

TRILLIUM 120 POSTHOLE SEISMOMETER

Nanometrics' industry-leading portfolio of Trillium seismometers includes a posthole variant that is revolutionizing the way seismologists deploy instruments and collect seismic data. The latest generation of the Trillium 120 platform maintains the performance and capabilities of the previous generations while reducing power consumption by over 50%.

Reliability, Repeatability, Outstanding Performance

The **Trillium Posthole Seismometer** is designed for down-hole deployments. The instrument is housed in a stainless steel enclosure incorporating a high-pressure, marine-grade connector making it suitable for uncased buried/posthole installations. An advanced leveling system allows the instrument to self-correct over a tilt range of ± 5 degrees (± 10 degrees optional).

Local, Regional, & Teleseismic Studies

The Trillium PH is ideal for local, regional, and teleseismic studies having a flat response 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.

A Highly Integrated Station Solution

When using the Trillium 120 PH 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.

Also Available:

- Trillium 120 Borehole, Trillium 120 Slim Posthole, and Trillium Horizon for vault or shallow direct bury.



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



TrilliumPH

Benefits

- Low- power consumption of 230 mW minimizes power source requirements at the site.
- The ability to get beneath the noise, even in urban environments, and keep your assets secure.
- Automatic leveling can be remotely initiated for corrections of up to ± 5 degrees (± 10 degrees optional), simplifying down-hole installation
- The axis stack is mechanically leveled to ensure that the vertical axis does not couple horizontal noise.
- A robust, waterproof, stainless steel enclosure ensures the sensor is protected from harsh environments.
- Cylindrical down-hole design with 5.6 inch outside diameter facilitates buried deployments



TECHNICAL SPECIFICATIONS TRILLIUM 120 POSTHOLE

Specifications subject to change without notice

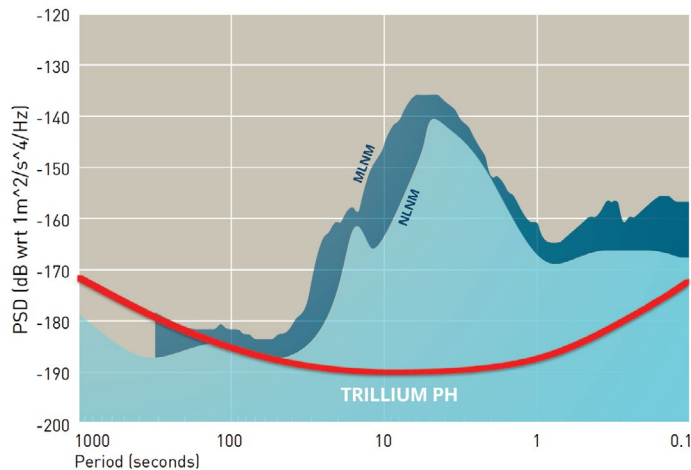
TECHNOLOGY

- Topology:** Symmetric triaxial
- Feedback:** Force balance with capacitive transducer
- Self-Leveling:** Internal automated leveling $\pm 5^\circ$ ($\pm 10^\circ$ optional)
- Leveling Initiation:** Control line or serial port command
- Mass Centering:** Motorized recentring automatically initiated during leveling sequence
- Alignment:** N-S line on cover for down-hole sighting
- Keying features for down-hole alignment rod
 - N-S marks on base for pier installation
- Digital Tiltmeter:** Reports case tilt from vertical for easy installation and remote troubleshooting

PERFORMANCE

- Self-Noise:** See plot below
- Nominal Sensitivity:** 1200 V-s/m (reference User Guide for precise value)
- Precision:** $\pm 0.5\%$ 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
- Dynamic Range:** 168 dB @ 1 Hz
- Temperature:** $\pm 45^\circ\text{C}$ without recentring
- Magnetic Sensitivity:** $< 0.03 \text{ (m/s}^2\text{)}/\text{T}$ (model T120-PH3-XC)

SELF-NOISE PERFORMANCE PLOT



INTERFACE

- Connector:** 20-pin marine
- 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 in XYZ or UVW
 - Individual channels selectable via web interface
- Control Lines:** Auto-Level & Mass Center, Calibration Enable, XYZ/UVW mode
- Serial Port:** RS-232 compatible serial IP (SLIP)
- Onboard web server standard HTTP
 - For enhanced instrument control and status: Self-leveling and mass centering, UVW/XYZ mode, short/long period mode, firmware updates, temperature, mass position, case tilt, digital bubble level, serial number and factory info

POWER

- Supply Voltage:** 9 to 36 Volts DC isolated input
- Power Consumption:** 230 mW typical quiescent
- Protection:**
- Reverse-voltage and over-voltage protected
 - Self-resetting over-current protection

PHYSICAL

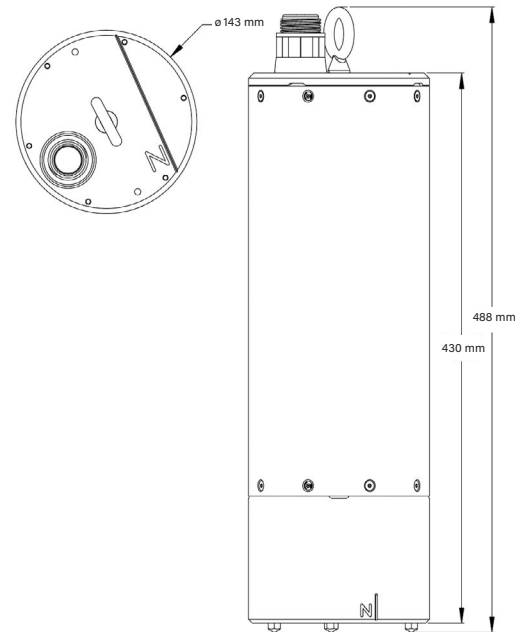
- Case Design:** Stainless steel pressure vessel, submersible
- Diameter:** 143 mm
- Height:** 432 mm not including connector or feet
- Weight:** 15.5 kg
- Handling:** Eye bolt on lid for lifting cable
- 1300 lbf (5800 N) rated

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)
- Ingress Protection:** Rated to IP68 and NEMA6P to 300 m for prolonged immersion. A dry hole is recommended for best seismic performance
- Shock:** 20 g half sine, 5 ms without damage, 6 axis
- No mass lock required for transport

AVAILABLE MODELS

- T120-PH3:** 5 degree Standard Model
- T120-PH3-XC:** 5 degree, Polar Certified Model
- T120-PH4:** 10 degree Standard Model
- T120-PH4-XC:** 10 degree Polar Certified Model



Strategic intelligence fueled by science

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