Seismographs and Accelerographs

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.

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 ±2g, ±5g, ±10g, and custom range from ±25g to ±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.

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 ±2g full scale range, ideal for structural engineering applications. For high range strong motion sensing, the SMA-XR provides a ±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.
### VELOCITY SENSORS

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Flat Response</th>
<th>Max. Clip</th>
<th>Power</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLAST</td>
<td>4.5 to 1600Hz</td>
<td>695 mm/s</td>
<td>1.0W</td>
<td>145mm</td>
<td>2.2kg</td>
</tr>
<tr>
<td>TREMOR</td>
<td>2 to 500Hz</td>
<td>254 mm/s</td>
<td>1.0W</td>
<td>185mm</td>
<td>3.0kg</td>
</tr>
<tr>
<td>PRISM-SP</td>
<td>10s to 150Hz</td>
<td>50 mm/s∞</td>
<td>1.0W</td>
<td>185mm</td>
<td>2.7kg</td>
</tr>
<tr>
<td>PRISM-MP</td>
<td>40s to 90Hz</td>
<td>40 mm/s∞</td>
<td>1.0W</td>
<td>185mm</td>
<td>2.7kg</td>
</tr>
<tr>
<td>PRISM-LP</td>
<td>120s to 60Hz</td>
<td>40 mm/s∞</td>
<td>1.0W</td>
<td>185mm</td>
<td>2.7kg</td>
</tr>
</tbody>
</table>

### ACCELERATION SENSORS

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Flat Response</th>
<th>Max. Clip</th>
<th>Power</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMA-2G</td>
<td>7µg/√Hz to 525Hz</td>
<td>±2g*</td>
<td>1.1W</td>
<td>145mm (5.7 in)</td>
<td>1.7kg (3.7 lb)</td>
</tr>
<tr>
<td>SMA-5G</td>
<td>12µg/√Hz to 800Hz</td>
<td>±5g*</td>
<td>1.1W</td>
<td>145mm (5.7 in)</td>
<td>1.7kg (3.7 lb)</td>
</tr>
<tr>
<td>SMA-XG</td>
<td>18µg/√Hz to 1100Hz</td>
<td>±10g*</td>
<td>1.1W</td>
<td>145mm (5.7 in)</td>
<td>1.7kg (3.7 lb)</td>
</tr>
<tr>
<td>SMA-XR</td>
<td>2µg/√Hz to 1600Hz</td>
<td>±10g</td>
<td>1.9W</td>
<td>185mm (7.3 in)</td>
<td>2.7kg (6.0 lb)</td>
</tr>
<tr>
<td>SMA-HR</td>
<td>0.001µg/√Hz to 800Hz</td>
<td>±2g∞</td>
<td>1.0W</td>
<td>185mm (7.3 in)</td>
<td>2.7kg (6.0 lb)</td>
</tr>
</tbody>
</table>

- *Offset in vertical axis due to gravity
- Maximum gain setting x64, 280,000 cpv sensitivity
- All sensors Ø 136mm (Ø 5.4 in) rated to IP67

### Data Storage
- SD card, SLC NAND recommended
- 32GB, hot swappable, Pre-formatted cards optional (64GB, 128GB)
- 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 ingress Protection: IP65 (available as special order in circular IP67 casing at extra cost)
- Dimensions (without cables): 140 x 108 x 71mm (5.5 x 4.3 x 2.8 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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**GECKO Recorder - Technical Specifications**

- **Digitiser & Recording**: 32-bit ADC, differential or single-ended
- **Digitiser Type**: 3+1, synchronously sampled
- **Data Channels**: 40Vpp (suitable for ±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 @50spsec
  - **Sensitivity (typical)**: 406,000 cpv (counts per Volt)
  - **Dynamic range (RMS noise vs FS range)**: 138dB @100spsec (144dB @50spsec, 127dB @4000spsec)
- **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
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*Gecko (shorted input) self noise below NLNM 1000 seconds to 2Hz (recorded @100sps, PSD amplitude scaled to 750V/ls velocity sensor)*

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