

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 the DM24 borehole digitiser or a 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.

Key features

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

76 mm outer diameter

Optional single-jaw lock for boreholes of 82 - 120 mm diameter

Waterproof and durable with O-ring seals throughout

Suitable for installation with sand backfill to minimise convection

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. We also offer civil works, installation and seismic station operation services

Applications

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

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SPECIFICATIONS

| SYSTEM | | PHYSICAL | |
|--------------------------------|---|-------------------------------|---|
| Configuration / Topology | Triaxial orthogonal (ZNE) | Diameter | 76 mm |
| PERFORMANCE | | Case height with lifting loop | 431 mm |
| Acceleration output band | DC to 100 Hz. Options of DC to 200 Hz | Enclosure/Materials | Hard anodised aluminium case Gold plated contacts O-ring seals throughout |
| Output sensitivity | 2 g standard, other solutions available | Borehole diameter | 82 mm to 120 mm |
| Peak / Full scale output | Differential: ± 20 V (40 V peak-to-peak) Single-ended (e.g. mass positions): ± 10 V (20 V peak-to-peak) | Borehole install depth | to 250 m (other options available) |
| Sensor Dynamic Range | 156 dB 140 dB (20 - 200 s) 127 dB (2 - 30 Hz) | Borehole install mechanism | Spring-loaded jaw with passive skids or studs (>60 kg force) |
| Self-noise below NHHM | > 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 consumption (at 12 V DC) | 288 mW | | |
| Power voltage range | 10 - 36 V DC | | |
| ENVIRONMENTAL | | | |
| Operating temperature | -20 to $+65$ °C | | |

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In the interests of continual improvement with respect to design, reliability, function or otherwise, all product specifications and data are subject to change without prior notice.

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