

SkyVueTMPRO

LIDAR Ceilometer

10 km Ceiling LIDAR Ceilometer

Cloud measurement with advanced signal processing



Overview

The SkyVueTMPRO LIDAR Ceilometer measures cloud height and vertical visibility for meteorological and aviation applications and is ideal for long-term research applications where a high level of detail is required.

Its robust construction is ideal for long-term installation, as it requires minimal maintenance and features a unique stratocumulus calibration procedure, allowing the ceilometer to be calibrated in the field.

The SkyVue PRO complies with Civil Aviation Authority (CAA), World Meteorological Organization (WMO), and International Civil Aviation Organization (ICAO) guidance and meets or exceeds all recommendations and specifications, including CAP 437, CAP 670, and CAP 746.

With an operational reporting range of 10 km, the SkyVue PRO is easy to use yet boasts advanced signal processing and unique optical arrangements to provide superior resolution and performance.

The SkyVue PRO has many standard features—from a tilting base and two-axis inclinometer for automatic correction of cloud heights to heaters, blowers, and a sun filter for operation under all conditions—making deployments possible around the world.

Unique standard features include an easy-to-operate stratocumulus calibration, long-life back-up battery, and twin clocks to augment its many continuous diagnostic self-checks and provide assurance of continuous, reliable, and accurate performance.

Learn more about our [CampbellAeroTM Automated Weather Observing System \(AWOS\) Solution](#) and our [CampbellAero Software](#).

Benefits and Features

- Single-lens design for high signal-to-noise ratio and maximized detector sensitivity, resulting in greater performance at low and high altitudes
- High performance and high specification at a competitive price
- Tilt angles to 24 degrees, improving performance during precipitation events and reducing impact of solar glare
- Unique continuous comparison of two separate internal quartz clocks to ensure measurement confidence
- Mixing layer height assessment option for air-quality applications
- User-friendly stratocumulus calibration capability and easy test with a calibrator plate provided as standard for easy field calibration



Detailed Description

The SkyVue PRO LIDAR ceilometer measures cloud height and vertical visibility for meteorological and aviation applications or long-term research applications where a high level of detail is required. Using LIDAR (Light Detection And Ranging) technology, the instrument transmits fast, low-power laser pulses into the atmosphere and detects backscattered returns from clouds and aerosols above the instrument.

A unique, efficient single-lens design increases optical signal-to-noise ratio and allows for larger optics in a compact package, improving accuracy and measurement performance. The optics are immune to damage from direct sunlight.

This approach, along with state-of-the-art electronics, provides a powerful and stable platform from which to measure cloud height and vertical visibility to high accuracy. The SkyVue PRO measures the atmosphere with high stability and repeatability, delivering excellent performance in even the harshest of conditions.

The SkyVue PRO provides information on cloud height, sky condition (up to five layers), vertical visibility, and raw backscatter profiles to a range of 10 km.

An automated mixing layer height (MLH) option is available for air-quality applications. MLH is an important parameter in modeling air quality and air pollution episodes. The MLH is determined based on the operational algorithm used by KNMI, which detects the top of boundary layers.

The algorithm runs within the SkyVue PRO itself, and the results are incorporated in data messages, making it easy to incorporate the MLH into whatever systems are already in use without the need to run external special software. If you require the MLH option, please contact us.

The unique stratocumulus calibration capability, which allows users to calibrate measurements of scatter coefficients, uses a simple and user-friendly field method, giving complete confidence in the scatter profiles reported and removes the requirement to have the unit sent back for calibration.

Reliable range measurement is further assured by cross-checking two separate internal quartz clocks, eliminating the possibility of unidentified errors due to clock drift.

The SkyVue PRO can be tilted at various angles up to 24 degrees. A small tilt is important, as it allows the ceilometer to resist high levels of reflection from large raindrops and frozen particles that can impair vertical-type sensors. The tilt also improves rain run-off on the ceilometer window, resulting in a much higher performance compared with vertical ceilometers.

Tilting to 24 degrees also means that it can be operated anywhere in the world without the sun shining into the lens and resulting in missing data. An internal two-axis inclinometer provides automatic correction of cloud height at all angles, ensuring ease of installation and confidence that cloud heights are automatically corrected throughout the lifetime of the installation.

Specifications

| | |
|----------------------------|--|
| Dimensions | 100 x 32.7 x 28.1 cm (39.4 x 12.9 x 11.1 in.) including base |
| Shipping Dimensions | 120 x 45.0 x 45.0 cm (47.2 x 17.7 x 17.7 in.) |
| Weight | 32 kg (71 lb) without cables |
| Shipping Weight | 58 kg (127.9 lb) |

Instrument Performance

| | |
|-------------------------------------|-----------------------------|
| Reporting Range | 0 to 10 km (0 to 33,000 ft) |
| Minimum Reporting Resolution | 5 m (16.4 ft) |

| | |
|-----------------------------------|---|
| Hard Target Range Accuracy | ±0.25%, ±4.6 m (15.1 ft) |
| Reporting Cycle | 2 to 600 s |
| Cloud Layers Reported | Up to four layers |
| Sky Condition | Up to five layers with cover in oktas according to WMO requirements for SYNOP and METAR codes as standard |
| Vertical Visibility | Reported when no clouds selected |
| Laser Wavelength | 912 nm (±5 nm) |
| Eye Safety Standard | Class 1M |



Specifications

Electrical Specification

| | |
|------------------------------|--|
| Power Source | 115, 230 Vac $\pm 10\%$, 50 to 60 Hz, 470 W maximum |
| Battery | Internal 12 Vdc, 2 Ah battery backup Provides 2 h measurement, without blower/heater, in the event of mains failure |
| Interfaces | <ul style="list-style-type: none">■ Data - RS-232/RS-422/RS-485/Ethernet■ Maintenance - USB 2.0 (USB 1.1 compatible)■ Baud Rate - 300 to 115,200 bps |
| Laser Safety Compliance | EN 60825-1:2001 |
| Electrical Safety Compliance | EN 61010-1 |

Environmental Specification

| | |
|--------------------|--|
| Temperature Range | <ul style="list-style-type: none">■ -40° to $+60^{\circ}\text{C}$ (-40° to $+140^{\circ}\text{F}$) excluding battery■ -20° to $+50^{\circ}\text{C}$ (-4° to $+122^{\circ}\text{F}$) with standard battery |
| Humidity Range | 0 to 100% RH |
| Maximum Wind Speed | 55 m/s (123 mph) |
| IP Rating | IP66 (NEMA 4x) |

