

ceilometer

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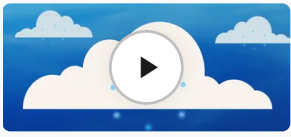

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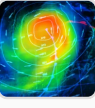
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Science & Tech

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Article History

ceilometer

device for measuring the height of cloud bases and overall cloud thickness. One important use of the ceilometer is to determine cloud ceilings at airports. The device works day or night by shining an intense beam of light (often produced by an infrared or ultraviolet transmitter or a laser), modulated at an audio frequency, at overhead clouds. Reflections of this light from the base of the clouds are detected by a photocell in the receiver of the ceilometer. There are two basic types of ceilometers: the scanning receiver and the rotating transmitter.


The scanning-receiver ceilometer has its separate light transmitter fixed to direct its beam vertically. The receiver is stationed a known distance away. The parabolic collector of the receiver continuously scans up and down the vertical beam, searching for the point where the light intersects a cloud base. When a reflection is detected, the ceilometer measures the vertical angle to the spot; a simple trigonometric calculation then yields the height of the cloud ceiling. Many modern scanning-receiver ceilometers use a laser pulse to identify the height of a cloud's base and top and various points in between to create a vertical profile of the cloud.

Britannica Quiz

April Showers to March's Lions and Lambs

The rotating-transmitter ceilometer has its separate receiver fixed to direct reflections only from directly overhead while the transmitter sweeps the sky. When the modulated beam intersects a cloud base directly over the receiver, light is reflected downward and detected.

This article was most recently revised and updated by John P. Rafferty.



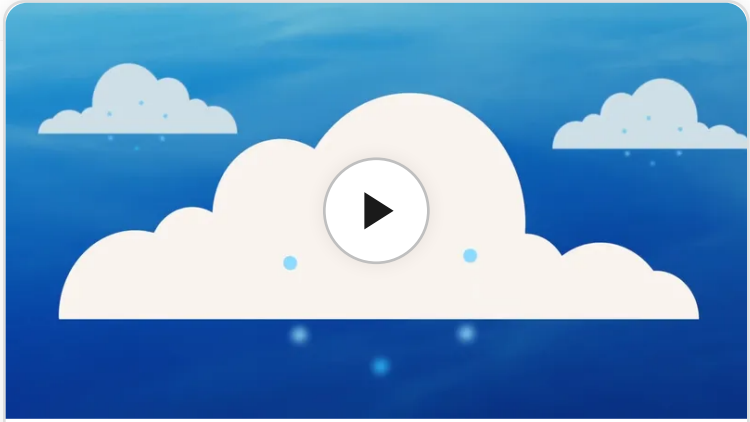
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Also known as: micrometer caliper


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Article History

micrometer

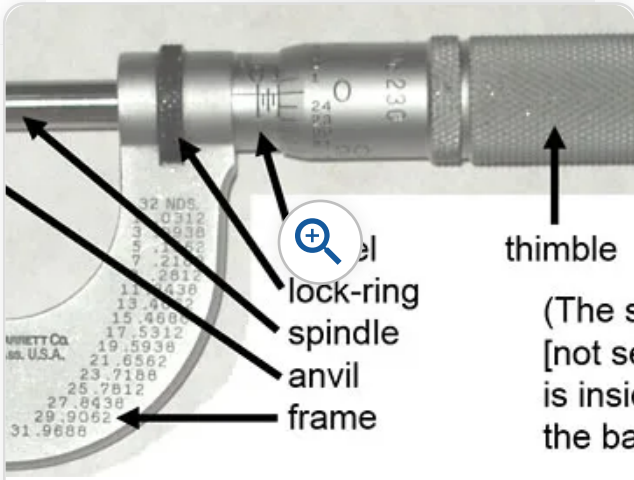
instrument for making precise linear measurements of dimensions such as diameters, thicknesses, and lengths of solid bodies; it consists of a C-shaped frame with a movable jaw operated by an integral screw. The fineness of the measurement that can be made depends on the lead of the screw—i.e., the amount the spindle moves toward or away from the anvil in one revolution and the means provided for indicating fractional parts of a revolution. The accuracy of the measurements depends on the accuracy of the screw-nut combination.

Although the prefix micro indicates one-millionth, the corresponding length of 0.000001 metre is known as a micron. See angstrom.

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Fun Facts of Measurement & Math

This article was most recently revised and updated by Amy Tikkanen.



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