

**CS120**

Atmospheric Visibility Sensor



# High Performance Visibility Measurements

Competitive price

## Overview

The CS120 Visibility Sensor uses tried-and-tested, infrared forward-scatter technology, and uses the proven 42° scatter angle to report meteorological observable range (MOR) for fog and snow in the range 10 to 30,000 m. It combines a high specification with

a very competitive price and is ideal for stand-alone applications or in combination with automatic weather stations in road, aviation, and wind-energy environments.<sup>a</sup>

## Benefits and Features

- › High-performance sensor at a competitive price
- › FAA-recommended 42° scatter angle for good Meteorological Observable Range (MOR) readings in all precipitation types
- › 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
- › Sensor design minimizes air flow disruption at measurement volume

## Technical Description

Compared to many such sensors the CS120 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 CS120 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 CS120 has several design features that keep its optics clean. Downward facing optics minimizes dirt and snow build up. Low powered heaters prevent the formation of dew, and a higher-powered heater prevents the formation of ice.

The sensor is 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.

<sup>a</sup>Currently not recommended for marine applications.



## Ordering Information

### Atmospheric Visibility Sensor

**CS120-L** CSL Atmospheric Visibility Sensor (-25° to +60°C). Must choose a cable termination option (see below).

#### Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in connector for attachment to a prewired enclosure. Please note that the prewired enclosure will need a cable entry seal (option -ME) for the CS120's heater cable.

### Common Accessories

- 28678** Calibration Device for the CS120
- 28679** Optical Sensor Mount
- 28680** Configuration Cable
- 28370** 24 Vdc 3.8 A NEC Class 2 Power Supply Kit (battery not included). Must choose a kit type (see below).

#### Kit Type for 28370 Power Supply (choose one)

- SK** Standard Kit
- UL** UL508A Kit

## Specifications

### Operational

- › Maximum Reported Visibility: 32 km (~20 miles)
- › Minimum Reported Visibility: 12 m (~39 ft)
- › Operating Temperature: -25° to +60°C
- › Operating Humidity: 0 to 100%
- › Wind Speed: Up to 60 ms<sup>-1</sup>
- › Sensor Sealing: rated to IP66

### Accuracy

- › 0 to 10,000 m: ±10%
- › 10,000 to 20,000 m: ±20%

### Optical

- › Emitter Light Frequency: 850 nm
- › Lens Contamination Circuitry: Monitors both the source and detector lenses for contamination/blockage at 1 s intervals; sensor adjusts its calibration for low to moderate window contamination
- › Light Source Stability Control: Ensures stable operation through variations in temperature and with sensor aging; corrected at 1 s intervals.

### Mechanical

- › Weight: ~3 kg (dependent upon mounting system)
- › Height: 44.7 cm (17.6 in)
- › Width: 64 cm (25.2 in)
- › Depth: 24.6 cm (9.7 in)
- › 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

### Electrical

#### Supply Voltage<sup>b</sup>

- › Electronics: 8 to 30 Vdc
- › Hood Heater: 24 Vdc or Vac

#### Power<sup>c</sup>

- › Hood Heater: 2 x 30 W, total of 60 W
- › Total Unit (including dew heaters): < 3 W while sampling continuously

### Interface

- › Serial Interface: RS-232 or RS-485
- › Serial Data Rates: 1200 to 115,200 bps (38,400 bps default rate)
- › Alarm Outputs: 2 x 0 to 5 V outputs, 32 mA (maximum)

<sup>b</sup>A low-voltage shutdown level can be set to prevent back-up batteries being damaged.

<sup>c</sup>Lower power states can be achieved by less frequent sampling and remote control of heaters.



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