



Specifications – Sensors

Angles

Range	Pitch: $\pm 90^\circ$, roll: $\pm 180^\circ$
Static accuracy	$\leq 0.15^\circ$ RMS (typical)
Dynamic accuracy	$\leq 1.0^\circ$ RMS (typical)
Angular resolution	0.025° 0.5 mg
Zero offset error	$< \pm 0.1^\circ$ (@20°C)
Offset change versus temperature	$\pm 0.01^\circ / ^\circ\text{C}$ (typical)

Accelerometer

Selectable Range	$\pm 2\text{ g}/\pm 4\text{ g}/\pm 8\text{ g}$
Zero offset error	$< 1.0\text{ mg}$ (@20°C)
In-run bias stability	$< 10\ \mu\text{g}$
Velocity random walk	X & Y: 0.075 m/sec/Vhr Z: 0.095 m/sec/Vhr
Nonlinearity	$\pm 0.5\%$ FS
Offset change versus temperature	$\pm 0.2\text{mg}/^\circ\text{C}$ (typical)
Noise density	125 $\mu\text{g}/\sqrt{\text{Hz}}$ (@200Hz)

Gyroscope

Selectable Range	$\pm 250/500/1000/2000^\circ/\text{s}$
In-run bias stability	$< 20^\circ/\text{hr}$
Angle random walk	1.4 $^\circ/\text{Vhr}$
Initial bias error	$< 0.2^\circ/\text{s}$ (@ $\pm 500^\circ/\text{s}$ range)
Noise density	0.025 dps/ $\sqrt{\text{Hz}}$ (@ 64 Hz)
Nonlinearity	$< 0.5\%$ FS

Specifications – System

Power source	4.1 – 38 VDC
Power consumption	250 mW (50 mA @ 5V)
Data format	ASCII
Baud rate	2.4kbps – 921.6kbps selectable default: 115.2kbps
Output data rate	1 Hz to 200 Hz selectable
Serial interface options	RS232, RS422, RS485, UART/USB, Wireless - RS485 with multi-drop networking,
GUI software	WinCTi-Tilt®
Temperature sensor	1°C resolution

Features

- Dynamic tilt measurement
- Measuring range: Pitch: $\pm 90^\circ$, Roll: $\pm 180^\circ$
- Three-axis accelerometer
- Three-axis gyroscope data
- Static accuracy: $\leq 0.15^\circ$
- Dynamic accuracy: $\leq 1.0^\circ$ (RMS)
- High resolution: 0.025° | 0.5 mg
- Simple ASCII interface language
- IP 67 compliant connector, cable and housing
- LED heartbeat and transmission indicators
- Robust aluminum housing
- Low power consumption: 250 mW (50 mA @ 5 V)

Applications

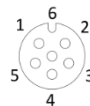
- Dynamic platform alignment, and stabilization
- Vehicle control: marine, robotics, automotive
- Tilt sensing and leveling
- Automotive safety systems
- Motion and position measurement
- Navigation and GPS compensation
- Robotics position sensing and control
- Agricultural and industrial vehicle tilt monitoring

Specifications – Mechanical

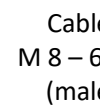
Protection	IP 67 (housing, connector, and cable)
Dimension	1.65" x 2.15" x 1.00"
Material	Enclosure: anodized aluminum Connector: brass / nickel Cable molded head: TPU Cable carrier: TPU or nylon Conductor insulation: PVC
Temperature range	-40°C to +85°C (-40°F to +185°F)
Connection	Cable gland connector M8, 6-contact (female)

Terminal Assignment

Connector	RS232/UART/USB	RS422	RS485	Wire Color
Pin 1	+Vin	+Vin	+Vin	Brown
Pin 2	GND	GND	GND	White
Pin 3	TX	TX+	D+	Blue
Pin 4	–	TX-	D-	Black
Pin 5	RX	RX+	D+	Gray
Pin 6	–	RX-	D-	Pink



Device:
M 8 – 6-contact
(female)



Cable:
M 8 – 6-pin
(male)

TILT – 50A

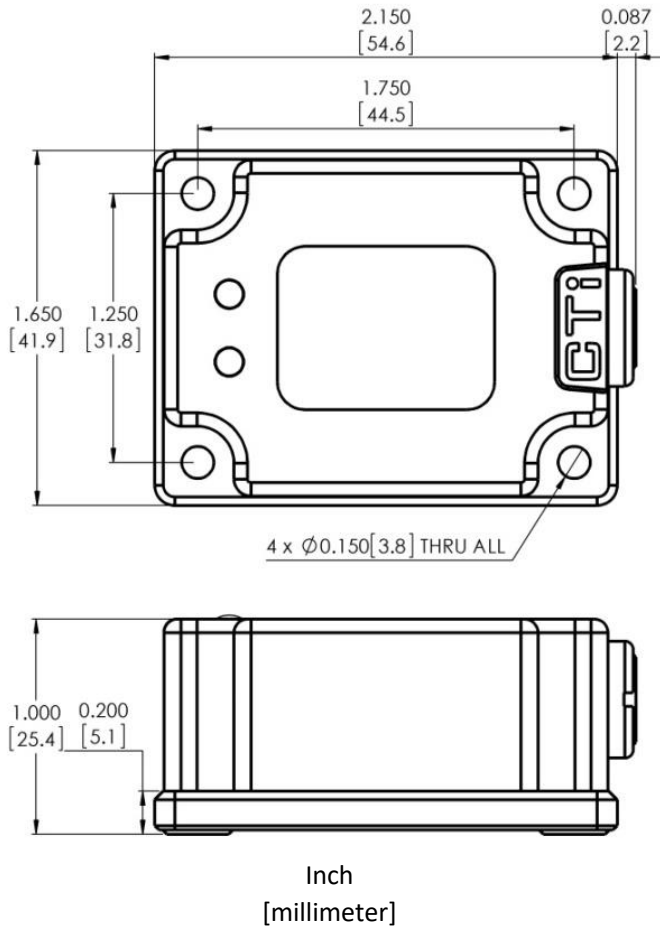
Three-Axis Accelerometer
Three-Axis Gyroscope

Dual-Axis Dynamic Inclinometer

Product Brief



Dimensional Drawing



Part Number

TILT	-	XX	X	-	X	-	XX
							Design model
							A1
							Interface
						3	RS232
						4	RS422
						8	RS485
						U	UART/USB
						S	SSI*
						W	Wireless
							Housing material
						A	Aluminum
						P	ABS Plastic*
						S	Stainless Steel 316L*
						O	OEM (No Housing)

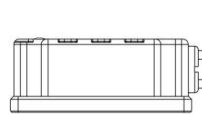
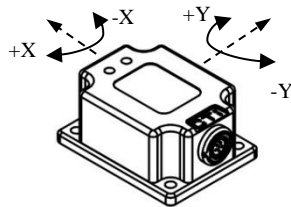
Family Series

- 05 Small size board (1"x1")
- 10 Board with multiple interfaces*
- 15 High accuracy analog inclinometer board
- 20 Low cost, ABS plastic enclosure*
- 3x High accuracy, aluminum enclosure
- 5x Dynamic inclinometer, aluminum enclosure
- 70 Harsh environment, stainless steel enclosure*

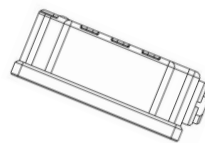
* Product/option not available

Horizontal installation position

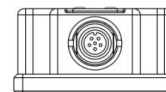
Measuring range: $\pm 90^\circ$ and $\pm 180^\circ$ (two-dimensional)



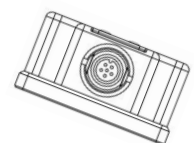
Default
Y=0



Inclination
Y=+30



Default
X=0



Inclination
X=+30

Warranty: This product has 18 months limited warranty. For more information, please visit:

www.CTiSensors.com/warranty

This product is fully designed and manufactured in the U.S.A.

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