

**ULTRALOW POWER
24-BIT / 18-BIT DUAL SEISMIC
DATA RECORDER
Model DR4050-A**

The eentec DR4050-A is a rugged, ultra low power, high-performance, versatile 24-bit and 18-bit resolution seismic recorder. It is designed for the most demanding requirements in high performance seismic or strong motion research. Generally for structural monitoring only the 121dB (low resolution 24-bit ADC) with standard internal accelerometer unit is required. The standard unit is also available with an external sensor input only.

This state-of-the art seismic standard recorder features an internal triaxial accelerometer. Options include a higher dynamic range internal accelerometer with 24-bit resolution or an external 24-bit triaxial sensor input with or without an internal standard accelerometer. Each channel has a high resolution ADC that ensures no channel to channel skew in any configuration, and a very low-power, high-performance DSP that controls the data acquisition, real-time digitization and filtration. The standard unit is suitable for building and structural monitoring (optional internal high-resolution accelerometer available). The optional external 3-channel sensor input can be ordered without the internal accelerometer and be used with a broadband seismometer (EP or SP series), rotational seismometer (R-1), or additional accelerometers

The powerful, full-featured single-board system is easy to use, install, and maintain. It is lightweight and robust for field deployment. It includes software for waveform analysis and manipulation.

Its full-featured communication capabilities such as VSAT, ADSL, and some radios allows easy configuration for telemetry networks. GSM, GPRS, CDMA, and PSTN communications are also supported. The included GPS can act as a network time server for synchronizing other NTPv4 enabled timing critical systems.

Other options include a LCD display, modem, and external battery pack with charger.

Specifications subject to change without notice

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e-mail: sales@eentec.com web-site: www.eentec.com

DR4050-A SPECIFICATIONS:

INPUT CHANNELS

Type:	Differential (external or internal option), Single ended Internal accelerometer standard
Data Channels:	3 internal accelerometer and optional 3 external channels
Resolution:	Standard low resolution 24-bit ADC ,18-bit resolution Optional high resolution 24-bit, or simultaneously
External Sensor Gain:	Software programmable: 1, 2, 3, 4, 8, 16, 24, 32
Single Ended Input Range, opt. Differential Input	±20 V
Overshoot Protection	500W per 10/10000us, steady state power dissipation 5W, surge current up to 40A.
Input Impedance	Data inputs 1MΩ
Dynamic Range: (rms to peak)	121 dB @ 50sps std or optional 135 dB @ 50 sps (or both)

DIGITIZER

Type:	24-bit delta-sigma converter on each channel
Sampling Rates:	16, 20, 40, 50, 80, 100, 200 sps
Digital Filter:	130 dB @ 200 sps, the low and high pass filtering with IIR, Sinc, or FIR (std) digital filters.
Internal sensor:	130 dB @ 200 sps FIR
Phase	Linear within the passband
Channel to Channel Skew	None
Processor	ARM processor with 8/16 Mb Ram available

TIMING SYSTEM

Type:	GPS
Maximum Accuracy (Software Selectable):	10 micro seconds
Crystal Oscillator	TCXO 1 ppm/year
Crystal Frequency Correction Resolution	0.016 ppm
Internal Battery Backup Clock	-100 to 10 ppm
GPS Receiver (integral with antenna):	Miniature; external; connects via a std 5m cable

TRIGGERING

Type:	STA/LTA, Level , phase picking
Recording	Triggered or continuous
Pre-event/ Post-even shared buffer	1,000 seconds split anyway between pre-even and post- event
Calibration	Internal 5V voltage step, external sensor option sine wave
Calibration Duration	User selectable

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DR4050-A SPECIFICATIONS (Con't):

POWER	
Voltage:	9 – 15 Vdc
Overtoltage Protection:	15V transzorb for spikes and reverse polarity, 1.8A automatic resettable polyfuse for longer term high voltage
Power Consumption with Internal Accelerometer	95mA at 12V
USER INTERFACE	
Display Type:	LED std, optional LCD
User Control:	Menu-driven; state-of-health messaging
Optional VGA data display:	Up to 3 channels simultaneously in real time, settings, and SOH for standard unit up to 6 channels optional
Setup	RJ45 plug on the plug panel to connect computer (via x-over cable) or to an Ethernet network
Main GUI	Any common web browser (MS Explorer, Firefox, Safarai)
Console	Any common VT100 emulator (Hyper Terminal)
Data Transfer (remote)	Any common FTP client
Data Retrieval (local)	Copying removable flash card to PC using a USB reader, or via FTP
MASS STORAGE	
Compact flash memory card	Removable 1Gb std, others optional
File Compatibility:	Any PC
Data format	PC-SUDS
REMOTE COMMUNICATION	
Interface	Via web browser or Telenet over Ethernet or PPP
Data Transfer	Using HTTP or FTP
Compatibility	VSAT links, GSM and CDMA modems, spread spectrum radios links, and others
ENVIRONMENTAL PARAMETERS	
Housing	Reinforced Plastic, Mounting plate with bolts included
Waterproofing	IP67
Operating Temperature Range	-20 to +60°C
Humidity	100% RH
Size	260 x 230 x 130mm
Weight	2Kg

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DR4050-A SPECIFICATIONS (Con't):

CONNECTORS: REAR PANEL, WATERPROOF

Power	2-pin Circular (bayonet)
Optional External Sensor	16pin Circular (bayonet)
Ethernet	RJ-45 10/100Mbit port for connection to PC, LAN, VSAT, Ethernet radio, etc.
Serial Port	10-pin Circular (bayonet RS-232 Port for GSM and CDMA modems
GPS	6-pin Circular (bayonet), 5m cable, extensions optional

CONNECTORS: INTERNAL

Terminal Interface	DB-9 terminal interface mainly for factory use.
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DR4050-A STANDARD INTERNAL ACCELEROMETER SPECIFICATIONS

ACCELEROMETER	
Type:	Orthogonally aligned triaxial mounted
Dynamic Range:	>108dB typical
RMS Noise	15 micro g
Full Scale	+/-2g
Bandwidth	DC to 400Hz +/-3dB
Sensitivity	2,000 mV/g
Linearity	0.3% typ
Cross Axis Sensitivity	0.02g/g
Calibration	Fully calibrated
Optional internal accelerometers	Available, 2 micro g RMS noise, dynamic range >120 dB or EA-120 FBA 130dB dynamic range

DR4050-A STANDARD ANALYSIS SOFTWARE

eqWave	Waveform analysis and manipulation. Operates under Windows, Unix, Linux, and MacOS
Functions	Reads and displays data files, zooming and scaling, bandpass filtering (3 custom bands for quick filtering), and arrival picking, FFT, magnitudes, and distance.

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