

CL31 Ceilometer for Cloud Height Detection



Vaisala Ceilometer CL31 measures cloud base height and vertical visibility in all weather – good or bad.

Features/Benefits

- Measurement range from 0 to 7.5 km (from 0 to 25,000 feet)
- Second generation of advanced single lens optics provides excellent performance also at low altitudes
- Reliable operation in all weather: unsurpassed performance in vertical visibility and cloud detection during precipitation
- Fast measurement enables detection of thin cloud layers below a solid cloud base
- Modular design for easy installation and maintenance
- Extensive self diagnostics with fault analysis
- Latest technology from the world-leading manufacturer – based on the experience from more than 5,000 installed Vaisala ceilometers worldwide

The Vaisala Ceilometer CL31 is a compact and lightweight instrument for cloud base height and vertical visibility measurements. It is able to detect three cloud layers simultaneously. The CL31 is ideal for aviation as well as meteorological applications where reliable detection of clouds is essential.

The CL31 employs a pulsed diode laser LIDAR (light detection and ranging) technology, where short, powerful laser pulses are sent out in a vertical or near-vertical direction. The reflection of light (backscatter) caused by clouds, precipitation or other obscuration is analyzed and used to determine the cloud base height.

Measurement starts from ground level

The enhanced single lens technology applied in the CL31 ensures excellent performance starting at a height of virtually zero. This is due to the strong and stable signal over the whole measurement range. The single lens

technology provides unsurpassed reliability during precipitation, low clouds and ground based obscurations, which are the most critical phenomena in aviation safety.

Fast measurement

The CL31 measurement cycle can be adjusted between 2 and 120 seconds, which gives flexibility for different applications. In addition, fast measurement helps to detect thin cloud patches below a solid cloud base. The CL31 provides a full backscatter profile for data visualization and research purposes.

Extensive self-diagnostics

The CL31 is fully automatic. In addition to cloud height data the messages contain instrument status information based on comprehensive self-diagnostic routines. In case of a malfunction the diagnostics help the user to identify the failed module. The CL31 features practical modularity and its easy-access

door ensures fast servicing and high data availability.

Easy installation and maintenance

The radiation shield provides better window protection during precipitation. In extreme temperatures it protects against excessive heat or cooling.

The CL31 beam can be directed either vertically or tilted. The tilting option together with the novel optics design provides enhanced performance during precipitation by improving the protection given by the shield. In the measurement unit, a tilt angle sensor automatically corrects the measured cloud distance reading to vertical cloud base height.

The automatic window blower with heater improves performance by keeping the window clean and dry. In cold conditions heating prevents frost generation on the window.

Technical Data

Performance

| | |
|-------------------------------|-----------------------------------|
| Measurement range | 0 ... 25,000 ft (7.5 km) |
| Measurement cycle | programmable, 2...120 s |
| Reporting resolution | 5m / 10 ft, units selectable |
| Distance measurement accuracy | |
| against a hard target | greater of $\pm 1\%$ or ± 5 m |
| Laser | InGaAs diode, 910 nm |
| Eye safety | Class 1M IEC/EN 60825-1 |

Electrical

| | |
|---------------------------|---|
| Power (*) | 100 / 115 / 230VAC $\pm 10\%$, 50...60 Hz max. 310 W including heating |
| Interfaces | |
| Data | RS232 / RS485 / Modem |
| Maintenance | RS232 |
| Bits per second | |
| RS232 / RS485 | 300...57,600 |
| Modem V.21, V.22, V.22bis | 300...2400 |
| Back-up battery | Internal, 2 Ah |

Data messages

| |
|--|
| Cloud hits (up to 3 layers) and status information |
| Cloud hits, status and backscatter profile |
| Cloud hits and internal monitoring data |
| Emulation of CT12K, CT25K, LD-25/40 |

Mechanical

| | |
|--|------------------------|
| Dimensions | |
| Total | 1190 x 335 x 325 mm |
| Measurement unit | 620 x 235 x 200 mm |
| Weight | |
| Total | 31 kg |
| Measurement unit | 12 kg |
| Tilt positions | Vertical or 12° tilted |
| Automatic window blower / heater | |
| Radiation shield and pedestal | |
| Service access through a door | |
| Optical filters for protection against direct sunlight | |

Environmental

| | |
|------------------------|---|
| Temperature range | -40 ... +60 °C (-40...+140 °F) |
| Humidity | 0 ... 100 % RH |
| Wind | 55 m/s |
| Housing classification | IP65 (NEMA 4) |
| Vibration | Lloyds Register / IEC60068-2-6 5...13.2 Hz ± 1.0 mm 13.2...100 Hz ± 0.79 mm |
| EMC | IEC/EN 61326 |
| Electrical Safety | IEC/EN 60950 |

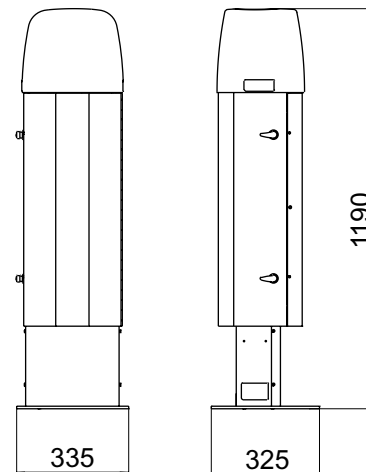
Accessories / options (*)

| |
|--|
| Cable termination box Termbox-1200 with extra transient protection |
| PC maintenance cable QMZ101 |
| Shock absorbing mounting pad CT35022 for ship installations |
| Modem module DMX501 |
| Attachment mechanics for radio modem antenna CLRADIOKIT |

(* Please specify power and optional accessories when ordering.)

Dimensions

Dimensions in mm.



Specifications subject to change without prior notice.
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