TRILLIUM CASCADIA
THE BEST OF BOTH WORLDS

What happens when the best class-A accelerometer in the world meets the world's most popular seismometer?

The Trillium Cascadia marries the proven Trillium Compact Posthole with the Class A Titan Posthole in a single posthole instrument. This dual-use, ultra-wide dynamic range sensor measures both strong motion and weak motion, with absolutely no compromise in performance. And with one hole to dig, a single connector, a single cable and dual sensors that are guaranteed to be mutually aligned, proper deployment is virtually effortless.

Don’t let your data be limited by your instrumentation
The new Cascadia gives you peace of mind that your strong and weak-motion instrumentation is of the same high quality and has a wide overlap in dynamic range. The Cascadia maximizes the scientific return on your investment by providing the richest possible data catalog to facilitate near-field studies. While you are monitoring for strong motion events, your instruments provide a valuable source of weak motion data that helps calibrate and train event detection algorithms, as well as benefit the broader seismology community.

A highly integrated station solution
The Trillium Cascadia is optimized for use with our popular Centaur digital recorder. Using the Cascadia with the Centaur allows for easy configuration of both sensors via the Centaur’s web interface. You’ll have full access to extended state-of-health data, including sensor inclinations, temperature and more. A digital leveling bubble in the Centaur GUI makes for easy leveling down a dark hole and gives you the ability to check levelness at any time once the instrument is buried.

Use Cases
- Earthquake Early Warning
- Local/Regional Monitoring and Modelling
- Structural Monitoring
- Aftershock Monitoring
- Volcano Monitoring
- Induced Seismicity Monitoring
- Highly portable, easy to install, no vault required
- Will never go off scale
- Ideally suited for applications where the amplitude range is unpredictable
- Features a digital bubble level for easy downhole levelling
- Suitable for harsh environments, resistant to flooding
- Minimal site footprint
- Each sensor independently serviceable
- Low cost of deployment/low cost of ownership

Ask us about our ultra-low temperature options
### TECHNICAL SPECIFICATIONS TRILLIUM CASCADIA

Specifications subject to change without notice

#### SEISOMETER MODULE TECHNOLOGY

**Topology:** Symmetric triaxial  
**Feedback:** Force balance with capacitive displacement transducer  
**Mass Centering:** Not required

#### SEISOMETER PERFORMANCE

**Nominal Sensitivity:** 750 V-s/m  
**(reference User Guide for precise value)**  
**Precision:** ±0.5% relative to User specification  
**Off-axis sensitivity:** ±0.5%  
**Bandwidth:** –3 dB points at 120 s and 108 Hz  
**Clip level:** 26 mm/s up to 10 Hz and 0.17 g above 10 Hz  
**Dynamic Range:** > 152 dB @ 1 Hz  
**Tilt:** Dynamic and operational tilt range of ±2.5°  
**Parasitic resonances:** None below 200 Hz

#### ACCELEROMETER MODULE TECHNOLOGY

**Topology:** Triaxial, horizontal-vertical  
**Feedback:** Force balance with capacitive displacement transducer  
**Centering:** Automated electronic offset zeroing via user interface  
**Full-scale range:** Electronically selectable

#### ACCELEROMETER PERFORMANCE

**Bandwidth:** DC to 430 Hz  
**Dynamic Range:**  
- 166 dB @ 1 Hz over 1 Hz bandwidth  
- 155 dB, 3 to 30 Hz  
**Offset:**  
- Electronically zeroed to within ±0.005 g  
- Offset trimming range ±0.05 g  
**Non-linearity:** ±0.015% total non-linearity  
**Hysteresis:** Less than 0.005% of full-scale  
**Cross-axis sensitivity:** Less than 0.5% total  
**Offset temperature coefficient:**  
- Horizontal sensor: 60 µg/°C, typical  
- Vertical sensor: 320 µg/°C, typical

#### LEVELING AND ALIGNMENT

**Digital bubble level:** Graphical bullseye level is available via Centaur digital recorder GUI  
**Physical Bubble level:** optional accessory  
**Alignment:** Vertical scribe marks for (N and S); precision guide in cover for straight-edge, line, or laser level

### HARDWARE INTERFACE

**Connector:**  
- 26-pin connector  
- Submersible  
- Glenair 802-013-02Z110-26EA  
- Mounted in top of case

**Calibration inputs:**  
- Single voltage input and one control signal to enable all three seismometer channels  
- Single voltage input and one control signal to enable all three accelerometer channels

**Seismometer Control Lines:** Cal. Enable or Long/Short Period mode, XYZ/UVW mode

**Seismometer Velocity output:**  
- 40 Vpp differential  
- Selectable XYZ (east, north, vertical) or UVW mode

**Seismometer Mass position output:**  
- Single voltage output representing maximum mass position  
- Three channel mass positions available through serial port

**Accelerometer Acceleration output:**  
- 40 Vpp differential  
**Accelerometer Control input:**  
- Single control signal can be configured to initiate auto-zero, initiate self-test, or enable calibration

**Accelerometer Status output:**  
- Asserted: Unit OK, output signal valid  
- Deasserted: Self-test in progress or failed, auto-zeroing in progress, calibration enabled, or starting up

### DIGITAL COMMAND AND CONTROL INTERFACE

**Serial Port (Seismometer):**  
- RS-232 compatible serial IP (SLIP)  
- Onboard web server standard HTTP  
- For enhanced instrument control and status: UVW/XYZ mode, short/long period mode, firmware updates, temperature, mass position, case tilt, digital bubble level, serial number and factory info

**Serial Port (Accelerometer):**  
- RS-232 compatible serial IP (SLIP)  
- Gain range selection, auto-zero, or set to specific offset, self-test, calibration enable, firmware updates, sampled XYZ/UVW outputs (in volts and g), temperature, serial number and factory info

### POWER

**Supply voltage:** 9 to 36 V DC isolated inputs  
**Power consumption:**  
- (Seismometer Module) 180 mW typical quiescent  
- (Accelerometer Module) 11 W typical quiescent

**Protection:**  
- Reverse-voltage and over-voltage protected  
- Self-resetting over-current protection

**Isolation:** Supply power is isolated from signal ground

### PHYSICAL

**Diameter:** 97 mm  
**Height:**  
- 216 mm - not including connector and feet  
- 231 mm - including connector  
- 238 mm - including connector and feet  
**Housing:** Stainless steel

### ENVIRONMENT

**Operating temperature:**  
- –20°C to 60°C  
(Ultra-low temperature option available. Please contact Nanometrics.)

**Storage temperature:** –40°C to 70°C

**Shock:**  
- 100 g half sine, 5 ms without damage, 6 axes  
- No mass lock required for transport

**Magnetic:** Insensitive to natural variations of the earth’s magnetic field

**Water Immersion:** Rated to IP68 for prolonged submersion to 300 m

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

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