

Contract specification of seismic array

Complete, inseparable set consists of:

- 1) Seven seismometers 3C,
- 2) Seven recorders.
- 3) Seven GPS module with external antenna for time (UTC) synchronization of recorder.
- 4) Instrumentation: connection cables (power and signal) sensor – recorder (10 m), power to recorder (2 m), connection (power and signal) GPS – recorder (10 m), connection (Ethernet) recorder – external device (RJ-45 connector).
- 5) Accessories: fourteen 2GB flash memory drives (two on the recorder, -20°C to 60°C), USB reader, iPod Touch (Kit) + cable + CD, seven sensor control Boards.
- 6) Two desktop PC (RAM 8GB, disc 2TB, processor 4 core, dedicate graphic card along with accessories (monitor 19”, keyboard, mouse)) in a configuration adapted to handle the equipment purchased.
- 7) The rugged laptop (notebook-reinforced, watertight, monitor 13” – 15”, RAM 4 GB or 8GB, disc 500GB, processor 2 or 4 core) in a configuration adapted to handle the equipment purchased.
- 8) Specialized software for: the analysis of records, FFT analysis, data visualization, signal filtering, plotting the Arias intensity, the focal location of the tremor, the tremor energy, seismometers control software, data acquisition, True Error-Correction Protocol for Real-Time Data Transmission and Communications, Real-Time Raw Data Waveform Display, the analysis of raw data.

The different specifications:

TRI-AXIAL SEISMOMETER		
Line	parameter	description
1	Frequency Bandwidth	0,0083 – 50 Hz
2	Sensitivity	2000 V/m/s
3	Dynamic Range	>140 dB at 5Hz
4	Calibration	Yes
5	Cross Axis Coupling	< 1 %
6	Low Spurious Resonance	> 100 Hz
7	Linearity	Better than 1% of full scale
8	Leveling	Two Integrated bubble levels
9	Mass Locking	Yes
10	Mass Locking	No need for adjustment within ambient temperature fluctuation $\pm 20^{\circ}\text{C}$
11	Power Consumption	~ 1 W
12	Power-Fail Protection & Signal Overload Protection	Built-in
13	Auto-recovery Time	Full operation recovery within 10 minutes after either power fail or signal overload
14	Watertight Integrity	Yes
15	Operation Temperature	$-20^{\circ}\text{C} / + 60^{\circ}\text{C}$.
16	Hand carry case	Designed for easy carrying in the field
17	Weight	12 kg or less
18	Sensor size max.	Diameter: 25 cm, height: 30 cm
RECORDER		
Line	parameter	description
1	Weight	2 kg
2	Watertight Integrity	Yes
3	Shockproof	Yes
4	Operating Temperature	$-20^{\circ}\text{C} / +70^{\circ}\text{C}$.
5	Connectors to:	1. Ethernet 2. Kit 3. GPS 4. Seismometer
6	A/D Converter	24 bit
7	Dynamic Range	137 dB @ 100 sps
8	Channels	3
9	Noise Level	~1 count RMS at 50 sps @ x1
10	Sample Rates	1000, 500, 250, 200, 125, 100, 50, 40, 25, 20, 10, 5, 1 sps
11	Accuracy with GPS and Free-Running Accuracy	$\pm 10 \mu\text{sec}$ after validated 3-D fix and locked; 2.5 ppm over temp. range of -20°C to 70°C
12	Recording Modes	Continuous Time Trigger Time List Trigger

		Event Trigger Level Trigger Vote Trigger External Trigger Cross Trigger
13	Recording Capacity	Battery Backed SRAM: 8 to 16 MB user specified
14	Disk	2 – 32 GB
15	Recording Format	PASSCAL

Accessories:

- Technical documentation (in English)
- Manual (in English)
- Warranties.