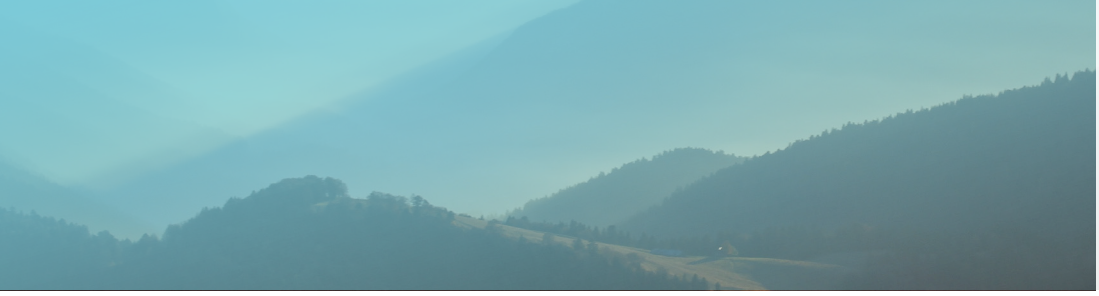


TRILLIUM HORIZON

VERSATILE, LOW-POWER SEISMOMETER

Nanometrics' commitment to the ongoing improvement of our instrumentation has led to the latest version of the Trillium Horizon. This second generation Horizon maintains all of the performance and capabilities of the first generation while reducing power consumption by over 50%.

In addition to the new lower power consumption, the Trillium Horizon's design is exceptionally versatile, ideal for both direct bury and vault use cases. This lightweight, easy-to-deploy sensor can be 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 120 seconds to 150 Hz and 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.

When combined with our new Pegasus digitizer the Horizon provides a true broadband station with an overall power consumption of less than 450 mW, providing an ideal solution for rapid response applications that require high resolution data.

Trillium Horizon

Benefits:

- Ultra-low power consumption (230 mW)
- Designed for both shallow bury and vault installs
- Ideal for regional and teleseismic studies
- Highly portable and easy to deploy
- 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

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

TECHNICAL SPECIFICATIONS TRILLIUM HORIZON

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
Nominal Sensitivity:
- 1200 V-s/m (Standard, Polar Certified & Magnetic Shield Models)
- 2000 V-s/m (2000 V/s/m Model)

(reference User Guide for precise value)
Precision: ±0.5% relative to User Guide specification
Bandwidth: -3 dB points at 120 s and 150 Hz
Clip level:
- 16.6 mm/s up to 10 Hz and 0.12 *g* above 10 Hz (Standard, Polar Certified & Magnetic Shield Models)
- 10.0 mm/s up to 20 Hz and 0.12 *g* above 10 Hz (2000 V/s/m Model)

Dynamic Range:
- 168 dB @ 1 Hz (Standard, Polar Certified & Magnetic Shield Models)
- 164 @ 1 Hz (2000 V/s/m Model)

Operating Tilt Range: ±1.5°
Temperature: ±45°C without recentering
Magnetic Sensitivity:<0.03 (m/s^2)/T (Polar Certified & Magnetic Shield Models)

AVAILABLE MODELS

TH120-2: Standard Model
TH120-2-XC: Polar Certified Model
TH120-2-M: Magnetic Shield
TH120-2-2000: 2000 V/s/m

INTERFACE

Connector: 19-pin UTS7-14D19P32
Velocity Output: 40 V peak-to-peak differential
- Selectable XYZ or UVW mode

Mass Position Output: Three independent ±4 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: Removable
Digital bubble level: Graphical bullseye level is available via Centaur digital recorder GUI
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: 230 mW typical quiescent
Protection:
- Reverse-voltage and over-voltage protected
- Self-resetting over-current protection

PHYSICAL

Diameter: 170 mm
Height: 174 mm, not including connector, feet
- 241 mm with handle and feet

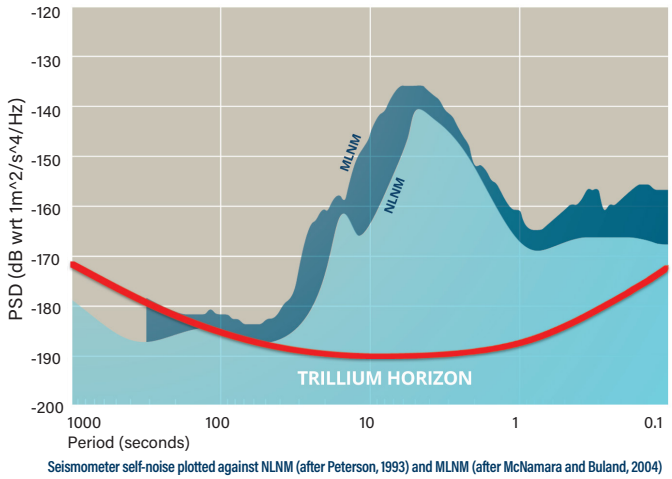
Weight: 9.7 kg
Handling: Detachable lifting handle included
Optional: Internal magnetic shield

ENVIRONMENTAL

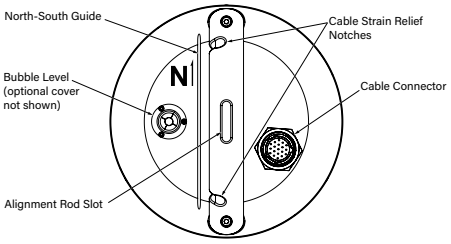
Operating Temperature:
–20°C to 60°C (Standard & Magnetic Shield Models)
–50°C to 60°C (Polar Certified Model)
Storage Temperature:
–40°C to +70°C (Standard & Magnetic Shield Models)
–60°C to +70°C (Polar Certified Model)
Optional: Insulating cover available for quick and convenient installation
Humidity: 0% to 100% (submersible)
Shock:
- 20 *g* half sine, 5 ms without damage, 6 axes
- no mass lock required for transport

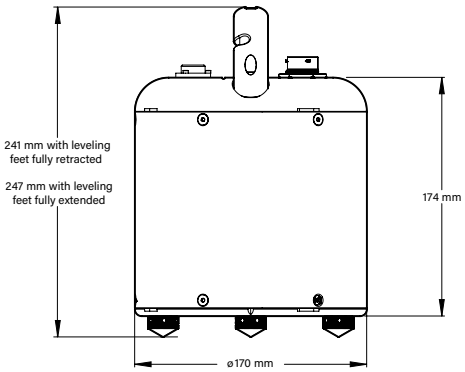
Ingress Protection: (Standard Models) Rated to IP68 and NEMA 6P to 10m for prolonged immersion (Polar Certified Model) Rated to IP68 at 2 m for 72 hours when connector is mated

SELF-NOISE GRAPH



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





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Listening to the Earth

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