The eentec DR4050 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 and other seismic applications, only the 18-bit (low resolution 24-bit ADC) is required. The standard unit has an external sensor input.

This state-of-the art seismic standard recorder features an external sensor input. Options include an internal accelerometer, 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 external 3-channel sensor input can be ordered with 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

DR4050 SPECIFICATIONS:

INPUT CHANNELS

Type:	Differential (external or internal option), Single ended Internal accelerometer optional
Data Channels:	3 external (optional internal accelerometers)
Resolution:	Standard low resolution 24-bit ADC ,18-bit resolution Optional high resolution 24-bit
External Sensor Gain:	Software programmable: 1, 2, 3, 4, 8, 16, 24, 32
Single Ended Input Range, opt. Differential Input	?20 V
Overvoltage Protection	500W per 10/10000us, steady state power dissipation 5W, surge current up to 40A.
Input Impedance	Data inputs 1MOhm
Dynamic Range: (rms to peak)	118 dB @ 50sps std or optional 135 dB @ 50 sps (or both)

DIGITIZER

Type:	24-bit delta-sigma converter on each optional 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

Specifications subject to change without notice

DR4050 SPECIFICATIONS (Con't):

POWER

Voltage:	9 – 15 Vdc
Overvoltage Protection:	15V transzorb for spikes and reverse polarity, 1.8A automatic resettable polyfuse for longer term high voltage
Power Consumption	80mA 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
Waterproofing	IP67
Operating Temperature Range	-20 to +60?C
Humidity	100% RH
Size	260 x 230 x 130mm
Weight	2Kg

Specifications subject to change without notice

DR4050 SPECIFICATIONS (Con't):

CONNECTORS: REAR PANEL, WATERPROOF

Power	2-pin Circular (bayonet)
External Sensor	16pin Circular (bayonet)
Ethernet	RJ-45 10/100Mbit port for connection to PC, LAN, VSAT, Ethernet radio, etc.
Serial Port	DB-25 RS-232 Port for GSM and CDMA modems
Telephone	RJ-11 for V.92 modem to telephone
GPS	6-pin Circular (bayonet), 5m cable, extensions optional

CONNECTORS: INTERNAL

Terminal Interface	DB-9 terminal interface mainly for factory use.

DR4050 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.