

General Handling Instructions

1. Carefully handling

The geotechnical instrumentations are sensitive, thus zero shift may be changed by dropping and giving shock.

2. Keeping of calibration sheets

The geotechnical instruments are supplied with calibration sheet, recorded atmospheric pressure, calibration temperature, calibration data and conversion factor and color in a signal cable. The operator must keep them until construction complete.

3. Being practiced by the specialist

The measuring project should be practiced by the specialist, Knowing well enough of geotechnical construction and the principle of instrumentations, to avoid mistake in selection of instrumentations and procedures for installation that will be impossible of long term monitoring.

4. Earthing the shield wire of signal cables

The sensor output is typically feeble, thus it may be affected by electro magnetic induction, during operation of equipments and electric charge, and in operation of the electric welder, generator, motor, antenna in geotechnical field should be earth the shield wire into ground.

5. Carefully slicing of signal cables

Expansion of signal cables from VW sensors that output frequency signal is matter little. On the other hand, expansion of signal cables from electrical sensors that output direct current in voltage, should be terminated by splice kits. Readings from them also are compensated by changes in resistance over signal cables one meters long as expansion length, because they utilize change in resistance from a transducer and are affected by cable length.

6. Covering protective tubes for signal cables

There are many causes in cutting of signal cables large displacement in dams, soft ground, concrete structures, in installation on ground, running of heavy construction equipments, frequent shifting constructions. For these reason, signal cables should be covered with protective tubes.

7. Installation of the amplifier for sensors that output direct current

Sensors that output direct current can usually transmit signal within 300 meters. Infield that distance between junction boxes or terminal boxes is far away, the amplifier should be installed to compensate voltage dropping.

8. Atmospheric pressure compensation

In use of a pressure gage as a transducer, it is sensitive to atmospheric pressure, so in field that atmospheric pressure variation is frequent, its readings is corrected to sea lever.

9. Composition of lightning arrester net

In mass civil construction such as dams, artificial lakes, sea, vast fields, valleys, instrumentations should be prevented by lightning arrester net. Over voltage exceeding input voltage may be an idle sensor.

10. Establishing a zero reading from pressure transducers

The filter is assembled to pressure gages as piezometers. In installation, they ensure de-airing so that is not air inside the filter, preventing error caused by remaining air. Moreover, You had better use Ceramics filters(1 μ m level) at an area which includes unsaturated soil or extreme water pressure between sections.

11. Selection of high precision Bearing plates for Load Cells

Load bearing surfaces above and below the cell must be flat, parallel and of sufficient strength to avoid significant distortion under load. Positioning and alignment of the cells is important to their reliable performance. In anchors installations, load cells should be installed with accurate cones and cone plates for expansion.

12. Compensating for temperature variations

The reading from VW sensors can vary with temperature variations because the vibrating wire has thermal zero shift. To take an accurate reading, measured data is compensated by thermal coefficient for VW sensor.

13. Installation of a Uninterrupted Power Supply in operation of Automatic Data Acquisition System

When automatic data acquisition system is used to monitor in civil construction, gathered power cables and overload by simultaneous using of many equipments can cause power failure and system breakdown. To prevent this trouble, uninterrupted power supply should be installed.

14. Be cautious of selecting the output device

Because companies which manufacture vibration sensors and output devices design sensors owing for accuracy, purpose and durability in the possibility range for measurement of 600~3,200Hz (if converted, 3600~10,240 10³Hz² or 1666~312 μ sec), when you alter unit change mode of the output device in this range, you have to unconditionally choose the high efficiency output device which can measure.