



APPLICATIONS

The RSS-X series of acousto elastic sensors is used to measure variations in compressive stress and load, which allows stress evaluation when the material's modulus of elasticity is unknown or anisotropic and inhomogeneous. Typical examples are concretes and drill holes in the rocks, where these instruments can be used include:

- Mining
- Tunnel supports
- Deformations of pillars
- Dams and nuclear power plants
- Structural members of buildings and bridges
- Piles and caissons
- Movements and landslides

DESCRIPTION

The sensor detects the compression of a metal body. This metal body is 2 components resin and protected housing. The housing is arranged in concrete or in the iron braid of reinforcement.

The compression are measured with ultrasonic pulse-echo method. In the case of concrete tension sensor, an ultrasonic sensor is included.

The RSS-X is offered in two models, RSS-X and RSS-2X, that differ in their measured axis.

RSS-2 X two systems owned by 90 ° turned. The horizontal and vertical stress is measured.

The sensors with Triaxial accelerometer with magnetometer (compass) or without can be equipped. Therefore, the alignment of the bore hole and the position of the sensor for crimping the expansion of cement can be determined.

The runtime in the measuring element is measured in high resolution with a separate stress meter. All ultrasound devices to the bolt measurement with a maximum frequency of 10 MHz is suitable for the measurement.

The term declines linearly with the compression in the elastic range.

Which the compressive stress sensor surrounding concrete is a compression of the measuring element. The change in the length of the measuring element is not only dependent on the load or stress, but also on the temperature.

Both factors taken into account the ultrasound measuring device for measuring the change in length.

A permanent temperature measurement is integrated into the pressure voltage sensor. This temperature sensor work as 1-wire sensor with ROM for the identification.

For universal use, the sensor for all devices for the measurement of bolt is suitable regardless of the manufacturer. The automatic temperature correction of these devices can be used, a second is incorporated independent temperature sensor.

The term due to the change in length and acousto elastic effect has reduced the influence of the surrounding concrete on the measuring element.

INSTALLATION AND READING

The sensors are embedded in the concrete. The cable to a junction box. This is accessible. The ultrasonic bolt gauge is connected to the sensor at each measurement via an adapter of RJ45 to LEMO. In development is an electronic unit for permanent monitoring with field bus RS485. The resolution will be better 0.05 ns and 0.010 MPA.

FEATURES

- 2 Stress axes
- Long-term reliability
- Smart sensor
- Triaxial accelerometer
- Magnetometer (compass)
- Resolution and accuracy is only dependent on the Scantool or ultrasonic boltmeter
- Maximum compressive stress up to 150 MPa
- Ease of installation
- Corrosion resistant: plastic components
- unique identification number in ROM
- Independent temperature measurement 1-wire
- Second Temperature probe for automatic temperature compensation for the ultrasonic boltmeter
- No hydraulics, no oil
- No moving mechanism
- Open sensor system for future advanced electronic systems with higher resolution

ACCESSORIES

- adaptor (between Sensor and Boltmeter)
- adaptor (Reader ID and temperature,USB)
- adaptor (Connector smart options,USB)

Not in the order:

- Junction box
- Compatible Readout instruments :

USM-3 Ultrasonic Stress Meter, Norbar Torque Tools
 BoltMike III Ultrasonic Bolt Extensometer, GE Meas. & Control
 BG80TDL Bolt Tension Monitor ,Elcometer Instruments
 Mini-Max Bolt Tension Monitor, Qualitest North America

ORDERING INFORMATION

Please specify:

- Cable length
- Accessories
- Model
- Option with or without smart sensor

SPECIFICATIONS

MODEL RSS-15P_DS MODEL RSS-215P_DS

Range 150 MPa max

Resolution with Boltmeter 0.0001 mm (linear unit) ,0.1 ns second echo corresponds to 0.2 MPa

Resolution with Boltmeter 0.0001 mm (linear unit) ,0.1 ns fifth echo corresponds to 0.08 MPa

Resolution with electronic unit¹ 0.000005 mm (linear unit) ,0.05 ns first echo corresponds to 0.01 MPa

Operating temperature -20 to +80°C

First temperature sensor 12 Bit (Dallas DS18B20)

Second temperature sensor Thermistor (see model boltmeter)

Electrical cable JR45, CAT6 (length optional)

Option triaxial accelerometer (smart sensor 3A)

Option magnetometer (smart sensor M)

Option triaxial accelerometer and magnetometer (smart sensor 3AM)

1) in development

DIMENSIONS

MODEL RSS-15P_DS MODEL RSS-215P_DS all options
 29,5 mm Diameter x 240 mm Length

MODEL RSS-10P_DS MODEL RSS-210P_DS all options
 23,5 mm Diameter x 230 mm Length

MODEL RSS-10P_DS without options
 23,5 mm Diameter x 150 mm Length