

Specifications for: SeismoDot

Seismograph for Research and Education

Unit

The “SeismoDot” is a geophone based seismograph for research and education. SeismoDot includes Wi-Fi and MQTT connectivity.

| Parameter | Value |
|------------------------------|--|
| Dimensions (estimated L*W*H) | 3.5x2.5x2 in or 88.9x63.5x50.8 mm |
| Weight (estimated) | 0.35 kg |
| Immersion Rating | IP61 |
| Connectors | USB-C and Micro SD |
| Installation Considerations | Magnets attachable to surfaces, or adhesive stickers |
| Operating Temperature | -40°C to +125°C |
| On Board Computer | ESP32 |

Seismograph

| Parameter | Value |
|-----------------------------------|---|
| Type | Single-component 4.5 Hz 395 Ohm vertical RGI-20DX geophone with electronic extension to lower frequencies (<1 Hz) |
| Samples per second | 100 |
| Bandwidth (estimate) | -3dB points at 0.7 and 44 Hz |
| Poles (estimate, radians/ second) | -1 (0.16 Hz, single pole high pass filter) -3.03 x2 (0.48 Hz, double pole high pass filter) -666.67 (106 Hz, single pole low pass filter) |
| Zeros (estimate, radians/ second) | 0; 0; 0 |
| Sensitivity (estimate) | 3.996500E+08 counts/ meter/ second +/- |

| | |
|--|--|
| | 10% precision |
| Clip Level (estimate) | +/- 8,388,608 counts (24-bits) 21 mm/s peak-to-peak from 0.1 to 10 Hz |
| Minimum Detection Threshold (estimate) | 0.08 $\mu\text{m/s}$ RMS from 1 to 20 Hz @ 100 sps Note: The minimum detectable level is considered to be 10 dB above the noise RMS. Dynamic range is the full scale sinusoid RMS over the noise RMS in dB. |
| Digitizer Dynamic range | 24-bit ADC Sigma-Delta $\Sigma\Delta$ 144 dB (24 bits) |
| Effective bits (estimate) | 21 bits (126 dB) from 1 to 20 Hz @ 100 sps (for the entire analog to digital hardware chain). |

Communications

| Parameter | Value |
|--|--|
| Digital bandwidth consumption at 100 Hz, per channel | Average: 820 bytes/ second 71 megabytes/ day Max: 1420 bytes/ second 123 megabytes/ day |
| MQTT Compatible | |
| Wi-Fi Connectivity | |

Power

| Parameter | Value |
|----------------------|--|
| Power Supply Voltage | 5 Volts DC (2.5 Amp supply) |
| Battery Life | At least 8 hour runtime on full charge |

Questions?

Email us at info@intelligentdots.com