GEO-A200

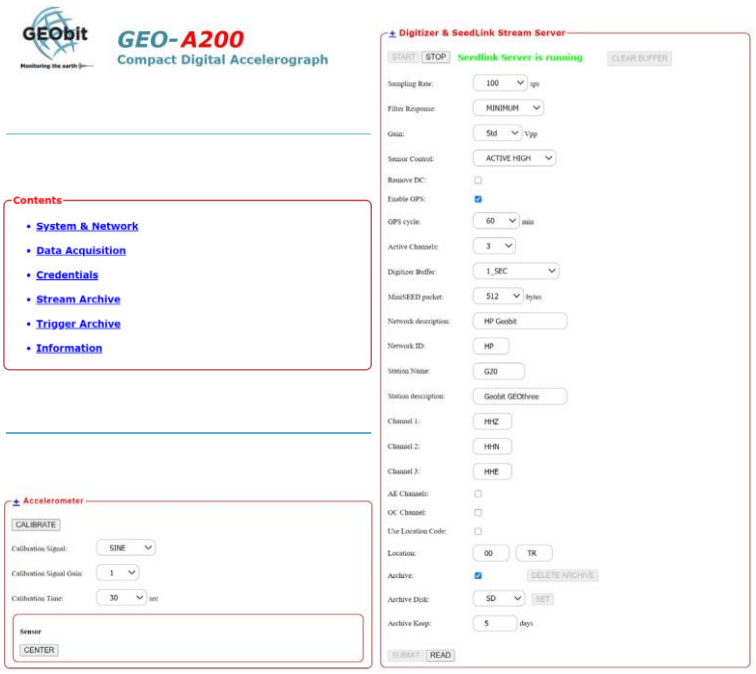
Compact Digital Accelograph

Monitoring the earth

- FBA based compact digital accelerograph
- Cost Effective and high performance
- Bandwidth DC-200Hz
- Dynamic Range >155dB
- Ethernet - WiFi - Serial port
- 32bit ADC digitizer
- GNSS time/Precision DPLL
- 0.1-1000 samples per second
- LCD and six status LEDs
- Integrated Seismic Switch
- Embedded Open Source OS
- Embedded SeedLink server
- Embedded earthworm server
- Continuous and trigger recording
- Advanced networking functionality
- Smart seismic network operation

FEATURES

GEObit introduces GEO-A200 high resolution and high dynamic range compact digital accelerograph. The size of the instrument is only 139mm heigh and 138mm diameter. The power consumption is less than 2W. Available sampling rate is 1 to 1000sps and optional lower sampling rates are supported. Build-in GNSS receiver combined with ultra accurate DPLL unit providing time drift 10e-9sec ensures timing stability even in the absence of GPS signal. NTP timing is also available. The instrument provides self calibration functionality. DC offset remove is also perfomed automatically or on demand. Acquisition parameters and operation modes can be set from the user-friendly web interface, up to 64 characters password protected.



The unit operates in continuous mode, triggered mode or both and data are streamed through different data ports. Local data storage is selectable as well as logfile information. The unit supports advanced functionality, implemented from the combination of trusted open source software components. Because of it's open source architecture is able to run any custom application thus providing the next day solution to the user. The hardware is based over an embedded ARM9 400MHz ARM linux board running 14.6 linux kernel. The data are stored in mini-SEED format into the microSD card or to a removable USB stick. The instrument supports 10/100 ethernet port and debug port. FTP, SFTP, SSH are also available. The state of health is transmitted over UDP packets upon request.

The instrument supports embeded earthworm and seedlink server with configurable data packet size that allows data transmission with low latency. The instrument is ideal for earthquake monitoring, early warning applications and structural monitoring applications. Single bolt mounting and flexibility of connectivity allows easy and quick inatallation.

INSTRUMENT SPECIFICATIONS

FBA BASED COMPACT DIGITAL ACCELEROGRAPH

DIGITIZER

Analog channels	3 seismic (acceleration) channels
A/D converter	Fourth Generation, Delta-Sigma, 32bits data stream, one per channel
THD	125Db
Modulator	Fourth Generation, 4th order Delta-Sigma Modulator
Filter	Programmable SINC, FIR, IIR filtering, auto-calibration function
Filter Response	Selectable Minimum or Linear Phase Filter
Sampling Rate	1-1000 sps, optional 0.1-1000sps
Power	9-18Vdc, <2W
Dynamic Range	>140dB@100sps,128db@1000sps

DATA RECORDING

Storage Media	MicroSD flash card, removable USB stick Ringbuffer RAM storing 10h+ data. Miniseed data files
Information file	System log file. SOH message
Recording mode	Continuous, Triggered STA/LTA based or both. MiniSEED Files
Operation	Advanced functionality if connected to an Earthworm server
Operating System	Open Source based, ability for custom application run
Memory	Internal 256Mbyte RAM in ringbuffer mode and minimum 64Gbyte FLASH memory, min 8Gbyte internal FLASH
Trigger time	Pre and post trigger time > 30sec user selectable

TIME BASE

Type	GNSS receiver(GPS, GLONASS, WAAS,EGNOS,BeiDou,QZSS) /DPLL, GPS port, up to 30m cable GPS antenna or 120m active GPS antenna
Accuracy Time	+/-1usec to UTC time pulse, +/-5 meters to position
Timing Sources	Ultra low drift DPLL unit using TCVCXO,RTC
DPLL drift	DPLL drift Less than 17usec between one hour GPS cycles

Specifications may change to better values without notice.

COMMUNICATION

Connectivity	Ethernet port, WiFi, or Serial Port(*)
Telemetry	Seedlink and Earthworm server, low latency 0.1sec
Protocols	Protocols SSH, FTP, SFTP, Web Interface, TCP/ IP, HTTP, HTTPS,PPP, MQTT, CoAP/CoAPS,NTP
LCD	Miniature LCD with alternative information messages
LED	Six high brightness LEDs

CALIBRATION

Control Signals	Automatic or on demand centering (offset removal)
Calibration	Pulse, Sine waveform, variable amplitude and frequency, 16bit DAC

INTEGRATED ACCELERATION SENSOR

Axes	Three, orthogonally placed
Bandwidth	DC - 200Hz
Dynamic Range	>155dB, >160dB@1H/1HzBW
Full Scale Range (g)	+/-4,2, 1,0.5,0.25, 0.125, 0.075 g
Noise	Below ALNM between 3s-10Hz

PHYSICAL

Size	139mm heigh, 138mm diameter
Weight	2.8kgr

ENVIRONMENTAL

Temperature range	-20 to +70 °C
Humidity	100%, IP67 enclosure

EMMERGENCY

Seismic Switch	SPST type Relay, 1A switch
Configuration	Web interface configurable, threshold limit activated.
Reference:	(*=Optional)

Design, Modeling, and Evaluation of a Class A Triaxial Force Balance Accelerometer of Linear Based Geometry
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