



Wind Energy Sensors

Sensors for Wind Energy Applications

Rugged, Reliable, and Ready for any Application



Most meteorological sensors can be measured by our dataloggers, allowing stations to be customized for each site. Typical sensors used on our

stations include, but are not limited to: wind speed, wind direction, barometric pressure, temperature, relative humidity, and delta temperature.

CUP ANEMOMETERS

	<i>Signal Type/Output</i>	<i>Measurement Description</i>	<i>Output Range</i>	<i>Operating Temperature</i>	<i>Calibration</i>
P2546A-L IEC Class 1 Performance 	contact closure (pulse)	wind speed	0 to 70 m s ⁻¹	-30° to 70°C	IEC 61400-12-1 MEASNET
A100LK-L IEC Class 1 Performance Great for turbulent terrain 	electronic pulse	wind speed	0 to 77 m s ⁻¹	-30° to 70°C	IEC 61400-12-1 MEASNET
Thies 4.3351.10.000^a IEC Class 1 Performance 	opto-electronic converted to square wave (pulse)	wind speed	0.3 to 75 m s ⁻¹	-50° to 80°C	IEC 61400-12-1 MEASNET
Thies 4.3351.00.000^a Heated Anemometer with IEC Class 1 Performance 	opto-electronic converted to square wave (pulse)	wind speed	0.3 to 75 m s ⁻¹	-50° to 80°C	IEC 61400-12-1 MEASNET
MetOne 011E^a IEC Class 1 Performance 	optical chopper (pulse)	wind speed	0 to 60 m s ⁻¹	-50° to 85°C	IEC 61400-12-1 MEASNET
#40C Wind Speed Sensor 	low level ac sine wave (pulse)	wind speed	1 to 96 m s ⁻¹	-55° to 60°C	--

More info: 435.227.9120

campbellsci.com/wind-energy



WIND VANES

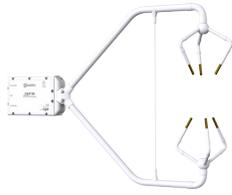
		Measurement	Measurement Description	Output Range	Operating Temperature
020C-L Reliable and accurate		potentiometer (half bridge)	wind direction	0° to 360°	-50° to 85°C
200P Wind Direction Sensor		analog potentiometer (half bridge)	wind direction	0° to 360°	-55° to 60°C
Thies 4.3150.10.212^a First Class, Accurate and Rugged		analog potentiometer (half bridge)	wind direction	0° to 360°	-50° to 80°C
Thies 4.3150.00.212^a Heated First Class Transmitter Accurate and Rugged		analog potentiometer (half bridge)	wind direction	0° to 360°	-50° to 80°C

HELICOID & ULTRASONIC ANEMOMETERS

		Signal Type/Output	Measurement Description	Output Range	Operating Temperature
05108-45-L Alpine Version Wind Monitor-HD, High Performance Designed to prevent ice buildup		analog potentiometer, ac sine wave	wind speed and direction	<u>Wind Speed</u> 0 to 100 m s ⁻¹ <u>Direction</u> 0° to 360°	-50° to 70°C
Thies 4.382x.xx.xxx^a Robust and well suited for cold climates Heated transducers and arms		RS-485, RS-232, analog (configurable for other types)	wind speed and direction	<u>Wind Speed</u> 0 to 75 m s ⁻¹ <u>Direction</u> 0° to 360°	-50° to 70°C
Vaisala WMT700^a Heated and Suited for Cold Climates		RS-485, RS-422, RS-232, SDI-12 (user programmable)	wind speed and direction	<u>Wind Speed</u> 0 to 75 m s ⁻¹ <u>Direction</u> 0° to 360°	-55° to 70°C
WINDSONICX-L High Quality and Lightweight		RS-485, RS-232, SDI-12	wind speed and direction	<u>Wind Speed</u> 0 to 60 m s ⁻¹ <u>Direction</u> 0° to 359°	-35° to 70°C
RM Young 85004^a Heated Ultrasonic for Extended Cold Weather Use		RS-485	wind speed and direction	<u>Wind Speed</u> 0 to 70 m s ⁻¹ <u>Direction</u> 0° to 360°	-50° to 50°C

ULTRASONIC 3D WIND SENSORS

CSAT3B | 3D Sonic Anemometer
Best instrument for flux and other high-level turbulence research projects



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
SDM, CPI, USB, RS-485	u_x, u_y, u_z, c	Full Scale Wind: $\pm 65 \text{ m s}^{-1}$	-30° to 50°C

TEMPERATURE & RELATIVE HUMIDITY

CS215-L | Reliable and easy to maintain



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
SDI-12	temperature relative humidity	<u>Temperature</u> -40° to 70°C <u>Relative Humidity</u> 0 to 100%	-40° to 70°C

083E-L | Accurate and reliable sensor



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
analog voltage	temperature relative humidity	<u>Temperature</u> -50° to 50°C <u>Relative Humidity</u> 0 to 100%	-50° to 50°C

EE181-L | Accurate and rugged



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
analog voltage	temperature relative humidity	<u>Temperature</u> -40° to 60°C <u>Relative Humidity</u> 0 to 100%	-40° to 60°C

BAROMETRIC PRESSURE SENSORS

CS100 (Setra 278) | Standard Barometer
Reliable and accurate



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
analog voltage	barometric pressure	600 to 1100 mb ^b	-40° to 60°C

092-L | Includes Weather-proof Enclosure
Reliable and accurate



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
analog voltage	barometric pressure	600 to 1100 mb	-40° to 55°C

VERTICAL WIND SENSORS

27106T-L | Low threshold precision vertical wind sensor



Signal Type/Output	Measurement Description	Output Range	Operating Temperature
analog voltage	vertical wind speed	0 to 40 m s ⁻¹	-50° to 50°C

DELTA TEMPERATURE

43347-L | Highly accurate RTD for atmospheric stability monitoring $\pm 0.1^\circ\text{C}$ accuracy with NIST calibration



	Signal Type/Output	Measurement Description	Output Range	Operating Temperature
	analog voltage	temperature	$\pm 50^\circ\text{C}$	$\pm 50^\circ\text{C}$
43502-L Aspirated Shield, provides more accurate measurement	NA	Delta T: $< 0.05^\circ\text{C}$ RMS with like shields	5 to 11 m s^{-1}	-50° to 60°C

OTHER

0871LH1 | Freezing Rain Detector



	Signal Type/Output	Measurement Description	Output Range	Operating Temperature
	RS-485	ice detected/ no ice detected	state dependent, ICE = 1 NO ICE = 0	-51° to 71°C

LWS-L | Surface Wetness Sensor
Dielectric sensor to determine presence of water and ice



	analog voltage	dry, frosted, wet	250 mV to 1500 mV, millivolt reading relates to moisture state	-20° to 60°C
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CS120 | Visibility Sensor
High Performance Visibility Measurements



	RS-232, RS-485	Meteorological Observable Range (MOR)	12 m to 32 km	-25° to 60°C
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CS135 | LIDAR Ceilometer
Sensitive, Long Range
Cloud Measurement



	RS-232, RS-485	cloud height and vertical visibility	5 m to 10 km: Up to four cloud layers reported	-40° to 60°C
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CS47X-L | Radar Water
Level Sensor
FCC Approved



	SDI-12	distance	50 mm to 70 m	-40° to 80°C
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ZephIR 300 | Remote
Sensing Lidar
Accurate and reliable



	cellular, Modbus	wind speed, wind direction, turbulence intensity, wind shear, wind veer	Up to 10 program- mable measure- ment heights from 10 m to 300 m	-40° to 50°C
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NOTES:

^aItem is special ordered and cabled by Campbell Scientific.

^bThe CS100 is available in special ranges of 500 to 1100 and 800 to 1110; contact Campbell Scientific for more information.

