

Ambient Monitoring Sensors

Sensors for Air Quality Applications



Rugged, Reliable, and Ready for any Application



Almost any meteorological sensor 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, solar radiation, delta temperature (SRDT), temperature, relative humidity, precipitation, and barometric pressure.

WIND SPEED & DIRECTION

	Signal Type/Output	Wind Speed		Wind Direction	
		Range	Accuracy	Range	Accuracy
<p>05305 Wind Monitor-AQ High performance wind sensor designed specifically for air quality measurements. It meets or exceeds the requirements of various regulatory agencies</p> 	<p>helicoid-shaped, 4-blade propeller and fuselage-shaped sensor body</p>	<p>0 to 50 m/s (0 to 112 mph)</p>	<p>±0.2 m/s (0.4 mph) or 1% of reading</p>	<p>0 to 360° (mechanical) 0 to 355°, 5° open (electrical)</p>	<p>±3°</p>
<p>WINDSONIC1 2-D Sonic Wind Sensor with RS-232 Output Low-maintenance, ultrasonic anemometer</p> 	<p>2-dimensional ultrasonic anemometer</p>	<p>0 to 60 m/s (0 to 134 mph)</p>	<p>±2% @ 12 m/s</p>	<p>0° to 359° (no dead band)</p>	<p>±3°</p>
<p>WINDSONIC4 2-D Sonic Wind Sensor with SDI-12 Output Low-maintenance, ultrasonic anemometer</p> 	<p>2-dimensional ultrasonic anemometer</p>	<p>0 to 60 m/s (0 to 134 mph)</p>	<p>±2% @ 12 m/s</p>	<p>0° to 359° (no dead band)</p>	<p>±3°</p>



DELTA TEMPERATURE

43347 | RTD Temperature Probe for DeltaT Measurements
Very High Accuracy



Temperature Range	Accuracy	Ambient Temperature ^a	Delta T ^b
±50°C	±0.3°C at 0°C; ±0.1°C with NIST calibration	< 0.2°C RMS at 1000 W/m ² intensity	< 0.05°C RMS with 43502 shields equally exposed

^a The ambient temperature and DeltaT specifications assume the 43347 is housed in the 43502 aspirated radiation shield.

SOLAR RADIATION SHIELDS

43502-L | Fan-Aspirated Radiation Shield
Shades and draws ambient air past sensor for more accurate measurements



Weight	Dimensions	Houses	Mounts to	Power Requirements
1.1 kg (2.5 lb)	length: 33 cm (13 in.) diameter: 20 cm (8 in.)	43347 RTD probe	crossarm, mast, or user-supplied pipe with a 2.5 cm (1.0 in.) to 5.3 cm (2.1 in.) OD	12 to 14 Vdc @ 500 mA for blower

41005-5 | 14-Plate Naturally Radiation Shield
Shades and protects sensor



Weight	Dimensions	Houses	Mounts to	Power Requirements
~1 kg (~2 lb)	plate diameter: 11.9 cm (4.7 in.)	HMP155A	crossarm, mast, or user-supplied pipe with a 2.5 cm (1.0 in.) to 5.3 cm (2.1 in.) OD	none

41003-5 | 10-Plate Naturally Radiation Shield
Shades and protects sensor



Weight	Dimensions	Houses	Mounts to	Power Requirements
0.6 kg (1.3 lb)	plate diameter: 11.9 cm (4.7 in.) height: 20.3 cm (8.0 in.)	HC2S3	crossarm, mast, or user-supplied pipe with a 2.5 cm (1.0 in.) to 5.3 cm (2.1 in.) OD	none

TEMPERATURE & RELATIVE HUMIDITY

HMP155A | Accurate, Wide Temperature Range
Higher end sensor where higher accuracy is required



Sensor	Relative Humidity		Temperature		
	Measurement Range	Accuracy (at 25°C)	Sensor	Measurement Range	Accuracy
HUMICAP® 180R (recalibratable)	0.8 to 100% RH	±1% to ±1.7% depending on RH	PT100 RTD	-80° to +60°C	±(0.055 - 0.0057 x temperature)°C
ROTRONIC® Hygromer IN-1 (recalibratable)	0 to 100% RH	±0.8% RH with standard configuration settings	PT100 RTD	-40° to +60°C	±0.1°C with standard configuration settings

HC2S3 | Accurate and Rugged
Superior performance and reliability



BAROMETRIC PRESSURE

CS100 | Standard Barometer
Resides inside weather-proof enclosure



Measurement Range	Elevation	Temperature Range	Accuracy	Current Consumption
600 to 1100 mb ^b	~ 2000 ft below sea level (as in a mine) to 12,000 feet above sea level	-40° to 60°C	±0.5 mb @ +20°C; ±1.0 mb @ 0° to 40°C; ±1.5 mb @ -20° to +50°C; ±2.0 mb @ -40° to +60°C	< 3 mA (active); < 1 µA (sleep mode)
500 to 1100 mb	~ 2000 ft below sea level (as in a mine) to 15,000 feet above sea level	-40° to 60°C	±0.3 mb @ +20°C; ±0.6 mb @ 0° to 40°C; ±1.0 mb @ -20° to +45°C; ±1.5 mb @ -40° to +60°C	< 4 mA (active); < 1 µA (sleep mode)

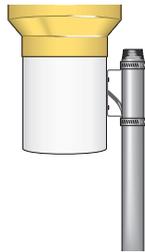
CS106 | Wider Pressure Range
Resides inside weather-proof enclosure



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

PRECIPITATION

TE525WS | Rain Gage
8-in. orifice meets the National Weather Service recommendations. Compatible with the CS705 snowfall adapter.



Sensor Type	Orifice Diameter	Resolution (Rainfall per Tip)	Accuracy	Operating Temperature
Tipping bucket with magnetic reed switch	20.3 cm (8 in.)	0.01 in. (0.254 mm)	Up to 1 in./hr: ±1% 1 to 2 in./hr: +0, -2.5% 2 to 3 in./hr: +0, -3.5%	0° to +50°C
Tipping bucket with magnetic reed switch	24.5 cm (9.66 in.)	0.1 mm (0.004 in.)	Up to 10 mm/hr: ±1% 10 to 20 mm/hr: +0, -3% 20 to 30 mm/hr: +0, -5%	0° to +50°C
Tipping bucket with siphon and dual reed switch	20 cm (7.9 in.)	0.01 in. (0.254 mm)	better than ±2% at 500 mm/hr (19.7 in./hr)	-40° to 70°C

TE525MM | Rain Gage
Monitors rainfall in metric rather than US units



CS700H | High-End Electrically Heated Rain and Snow Gage
Rugged, accurate, and ideal for high-intensity precipitation, even in freezing conditions



SOLAR RADIATION

CS300 | Silicon Pyranometer
Accurate, dependable, and ideal for long-term deployment in harsh conditions



	Sensor	Measurement Description	Spectral Range	Sensitivity	Operating Temperature
	silicon photovoltaic detector mounted in a cosine-corrected head	Measures sun plus sky radiation	300 to 1100 nm	0.2 mV/Wm ⁻²	-40° to +55°C
	silicon photovoltaic detector mounted in a cosine-corrected head	Measures sun plus sky radiation	400 to 1100 nm	0.2 kW m ⁻² mV ⁻¹	-40° to +65°C
	Blackened thermopile protected by a dome	Monitors solar radiation for the full solar spectrum range	305 to 2800 nm	15 μV/W/m ²	-40° to +80°C
	Blackened thermopile protected by a dome	Monitors solar radiation for the full solar spectrum range	300 to 2800 nm	5 to 20 μV/W/m ²	-40° to +80°C

LI200RX | Silicon Pyranometer
Accurate and dependable



LP02 | ISO-Second-Class Pyranometer
High Quality device with protective dome



CMP3 | ISO-Second-Class Pyranometer
Protective Glass Dome and Solar Shield



VISIBILITY

CS120 | Visibility Sensor
High Performance Visibility Measurements



	Maximum Reported Visibility	Accuracy	Supply Voltage	Power
	32 km (~20 miles)	0 to 10,000 m ±10% 10,000 to 20,000 m ±20%	Electronic 8 to 30 Vdc Hood Heater 24 Vdc or Vac	<u>Hood Heater</u> 2 x 30 W, total of 60 W <u>Dew Heater</u> 2 x 0.6 W, total of 1.4 W <u>Total Unit Power</u> < 3 W while sampling continuously (including dew heaters)

DIGITAL CAMERA

CC5MPX | Rugged, High-Resolution Measurements
Weatherproof enclosure for use in harsh, remote locations



	Programmable Still Image Resolutions (JPEG)	Video	Current Drain	Operating Temperature
	2592 x 1944; 1280 x 960; 1280 x 720; 640 x 480; 640 x 352; 320 x 240; 320 x 176	1280 x 720 (MPEG4), 640 x 480 (MJPEG), 320 x 240 (MPEG4)	<u>Maximum at 12 Vdc</u> 250 mA <u>Quiescent</u> ≤1 mA (off power mode)	-40° to +60°C