

# 3T/5T Borehole



The 3T/5T Borehole (3T/5TB) seismometer offers exceptional dynamic range achieved with this dual sensor 3T/5T instrument, designed specifically for borehole applications.

## KEY FEATURES

Total realised dynamic range of over 200 dB with exceptionally low noise floor

Single-jaw hole lock for inner borehole diameters of 99 to 203 mm, or backfill with sand to minimise convection

Operates with a tilt tolerance of up to 2.5 ° with an option to increase this to 12.5 °

Waterproof and durable with O-ring seals throughout

Built-in inclinometer option for attitude checking at depth

Hole-lock units with cable pass-through available, allowing installation in boreholes already containing an instrument

Strain relief mechanism fully isolates the sensors from any motions in the load-bearing cable

## APPLICATIONS

- > Earthquake Early Warning systems
- > Strong motion monitoring and modelling

## SPECIFICATIONS

SYSTEM	
Configuration / Topology	Two sensors, each with triaxial, orthogonal (ZNE) components
PERFORMANCE	
Velocity output band (3T)	120s (0.0083 Hz) to 50 Hz or 360 s (0.0028 Hz) to 50 Hz Contact Güralp to discuss other frequency response options
Acceleration output band (5T)	DC to 100 Hz. Option of DC to 200 Hz
Output sensitivity	3T sensor: 1500 V/ms <sup>-1</sup> (2 x 750 V/ms <sup>-1</sup> ) differential standard output (full-scale clip level of 13 mm/s) 2 g standard, other options available 5T sensor: Contact Güralp to discuss alternative high sensitivity (high gain) options
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)
Sensor Dynamic Range	3T sensor: 167 dB at 1 Hz (Full octave width across 1 Hz) 5T sensor: > 156 dB
Self-noise	3T-120 sensor: Below NLNM 166 s (0.006 Hz) to 10 Hz 3T-360 Sensor: Below NLNM 200 s (0.005 Hz) to 10 Hz 5T sensor: Below NHNM > 0.08 Hz (12.5 s)
Cross axis rejection	3T sensor: 65 dB 5T sensor: > 0.001 g/g
Linearity	3T sensor: > 111 dB 5T sensor: > 77 dB vertical; > 66 dB horizontal
Lowest spurious resonance	3T sensor: > 140 Hz 5T sensor: > 400 Hz
Offset zeroing (5T)	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

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3T/5TB WITH SINGLE JAW HOLE-LOCK



Calibration controls	Remote calibration on both 3T and 5T sensors
Operational tilt	Up to 2.5 ° (option to increase this to 12.5 °)
MASS / MONITORING CONTROL	
Locking (3T)	Remote auto mass lock/unlock
Mass centre (3T)	Remote automatic mass centring
POWER	
Power voltage range	11– 30 V DC* (24 V DC recommended)
Power consumption (at 12 V DC)	3.5 W
<i>*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.</i>	
ENVIRONMENTAL	
Operating temperature	-20 to +70 °C
PHYSICAL	
Instrument diameter	89 mm
Inner borehole diameter	99 mm to 203 mm
Case height (exc. lifting bail)	1075 mm without hole-lock 1560 mm with single-jaw hole lock
Enclosure/Materials	Stainless steel case Gold plated contacts O-ring seals throughout
Communication / Connectors	100 bar/10 MPa waterproof connector
Hole-lock install mechanism	Spring-loaded single jaw with passive skids or studs (>60 kg force)
For deployments exceeding 100 metres in depth, we recommend the integrated Downhole Minimus digitiser. For more information see the Borehole brochure or datasheet DAS-MIN-0003	

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.

DAS-BHO-0006 Issue K