MADE IN AUSTRALIA

bsi. ISO 9001 Quality Management

EARTHQUAKE RECORDING INSTRUMENT

VIBRATION SENSOR

designed by: **Seismology Research Centre**
manufactured by: **ESS Earth Sciences Pty Ltd**
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Richmond VIC 3121, Australia

src.com.au
essearth.com

GECKO ERI

EARTHQUAKE RECORDING INSTRUMENT

STRONG MOTION ACCELEROGRAPH FOR BUILDING MONITORING

EARTHQUAKE RECORDING INSTRUMENT

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GECKO ERI

2023-02-06 01:17:35
G4040 Storing EN2 _
GPS107 Sending ___2
64GB free+13.05496%

POWER +18 V DC
GROUND
ALARM 2   Inactive
           Input
           Active
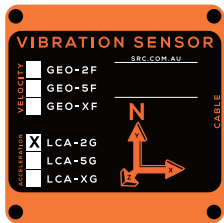ALARM 1   Inactive
           Input
           Active

This building monitoring solution comprises a triaxial LCA-2G accelerometer with 2m cable connected to a wall-mountable Gecko earthquake recorder, which includes an Ethernet port, an internal battery for over 12 hours of operation* in case of loss of AC power, an alarm buzzer, and two switched alarm relays

Accessories included:
- GPS aerial with 7m cable
- 33m GPS extension cable
- AC power plug pack

VIBRATION SENSOR
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VELOCITY
☐ GEO-2F
☐ GEO-5F
☐ GEO-XF

ACCELERATION
☒ LCA-2G
☐ LCA-5G
☐ LCA-XG

Technical Specifications

Accelerometer
- Triaxial Micro-ElectroMechanical System (MEMS)
- ±2g full scale range (1g offset in vertical due to gravity)
- DC to 300Hz bandwidth
- 80x80x60mm IP67 case with 2m cable to ERI wall box
- Mounting plate with anchor and centre bolt

Recorder
- 3-channels with simultaneous sampling
- 32-bit ADC per channel, dynamic range of 137dB @100sps
- User-selectable sample rates up to 4000 samples per second
- 64GB SD card included, larger capacities supported
- Internal GPS receiver for 100 micro-second timing accuracy

Inputs
- LCD and 4-button keypad user interface - no laptop required
- Coaxial GPS aerial connection
- 18W 18V DC power, connected via 8-way terminal plug

Outputs
- Continuous data stored to SD card
- Seismic trigger alert or Instrument alert switched via 8-way plug
- Data streaming over Ethernet to remote PC running "Streams"

Options (not included)
- Custom accelerometer cable length, up to 50m
- Increased accelerometer range to ±5g or ±10g
- High gain GPS aerial with 80m cable

backup battery only powers data storage, not Ethernet communications
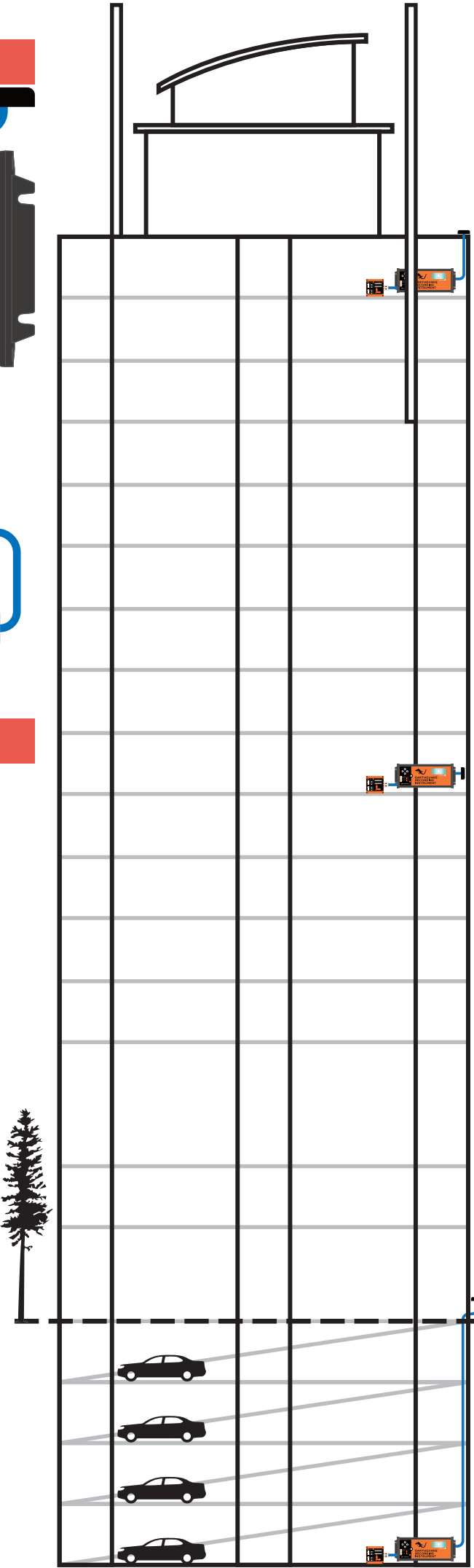
GECKO ERI-2G
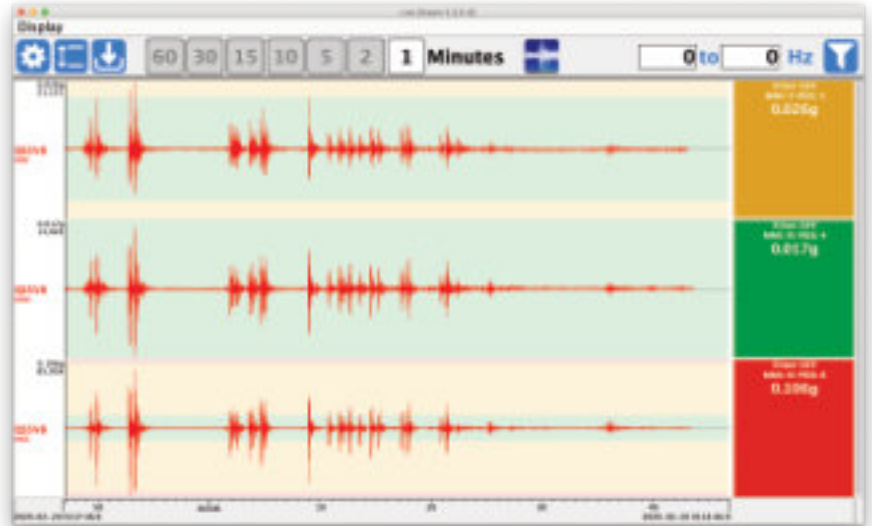
The affordable building alarm accelerograph

The Gecko ERI-2G is a strong motion accelerograph that provide an affordable solution for structural monitoring and earthquake alarms. The acceleration sensor is sensitive enough to record earthquakes that may not be detectable by humans, and is certainly capable of recording the motion of any earthquake that may be large enough to be of concern to building safety.

Gecko ERI-2G will store over a year of continuous time series data on its memory card, will generate alarm signals when a major seismic event is detected, and will record for 12+ hours without mains power should an earthquake interrupt the mains AC supply.

Data can be streamed in real time to a local PC running our free **Streams** software that will display the data on the screen with a colour-coded visual indicator of intensity for rapid response when an earthquake has been felt.

Waves, our data analysis program, and **Streams** are available for Windows, macOS and Ubuntu.

Download Streams & Waves for free at **src.com.au**

DPWH guidelines: Requirements	Compliance: Gecko ERI-2G
Accelerograph	**Accelerograph**
• Seismic qualified as tested by recognized international testing laboratory	• Tested by University of Technology Sydney, University of Melbourne, ISO 9001:2015
• Stores seismic activity information as gathered by the attached accelerometer	• Records triaxial data from integrated accelerometer continuously to SD card storage
• Equipped with fault detection	• Fault detection - SD card full/error, low power, high temperature
• Provides real-time alarm information (either audio, visual or both) during an earthquake event.	• Real-time alarm output to relay circuit during earthquake - buzzer, and visual on Gecko LCD
• Equipped with internal battery back-up power to ensure continuous operation during a power fluctuation.	• Internal battery, charge regulator, and locally compatible AC plug pack included
• Minimum design life: 10 years and should be demonstrated and certified to have a 40,000-hour (minimum) mean time between failures	• Designed for minimum 10 year operation. SRC-made SMAs used in structural monitoring have operated for over 20 years, producing an aggregate MTBF of greater than 5 years
• Minimum of three components (vertical, longitudinal and transverse)	• Three aligned accelerometer components: vertical, longitudinal and transverse
• Natural Frequency: Above 50 Hz	• Flat response to 300Hz
• Damping: Approximately 60-70 percent critical	• Sensors have critical damping of 100%
• Sensitivity: 2g	• Sensitivity is 2V/g with ±5V range, giving > ±2g input range
• Bandwidth: DC to 100 Hz	• Bandwidth is DC to 300Hz
• Environment: IP 67	• Compliant with IP67 for dust and water ingression
Recording	**Recording**
• Sampling Frequency : Minimum of 100 samples per second	• Sampling rates up to 4000 samples per second available
• Time: From at least 20 seconds before the ground shaking begins until 30 seconds after the last triggering level motion	• Data is stored continuously before and after trigger time, meaning that any number of seconds of data from before or after the trigger time can be retrieved
• RMS Noise: System noise shall be less than 40µg measured over 0-30 Hz	• System noise: 7µg/√Hz (i.e. <40µg above 0.03Hz)
• Media :Memory Card	• Media: 64GB SD Memory Card standard
• Continuous Recording : capable of continuous recording	• Continuous recording is always enabled
• AD Converter : 16 bits	• AD Converter: 32 bits (i.e. <1µg noise with ±2g full scale)
Timing	**Timing**
• Interval: Half a second or less	• Data storage interval at 100sps is less than 0.5 seconds
• Accuracy: Plus or minus 0.2 second per 100 seconds	• Time accuracy: 0.00001 seconds, synchronised every second
• Type : GPS or NTP Server	• GPS used for timing and position
Triggering	**Triggering**
• Method: Pendulum or other device using earthquake motion as an exciting force	• Solid state sensor. Earthquake motion provides excitation
• Level: Accelerograph: 0.5 to 100 gals nominal velocitimeter: 5 µm/s to 1 mm/s	• Level triggering for accelerograph can be set at any value from 0.2 to 1980 Gal
• Time: Full operation of accelerograph/velocity in not over 0.1 second after activation.	• Full recording operation 100% of time, regardless of trigger activation
Power	**Power**
• Battery maintained by charger	• NiMH battery maintained by AC power supply to internal charger
Communication	**Communication**
• Ethernet: 10 base –T or 100 base-TX	• 10/100 Ethernet included
• Protocol: TCP/IP FTP/SFTP	• Serial streaming over TCP/IP