5T Borehole

BOREHOLE ACCELEROMETER

A low noise, triaxial, force feedback, borehole instrument.

The Güralp 5T borehole is designed for strong-motion borehole studies with a sensor that is comparable to the surface 5TC accelerometer.

The analogue borehole instrument can be combined with a borehole or surface digitiser to build a fully networked, integrated borehole monitoring system.

The instrument is supplied with surge protection and a strain relief mechanism to isolate the sensors in the instrument from motions in the cable.

Applications

> Vertical arrays
> Earthquake Early Warning systems
> Strong motion seismic hazard modelling
> Studies of ground amplification / attenuation

Key features

Flat acceleration output from DC to 100 Hz (200 Hz option)

76 mm diameter option suitable for posthole installation with sand backfill to minimise convection

89 mm diameter option for installation with single-jaw lock for inner borehole diameter of 99 - 203 mm

Waterproof and durable with O-ring seals throughout

Dual output (high and low gain) and optional high/low pass filters

Optional electronic compass module to determine downhole attitude

Remote DC offset zeroing

We can provide tripods, winches and other equipment designed specifically for borehole installations

Images show the Güralp 5T borehole accelerometer with hole-lock

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SPECIFICATIONS

SYSTEM	
Configuration / Topology	Triaxial orthogonal (ZNE)
PERFORMANCE	
Acceleration output band	DC to 100 Hz. Options of DC to 200 Hz
Output sensitivity	2 g standard, other solutions available
Peak / Full scale output	Differential: ±20 V (40 V peak-to-peak)
Sensor Dynamic Range	156 dB 140 dB (20 - 200 s) 127 dB (2 - 30 Hz)
Self-noise below NHNM	> 0.08 Hz (12.5 s)
Cross axis rejection	> 0.001 g/g
Linearity	> 77 dB vertical; > 66 dB horizontal
Lowest spurious resonance	> 400 Hz
Offset zeroing	Via remote control
Transfer function	User manual is available to download from the website. Each sensor is provided with full calibration details including measured sensitivity, measured frequency response and instrument poles and zeros
Calibration controls	Independent signal & enable lines exposed on sensor connector
POWER	
Power voltage range	10 - 36 V DC*
Power consumption (at 12 V DC)	0.4 W

**Power voltage for operation of this unit only. Connection to additional instrumentation or use of longer cables may result in a higher input voltage requirement.*

ENVIRONMENTAL	
Operating temperature	-20 to +70 °C

PHYSICAL	
Diameter	76 mm (for installation without hole-lock) 89 mm (for installation with hole-lock)
Case height to top of lifting bail	540mm without holelock 990mm with holelock
Enclosure/Materials	Stainless steel case Gold plated contacts O-ring seals throughout
Inner borehole diameter for installation with hole-locks	99 mm to 203 mm
Borehole install depth	to 250 m (other options available)
Optional borehole install mechanism	Spring-loaded jaw with passive skids or studs (>60 kg force)

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