Common sense…uncommon innovation

GEOTECH INSTRUMENTS, LLC

FEATURES

- **24-bit delta sigma A/D converter**

- **3 or 6 channels**

- **All-in-one solution: same electronics, same packaging**

The SMART Series of instruments represent the logical solution for seismological data acquisition: a common design for a digitizer, portable recorder, and strong motion recorder (the all-in-one solution). The traditional difference between these instruments vanishes, a strong motion recorder can now simultaneously record continuously weak motion data on a large selection of media: up to 60 GB hard disks, PCMCIA ATA disks, IBM microdrives, Compact Flash memory, etc.

Extreme low power consumption is supplemented by a complete set of communication ports: serial, Ethernet, USB2.0, IEEE1394, and IrDA. The removable and hot-swappable cartridge has a USB2.0 port for very fast data download.

THE SMART SERIES

MODEL SMART-24D™ Digitizer
MODEL SMART-24R™ Recorder
MODEL SMART-24A™ Accelerometer

NEW

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SMART-24 SERIES SPECIFICATIONS

DATA ACQUISITION

Number of inputs	3 or 6 channels
Input type	Balanced differential with transient protection suitable for both passive and active sensors
Input range	20 volts p-p bipolar differential
Gain	Software selectable: x1, 2, 4, 8, 32, 64
Common mode rejection	Greater than 80 dB
Digitizer	Over sampled 24-bit Delta Sigma ADC with digital signal processing, 1 per channel
Anti-alias filter	Brickwall digital FIR filter, cutoff at 80% of and 130 dB down at output Nyquist frequency. Causal filter optional.
Dynamic range	132 dB typically at 1 gain
Intermodulation distortion	Less than –110 dB
Sample rates	1,5,10, 20, 40, 50, 100, 125, 200, 250, 500, 1000, 2000 sps primary sample rates
Noise	< 1 count RMS typical at 50 sps, x1 gain
Calibration	Pulse, sine wave, pseudo-random wide band noise, and step functions

ACQUISITION MODES (24R and 24A only)

Continuous	User selected start time, ring buffer or until storage full
Timed	16 user programmable recording windows
Triggered	Threshold, STA/LTA (updating or non-updating), and external
Pre-event length	Up to 32,768 data samples
Post-event length	Up to remaining data storage

DATA STORAGE (24R and 24A only)

Type	Up to 60 GB hard disk, PCMCIA ATA hard disk, Compact Flash memory, IBM microdrives
Recording format	Standard file system, drives readable directly on a PC, format converters available for SUDS, ASCII, GSE (For other formats, contact factory.)

TIMING

	Voltage controlled TCXO with optional external GPS synch.
Accuracy	±100 microseconds of UTC with GPS lock
Stability	0.5 PPM (when unlocked)
GPS duty cycle	User programmable GPS power on/off cycle times

INTERFACES

Indicators	Large LCD display
Communications	RS232, Ethernet, USB2.0, IEEE1394 and IrDA ports
GPS	Dedicated RS-422/485 serial port
Power	Main power and external battery inputs
Other I/O	Analog input, external trigger in/out, 1 PPS in/out
Telemetry	CD1.1 output format

INTERNAL SENSORS (24A only)

Type	Force balance or MEMS
Response	DC to 50 Hz
Full scale	±2g (optional ±1g, ±0.5g, ±0.25g)
Dynamic range	>120 dB

POWER (24D only)

Input	10 to 15 VDC
Power consumption	0.75 watt average (3 channels @ 100 sps and GPS power cycling) 0.9 watt average (6 channels)

PHYSICAL

Construction	Portable rugged molded case
Size	4.1 in (105 mm) w x 10.35 in (263 mm) l x 13.65 in (347 mm)
Weight (24D only)	8.5 lbs (3.9 kg)
Operating temperature	-20°C to +65°C; PCMCIA PC Card and hard disk options may limit this range on 24R and 24A models
Humidity	0 to 100%