

TRILLIUM 120 BOREHOLE SEISMOMETER

Nanometrics' industry-leading portfolio of Trillium seismometers includes a borehole variant for deep-earth deployments in cased boreholes

Reliability, repeatability, outstanding performance

The Trillium Borehole 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, remote mass centering and robust no-mass lock design inherent in all Trillium seismometers.

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A highly integrated station solution

When using the Trillium 120 BH 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.



Benefits

- Automatic leveling can be remotely initiated for corrections of up to ± 5 degrees, facilitating hole-lock installations in deep boreholes.
- 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 hostile environments.
- Instrument recovery is aided by a fail-safe holelock release mechanism that prevents jamming to the casing during removal.
- Low power consumption of 490 mW minimizes power source requirements at the site.
- Quiet down-hole deployments benefit from the exceptional low self-noise

TECHNICAL SPECIFICATIONS TRILLIUM 120 BH

Specifications subject to change without notice

TECHNOLOGY

Topology: Symmetric triaxial
Feedback: Force balance with capacitive transducer
Self-Leveling: Internal automated leveling $\pm 5^\circ$
Leveling Initiation: Control line or serial port command
Mass Centering: Motorized re-centering automatically initiated during leveling sequence
Holelock: Motorized single jaw, non-jamming
 • Adaptable to a wide range of hole sizes
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: > 167 dB @ 1 Hz
Temperature: $\pm 45^\circ\text{C}$ without re-centering

INTERFACE

Connector: 20-pin marine
Velocity Output: 40 V 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: 490 mW typical at 15 V input
Protection:
 • Reverse-voltage and over-voltage protected
 • Self-resetting over-current protection

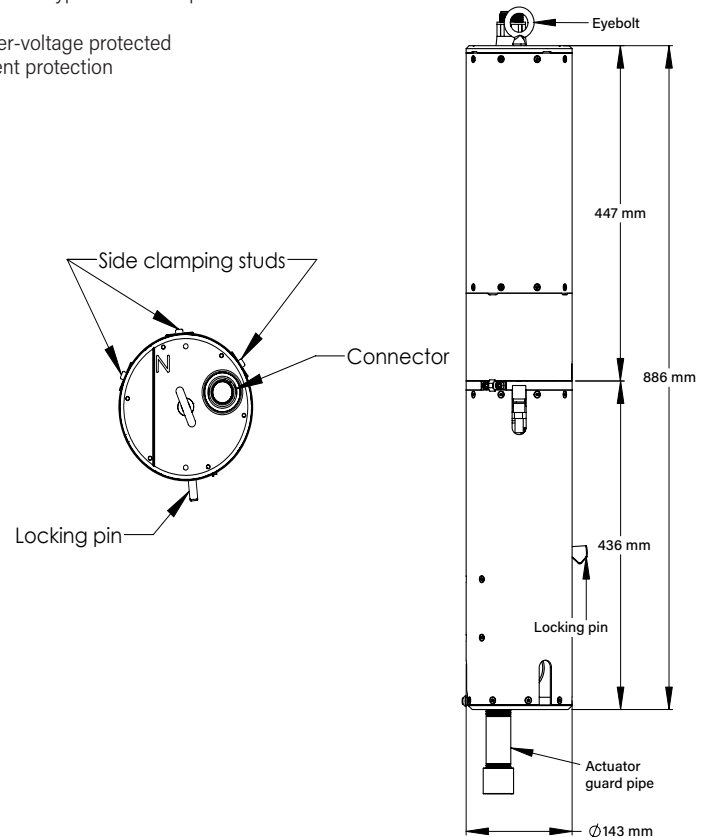
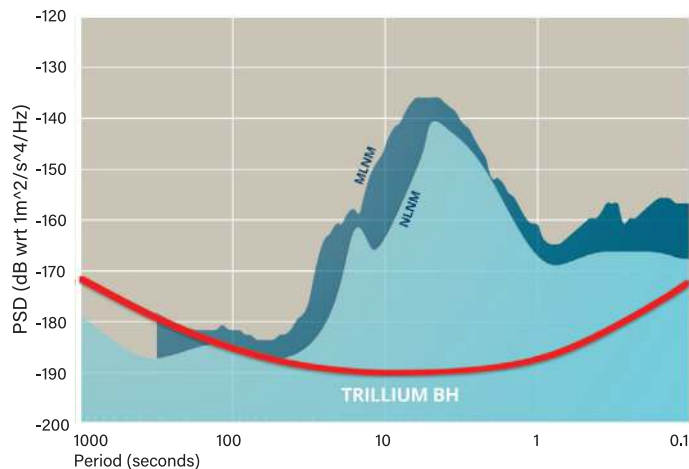
PHYSICAL

Case Design: Stainless steel pressure vessel and holelock
Diameter: 143 mm
Height: 886 mm not including connector or actuator guard pipe
Weight: 30 kg
Handling: Eye bolt on lid for lifting cable
 • 1300 lbf (5800 N) rated

ENVIRONMENTAL

Operating Temperature: -20°C to $+60^\circ\text{C}$
Storage Temperature: -40°C to $+70^\circ\text{C}$
Ingress Protection: Seismometer is rated to IP68 and NEMA6P to 300 m for prolonged immersion. A dry hole is recommended for best seismic performance. Holelock motor is rated to IP68 and NEMA6P to 30 m for prolonged immersion
Shock: 20 g half sine, 5 ms without damage, 6 axis
 • No mass lock required for transport

SELF-NOISE GRAPH



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