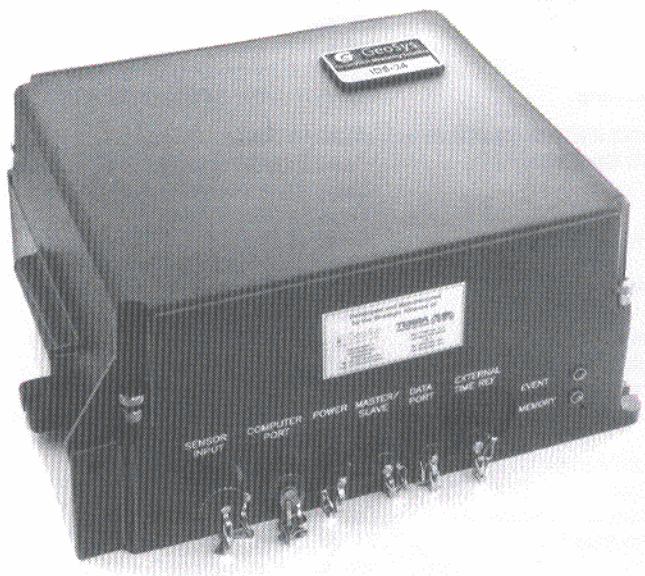
GeoSys

Geophysical Measuring Solutions

IDS-24 Seismic Recorder

Features

- ❒ 22 Bit Resolution @ 250 sps
- ❒ 130 dB Dynamic Range
- ❒ Data Acquisition Noise 1.5 μV RMS @ 250 sps
- ❒ DC to 100 Hz @ 250 sps
  DC to 80 Hz @ 200 sps
- ❒ Timing Accuracy < 50 μs of UTC with optional GPS
- ❒ Std. Temperature Compensated Crystal Oscillator
- ❒ Std. Acceleromter 0.5 μg Noise Floor
- ❒ 3 Internal Channels Std.
  Field Upgradeable to 8 Channels
- ❒ Anti-Alias Filter
  130 dB Attenuation @ Nyquist
- ❒ Selectable Sample Rates 250 to 25 sps



OUTLINE

The IDS-24 is a 22 bit digital data acquisition system. The standard configuration includes a the SSA-320SLN accelerometer providing three channels of acceleration data. The fully configured system may employ additional accelerometers or any of the popular seismometers available to complete a 8 channel seismic monitoring station.

Multipule IDS-24s may be connected in an array to achieve common timing, common triggering, network communications and data transfer. Large multi channel central arrays may be achieved using the IDS-CR configuration.

Our engineers have selected the Crystal™ 5321, 5322 A/D converter chip set that is recognised as the highest performance converter available and is specifically designed for geophysical applications. Each channel of the IDS-24 employs a forth-order Delta-Sigma digital converter and digital signal processing. With the use of a common clock driving multiple A/D converters zero channel skew is achieved

The IDSMenu set-up and analysis software operating on a PC may operate under Windows 95™ and provides a windows-like graphical users interface that is easy to use. Comprehensive analysis software is available.

All of the IDS models are multi-tasking providing auto dial and event download, simultaneous recording and communications to a remote PC and real time digital data stream output.

The IDS-24 allows the user to upgrade the system as the application of the instrument changes. The basic system may be field upgraded from a standard 3 channel system to 8 and sensor types may be mixed. The standard 4 Mbyte FLASH memory is expandable using the second PCMCIA slot or 10 or 20 Mbytes memory cards.

The cast aluminium enclosure provides a stable platform for Terra's triaxial accelerometer module that may be easily deployed externally by the addition of a MS connector and a cable. The enclosure of both the IDS-24 and sensor are NEMA6P rated for prolonged submersion in water and provides exceptional corrosion resistance.

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SPECIFICATIONS IDS-24

TRANSDUCER UNIT:

Type:	Terra SSA-320 SLN (Super Low Noise) Force Balance Accelerometer
Full Scale Range:	± 2g std., ±4g, ±1g, ±0.5g, ±0.25g optional.
Frequency Response:	DC to 50 Hz (-3dB point) contact factory for special order frequency response
Dynamic Range:	150 dB, 0 to 10 Hz 144dB typical, 0 Hz to 50 Hz
Noise Floor:	0.5 µg
Linearity:	< 0.05 % of full scale
Hysteresis:	< 0.005 % of full scale
Cross Axis Sensitivity:	< 0.0005 g/g
Damping:	0.6 to 0.7
Output:	± 5 V standard
Self Test Response:	± 1 g Step Test
Gain Selection:	1x or ¼ g user selectable, software commanded, hardware activated at sensor. Remote controlled "shorted" signal line for monitoring cable noise
Levelling:	3 point levelling screws on SSA-320SLN

ACQUISITION SYSTEM CHARACTERISTICS:

A/D Converter:	High dynamic range fourth order Delta-Sigma converter with digital FIR filter (One set per channel)
Dynamic Range:	128 dB @ 250 sps, >130 dB@50 sps (10,485,760 digital counts full scale)
RMS Noise:	1.5µV RMS (0.000016% of full scale)
Resolution:	22 bits @ 250 sps
Sample Rate:	
software selectable (sps):	250, 200,125,100, 50, 25
Frequency response:	DC to 100 Hz @ 250 sps
Number of channels:	3 channels standard, field upgradeable to 8 channels
Input Range:	+/- 5 V standard, optional +/-2.5V
Type:	Differential input
Channel to channel skew:	Zero
Anti-Alias filter:	24 bit Digital FIR filter with 130 dB attenuation at Nyquist Cut-off at 80% of Nyquist Linear phase response (Additional 2 pole filter in the accelerometer)
Auto-Zero:	User selectable "Auto Zero" function.
System operation:	Multi-tasking (simultaneous acquisition and communications)
Communications:	Up to 115.2k baud direct RS-232, modem or cellular data link

TRIGGER OPERATION:

Trigger selection:	Independently selected for each channel (1-8)
Threshold Trigger:	Selectable 0.01 % to 100 % of full scale
Additional Triggers:	STA/LTA, ratio trigger, alarm triggering (timed triggers), combination between STA/LTA and threshold, external trigger

CONNECTORS:

Computer / Modem port:	RS-232
Master/Slave (Network):	External trigger and optional network connection
Power:	AC input, DC input / output
External Time Reference:	Optional GPS / IRIG-E
Sensor connector:	Up to 8 external channels
Data Port (optional):	RS-232 for Real Time Data Stream Output per "USGS Telemetry format"
Protection:	Power connector with EMI/RFI and transient protection standard. Optional for additional connectors

INDICATORS:

LED:	Event/Recording, Memory Status, Recorder Status, Power
IDSMenu Instrument Status:	Battery Voltage, Charger Status, Temperature, Number of Events, Memory Available

POWER:

Main Battery:	12 V rechargeable sealed lead acid
Battery Reserve:	2.5 days (with 3 internal batteries installed, for 3 channel system, and sensor)
Memory batteries:	Lithium
Internal AC Battery charger:	Operates from 90-250 VAC, 47-63 Hz, Provides charge to internal batteries and optional external battery
External Power:	The power connector provides DC input/ output for supplemental DC supplies
Optional DC Supplies:	12 V solar panel (with regulators) External 12V Batteries
Current drain:	345mA @ 12 VDC with sensor

TIMING:

Internal Clock:	High Accuracy Temperature Compensated Crystal Oscillator TCXO -Standard 1 ppm (0 to 50°C) -Optional high accuracy 0.3 ppm (-20 to 70°C)
Ageing:	< 0.5 ppm per year
External Clock (option):	Trimble GPS time stamp with accuracy ± 50 µs of UTC

STORAGE:

Memory Type /Size:	Standard 4 MB PCMCIA Flash card (Temp 0 to 60°C) ≅ 30 min recording, 3 channels @ 250 sps ≅ 5 hrs recording, 3 channels @ 25 sps
Optional:	Extended Temp Flash card (-25 to 70°C) 10 MB, 20 MB, 2 MB RAM or consult factory for higher capacity
Pre-Event Time:	0 - 80 seconds, selectable in 1 sec. steps for 3 channel @ 250 sps (0 - 300 seconds optional)
Post-Event Time:	0 - 300 seconds, selectable in 1 sec. steps for 3 channel @ 250 sps

ENVIRONMENT/HOUSING:

Package Type:	Cast Aluminium, O-Ring Sealed, Integral Handles and Padlock Hasp
Package Size:	340 x 310 x 180 mm
Weight:	35 lbs or 15.9 kg (with single battery)
Index of protection:	NEMA 6P (IP 67)
Temperature Range:	-25 to +70°C
Humidity:	0 to 100% (non-condensing)
Mounting:	Horizontal or vertical
Attachment:	Internal single bolt with internal levelling screws or external flange attachment

OPTIONS AND ACCESSORIES:

- Additional accelerometers (up to 8 channels)
- Connection with seismometer and accelerometer combinations
- Internal modem

Plug-in modules:

- Network Module (optically isolated for long cable connection) enables interconnection with multiple IDS-2024 for common triggering, common timing, network communication and data transfer (RS-485)
- Pre-amplifier Module provides high gain for connection with seismometers, geophones or other sensors
- Custom Module

SOFTWARE:

IDSMenu for PC, user friendly, menu-driven software allows data transfer, analysis and set-up of all IDS parameters directly or remotely via modem. Includes command to automatically receive transfer data initiated by IDS in auto dial-out mode. Format conversion menu allows conversion to SUDS and ASCII for data analysis.

Specifications subject to change

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