

Borehole Extensometer – EXCEXX-100

Borehole extensometers are instruments which record the rock mass displacements at certain points (anchor). They are installed in a borehole and are fixed to the ground with different methods, either by grouting or mechanically by spider anchors. Stability and movement behavior of structures in rock can be determined by these instruments. A typical extensometer consists of a reference head, one or more anchors and rods by which the displacement of each anchor is transferred to the reference head. These rods are usually made out of fiberglass which is light, strong and elastic. Sometimes, steel rods are used for very low displacement cases. A PE pipe covers all the rods and de-bonds them from the grouting agent. When the soil or rock deforms, the distance between anchors change and these are recorded relative to the reference head. By using extensometers, one can accurately determine distribution of rock mass displacement along the length of extensometer and calculate the magnitude and rate of displacements. Reading displacements can be either manually or remotely by attaching an electrical head with linear displacement sensors.

Application

Some of the applications of this instrument are :

- Measurement of deformation around tunnels.
- Monitoring rock displacement in open pit mines.
- Stability assessment in layered formations.
- Subsidence of surface buildings adjacent to open excavations.
- Settlement of ground under plate loading and Jacking tests.
- All kinds of mine stability studies.

Operation and Installation

Groutable extensometers are placed in a borehole either in an upward or downward direction. The hole is washed and dried prior to installation. Grout and vent tubes are attached to the instrument then the whole package is inserted to the hole. The head is connected and sealed to the excavation surface by cement mortar. Once the mortar is set, grouting commences from the grout hose until fresh grout exits from the vent hose. After grout has set, the readings begin and this is repeated in the followings days.

Technical Spec	
Extensometer diameter	32/75 mm
Extensometer length	Up to 40m
Number of anchor points	Up to 14 anchors
Anchor Material	Brass / Aluminum / Steel
Rod material	Fiberglass / Steel
Electrical head assembly	
Sensor type	Potentiometer/ VW
Displacement range	100mm
Resolution	0.01 mm



Order information

EXCEXX-100-AA-B-CCC-D-E
 XX: Number of anchor points
 AA: Extensometer length
 B: Manual reading (M) or electrical head (E)
 CCC: Borehole diameter in mm
 D: Anchor Material (Brass (B) or Aluminum (A))
 E: Rod material (Fiberglass (F) or Steel (S))