



M. F. Gilmullin, "The Telescopic Alidade," *Mathematics with Mansur*, Oct. 8, 2024. [Online]. Available: <https://history-math.org/publications/hm-tt-6454aed1130d-en/>.

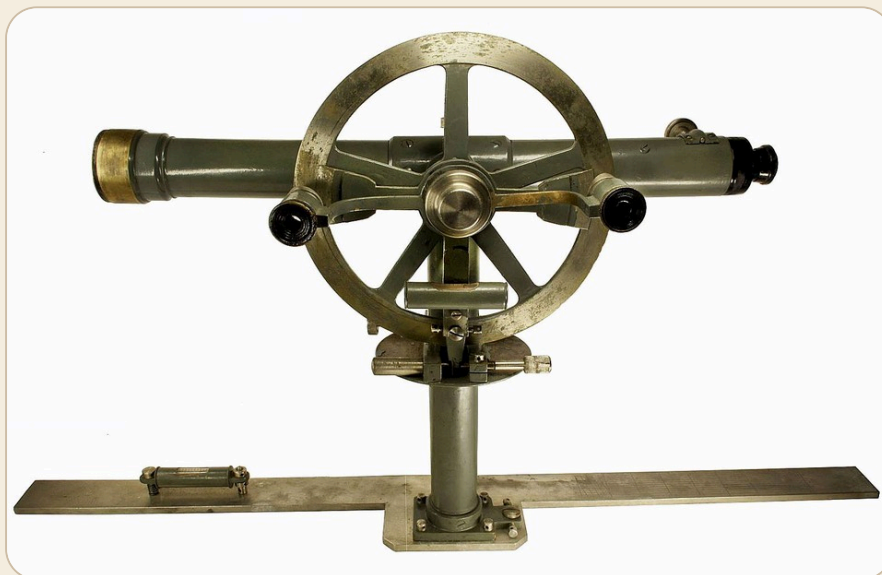
INSTRUMENT

The Telescopic Alidade

The telescopic alidade measures height differences, distances and vertical angles and plots survey directions on a plane table.

Mansur Gilmullin · 08.10.2024 · EN

[Read this article on the journal website](#)



KB alidade (1943), manufactured by the Geofizika factory · [Source](#)

The telescopic alidade (German kippregel, from kippen, “to tip”, and regel, “rule”) is a mechanical or optical surveying instrument for measuring differences in elevation, distances and vertical angles, and for constructing directions graphically and plotting them on a terrain plan.



Shiryayev KVSh-8 height-measuring alidade (1970) · [Source](#)

The alidade forms part of a plane-table surveying set — the plane table being a drawing table used in the field — for topographic surveys. An alidade usually includes:

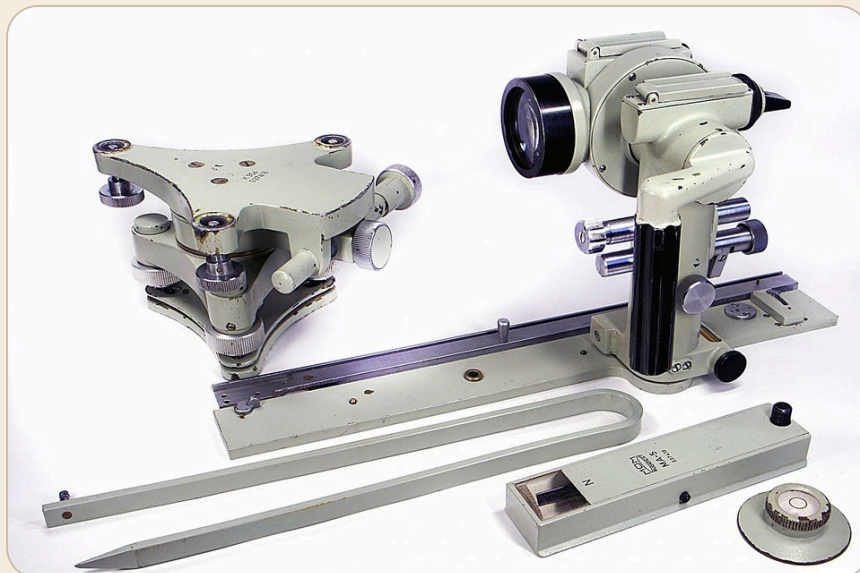
- a supporting column;
- a telescope with stadia hairs, or a sight;
- a vertical circle, graduated in degrees, for determining angles of inclination;
- a tubular spirit level used for levelling;
- a graduated rule for plotting survey points on the plane-table board.



KA-2 automatic alidade (1973) on a plane table · [Source](#)

The alidade is used to sight survey points. The stadia hairs give the distance to a point. Its difference in elevation is determined from the vertical angle and distance. The rule is used to plot the line towards the point and its distance on the board.

Plane-table surveying with an alidade is used, for example, in railway surveys to prepare plans of bridge crossings and difficult terrain.



MOM MA-5 alidade (1970, Hungary) · [Source](#)

In our country, a nomographic alidade was also mass-produced in two versions from 1976 onwards.



KN nomographic alidade (1986) · [Source](#)

Further reading

1. Great Soviet Encyclopedia. Vol. 12 / Chief editor A. M. Prokhorov. — Moscow: Sovetskaya Entsiklopediya, 1970–1978.
2. Zakharov, A. I. Surveying Instruments: A Handbook. — Moscow: Nedra, 1989. — 314 pp.
3. Znamensky, M. A. Measurement Work in the Field. — Moscow: Uchpedgiz, 1960. — 192 pp.
4. Prochukhaev, V. G. Measurement in the Secondary-School Mathematics Course. — Moscow: Prosveshcheniye, 1965. — 140 pp.