

Data you want, when and where you need it...

GTR-X10 is a precision temperature-compensated, tri-axial tilt sensor with < 10-arcsecond resolution. It is a direct replacement for the Leica Nivel2xx products. GTR-X10 is compatible with Leica GR/GM GNSS receivers and GeoMoS Monitor. GTR-X10 comes in RS-232 or RS-485 models, supports all Nivel2xx commands through the TTL232 / RS485 interface, and features a USB serial port for administration and alternate power. GTR-X10 is natively supported by Leica Geosystems solutions.



### Compatibility:

- ✓ Nivel 2xx systems
- ✓ GNSS GM/GR30 & GR50
- ✓ GeoMoS Monitor

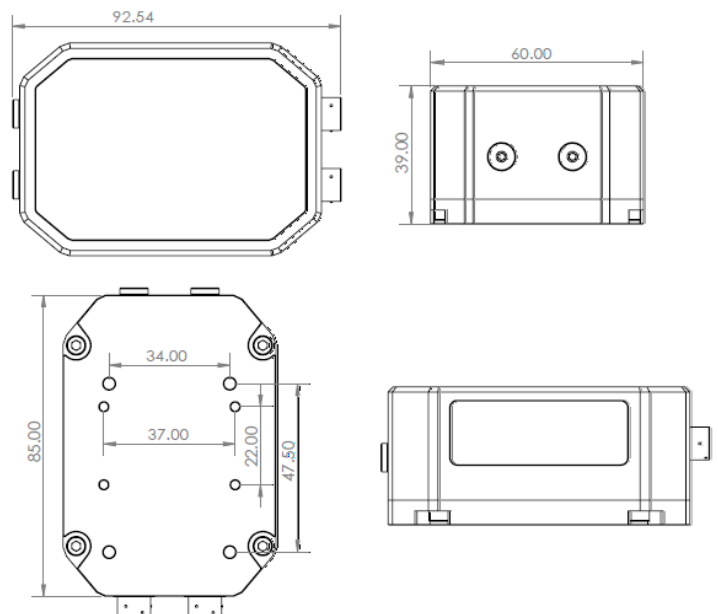
GTR-X10 is externally powered and accepts power from 5V to 18V DC over the serial interface. Standard USB power is also supported via the USB interface.

GTR-X10 supports on-demand readings down to 1Hz rate and supports mounting in any orientation. The baseline feature allows users to detect relative tilt changes instead of absolute readings.



### Features

- <10 arc second pitch and roll resolution
- Temperature compensation option
- Externally powered (5V to 18V DC)
- Status and diagnostic LEDs for easy monitoring (configurable)
- Choice of RS-232 and RS-485 models
- USB serial interface for maintenance
- 10-meter UV resistant cable with LEMO connecto
- IP67 machined aluminium case (85x60x39mm)
- IP67 sealed protective caps for connectors
- Multiple mounting bracket options
- GTR and cable supplied in protective ABS case



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# GSS GTR-X10



## General Specifications

Part Numbers	RS-232 Model: GTR-X10-232 RS-485 Model: GTR-X10-485
Interfaces	1 x USB Port and 1 x AUX port (TTL232 or RS485 depending on model)
Management Access	Serial via USB Port

## Tilt Specifications

Sensing Range	± 90 degrees on Pitch and Roll
Resolution	0.00035–0.00040° RMS
Precision	±0.001°
Repeatability	±0.001–0.002°
Accuracy over ranges <sup>1</sup>	±2° ≈ ±0.001°    ±5° ≈ ±0.001°    ±45° ≈ 0.0014°    ±85° ≈ 0.0115°
Latency	30-60 seconds latency. EWMA for improved responsiveness
Reading Interval	On demand (>=1 sec interval)
Data Format	Angles in Milliradians and Temperature in Celsius

## Operating Specifications

<b>Power &amp; Environmental</b>	
Operating Temperature	-40 °C TO +50 °C
Mechanical Shock Limit	500 G (Calibration Unaffected) 1000 G (Bias Affected) 5000 G (Survivability)
MTBF	1.1 million Hours (Telcordia Method I, GF/30C) 0.4 million Hours (Telcordia Method I, GM/35C)
Base Unit Dimensions	L:94.54mm x W:60mm x H:39mm
Weight (grams)	262g

<b>GTR Connectors</b>	
USB	1 x 6-pin Push-Pull keyed connector with metal cap (IP67) and chain
AUX (Serial Port)	1 x 4-pin Push-Pull keyed connector with metal cap (IP67) and chain
<b>Calibration</b>	
Calibration Certification	Basic factory calibration. Absolute calibration with NIST certificate available for an extra fee.
<b>Accessories</b>	
USB to PC Cable	ACC-CAB-USB1: 1 meter cable. USB to 6-pin LEMO-type connector
GTR Cable (10m standard)	ACC-CAB-GTR-10L: 10-meter cable. 4-pin LEMO-type to 8-pin LEMO (FGA-1B-308)
RS485 Expansion Kit Cable (100m) <sup>2</sup>	ACC-EXP-GTR-100-485: 485 expansion nodes + 100m cable + LEMO-type 4-pin to 4-pin and standard ACC-CAB-GTR-10L cable.
Mounting Brackets	ACC-RZR-M01: Small Bracket ACC-RZR-MK1: Small and Large Bracket Set

<sup>1</sup> Linear performance degrades at high angles

<sup>2</sup> Future Product. Contact GSS for further details on the 485 Expansion Kit availability

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