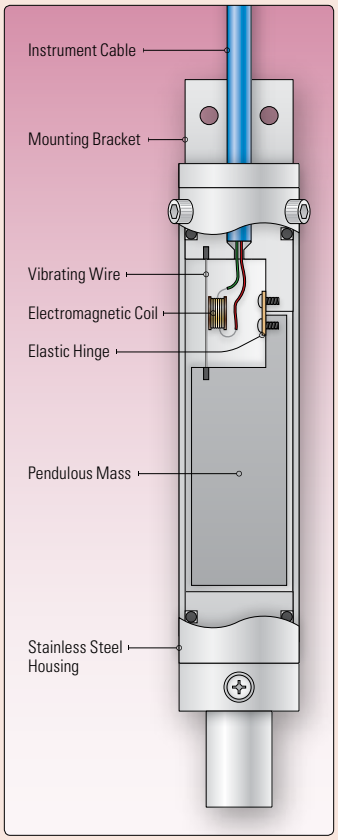
Vibrating Wire Tiltmeter

Applications

The Model 6350 Vibrating Wire Tiltmeter is designed to measure tilt in structures including…

- **Buildings**
- **Dams**
- **Embankments**
- **Slopes**
- **Excavation walls**
- **Open pits**



Vibrating wire tilt sensor construction.

Model 6350 Vibrating Wire Tiltmeter shown with mounting bracket assembly.

Operating Principle

The Model 6350 Tiltmeter is designed for attachment to structures, on either a vertical or horizontal surface by means of an adjustable bracket, and for the subsequent measurement of any tilting that may occur.

When at rest, in a vertical configuration, a pendulous mass inside the sensor, under the force of gravity, attempts to swing beneath the elastic hinge on which it is supported but is restrained by the vibrating wire. As the tilt increases or decreases the mass attempts to rotate beneath the hinge point and the tension in the vibrating wire changes, altering its vibrational frequency. This frequency is measured using the Model GK-404 or GK-405 Readout, or the Micro-1000 Datalogger, and is then converted into an angular displacement by means of calibration constants supplied with the sensor.

Advantages and Limitations

Vibrating wire tiltmeters combine a high range with high sensitivity, and very high calibration accuracy. They have excellent long-term stability and their temperature dependence is close to zero.

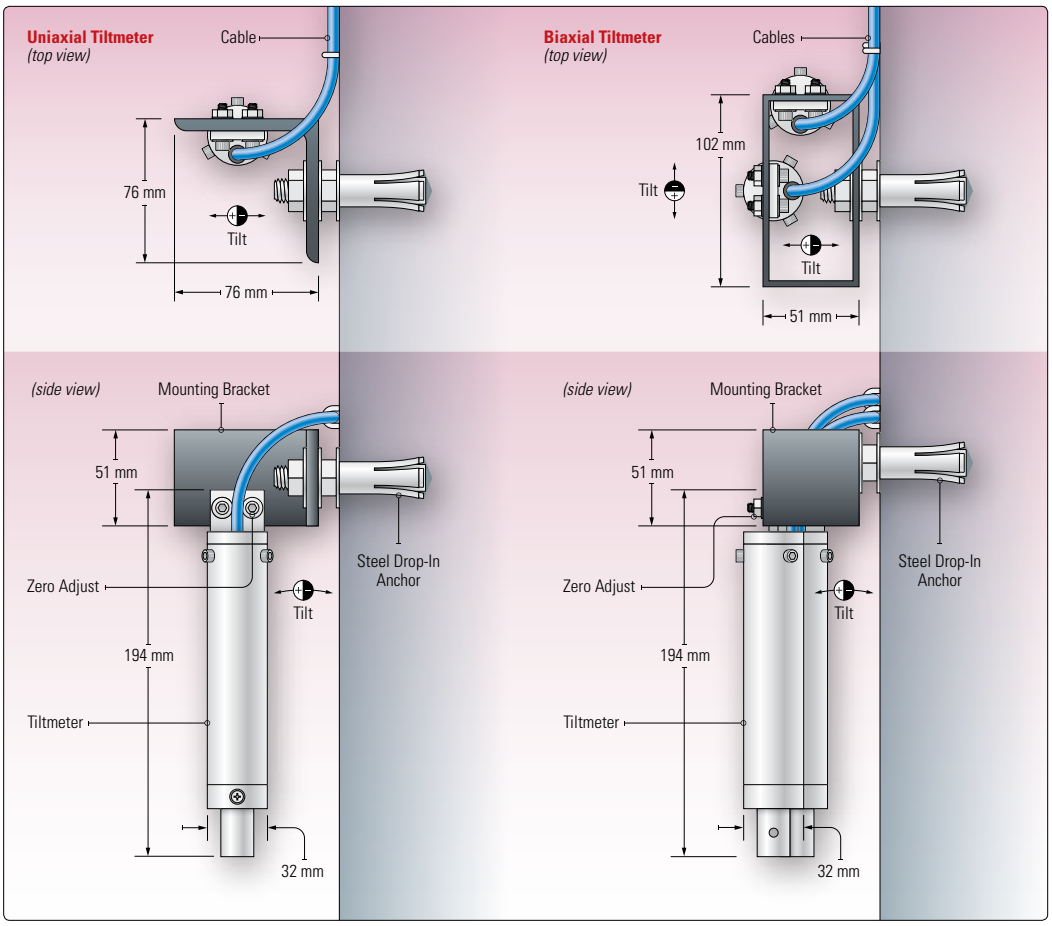
The sensor output is a frequency, which can be transmitted over long cables, and renders the sensors less susceptible to the effects of moisture intrusion.

Biaxial measurements can be achieved by mounting the sensors in pairs, each member oriented at 90 degrees to the other.

Damping fluid may be added to the sensor to counteract the effect of any vibrations of the structure.

In-built shock absorbers protect the sensor from shock loading.

Model 6350 installation using a custom mounting bracket designed for concrete face rock fill dam applications (shown with protective cover removed).



Installation details and dimensions for the Model 6350 Uniaxial (left) and Biaxial versions (right).

System Components

The basic transducer is mounted inside a stainless steel housing equipped with a lug for mounting the sensor to an adjustable bracket. The bracket is bolted to the structure using hardware supplied with the sensor, which includes a 3/8 inch drop-in anchor. Special biaxial mounting brackets and protective enclosures are also available.

A thermistor mounted inside the sensor housing permits the measurement of temperatures.

Readout is accomplished using a Model GK-404 or GK-405 Readout.

Technical Specifications

Standard Range	±10°
Resolution	±0.05 mm/m (8 arc seconds)
Accuracy[1]	±0.1% F.S.
Temperature Range[2]	–20°C to +80°C
Shock Survival	50 g
Waterproof	Tested to 3 MPa
Length × Diameter[3]	194 × 32 mm

[1]*Established under laboratory conditions.*
[2]*Other ranges available on request.*
[3]*Transducer only.*

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