

# TITAN

## ACCELEROMETER

The Titan is a force balance triaxial accelerometer that provides exceptional performance over a wide frequency range from DC to 430 Hz and features industry leading dynamic range and ultra-low self-noise performance that is comparable to that of some broadband seismometers.

As the first accelerometer to incorporate digitally selectable full scale range and offset zeroing capabilities; the Titan's features are ideal for difficult to access or remote deployments, where site visits should be minimized. The triaxial sensor and electronics are housed in a rugged, compact aluminum enclosure featuring a single bolt anchoring slot, adjustable leveling screws and integrated bubble level.

### Industry Leading Performance Attributes:

- Industry leading 166 dB dynamic range
- Ultra-low self-noise comparable to some broadband seismometers
- Wide operational frequency range: DC to 430 Hz
- Best in class thermal stability and high accuracy provide increased data quality
- Full scale range of  $\pm 0.25$  g to  $\pm 4$  g with independent horizontal and vertical range selection

### Ease of use advantages:

- Electronically selectable full scale range facilitates remote sensor control when deployments are distant or difficult to access
- Integrated web server provides efficient instrument management and control
- Installation features that include an integrated bubble level, adjustable leveling screws, single bolt keyhole mount, and a compact footprint ensure that deployments are completed efficiently and quickly



Combine the Titan with the Centaur digitizer to achieve a complete data acquisition and recording system that is suitable for deployment in both remote and networked locations.



*Titan accelerometer connected to and powered by a Centaur digitizer*

# TECHNICAL SPECIFICATIONS TITAN ACCELEROMETER

Specifications subject to change without notice

## ACCELEROMETER TECHNOLOGY AND PERFORMANCE

**Topology:** Triaxial, horizontal-vertical

**Feedback:** Force balance with capacitive displacement transducer

**Centering:** Electronic offset zeroing via user interface or control line

**Full-scale Range:** Electronically selectable range:  $\pm 4g$ ,  $\pm 2g$ ,  $\pm 1g$ ,  $\pm 0.5g$ , and  $\pm 0.25g$  (peak)

**Bandwidth:** DC to 430 Hz (-3 dB point)

**Dynamic Range:** (Integrated RMS)

- 166 dB @ 1 Hz over 1 Hz bandwidth
- 155 dB, 3 to 30 Hz

**Offset:** Electronically zeroed to within  $\pm 0.005g$

**Non-linearity:**  $< 0.015\%$  total non-linearity

**Hysteresis:**  $< 0.005\%$  of full scale

**Cross-axis Sensitivity:**  $< 0.5\%$  total

**Offset Temperature Coefficient:**

- Horizontal sensor:  $60 \mu g/^{\circ}C$ , typical
- Vertical sensor:  $320 \mu g/^{\circ}C$ , typical

## DIGITAL COMMAND AND CONTROL INTERFACE

**Digital Interface:** Onboard web server standard HTTP

- RS-232 compatible Serial Line Internet Protocol (SLIP)
- R-232 command-line interface

## DIGITAL COMMAND & CONTROL INTERFACE (CONT'D)

**Commands:** Gain range selection

- Auto-zero, or set to specific offset
- Self-test
- Calibration enable
- State of health request
- Firmware updates

**Data Outputs:** Sampled XYZ outputs (in volts and  $g$ )

- Instrument temperature
- Trimmer settings
- Instrument serial number
- Hardware assemblies and firmware revisions

## HARDWARE INTERFACE

**Connectors:** MIL-C-26482G Series 1, 14-pin, shell size 12

**Acceleration Output:** 40 Vpp differential

**Output Impedance:**  $2 \times 100 \Omega$

**Calibration Input:** Single voltage input, all channels enabled together

**Control Input:** Single control signal can be configured to initiate auto-zero, initiate self-test, or enable calibration

**Status Output:** Asserted: Unit OK, output signal valid

- Deasserted: Self-test in progress or failed, autozeroing in progress, calibration enabled, or starting up

**Serial Port:** 9600 Baud RS-232 compatible

## POWER

**Supply Voltage:** 9 to 36 V DC isolated input

**Power Consumption:** 1.1 W typical quiescent

**Protection:** Reverse-voltage and over-/under-voltage protected

- Self-resetting over-current protection

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

**Grounding:** Predrilled holes (4) for M4 x 5 grounding lug screw

**Voltage Disconnect:** Software configurable (low/high)

## PHYSICAL AND ENVIRONMENTAL

**Housing:** Aluminum, surface resistant to corrosion, scratches, and chips

**Mounting:** Single bolt keyhole mount

**Leveling:** Integrated bubble level  
Adjustable locking leveling screws

**Size:** Length: 140 mm

- Width: 85 mm
- Height: 58 mm
- Weight 960 g

**Operating Temperature:**  $-20^{\circ}C$  to  $+60^{\circ}C$

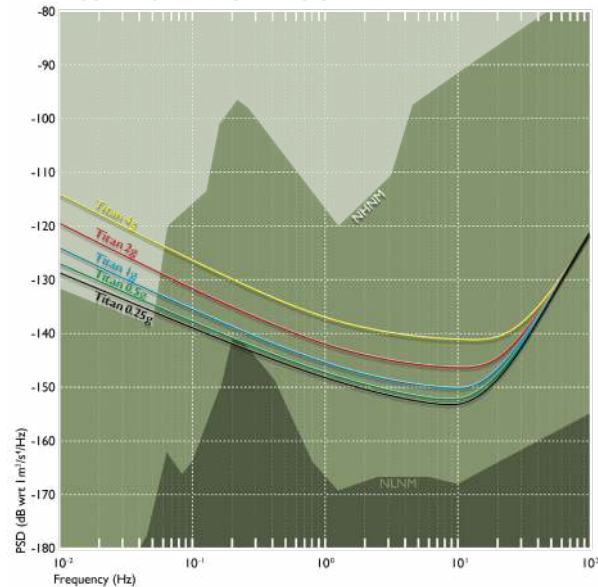
(Ultra-low temperature option available. Please contact Nanometrics.)

**Storage Temperature:**  $-40^{\circ}C$  to  $+70^{\circ}C$

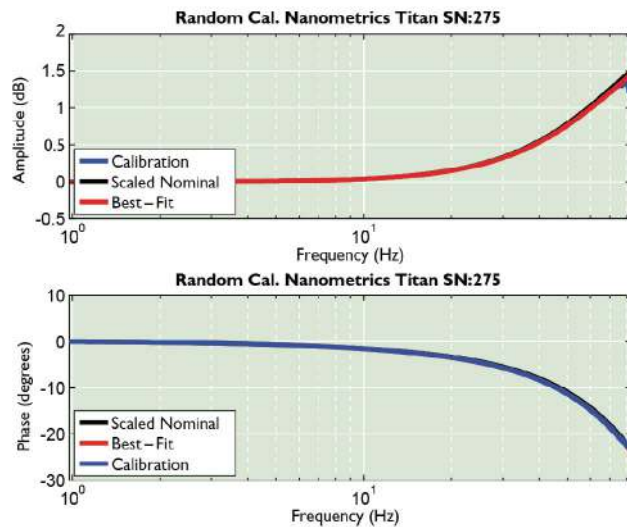
**Humidity:** 0 to 100%

**Ingress protection:** Rated to IP68 at 2 m for 72 hours

## TITAN ACCELEROMETER SELF-NOISE



## SENSOR PERFORMANCE: FLAT RESPONSE



Test results courtesy of USGS

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