



# HERMES

## INFRASOUND SENSOR

### KEY FEATURES

BROADBAND (0.033\* HZ TO 200 HZ)  
\*LOWER FREQUENCIES ON REQUEST

HIGH DYNAMIC RANGE (110 DB) LOW NOISE  
(-62DB PA<sup>2</sup> /HZ, REL TO 1 PA AT 1 HZ)

LOW POWER

LOW COST

ROBUST PHYSICAL BUILD QUALITY  
AND SEALED ELECTRONICS

HERMES is a differential infrasonic sensor based on differential pressure measurement and the use of an acoustic filter to eliminate the stationary component of atmospheric pressure. Hermes performs high precision / high reliability measurements over a wide frequency bandwidth and it's capable of detecting low-frequency (non audible) sound waves. In addition to strong volcanic eruptions, there are many sources of infrasonic waves, most of which are produced by natural phenomena such as adverse weather conditions, lightning, asteroids, wave motion, outgassing and minor volcanic explosions, debris-flow, rapid mass flows such as snow avalanches and landslides, earthquakes and related ground shaking, sea storms, mountain waves. Artificial sources of infrasonic waves that can be measured are quarry blasting, TNT/Gas blasting during avalanche control, nuclear explosions and shock waves. A range of sensors with different sensitivity and dynamics as well as frequency ranges are able to cover the amplitude and frequency ranges of most of these infrasound sources, allowing effective monitoring. The rugged casing together with the low power consumption guarantee the employment of HERMES sensors also in hostile environment.

Recording phenomena that emit acoustic waves such as volcanic eruptions, avalanches, landslides, sea storms and mountain waves.

APPLICATIONS

**AVAILABLE FULL SCALE RANGES**

50 Pa (± 25 Pa) - 250 Pa (± 125 Pa) - 500 Pa (± 250 Pa)

1000 Pa (± 500 Pa) - 2400 Pa (± 1200 Pa)

**NOMINAL SENSITIVITY**

50 Pa -> 0.8 V/Pa - 250 Pa -> 0.16 V/Pa - 500 Pa -> 0.08 V/Pa

1000 Pa -> 0.04 V/Pa - 2400 Pa -> 0.016 V/Pa

A/D CONVERSIONS

**OUTPUT TYPE** Differential

**MAXIMUM** 40 volts peak-to-peak (signal+ to signal-) ±10 volt max, signal to ground

**FREQUENCY RESPONSE** Flat from 0.03 Hz to 200 Hz

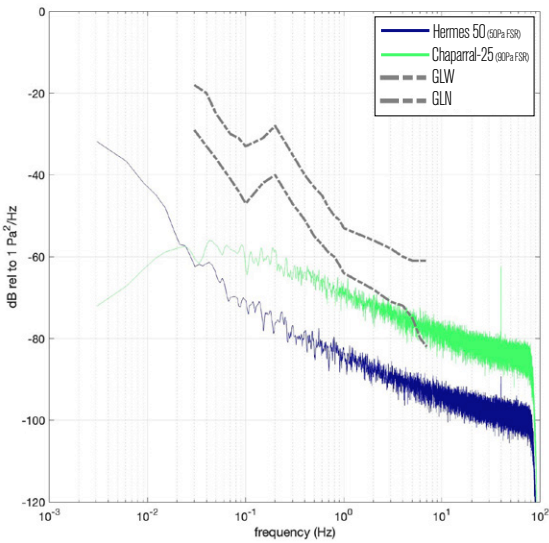
**SELF NOISE** 0.8mPa RMS 0.5 to 2Hz 1.9mPa RMS 0.1 to 50Hz

**DYNAMIC RANGE** 110dB (@ 0.8mPa RMS self noise)

**OUTPUT IMPEDANCE** 100Ω non-reactive (recommended load > 10 kΩ)

**SHORT CIRCUIT PROTECTED** signal+ to signal- and signal to ground

OUTPUT



**POWER SUPPLY** 5 - 40 VDC isolated, reverse voltage protected.

**POWER CONSUMPTION** <260mW

POWER SUPPLY

**STORAGE TEMPERATURE RANGE** -40 ÷ +85°C

**HUMIDITY** 0 to 95% (non-condensing)

**OPERATING TEMPERATURE RANGE** -20 ÷ +60°C

OP. CONDITIONS

Sensor will function in any position or attitude. Sealed to IP-67 with acoustic inlets sealed and mating electrical connector or cap installed

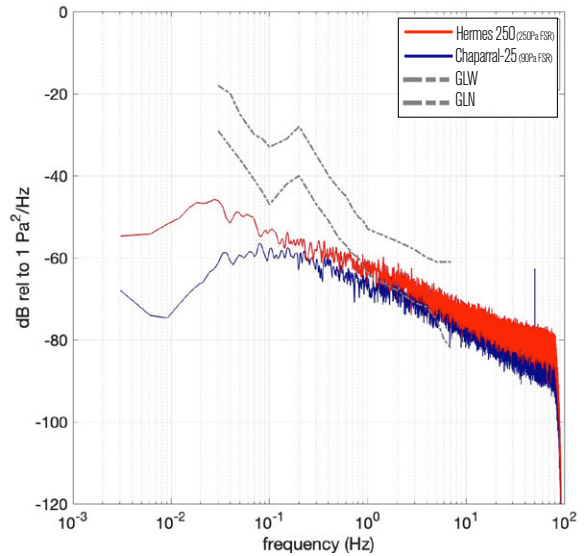
**HOUSING** Aluminum surface treatment (AISI 316 opt)

**DIMENSIONS** mm 145 x 100 Ø

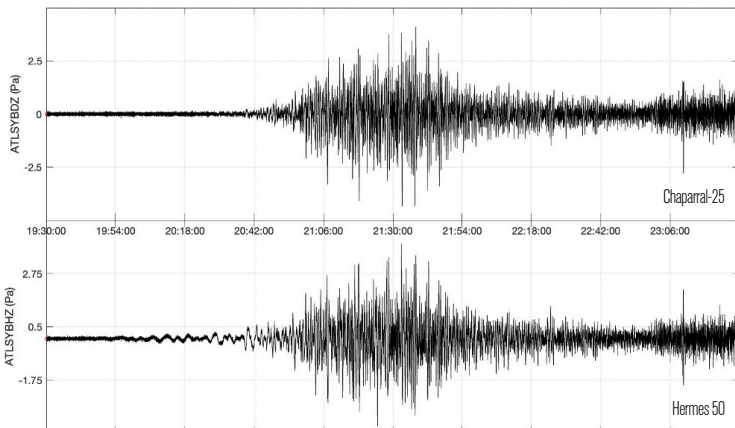
**WEIGHT** kg 2,00

**ACOUSTIC INLET(S)** 4 inlet ports, 1/8" G female

PHYSICAL



ATL Array data, from 15-Jan-2022 19:30:00 to 15-Jan-2022 23:29:59



Beside the infrasonic signal produced by the eruption of the Hunga-Tonga-Ha'apai volcano recorded in Lunitek laboratories by HERMES 50 (50Pa FSR) compared to the Chaparral-25 (90Pa FSR) recording.