

Nanometrics' industry-leading portfolio of **Trillium** seismometers now includes a posthole variant that will revolutionize the way seismologists deploy instruments and collect seismic data



Trillium PH

Posthole Seismometer



The **Trillium Posthole Seismometer** is a very broadband seismometer 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).

The **Trillium PH** is ideal for local, regional and teleseismic studies having a response flat to velocity from 120 seconds to 150Hz and a self-noise below the NLNM at 100 seconds. Operators will appreciate the low power consumption, automatic mass centering and robust no-mass lock design inherent in all Trillium seismometers.

Benefits

- 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 levelled to ensure that the vertical axis does not couple horizontal noise.
- A robust, waterproof, stainless steel enclosure ensures the sensor is protected from hostile environments.
- Cylindrical down-hole design with 5.6 inch outside diameter facilitates buried deployments.
- Low power consumption of 560mw minimizes power source requirements at the site.



Trillium PH

SPECIFICATIONS

Specifications subject to change without notice.

TECHNOLOGY

Topology	Symmetric triaxial
Feedback	Force balance with capacitive transducer
Self-Leveling	Internal automated leveling +/-5° (+/-10° optional)
Leveling Initiation	Control line or serial port command
Mass Centering	Motorized re-centering 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

PERFORMANCE

Self-noise	See plot at right
Sensitivity	1200V-s/m ± 0.5% precision
Bandwidth	-3dB points at 120 s and 150Hz
Clip Level	>16.6mm/s up to 10Hz and 0.17g above 10Hz
Temperature	±45°C without re-centering

INTERFACE

Connector	20-pin marine
Velocity Output	40V peak-to-peak differential Selectable XYZ or UVW mode
Mass Position Output	Three independent voltage outputs
Calibration Input	Single voltage input for all channels, independent calibration enable for each channel Calibration in XYZ or UVW
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, instrument status, serial number and factory info

POWER

Supply Voltage	9 to 36 Volts DC isolated input
Power Consumption	560mW typical at 15V input
Protection	Reverse-voltage protection Auto-resettable over-current protection (No fuse to replace)

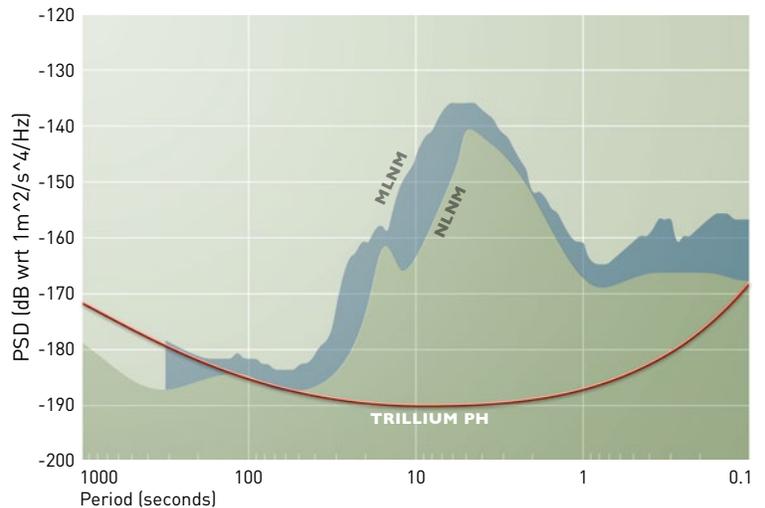
PHYSICAL

Case Design	Stainless steel pressure vessel, submersible
Diameter	143 mm (5.63")
Height	432 mm (17") not including connector or feet
Weight	16 Kg
Handling	Eye bolt on lid for lifting cable 1300 lbf (5800 N) rated

ENVIRONMENTAL

Operating Temp.	-20°C to +60°C (Ultra-low temperature option available. Please contact Nanometrics.)
Storage Temp.	-40°C to +70°C
Water Immersion	Rated to IP68 and NEMA6P for prolonged submersion
Shock	20g half sine, 5ms without damage, 6 axis No mass lock required for transport

SELF-NOISE PERFORMANCE PLOT



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

