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WHEN MEASUREMENTS MATTER

AVIATION VISIBILITY
*Visibility system for aviation application*

# Aviation Visibility System

## Visibility for aeronautical purposes calculated on-site

## Overview

The Aviation Visibility System provides accurate visibility information day and night allowing an airport of any size to provide visibility that complies with ICAO recommendations. It calculates the values required at the sensor site so that no change is required to existing AWOS or display systems. Similarly it allows an airport installing a new system to do so without requiring an AWOS processor capable of sophisticated calculations.

ICAO Annex 3 and WMO Guide to Meteorological Instruments and Methods of Observation No. 8 define visibility for aeronautical purposes (VIS-AERO) as the greater of:

a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;

b) the greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

A visibility sensor alone can only provide a) and at night or in poor visibility will not report the correct value because b) is dependent on the background luminance. This means that VIS-AERO could be underestimated.

The Aviation Visibility System uses a forward scatter visibility sensor and a background luminance sensor to collect the data required to calculate VIS-AERO in a data logger at the sensor site to provide a host AWOS or display system with the correct value irrespective of conditions. In addition it can optionally provide present weather data in the form of METAR codes.

The Aviation Visibility System is simple to use. To a host display or AWOS system it behaves as a single sensor that can be polled or send data automatically, including VIS-AERO data.

Both sensors incorporate low power dew prevention heaters and higher power anti-icing heaters for the hoods as standard. These are automatically controlled to ensure operation in all weathers or can be disabled to save power. They continuously monitor their own status and will report faults and contamination of the sensor lenses.

The system 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).

The Aviation Visibility System is ideal for:

- Integrators who install AWOS systems that do not currently support VIS-AERO.
- Airports with AWOS systems that do not support VIS-AERO.
- Airports buying simple systems needing VIS-AERO but who do not need a full AWOS system.

### Benefits and Features

- A unique self-contained solution to provide VIS-AERO to any host AWOS or display system
- Allows an AWOS to be upgraded to display VIS-AERO as specified by ICAO without the costs of adding complex algorithms
- Allows VIS-AERO to be provided at all aerodromes, whatever their size, or helicopter operating sites
- High performance at an economical price
- Visibility sensor uses established 42° scatter angle for good MOR readings in all precipitation types
- Incorporates both dew and hood heaters for all-weather operation
- Present weather option
- RS232/RS485 and logic level alarm outputs
- Low power - suitable for remote applications
- Automatic fault/contamination detection
- Visibility sensor sample volume clear of disturbance from the mounting and the electronics enclosure

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## Operational Specifications

- Maximum reported visibility: 75 km (approx. 47 miles)
- Minimum reported visibility: 10 metres (32 feet)
- Accuracy: <600 m ±8%
  600-10,000 m ±10%
  10,000-15,000 m ±15%
  15,000-75,000 m ±20%
- Resolution: 1 metre
- Operating temperature: -25 to +60°C
- Extended operating temperature: -40 to +70°C option
- Operating humidity: 0 . . . 100%
- Wind speed: Up to 60 m/s
- Sensor sealing: rated to IP66

**Present weather option**

- Present weather: Outputs 56 SYNOP present weather codes according to WMO code table 4680, associated METAR codes to WMO code table 4678 and NWS codes.

## Mechanical Specifications

- Visibility sensor approximate weight: 3 kg.
- Visibility sensor dimensions: H540 mm x W640 mm x D246 mm
- Background luminance sensor approximate weight 3 kg
- Background luminance sensor dimensions H90 mm x W180 mm x D360 mm
- Mountings: Stainless steel clips on V-bolt mounting to pole (diameter 32 mm to 52.5 mm)
- Frangible masts available to customer requirements to meet ICAO recommendations (typically placing the sample volume at 2.5 m)

## Electrical Specifications

- Voltage requirements: 90-132/180-264 V AC, auto select
- Current requirements: 2.20 A at 115 V AC, 0.83 A at 230 V AC typical
- Input frequency: 47-63 Hz
- DC power options also available
- Back-up batteries available

## Interface Specifications

- Serial interface: RS232 or RS485
- Serial data rates: 1200-115,200 bps (38,400 bps default rate)

## Optical Specifications

### Visibility

- Emitter 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.

### Background Luminance

- Field of view 6° wide with sharp cut-off
- Elevation angle 6° with hood horizontal
- Lens contamination circuitry monitors the window for contamination/blockage. It can be configured to correct for window contamination.
- Spectral response closely follows CIE curve matching the response of the human eye

## Options

- Temperature and RH probe type CS215 with RAD10 radiation shield for present weather option
- High grade CS120A/CS125 calibration device, wide temperature range
- Battery back-up
- Logging on site
- ICAO compliant frangible masts for aviation use
- Maintenance cables
- Ethernet converters and modems are available

We reserve the right to alter specifications without notice

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