

2GIG USB Inclinometer Guide

NOTE: Before attempting to communicate with the USB Inclinometer, please follow these instructions. Drivers must be installed first before plugging the inclinometer into your computer.

1. Download and Install FTDI VCP Drivers

Do not plug the USB Inclinometer into your computer. For PC and Mac users, go to FTDI's VCP Drivers page and download the appropriate drivers for your computer:

<http://www.ftdichip.com/Drivers/VCP.htm>

These drivers must be downloaded and then installed on your computer. After installing the drivers, you may then plug in the USB Inclinometer. Your computer should then automatically install and notify you of a newly installed COM port.

2. Download and Install Terminal Software

In order to communicate with the inclinometer for test purposes, terminal software is required. Terminal software is free software that can be downloaded online, and there are many different terminal programs out there. For the purpose of simplicity, we recommend specific terminal software below. We have created instructions and offer support for the following terminal software:

For PC Users:

Terminal: **RealTerm**

Download: <https://realterm.i2cchip.com/>

Instructions: https://www.2gig-eng.com/wp-content/uploads/2018/07/2GIG_USB_Communication_with_RealTerm.pdf

For Mac Users:

Terminal: **CoolTerm**

Download (Direct): <http://freeware.the-meiers.org/CoolTermMac.zip>

Instructions: https://www.2gig-eng.com/wp-content/uploads/2018/07/2GIG_USB_Communication_with_CoolTerm.pdf

WARNING: 2GIG Engineering cannot guarantee support for alternative terminal programs used outside of these recommended programs. We will do our best to accommodate.

2GIG USB Protocol

The USB series of tilt sensors communicate via serial port through an FTDI cable. Please visit www.2gig-eng.com/mems-inclinometer for a link to the drivers. The sensor outputs the X (°), Y (°), and the output rate. The sensor output behavior is fully adjustable via sending it commands through a USB COM Port. The standard output message, input message, baud rate, and configuration settings can be modified to fit most systems.

Specification	USB COM Port																																				
Adjustable Output Rate (Hz)	1 – 100 (Default: 10 Hz)																																				
Adjustable Baud Rates (bits/sec) <i>(Max Output Rate (Hz))</i>	2400 <i>(8)</i>	9600 <i>(20)</i>	19200 (Default) <i>(40)</i>	57600 <i>(100)</i>	115200 <i>(100)</i>																																
Communication Specs	Data Bits 8	Parity None	Stop Bits 1	Handshaking None																																	
2GIG Output Message Format	<p>Dual Axis Format: \$2gig,[X Angle],[Y Angle],[Output Rate]*[Checksum][LF] Single Axis Format: \$2gig,[X or Y Angle],[Output Rate]*[Checksum][LF]</p> <p style="text-align: center;">Message Descriptions</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #D9E1F2;">X Angle</th> <td>X Angle reading in hundredths of a degree (0.00)</td> </tr> <tr> <th style="background-color: #D9E1F2;">Y Angle</th> <td>Y Angle reading in hundredths of a degree (0.00)</td> </tr> <tr> <th style="background-color: #D9E1F2;">Output Rate</th> <td>Current Output Rate Frequency (Hz)</td> </tr> <tr> <th style="background-color: #D9E1F2;">Checksum (Hex)</th> <td>Data Validation Check by XORing all ASCII values between the \$ and * characters</td> </tr> <tr> <th style="background-color: #D9E1F2;">LF</th> <td>Line Feed (New Line) Character – ASCII 10</td> </tr> </thead></table>					X Angle	X Angle reading in hundredths of a degree (0.00)	Y Angle	Y Angle reading in hundredths of a degree (0.00)	Output Rate	Current Output Rate Frequency (Hz)	Checksum (Hex)	Data Validation Check by XORing all ASCII values between the \$ and * characters	LF	Line Feed (New Line) Character – ASCII 10																						
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