

WEATHER

Ceilometers

Model 8339 Series



Overview

The ADB Safegate 8339 Series of Aviation Grade laser ceilometers is designed to provide accurate cloud height, cloud layer thickness, and vertical visibility measurements. Additionally, the 8339 measures four cloud layers simultaneously up to 25,000 vertical feet (7,600 meters). The 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 8339 Aviation Grade 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 8339 laser ceilometers are fielded world-wide and operationally provide safer airspace to the flying community.

Accurate and Reliable

The 8339 laser ceilometer provides accurate and reliable measurement of cloud height and thickness in all weather conditions. The 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 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 the 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 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 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 lifecycle service costs.

Ceilometers

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
Cloud Layers	up to four, base and depth
Distance Measurement Accuracy (against hard target)	Greater of $\pm 1\%$ or ± 4 m (12 ft)
Laser	Pulsed InGaAs diode
Wavelength	905 nm \pm 10 nm
Pulse Width	50 ns
Operating Environment	
Temperature Range	-40°C to +60°C (-40°F to +140°F)
Humidity	0 to 100% RH
Wind	Up to 65 m/s (145 mph) (125 kts)
Power Requirements	
Input Power	100–240 VAC \pm 10 %, 45–65 Hz, 100 W With Optional Heater/Blower 600 W
Backup Battery	Internal, 12 V, 5 A·h
Serial Ports	
Data Output	RS-232, RS-485
Maintenance Port	RS-232
Serial Parameters	300, 1200, 4800, or 9600 bps, 8-N-1
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	
IP Rating	IP66 (NEMA 4X)
Ceilometer Enclosure	Stainless Steel
Heater/Blower Enclosure	Aluminum
Mounting	Unistrut mounted on single- leg pedestal; 2½" pipe

Ordering Information

8339-F	100–120 VAC Ceilometer
8339-G	200–240 VAC Ceilometer
83396-00	115 VAC Heater/Blower
83397-00	230 VAC Heater/Blower
83395-00	Battery Backup Kit
M491742-00	Data Port Cable
M491745-01	50 ft Ceilometer Power Cable
M491762-02	Heater/Blower Data and Power Cable
M491763-01	Service Port/Programming Cable
M028181-00	Desiccant
M488318-00	Galvanized Pipe Mounting Kit

Dimensions & Weights

Dimensions	Ceilometer	48 cm H x 40 cm W x 22 cm D (19" x 16" x 9")
	w/ Heater/Blower	67 cm H x 51 cm W x 41 cm D (27" x 20" x 16")
Weight	Ceilometer	24 kg (53 lb)
	Heater/Blower	27.2 kg (60 lb)
Container	Size	66 cm x 61 cm x 38 cm (26" x 24" x 15")
	Weight	27.2 kg (60 lb)