

MID-RANGE

BROADBAND SEISMOMETER

THETA Θ - TT120 - VEL

THETA Θ - TT120 - VEL is a mid-range portable feedback broadband seismometer housed inside a waterproof enclosure. The low noise high dynamic range broadband feedback seismometer is based on truly rectilinear suspension system which does not require mass lock.

Detailed sensor calibration information is provided with every sensor, including sensor dc calibration levels, frequency response of the instrument and the transfer function in poles/zeros notation.

It is extremely simple to install the sensor. Three levelling feet ensure that the sensor can be levelled easily with the aid of the bubble level. The North/South ordination pointes are machined on the sensor base and the sensor component fixing crews are fixed with dowel pins to achieve highest possible orientation accuracy. The errors in pointer to the sensor orientation is less than ± 0.1 degrees.



SUITABLE FOR LOCAL, REGIONAL & TELE-SEISMIC RECORDING, INCLUDING:

- Single or large scale seismic networks
- Micro-seismic monitoring
- After-shock monitoring
- Volcanology
- Structural health monitoring
- Hydrocarbon exploration
- Permanent reservoir monitoring
- Induced seismicity detection
- Explosion monitoring
- Post hole seismology
- Micro-seismic monitoring

The product specifications and the stated data are subject to change without prior notice.

SIGNIFICANT QUALITIES AND BENEFITS OF THE SYSTEM

- High data quality broad band data
- Truly rectilinear suspension system with high cross axis rejection
- Broad band data with high frequency response extending to 150 Hz
- Minimises equipment used during installation
- Automatic self-installation and zeroing for quick installation
- Tilt tolerance of ± 10 degrees
- Portable and easy to deploy
- Waterproof with connectors mated
- Connector turret provides easy access to the connectors and cabling

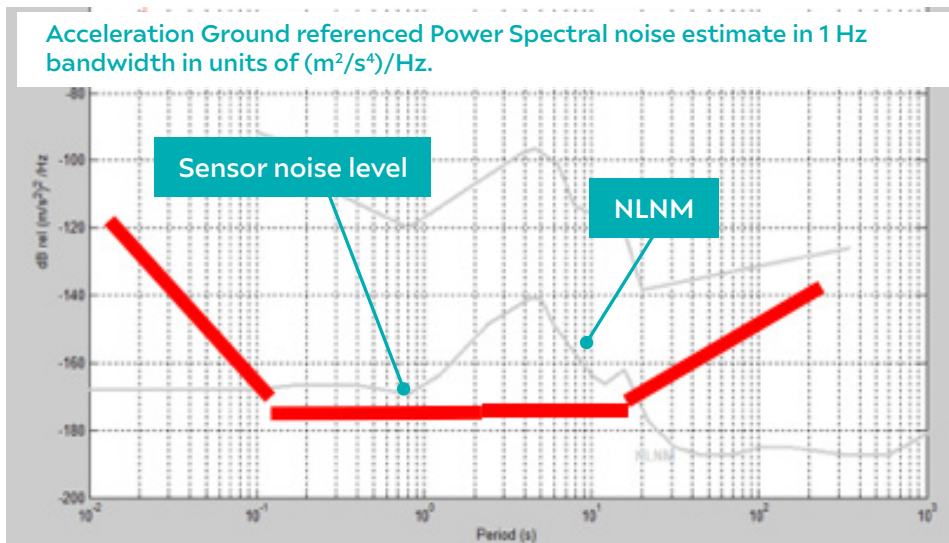
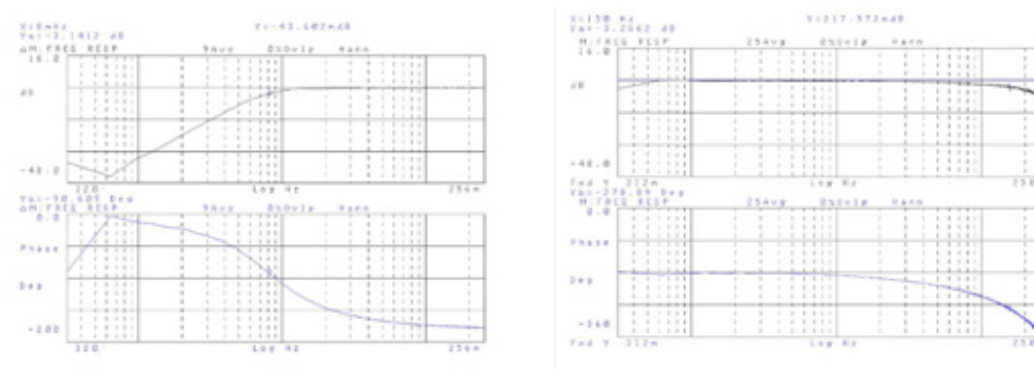


Figure 1: Triple red line is sensor power spectral noise density over the entire seismic spectrum. The sensor noise level crosses the low noise model form 8 Hz to 14 seconds.

The standard frequency pass band is flat to velocity from (120 Seconds period) 0.00833 Hz to 150 Hz, other options are available. Standard Pass band Frequency is shown in the provided frequency response plot.

MEASURED FREQUENCY RESPONSE OF THE DIGITAL SENSOR



Note: The measured frequency response is given as low and high frequency sections in order to identify accurately the corner frequency of the transfer function.

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TECHNICAL SPECIFICATIONS

Standard Frequency Response:
Flat velocity 0.008333Hz (120s) to 150 Hz

Other optional responses:
60 seconds to 150 Hz
30 seconds to 150 Hz
20 seconds to 150 Hz
10 Seconds to 200 Hz
1 second to 200 Hz

Analogue sensor sensitivity:
Differential: 2*1500 V/m/s.
Other responses are available.

SENSOR CONTROL LINES

Calibration signal: Can be applied to each axis.
Calibration enable via serial Port.

Mass Centring Range: ± 10 Degrees.

Mass Lock: Not required.

Lowest spurious Resonance: 340 Hz vertical and horizontal modules.

Cross axis sensitivity: -68 dB.

Linearity: Measured at 1 Hz: -85 dB

Bubble level: 20 mm diameter

Logic Control Lines:
Calibration enable and centre via serial interface.

CALIBRATION SIGNAL INPUT

Wave forms:
Square, Sine, Step, Pulse with duty cycle and frequency control and pseudo random signals can be injected to calibrate the sensor.

Operating temperature:
-20 to 75 degrees centigrade.

Power supply:
+9 - +36 V DC, Galvanically isolated analogue input stage of digitiser.

Galvanically isolated sensor electronics.

Polarity protected, over voltage protection with transient suppression.

Power consumption at 12 Volts:
830 Milli Watts
Low power option: 235 Milli Watts

PHYSICAL

Case diameter: 138 mm

Case height: 185 mm

North South Pointer: Machined to the base.

Base plate and top cap: Hard Anodised Aluminium.
Environmental: IP-68

Weight: 3.1 Kg



Figure 2:
Sensor production at Gaiacode, ALPHA-TA120-LIGHT, THETA-TT120-VEL, SIGMA-TSD4G-ACC.

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