



Background Luminance Sensor

High performance at an economical price

Overview

The CS140 is a high quality background luminance sensor used with CS120A, CS125 or PWS100 visibility sensors. It provides the luminance data required to assess the visibility range for lights such as runway lights or warning lights. It is also ideally suited for measuring the ambient luminance at the entrance to road tunnels.

The field of view and elevation angle follows aviation practice and the spectral response follows the CIE curve that matches the typical response of the human eye. The optics are designed so that with the sensor horizontal the field of view is elevated by 6°. This allows maximum protection from precipitation for the window.

The CS140 meets the standards of ICAO, the UK CAA and the FAA.

Serial output allows easy connection to data loggers or any other data collection or transmission system.

It is a robust instrument and is immune to damage from sunlight shining directly into the window.

The CS140 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 individually to save power.

The CS140 continuously monitors its own status and will report internal faults and contamination or blockage of the sensor window.

The CS140CAL field calibrator allows the CS140 to be calibrated on-site whatever the ambient condition.

A maintenance cable is available to allow easy on-site communication with the CS140.

Applications

- Runway Visual Range assessment
- Wind farm warning light control
- Luminance measurement in tunnels

Benefits and Features

- › High performance sensor at an economical price
- › Elevated field of view with hood horizontal to give high resistance to contamination on the window
- › Incorporates both dew and hood heaters for all-weather operation
- › RS-232/RS-485 outputs so can operate independently of a host visibility sensor for flexible, reliable operation
- › Low power - suitable for remote applications
- › Automatic window contamination detection
- › Configurable window contamination correction
- › Monitoring of internal supply voltages and temperatures
- › Type certified for Aviation use by the German Meteorological Service, Deutscher Wetterdienst (DWD)

Operational Specifications

- › Measuring range: 0-45,000 cd/m²
- › Accuracy: $\pm 0.2 \text{ cd/m}^2 < 2 \text{ cd/m}^2$, $\pm 10\% > 2 \text{ cd/m}^2$
- › Resolution: 0.1 cd/m²
- › 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
- › Response time: 1 s

Mechanical Specification

- › Sensor approximate weight: 2.4 kg (dependent upon mounting system)
- › Sensor dimensions (including mount): H 90 mm x W 180 mm x D 360 mm
- › Mountings: Stainless steel V-bolt mounting to pole (diameter 32 mm to 52.5 mm)
- › Shipping weight: 8 kg
- › Shipping dimensions (mm): 390 x 290 x 310

Electrical Specification

- › Electronics supply voltage: 9-30V D.C.
- › Hood heater supply voltage: 24V D.C. or A.C.
- › Hood heater power: 48 Watts
- › Dew heater power: 0.6 Watt
- › Total unit power: <1.5W while sampling continuously (including dew heater)
- › Optional power supplies with battery back-up available
- › A low voltage shutdown level can be set to prevent back-up batteries being damaged.

NB: Lower power states can be achieved by less frequent sampling and remote control of heaters.

Interface Specification

- › Serial interface: RS-232 (full duplex, no hardware handshaking)
RS-485 (half duplex only)
- › Serial data rates: 1200-115,200 bps (38,400 bps default rate)

Optical Specification

- › 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.

Accessories

- › Maintenance lead
- › CS140CAL - Calibrator to allow field calibration

We reserve the right to alter specifications without notice



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