GeoDAQ 5-24 Seismograph

High Resolution Seismic Recording System with High Speed, Compact Size & Low Power

GeoDAQ 5-24 is the fifth generation of portable seismograph systems. It can be configured as a stand-alone monitoring system, a refraction system or a distributed seismic reflection system.

The GeoDAQ 5-24 is compatible with 61-pin spread cables and geophones.

Vscope software controls the seismograph, providing acquisition control, data QC and file storage. This seismograph utilizes industry standard Ethernet for command, control, and fast data file transfer.

GeoDAQ 5-24
24 Channel Seismograph

System Features:

Cutting-Edge Performance
- 1 to 24 channels per seismograph node
- High-Speed 24bit ADC – up to 64,000 sps
- Wide Bandwidth – DC to 27 KHz
- Low Distortion – <0.00008% THD @ 500 sps
- Wide Dynamic Range – >124 dB @ 500 sps
- Low Noise – <0.15 µV RMS @ 500 sps

Multiple Time Synchronization Modes
- GPS Clock Discipline for Continuous Recording
- VHF/UHF Radio for Underground Use

Multiple Trigger Modes
- Trigger on hammer switch for shot acquisition
- Trigger using GPS time for noise monitoring
- Trigger using LTA/STA for event monitoring
- Two trigger circuits available, one for standard and a second for low-voltage inputs

Multiple Data Storage Methods
- 16 Gbytes internal memory card standard
- External USB-compatible 32 GB expansible Memory Plug for data backup and transfer

Included Mesh Wi-Fi Adapter
- Conveniently connects multiple seismographs and to notebook computers

Built-in Dual Ethernet Network
- Use network to configure seismograph, monitor noise, and collect data
- Compatible with cables, Wi-Fi and Cellular Data
- Dual Ethernet ports ease connecting GeoDAQs together for high channel count systems

Built-in Acceptance Testing
- Instrument Tests:
  - Distortion, Cross-feed, CMRR, Impulse & Noise
- Sensor Tests:
  - Resistance, Frequency, Damping, Sensitivity

Operation Modes:

Operate as Stand-Alone Seismograph
- Use a sledgehammer and hammer switch
- Small, lightweight unit for small, fast crews

Operate as Part of a Larger System
- Use multiple seismographs
- Use larger, higher-output sources like:
  - Vibroseis (with Force 3 controllers)
  - Dynamite (with Boom Box blasters)
  - Mechanical Impulse Sources (with RTM 3}
- Compatible with SourceLink Acquisition and Crew Management Software

Passive Monitoring
- True Continuous Recording
- Use Cellular Modem for Remote Data Collection
- Works with surface or downhole sensors

Automated Event Detection
- Continuously record and store data
- Use LTA/STA Tolerance (Long Term Average / Short Term Average) to detect events
- Includes automatic email notifications as events are located

GeoDAQ 5-24 Seismograph

Features and Specifications

Technical Features

A/D Conversion:
24-bit, high-speed, delta-sigma converters
Dynamic Range:
Greater than 124 dB (measured @ 500 sps)
Crossfeed:
Better than 124 dB (measured @ 500 sps)
Common Mode Rejection:
Better than 100 dB (measured @ 500 sps)
Total Harmonic Distortion
Better than 0.00008% (measured @ 500 sps)
Noise Floor:
0.15 µV RMS (measured @ 500 sps)
Bandwidth:
0 to 27 kHz
Preamp Gain (User Selectable):
x1 (0 dB), x4 (12 dB), x16 (24 dB), x256 (48 dB)
Maximum Input Signal:
x1 gain - 6.5 Volts peak to peak
Input Impedance:
100 K Ohms
Digital Filter (User Selectable):
Low-Cut Filter - Disabled, 0.001-120 Hz
Filter Type - Linear or Minimum Phase
Anti-Alias Filter:
85% of the Nyquist frequency
Sampling Interval:
0.016, 0.032, 0.0625, 0.125, 0.250, 0.500, 1.0, 2.0, 4.0, 8.0, & 16.0 milliseconds
Sampling Rate:
64,000, 32,000; 16,000, 8000, 4000, 2000, 1000, 500, 250, 125, & 62.5 sps
Record Length:
Unlimited (with Continuous Recording)
Record Modes:
DAQlink (Triggered by External Event)
Sigma (Continuous Recording)
Trigger Accuracy:
±1 microsecond at any sampling frequency
Pre-Trigger Delay:
Up to 32 seconds
Post-Trigger Delay:
Up to 100 seconds

Physical Features

Internal Network:
100-BaseT Ethernet
Includes real-time data transfer.
Internal CF-Card Memory:
16 Gbytes Standard (can be expanded)
GPS Interface Standard
Internal Clock synchronized to GPS time
GPS Time and Position saved with data
Optional External Removable Memory:
32 Gbytes (can be expanded)
Power Consumption (24 channels):
Less than 0.13 watts/channel
Power Requirements:
10 to 28 VDC
Included Tests:
Internal tests for verification of the instrument and the geophone spread
Dimensions:
Dimensions:.....328 x 282 x 72 mm
.....12.9 x 11.1 x 2.8 inches
Weight:.....3.1 kg
.....6.8 pounds
Operating Temperature:
-40° to 80° C
Case:
Sturdy Milled Aluminum
Weatherproof seal - IP67

A complete GeoDAQ 5-24 Field System typically includes the following:

1... GeoDAQ 5-24 Seismograph
..... 1 .....20 v Battery & Cable
..... 1 .....Ethernet Data Cable
..... 1 .....Trigger Port Cable
..... 1 .....Mesh Wi-Fi Transceiver & Cable
1... Hammer Switch with Extender Cable
1... Choice of Spread Cable Configuration:
..... 1 .....One "Y" & two 12 Channel Cables
..... or
..... 1 .....Single 24 Channel Cable
24. Geophones (choice of frequencies)