



STRESSMETER



INTRODUCTION:

The model SIS-5000-H & 5000-S Stress Capsule is designed to monitor total stresses in hard and soft rocks. For determination of in situ modulus of deformation, the Stress Meter may be used as an active pressure-meter probe.

Our Stress Meters incorporate vibrating wire sensor with the resonant frequency of vibration of a tensioned steel wire is proportional to the strain or tension in the wire. This fundamental relationship is utilized in a variety of configurations for the measurement of pressure. Vibrating wire sensors are well known for their long term stability. The design contributes to the outstanding features and performances over conventional Vibrating Wire Stress Capsule. The Stress Capsule offers:

- Unprecedented sensitivity
- Long term stability and reliability
- Robust and sturdy construction
- Slim-line design

FEATURES:

- Passive or combined passive/active cell for stress and modulus determination
- Accurate, highly sensitive and reliable
- Extremely stable for long term operations
- Frequency output for transmission over long distances
- In built Thermistor for temperature reading
- Suitable for remote reading, scanning and data logging
- Stainless steel construction
- Waterproof



Systel Instrumentation Services Pvt. Ltd



ISO 9001-2008 Certified

TYPICAL APPLICATION:

Mining applications for soft rock and hard rock
Use in nuclear waste storage

DESCRIPTION:

The Model SIS-5001-S Stress Capsule is suitable for use in soft rock and model SIS 5000-H Stress Capsule is for hard rock application. Stress Capsule can be used in the borehole diameter from 38mm to 42mm borehole size. It is composed of a hollow cylindrical body with a piano wire stretched across the diameter. Both ends are sealed and the body is electroplated to resist corrosion thus ensuring long-term stability in harsh environments. For excitation and reading purposes, a coil/magnet assembly and a thermistor are used and are connected to a 4 conductor electrical cable. A two part wedge/platen assembly completes the SIS-5000-H/5000-S Stress Capsule. Depending upon whether the installation is being made in hard or soft rock, there are two configuration options available in the wedge/platen assembly.

OPERATION:

Stress variations in the host medium will deform the Stress Meter changing the wire tension and consequently frequency. When a reading of the SIS-5000/5001 is taken, the readout unit generates plucking voltages at variable frequency in coil/magnet assembly, forcing the wire to vibrate. Changes in the frequency or period of vibration are correlated to stress changes.

A Readout Unit can accurately measure the frequency of the wire. The Stress Capsule is suitable for connection to data loggers for recording data in engineering units automatically at pre determined intervals. The thermistor mounted in the Stress Capsule enables simultaneous measurement of temperature. This allows any corrections to be made in the observed readings due to temperature changes.

INSTALLATION:

The Wedge/Platen assembly can be activated from the borehole collar either with a manual or hydraulic setting tool depending on the depth of installation. In the first case, depth of the order of 20 meters can be reached. The hydraulic system permits deeper installations reaching 50 meters.

Although the Stress Capsule is mostly installed in boreholes, it can be used advantageously as a load cell for load monitoring within a metallic structure.



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SPECIFICATION

MODEL SIS-5001-S (Soft Rock)

MODEL SIS-5000-H (Hard Rock)

Range in Compression : 70 MPa

Range in Tension : 3 MPa

Resolution : 14 to 70 KPa

Temperature Range : 20°C to +60°C

Borehole Diameter : 37 to 40 mm

ACCESSORIES:

- Installation Tools (Manual)
- Setting rod extension
- Optional Wedge & Patten
- Readout Unit