allweatherinc
Your Aviation Weather Partner

Aviation Grade Laser Ceilometer

8339 Series

Overview

The All Weather, Inc (AWI) 8339 Series of Aviation Grade laser ceilometers are designed to provide accurate cloud height, cloud layer thickness, and vertical visibility measurements. Additionally, the AWI 8339 measures four cloud layers simultaneously up to 25,000 vertical feet (7,600 meters). The AWI 8339 ceilometer's laser technology precision makes it ideal for implementation in demanding automated weather applications such as Automated Weather Observing Systems (AWOS) for meteorological research and aviation.

Designed for Aviation

The AWI 8339 Aviation Grade cloud height laser ceilometer is FAA Certified and meets the recommendations of both the International Civil Aviation Organization (ICAO) and the World Meteorological Organization (WMO). Over 2,000 AWI laser ceilometers are fielded world-wide and operationally provide safer airspace to the flying community.

Accurate and Reliable

The AWI 8339 laser ceilometer provides accurate and reliable measurement of cloud height and thickness in all weather conditions. AWI's state-of-the-art laser diode intermittent pulse rate system detects the lower cloud layer and upper cloud layer during heavy precipitation, often not detected from ceilometers with constant pulse rate emitters.

The ruggedness of the AWI 8339 laser ceilometer begins with an IP66 (NEMA 4X) stainless steel enclosure and includes all solid-state components. Harsh environments of ice, snow, and blowing dust are minimized by AWI's ceilometer design. Reliability is enhanced from the angled external lens that sheds debris, and the powerful heater/blower combination which minimizes the accumulation of snow and ice that could affect the accuracy of measurement.

Operation

The 8339 ceilometer emits a laser pulse into the atmosphere. The altitude of each cloud base and sky condition is calculated by analyzing the backscatter of the emitted laser beam, a technology known as Laser Light Detection and Ranging (LIDAR). The AWI proprietary algorithm uses the WMO recommended weighted 10-minute average to determine the base cloud height layers. Sky conditions are reported according to the WMO and FAA standards (CLR, FEW, SCT, BKN, OVC).

Calibration and self-diagnostics

Every AWI 8339 laser ceilometer is factory calibrated and tested. The factory calibration certificate is provided with every sensor. An array of self-tests verify that the sensor is operating within designed parameters. Should a fault be detected the sensor reports both visibly by colored LED lights and electronically through a coded output string. The user interface software assists restoring the sensor by identifying the fault or the corrective action required.

Serviceability

The AWI 8339 laser ceilometer is designed for in field serviceability, an MTTR of less than 30 minutes. The modular design enables easy in field repairs and reduces the need for factory recalibration. Additionally, the modular design limits the need for a large spare part inventory while minimizing the life-cycle service costs.

Meteorological Grade AWI 8340 Series

The All Weather, Inc (AWI) 8340 Series of Meteorological Grade laser ceilometers is designed to provide accurate cloud height measurement up to 40,000 vertical feet (12,200 meters). Please refer to the AWI 8340 Series data sheet for details.

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Specifications

Parameter	Specification
Measurement Performance	
Observation range	0 … 7.6 km (0 … 25 000 ft)
Backscatter profiling range	0 … 7.6 km (0 … 25 000 ft)
Reporting resolution	4 m (12 ft)
Reporting interval	30, 60 or 120 seconds or when polled
Distance measurement accuracy against a hard target	Greater of ±1 % or ±4 m (12 ft)
Laser	InGaAs diode
Wavelength	905 Nm +/- 10 nm
Pulse Width	50 ns
Operating Environment	
Temperature Range	-40 … +60 °C (-40 … +140 °F)
Humidity	0 … 100 %RH
Wind	Up to 65 m/s (145 mph) (125 kts)
Inputs and Outputs	
Power input operating voltage	100/115/230 VAC ± 10 %
Power input frequency (min/max)	45 … 65 Hz
Back-up battery	Internal,12 V, 5 Ah
Interfaces	
Data output options	RS-232/RS-485, multidrop, 2-wire
Maintenance data output	RS-232
Information	
Data messages	Cloud hits (up to 4 layers) and status information, backscatter and Sky condition
Maintenance data output	Cloud hits, status, and backscatter profile Cloud hits and internal monitoring data
Compliance	
EMC	CE EN 61326 04, EN55011, EN 61326 04, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11
Electrical safety	CE IEC/EN 61010 – 1
Eye safety	FDA Class I, 21 CFR 1040, Class 1M IEC/ EN60825-1
Mechanical Specifications	
IP rating	IP66 (NEMA 4X)
Enclosure	Stainless Steel
Mounting	Single leg pedestal; 6.35 cm (2.5 in) pipe; frangible (optional)

Ordering Information

Part #	Description
8339-F	110 VAC Ceilometer
8339-G	220 VAC Ceilometer
83396-00	115 VAC Heater/Blower
83397-00	230 VAC Heater Blower
83395-00	Battery Back-up Kit
M491742-00	Data Port Cable
M028181-00	Desicant
M491763-01	Service/Programming Cable
M488318-00	Galvinized Pipe Kit

Dimensions & Weights

Dimensions	
Measurement unit (H X D X W)	48 cm x 22cm x 40 cm (19 in x 9 in x 16 in)
Height with shield	2.7 m (6 ft)
Total	68 cm x 50 cm x 40 cm (27 in x 20 in x 16 in)
Weight	
Measurement unit	18 kg (40 lb)
Shield and blower	9 kg (20 lb)
Total	27 kg (60 lb)
Transport Container	
Container Size	660 × 610 × 381 mm (26 × 24 × 15 in)
Container Weight	27.2 kg (60 lb)