

# LPS-1 LONG PERIOD SEISMOMETER SYSTEM

*The world's first  
complete seismometer  
system in a single package.*



INCLUDES:

- Sensor
- Acquisition Hardware
- Analysis Software

The LPS-1 is the world's first commercial seismometer to measure down to quasi-DC frequencies. It is sensitive enough to routinely observe earth tides! Micro-g LaCoste applies over 70 years of gravity meter expertise to seismology – enabling scientists to explore signals previously undetectable.

## APPLICATIONS

- Tidal measurements
- Ocean wave analysis
- Free oscillations and Eigenmode studies
- Complete earthquake characterization
- Surface Wave analysis
- Source discrimination (e.g. earthquake v. explosion)
- Volcanic tremor measurements
- Low Frequency Earthquakes
- Slow-slip event measurements
- Geothermal, groundwater, reservoir characterization

## PERFORMANCE SPECIFICATIONS

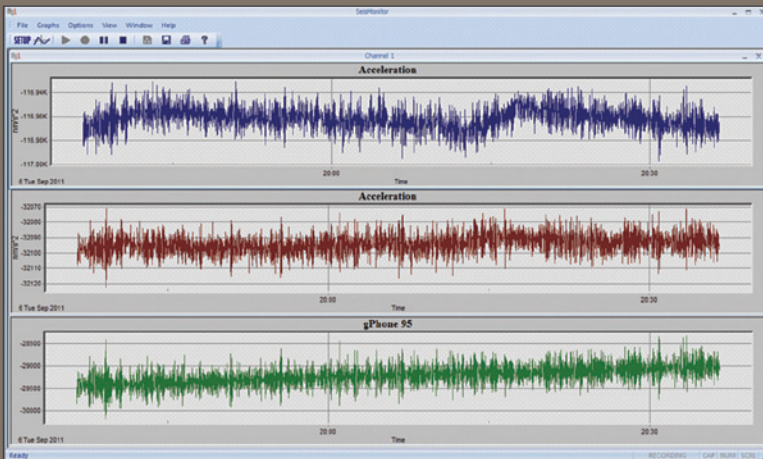
OUTPUT	10-36VDC, 700mWatt
A/D SENSITIVITY (24-BIT)	<i>Acceleration:</i> 6nm/s <sup>2</sup> <i>Velocity:</i> 3nm/s (in 0.3 Hz seismic frequency band)
RANGE	±100 mm/s <sup>2</sup> (±10,000 milliGal)
FREQUENCY RANGE	Quasi-DC (~48hrs, or 5μHz) to 10Hz
OPERATING TEMPERATURE	-10 to +45°C
LEVELING	3 adjustable legs with lock, 20 arc-second bubble level

# LPS-1 SENSOR FEATURES



- Quasi-DC (~48hrs, or 5 $\mu$ Hz) to 10Hz bandwidth
- Small, portable size
- Temperature stabilized (unless de-selected for lower power consumption)
- 3 leveling legs – lockable
- Field-rugged and water-resistant housing

## SeisMonitor™ Analysis Software



- Windows-based software (XP or above)
- Can log 1 to 4 channels (i.e. up to 4 LPS-1 sensor heads)
- Real time Acquisition: 100Hz input, 1Hz Graphical display: Acceleration, Velocity, and Displacement
- Post-Acquisition Reprocessing: Raw/binary input (100Hz), TSoft input (1Hz), ASCII (csv) input (1Hz)
- 4 Output formats: Raw/binary (100Hz), mini-SEED (1Hz), TSoft (1Hz), ASCII (1Hz)
- Customizable graphic interface and Output
- Data Logger Interface: Activate channels, Set Onboard Sample Rate, Date/Time, SD card file manipulation, Acquisition Start/Stop

# DATA LOGGER MODULE



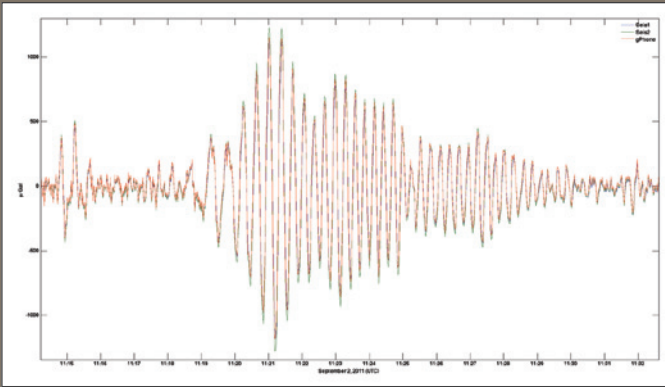
FRONT VIEW



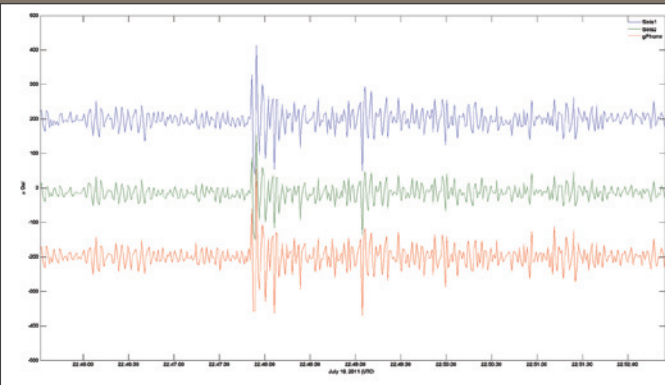
REAR VIEW

- Controls (and optionally heats) up to 4 LPS-1 sensors
- 1-16Gb Removable SD card slot for push-button, autonomous, binary data storage (no PC required)
- Selectable 1Hz or 100Hz sample rate
- GPS input to slave internal clock and time stamp data
- 10MHz Reference Input (TTL) for accurate time stamping when GPS not available
- Auxiliary 10MHz Output (TTL)
- RS232/USB computer interface to SeisMonitor™ software if desired
- 4 Auxiliary Single-Ended Analog Inputs ( $\pm 10V$ )
- 4 LPS-1 Analog Outputs
- Robust, water resistant, field-ready housing

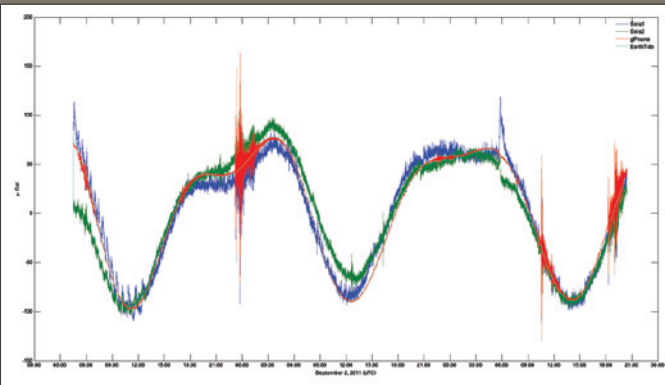
# EXAMPLE DATA



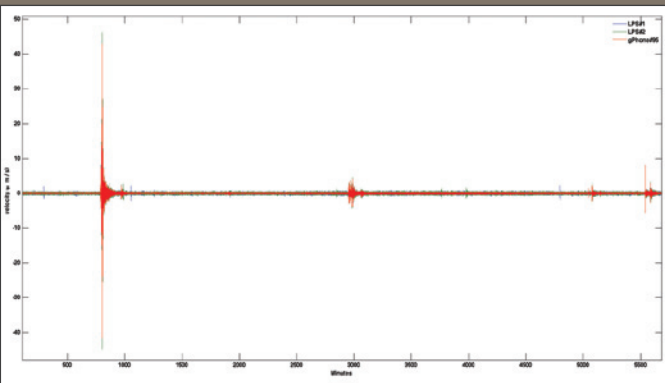
Comparison of two LPS-1 sensors and a gPhone gravimeter during an earthquake. The LPS-1s are in blue and green, and the gPhone is plotted in red.



The same instruments during quiet seismic activity.



The same instruments over 48 hours, clearly indicating the observation of Earth tides.



Finally, a plot of the 3 sensors integrated to get velocity.

# POWER, WEIGHT & DIMENSIONS

SENSOR INPUT POWER	10-36VDC, 700mWatt
HEATER POWER	12VDC regulated, 25W max, 0.3 W/ $\Delta T^{\circ}C$
DATA LOGGER INPUT POWER	12VDC regulated, 7Watts during warm-up, 5.5Watts steady state
AC/DC CONVERTER INCLUDED	100-240VAC, 50-60Hz
SHIPPING WEIGHT	Sensor 3kg, Data Logger 2.5kg, Case: 4kg, Total: 12kg

## INCLUDED ITEMS

- 1 LPS-1 Sensor
- 1 Data Logger Unit
- 1 ODU communication cable (5m)
- 1 AC/DC power converter for Data Logger
- 1 12VDC power cable for Data Logger
- 1 Installation disk for SeisMonitor™ (PC Not Included)
- 1 weatherproof carrying case
- Additional LPS-1 Sensors & Cables can be purchased separately

Specifications subject to change.



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