

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' **Rock** platform, **Dolomite+** is easy to integrate 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 enclosure the sensor cables are routed behind the **Dolomite+** and exit on either side of the mounting plate for channel distribution, tie points are provided for cable management at these locations. An AC power cord, a dual outlet with transient protection and an EMI/RFI filter is provided to protect the AC/DC charger and power supply. Up to four 12VDC 35Ah gel cell batteries can be housed inside the enclosure.

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 of battery power. As the AC power is restored the Dolomite will determine if battery charging is required and start the charge cycle.

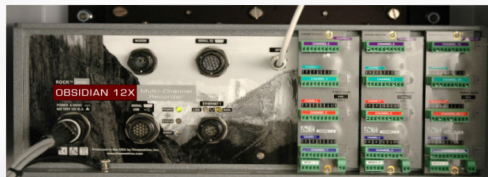
# Dolomite+

## Up to 36 Channels Central Recording System

### 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

### SPECIFICATIONS



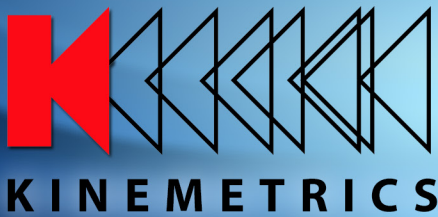
12 Channel Dolomite+  
based on Obsidian Recorder

#### 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" (61 cm)  
**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)



## SPECIFICATIONS

### 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: Kinemetrix 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

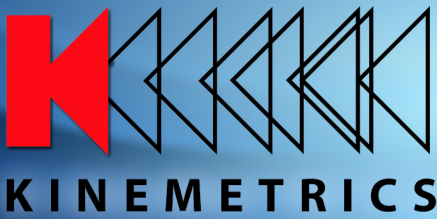
### I/O and Display

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



## SPECIFICATIONS

### Support Software

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