

The Tiltometer



The Tiltometer is the first product designed specifically for measuring the tilt (verticality) of masts.

It is designed to operate tied on a mast, sending out angle information as analog voltage outputs. The angle information will either be recorded on a data logger or will be monitored via the RS232 port, or both. It is compatible with most brands of data loggers.

Used with a GSM modem, it can deliver on-line data or transmit an SMS message when Elevation angle (tilt) exceeds a preset level.

Although it is designed for vertical masts, it is also well suited for other 2-axis monitoring applications.



What is a Tiltometer?

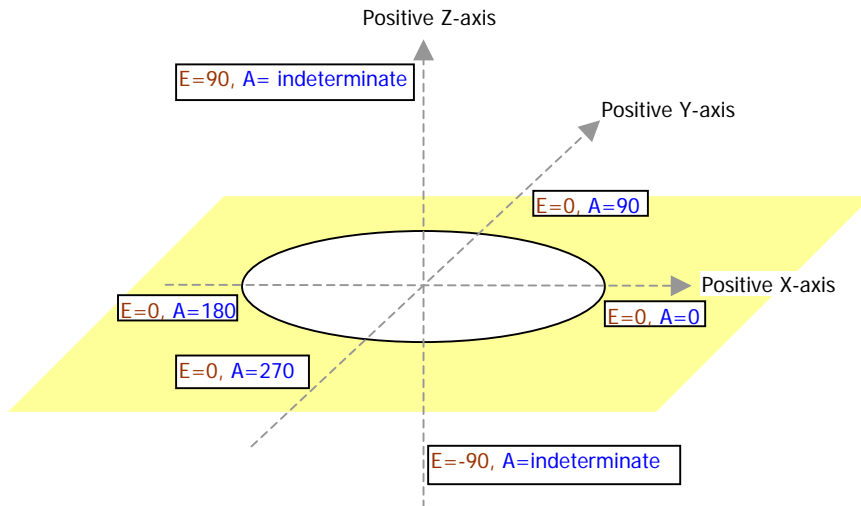
The Tiltometer contains gravity sensors and a microprocessor that converts tilt information to full 3-D polar angle coordinates. It outputs mast verticality information in voltage, which corresponds to polar coordinates, i.e. Elevation and Azimuth (see diagram on next page).

What can you do with the Tiltometer?

- Monitor the mast slope and deformation at real time.
- Examine the mast slope and deformation history over time.
- Relate wind speed to mast slope and deformation.
- Program visits to the site for guy wire tensioning.
- Prevent mast fall and subsequent expenses.
- Automatically transmit an SMS message on crossing a predetermined mast slope.
- Plot and analyze dynamic mast behavior.
- Compare mast strength and quality.
- Examine mechanical effect of ice covering the mast during winter.
- Assure higher reliability of wind-measured data.
- Warn for malicious actions on mast.
- Validate data logger measurements.

Who needs a Tiltometer?

Companies and individuals who receive data from measurement masts will benefit by using this product. You may use more than one Tiltometer in tall masts, in various heights.



TECHNICAL SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

Elevation Output.

- Range: 0-2.5 volts or 0-5 volts, representing -90 to $+90$ degrees.
- Resolution: 0,7 degree.
- Accuracy: better than ± 2 degrees.
- Output Update Rate: 2 Hz.

Azimuth Output.

- Range: 0-2.5 volts or 0-5 volts, representing 0 to $+360$ degrees.
- Resolution: 1,4 degrees.
- Accuracy: better than ± 4 degrees.
- Output update rate: 2 Hz.

RS232 connection.

- 9600 baud, 8 bits, no parity.
- Optional hardware Handshake control

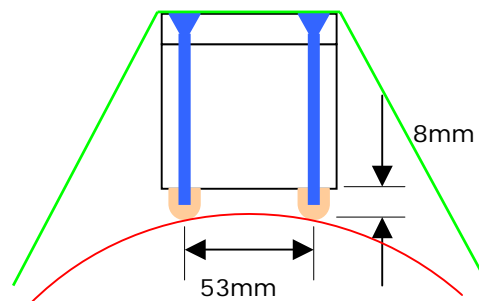
Step response.

- 8 seconds (from any value to final value).

Power Supply.

- 6 to 15 VDC supply @ 8 mA (typical).

*Horizontal Section.
Mast is colored red.
Clamp is colored green.*



MECHANICAL CHARACTERISTICS

- Box: Aluminium IP65.
- Dimensions: 115 x 65 x 30 mm.
- Mounting: directly on wind masts with diameters between 70 and 150mm, using clamp (see picture).
- I/O Connections: On internal 10-position screw terminal.

ENVIRONMENTAL CHARACTERISTICS

- Operating Temperature: -25 to $+75$ °C.
- Protection: IP65.



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