Güralp 3EX

DIGITAL EXPLORATION SEISMOMETER

Based on the 3ESPCD, the Guralp 3EX has been developed for rapid, temporary deployments.

Designed for practicality and ease of use, the compact and robust 3EX can be installed in an instant, simply connect power and a GPS receiver and you're off. A large dense array can be up and running within a couple of hours. Each instrument has sufficient storage for a month of three-channel data at 100 samples per second. On retrieval, the data can be uploaded immediately via Firewire for rapid processing on a computer.

Key features

- Flat, linear response from 1, 30 60* or 120 s to 50 or 100 Hz. Optional hybrid response available (*standard)
- Truly portable at less than 9.2 kg, with lifting handle and convenient access to connectors
- RS-232, Ethernet and Wi-Fi output options
- Data transfer via Firewire, RS-232, Ethernet or Wi-Fi
- Robust mass suspension: locking only required for shipping
- Automatic mass locking/unlocking and centring
- Lock, unlock, centre and data-flush enable buttons on lid, with LED status indicators
- High linearity: > 107 dB horizontal; > 111 dB vertical
- Over 140 dB dynamic range; low self-noise over a wide frequency band
- Cross-axis rejection > 62 dB; sensor axes orthogonal to within 0.1 °
- Adjustable feet allow for up to 4 ° tilt (8 ° optional)
- Low power consumption (< 1.4 W to 2.5 W at 12 V depending on options)
- Integrated CD24 digitizer

Applications

> Surface installation

> Active-source 2-D/3-D seismic reflection and refraction surveys

> Passive seismic monitoring for 2-D/3-D subsurface models using microseismic events, local earthquakes and ambient noise

Image: Guralp 3EX

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SPECIFICATIONS

SYSTEM	
Configuration / Topology	Triaxial orthogonal (ZNE)
PERFORMANCE	
Frequency Bandwidth	0.02 to 50 Hz (60 to 0.02 s) standard. 1 s, 30 s or 120 s LP and 100 Hz HP
Output sensitivity	6000 V/ms^{-1} (2*1000 V/ms^{-1}) differential output - optional sensitivities from 800 V/ms^{-1} to 20,000 V/ms^{-1}
Peak / Full scale output	±10 V differential
Sensor Dynamic Range	>140 dB
Self-noise below NLNM	>30s to >16 Hz
Cross axis rejection	> 62dB
Linearity	> 111 dB vertical; > 107 dB horizontal (USGS figures)
Lowest spurious resonance	> 200 Hz (vertical)
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
Calibration controls	Sine wave and step calibration signals
MASS / MONITORING CONTROL	
Sensor Mass positions	Three independent sensor mass position outputs (single ended)
Locking	Remote auto mass lock/unlock for transportation
Mass centre	Remotely controlled automatic mass centring
POWER	
Power consumption (at 12 V DC)	<1.4 to 2.5 W depending on specification
Power voltage range	10– 28 V DC (optional low power 5 V DC available)
ENVIRONMENTAL	
Operating temperature	-20 to +65 °C Optional -20 to +50 °C without recentring

PHYSICAL	
Diameter	168mm
Height with handle	317mm
Enclosure/Materials	Hard anodised aluminium casing with stainless steel base
Weight	9.2 kg
Communication / Connectors	Mil-spec connector
DIGITAL	
Display	Lock, unlock, centre and data-flush enable buttons on lid, with LED status indicators
Sampling rates	1 to 1000 samples per second
Digital resolution/output format	24-bits
Data output format	GCF over RS-232, Firewire, Ethernet or Wi-Fi
Data storage	64 MB internal Flash memory (options to 16 GB)

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

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

www.guralp.com

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