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WHEN MEASUREMENTS MATTER

CS120A

Atmospheric Visibility Sensor

High-Performance Visibility Measurements

Competitive price

Overview

The CS120A uses tried-and-tested, infrared forward-scatter technology, and it uses the proven 42° scatter angle to report meteorological observable range (MOR) for fog and snow in the range of 5 to 75,000 m (16.4 to 246,063 ft). It combines a high specification with a very competitive price. The CS120A is ideal for stand-alone applications or in combination with automatic weather stations in road, aviation, solar-energy, and wind-energy environments.

For aviation applications, users can be assured that the CS120A complies with UK CAA, FAA, and ICAO guidance and meets or exceeds all recommendations and specifications. (This includes CAP437, CAP670, and CAP746.)

The CS120A is certified by Deutscher Wetterdienst as suitable for use to control wind turbine obstruction light systems as specified by 506/04, General Administrative Rules for the Identification of Aircraft Obstructions.

Benefits and Features

- High performance sensor at a competitive price
- Sensor design minimizes airflow disruption at measurement volume
- Incorporates automatic dew and hood heaters for all-weather operation
- Simple field calibration using optional calibration kit
- Low power—suitable for remote application
- Automatic status check for faults or window contamination
- Type certified for aviation use by the German Meteorological Service, Deutscher Wetterdienst (DWD)

Detailed Description

Compared to many such sensors, the CS120A design means that visibility is being measured in a relatively clean space because the position of the heads and body minimize disturbance of the airflow at the measurement volume.

The CS120A uses continuous high-speed sampling, which improves the accuracy of the measurements taken during mixed weather such as rain and hail, while providing reliable readings during more stable events such as fog and mist. High-speed sampling also allows the sensor to better respond to suddenly changing conditions.

The CS120A has several design features that keep its optics clean. Downward-facing optics minimize dirt and snow

buildup. Low-powered heaters prevent the formation of dew, and a higher-powered heater prevents the formation of ice.

The sensor is very power efficient, drawing just 3 W during normal operation including the dew heaters; power can be reduced further by reducing the sample rate and manual control of the heaters.

Two configurable alarm outputs are provided and, via relays, these can drive external warning systems such as lights and foghorns. They can also be used to switch the intensity of wind turbine warning lights depending upon current visibility levels.

Specifications

Signal Type/Output	RS-232, RS-485
Measurement Description	Meteorological Observable Range (MOR)
Maximum Reported Visibility	75 km (46.6 mi)
Minimum Reported Visibility	5 m (16.4 ft)
Accuracy	⟩ ±15% at 10,000 to 15,000 m (32,808.4 to 49,212.6 ft) ⟩ ±20% at 15,000 to 75,000 m (49,212.6 to 246,063 ft) ⟩ ±8% at < 600 m (< 1968.5 ft) ⟩ ±10% at 600 to 10,000 m (1968.5 to 32,808.4 ft)
Resolution	1 m (3.3 ft)
Mounting	Stainless-steel V-bolt bracket that attaches to a pole with a 32 to 52.5 mm (1.25 to 2 in.) outer diameter
Electronics Supply Voltage	7 to 30 Vdc
Total Unit Power	< 3 W while sampling continuously (including dew heaters)
Standards	Frangible masts are available to customer requirements to meet ICAO recommendations (typically placing the sample volume at 2.5 m [8.2 ft]).
Sensor Dimensions	540 x 640 x 246 mm (21.26 x 25.2 x 9.7 in.) including mount
Sensor Weight	~3 kg (6.6 lb) depending on mounting system

Optical/Pulse

LED Center Wavelength	850 nm
LED Spectral Bandwidth	±35 nm
Light Pulse Rate	1 kHz

Environmental

Operating Temperature Range	-25° to +60°C (standard)
Extended Operating Temperature Range	-40° to +70°C (This extended version is available as a special. Contact Campbell Scientific for more information.)
Operating Humidity Range	0 to 100%
Sensor Sealing	Rated to IP66
Wind Speed	Up to 60 m s^{-1}
Sensor Heater Threshold	⟩ > 40°C (dew heater off) ⟩ < 35°C (dew heater on) ⟩ < 5°C (hood heater on) ⟩ > 15°C (hood heater off)

DSP & Dew Heaters

Power	2 x 0.6 W (total of 1.4 W) for dew heater
Typical Current Consumption @ 12 Vdc	⟩ 200 mA (dew heaters active, RS-232 communications) ⟩ 200 mA (continuous sampling, dew heaters active) ⟩ 110 mA (continuous sampling, dew heaters disabled) ⟩ 21 mA (no sampling, dew heaters disabled)

Hood Heater

Supply Voltage	24 V dc or ac
Power	2 x 30 W (total of 60 W)

Interface

Serial Interface	RS-232 or RS-485, 8 bit data bytes, 1 stop bit
Serial Data Rates	1200 to 115,200 bps (38,400 bps default rate)

For comprehensive details, visit: www.campbellsci.com/cs120a