

EVALUATION OF TEMPERATURE MEASUREMENT INSTRUMENTS CONFORMITY TO THE TECHNICAL REGULATION ON MEASURING INSTRUMENTS

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Purpose The purpose of this article is to review the test program for a temperature sensor pair that are part of heat meters.

Results of work Heat meters are in the field of legally regulated metrology, since their measurement results are used in calculations between consumers and suppliers of heat for heating and hot water. As legally regulated measuring instruments, heat meters are allowed to be used subject to their conformity with the Technical Regulation on measuring instruments approved by the decision of The Cabinet of Ministers of Ukraine of 24 February 2016 No. 163. To confirm conformity with The Technical Regulation, a temperature sensor pair as part of a heat meter is subjected to a number of tests: definition the basic error, the qualifying immersion depth, the time of thermal response time and testing of the influence of pockets.

A feature of temperature sensors as part of a heat meter is that not the error of each sensor is normalized for them, but the error of a sensor pair when measuring the temperature difference in the supply and return pipelines. To reduce the amount of experimental research, an experimental calculation method is used to determine the error. Temperature sensors are tested at three temperature conditions. The obtained results of resistance measurements are used in the system of three equations for calculating the three constants of the temperature/resistance equation, after which a characteristic curve for temperature sensors is constructed. To obtain the value of the error at any temperature, the "ideal" curve constructed with standard constants is subtracted from the characteristic curve of each temperature sensor.

Conclusions Conformity assessment of temperature measuring instruments that are part of a heat meter with the requirements of the Technical Regulation promotes to protecting consumers' interests in obtaining reliable measurement results, solving the problem of saving energy resources in the housing and communal services, and increasing the competitiveness of measuring instruments of domestic production.