



## 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](mailto:info@intelligentdots.com)