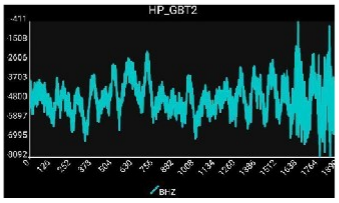
# GEOtiny10

## Compact Digital Seismometer

GEObit
Monitoring the earth

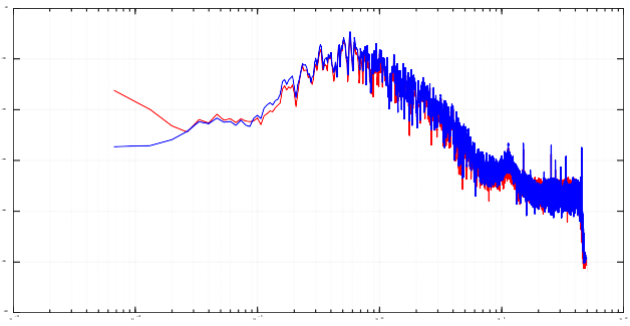
- 3C seismic and 3C acceleration sensor
- DR: 146dB velocity. 97dB acceleration
- Wide response V:10s to 98Hz, A:DC-550Hz
- Low power consumption
- Cost affordable design
- Only 130mm D/115mm H
- Integrated 24bit digitizer, 138dB
- Embedded Seedlink & Earthworm Server
- Realtime Telemetry and Local Storage
- MiniSeed data format
- Linux open source OS
- Web Interface Menu
- SSH, SFTP, HTTPS, CoAP, NTP
- Modular seismic sensor design
- Customized Sensor Corner Frequency
- High sensitivity 1500V/m/s
- Operation Range: -20 +70°C
- Waterproof IP67 aluminum case


GEObit introduces world's lowest price, compact digital seimometer which integrates seimic and acceleration sensor, 24bit digitizer, local data storage and Seedlink Server for data telemetry.




## FEATURES

GEOtiny10 is a compact miniature digital seismometer which integrates three seismic and three acceleration channels. It supports high resolution 24bit digitizer, embedded linux OS and GPS or NTP timing. Seedlink server ensures reliable real time data telemetry while large storage volume ensures long period local data recording. The instrument has very low power consumption so it can operate getting powered from a small 12Vdc battery. Due to its small size provides the ability to be buried underground. Modular sensor interface allows the user to select between a variety of sensor types and frequency corners (10sec, 5sec, 2sec, 1sec, 2Hz, 4,5Hz), thus covering the short period and wide band seismic range. Design simplicity is the great advantage and it is reflected to the price which is only fraction of the common commercial seismometers. The user is able to deploy even 100% more units than using common seismometers at same cost.



Sensor PSD compared to a Guralp3T 120Sec sensor
RED= GEOtiny, BLUE = 120sec seismometer

- Aftershock monitoring
- Regional seismicity monitoring
- Seismic tomography acquisition
- Induced seismicity monitoring
- Volcano monitoring
- Structural monitoring
- HVSR, MASW surveys
- Educational seismograph
- Personal seismograph

# INSTRUMENT SPECIFICATIONS

## GEOtiny10 MINIATURE DIGITAL SEISMOMETER

### DIGITIZER

| | |
|---|---|
| Channels | Three seismic and three acceleration channels |
| A/D converter | Fourth Generation, Delta-Sigma, 24bits |
| Nonlinearity | +/-0.001% |
| Modulator | Fourth Generation, 4th order Delta-Sigma Modulator |
| Filter | Programmable , FIR filtering |
| Analog Input | Modular sensor board |
| Sampling Rate | 1 to 1000 samples per second |
| Power | 9-18Vdc , or 9-36Vdc 0.8W , 0.95 with integrated sensor board |
| Autonomy | One week powered from a 12V/9Ah battery, 36days powered from a 12V/55Ah car battery. |
| Dynamic Range | 138dB @ 100sps |

### DATA RECORDING

| | |
|---|---|
| Media | Internal flash up to 64Gb and External Removable Flash up to 128Gb (USB-SD) |
| Data file type | Miniseed |
| Information file | System log file |
| Recording mode | Continuous,Trigger or both |

### TIME BASE

| | |
|---|---|
| Type | GNSS receiver (GPS, GLONASS, WAAS, EGNOS, BeiDou, QZSS)/DPLL, GPS port |
| Accuracy Time | +/-1usec to UTC time pulse, +/-5 meters to position |
| Timing Sources | GPS, RTC, NTP |
| DPLL drift | Less than 17usec between one hour GPS cycles |

### COMMUNICATION

| | |
|---|---|
| Telemetry | Ethernet port, WiFi |
| Connectivity | SEEDlink |
| LED | 5 high brightness LEDs monitoring system SOH |
| Protocols | SSH, FTP, SFTP, Web Interface, TCP/IP, HTTP, HTTPS, PPP,MQTT, CoAP/CoAPS, NTP |

### INTEGRATED FORCE-BALANCE SENSOR ELECTONICS (modular)

| | |
|---|---|
| Bandwidth | 10sec–120Hz, variable frequency corner (10s, 5s, 2s , 1s, 2Hz , 4.5Hz) |
| Technology | Electro-dynamic Force–Balance technology |
| Sensitivity | 1500V/m/sec , Acc: +/-2g, +/-4g,+/-8g |
| Dynamic Range | Velocity >142dB, Acceleration > 97dB |

### PHYSICAL (SEISMIC SENSOR)

| | |
|---|---|
| Type | Surface Type |
| Dimensions | 130mm diameter x 115mm length |
| Cable length | Standard 5 meters, up to 50* meters |
| Mounting | Three adjustable legs |
| Weight | 2.6kgr |
| Tilt | +/-10 degrees |

### ENVIRONMENT (DIGITIZER/RECORDER)

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

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