

WIRELESS SERIES

Single or Dual Axis MEMS Inclinometer



The 2GIG Industrial RF Wireless Inclinometer is engineered to work for all applications. The internal software provides unlimited programming capabilities. It offers the best operating temperature range, widest operating voltage range, and the most advanced sensing technology in the industry. All this packaged in the most simplistic design for easy plug-and-play.

ENGINEERED TO PERFORM



Adaptive Sensing Technology

- Highly accurate tilt readings
- Widest temperature range
- Intuitive smart system for vibration ranging from low to extreme conditions
- Temperature Compensated
- Real-time readings

Robust – Inside and Out

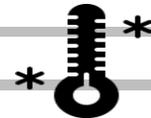
- Impact Resistant Housing
- UV Stabilized Polycarbonate
- Epoxy Encapsulated Circuit
- CE Tested and Approved
- Zero Maintenance
- RoHS Compliant

Vibration



Our solid state MEMS (Micro-Electro-Mechanical Systems) inclinometer utilizes a 3-axis Gyroscope paired with a 3-axis accelerometer. A combination of the two gives it the ability to provide the most stable readings along with the capabilities of analyzing vibration keeping it performing perfectly all the time.

Temperature



The 2GIG tilt sensor uses the highest quality components and every unit has built-in temperature compensation to eliminate temperature drift, keeping your readings as precise as possible throughout the full temperature range.

User Preferences



Use a tilt sensor that offers the best specifications in the market: operational voltage range, temperature range, electrical protection, durability, and a wide variety of model types and output behaviors. No longer will your system be restricted by a particular specification. This MEMS tilt sensor removes engineering limitations, therefore giving the customer maximized flexibility and ease of integration within their design.



Rugged and robust design, built to last – The 2GIG MEMs Inclinometer has been designed with the most rugged materials in order to survive the harshest of environments and operating conditions. Featuring an anti-fungal housing with a protection class rating of IP67, these inclinometers are guaranteed to work with the highest accuracy in any industrial condition.

No environment can rain on our parade– The 2GIG MEMs Inclinometer boasts the highest accuracy over the widest temperature range. These inclinometers are able to retain a ground-breaking 0.1° or better accuracy throughout the entire operating range of -40°C to 85°C. The sensing technology featured in the 2GIG inclinometers is able to detect extreme vibration without limiting the reaction time, giving the user optimal vibration resistance within the harshest environments. These inclinometers have been CE approved and are immune to the following conditions: EMC, surges, radiated emissions, transients, and magnetic fields.

You supply the voltage, we supply the solution – The 2GIG MEMs Inclinometer can operate from a regulated 5vdc supply or from a ranging voltage supply of 6v to 60v. The output behavior stays the same for all voltage supplies. There is no complex math - ensuring the user with simple ease of design into any application. Our inclinometers can also withstand constant over-voltages up to 75v and are protected against accidental reverse polarity hook-ups.

Don't settle for anything less than the best – The 2GIG MEMs Inclinometer is the number one solution for any tilt measurement application. Whether you need to simply obtain tilt readings or drive high current loads at a specific trip angle, these inclinometers are designed to be the perfect fit-and-forget solution or drop-in replacement for any industrial application. These inclinometers also incorporate a zero button for relative mounting (mounts which are not at absolute zero). This feature allows simple rapid installation saving time and money.

Flexible lead times and top-notch customer service – The 2GIG MEMs Inclinometers are built to fit every customer's needs. Our shipping department is capable of sending product same day if inventoried to having it built and shipped in a matter of days, successfully eliminating long lead times and supplying 'on demand'. With rapid communication and flexible lead times, 2GIG ensures that every customer is treated as a number one priority.

Tested and quality assured – 2GIG Engineering prides itself on extensive testing and top-of-the-line quality for every inclinometer. Each inclinometer is guaranteed with CE approval, RoHS compliance, and robust in-circuit protection.

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The 2GIG wireless inclinometer utilizes RF modules that are engineered to meet IEEE 802.15.4 standards and support the unique needs of low-cost, low-power wireless sensor networks. The modules require minimal power and provide reliable delivery of data between devices.

Transmission Specifications:

- RF Transmission Communication - ISM 2.4 GHz frequency band
- Real-time data – Standard sample rate every 200 msec (adjustable)
- Incorporates power saving mechanisms
- Supports over 65,000 unique addresses on one communication channel
- Sleep mode - enables the RF module to enter states of low-power consumption when not in use

Transmission Range:

- Standard Range – up to 100ft indoors, 300ft Outdoor line-of-sight
 - Peak transmission current consumption: 45 mA
- Extended Range – up to 300ft indoors, 1mile Outdoor line-of-sight
 - Peak transmission current consumption: 250 mA
- Power-down (sleep) current: <10 μ A



Electrical Specifications

Measurement Range

Dual Axis: $\pm 90^\circ$
Single Axis: $\pm 180^\circ$
Temperature: ($^\circ$ C)

Measurement Specifications

Accuracy: $\pm 0.1^\circ$
Resolution: 0.01°

Maximum Temperature Drift

-40° C to $+85^\circ$ C $\pm 0.1^\circ$

Startup Time

< 500ms

Voltage Supply

6 – 60 VDC
5V Regulated, wire or USB 2.0
Internal or External Battery (sized according to customer requirements)

Emissions Specifications

Radiated Emissions

IEC 61000-6-3:2011 Frequency Range: 30MHz-1GHz – Class B Limits

Electrostatic Discharge Immunity

IEC 61000-4-2:2008 ± 4 kV – Contact/Indirect Discharge; ± 8 kV – Air Discharge

Radiated RF Immunity

IEC 61000-4-3:2010 80MHz-1GHz – 10V/m; 1.4-2.0GHz – 10V/m; 2.0-2.7GHz – 10V/m

Electrical Fast Transient/Burst Immunity

IEC 61000-4-4:2012 ± 2 kV – DC Inputs; ± 1 kV – I/O Ports (>3m in Length)

Surge Immunity

IEC 61000-4-5:2014 ± 0.5 kV(L-G) ± 0.5 kV(L-L) – DC Inputs

Magnetic Field Immunity

IEC 61000-4-8:2009 50/60Hz – 30A/m

Environmental Specifications

IP67 Protection Class

IEC 529 and NEMA 1, 2, 4, 4x, 12 and 13 specifications

Operational Temperature

-40° C to $+85^\circ$ C

Storage Temperature

-44° C to $+125^\circ$ C

Thermal Cycle

Yes

Thermal Shock

Yes

Drop Test

3m drop onto concrete



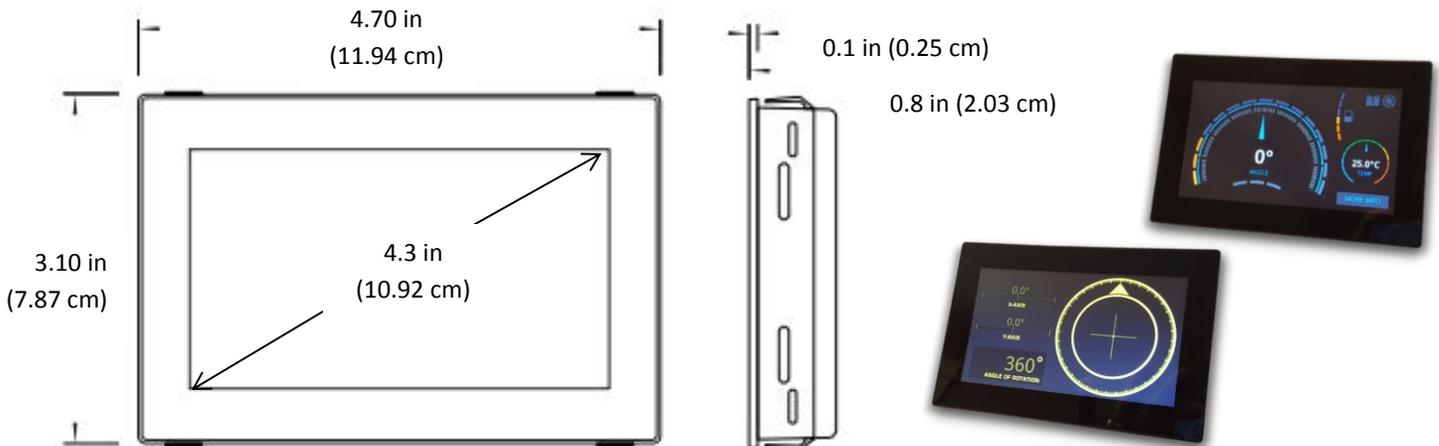
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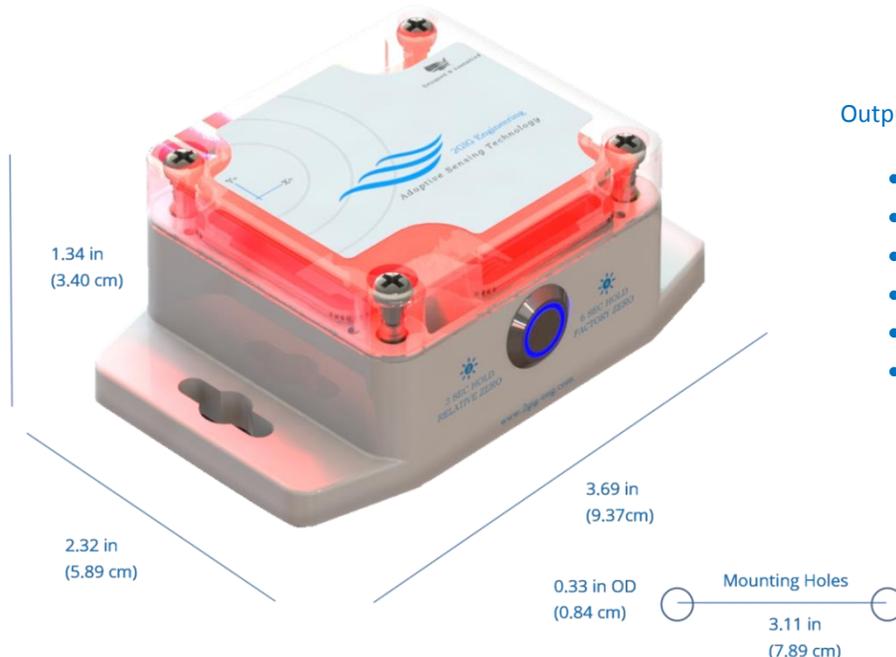


TWO OPTIONAL RECEIVERS:

- HMI Panel Display** – 4.3” capacitive touchscreen that receives the wireless readings from the transmitter and displays them on a customized visual display. The display can be powered from either USB or a 5-30V DC supply and offers users a wealth of hardware interfaces which include: four 16bit bi-polar analogue inputs (to a maximum of $\pm 40V$ DC), eight digital input/output pins, two alarm outputs (maximum current sink 10mA) and four 8bit PWM outputs.



- 2GIG Wireless Receiver Circuit** – This circuit provides all output behaviors that our inclinometer models provide in order to communicate with a PLC, incorporate into a CANBUS system, operate an alarm, or power up a high current solenoid.



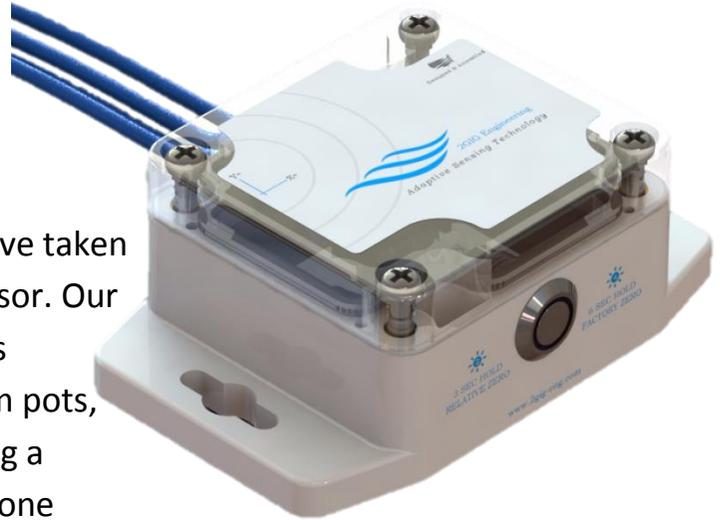
Output Capabilities

- Analog 0-5V
- Milliamp 4-20ma
- Switching Relay
- USB COM Port
- RS232
- CANBUS: CANOPEN or J1939

INSTALLING A SENSOR

just got a whole lot easier

Simple installation comes standard. We've taken the confusion out of installing a level sensor. Our simple three-step installation process has eliminated the headache of adjusting trim pots, adjustment nuts, or rotating while holding a voltmeter. Keeping it simple saves everyone valuable time and money.



ONE **wired sensor**



Our solid-state MEMs sensor is built with the most durable components. Starting with the impact-resistant housing, an epoxy-protected circuit, and standard SXL automotive wire allows our unit to survive the most extreme environments. Optional customizations of the unit include: custom enclosures, artwork, wire or cable, custom connectors, and HMI (panel) LCD display either wired or wireless.

TWO **bolts to secure**



In addition to the precision and safety enhancements available in our MEMs sensor, it is engineered to be a drop-in replacement for any other legacy tilt devices. Including pendulum silicone filled, mercury switches, or mechanical inductive devices. The compact design of our sensor allows it to fit in most application with ease. Once we receive details we can reproduce the sensor faster than anyone else. For more information about the benefits of upgrading from other tilt devices visit our blog at www.2gig-eng.com/blog/

THREE **second hold**



2GIG's Inclination sensor comes standard with a stainless steel button that illuminates in blue. The button is preset to illuminate when the unit is powered on. During installation to set relative zero on your equipment, press and hold this button for 3 seconds until all LEDs flash two times. To use the factory zero option hold for 6 seconds and all LEDs will flash four times. The bright red trip LED is also another standard feature. The highly visible illumination around the perimeter of the top cover provides you with the best visibility to see if the LED is on. This feature can be specified by end user. The LED is preset to illuminate when the tilt sensor reaches its programmed trip angle.