

# Kelunji Echo SMA

TRIAxIAL STRONG MOTION ACCELEROGRAPH

## FEATURES

- Low price, high performance
- Internet ready
- 3-channel accelerograph
- GPS timing
- CompactFlash data storage
- Ethernet
- Web-based user interface
- LCD panel for displaying waveforms, view settings and state-of-health information

## APPLICATIONS

The Kelunji Echo SMA can be used for structural monitoring, blast and other vibration monitoring.

The Echo is simple to use, easy to install and maintain, and light and robust enough for aftershock monitoring or other portable surveys.

Ethernet based communications such as VSAT, ADSL and some 3G modems and radios allows easy configuration of networks for data telemetry.

The core Echo, by using its built-in GPS timing system, can act as a Network Time Server for synchronizing other NTPv4 enabled timing-critical equipment.

LOGGERS / RECORDERS



Every Echo comes supplied with our eqWave software for waveform analysis and manipulation. eqWave runs on most computing platforms that run a Java Virtual Machine, including Windows, Unix, Linux and MacOS X.

Echo seismic data is recorded in PC-SUDS file format, stored in a standard file system. A logical hierarchy is implemented for simple copying to PC using a CF-USB reader or via FTP.



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# TECHNICAL SPECIFICATIONS

## PHYSICAL

<b>Dimensions</b>	260 x 230 x 130 mm, 2kg
<b>Environmental</b>	Operating temp -20° to +60°C, humidity up to 100% R/H
<b>Connectors</b>	Power, Ethernet, GPS
<b>Enclosure</b>	IP67 rated (dust proof, water resistant)
<b>Colour</b>	Orange

## PORTS

<b>Console Internal</b>	(DB9) RS-232 port used for terminal interface
<b>Ethernet</b>	(RJ45) 10/100Mbit port for connection to PC, LAN, VSAT, Ethernet radio etc

## COMMUNICATIONS

<b>Interface</b>	via Web browser or Telnet over Ethernet
<b>Data Transfer</b>	Using HTTP or FTP

## MAIN PROCESSOR

<b>Core</b>	ARM processor with 16MB RAM available
<b>Input Voltage</b>	9-15V DC, protected against over/under/reverse voltages
<b>Consumption</b>	Typically 95mA@12V for main board
<b>Memory</b>	1GB Compact Flash memory card (2GB, 4GB available)

## PROCESSES

<b>Functions</b>	Trigger detection, phase picking
<b>Recording</b>	Triggered and/or continuous data
<b>Telemetry</b>	Files sent by FTP, serial streaming
<b>State of Health</b>	Extensive monitoring, recording and transmission of SOH information

## INTERFACES

<b>Memory Buffer</b>	100,000 samples
<b>Main GUI</b>	Any common web browser (eg. Explorer, Firefox, Safari)
<b>Console</b>	Any common VT100 emulator (eg. HyperTerminal)
<b>Data transfer</b>	Any common FTP client (eg. FileZilla)
<b>LCD (optional)</b>	View real-time waveforms, settings and SOH information
<b>eqWave</b>	Waveform analysis software is provided with every Echo purchase. Operates on Windows, Unix, Linux, MacOS

## ACCELEROMETER

Orthogonally aligned triaxial internally mounted accelerometer

<b>Sample Rates</b>	up to 200sps with 100Hz bandwidth @ 24 bit resolution
<b>Absolute full scale</b>	±2g
<b>RMS noise</b>	15µg
<b>Dynamic range @ 100sps</b>	100dB
<b>Power consumption</b>	15mA

## GPS TIMING

<b>Accuracy</b>	Down to 10 microseconds
<b>Oscillator</b>	Internal voltage-controlled temperature-compensated crystal oscillator
<b>Reference</b>	Disciplined from internal GPS receiver
<b>Backup</b>	Battery backed clock (-100 to +10 ppm)

