PR6-24 Portable Field Recorder

A high performance recorder for seismic profiling, aftershock studies, networks and noise measurements

- *6 Channels of True 24-bit conversion*
- *Sample Rates from 1 to 1000 Hz*
- *Data Recorded on Removable Hard Disk*
- *Ethernet and Modem connection*
- *GPS Time Accuracy*
- *Rugged Weathersealed Housing*
- *Operates from -20°C to +60°C*
- *Optional internal Flash Disk*

The Earth Data PR 6-24 Portable Field Recorder can be used in hostile environments and is ideal for rapid deployment by unskilled personnel. It is suitable for seismic profiling, after shock studies, noise measurements and single station micro seismic networks.

140 dB DYNAMIC RANGE

The PR 6-24 incorporates Earth Data's proprietary 7th order Sigma-Delta technology. This provides a signal to noise ratio of 140dB at sample rates up to 100 Hz rising to 150dB at 10 Hz. Even at 1000 Hz the signal to noise ratio is still 130dB. Data is recorded as 32-bit words to accommodate this high dynamic range.

INTERNAL ARCHITECTURE

The PR 6-24 incorporates a 6 channel digitizer/buffer, a LINUX based rugged PC and a removable disk unit. All internal units are specified for operation over a wide temperature range. The removable disk unit incorporates a temperature management system which ensures that the hard disk can be operated even with external temperatures of -20 °C. The unit is intended to be used with an external GPS antenna which disciplines the internal time base.

FLEXIBILITY

The PR6-24 can be supplied as a 3 or 6 channel unit. The internal digitizer can be directly connected to a radio modem enabling continuous near real-time data transmission whilst at the same time recording to hard disk. Interfaces include real-time serial monitor, serial modem, Ethernet plus optional USB and IrDA. All software and firmware can be remotely updated, avoiding costly return to factory or dismantling.

RECORDING PERIOD

The standard hard disk capacity of 5.5GBytes allows more than two months of continuous recording at 100 samples/second. The use of compression can extend this by up to three times. When the disk is full the oldest data is normally replaced with new data and at any time the previously recorded data is available by downloading via the Ethernet connection or by simply changing the disk. Disk changes and Ethernet downloads can be undertaken without interrupting the acquisition process.

PROGRAMMING THE RECORDER

All recorder parameters are set by a standard '.INI' file which is copied to the hard disk. This is constructed using any standard text editor on a separate PC or directly on the PR 6-24. Since this file fully characterises the machine, the recorder merely implements the configuration contained in this file. '.INI' files can be updated by copying onto the hard disk, using an Earth Data docking station, or downloaded via Modem, Ethernet or IrDA.

EARTH DATA

Specification

GENERAL

Number of channels	3 or 6 differential input
CMRR	Better than -100dB
Input resistance	2 Mohms differential; 1 Mohm each input to Gnd
Sample rates	1, 2, 3, 4, 5, 10, 12, 15, 20, 25, 30, 40, 50, 75, 100, 120, 125, 150, 200, 250, 300, 375, 500, 600, 750, 1000
Analogue response	d.c. to 0.4 of selected sample rate
rms to rms noise	150 dB 10 samples/sec and below 140 dB 100samples/sec and below 130 dB 1000 samples sec and below

DATA RECORDING

Media	Removable hard disk unit. (5.5Gbyte min)
Data file type	Any length MINISEED (stored on Fat32 partition – readable by Windows 9x, Windows 2000, Linux)
Operating System	Linux
Additional stored information	GPS activity, battery volts, temperature Four low resolution analogue channels at 1 sample/sec
Power requirements	10 to 18 volts (1.8 watts average) at 100sps 3 channels

SET-UP AND DATA RETRIEVAL

Disk Docking Station	IEEE-1394 (FireWire) connection from Earth Data docking Station to host (FireWire compatible) PC, supports multiple disks concurrently
100 baseTx Ethernet	Communicate using TCP/IP (e.g. FTP client, Telnet)
Modem	Connect using PPP client (e.g. Windows Dial up networking - then communicate with standard TCP/IP FTP client or Telnet)
USB	Connectivity with other USB devices
IrDA	Communication with PDA's, laptops, hand-helds, etc.

EXTERNAL CONNECTIONS

Dual power connector	2x 12 volts in, fused power out
External Modem	Automatic wake up via ring indicator
Ethernet AND real time monitor	Ethernet is 10/100baseTx Real time monitor is RS232
Signal channels 1 to 3	Includes raw power out
Signal channels 4 to 6	Includes raw power out
Anciliary Inputs	Four low-resolution analogue inputs. 1 sample/sec.
GPS antenna	5/3 volt powered

PHYSICAL

Size	154 x 210 x 227mm
Weight	4.5 kg

ENVIRONMENTAL

Temperature range	-20 to +60ºC
Waterproofing	To IP67 standard
Housing	Injection Moulded ABS.

EARTH DATA