



Vaisala LD-40 Ceilometer Cloud Height Measurement up to High Cirrus

- **13,000 m (43,000 ft) measurement range**
- **Cirrus cloud detection at high altitude**
- **Sophisticated algorithms for cloud detection**
- **No need for field adjustments**
- **Modular design: subassemblies are easily replaced in the field without optical realignment**

The Vaisala LD-40 "Tropopause" is a compact, long-range ceilometer for cloud detection and atmospheric profiling. Operating up to to an altitude of 43,000 feet (13 km), the vertical resolution of the instrument is 25 feet (7.5 m). The measurement principle is based on LIDAR (Light Detection and Ranging). Short pulses of light are emitted by a laser diode, focused to a parallel beam, and then transmitted vertically into the atmosphere. Part of the light is scattered back to the ceilometer from the aerosols in the atmosphere.

HIGH PERFORMANCE UNDER ALL KINDS OF PRECIPITATION

Using the backscatter signal, the LD-40 calculates cloud height, the maximum detection range, vertical visibility, and provides precipitation status. The standard report includes height values for up to 3 cloud layers. The long measurement range allows cirrus clouds to be detected at high altitude. Sophisticated algorithms are employed to ensure reliable cloud detection under all kinds of precipitation. When a cloud base cannot be distinguished during weather conditions associated with very low visibility, vertical visibility is still reported. The LD-40's ability to report raw data also makes it a valuable tool for atmospheric research.



MINIMAL MAINTENANCE WHATEVER THE CLIMATE

The LD-40 operates unattended under all climatic conditions. Internal monitoring ensures reliable operation: messages are automatically transmitted containing information on internal diagnostics. The LD-40 can be operated as a stand-alone instrument or as part of a large meteorological system. Its design is modular: subassemblies such as the laser transmitter are easily replaced in the field without optical realignment.

TECHNICAL INFORMATION

PERFORMANCE

Measurement range	25 ft to 43,000 ft (8 m to 13,000 m)
Resolution	25 ft (8 m)
Accuracy (solid target)	± 25 ft (8 m)
Measurement cycle	15 seconds
Laser	Stacked diode, InGaAs (MOCVD)
Wavelength	855 nm
Eye safety	Class 3A (EN60825-1)
Output	Height of cloud base, up to 3 layers Maximum range of detection Vertical visibility Backscatter profile Instrument status information

ELECTRICAL

Power supply	230 / 115 VAC +10% -15%
Power consumption	700 W max. including heating
I/O connections	Data line: RS232/RS422/RS485/modem Maintenance line: RS232

MECHANICAL

Dimensions	1260 (h) x 444 (w) x 404 (d)
Weight	40 kg

ENVIRONMENTAL

Operating temperature	-40 to 55 °C
Operating humidity	up to 100 % RH
Wind	55 m/s
Electrical safety	EN 60 950

ACCESSORIES

Cloud Height Simulator for operational testing in field conditions
Solar shutter for protecting against direct solar radiation
Service tool set

Power, data line and accessories are to be specified when ordering