

# WIND MONITOR ANEMO / WIND VANE

*YOUNG ALPINE 05103-45*





ORDER - N°	SENSOR MEASURE	ELECTRICAL OUPUT	ELECTRICAL SUPPLY	HEATING SUPPLY	MODEL IN EOL MANAGER
YOUNG ALPINE 05103-45	WIND SPEED	R: 2 kΩ		No heating	YOUNG 05103
	WIND DIRECTION	Pot: 10 kΩ	15 VDC		

### APPLICATION

The Wind Monitor Alpine measures horizontal wind speed and direction. The wind speed sensor is a four blade helicoid propeller. Propeller rotation produces an AC sine wave signal with frequency proportional to wind speed. This AC signal is induced in a stationary coil by a six pole magnet mounted on the propeller shaft. Three complete sine wave cycles are produced for each propeller revolution. Slip rings and brushes are eliminated for increased reliability.

Vane position is transmitted by a 10 kΩ precision conductive plastic potentiometer which requires a regulated excitation voltage. With a constant voltage applied to the potentiometer, the output signal is an analog voltage directly proportional to wind direction angle.

### CONSTRUCTION AND MODE OF OPERATION

This sensor is rugged and corrosion resistant, yet accurate and light weight. Its simplicity and corrosion-resistant construction make it ideal for a wide range of wind measuring applications. The external housing surfaces of YOUNG ALPINE 05103-45 are coated with a special ice resistant coating to improve performance in harsh alpine conditions.

Both the propeller and vertical shafts use stainless steel precision grade ball bearings. The instrument mounts on standard pipe, outside diameter 34 mm. An orientation ring is provided so the instrument can be removed for maintenance and reinstalled without loss of wind direction reference. Both the mounting post assembly and the orientation ring are secured to the mounting pipe by stainless steel band clamps.

Electrical connections are made in a junction box at the base. A variety of devices are available for signal conditioning, display, and recording of wind speed and direction. This sensor can operate in a range of temperature -50...+50°C assuming non-icing conditions.

## WIND MONITOR ANEMO / WIND VANE | YOUNG ALPINE 05103-45

### TECHNICAL DATA

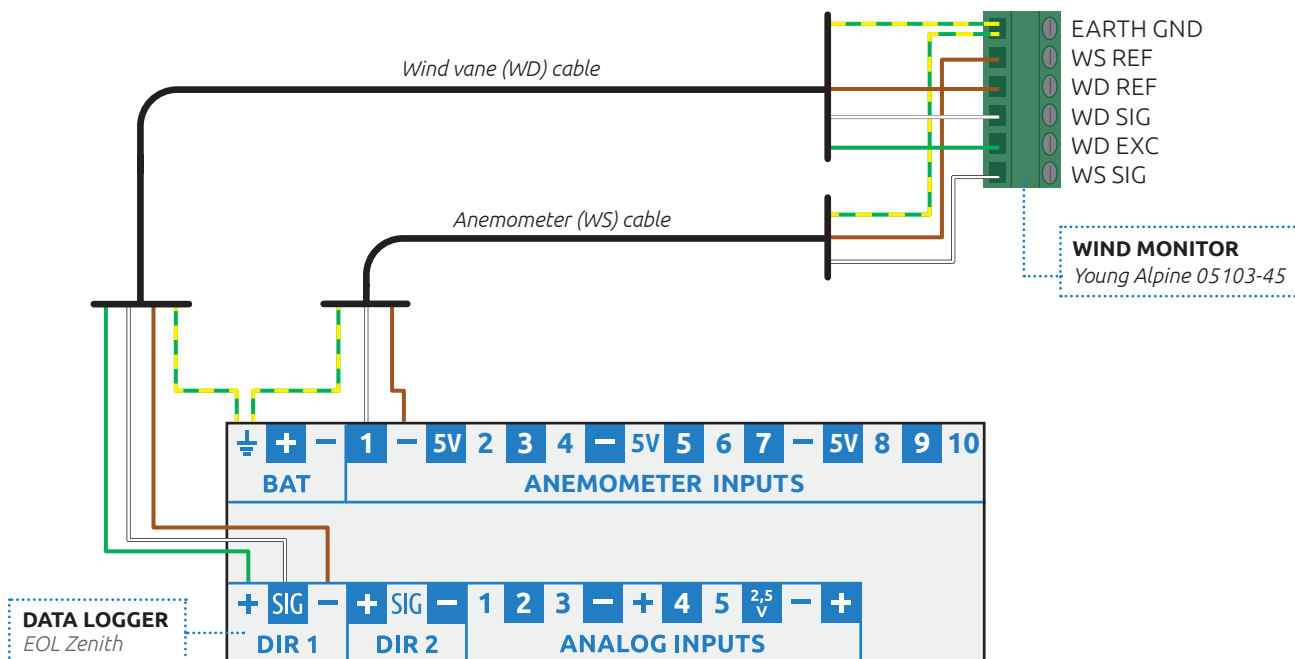
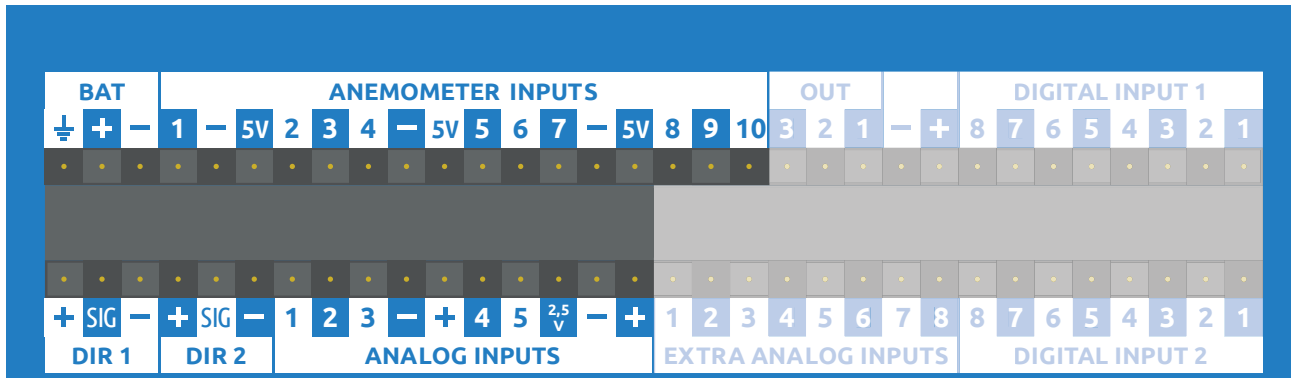
WIND SPEED	
CHARACTERISTIC	DESCRIPTION / VALUE
Measuring range	0...60 m/s
Survival speed	0...100 m/s
Accuracy	±0.3 m/s or 1% of reading
Sensor description	14 cm diameter 4-blade helicoid propeller molded of polypropylene
Pitch	29.4 cm air passage per revolution
Distance constant	2.7 m for 63% recovery
Threshold sensitivity	1.1 m/s
Transducer output YOUNG ALPINE 05103-45	Centrally mounted stationary coil, R: 2 kΩ nominal DC resistance AC sine wave signal induced by rotating magnet on propeller shaft 80 mV pk-pk at 100 rpm, 8 V pk-pk at 10 000 rpm
Output frequency	3 cycles per propeller revolution (0.0980 m/s per Hz)

WIND DIRECTION	
CHARACTERISTIC	DESCRIPTION / VALUE
Measuring range	360° mechanical, 355° electrical (5° open)
Accuracy	± 5°
Sensor description	Balanced vane, 38 cm turning radius
Damping ratio	0.3
Delay distance	1.3 m for 50% recovery
Threshold sensitivity	1.1 m/s at 10° displacement
Damped natural wavelength	7.4 m
Undamped natural wavelength	7.2 m
Transducer output	Precision conductive plastic potentiometer, 10 kΩ resistance (±20%), 0.25% linearity, life expectancy 50 million revolutions, rated 1 W at 40°C, 0 W at 125°C Analog DC voltage proportional to azimuth angle with regulated excitation voltage applied across potentiometer
Electrical supply	Regulated DC voltage, 15 VDC maximum

# WIND MONITOR ANEMO / WIND VANE | YOUNG ALPINE 05103-45

## INSTRUCTIONS

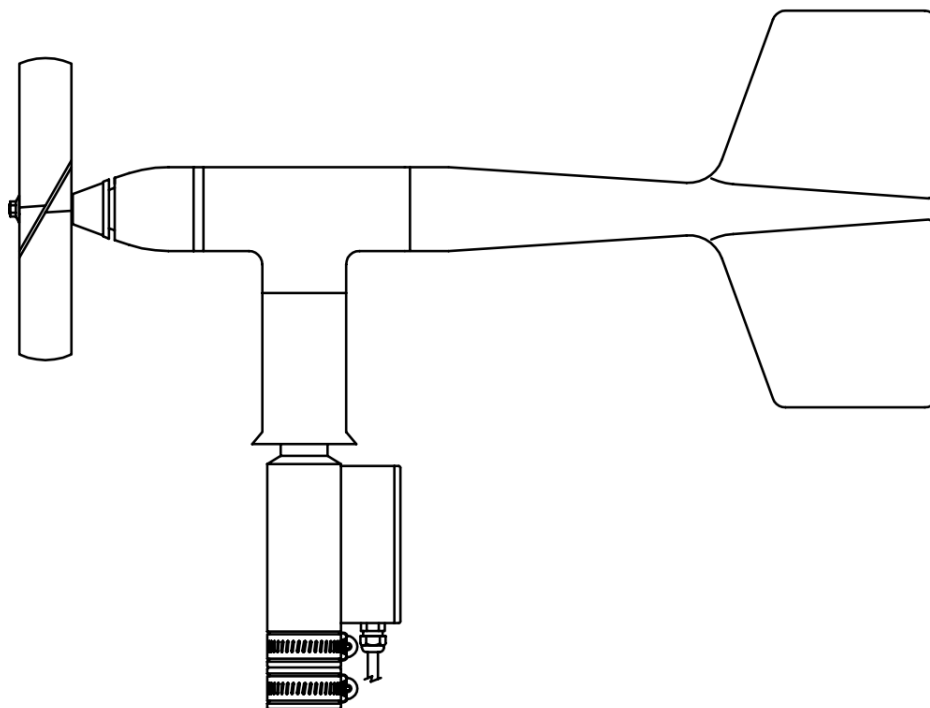
Use the following input channels on the logger to connect this sensor. See highlighted input channels marked here below. The wire colors used in the connection diagram below only applies in case the cable is supplied by Kintech Engineering.



SENSOR PIN DESCRIPTION		DATA LOGGER INPUT CHANNEL	
WD Ref.	Wind Direction Reference	DIR 1	(-)
WD Sig.	Wind Direction Signal	DIR 1	SIG
WD Exc.	Wind Direction Excitation	DIR 1	(+)
EARTH GND	Shield	BAT	GND
EARTH GND	Shield	BAT	GND
WS Ref.	Wind Speed Reference	Anemometer Inputs	(-)
WS Sig.	Wind Speed Signal	Anemometer Inputs	1

KINTECH COLOR CODES		
	Brown	WD cable
	White	
	Green	
	Yellow - Green	
	Yellow - Green	WS cable
	Brown	
	White	

SENSOR DIMENSIONS



SENSOR DIMENSIONS	
Overall Height	37 cm
Overall Length	55 cm
Propeller Diameter	14 cm
Mounting Pipe Description	34 mm OD standard

## HOW TO CONFIGURE THIS SENSOR (WIND SPEED) IN EOL MANAGER

Open EOL Manager and go to the data logger you are working on. Open the “inputs” tab and select the following type and model:

- Section: Anemometers/Frequency
- Type: Anemometer
- Model: YOUNG 05103

**Calibration values:** Tick the “Std Cal” to use this sensors standard slope and offset. If you have the Measnet calibration certificate for this sensor insert the slope and offset values from this certificate.

Anemometers/Frequency

Ignore	Channel	Type	Model	Units	Serial Number	Height	Username	Std Cal	Slope	Offset	Std Dev	Max	Min
<input type="checkbox"/>	ANE1	Anemometer	YOUNG_05103	m/s		0	Anemo1	<input checked="" type="checkbox"/>	0.098000	0.200000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	ANE2	Anemometer	-----	m/s		0	Anemo2	<input type="checkbox"/>	0.000000	0.000000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

SENSOR SELECTION

MODEL SELECTION

DATASHEET DOWNLOAD

STANDARD CALIBRATION

## HOW TO CONFIGURE THIS SENSOR (WIND DIRECTION) IN EOL MANAGER

Open EOL Manager and go to the data logger you are working on. Open the “inputs” tab and select the following type and model:

- Section: Wind Vanes
- Type: Windvane
- Model: YOUNG 05103

**Offset value:** Tick the “Std Cal” if the north marking on the wind vane is aligned exactly towards North. (In this case the offset is zero (0)). Otherwise the angle (in degrees) must be typed in the offset. If you have the Measnet calibration certificate for this sensor insert the offset value from this certificate.

Wind Vanes

Ignore	Channel	Type	Model	Units	Serial Number	Height	Username	Std Cal	Slope	Offset	Std Dev	Max	Min
<input type="checkbox"/>	D1	Windvane	YOUNG_05103	°		0	Windvane1	<input checked="" type="checkbox"/>	1.000000	0.000000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	D2	Windvane	-----	°		0	Windvane2	<input type="checkbox"/>	1.000000	0.000000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SENSOR SELECTION

MODEL SELECTION

DATASHEET DOWNLOAD

STANDARD CALIBRATION

### IMPORTANT

- After configuring the sensor in EOL Manager make sure to upload the configuration file to your EOL Zenith data logger. See the “Quick User Guide” how to upload configuration files to the data logger.
- All sensor wire shields must be connected to the data logger GND terminal.
- The data logger should always be connected to a separated ground rod. **Not** to the lightning rod of the tower.
- The three 5V power supply outputs are completely independent and not associated to any of the signal inputs. The three 5V outputs can therefore be distributed according to needs.
- To store data such as Std Dev, Max and Min you should tick the corresponding boxes next to each anemometer channel when setting up your site file. Otherwise these parameters will not be stored.
- There are two exclusive inputs in the logger for the wind vanes (DIR1 & DIR2). Connecting the 3<sup>rd</sup> – 7<sup>th</sup> wind vane use “ANALOG INPUTS” of the logger.
- Wind vanes connected to the “ANALOG INPUTS” of the logger must be connected to exclusive (+) and (-) terminals. The terminals (+) and (-) can consequently **not** be shared between wind vanes.
- Wind vanes **cannot** be connected to the “EXTRA ANALOG” channels of the logger.
- Cable recommendation:  
Use 2 separate cables, each with its own shield.

Sensor no heating	WD cable 2x0.5mm <sup>2</sup>
	WS cable 3x0.5mm <sup>2</sup>

Last modified: 04.04.2017

**KINTECH ENGINEERING**

[www.kintech-engineering.com](http://www.kintech-engineering.com)

[support@kintech-engineering.com](mailto:support@kintech-engineering.com)

Tel. +34 976 221 789