

THE BASICS REPRODUCING AND TRANSMITTING UNIT SIZES OF PHYSICAL QUANTITIES

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Annotation

When performing measurements, it is necessary to ensure their unity. Unity of measurement refers to the state of measurement in which the results are expressed in legal units and measurement errors are known with a given probability.

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The unity of measurements allows you to ensure comparability of measurement results of the same parameters performed at different times, in different places, using different methods and measuring instruments.

To ensure the uniformity of measurements, the identity of units in which all existing measuring instruments of the same value are graded is necessary. This is achieved by accurately reproducing and storing the installation units of physical quantities in specialized institutions and transmitting their dimensions to the measuring instruments used.

Measuring instruments intended for reproducing and storing units of quantities, verification and calibration of measuring instruments are divided into standards and model measuring instruments.

Etalon – a measuring instrument (or a set of measuring instruments) that provides reproduction and (or) storage of a unit of physical quantity with the highest accuracy for a given level of development of measuring technology in order to transfer its size to lower-level measuring instruments according to the verification scheme.

Standards are highly stable and high-precision devices and are the foundation of work to ensure the uniformity of measurements.

Transfer of the dimensions of units of physical quantities from standards to working measuring instruments is carried out using model measuring instruments.

Model measuring instruments (measures, measuring transducers, measuring instruments) are intended for checking and calibration of other measuring instruments based on them.

According to the level of accuracy and metrological subordination, model measuring instruments are divided into categories established for each value by a special document – a verification scheme.

Verification scheme – a regulatory document that establishes the subordination of measuring instruments involved in the transfer of the unit size from the standard to working measuring instruments, indicating methods and errors, and which is approved in accordance with the established procedure.

Model measuring instruments corresponding to the highest stage of the verification scheme are considered initial. Lower-level measuring instruments are subordinate to the original reference measuring instrument.

Literature

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