Chapter 2 - Specifications

Specifications

Data Recorded	One (1) acoustic and three (3) seismic channels.
Frequency Response	2 to 500 Hz. (-3 dB. points) at 2048 samples per second. Lower sample rates reduce the high frequency response proportionately.
Seismic Sensors	Three component mounted velocity geophones or accelerometers, depending on the ordered recording ranges.
Microphone	Ceramic element rated to at least 160 dB.
Memory	Solid state with all summary, setup, and recorded data retained with power off. A lithium backup battery retains data if primary power fails.
Clock	A 24 hour clock maintains the date and time accurate to within 1 minute per month, even if primary power fails.
Timer Mode	Allows an instrument to be active only during selected hours on a daily basis.
Display	The high contrast LCD has two lines of 40 characters to facilitate the instrument's setup. It also allows the operator to view operating parameters and summary data.
Optional Keypad	Contains 6 keys for entering setup data and operating commands.
Power on Log	A log is kept in memory to indicate the active monitoring periods. If the timer is used, the log is updated each time it activates.
Battery	Internal 6 volt rechargeable.
Operating Time	With a fully charged battery all models will operate from 7 to 10 days at 1024 samples per sec. Longer times may be obtained using the timer mode or external power from a small solar cell or automobile battery.
External Battery Life	A standard automobile battery will keep the internal battery at full charge for several months at moderate temperatures. If the external battery fails, the unit will continue to operate on its internal battery.
Charging	An internal charging circuit allows charging with the supplied plug-in wall mount charger or any 10 to 15 volt DC supply. Power supplies for international use are available.
Operating Temperature	0 to 130 degrees F (-18 to 54 degrees C)

Case	Heavy gauge aluminum for effective electrical shielding and rugged protection.
Size	Approximately 7.5 in. x 4.5 in. x 2.5 in.
Weight	Approximately 3.5 lbs. (1.6 Kg.) without accessories.
Weight - Accessories	Approximately 6 lbs. (2.7 Kg.) including the storage case.
Waveform Data	1.0M: Up to 340 events. 1/2M: Approximately 150 to 250 typical blast events. 1/2M: Approximately 50 to 100 typical blast events.
Summary Data	Summarized data include the event time, date, battery voltage, peak measurements, unit serial number and frequencies. The summarized data are stored in solid state memory for the last 340 events.
Sample Rate	From 2048 to 32 samples per second per channel.
Recording Units	English (U.S.) or metric.
Seismic Recording Ranges	Standard (x2) 0.005 IPS to 2.5 IPS (0.125 to 64 MMPS) 0.01 IPS to 5.0 IPS (0.25 to 127 MMPS) 0.02 IPS to 10.0 IPS (0.50 to 254 MMPS) Optional (x1 - accelerometers) 0.01 IPS to 5.0 IPS (0.25 to 127 MMPS) 0.02 IPS to 10.0 IPS (0.50 to 254 MMPS) 0.04 IPS to 20.0 IPS (1.00 to 508 MMPS) Optional (x4) 0.0025 IPS to 1.2 IPS (0.063 to 30.5 MMPS) 0.005 IPS to 2.5 IPS (0.125 to 64 MMPS) 0.01 IPS to 5.0 IPS (0.25 to 127 MMPS) Optional (x8) 0.0013 IPS to 0.6 IPS (0.033 to 15.2 MMPS) 0.0025 IPS to 1.2 IPS (0.063 to 30.5 MMPS) 0.005 IPS to 2.5 IPS (0.125 to 64 MMPS)
Acoustic Ranges	Standard 0.02 to 2.56 millibars (100 to 142 dB) 0.04 to 5.12 millibars (106 to 148 dB) Optional 0.08 to 10.24 millibars (112 to 154 dB) 0.16 to 20.48 millibars (118 to 160 dB)

Trigger Levels	Seismic 2.5 IPS Range - 0.01 to 0.57 IPS (0.25 to 14.5 MMPS) 5.0 IPS Range - 0.02 to 1.14 IPS (0.5 to 29 MMPS) 10.0 IPS Range - 0.04 to 2.28 IPS (1.0 to 58 MMPS) Seismic trigger sensitivities are proportionally modified by optional gains. Acoustic - 106 to 142 dB or 112 to 148 dB. Acoustic trigger sensitivities are proportionally modified by optional gains.
Manual Trigger	Allows triggering from the keyboard or by an external input. One unit may be used to trigger additional instruments.
Record Duration	From 2 to 12 seconds at a sample rate of 1024 samples per second. At lower sample rates, the duration is automatically increased proportional to the amount of decrease in the sample rate.
Cycle Time	At 1024 samples per second, up to 12 seconds of data can be taken with only 50 milliseconds between events. After 12 seconds of data are stored, another event cannot be taken until the previous data have been processed. Processing requires about 3 seconds per second of recording time.
Records Stored	Up to 340 blast type events, varies depending on memory and data compression.
Calibration Test (Seismic)	A dynamic transducer test is performed automatically after each event or manually on command. The test is stored in the summarized data and may be downloaded as an event.
Calibration Test (Acoustic)	An electronic test of the microphone is performed with the seismic test and is stored in memory along with the seismic test.
84 Hour Cal Test	In a remote installation, an automatic calibration test occurs if no event has been recorded for 84 hours.
RS232 Serial Port	Data can be downloaded and setup commands can be uploaded directly by computer or remotely by modem.
Baud Rate	From 1200 to 38.4K.
External Printer	An external printer is available as an option. Printer enabled firmware is required.