Choice of scheme for field precision thermostat

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Abstract. Matching conditions for temperature of thermostat heater and sensor are determined. The results of theoretical analysis and comparative evaluation of the three thermostat schemes for field geophysical equipment are described. It is shown that the two of them are able to ensure thermal stability with an uncertainty of less than 0.010 °C under external temperature changes of a few dozens degrees. It was experimentally demonstrated that "hybrid" option of the two-step thermostat keeps thermal stability with an uncertainty of approximately 0.002 °C under external temperature changes of 10 °C.

Keywords: integral temperature, scheme of automatic control, error rate, temperature stabilization factor, twostep thermostat.