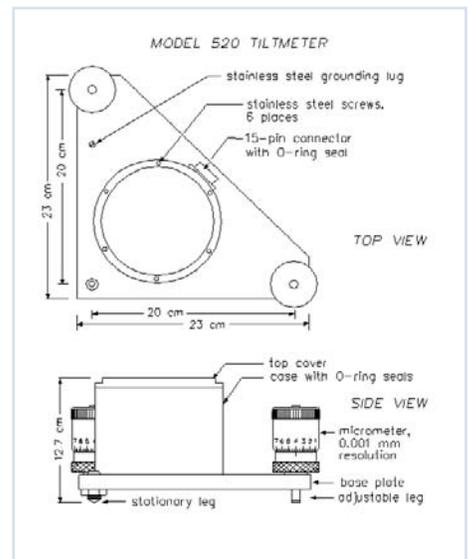
Underground tiltmeter testing vault

Model 520 Geodetic Platform Tiltmeter

RESOLUTION	< 10 nanoradians
SCALE FACTORS	Scale factors are selected with "GAIN" rotary switch in the switch box. Single-ended scale factors are 5, 50 and 500 mV/ μ radian (200, 20 and 2 μ radian/volt) in gain settings "1", "2" and "3" respectively. Differential scale factors are 10, 100 and 1000 mV/ μ radian (100, 10 and 1 μ radian/volt).
OUTPUT VOLTAGE	Mechanically adjustable through ± 7 degrees. Operating tilt range is approximately ± 1200 microradians after leveling at gain setting "1".
TILT RANGE	± 7 VDC single-ended (± 14 VDC differential) in gain setting "1", ± 8 VDC single-ended (± 16 VDC differential) in gain settings "2" and "3". Single-ended and differential outputs are both provided.
OUTPUT FILTERS	Two 2-pole Butterworth filters. Time constants = 0.1 second (filter "OFF") and 10 seconds (filter "ON"). Filter is selected with toggle switch in switch box.
TEMPERATURE COEFFICIENT	Scale Factor: $K_s = +0.05\%/^{\circ}\text{C}$ typical, Zero: $K_z = 2 \mu\text{radian}/^{\circ}\text{C}$ typical
OUTPUT IMPEDANCE	270 ohms, short circuit and surge protected
TEMPERATURE OUTPUT	10 mV/ $^{\circ}\text{C}$ (single-ended only), 0 mV = 0°C , -40° to $+100^{\circ}\text{C}$, $\pm 0.75^{\circ}\text{C}$ accuracy
POWER REQUIREMENTS	+11 to +15 VDC and -11 to -15 VDC @ +15 mA and -7 mA typical; 250 mV peak-to-peak ripple max. Reverse polarity and surge protected. Low battery indicator on switch plate.
CONNECTIONS	15-pin quarter-turn connectors on tiltmeter and switch box, connected by 3m (10 ft) multi-conductor cable. Power and signal connections made via terminal strip in switch box.
LEVELING	Performed with two micrometers (0.001 mm resolution) or two worm gears
ENVIRONMENTAL	-25 to +70 $^{\circ}\text{C}$ operational, -30 to +100 $^{\circ}\text{C}$ storage; 0 to 100% humidity, nonsubmersible (NEMA 4X / IP65 rating)
SIZE & WEIGHT	Tiltmeter: 23 x 23 x 12.9 cm (9.1 x 9.1 x 5.0 inches), 4.5 kg (10 lb); Switch box: 23 x 20 x 14 cm (9 x 8 x 5.5 inches), 1.8 kg (4 lb)
MATERIALS	Tiltmeter: anodized 6061-T6 aluminum; Switch box: gray fiberglass



Model 520 Switch plate



Model 520 Tiltmeter

ORDER CODES:

- 90520-01 Model 520 with worm gear legs (invar). Includes 3m cable & switch box
- 90520-02 Model 520 with micrometer legs (stainless steel). Includes 3m cable & switch box.

USEFUL ACCESSORIES:

- 79009 Additional cable (specify length)