

3T-120

THE ORIGINAL REVOLUTIONARY WEAK MOTION TRIAXIAL
BROADBAND SEISMOMETER



KEY FEATURES

- > 120 s to 50 Hz frequency response (option to 100 Hz)
- > Measured self-noise below the NLNM from 166 s to the high frequency limit at 10 Hz
- > 167 dB dynamic range at 1 Hz
- > Stainless steel enclosure, with refinement options for vault, posthole or polar installations

APPLICATIONS

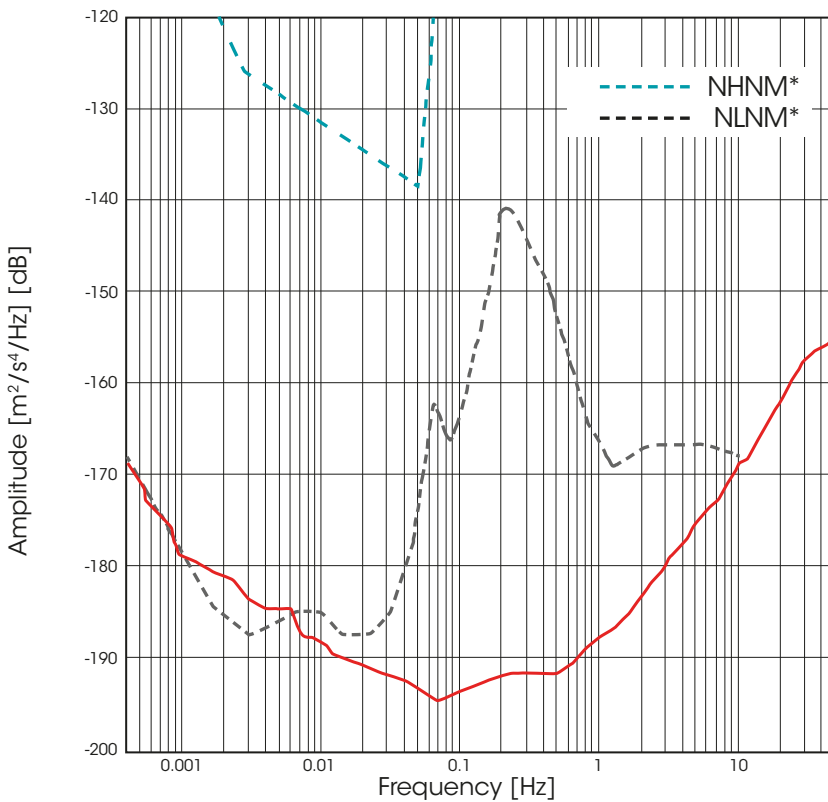
- > Vault and posthole installations
- > Local, regional and teleseismic monitoring
- > Nuclear test ban treaty monitoring

3T-120

The Güralp 3T-120 is a triaxial, broadband, weak motion instrument, suitable for vault and post-hole installations.

Güralp are the pioneers of miniature force-feedback seismometers and since 1987 our instruments have been used in many seismic networks. The 3T in particular is renowned for delivering reliable, high quality performance in long period monitoring applications.

SELF NOISE PLOT FOR THE 3T-120 SENSOR*



*(Peterson, 1993)

POSTHOLE CASING WITH
100 BAR/10 MPA
WATERPROOF CONNECTOR



*3T-120 with output sensitivity set at 2000 V/ms⁻¹ (2 x 1000 V/ms⁻¹)

Key features

120 s to 50 Hz frequency response (option to 100 Hz)

Covers the complete seismic spectrum with a single transfer function

Measured Self noise below the USGS NLNM from 166 s (0.006 Hz), remaining below the high frequency limit of the NLNM at 10 Hz

High linearity: >111 dB (USGS figures)

Dynamic range of 167 dB at 1 Hz (Full octave width across 1 Hz)

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

Remote, automatic electronic mass locking, unlocking and centring

Operating tilt range of $\pm 5^\circ$ with adjustable feet for off-horizontal installation bases

Low power consumption: 0.75 W from a 10–36 V supply

The 3T-120 is available in surface, posthole or polar casing

Comes with lifing handle and convenient access to connectors

Data Integrity

The 3T-120 can be partnered with the Affinity or Minimus digitisers. Each offers a flexible array of features and functionality that you can tailor according to your needs and both utilise precision time protocol for absolute timing accuracy.

Applications

- > Surface and subsurface vault
 - > Temporary and permanent posthole
 - > Permanent dense arrays
 - > Polar casing option for ice-quake monitoring
 - > National seismic networks
 - > Global and regional earthquake monitoring
 - > Nuclear test ban treaty monitoring
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For more details you can view both digitisers on our website:

www.guralp.com/products/data-acquisition

3T-120



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) | 120s (0.0083 Hz) to 50 Hz standard Option of 120s (0.0083 Hz) to 100 Hz |
| 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 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) | 166 s (0.006 Hz) to 10 Hz |
| Sensor dynamic range | 167 dB at 1 Hz (Full octave width across 1 Hz) |
| Cross axis rejection | 65 dB |
| Linearity | >111 dB |
| Lowest spurious resonance | >140 Hz |
| Damping | 0.7 critical or 70% critical |
| Operating tilt range | ±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 No mass deviation within temperature range ±45 °C |

| CALIBRATION | |
|---|---|
| Calibration input | Independent signal and enable lines exposed on sensor connector |
| CONNECTORS | |
| Analogue output | 26-pin military specification bayonet connector |
| POWER | |
| Power supply voltage | 10–36 V DC* |
| Power consumption (at 12 V DC) | 0.75 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> | |
| PHYSICAL / ENVIRONMENTAL | |
| Operating temperature range | -20 to +75 °C (-55 °C optional) |
| Operating humidity range | 0-100% relative humidity |
| Enclosure ingress protection Surface: | IP68 - protection against effects of prolonged immersion at 3 m depth for 72 hours Posthole: For deeper, long term immersion, the optional 100 bar/10 MPa waterproof connector is recommended |
| Enclosure material | Stainless steel case O-ring seals throughout |
| Diameter | 168 mm |
| Height without feet, handle or connector | 273 mm |
| Standard connector height | 14 mm |
| Posthole connector height | 31 mm |
| Height with feet and handle | 340 mm |
| Weight (standard) | 15 kg |
| Weight (posthole) | 15.15 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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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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