

A DIGITAL GEOPHONE IN THE INFRA-SYSTEM

INFRA V10 Vertical Geophone

The INFRA system is used to monitor construction activities, blasting, train traffic, road traffic, vibration in buildings etc.

The V10 Vertical Geophone has a vibration sensing element sensitive in vertical direction together with Digital Signal Processing.

The Geophone can be directly connected to the INFRA field monitoring system.

All filtering, signal processing and detection is done digitally in the geophone. Before the recording/scanning is started you only select the wanted standard that is presented in the display of the INFRA data logger or Remote in INFRA Net Manager.



The INFRA geophone measures according to the following standards using internal signal processing software:

SS 460 48 66

Vibration och shock - Blast induced vibration in buildings. mm/s 5-300 Hz.

SS 02 52 11

Vibration and shock - Vibration in buildings from piling, sheet piling, excavation and packing. mm/s 5-150 Hz or 2-150 Hz.

SS 460 48 61

Vibration and shock - Comfort in buildings 1-80 Hz, ISO 2631-2, mm/s RMS or mm/s² RMS.

SS-ISO 8569

Vibration and shock - Vibration sensitive electronic equipment in buildings. Acceleration m/s², 5-300 Hz.

NS 8176 Comfort

Vibrations and shock – Measurement of vibration in buildings from land based transport and guidance to evaluation of effects on human beings. 1-80 Hz

NS 8141 Byggverk

Vibrations and shock in structures. Guidance limits for blasting-induced vibrations. 5-300 Hz

NS 8141-1:2012 Byggverk

Vibrations and shock – Guideline limit values for construction work, open pit, pit mining and traffic. 2-300 Hz

Geophone, 5-500 Hz

Technical Data

DIRECTION OF SENSITIVITY

V10 is uniaxial and measures vibration in vertical direction. It has holes for mounting bolts (M6) for wall mount and floor mount.

MEASURING

The geophone has a built in digital signal processor. The signal processor processes all incoming data in real time according to the selected standard. It is easy to add new standards by updating the software of the geophone. Software update can be done over the bus cable. The sensor works in combinational mode. It measures maximum values for each minute (selectable from 5 sec. to 15 min) according to the selected standard and at the same time it triggers and record time histories when the trigger level is exceeded.

SAMPLING

The geophone signal is sampled at 4096 Hz using a 16 bit A/D converter which gives a wide dynamic range. When a preset threshold is exceeded a time history is recorded. Even some time before the trigger time is stored (pre-trig). If any one sensor in a sensor network triggers all sensors will record time history data synchronously.

RECORDING TIME

Recording time up to 40 seconds at 4 kHz sampling. As soon as a time history is recorded in the geophone it is sent over the INFRA bus to the master unit.

POWER SUPPLY

The geophone is powered via the bus cable with 12 Volts DC. Power in monitoring and recording mode 25 mW. Somewhat higher during communication over the bus.

MEASURING RANGE

Frequency range 1 Hz - 500 Hz The Geophone has a calibrated sensitivity within +- 2%. Maximum vibration level is 250 mm/s dependent on the selected standard. High range is 0.05 mm/s to 250 mm/s Low range is 0.005 mm/s to 25 mm/s. The noise level is extremely low due to the internal A/D converter.

SENSOR ELEMENT

The sensor element is a high quality velocity sensing geophone. It is very rugged and has the following properties:

- High tolerance to mechanical shock
- Long term stability
- Wide temperature range -20 to +50 degrees
- Wide dynamic range

Product specifications and descriptions in this document are subject to change without notice.

IDENTITY

The geophone has a unique ID number that follows the recorded data. This makes it possible to trace data to a certain sensor.

CALIBRATION

Only the geophone has to be calibrated. The rest of the the system is only data communication and data storage. The Geophone has an internal memory for identity, calibration factors, calibration date etc. Even the calibration date is supplied with the recorded data.

TRIGG-SYNCRONISATION

All time history recording sensors that are connected to the same INFRA bus cable will record data simultaneously if one sensor triggers. Acts as a multi channel transient recorder.

MECHANICAL

Watertight anodized aluminium house with rubber seals. It has holes for bolts passing through in both vertical and horizontal direction. Can very easily be bolted to the floor or to the wall.

Dimension: 78 x 78 x 42 mm (3.1 x 3.1 x 1.7 in)
(excluding connector and standoffs)

Material: Anodized aluminium.

Protection class IP67

Weight: 500 grams (1.1 lbs)

ACCESSORIES

See the product catalogue for accessories.

CE APPROVAL

Fulfills EMC demands according to:

EN 301 489-1 V1.8.1 (2008)

EN 301 489-7 V1.3.1 (2005)

EN 61326-1 (2006)

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