

TRILLIUM HORIZON 360

VAULT & DIRECT BURY SEISMOMETER

Nanometrics' commitment to the ongoing evolution of our instrumentation has led to the latest addition in the Horizon series, the Trillium Horizon 360. The 360 model brings an even lower noise floor and corner frequency to the exceptionally versatile Trillium Horizon design. This lightweight, easy-to-deploy sensor can be both direct buried at shallow depth or set on a pier.

Local, regional & teleseismic studies

The Trillium Horizon is ideal for local, regional and teleseismic studies having a response flat to velocity from 360 seconds to 136 Hz exceptionally low self-noise. Operators will appreciate the low power consumption, automatic mass centering and robust no-mass lock design inherent in all Trillium seismometers. The Horizon is ideal for instrument pools; it gives you all the versatility you need with a smaller financial investment and less storage space required than purchasing both vault and direct-bury instruments.

A highly integrated station solution

When using the Horizon with our popular Centaur digitizer, you'll have access to a digital leveling bubble through the Centaur GUI. The virtual leveling bubble makes for easy leveling down a dark hole, or once buried, gives you the ability to check levelness at any time.

Our optional accessories ensure fast and easy deployment

- Sensor cables
- Transport case
- Alignment and leveling toolkit
- Insulating cover
- Lifting cable



Benefits:

- Designed for both shallow bury and vault installs
- Ideal for regional and teleseismic studies
- Highly portable and easy to deploy
- Low power consumption
- Features a digital bubble level for easy downhole leveling
- Stainless steel and resistant to the elements
- Immersible to 10 m (able to survive indefinitely in a flooded vault)
- Top-mounted connector to facilitate direct bury
- Automatic mass centering



*Polar Certified Model
available for operating
temperatures down to -50°C*

TECHNICAL SPECIFICATIONS TRILLIUM HORIZON 360

Specifications subject to change without notice

TECHNOLOGY

Topology: Symmetric triaxial

Feedback: Force balance with capacitive transducer

Mass centering: Automatic mechanical recentering, can be remotely initiated

PERFORMANCE

Self-noise: See self-noise graph

Sensitivity: (Nominal) 2000 V·s/m; (Actual) 2001.2 V·s/m $\pm 0.5\%$

Accuracy: $\pm 0.5\%$ relative to User Guide specification

Bandwidth: -3 dB points at 360 s and 136 Hz

Clip level: 10 mm/s up to 15 Hz and 0.17 g above 15 Hz

Dynamic Range: 169 dB @ 1 Hz

Operating Tilt Range: $\pm 1.5^\circ$

Temperature Sensitivity: $\pm 10^\circ\text{C}$ without recentering

Magnetic Sensitivity: $< 0.03 \text{ (m/s}^2\text{)}/\text{T}$

PHYSICAL

Diameter: 170 mm

Height: 174 mm, not including connector, feet

- 241 mm with handle and feet

Weight: 9.7 kg

Handling: Detachable lifting handle included

AVAILABLE MODELS

TH360-2-2000: 360, Standard Model

TH360-2-2000-XC: 360, Polar Certified Model

INTERFACE

Connector: 19-pin UTS7-14D19P32

Velocity Output: 40 V peak-to-peak differential

- Selectable XYZ or UVW mode

Mass Position Output: Three independent $\pm 4 \text{ V}$ outputs

Calibration Input: Single voltage input with one active-high control signal for all channels; calibration with XYZ or UVW

Control Lines: Mass Center, Calibration Enable, XYZ/UVW mode

Serial Port:

- RS-232 compatible serial IP (SLIP) with onboard HTTP web server to select sensor operating modes, to mass center, and to access state-of-health, virtual level bubble, firmware updates and metadata
- Plug-and-Play automated workflow interface to select sensor operating modes, and to access state-of-health, virtual level bubble and metadata

LEVELING AND ALIGNMENT

Bubble level: Bubble level and mounting screws included for use in vault deployments only

Digital bubble level: Graphical bullseye level is available via Centaur digital recorder Web interface

Alignment: Vertical scribe marks for (N and S); precision guide in cover for straight-edge, line, or laser level

Digital tiltmeter: Reports case tilt from vertical for easy installation and remote troubleshooting when using Centaur digital recorder

POWER

Supply Voltage: 9 to 36 V DC isolated input

Power Consumption: 250 mW typical quiescent

For power consumption under other operating conditions such as startup and mass centering, see User guide

Protection:

- Reverse-voltage and over-voltage protected
- Self-resetting over-current protection
- No fuse to replace

ENVIRONMENTAL

Operating Temperature:

-20°C to +60°C (Standard Model)

-50°C to +60°C (Polar Certified Model)

Storage Temperature:

-40°C to +70°C (Standard Model)

-60°C to +70°C (Polar Certified Model)

Optional: Insulating cover available for quick and convenient installation

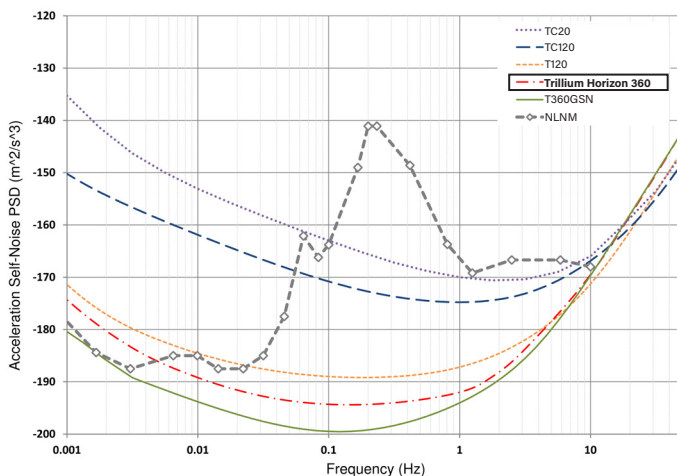
Humidity: 0% to 100% (submersible)

Shock:

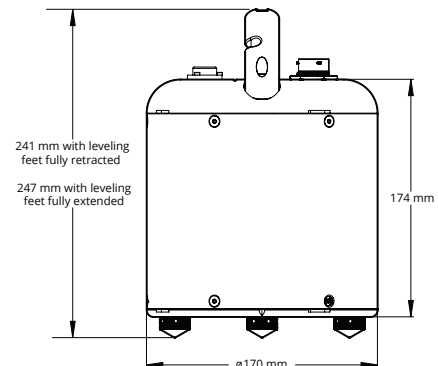
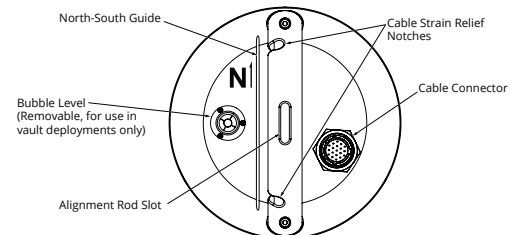
- 20 g half sine, 5 ms without damage, 6 axes
- No mass lock required for transport

Ingress protection: Rated to IP68 and NEMA 6P to 10m for prolonged immersion

SELF-NOISE GRAPH



Seismometer self-noise plotted against NLNM (after Peterson, 1993) and MLNM (after McNamara and Buland, 2004)



Contact a product expert Toll Free: 1 855 792 6776 | sales_mkt@nanometrics.ca



Listening to the Earth

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