



## Visibility Sensor

High performance at an economical price

### Overview

The CS120A is an infrared forward scatter visibility sensor for stand alone use or with automatic weather stations including those for road and airport applications. The CS120A uses the well established forward scatter system for visibility measurement, utilising a 42° scatter angle which gives accurate estimates of Meteorological Observable Range (MOR) for fog and snow.<sup>1</sup> It has downward pointing optics that reduce the risk of contamination of the optics and blockage with snow.<sup>2</sup> This also makes it easier to install without being affected by stray lights. Interference to the sample volume from the sensor by flow distortion or heat is also minimised.

The CS120A uses continuous high speed sampling to reduce errors during mixed weather events and events that return intermittent signals such as rain and hail, while still providing reliable readings during more stable events such as fog and mist. The CS120A has high immunity to interference from the visible and infra-red warning lights used to mark obstructions such as wind turbines.

The sensor can be set to a lower sampling frequency to save power, if required.

The CS120A incorporates low power dew prevention heaters as well as higher power anti-icing heaters for the hoods as standard. These heaters are automatically controlled to ensure operation in all weathers or can be disabled to save power.

The CS120A continuously monitors its own status and will report internal faults and contamination or blockage of the sensor lenses. It also has two user configurable alarm outputs which can be used to drive audio or visual alarms using solid state relays.

The CS120A complies with ICAO and CAA guidance and meets or exceeds all recommendations and specifications (this includes ICAO 9837, ICAO Annex 3, CAP437, CAP670 and CAP746).

### Applications

- › Road visibility
- › Airport visibility and Runway Visual Range
- › Automatic weather stations
- › Wind farms

<sup>1</sup>U.S. Department of Transportation, FAA 1997 ref. DOT/FAA/AND-97/1

<sup>2</sup> ICAO9328 8.2.6 b)

## Benefits and Features

- › High performance visibility sensor at an economical price
- › Uses established 42° scatter angle for good MOR readings in all precipitation types
- › Incorporates both dew and hood heaters for all-weather operation
- › RS232/RS485 and logic level alarm outputs
- › Simple calibration using optional calibration kit
- › Field calibratable
- › Low power - suitable for remote applications
- › Automatic fault/contamination detection
- › Sample volume clear of disturbance from the mounting and the electronics enclosure

## Operational Specifications

- › Maximum reported visibility: 32 km (approx. 20 miles)
- › Minimum reported visibility: 10 metres (33 feet)
- › Accuracy: 0-10,000 m  $\pm 10\%$   
10,000-15,000 m  $\pm 15\%$   
15,000-32,000 m  $\pm 20\%$
- › Extended operating temperature: -40 to +70°C option
- › Operating temperature: -25 to +60°C
- › Operating humidity: 0... 100%
- › Wind speed: Up to 60 m/s
- › Sensor sealing: rated to IP66

## Mechanical Specification

- › Sensor approximate weight: 3 kg (dependent upon mounting system)
- › Sensor dimensions (including mount): H447 mm x W640 mm x D246 mm
- › Mountings: Stainless steel V-bolt mounting to pole (diameter 32 mm to 52.5 mm)
- › An optical mounting pole is available to place the sample volume at 1.5 m as recommended by the WMO.

## Electrical Specification

- › Electronics supply voltage: 7-30V D.C.
- › Hood heater supply voltage: 24V D.C. or A.C.
- › Hood heater power: 2 x 30 Watts, total of 60 Watts
- › Dew heater power: 2 x 0.6 Watt, total of 1.4 Watts
- › Total unit power: <3W while sampling continuously (including dew heaters)  
NB: Lower power states can be achieved by less frequent sampling and remote control of heaters
- › Optional power supplies with battery back-up available
- › Connectors in place of flying leads are available
- › A low voltage shutdown level can be set to prevent back-up batteries being damaged.

## Interface Specification

- › Serial interface: RS232 or RS485
- › Serial data rates: 1200-115,200 bps (38,400 bps default rate)
- › Alarm Outputs: 2 x 0-5V outputs, 32 mA (max)

## Optical Specification

- › Emitter light frequency: 850 nm
- › Lens contamination circuitry monitors both the source and detector lenses for contamination/blockage at 1 sec intervals. The sensor can be configured to adjust calibration for low to moderate window contamination.
- › Light source stability control ensures stable operation through variations in temperature and with sensor ageing. Corrected at 1 sec intervals.

## Accessories

- › High grade CS120A/CS125 calibration device, wide temperature range
- › WMO compliant optical mast

We reserve the right to alter specifications without notice



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