ภาคผนวก ซ

Orion portable Seismograph

Orion เป็นเครื่องบันทึกคลื่นแผ่นดินไหวชนิดหิ้วได้ แบบ 24 บิต พร้อมเสาอากาศ GPS สะดวกด้วยฮาร์ดดิสบันทึกข้อมูลแบบถอดเปลี่ยนได้ และแสดงผลการใช้งานด้วยหน้าจอกราฟฟิก LCD โดยบรรจุภัณฑ์นี้เป็นแบบป้องกันน้ำเข้า

รายละเอียดเครื่องมือ

Input channels:

Sensor channels	3 standard, 6 optional
Type	Differential
Sensitivity	1.9uV/bit, default
Gain	Resistor programmable
Input Level	28 Vpp
Damping	Provisions for internal resistor
Impedance	Typically 1 Mohm with no damping
Noise level	Typically 1.25 counts rms at 1.9mV/bit & 100sps (shorted input)
Dynamic Range	132 db rms - rms

Digitiser:

Type	24-bit delta-sigma
Analog filter	3rd order bessel -3db 3.7 KHz
Digital filter	-140db at output Nyquist
Hardware sample rate	256 KHz
Phase	Linear in passband
Cross talk	>-80 dB typical
Sample Instant	Simultaneous

Sample rates	10, 20, 40, 50, 80, 100, 125, 200, 250, 500, 1000, Consult factory for other rates
Output format	Compressed, nonapproximating first difference, Absolute UTC time reference
Preview Channels	2 channels at 1 sps to 600 seconds, Bandpassed filtered min & max over interval
Auxiliary Data Channels:	
Fast Channels	3 channels +/- 10V at 1 to 1/600 sps
Slow channels	3 channels +/- 10V at 1/8 to 1/600sps
Resolution	10-bit
Sensitivity	49 mV/bit
State of Health:	
Internal	Temperature, disk temperature, supply voltage
Self-test	Performs a complete self test at power up
Timing System:	
Timing system	UTC timed with DCXO displined to GPS
System Accuracy	1 ms (typically 20 microseconds GPS 100%)
Internal Oscillator	DCXO, typically 0.4 ppm over temperature range
Type	Five Channels GPS receiver
GPS duty cycle	1 to 99% operator set
Antenna	Active typically 25 dB gain
Cable length	2m standard, Optional 10m
Time to first fix	Typically 30 seconds
Power Consumption	1.3 watt continuous mode, one fix per second
Acquisition Modes:	
Continuous Mode	Operator set start and stop time, Continuous with trigger flags
Event Mode	As determined by event trigger

Window Mode	Ten programmable windows with repeats, Continuous or event recording in each window
Recording method	Ringbuffer or no overwrite
Event Detector:	
Trigger pre-filter	Band pass, high or low pass, to 5th order
Triggering	STA/LTA or absolute level (%g) trigger, Up to 6 independent triggers
Trigger threshold	Ratio 1 to 99.9
Pre-event memory	1 to 99 seconds
Post-event memory	1 to 200 seconds
Data Cartridge:	
Data Compression	Non-approximating typically 1.3 bytes / sample
Shock	Drives float in foam within the disk drive package for added shock protection
Temperature Range	-20C to +40C (with heating)
Drive heating	Cartridges include a 15 W heating element Heating operator-set can be enabled or disabled
Size	Length 22cm height 6cm with 14cm Weight 0.5kg (1.1lbs) varies with drive capacity
User Interface:	
Liquid Crystal Display	240 x 64 graphic
Contrast & backlight	Set via menu
Input keys	Four push buttons
LEDs indicator:	
Disk	Disk activity
GPS	GPS locked or unlocked
Battery	Battery voltage & low voltage shutdown
Event	An event is being processed

	ACQ-CPU	Acquisition processor status
	USER-CPU	User Interface processor status
Power:		
	Typical	5.2 watts
		(100sps, 3 channels and GPS 10% duty cycled)
	Voltage	11V to 17V DC
	Battery	12Ahrs (two 6 volt 12 Amp Hr) internally mounted
	Overvoltage	protection No damage at +/- 30 V
Mains Power Supply / Charger:		
	Input Voltage	85 VAC to 264 VAC
	Input Freq. Range	47vHz to 440 Hz
	Output Voltage	13.5 VDC
Connectors:		
	Sensor	19 pin for Three channel sensor
	GPS Antenna	Coaxial
	Communications	19 pin I/O, serial port, SOH
	Power	4 pin 12V battery, charger input and earth
	Data Cartridge	50 pin SCSI connector for data cartridge,
		24 pin 'D' connector for cartridge power/control
Environmental:		
	Operating Temp.	-20 to +40C
	Humidity	100%
	Packaging	ABS alloy case
	Dimensions	Length 47 cm, Width 37cm, Depth 19cm
		Weight 10.9kg (24 lbs) including batteries