# Seistronix

# RAS-24  Digital Seismograph

The RAS-24 is a modular 24-channel, high resolution, signal enhancement seismograph designed for shallow refraction and reflection surveys. The system combines state-of-the-art 24-bit conversion with a flexible, expandable architecture that provides the ease of use of a conventional system with the advantages of a distributed system.

Whether you're looking for a 12-channel seismograph for small refraction jobs or a 240-channel system for 3D reflection, the RAS-24 has the data quality, features and performance you need for the most demanding jobs.

## Easy to use

Operating under Windows, the RAS-24 system software has a familiar point and click interface which is easy to learn and operate.  With buttons, scroll bars and single key commands for commonly used functions, the RAS-24 user interface is designed to allow direct access to important system functions.

And setting up the RAS-24 couldn't be easier.  Select the type of survey you want to perform - refraction, 2D reflection with roll, or 3D - and the RAS-24 configures itself.
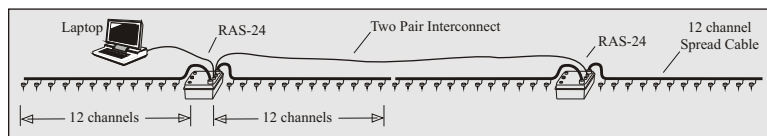
## Consistent Data Quality

The RAS-24 provides an extensive array of tests to ensure that data is accurately recorded.  Tests include amplifier noise, dynamic range, A/D offsets, amplifier pulse, CMR, timing accuracy, crosstalk, phase similarity, and gain similarity.  Tests can be performed individually or a complete system test can be performed automatically with the test results logged to disk.

## Reduced Field Setup Time

Finding marginal geophones  and intermittent spread cables can be a real chore in the field.  But with geophone resistance, geophone pulse, geophone similarity, and cable leakage tests, the RAS-24 can easily locate geophone and cable problems before they affect your data.

Typical 24-Channel Record

## Expandable

The RAS-24 provides unique expandability not found in other systems.  Connect one RAS-24 to a laptop and you have a very portable 24-channel seismograph for refraction or reflection. Connect ten units together in a line and you have a 240-channel, 2D line complete with roll.  Rearrange those ten units and you have a ten line, 24 channel/line 3D spread.  No special hardware is required, and you can use standard 12-channel spread cables for all configurations.
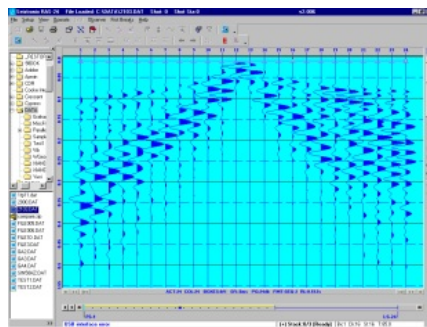
48 Channel Line

## Advanced System Software

The RAS-24 system software provides a broad range of features to aid in collecting quality data in the field.  For refraction or reflection surveys, data may be previewed, filtered, AGCed, stacked or unstacked as desired.

For 2D reflection shooting, the RAS-24 offers line management with autoroll, and a line geometry display showing the shot point, roll direction, total number of channels on line, and active channel positions.  For 3D surveys, the RAS-24 has an integrated 3D script editor for specifying how the RAS-24s are connected and which portion of the spread is active for each shot.

Intuitive display options allow you to view the data the way you prefer.  With a single click, you may expand or contract the display in the time or channel direction, display all the even or all the odd traces, or zoom in on an individual channel.

Other features include an observer's log, recorded with each record, and a time-stamped shot log which provides a continuous log of recording activity allowing you to retrace events in the field. And when you're back in the office, you can review the observer's log and view, pick and print records on your office system using the same software that you ran in the field.

- Available with 12 or 24 channels
- 24-Bit Delta-Sigma A/D conversion
- Wide dynamic range (117db @ 2ms)
- Lightweight - 10 lbs
- Connect up to 10 boxes (240 channels)
- 3D on up to 10 lines
- Automated system performance tests
- Operates with any laptop
- Runs  under Win ME/2000/XP
- Uses standard 12-channel spread cables

# RAS-24 Specifications

## SYSTEM

| | |
|---|---|
| Number of Channels: | 12 or 24 per RAS,up to ten 24-channel RAS modules (240 channels) per system |
| Sample Intervals: | 0.125, 0.25, 0.5, 1, 2 and 4 ms |
| Record Length: | 4 ms - 64 sec, 2 ms - 32 sec, 1 ms - 16 sec, .5 ms - 8 sec, .25 ms - 4 sec, .125 ms - 2 sec |
| CDP Operation: | Automatic or manual roll of entire spread |
| Stacking: | Vertical stack in the laptop or in each RAS-24 |
| Cable: | One standard 12 takeout cable for 12 channel system Two for 24 channel system |
| Max RAS Interval: | 5000ft |
| Recording Format: | SEG-2, SEG-D 8038, SEG-D 8058 |
| RAS Data Cable: | Two twisted pairs |

## RAS MODULE

| | |
|---|---|
| Channels: | 12 or 24 |
| A/D Resolution: | 24 Bits |
| Preamp Gain (PG): | 12db, 24db, 36db or 48db, remotely selectable |
| Frequency Response: | .125 ms: 2 - 2000 Hz, .25 ms: 2 - 1650 Hz, .5 ms: 2 - 825 Hz, 1 ms: 2 - 412 Hz, 2 ms: 2 - 206 Hz, 4 ms: 2 - 103 Hz |
| Dynamic Range: | 120db @ 4 ms PG=12db, 117db @ 2 ms PG=12db (typ) |
| Distortion (THD): | <.005% at 25 Hz, 2 ms sample interval (typ) |
| Crosstalk: | Greater than 90db isolation between channels |
| CMR: | Greater than 90db @ 60 Hz |
| Max Input Signal: | .88 VRMS @ 12db, 55 mVRMS @ 36db |
| Input Noise: | .21 VRMS @ 2ms PG=36db, 1.6 VRMS @ 2ms PG=12db (typ) |
| Anti-Alias Filters: | 4 ms 103 Hz, 2 ms 206 Hz, 1 ms 412 Hz, .5 ms 825 Hz, .25ms 1650 Hz, .125ms 3300 Hz |
| Test Oscillator: | 10, 25, 50, 60, 100, 125, 200, 250 Hz Amplitude adjustable in 10 mV steps |
| Instrument Tests: | Internal digital tests, battery voltage, internal voltage, crosstalk, amplifier pulse, CMR, amplifier noise, dynamic range, gain & phase similarity, communications, and trigger verification |
| Line Tests: | Geophone pulse, geophone similarity, geophone resistance, leakage |
| Connectors: | Two 27-pin NK-27-21C connectors for geophone spread cable, 3-pin Bendix for trigger, two 6-pin Bendix for data, 3-pin Cannon for power. Waterproof Bendix connectors are optionally available for the signal inputs. |
| Power: | 12 volts nominal. 12 Chs: 1A, 24 Chs: 1.7A |
| Physical: | 11.5″ x 13.25″ x 5.75″, 10 lbs |
| Operating Temp: | -30 to 70°C |

## INTERFACES

There are three types of interfaces for the RAS-24:

**Serial Interface** - This interface consists of a 2-meter cable that connects the RAS-24 to the laptop's serial port. This interface is included with every RAS-24 and is adequate for 12- and 24-channel systems. It transfers data at 115Kbps. For systems with two or more RAS-24s, one of the USB interfaces described below must be used.

**USB-100 USB Interface** - This optional interface consists of a small box that connects to the laptop's USB port through a short cable. This interface transfers data at 2.45Mbps and provides a trigger input for triggering the RAS-24 system. Power for the interface is supplied by the laptop.

**USB-200 USB Interface** - This optional interface consists of a small box that connects to the laptop's USB port through a short cable. This interface transfers data at 2.45Mbps and provides a trigger input for triggering the RAS-24 system and a trunk line connector for connecting the laptop into the middle of a spread. A Fire Control connector is also provided for interfacing to a variety of shooting equipment. Power for the interface is supplied by the laptop.
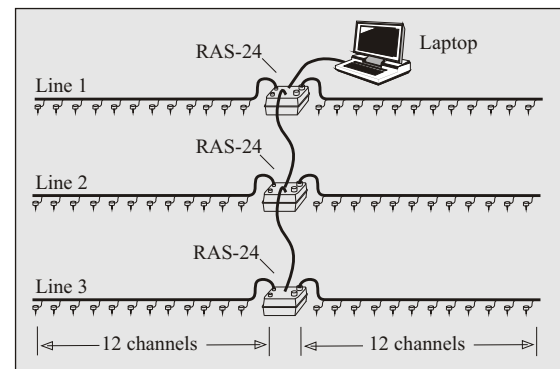
## ACCESSORIES

Vertical and horizontal Geophones
HS-1 Hammer switch with 5M cable and mating connector
Striker plate 8" x 8" x 3/4"
BP-1 12-volt battery pack and charger
12-channel spread cable (specify geophone interval)
100M Hammer switch extension cable on reel
RAS to RAS Interconnect cable(s)
USB to RAS Interconnect cable - 10M is standard, other lengths available.
Spread cable to Hammer switch adapter box
Portable printer
HVB-100 Seismic blaster
Refraction and reflection processing software

**Portable Ruggedized Computers**

Seistronix can supply ruggedized, daylight readable computers suitable for field work from a variety of manufacturers. Please contact Seistronix for the latest models and pricing.

72 Channels on Three Lines