

# 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 3ESPC's portable design and low power consumption make it ideal for long-term and temporary 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

### Key features

Covers the complete seismic spectrum with a single transfer function

60 s - 100 Hz standard frequency response, 120 s low-pass corner option available

Self noise below the USGS NLNM from 30 s to 10 Hz

High linearity: > 107 dB horizontal, 111 dB vertical

165 dB dynamic range

Cross axis rejection over 62 dB; sensor axes orthogonal to within  $\pm 0.05^\circ$

Robust automatic mass locking, unlocking and centring

Adjustable feet allow for levelling up to  $2.5^\circ$  tilt

Low power consumption of just 750 mW

Truly portable - just 8.4 kg with lifting handle, and convenient access to connectors

## 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 100 Hz (60 to 0.01 s) standard<br>Option of 120s (0.0083 Hz) to 100 Hz<br><br>Contact Güralp to discuss other frequency response options  |
| Output sensitivity  | 2000 V/ms <sup>-1</sup> (2 x 1000 V/ms <sup>-1</sup> ) differential standard output (full-scale clip level of 10 mm/s)<br><br>Contact Güralp to discuss alternative high sensitivity (high gain) options |
| Peak full-scale output voltage                                    | Differential: ±20 V (40 V peak-to-peak)<br>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 10 Hz  |
| Sensor dynamic range (at standard output sensitivity)             | > 165 dB @ 1 Hz (Full octave width across 1 Hz)  |
| Cross axis rejection  | 62 dB  |
| Linearity   | > 107 dB horizontal; > 111 dB vertical   |
| Lowest spurious resonance   | > 300 Hz (vertical)  |
| Damping   | 0.7 critical or 70% 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 military specification bayonet connector   |
| POWER   |   |
| Power supply voltage  | 10–36 V DC*   |
| Power consumption (at 12 V DC)  | 0.75 W  |
| * 9-36 V DC option available. 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. |   |
| PHYSICAL / ENVIRONMENTAL  |   |
| Operating temperature range   | -20 to +65 °C   |
| Operating humidity range  | 0-100% relative humidity  |
| Enclosure ingress protection  | IP68 - protection against effects of prolonged immersion at 3 m depth for 72 hours  |
| Enclosure material  | Hard anodised aluminium<br>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  |
| Weight without feet and handle  | 7.95 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:<br><a href="https://www.guralp.com/documents/MAN-C3E-0001.pdf">https://www.guralp.com/documents/MAN-C3E-0001.pdf</a> |