



Laser Ceilometer Model 8340

Overview

The 8340 Laser Ceilometer measures cloud height and thickness, in addition to vertical visibility, detecting up to four cloud layers simultaneously to a distance of 40,000 vertical feet. Its precision makes it ideal for applications requiring the highest in performance and reliability, such as aviation and meteorological studies.

A laser pulse is emitted into the atmosphere and backscatter analyzed. Using the speed of light, the altitude of each cloud base and top is determined. Due to poorly defined borders or a sparse composition, some clouds are much more difficult to measure than others. Depending on the current and historical sky conditions, an adaptive algorithm determines the number of returns needed to maintain accuracy.

Accuracy by Design

Accurate measurement of cloud height and thickness in all weather conditions, including heavy precipitation and low clouds, can cause serious errors in other ceilometers. Proprietary algorithms and digital techniques from 20 years of cloud detection research and manufacturing are applied, allowing the 8340 ceilometer to provide accurate information even in difficult circumstances.

Long Life

Sensing circuits and optimization algorithms control the pulse frequency, output power and temperature of the laser itself in order to dramatically extend its life.



- Measures up to 40,000 feet
- Reports up to 4 separate cloud layers
- 20 years of cloud detection research and ceilometer manufacturing guarantees accurate measurement in all weather conditions, including heavy precipitation and low clouds
- Adaptive control for long laser life
- Extensive self-diagnostics and fault analysis insures 30 minute max. repair time
- Designed by our customers for optimum serviceability

Extensive Self-diagnostics

An array of self-tests executed in the background during operation detects faults and reports them, along with identifying the replaceable module associated with the fault. Errors are reported both visibly in the sensor and electronically through the output string.

Designed by Our Customers

Quickly diagnosing a failed module is only one part of quickly restoring operational readiness. The serviceability design of the 8340 was influenced by our customers. Using their input to engineer the package and configuration of “Line Replacement Units,” repair can be accomplished in 30 minutes or less.

In addition, the 8340 is enclosed in a NEMA 4X stainless steel package that will stand up to the harshest environmental conditions thrown at it. From corrosive marine air to blowing desert sand, the 8340 is designed to last.

Solid Reputation

Over the years, AWI has developed a reputation for accuracy and reliability and is the preferred development partner of the FAA. In addition to supplying over 1,800 ASOS, AWOS, and AWSS systems to the FAA, NWS, and Department of Defense, our solutions also meet the stringent requirements of international standards organizations around the world, including the ICAO, WMO, and Transport Canada.

SENSORS

Specifications

Performance

Measurement range	to 40,000 ft.
Resolution	12.5 ft.
Accuracy	±20 ft. over full range
Cloud layers	up to four, base and depth
Measurement cycle	configurable to 30, 60, or 120 second sampling/reporting interval; can be set to automatically switch to 180 second interval when no clouds are detected

Principle of Operation

LIDAR	pulsed diode, InGaAs
Wavelength	905 nm ±10 nm
Pulse width	50 ns
Collector type	Si Avalanche Photodiode, variable gain, temperature compensated
Optics	side-by-side optical channels

Safety

Laser safety	FDA Class I, 21 CFR1040
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Electrical

Power	95-240 VAC
Frequency	47-64 Hz
Power consumption	
Electronics	100 W max.
Heaters/Blower (optional)	600 W max.
Battery backup (optional)	ceilometer electronics only, built-in charger

Mechanical

Dimensions	
Ceilometer	19" H x 9" D x 16" W
with Heater/Blower	27" H x 20" D x 16" W
Weight	
Ceilometer	43 lbs. (19.5 kg)
Heater/Blower	18 lbs. (8 kg)
Mounting	single leg pedestal; 2½" pipe, unistrut mounted

Environmental

Operating	-40° C to +60° C
Storage	-50° C to +70° C
Relative humidity	0-100%, condensing
Enclosure	
Ceilometer	NEMA 4X stainless steel
Heater/Blower	aluminum

Communication

RS-232	cloud detection, vertical visibility, sky condition algorithm, system status
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CE Complies with applicable CE directives.

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Ordering Information

8340-F	Laser Ceilometer, 40,000 ft, 110 VAC
83391-00	Heater/Blower, 115 VAC
8340-G	Laser Ceilometer, 40,000 ft., 220 VAC
83392-00	Heater/Blower, 230 VAc
83395-00	Battery Backup Kit
M491762-00	Service Port Cable
M028181-00	Desiccant



allweatherinc

All Weather, Inc.

1165 National Drive
Sacramento, CA 95834

Phone: 916 928-1000

USA Toll Free: 800 824-5873

Fax: 916 928-1165

www.allweatherinc.com