

# TRILLIUM 120 POSTHOLE SEISMOMETER

Ideal for local, regional, and teleseismic studies, the **Trillium 120 Posthole Seismometer** minimizes onsite power system requirements while providing exceptionally low-noise performance. This easy to deploy instrument makes it possible to efficiently reach quiet down-hole installations that can take advantage of the observatory class performance.

## Designed for Down-Hole Deployments

The Trillium 120 Posthole's corrosion resistant, stainless steel enclosure features a high-pressure, marine-grade connector making it suitable for a range of uncased buried and posthole installations. The advanced levelling system allows the instrument to self-correct over a tilt range of  $\pm 5$  degrees ( $\pm 10$  degrees optional) to ensure a successful down-hole deployment at any site.

## Exceptional Performance and Reliability

The Trillium 120 Posthole provides a flat response to velocity from 120 seconds to 150 Hz with an exceptionally low self-noise, maximizing the dynamic range over the passband and providing a more reliable data output.

## Complete Station Solutions

The Trillium 120 seismometer series is optimized for use with our popular Centaur digital recorder. Pairing the Trillium 120 with a Centaur provides a range of added functionality including quick and easy configuration of the station and digital leveling tools via the intuitive web-based user interface.



## Key Features

- Low-power consumption of 230 mW minimizes power system requirements at the site.
- Automatic leveling can be remotely initiated for corrections of up to  $\pm 5$  degrees ( $\pm 10$  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.
- Robust design doesn't require a mass lock providing reliable, trouble-free operation
- 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  $-50^{\circ}\text{C}$ .



# TECHNICAL SPECIFICATIONS TRILLIUM 120 POSTHOLE

Specifications subject to change without notice

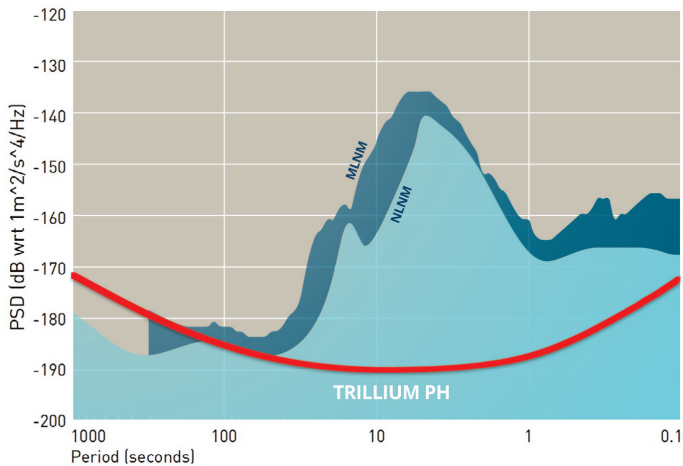
## TECHNOLOGY

- 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



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

## INTERFACE

- Connector:** 20-pin marine
- 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 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) 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

## 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

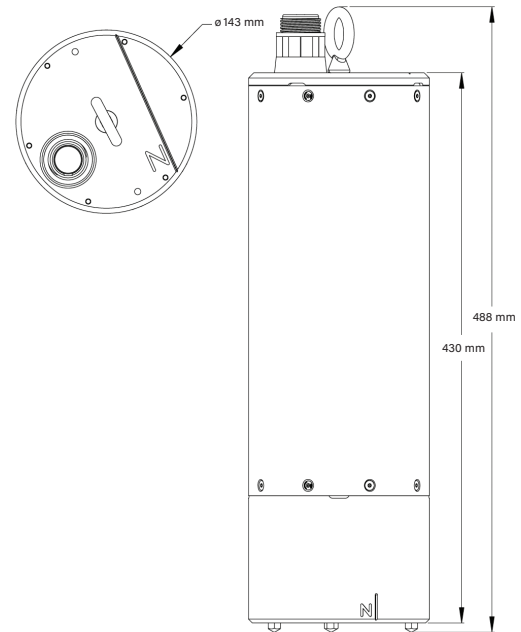
- Case Design:** Stainless steel pressure vessel, submersible
- Diameter:** 143 mm
- Height:** 432 mm not including connector or feet
- Weight:** 15.5 kg
- Handling:** Eye bolt on lid for lifting cable
  - 1300 lbf (5800 N) rated

## ENVIRONMENTAL

- Operating Temperature:**
  - $-20^\circ\text{C}$  to  $60^\circ\text{C}$  (Standard Model)
  - $-50^\circ\text{C}$  to  $60^\circ\text{C}$  (Polar Certified Model)
- Storage Temperature:**
  - $-40^\circ\text{C}$  to  $+70^\circ\text{C}$  (Standard Model)
  - $-60^\circ\text{C}$  to  $+70^\circ\text{C}$  (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



Contact a Product Expert Toll Free: 1 855 792 6776 | [sales\\_mkt@nanometrics.ca](mailto:sales_mkt@nanometrics.ca)



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