

Güralp 3T Portable



WEAK MOTION BROADBAND SEISMOMETER



A high performance, low noise triaxial sensor suitable for rapid deployment.

The Güralp 3T Portable is a triaxial, broadband, weak motion instrument, suitable for surface vault, subsurface vault and post-hole installations. The 3T series is widely used on many national seismic networks, with in excess of 3,000 triaxial sensors deployed worldwide.

The 3TP Portable features a robust mass-locking mechanism that protects the sensor's internal mechanics during transportation between installations.

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

Force feedback tri-axial broadband instrument

Measured Self noise below the USGS NLNM from 200 s to 20 Hz

Over 140 dB dynamic range over a wide frequency band

High linearity: >111 dB (USGS figures)

Cross axis rejection over 65 dB; sensor axes orthogonal to within $\pm 0.05^\circ$

Lifting handle and all connectors on the top of the instrument

Waterproof and durable with O-ring seals throughout

Quick and easy, one-person installation

Low power consumption: 0.84 W from a 10–36 V supply

Optional hybrid response models are available, e.g. flat to velocity from 50 Hz to 30 s and, flat to acceleration between 30 s and 200 s, offering unrivalled dynamic range.

Applications

- > Surface and subsurface vault installations
- > Posthole installation
- > National seismic networks
- > Global and regional earthquake monitoring
- > Nuclear test ban treaty monitoring
- > Long-term and semi-permanent deployments
- > Permanent dense arrays

Images show the Güralp 3T Portable seismometer

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	1,500 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 sensitivity (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
POWER	
Power supply voltage	10–36 V DC
Power consumption (at 12 V DC)	0.84 W
PHYSICAL / ENVIRONMENTAL	
Operating temperature range	-20 to +75 °C
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)
Enclosure material	Stainless steel case O-ring seals throughout
Maximum sustainable shock	100g half sine, 5 ms without damage, 6 axes
Diameter	168 mm
Case height - no feet, no handle and no connector	275 mm
Height with no feet and no handle	290 mm
Height with feet and handle	333 mm
Weight	15.0 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