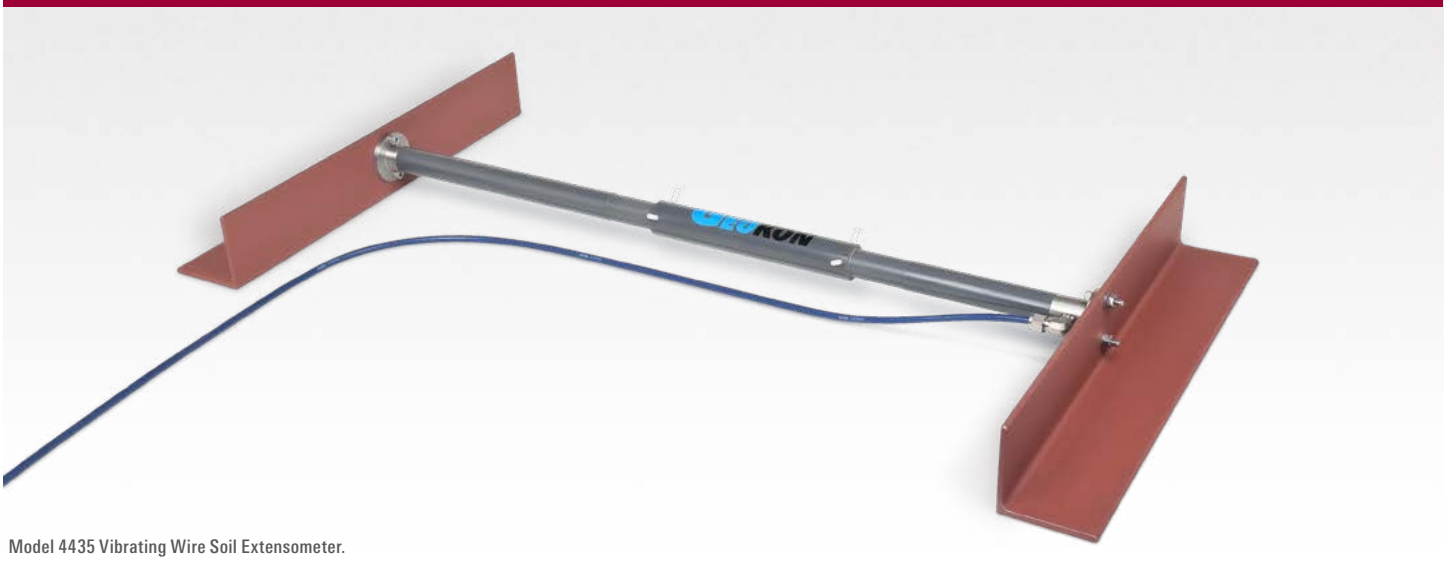
VIBRATING WIRE SOIL EXTENSOMETER

GEOKON®

MODEL 4435



Model 4435 Vibrating Wire Soil Extensometer.

APPLICATIONS

The 4435 Soil Extensometer is designed to measure:

- Horizontal strains in earthfill and rockfill dams
- Deformation in roadways, embankments, and surcharges

GeoNet Vibrating Wire Data Logger.

OPERATING PRINCIPLE

The Model 4435 Vibrating Wire Soil Extensometer is designed to be installed, in series, to measure horizontal strain in earthfill or rockfill dams. Versions are also available for the measurement of strains in boreholes and RCC dams (please see the Model 4430 data sheet).

The Soil Extensometer is designed to be installed in trenches, excavated in the surface of the fill of an embankment dam, to measure lateral deformation as the dam is constructed, and to monitor continued deformations during operation of the dam.

ADVANTAGES & LIMITATIONS

The Model 4435 Vibrating Wire Soil Extensometer has flanges on either end which enable a series of extensometers to be bolted together forming long strings of sensors so that complete profiles of deformation can be monitored.

Each extensometer contains a Model 4450 Vibrating Wire Displacement Transducer which converts extensions between flanges into an electrical signal. The vibrating wire element is subject to increasing tensions as the flanges separate. This causes the fundamental frequency of vibration of the element to increase. The frequency is transmitted through long cables to the readout location where a vibrating wire readout or datalogger measures the frequency and displays and/or stores the values of Hz^2. These values when multiplied by a calibration constant yield the displacement of the flanges in millimeters or inches.

Displacement transducers can be customized to meet your needs. Our staff will work with you throughout the process. Common customizations include waterproofing, high-temperature operation, corrosion resistance, specialty cables, etc.

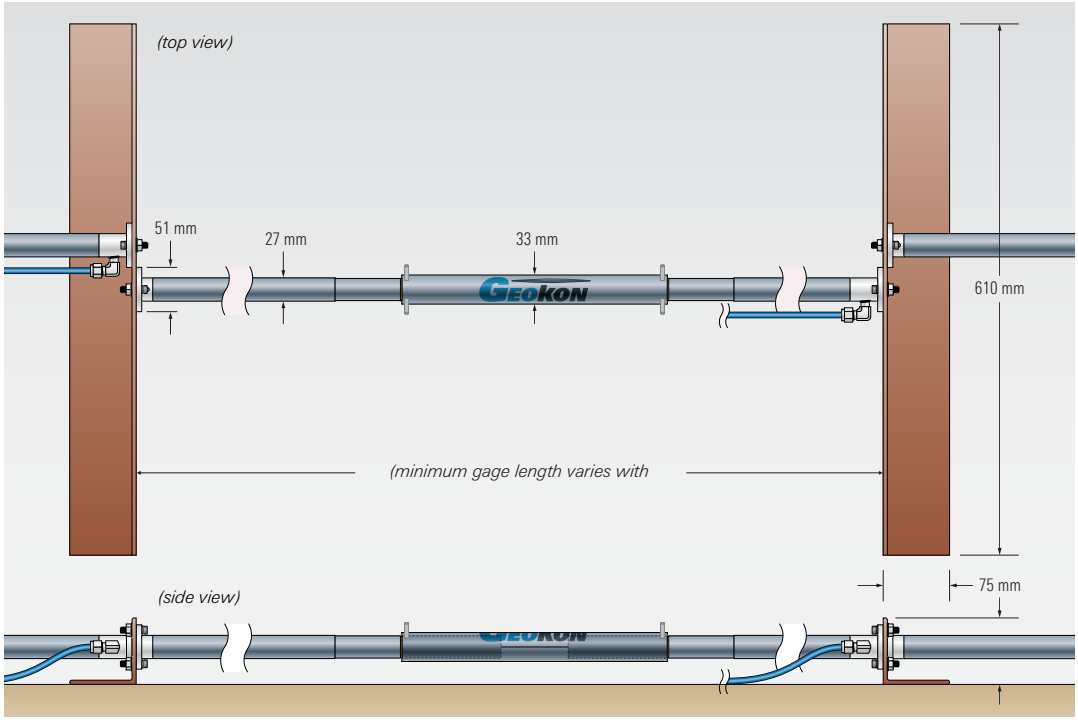
SYSTEM COMPONENTS

The vibrating wire sensor is housed inside a protective PVC pipe. A second protective PVC pipe of larger diameter telescopes over the housing and the sliding joint is sealed with 'O'-rings (steel or stainless steel pipes, instead of PVC pipes, can be used in rockfill dams for added robustness).

One end of the vibrating wire sensor is connected to one flange and the other end is connected to the other flange by a stainless steel rod inside the protective PVC pipes. The gauge length of the 4435 is specified by the customer at the time of order. Gauge lengths can be adjusted in the field by the addition of PVC pipe sections and additional rods. The actual range of movement between flanges, which can be accommodated, depends on the choice of transducer range. Standard ranges are 25-300 mm. Other ranges are available on request.

Installation of Model 4435 sensors.

Attaching the end flange.



Model 4435 dimensions.

TECHNICAL SPECIFICATIONS

Standard Ranges[1]	25, 50, 100, 150, 300 mm
Resolution[2]	0.025% F.S.
Accuracy[3]	±0.1% F.S.
Nonlinearity	< 0.5% F.S.
Temperature Range[1]	–20 °C to +80 °C
Min. Gauge Length | Range[4]	341 mm | 25 mm 421 mm | 50 mm 575 mm | 100 mm 670 mm | 150 mm 890 mm | 200 mm 930 mm | 250 mm 1210 mm | 300 mm
Pipe Diameter	27 mm
Slip Coupling Diameter	33 mm
Flange Dimensions (L × W × H)	610 × 75 × 75 mm

[1] Other ranges available on request.
[2] Resolution depends on readout equipment.
[3] Transducer accuracy established under laboratory conditions.
[4] With transducer at midrange.

COMPATIBLE READOUTS AND DATA LOGGERS

GK-404: Handheld Readout
GK-406: Vibrating Wire Analyzer

8600 Series: Multi-Channel Data Loggers
8910 Series: GeoNet Wireless LoRa® Data Acquisition System

8920/8930/8950 Series: GeoNet Cellular and Wi-Fi Network Data Loggers
8940 Series: GeoNet Data Loggers

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