

RD-XYZH 4-COMPONENT DOWNHOLE DIGITAL SEISMIC ARRAY

Applications

- ◆ Oil and gas exploration
- ◆ Reservoir characterization
- ◆ Mineral exploration
- ◆ Resource delineation
- ◆ Hazardous waste geologic disposal
- ◆ Hydrogeological assessment
- ◆ Rock mechanical studies
- ◆ Research and education



Features

- ◆ **Very low noise** by 24-bit Delta-Sigma A/D conversion performed inches from the sensors
- ◆ **Full digital dynamic of extremely low-level signals** by 8-step gain preamplifiers individually programmable for each channel
- ◆ **4-sensor/level.** The 4th sensor can be a hydrophone, a low-frequency geophone (1 Hz), an additional independent Z-axis geophone
- ◆ **Up to 96-level configuration** on steel armored wireline cable
- ◆ **Interchangeable modules** with software driven reconfiguration procedure
- ◆ **Self test/Troubleshooting function** for each individual element
- ◆ **Emergency clamping release** upon major communication failure with surface
- ◆ **Interfaces** with Vibrators and VIBSIST, weight-drop and explosive sources



PRODUCT INFORMATION

Software controlled

- Data acquisition
- Clamping

Built in test functions

- System test
- Transducer test

Sample Interval

1/48, 1/32, 1/16, 1/8, ..., 8 ms

Number of Samples per Trace

Max. 3000 K-samples

System Input Noise

≤ 0.12 μV RMS @ 1 ms
(1.3 nV/Sqrt(Hz) at 7.2 kHz bandwidth)

Instantaneous Dynamic Range

≥ 120 dB @ 1 ms

Total Harmonic Distortion

≤ 130 dB (22 * 10⁻⁶ %)

Common Mode Rejection Ratio

≥ 90 dB

Gain Accuracy between Channels

≥ 1 %

Integral Nonlinearity

≥ 96 dB

Cross-talk

≤ 107 dB

Analogue Anti-Alias Filter

7,2 kHz 6 dB / Octave

Analogue Low-Cut Filter

1 Hz 6 dB / Octave

Digital Anti-Alias Filter

19.2 kHz @ 1/48 ms	12.8 kHz @ 1/32 ms
6.4 kHz @ 1/16 ms	3.2 kHz @ 1/8 ms
1.5 kHz @ . ms	800 Hz @ 1/2 ms
400 Hz @ 1 ms	200 Hz @ 2 ms
100 Hz @ 4 ms	50 Hz @ 8 ms

Rejection at Nyquist Frequencies

-130 dB

Operation Temperature Range

-40°C to +105°C
Optional version: -40°C to +125°C

Dimensions of one receiver unit

780 mm length, 55 mm diameter

Power

24 Vdc
Current (electronics) 0.1 A
Motor clamping current 0.4 A
Max current (motor clamping limit) 2A / 0.5s

Maximum Depth

3000 m

A/D Converter

24 bit delta sigma technology

Frequency Range

3- XYZ Components:

Version LF 5 Hz - 500 Hz
Version SF 16 Hz - 2000 Hz
Version HF 40 Hz - 6000 Hz

4-th Component:

Hydrophone 300 Hz - 10kHz
VLF Geophone 1.0 Hz - 260 Hz

