T he RAS-24 isamodular24-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 98, 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.
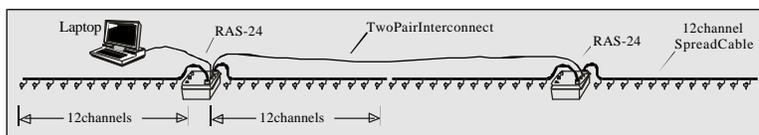
Consistent Data Quality

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.

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.
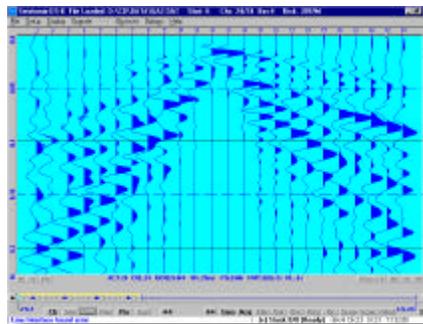

Typical 24Channel Record

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 orreflection surveys, data may be previewed, filtered, AGC'd, stacked or unstacked as desired.

For 2D reflection shooting, the RAS-24 offers1ine 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 alltheeven or all the odd traces, or zoom in on an individual channel.

Otherfeatures include an observers 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 observers 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
- Intuitive operation under Windows 98
- Uses standard 12-channel spread cables

RAS-24 Specifications

SYSTEM

Number of Channels:	12 or 24 per RAS, ten 24-channel RAS modules (240 channels) per system
Sample Intervals:	0.125, 0.25, 0.5, 1, 2 and 4ms
Record Length:	4ms-64sec, 2ms-32sec, 1ms-16sec, .5ms-8sec, .25ms-4sec, .125ms-2sec
Multiline Operation:	10 lines
CDP Operation:	Automatic or manual roll of entire spread
Stacking:	Vertical stack
Cable:	One standard 12 takeout cable for 12 channels system Two for 24 channels system
Max RAS Interval:	2800ft
Recording Format:	SEG-2, SEG-D 8038, SEG-D 8058
RAS Data Cable:	Two twisted pairs (CAT-3 or equivalent)

RAS MODULE

Channels:	12 or 24
A/D Resolution:	24 Bits
Preamp Gain (PG):	12db, 24db, 36db or 48db, remotely selectable
Frequency Response:	.125ms: 2-2000Hz, .25ms: 2-1650Hz, .5ms: 2-825Hz, 1ms: 2-412Hz, 2ms: 2-206Hz, 4ms: 2-103Hz
Dynamic Range:	112db @ 2ms PG=36db, 117db @ 2ms PG=12db (typ)
Distortion (THD):	.005% at 25Hz, 2ms sample interval (typ)
Crosstalk:	Greater than 90db
CMR:	Greater than 90db @ 60Hz
Max Input Signal:	.88 VRMS @ 12db, 55mVRMS @ 36db
Input Noise:	.21 µVRMS @ 2ms PG=36db, 1.6 µVRMS @ 2ms PG=12db (typ)
Anti-Alias Filters:	4ms 103Hz, 2ms 206Hz, 1ms 412Hz, .5ms 825Hz, .25ms 1650 Hz, .125ms 3300Hz
Test Oscillator:	10, 25, 50, 60, 100, 125, 200, 250Hz Amplitude adjustable in 10mV 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
Power:	12 volts nominal. 12 Chs:1A, 24 Chs:2A
Physical:	11.5″ x 13.25″ x 5.75″, 10 lbs
Operating Temp:	-30 to 70°C

OPTIONS

HS-200 High Speed PCMCIA-II Serial interface for laptop. Permits higher data trans rates.

ACCESSORIES

Geophones
HS-1 hammer switch with 5M cable and mating connector
Striker plate 9" x 9" x 1"
BP-1 12 volt battery pack and charger
12 Channel spread cable (specify geophone interval)
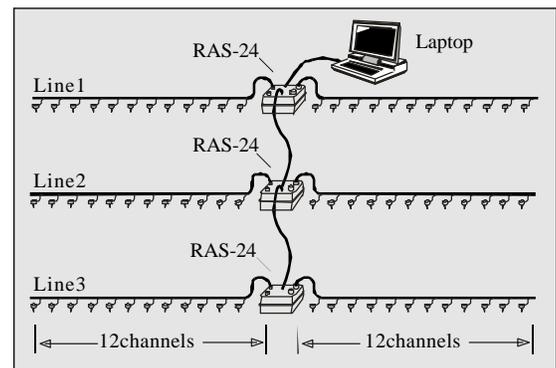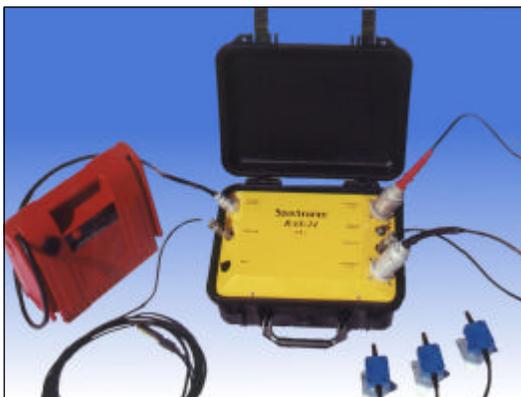Trigger extension cable
RAS Interconnect cable(s)
Portable printer

Portable Ruggedized Computer

The A740 notebook computer is housed in a die cast magnesium alloy enclosure and is intended specifically for harsh environments. The internal hard disk is shock mounted and the entire unit is designed to survive a three-foot drop to a concrete floor.

The computer features a bright, daylight readable display, and three accessory bays which can hold a K56 modem, SCSI-II module, or additional batteries, hard disks, PCMCIA ports, and serial ports. With sealed access doors and a waterproof/dustproof keyboard and touchpad, the A740 is the ideal companion for the RAS-24.

CPU	233MHz Pentium, 266 MHz optional
Display:	11.3" 800x600 SVGA, active matrix high contrast
Storage:	3.5" floppy, >2.1GB hard disk
Memory:	32MB RAM expandable to 128MB
External Connections:	Two serial, parallel, PS/2 keyboard, PS/2 mouse, SVGA video, external power, and 200 pin docking port
Line Connections:	One 55 pin for single line, two 55 pin for multiline
PCMCIA:	Two type I/II or one type III
Keyboard:	87-Key, waterproof and dustproof
Battery:	Removable & rechargeable main Ni-Mh battery pack
Power:	12 volts nominal (10-20 VDC)
Physical:	12.2″ x 10.0″ x 4.2″ 11lbs, sealed magnesium alloy die cast case
Operating Temp:	0 to 50°C
Options:	266MHz CPU, SCSI-II module, K56 modem, 13.3 XGA TFT display, 1024x768 64K colors

Specifications subject to change

72 Channels on Three Lines