

Nanometrics **Centaur** digital recorder:
combines ease of use with industry-leading performance

Centaur

**A truly modern digital recorder that
meets today's field deployment challenges**



**Centaur simplifies
high performance
seismic recordings
for any deployment –
portable or permanent,
standalone or
networked.**

Deployments and Data Returns have never been easier

- Field deployments are now faster and more efficient
- Easy access to configuration and State-of-Health data via intuitive web interface
- Improved dynamic range at higher sample rates
- SeedLink availability (time series & SOH data support)

Reliability

- Redundant, fail-safe data archive with field swap capability
- Rugged, water proof field enclosure for harsh environments, rated for continuous submersion (IP68)
- Dramatically improved protection for ESD & lightning

Exceptional Performance

- True 24-bit performance available in 3 or 6 channel configurations
- Suitable for both broadband and passive sensors using the new High Gain option
- Sample rates of up to 5000 sps to support high frequency applications
- Full digitizer/sensor response files generated on-demand
- Fully configurable digital filtering

Onboard Data Processing

- Advanced bandpassed triggering
- Derived data products, including: PGA, PGV, PGD
- Acquisition and data management of high precision GPS data (BINEX) and other data formats



Centaur

Specifications subject to change without notice

SPECIFICATIONS

SENSOR INPUTS

Channels	Available with 3 or 6 channel inputs
Sampling	Simultaneous on all 3 or 6 channels
Resolution	24 bits per channel, full 24-bit range to clip level
Input Impedance	40kΩ (standard digitizer) 1.8MΩ (high-gain digitizer)
Input voltage range (peak-to-peak)	40V, 20V, 10V, 4V, 2V, 1V (standard) 10V, 5V, 2.5V, 1V, 0.5V, 0.25V (high-gain)

SENSOR COMPATABILITY

Sensor Types	Broadband active and short period passive seismometers and geophones
Control Lines	6 per connector – typically used for Cal enable, mass centre, mass lock/unlock, XYZ/UVW select
Sensor Power	Supply power pass-through to sensor (9-36VDC, 1A) Over-current and surge protected
Auto Mass Centering	Configurable thresholds, intervals, retries
Serial Interface	Supports digital management of Nanometrics sensors

DIGITIZER PERFORMANCE

Type	True 24-bit ADC per channel
Preamp Gain	Standard: 1x, 2x, 4x, 10x, 20x, 40x High Gain: 4x, 8x, 16x, 40x, 80x, 160x
Sample Rates	1, 2, 5, 10, 20, 40, 50, 80, 100, 125, 200, 250, 500, 1000, 2000, 5000sps
Dual Sample Rates	A second sample rate can be selected from the sample rates above
Anti-Alias Filters	Attenuation: 140dB at output Nyquist, 0dB at 80% Nyquist frequency
Digital Filters	User-configurable low-pass and high-pass 1st to 5th order, 0.1 mHz to Nyquist Different filters may be configured for primary and secondary sample rates and Sensor A and B
Accuracy	Nominal gain accuracy within ±0.5%
Dynamic Range	142dB @ 100sps, 135dB @ 500sps (full-scale peak to RMS shorted-input noise)

CALIBRATION

Signal Source	16-bit DAC with 30ksps output
Attenuator Selectable	1x, 10x, 100x, 1000x attenuation
Waveforms	Playback standard .wav files Step, sine and PRB provided Users can upload custom waveforms

RECORDING (CONTINUOUS)

Formats	MiniSEED, Nanometrics NP
Internal Memory	8GB flash memory (other capacities available upon request)
Removable Media	SD Card up to 64GB

RECORDING (EVENTS)

Triggers	Bandpassed STA/LTA, Threshold
Captured Data	MiniSEED, ASCII
Data Products	Peak Ground Motion (i.e PGA, PGV, PGD) statistics calculated on the instrument

STATE-OF-HEALTH INPUTS

Channels	3 singled-ended inputs, ±5V range, 50KΩ input impedance
Sampling Interval	Configurable from 60 to 3600 seconds
Accuracy	18 bits effective resolution

DATA RETRIEVAL

File Transfer	Via Ethernet, optional WiFi or Ethernet-connected DSL, VSAT, cellular, radio
Media Exchange	SD card field-swappable during continuous recording with no loss of data

DATA STREAMING

Continuous	Seismic data and State-of-Health data
Formats	SeedLink (optional), Nanometrics NP (standard)
Events	Triggered event data: email, secure file transfer, other options available

TIMING

Timing System	Internal DCXO clock disciplined to GPS, or External NTP or PTP (Precision Time Protocol) source (Can also act as a PTP master)
Timing Accuracy	<5µsec (GPS Always on) <100µsec (GPS duty cycled) <100µsec – external PTP on local LAN
GPS Receiver	Internal 14-channel receiver
GPS Power	Selectable: Always on, Duty Cycled, or Off

COMMUNICATIONS

Web-based UI	Supports standard PC, tablet and mobile devices
Interfaces	10/100 Base-T Ethernet, WiFi (optional), Serial via USB
IP Addressing	Static, dynamic (DHCP) or link-local IP
Protocols	UDP/IP unicast/multicast, HTTP data streaming

LOCAL USER INTERFACE

Removable Media	SD card protected in waterproof media bay
External LEDs	System status, Ethernet link, Time quality, Media card status, Sensor A & B
Buttons	WiFi wakeup, media eject, system shutdown
POWER	
Power Supply	9-36VDC isolated input
Protection	Electronic resettable fuse design, lightning surge, reverse battery and short circuit protection
Battery Manager	User-configurable low voltage shutdown and restart thresholds

POWER USAGE (GPS DUTY CYCLED)

3 chan. (standard)	1.0W, 1.3W with Ethernet
6 chan. (standard)	1.6W, 1.9W with Ethernet
High Gain	Add 0.2W for every 3 high-gain channels

CONNECTORS

Sensor	26-pin Mil. circular, shell size 16, female
Power	3-pin Mil. circular, shell size 8, male
Ethernet	Watertight RJ-45
USB	2.0 Type A receptacle behind media bay door
GPS Antenna	TNC (female) with 3.3V supply for active antenna
State-of-Health	4-pin Mil. circular, shell size 8, female

PHYSICAL CHARACTERISTICS

Housing	Aluminum
Weather Resistance	Rated to IP-68 with connectors mated
Humidity	0 to 100%
Operating Temperature	-20°C to +60°C (Ultra-low temperature option available. Please contact Nanometrics.)
Storage Temperature	-40°C to +70°C
Weight	1.9 kg (3-channel), 2.0 kg (6-channel)
Size	196 mm (L) x 137 mm (W) x 88 mm (H)