

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) |

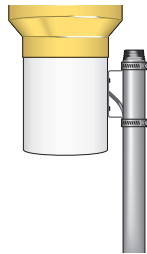
CS106 | Wider Pressure Range
Resides inside weather-proof enclosure



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

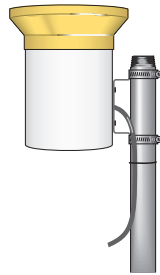
PRECIPITATION

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 |