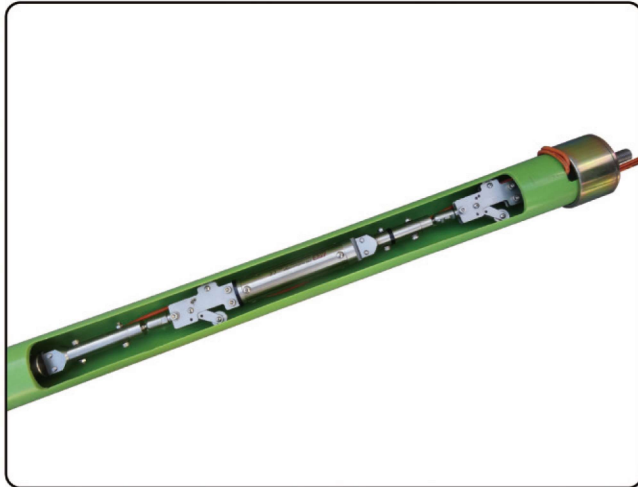


VW vertical multi-point inclinometers



Description

VW vertical multi-point inclinometers are mounted on wheel assemblies connected by extension tube.

The guide wheels on the sensor keep it centered in the grooved casing that is installed in a vertical borehole that passes through a suspected zone of movement and inclinometer casings.

Advantage of VW sensor is that unmanned automated operation is possible using data acquisition system, could be installed in single axis with gage length of 1~3 meter when displacement direction is expected or in biaxial when displacement direction is not expected.

The VW vertical multi-point inclinometers are available in both uniaxial and biaxial versions.

When ground behaves, casing is caused a change in the inclination of the sensors in diameter $\varnothing 59\text{mm}$ casings.

The VW vertical multi-point inclinometers can be connected up to 60 sensors. The sensor outputs frequency signal which changed by lateral movement in the ground.

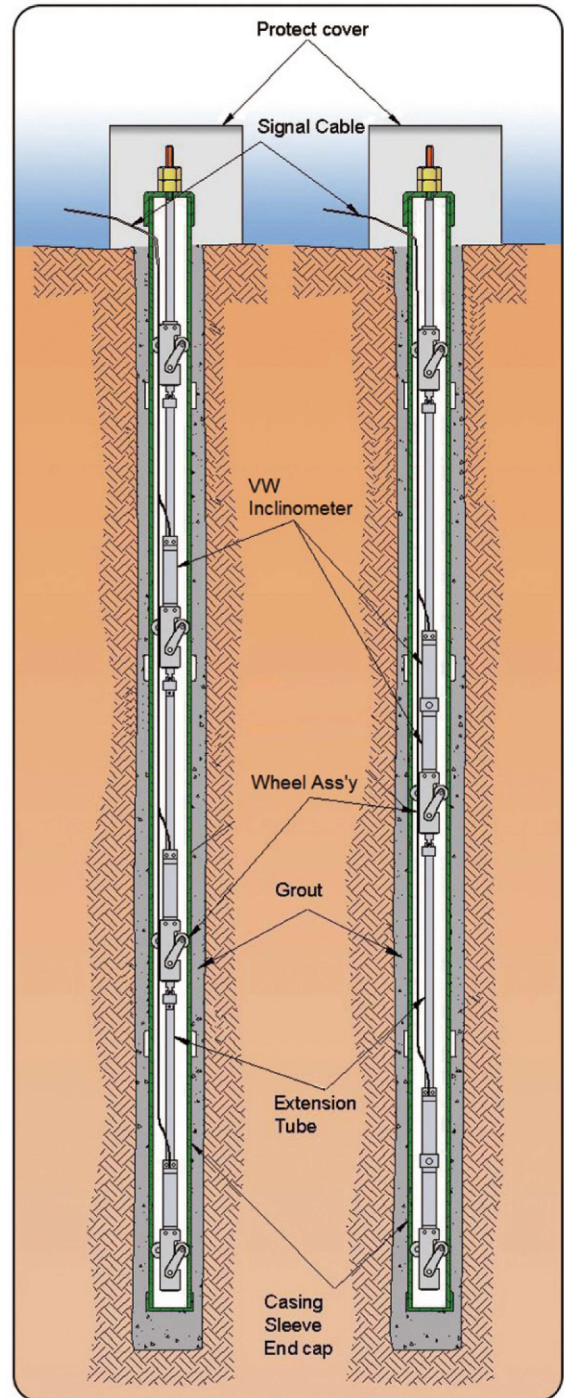
Inside transducer have a lightning protection to prevent the sensor from electrical shock and a temperature device to compensate for temperature variations in the sensors.

Applications

- Measurement of ground movements under tunnel construction and excavation.
- Measurement of movements in the retaining walls and embankments.
- Measurement of lateral movements in unstable ground such as dams, around open excavations, embankments and for landslide monitoring.
- Measurement of displacement at pile

Features

- Easy installation and use
- Stability and confidence with which it can operated in severe environment
- Not affected by cable length, so reproducibility and responsibility is very excellent.
- Built-in temperature device
- Selection of anticorrosive and rustproof material
- Automated measurement is possible



[Uniaxial]

[Biaxial]

[Installation of VW vertical multi-point inclinometer]

VW vertical multi-point inclinometers

Specification

Model	1430U (Uniaxial)	1430B (Biaxial)
Sensor element	Vibrating wire sensor	
Range	±5°	±10°
Resolution	0.025% FSR (5 arc seconds)	0.025% FSR (10 arc seconds)
Accuracy	±0.1% FSR	
Nonlinearity	±0.5% FSR	
Thermal zero shift	Less than ±0.001% FSR /°C	
Operating temperature	-40~80°C	
Built-in temperature device	Thermistor (3kΩ)	
Temperature device range	-40~105°C	
Temperature device accuracy	±0.5°C	
Gage length	One of standard 1, 2, 3 m	
Maximum sensor volume	Inclinometer sensor total 60ea / ID Ø59mm casing	
Waterproof	200m H ₂ O	
Material	Stainless steel. High grade epoxy resin potting	
Weight	① Sensor 0.7kg ② Guide wheel 0.4kg ③ Extension tube 0.7kg/m ④ Union 0.15kg	
Signal cable	0.24mm ² × 4 core shielded PVC sheath cable (Ø3~Ø4.5mm)	
Accessories	① Guide wheel ② Extension tube ③ Union ④ Top cover ⑤ Connection part	

The readout

It is connected to the system such as the VW readout units, data loggers to be data logging and data acquisition system to monitor readings. It is compatible with other company's readout unit.

- ACE-800 (VW readout)
- ACE-1000 (VW data recorder)
- ACE-1100 series (VW mini logger)
- ADL-16V (VW data logger)
- ADL-200A (Smart logger)
- VL Module (Smart LoRa system)

Recommendation

- In installation inclinometer casing in boreholes where large lateral movements are expected, it is good to use telescopic section, preventing against damaging the sensor.
- When there are two many volumes to set, you can measure tendency or volume of displacement easily and quickly by using analysis program (SF-01) for horizontal displacement.
- The case where the installation depth will be above 40m or the shearing zone is many, it is safer to use the ID Ø 73mm inclinometer casing.

Ordering information

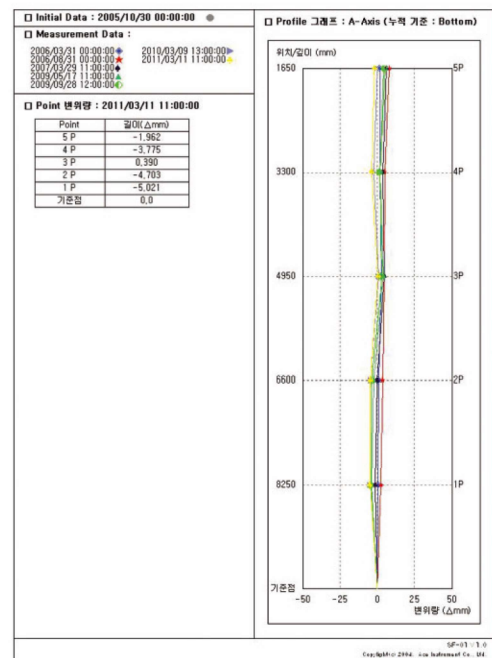
- Sensor assembly (uniaxial or biaxial)
- Keeping readout unit
- Depth of installation and cable length
- System spec. / standard point of managing
- Installation site

Ancillary equipments

- Universal terminal box (model 7012/7024)
- Accessories for installation of casing
- Protective cover (PC-50)
- Analysis program for horizontal displacement (SF-01)

Limitation

The VW vertical multi-point inclinometer allows sensor to sensor connections for gage lengths up to 3m, and connections for installation up to 60 sensors, if inside diameter Ø59mm casing is used.



[SF-01 operating software]