Güralp 3T

WEAK MOTION BROADBAND SEISMOMETER

Our best-selling 3T instrument has been in continuous production since 1987.

The Güralp 3T is a triaxial, broadband, weak motion instrument, suitable for surface vault, subsurface vault and post-hole installations. The 3T is widely used on many national seismic networks, with in excess of 3000 triaxial sensors deployed worldwide.

Key features

- Covers the complete seismic spectrum with a single transfer function
- The 3T family offers standard frequency responses of either a 120 s or a 360 s long period corner, other bespoke options are available on request
- Hybrid velocity-acceleration responses available offering unrivalled dynamic range.
- Measured Self noise below the USGS NLNM from 200 s to 20 Hz
- High linearity: >111 dB (USGS figures)
- Over 140 dB dynamic range over a wide frequency band
- Cross axis rejection over 65 dB; sensor axes orthogonal to within ±0.05°
- Remote, automatic electronic mass locking, unlocking and centring
- Operating tilt range of ±2.5° with adjustable feet for off-horizontal installation bases
- Low power consumption: 0.75 W from a 10–36 V supply
- Truly portable with lifing handle and convenient access to connectors

Applications

> Surface and subsurface vault installations
> Posthole installation
> National seismic networks
> Global and regional earthquake monitoring
> Nuclear test ban treaty monitoring
> Permanent dense arrays

Images: Güralp 3T seismometer

Güralp 3T

SPECIFICATIONS

SYSTEM	
Technology	Force feedback (force-balance) velocity sensor
Configuration / Topology	Triaxial orthogonal (ZNE)
PERFORMANCE	
Velocity output band (flat response within -3 dB crossing points)	Standard options: 120s (0.0083 Hz) to 50 Hz 360 s (0.0028 Hz) to 50 Hz Contact Güralp to discuss other frequency response options
Output sensitivity	1500 V/ms^{-1} (2 x 750 V/ms^{-1}) differential standard output (full-scale clip level of 13 mm/s) Contact Güralp to discuss alternative high sensitvity (high gain) options
Peak full-scale output voltage	Differential: ±20 V (40 V peak-to-peak) Single-ended (e.g. mass positions): ±10 V (20 V peak-to-peak)
Self noise below NLNM (New Low Noise Model; Peterson, 1993, USGS)	200 s (0.005 Hz) to 20 Hz
Sensor dynamic range (at standard output sensitivity)	140 dB
Cross axis rejection	65 dB
Linearity	>111 dB
Lowest spurious resonance	>140 Hz
Damping	70% of critical
Operating tilt range	±2.5°
MASS / MONITORING CONTROL	
Sensor Mass positions	Three independent sensor mass position outputs (single-ended)
Mass locking	Remote auto mass lock/unlock for transportation
Mass centring / offset zeroing	Remotely controlled automatic mass centring

CALIBRATION	
Calibration input	Independent signal and enable lines exposed on sensor connector
CONNECTORS	
Analogue output	26-pin Mil-spec (military specification bayonet) connector Optional 1500 psi waterproof connector for posthole deployment
POWER	
Power supply voltage	10–36 V DC
Power consumption (at 12 V DC)	0.75 W
PHYSICAL / ENVIRONMENTAL	
Operating temperature range	-20 to +75 °C (-55 °C optional)
Operating humidity range	0-100% relative humidity
Enclosure ingress protection	IP68 - protection against prolonged effects of immersion under pressure (tested under 3 m of water for 72 hours) For deeper, long term immersion, the optional 1500 psi waterproof connector is recommended
Enclosure material	Stainless steel case O-ring seals throughout
Diameter	168 mm
Height with feet and handle	340 mm
Weight	14.6 kg
Alignment	Bubble level on lid; north arrow on handle and base; adjustable feet
SUPPORTING DOCUMENTATION	
Calibration values	Measured sensor sensitivity, frequency response, instrument poles and zeros enclosed
Full user's guide	Available online at: https://www.guralp.com/documents/MAN-030-0001.pdf

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DAS-030-0001 Issue L