Güralp 3ESPC

PORTABLE COMPACT WEAK MOTION SEISMOMETER

A proven weak-motion triaxial broadband seismometer for the price and size of a medium-motion instrument.

The Güralp 3ESPC is ideally suited for long-term temporary and permanent installations in areas with low to moderate noise levels.

Its broadband response and low self noise level make the 3ESPC ideal for seismic monitoring at all scales: local, regional and teleseismic.

Applications

> Surface vault installations
> Direct burial installations
> Regional seismic networks
> Long-term microseismic monitoring
> Permanent volcano monitoring networks

Images: Güralp 3ESPC weak motion seismometer

Key features

- Covers the complete seismic spectrum with a single transfer function
- 60 s - 50 Hz standard frequency response, 30 or 120 s low-pass corner option available
- Self noise below the USGS NLNM from 30 s to 16 Hz
- High linearity: > 107 dB horizontal, 111 dB vertical
- Over 140 dB dynamic range over a wide frequency band
- Cross axis rejection over 62 dB; sensor axes orthogonal to within ± 0.05°
- Robust automatic mass locking, unlocking and centring
- Adjustable feet allow for levelling up to 4° tilt
- Low power consumption of just 750 mW
- Truly portable - just 8.4 kg with lifing handle, and convenient access to connectors
- Fully digital 3ESPCD (www.guralp.com/documents/DAS-C3E-0002.pdf) and 3ESPCDE (www.guralp.com/documents/DAS-C3E-0005.pdf) models are also available, integrating the 3ESPC with CD24/DM24 digitisers

Güralp 3ESPC

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)	0.017 to 50 Hz (60 to 0.02 s) standard. Option of 30 s or 120 s low-pass corner Contact Güralp to discuss other frequency response options
Output sensitivity	2000 V/ms^{-1} (2 x 1000 V/ms^{-1}) differential standard output (full-scale clip level of 10 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)	30 s (0.03 Hz) to 16 Hz
Sensor dynamic range (at standard output sensitivity)	>140 dB
Cross axis rejection	62 dB
Linearity	>107 dB horizontal; >111 dB vertical
Lowest spurious resonance	140 Hz
Damping	70% of critical
Operating tilt range	±2.5° from horizontal
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)	0.75 W
PHYSICAL / ENVIRONMENTAL	
Operating temperature range	-20 to +65 °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	Hard anodised aluminium O-ring seals throughout
Diameter	176 mm
Height without feet and handle	200 mm
Height with feet	227 mm
Height with feet and handle	280 mm
Weight	8.4 kg
Alignment	Bubble level on lid; north arrow on handle and base; adjustable feet up to 4°
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-C3E-0001.pdf

Güralp Systems Limited
Midas House
Calleva Park
Aldermaston
Reading
RG7 8EA
United Kingdom

T +44 118 981 9056
F +44 118 981 9943
E sales@guralp.com

www.guralp.com

DAS-C3E-0001 Issue M