



SkyVUE™PRO 10 km Ceiling LIDAR Ceilometer

Cloud measurement with
advanced signal processing

Overview

The SkyVUE™PRO 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 installations 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 CAA, WMO and ICAO guidance and meets or exceeds all recommendations and specifications, including CAP437, CAP670, and CAP746.

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 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, to provide assurance of continuous, reliable and accurate performance.

Benefits and Features

- › Single lens design for high signal-to-noise ratio, maximized detector sensitivity, resulting in greater performance at low and high altitudes
- › Operational range of 10 km
- › High performance and high specification at a competitive price
- › Tilt angles to 24°, improving performance during precipitation events and reducing impact of solar glare
- › Three year extended warranty available on this product
- › 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, means the unit can be easily field calibrated

Technical 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 back-scattered returns from clouds and aerosols above the instrument.

A unique, efficient single lens design increases optical signal-to-noise ratio 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 modelling 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 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°. 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° also means that it can be operated anywhere in the world without the sun shining into the lens resulting in missing data. An internal 2-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

Instrument Performance

- › Reporting range: 0-10 km (32,800 ft)
- › Minimum reporting resolution: 5 m (15 ft)
- › Hard target range accuracy: $\pm 0.25\% \pm 4.6$ m
- › Reporting cycle: 2 to 600s
- › 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

Electrical Specification

- › Power: 110, 115, 230 Vac $\pm 10\%$, 50 to 60 Hz, 470 W maximum
- › Battery: Internal 12 Vdc, 2Ah battery back-up
Provides 2 h measurement, without blower/heater, in the event of mains failure.
- › Interfaces:
 - Data - RS-232 / RS-422 / RS-485 / Ethernet
 - Maintenance - USB 2.0 (USB 1.1 compatible)
 - Baud rate - 300 - 115200 bps
- › Laser safety compliance: EN60825-1:2001
- › Electrical safety compliance: N61010-1

Mechanical Specification

- › 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 x 45 cm (47.2 x 17.7 x 17.7 in)
- › Weight: 32 kg (71 lb) without cables
- › Shipping weight: 58 kg (127.9 lb)

Environmental Specification

- › Temperature range: -40°C to +60°C (-40°F to +140°F) excluding battery
-20°C to +50°C (-4° to +122°F) with standard battery
- › Humidity range: 0 - 100% RH
- › Maximum wind speed: 55 m/s
- › IP rating: IP66 (NEMA 4x)

