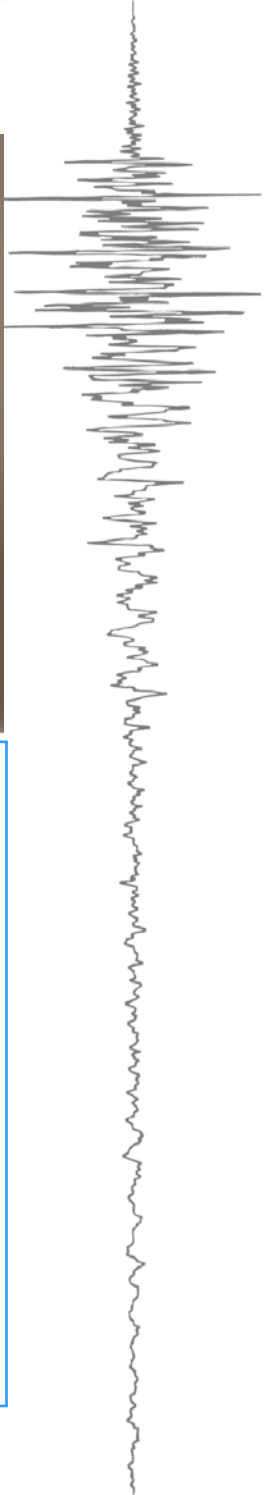


## Up to 36 Channels Central Recording System

### KEY BENEFITS

- ◆ 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



### INTRODUCTION

The *Dolomite* is a full-featured Central Recording System designed with the end user in mind. 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' new *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 Granite 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 Granite will determine if battery charging is required and start the charge cycle.



### Housing

**Type:** NEMA 4

**Mounts:** Wall or floor with direct bolts into concrete or mounting supports

**Size:** Width, 22.5" (57 cm); Depth, 16" (41 cm); Height, 24" (61 cm)

**Weight:** Without batteries, 100 lbs. (45 kg); With 2 batteries, 150 lbs. (68 kg)

12 Ch. Dolomite based on Rock Platform

# ROCK Family Dolomite Central Recording System

## Granite Digital Recorder Specifications

### Input Channels

Sensor channels: 12, 24 or 36 (Other configurations available)  
Input level: 5Vpp, 10Vpp, 40Vpp Differential Input

### Data Acquisition

Type: Individual 24-bit Delta Sigma converter per channel with Black Fin DSP on each 4 Channel board  
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, 50, 100, 200, 250, 500, 1000 sps (2000 sps available depending on output format)  
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  
Real time digital output: Ethernet or RS-232 output of digital stream (contact factory for available formats)

### 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

### Storage

Primary slot: Internal Compact Flash Slot, std 4Gb up to 64Gb  
Secondary slot: Internal SD Card Slot  
Storage Module: (Option) Additional User Accessible Compact Flash Slot  
Accessible SD Card Slot (Replaces internal slot)  
Recording capacity: Approximately 42 kB per channel per minute on Memory Card of 24-bit data @ 200 sps.  
Recording format: Main CF Card Linux EXT3  
Removable Media DOS File System

### Firmware

Type: Multi-tasking operating system supports simultaneous acquisition and interrogation; boot loader allows remote and optionally automatic firmware upgrades  
System control: Configure sample rate, filter type, trigger type and voting, maintains communications and event storage  
Supported File Formats: Kinometrics EVT, MiniSEED, SAC, COSMOS, MATLAB, SUDS, SEISAN, ASCII  
User interface: 1 10BaseT Ethernet Ports  
1 RS232 (2<sup>nd</sup> Port/Modem Optional)  
1 USB 1.1 Device  
2 USB 2.0 Ports (1 OTG/1 Host)  
1 Bluetooth Interface (optional)  
Intelligent alerting: System can be configured to initiate communications when an event is detected or if an auto-diagnostic failure occurs  
Auto-diagnostics: System can be configured to continuously check system voltages, temperature, humidity, and timing  
Rapid setup: Unit can be configured from parameter file stored on Compact Flash

### Timing

Type: Oscillator digitally locked to GPS or *RockNet*  
GPS: Integrates completely with system, providing timing, internal oscillator correction and position information, optional power cycling.  
*RockNet*: Shared timing for two units over CAT-5 cable  
Timing: Accuracy: <1 microseconds of UTC with GPS  
Power: Power consumption: <100mW (active)

### I/O and Display

Power input: Mil-style connector for DC power input, external battery connection, 1-W power LAN  
RS-232/USB input: Mil-style connector with full RS-232C interface with modem control, USB 1.1 Device connection, RS232 Console connector  
Ethernet Connection: 10 Base-T Ethernet Interface  
EMI/RFI protection: All I/O lines EMI/RFI and transient protected  
LEDS: System, power and event status, Ethernet Link & Data

### Power Supply

Type: Internal high efficiency switched power supply and battery charger system  
Input: 8-18 VDC 4W (typical) for 12 channels  
Int. Charger Operation: 15.5VDC Required  
Ext. Power Module: Input 100-250 VAC 50/60 Hz Output 15.5 VDC  
Internal Battery Charger: Digitally temperature compensated output for VRLA battery with reverse protection and deep discharge recovery.  
Fuses: None uses resettable Polyswitch protection  
Batteries: External Valve Regulated Lead Acid (VRLA) Battery Optional battery housing.  
Current drain: ~335ma @12V (12 Channel System)

### 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 (Multiple destinations TCP/IP Protocol), Parameter set up, and event retrieval  
Modem: Remote access, initiated by user or by the Granite. Optional

### 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  
*RockTalk*\*: 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 Granite)  
Miscellaneous: Format converters to ASCII other formats. Web Server for command and control, Optional Software Development Kit and Compilers. Contact Kinometrics for other options.

\*No charge

### Environment

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