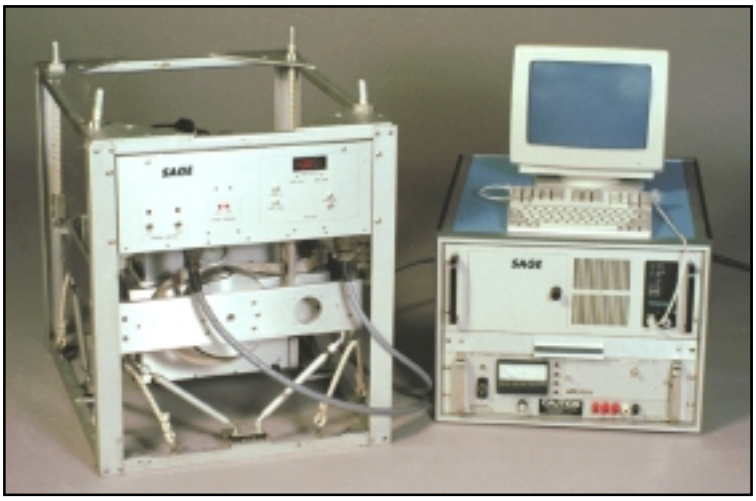
FUGRO-LCT

SAGE Ô

The Fugro-LCT Control System for Air/Sea Gravity Meters

The **SAGE** Ô system is a digital enhancement of the classic LaCoste & Romberg Model S Air-Sea gravity meter. **SAGE** Ô provides a flexible PC-based digital system replacing much of the analog circuitry used in the original LaCoste & Romberg system. The **SAGE** Ô system improves the accuracy of critical signal measurements while eliminating many noise sources.

The **SAGE** Ô system is available exclusively from FUGRO-LCT.



The above photo shows the complete SAGE system with the gravity platform and measuring element on the left and the electronics control package on the right.

Features:

- ❑ Unfiltered raw data recording for maximum processing flexibility:
  - Provides ability to compute gravity using filters appropriate to the motion experienced in the recording environment
  - Provides ability to determine and correct errors at the raw data level
- ❑ Improved beam sensing electronics
- ❑ Isolation of sensor signals from noise sources
- ❑ Improved temperature control using proportional heaters
- ❑ Digital recording of pressure and temperature

Sampling:

- ❑ Gravity recorded at one second sample rate, twenty-four hours per day:
  - Takes full advantage of DGPS velocity measurement precision
  - Provides maximum possible data coverage
- ❑ Analog display of SAGE data record on a graphics printer

Diagnostics:

- ❑ Built-in diagnostics, self-monitoring and self-testing for temperature, leveling, pressure and system malfunctions
- ❑ Automatic visual and audio alarms alert operator to possible system malfunctions

Reliability:

- ❑ The SAGE Gravity System uses proven LaCoste & Romberg sensor technology and state-of-the-art control hardware.

SAGE Technical Specifications

System Performances	System resolution	0.01 mGal
	Mechanical system response time	4 milliseconds
Estimated Survey Resolution	Good operating conditions	Better than 0.2 mGal at 0.5 km wavelengths
	Average operating conditions	Better than 0.5 mGal at 2 km wavelengths
SAGE System Filtering	Analog anti-alias filtering prior to 100 Hz digital sampling	1 sec. 4-stage Butterworth
	Digital filter prior to one sec. sampling	100-point running average of 100 Hz. samples
Stable Platform	Standard L & R design with updated analog electronics	
	Fully-adjustable platform period	4.3 minutes standard setting
Physical Installation	The gravity sensor and platform should be located as near as possible to the center of pitch and roll of the vessel The gravity element and electronics console may be installed with a standard separation distance of up to 30 Feet. (150 Foot option is available)	
Ancillary Data Inputs	Serial	4 ports, RS232 compatible, accepting up to 3072 bytes per port per ten second interval
	Parallel	4 ports, TTL+5VDC, accepting up to five characters per port A time tag is automatically appended onto each value received over a parallel port.
Digital Data Recording	The SAGE system creates several digital data files on the computer's hard drive. These files include:	
	One second data	(.GRV) One second raw gravity system signals
	L & R format	(.LRF) Ten second gravity system signals emulating traditional LaCoste & Romberg format
	Monitors	(.MON) One minute samples of key SAGE system monitor data (temp., pressure, power, etc.)
	Messages	(.MSG) Contains SAGE system messages including operating status, error messages, and messages indicating system changes
	Parallel data	(.PAR) Parallel data from ancillary data sources
	Serial data	(.SI#) Serial data from ancillary data sources
Analog Data Record	Analog records are produced on a graphics printer. Any SAGE system signal may be selected for graphical plotting	
Recording Media	Iomega zip disk 3.5 inch floppy diskette Standard fan-fold 8.5 x 11 inch printer paper	
Digital Output	SAGE L&R format data may be transmitted to external recording systems\ via RS232 serial port 4	
Power Requirements	Maximum 1 kilowatt, 50/60 Hz, 120 vac	
Shipping Configuration	The complete system consists of 10 pieces at a gross weight of 450 kg	
Technical Support	The FUGRO-LCT Technical Center provides comprehensive field support services	

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