

Ceilometer CL51 for boundary layer measurements

Product Spotlight

Real-time, accurate boundary layer detection for precise air quality monitoring and forecasting

Vaisala Ceilometer CL51 captures detailed data on boundary layers and cloud heights, even in adverse weather conditions, providing the insights needed for effective air quality management.

Providing full-range detailed backscatter profiles up to 15 km, CL51 produces crucial data for advanced atmospheric analysis of how pollutants disperse and transform in the atmosphere. Its user-friendly design and robust measurement capabilities make it ideal for atmospheric research and environmental monitoring.



Key benefits

Outstanding performance, especially in low clouds, low inversion layers, precipitation and fog

Reliable pulsed diode lidar operation with long life expectancy

Accurate, detailed full backscatter profiling in all weather

Fast and accurate boundary layer height measurement

Convenient visualizations and actionable insights

Simplified installation with complete, preconfigured delivery

Easy upgrades with compatibility to existing Vaisala ceilometer foundations

Why Vaisala?

As the global leader in weather and environmental measurements, Vaisala empowers businesses and community leaders to build resilience to climate change and extreme weather events. Our nearly 90 years of expertise is grounded in science, innovation and our unwavering commitment to constantly evolving.

We boldly demonstrate that a culture of resilience and a connection to nature can create new ways of smarter, resilient living. We are champions for smarter, safer and more sustainable urban communities.

Advanced measurement capabilities

CL51 provides continuous and automatic monitoring of boundary layer structure, including boundary layer depth and residual structures. It accurately determines mixing layer height (MLH), an essential factor in air quality forecasting. The instrument delivers precise real-time assessments of vertical dilution, emission travel, and density, as well as monitoring pollutant spread under a wide range of conditions.

CL51 analyzes boundary layer structures and pollutant spread in all weather. Its single-lens design offers accurate near-ground measurements, enhancing performance in low clouds and fog. Rapid real-time processing of boundary layer height improves atmospheric monitoring and forecasting. Vaisala BL-View software provides clear visualizations and actionable insights.

Robust performance and ease of use

Designed for continuous, unattended operation, CL51 features a robust design with a shield, blower and heater to maintain optimal performance in harsh weather. Reliable solar protection with optical filters and pulsed diode lidar technology deliver consistent performance and a long operational life.

CL51 is designed for easy use and seamless integration. It offers continuous self-diagnostics to monitor instrument status and ensure reliability. The unit arrives preconfigured for quick setup and is compatible with older Vaisala ceilometers for easy upgrades.

Applications

- Reliable cloud detection: From low-level clouds to high-level cirrus clouds
- Situational awareness: Provides cloud height and sky condition data for numerical weather prediction models
- Vertical profiling: Offers a comprehensive understanding of the atmosphere up to 15 km
- Aerosol layer reporting: Monitors the vertical extent of aerosol layers for reliable air quality forecasting
- Boundary layer monitoring: Automatically monitors boundary layer structures and verifies numerical weather forecasting and dispersion models
- Air quality data support: Enhances air quality data processing systems to study the interaction between pollutants and meteorological factors

