



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-sensors/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

$\leq 0.12 \mu\text{V RMS @ 1 ms}$
(1.3 nV/Sqrt(Hz) at 7.2 kHz bandwidth)

Instantaneous Dynamic Range

$\geq 120 \text{ dB @ 1 ms}$

Total Harmonic Distortion

$\leq 130 \text{ dB } (22 * 10^{-6} \%)$

Common Mode Rejection Ratio

$\geq 90 \text{ dB}$

Gain Accuracy between Channels

$\leq 1 \%$

Integral Nonlinearity

$\geq 96 \text{ dB}$

Cross-talk

$\leq 107 \text{ dB}$

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 @ 1/4 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

1100-1200 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



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