Geospace Seismic Recorder System (GSR)

Autonomous Nodal Seismic Data Recording System

- Scalability greater than 50,000 channels
- Delivers high resolution with a 24-bit delta-sigma ADC
- Built-in GPS receiver and disciplined clock
- Up to 30 days of continuous recording
- Compatible with explosive, vibratory and impulsive energy sources
- Accepts standard analog sensor inputs
- Has a built-in full resolution test generator
- Available as 1, 2, 3 or 4 channel versions
- Has an LED Status/Deployment State Indicator

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Geospace Seismic Recorder (GSR)

Autonomous Nodal Seismic Data Recording System

The GSR is designed for autonomous nodal seismic data recording. The self-contained unit includes 1 to 4 channels of 24-bit digitization, an integrated/high sensitivity GPS receiver, built-in test signal generator, up to 4 GB per channel of non-volatile solid-state data storage, and a high-speed data port. The unit is housed in a sealed case, with input connector, extended life battery connector/ data port connector.

Above and Left : GSR and Lithium Polymer battery units

GSR System Tests

The seismic channel performance and sensor tests can be performed by the GSR System. The user can choose a partial or complete set of tests that can be run in sequence. The user can also choose to display all of the results or only the failures. In the tests described below, the System Software automatically controls the Channel Input Switch Positions and Test Oscillator Settings during the tests. All tests can be run at all sample intervals and preamp gains of the GSR.

- **Harmonic Distortion**
- **Impulse Response**
- **Equivalent Input Noise**
- **Instantaneous System Dynamic Range**
- **Gain Accuracy**
- **Common Mode Rejection**
- **Geophone Impedance and THD**
- **Crossfeed (multi-channel)**

All specifications subject to change without notice

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Geospace Seismic Recorder (GSR)

Features and Specifications

- 24-bit digital recorder
- Built-in GPS and disciplined clock
- Built-in full resolution test signal generator
- Solid-state flash memory
- Scalability greater than 50,000 channels
- Greater than 30 days of continuous recording
- Compatible with vibratory, explosive and impulsive energy sources.
- LED Status/Deployment State Indicator
- Accepts standard analog sensor input
- Available as 1,2,3, or 4 channel versions
- 24-bit delta-sigma ADC
- 3 Hz to 1600 Hz freq. response
- <1 µsec. of UTC (GPS clock)
- Up to 4 GBytes per channel flash memory storage
- 12 Volt external battery
- Operating Temperature: -40° C to +85° C
- Humidity: 0 to 100%
- Selectable Gains:
  - X1, X2, X4, X8, X16, X32, X64
  - 0, 6, 12, 18, 24, 30, 36 dB
- Sample Intervals:
  - 4, 2, 1, .5, .25 milliseconds

Max input signal: 1.80 Vrms @ 0 dB Gain
Total Dynamic Range: 140 dB
System Dynamic Range @ 0dB Gain: 126 dB @ 4 msec SI 124 dB @ 2 msec SI 120 dB @ 1 msec SI 117 dB @ .5 msec SI 102 dB @ .25 msec SI
Equivalent Input Noise @ 2 msec SI: 1.13 µV @ Gain 0 dB .58 µV @ Gain 6 dB .33 µV @ Gain 12 dB .22 µV @ Gain 18 dB .19 µV @ Gain 24 dB .18 µV @ Gain 30 dB .17 µV @ Gain 36 dB
Input Impedance: 20 kohms/0.06 µf Difference Mode 205 kohms Common Mode

System Dynamic Range @ 2 msec SI 124 dB @ Gain 0 dB 123 dB @ Gain 6 dB 122 dB @ Gain 12 dB 120 dB @ Gain 18 dB 115 dB @ Gain 24 dB 110 dB @ Gain 30 dB 105 dB @ Gain 36 dB
Total Harmonic Distortion: 0.0005%
Common Mode Rejection: 0.001%
Gain Accuracy: 1%
Anti Alias Filter: Rejection @ Nyquist: 130 dB Frequency @ -3 dB: 0.87 Nyquist Linear or Minimum Phase
Time Standard: <1 ppm
Weight: 2 pounds
Max. Dimension: 3.5”Wx3.0”Hx6.67”L

All specifications subject to change without notice

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Geospace Seismic Recorder (GSR)

GeoRes-XTC GSR Data Management System

The GeoRes-XTC consists of two embedded software modules:

GeoReaper performs pre-deployment parameter programming, i.e. sample rate, preamp gain, record mode, testing, etc. and data collection via Ethernet connection to the Data Transfer Module (DTM) and a high speed PC. A full set of instrument tests can be performed and analyzed while the GSR is installed in the Data Transfer Module (DTM).

GeoMerge allows the system to read and import all three major components of SPS (R, S and X records). It will merge all GSR data into SEG-D or SEG-2 files according to SPS X records (Cross-Reference File, sorted in the same order as the Source 'S' File) and convert all latitude and longitude information into the same coordinates used in the SPS files. These data are then output to the field database (RAID memory) and/or hard media (tape, disk, etc.).

The GeoRes-XTC is compatible with third party generated SPS files.

Above: Data Transfer Module (DTM)

Left: GeoRes-XTC Data Management System

Right: The GeoRes XTC Data Management System contains software modules that can program GSR deployment parameters and allow the system to read, import and manipulate the data collected in the GSR's flash memory. The data can then be output to the field database in RAID memory and/or to hard media like tape or disk.

Visit our website (www.oyogeospace.com) and see our newest video installment - the *OYO Geospace* GSR system in action on a 200 km^2 3-D shoot near Edirne, Turkey.

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