

## Multipurpose digital measuring station KVVN-7 for electromagnetic monitoring of seismoactive zones

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**Abstract.** The portable high-sensitivity measuring station KVVN-7 is designed for frequency soundings with controlled and natural fields in one cycle. Registration of signals is performed with seven channels (three magnetic and four electric) in a wide spectrum of frequencies (0.1–2000 Hz). Noise suppression is implemented at the edges of frequency range and on upper harmonics of industrial frequency (to 9th harmonic). The system of protecting filters and filters of mirror frequencies on resistors with low temperature factor of resistance (less than  $25 \cdot 10^{-6} \text{ }^\circ\text{C}^{-1}$ ) and capacitors with low temperature factor of capacity ( $\pm 30 \cdot 10^{-6} \text{ }^\circ\text{C}^{-1}$ ) is created. Station KVVN-7 application allows high resolution investigation of electrical conductivity and fluid regime of the top part of the Earth's crust both for solving geological problems and electromagnetic monitoring in a complex with seismic methods. An example of practical application of station KVVN-7 on a profile Lovozero-Pulozero (Kola peninsula) is presented. High efficiency of station is shown at the study of fluid containing conductive layer of dilatancy-diffusion nature ("DD layer") in the top part of the Earth's crust. The further improvement of station KVVN-7 is aimed at creation of completely automated system of registration with data recording on the built in data carrier (flash-memory). Besides, it is supposed to use the built in ADC of 24-bit on each channel for expansion of a dynamic range of station.

**Keywords:** digital measuring station, frequency range 0.1–2000 Hz, intrinsic noises, natural and controlled fields, electromagnetic monitoring, dilatancy-diffusional layer, earthquakes prediction.