KINEMETRICS

Advancement through Innovation

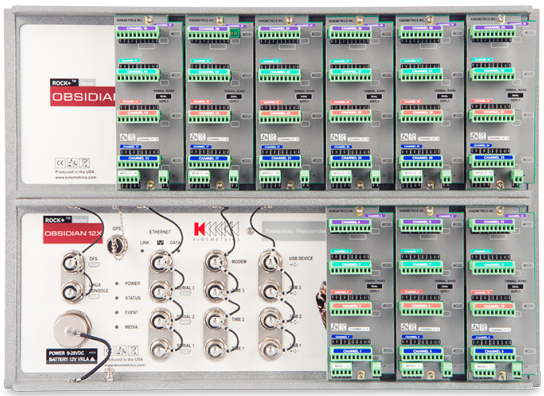
Dolomite+

Up to 36 Channels Central Recording System

The ***Dolomite+*** is a full-featured Central Recording System based on the Obsidian recorder. Offering high dynamic range on up to 36 channels and with exemplary timing accuracy and spectral purity, the ***Dolomite+*** advances the standards of seismic data recording. Built on Kinemetrics' ***Rockhound*** platform, ***Dolomite+*** is easy to integrate within our OasisPlus platform or with other ***Rock*** line of products & ***Quanterra*** instruments allowing users to develop highly flexible monitoring solutions. As with all Kinemetrics instrumentation, the Dolomite is designed and tested to ensure ultra-reliable operation in rugged field conditions.

Inside the galvanized steel NEMA4X enclosure, sensor cables are routed behind the Obsidian and terminate in convenient individual channel screw terminals. Also protected within the housing are an EMI/RFI filter up to four 12VDC 35Ah gel cell batteries, and additional device options such as an Ethernet switch, GPS amplifier, signal conditioner, and a low voltage disconnect switch.

The ***Dolomite+*** manages power by constantly monitoring AC power loss, the batteries' state of charge, temperature and voltage levels. During an AC power loss the system continues to operate without disruption on battery power. As AC power is restored, the Dolomite will determine if battery charging is required and start the charge cycle.



FEATURES

- Up to 36 channels at ~130dB dynamic range
- Record and communicate multiple sample rates
- Each channel can be set up independently
- Multiple data formats and telemetry protocols
- Power Management for ultra-low power operation
- Designed for quick and easy installation & low total cost of ownership
- Power and protect additional options such as communication devices, signal conditioner, low-voltage disconnect switch, GPS amplifier, etc
- Large-capacity (e.g. 32GB) storage card for data separate from system

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SPECIFICATIONS

Housing

Type: NEMA 4
Mounts: Wall or floor with direct bolts into concrete or mounting supports
Size: Width, 21.5" (55 cm); Depth, 16" (41 cm); Height, 24" (61cm)
Weight: Without batteries, 100 lbs. (45 kg); With 2 batteries, 150 lbs. (68 kg)

Environment

Operating temperature: -20° to 70°C Operation
Humidity: 0-100% RH (Non-condensing)

Channels

Obsidian: 3 x (3+1) Channels (Obsidian 12X)
6 x (3+1) Channels (Obsidian 24X)
9 x (3+1) Channels (Obsidian 36X)

Input level: 5Vpp, 10Vpp, 40Vpp Differential Input

Data Acquisition

Type: Individual 24-bit Delta Sigma converter per channel
Anti-alias filter: Double Precision FIR Filter Causal/Acausal; >140 dB attenuation at output Nyquist
Dynamic range: 200 sps ~127 dB (RMS noise to RMS clip - Typical)
100 sps ~130 dB (RMS noise to RMS clip - Typical)
Frequency response: DC to 80 Hz @ 200 sps
Sampling rates: 1, 10, 20, 50, 100, 200, 250, 500, 1000, 2000, 5000 sps
Channel skew: None – simultaneous sampling of all channels
Acquisition modes: Continuous, triggered, time windows
Output data format: 24 bit signed (3 bytes) in user selectable format
Parameter calculations: Calculations of key parameters in real- time, including JMA intensity
Real time digital output: Ethernet or RS-232 output of digital stream

Trigger

Type: IIR bandpass filter (three types available)
Trigger selection: Independently selected for each channel
Threshold trigger: Selectable from 0.01% to 100% of full scale
Trigger voting: Internal, external and network trigger votes with arithmetic combination
Additional trigger: STA/LTA, Time Window

Timing

Type: Oscillator digitally locked to GPS or PTP: Integrates completely with system, providing timing, internal oscillator correction and position information.
Shared timing: 3 Ports for shared timing for multiple local units
Timing: accuracy: <1 microseconds of UTC with GPS or PTP

Storage

Data slot: Internal SDHC Card Slot, standard 32 GB
System slot: Internal SDHC Card Slot, 4 GB
Recording capacity: Approximately 42 kB per channel per minute on Memory Card of 24-bit data @ 200 sps.
(33 days of 4x200sps recording on 8GB Data card)
SDHC Format: Linux EXT4
Data: Offloaded automatically to removable thumb drives connected to a USB host port. Parallel recording (mirroring) data on an external USB thumb drive.
USB drives format: FAT32

Communications

Ethernet interface: Real Time Telemetry (Multiple destinations TCP/IP Protocol), Parameter set up, and event retrieval (FTP/SFTP) RS-232 interface: Real Time Telemetry (over modem, radio, etc.), Parameter set up, and event retrieval
Modem: Built in modem, Remote access, initiated by user or by the Obsidian
Telemetry: Real-time data via DFS, SEEDLink, Earthworm, Antelope compatible ORB server, or Altus SDS protocols.

Instrument Software

Type: Multi-tasking operating system supports simultaneous acquisition and interrogation; allows remote and automatic firmware upgrades
Security: Supports SSH and SSL
System control: Configure sample rate, filter type, trigger type and voting, maintains communications and event storage
File formats: Kinemetrics EVT, MiniSEED, SAC, COSMOS, MATLAB, SUDS, SEISAN, ASCII, others
Intelligent alerting: Initiate communications when an event is detected or if an auto-diagnostic failure occurs
Auto-diagnostics: Continuously check system voltages, temperature, humidity, and timing system integrity
Rapid setup: Can be configured from a parameter file
System timing: Supports PTP Slave and PTP Master timing (Using Internal GPS as Master clock), NTP and External 1PPS

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I/O and Display

Power input:	Mil-style connector for DC power input, external battery connection, Power over Ethernet (Option)
Interfaces:	10/100 BaseT Ethernet Port
(M12 connectors)	3 x USB 2.0 Host Ports
	USB 2.0 Device
	3 x RS-232
	DFS Port (RS232)
	Linux Console (RS232)
	POTS Modem
	3 x Time/Power Ports (1PPS In/Out, Switched Power)
	GPS Antenna (TNC)
EMI/RFI protection:	All I/O lines EMI/RFI and transient protected
LED:	System, power and event status, Ethernet Link & Data

Support Software

Altus File Viewer:	Multiplatform program for rapid review of waveforms and event information.
Antelope:	Comprehensive commercial network operational and mgmt system for medium and large networks
Earthworm:	Comprehensive public domain network operational and management system for medium and large networks
NMS:	Commercial PC-based network management system for small to medium sized networks via modem or real-time data R*ockTalk*: Multiplatform program for command and control
Rockhound:	Commercial open architecture user-extensible real-time data collection and processing software that runs on a variety of computers
PSD:	Commercial Pseudo Spectral Density software for earthquake data analysis
SMA:	Commercial Strong Motion Analyst software for earthquake data analysis and processing
K2COSMOS:	Conversion software from Altus EVT file format to COSMOS v1.20 format (COSMOS format can also be produced natively from the Obsidian)
Miscellaneous:	Format converters to ASCII other formats. Web Server for command and control, Optional
Software Development Kit and Compilers.	Contact Kinemetrics for other options.

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