

# Seismographs and Accelerographs



GECKO COMPACT

## Gecko Digitiser – record any sensor

So, you're happy with the sensors you've got, but you want an easy-to-use, affordable digital recorder that has a built-in user interface for set up in the field without the need for laptop, tablet or phone.

The 3+1 channel Gecko **Compact** is a research-grade data logger at a budget price, with a splash resistant body suited for installation inside shelters or vaults. It is also available in a cylindrical waterproof body design as used by our digital sensors for outdoor monitoring applications.

Stream live data using an Ethernet+WiFi adaptor, cellular modem, USB cable, or GeckoLink (SeedLink) server.



BLAST and SMA

## Portable all-in-one vibration sensors

By combining a triaxial sensor with the Gecko recorder we have created simple, affordable digital sensor.

The Gecko **Blast** uses a triaxial set of 4.5Hz geophones that are suited to urban vibration or blast velocity monitoring.

The Gecko **SMA** (strong motion accelerograph) uses a triaxial accelerometer for monitoring large signal levels in noisy environments. SMA is available with maximum range of  $\pm 2g$ ,  $\pm 5g$ ,  $\pm 10g$ , and customs range from  $\pm 25g$  to  $\pm 400g$ .

Both models have an input for an external single channel sensor such as air pressure monitoring microphone.

A central hole passing through the entire sensor allows for rapid single hole installation using the included mounting kit. The Blast also includes spikes to replace the removable feet for quick installation in soil.



SMA-HR and -XR, TREMOR, PRISM-SP, -MP and -LP

## Professional all-in-one earthquake sensors

Larger, higher sensitivity sensors are integrated into our Gecko "Pro" range of seismographs and accelerographs. These models have an optional internal battery providing hours of backup run time if the main power source becomes unavailable.

Gecko **Tremor** uses velocity sensors with a flat frequency response from 0.5 seconds to 500Hz. By adjusting the sensing amplitude range, users can tune the Tremor seismograph for surveys and local earthquake and aftershock monitoring (high sensitivity, reduced clip level) or for high amplitude blast & urban vibration monitoring using the full 254mm/s range.

The Gecko **SMA-HR** uses the latest technology low noise optical sensors for high resolution strong motion acceleration monitoring while maintaining a  $\pm 2g$  full scale range, ideal for structural engineering applications. For high range strong motion sensing, the **SMA-XR** provides a  $\pm 10g$  range with low noise and frequency sensitivity.

The **Prism** velocity sensors use compact, robust components to achieve high sensitivity in a portable package. Available with Short Period (**-SP**) frequency response, or low noise Medium Period (**-MP**) and Long Period (**-LP**) broadband versions, each model is suited to monitoring seismic data at different distance scales: local, regional or global, respectively.



SEISMOLOGY  
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## GECKO Digital Sensors

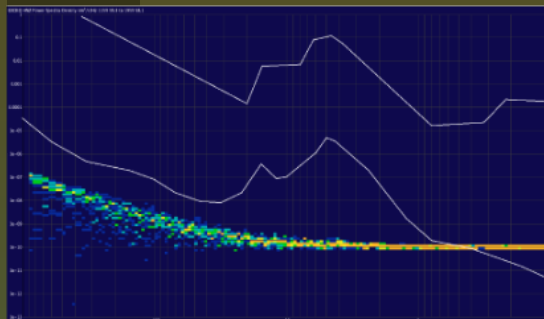
	VELOCITY SENSORS				
	Flat Response	Max. Clip	Power	Height	Weight
<b>BLAST</b>	4.5 to 1600Hz	695 mm/s	1.0W	145mm (5.7 in)	2.2kg (4.9 lb)
<b>TREMOR</b>	2 to 500Hz	254 mm/s	1.0W	185mm (7.3 in)	3.0kg (6.6 lb)
<b>PRISM-SP</b>	10s to 150Hz	50 mm/s $\infty$	1.0W	185mm (7.3 in)	2.7kg (6.0 lb)
<b>PRISM-MP</b>	40s to 90Hz	40 mm/s $\infty$	1.0W	185mm (7.3 in)	2.7kg (6.0 lb)
<b>PRISM-LP</b>	120s to 60 Hz	40 mm/s $\infty$	1.0W	185mm (7.3 in)	2.7kg (6.0 lb)

	ACCELERATION SENSORS					
	Self Noise	Flat Response	Max. Clip	Power	Height	Weight
<b>SMA-2G</b>	7 $\mu$ g/ $\sqrt$ Hz	to 525Hz	$\pm$ 2g*	1.1W	145mm (5.7 in)	1.7kg (3.7 lb)
<b>SMA-5G</b>	12 $\mu$ g/ $\sqrt$ Hz	to 800Hz	$\pm$ 5g*	1.1W	145mm (5.7 in)	1.7kg (3.7 lb)
<b>SMA-XG</b>	18 $\mu$ g/ $\sqrt$ Hz	to 1100Hz	$\pm$ 10g*	1.1W	145mm (5.7 in)	1.7kg (3.7 lb)
<b>SMA-XR</b>	2 $\mu$ g/ $\sqrt$ Hz	to 1600Hz	$\pm$ 10g	1.9W	185mm (7.3 in)	2.7kg (6.0 lb)
<b>SMA-HR</b>	0.001 $\mu$ g/ $\sqrt$ Hz	to 800Hz	$\pm$ 2g $\infty$	1.0W	185mm (7.3 in)	2.7kg (6.0 lb)

\*1g offset in vertical axis due to gravity

$\infty$ Maximum gain setting x64, 280,000 cpv sensitivity

All sensors  $\varnothing$  136mm ( $\varnothing$  5.4 in) rated to IP67



**Gecko (shorted input) self noise below NLNM 1000 seconds to 2Hz (recorded @100sps, PSD amplitude scaled to 750V/m/s velocity sensor)**

# GECKO Recorder - Technical Specifications

## Digitiser & Recording

Digitiser Type	32-bit ADC, differential or single-ended
Data Channels	3+1, synchronously sampled
Full-scale range	40Vpp (suitable for $\pm$ 10V differential output sensors)
Gain settings	1, 2, 4, 8, 16, 32, 64, 128, 256, and 512
Frequency response	DC to 1600Hz (at maximum sample rate)
Sample rates (per second)	50, 100, 200, 250, 400, 500, 800, 1000, 2000, 4000

## Noise and Dynamic Range

Noise level (shorted input)	Less than 1 LSB RMS noise in a 24-bit system @50sps
Sensitivity (typical)	406,000 cpv (counts per Volt)
Dynamic range (RMS noise vs FS range)	138dB @100sps (144dB @50sps, 127dB @4000sps)

## GPS Timing

Reference	Data is time stamped every second from GPS receiver
Accuracy	RMS 30 nanoseconds
GPS connection	Magnetic patch antenna with 5m cable
Maximum GPS cable length	80 metres (with high gain aerial, sold separately)

## Controls

User Interface	In-built LCD with 4-line text display and 4-button input
File recording	Continuous (always on), Histogram (always on)
Trigger & Alarm	1x STA/LTA, 2x Level (High and Low - 3D or 1D); System Alerts
Pre- and Post-trigger data	Unlimited - user configurable in reception/extraction software
Calibration signal generator	Variable amplitude/frequency step/sine signal generation
Mass Control	Calibrate enable, Mass Lock, Unlock and Centre commands

## Data Storage

Flash memory type	SD card, SLC NAND recommended
Included storage	32GB, hot swappable. Pre-formatted cards optional (64GB, 128GB)
Continuous recording capacity	Ring buffer data storage >1 year (3 channels @100sps)
File system	FAT32, readable by Windows, macOS & Linux
Data format	24-bit MiniSEED (with data-less station information files; station.xml export)

## Power

DC input voltage range	11.5 to 24V (no cost option to enable 7 to 30V range)
Consumption (LCD backlight off)	0.95W (1.5W with LCD backlight on, 2 minute backlight timeout)

## Physical

Housing	Aluminium
Dust and Water Ingression Protection	IP65 (available as special order in circular IP67 casing at extra cost)
Operating Temperature (100% R/H)	-20 to +60 $^{\circ}$ C (-4 to +140 $^{\circ}$ F)
Dimensions (without cables)	140 x 108 x 71mm (5.5 x 4.3 x 28 in)
Weight	600g (1.3 lb)

## Data Telemetry

Connectivity options (sold separately)	Ethernet/WiFi adaptor, 4G cellular modem, GeckoLink co-processor
TCP Socket Streaming	Push to eqServer or Streams, pull from SeedLink (via GeckoLink)
Remote setup and firmware upgrades	Web interface (eqServer & GeckoLink) or application (Streams)

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