



Introduction:

This document provides guidance on how to configure a **Kintech Geovane** for use on a SymphoniePRO data logger. **The Geovane is not a wind vane; therefore, it does not provide a wind direction measurement. The Geovane is a solar compass, specifically designed to work in conjunction with wind vanes, ultrasonic anemometers, and remote sensing devices; and to be permanently installed in any wind turbine's nacelle**

Tools Needed:

The following items are needed to configure and use the **Geovane**:

- **Geovane** and sensor cable
- Computer with [SymphoniePRO Desktop App](#) & [Geovane Tools \(Down On Click\)](#)
- USB-RS485 converter
- USB-A to USB-B cable
- 12 VDC power supply or SymphoniePRO data logger + iPack + Large wiring panel
- Small flathead screwdriver

Default Configuration:

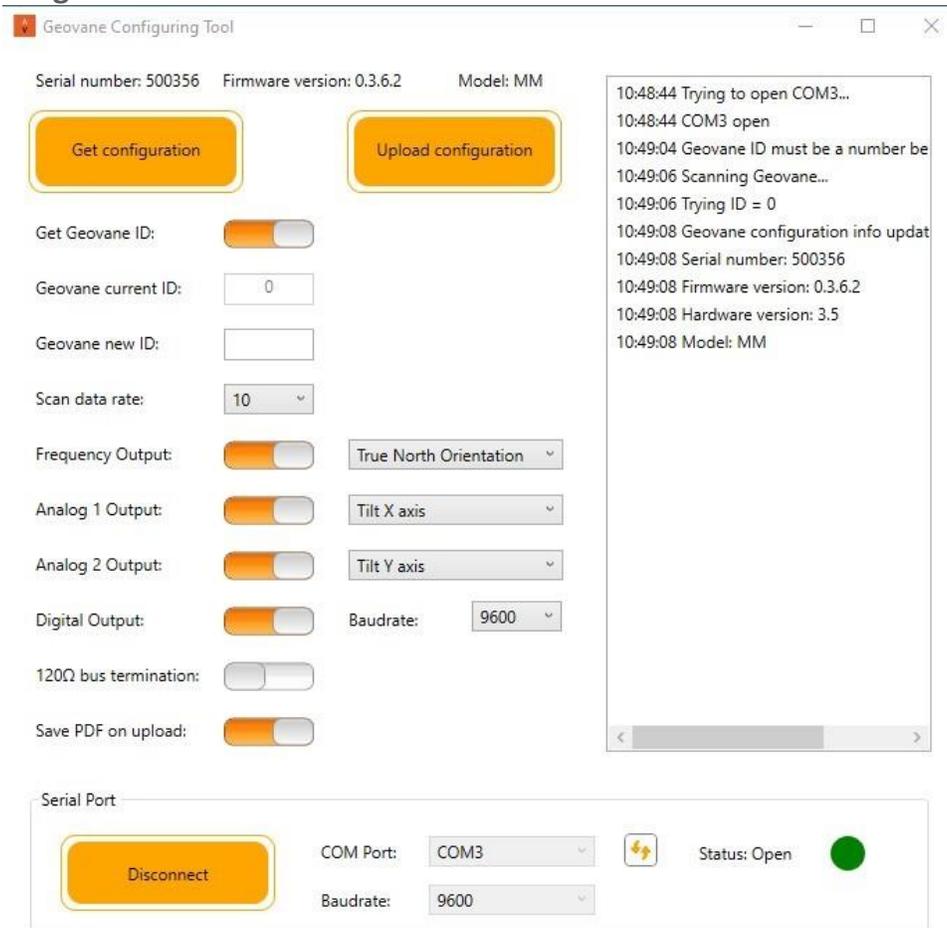


Figure 1: Default Geovane Settings



How to Use:

Power Requirements:

Note: To use this sensor on a **SymphoniePRO** logger, the **SymPRO Booster Kit (PN 17709)** **MUST** be used. Do not connect the **Geovane** power directly to the wiring panel, the sensor may not work, and at worse could damage the system.

Description	Value	Units	Comments
Operating voltage	12	V (DC)	Recommended
	6	V (DC)	Minimum

Remark:

The power supply should be able to provide at least 80mA to account for the maximum current peak Geovane might demand.

Figure 2: Geovane Power Specs

Wiring sensor to Logger:

Table 1: Analog Sensor Wiring

Wire Color	Function	Termination
Green	Supply (+)	Supply 6-30V DC
Brown	Supply (-)	Supply Ground
Red	Out (Hz)	Frequency Output
White	Out (V1+)	Analog Output #1
Blue	Out (V2+)	Analog Output #2
Yellow	Out (V-)	Analog Output Ground
Yellow / Green	Shield	SHD

Table 2: Modbus Sensor Wiring

Wire Color	Function	Termination
Green	Supply (+)	Supply 6-30V DC
Brown	Supply (-)	Supply Ground
Pink	RS-485 A	TX/RX+
Grey	RS-485 B	TX/RX-
Yellow / Green	Shield	SHD



Handling / Orientation:

Tilt angle goes as follows when holding the Geovane in hand, with the North mark (indentation) facing the holder:

- Tilt X:
 - Rotate Towards Holder: Negative
 - Rotate Away From Holder: Positive
- Tilt Y:
 - Rotate left: Negative
 - Rotate Right: Positive

Configuring the Logger:

Open the SymphoniePRO Desktop App, connect to the logger using a USB connection or remote connection via Metlink with the IPacks static IP address. From **Fleet View** click into the logger and navigate to the Channels tab located on the left side. The Geovane has 1x Frequency Output (Counter Channels 1 – 12), 2x 5V Output (Analog 5V Channels 13-19).

For Analog output:

Channel	Mode	Type	Description	Serial Number	Height	Boom Bearing	Scale Factor	Offset	Units	Live Data
Counters										
+ 12	Statistics	Anemometer	True North Orient		2.00m	0.0° (N)	3	-30	m/s	6 m/s
Analog 5 V or 12 V Excitation										
+ 17	Statistics	Analog	Geovane Tilt X		2.00m	0.0° (N)	45	-112.5	Degrees	0.74 Degrees
+ 18	Statistics	Analog	Geovane Tilt Y		2.00m	0.0° (N)	45	-112.5	Degrees	0.12 Degrees

Figure 3: Geovane Analog Outputs, Sympro Desktop App

Counter Channels (1 – 12) Configuration: True North Orientation

- Description: "True North"
- Serial number: *Sensor Specific*
- Scale Factor: "3" degrees per Hz
- Offset: "-30" Degrees

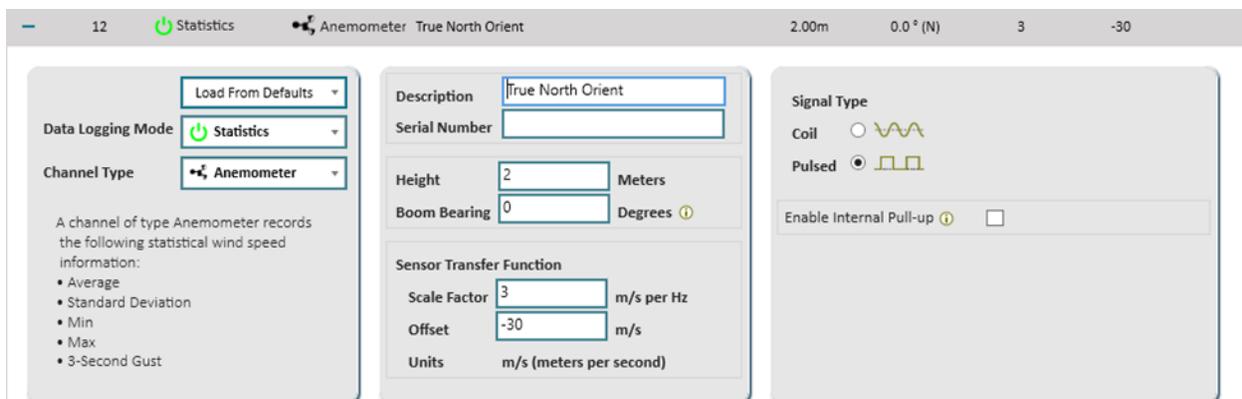


Figure 4: SymPRO Channel 12 Configured for True North Orientation

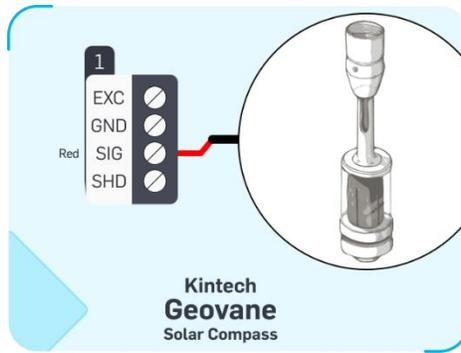


Figure 5: Counter Channel Wiring (DO NOT USE EXC FROM WIRING PANEL)

Analog 5V Channels (13 – 19) Configuration: Tilt X / Y

- Description: "Tilt X" or "Tilt Y"
- Serial number: *Sensor Specific*
- Scale Factor: "45" degrees per Volt
- Offset: "-112.5" Degrees

17 Statistics Analog Geovane Tilt X 2.00m 0.0° (N) 45 -112.5 Degrees

Data Logging Mode: Load From Defaults Statistics

Channel Type: Analog

A channel of type Analog records the following statistical information:

- Average
- Standard Deviation
- Min
- Max

Description: Geovane Tilt X

Serial Number:

Height: Meters

Boom Bearing: Degrees ⓘ

Sensor Transfer Function

Scale Factor: Degrees per V

Offset: Degrees

Units:

Excitation

Mode: Off

Voltage: 5 V

Figure 6: SymPRO Channel 17 Configured For Tilt X

18 Statistics Analog Geovane Tilt Y 2.00m 0.0° (N) 45 -112.5 Degrees

Data Logging Mode: Load From Defaults Statistics

Channel Type: Analog

A channel of type Analog records the following statistical information:

- Average
- Standard Deviation
- Min
- Max

Description: Geovane Tilt Y

Serial Number:

Height: Meters

Boom Bearing: Degrees ⓘ

Sensor Transfer Function

Scale Factor: Degrees per V

Offset: Degrees

Units:

Excitation

Mode: Off

Voltage: 5 V

Figure 7: SymPRO Channel 17 Configured For Tilt Y

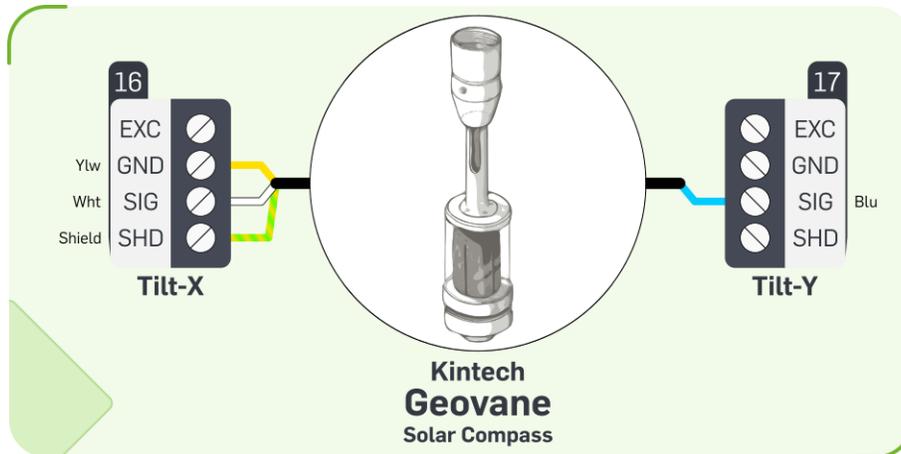


Figure 8: 5V Analog Channel Wiring (DO NOT USE EXC FROM WIRING PANEL)

Final Checks:

Double check that the sensors are outputting the numbers you expect, and that the units are labeled correctly too. It is a good idea to export a sample of the data to make sure that the data is being stored properly. If possible, check both ends of the sensor output limits.

References:

The True North orientation can be calculated from the measured volts according to the following equation:

$$\text{True North orientation} = \text{Voltage} * 90 - 45$$

Both Tilt X and Tilt Y can be calculated from the measured volts according to the following equation:

$$\text{Tilt} = \text{Voltage} * 45 - 112.5$$

Figure 9: Voltage Equations

The True North orientation can be calculated from the measured hertz according to the following equation:

$$\text{True North orientation} = \text{Hertz} * 3 - 30$$

Figure 10: Frequency Equation



Pin*	Color	Description	Function
1	White	Out (V1+)	Analog output #1
2	Pink	RS-485 A	RS-485 Data +
3	Green	Supply (+)	Supply 6... 30V DC
4	Grey	RS-485 B	RS-485 Data -
5	Blue	Out (V2+)	Analog output #2
6	Red	Out (Hz)	Frequency output
7	Brown	Supply (-)	Supply ground
8	Yellow	Out (V-)	Analog output ground

Figure 11: Sensor Wiring

Remark:

Before the Geovane gets GPS signal, the True North orientation outputs are set to **380°** (GPS fix is typically obtained 30 seconds after power on, provided open-sky conditions).

Once the Geovane has obtained GPS signal and until it is able to measure for the first time, the True North orientation outputs are set to **370°**. In this way, the installer can verify that the Geovane is operating properly even in the absence of sunlight

Figure 12: Initial Start-up Behavior



- **Tilt X** output is referenced to the wind vane's North mark (Geovane's slit #1), being positive if tilted upwards and negative if tilted downwards.
- **Tilt Y** output is referenced to slit #7 (East of the wind vane), being positive if tilted upwards and negative if tilted downwards.

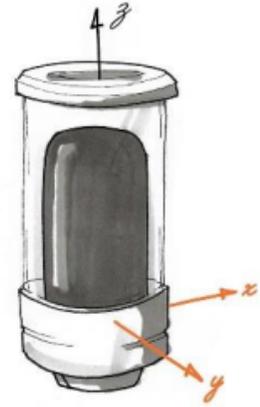


Figure 13: Tilt X/Y Directions