CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

CS125

Present Weather and Visibility Sensor

Unrivalled Performance

Ideal For Transport Applications

Overview

The CS125 is an infrared forward scatter visibility and present weather sensor for stand-alone use or with automatic weather stations including those for road, marine and airport applications. It uses the 42° scatter angle which gives accurate estimates of Meteorological Observable Range (M.O.R.) for fog and snow. The CS125 identifies precipitation particles from their scattering properties and fall speeds, and combines this with a temperature measurement to identify the weather type.

Benefits and Features

- High-performance sensor at an economical 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 fault/contamination detection
- Sample volume clear of disturbance from mounting and electronics enclosure
- Two user configurable alarm outputs can drive audio or visual alarms using solid state relays

Technical Description

The CS125 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 CS125 has several design features. 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 position of the CS125's heads and body minimizes disturbance of the airflow at the measurement volume.

Specifications

Operational

- Maximum Reported Visibility: 75 km (~46 miles)
- Minimum Reported Visibility: 10 m (~33 ft)
- Accuracy: 2% calibration accuracy
- Resolution: 1 m (3.3 ft)
- Output: 56 SYNOP present weather codes and associated METAR and NWS present weather codes
- Precipitation Detection Sensitivity: 0.05 mm/h
- Operating Temperature Range: -25° to +60°C standard (-40° to +70°C temperature range available as a special; contact Campbell Scientific for more information)
- Operating Humidity Range: 0 to 100%
- Wind Speed: Up to 60 m s^{-1}
- Sensor Sealing: rated to IP66
- Total Unit Power: < 3 W while sampling continuously (including dew heaters)

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.

Electrical

- Electronics Supply Voltage: 7 to 30 Vdc*
- Hood Heater Supply Voltage (ac or dc): 24 (nominal), 30 V (maximum)*
- Hood Heater Power: 2 x 30 W (total of 60 W)**
- Dew Heater Power: 2 x 0.6 W (total of 1.2 W) **
- Typical Current Consumption @12 Vdc
  Continuous Sampling, Dew Heaters Active: 200 mA
  Continuous Sampling, Dew Heaters Disabled: 110 mA
  No Sampling, Dew Heaters Disabled: 21 mA
  Dew Heaters Active, RS-232 Communications: 200 mA

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)
- Alarm Outputs: two 0 to 5 V outputs, 32 mA (maximum)

Compliance Information

- View the EU Declaration of Conformity document for the 28678 Calibration Device at: www.campbellsci.com/28678

Physical

- Weight: ~3 kg (~7 lb)
- Height: 54 cm (21.3 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

** A low-voltage shutdown level can be set to prevent back-up batteries being damaged.*
***Lower power states can be achieved by less frequent sampling and remote control of heaters.*

© 2014, 2017
Campbell Scientific, Inc.
May 11, 2017