УДК: 006.06

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METROLOGICAL DETAILS AND ACCURACY CLASSES OF MEASURING INSTRUMENTS

Annotation: the accuracy with which an item is being prepared directly depends on the indications of the measuring instruments. When choosing measuring instruments, it is necessary to consider their indicators, such as the value of the scale piece, the range of indications and measurements, the measurement limits the accuracy class of the measuring instrument is a generalized description, which is determined by the main and additional errors of the measuring instrument, as well as other characteristics that affect accuracy.

Key cots: measuring instrument, physical size, item, product, preparation accuracy, scale pointer, range of instructions, measurement error, accuracy class

Introduction

A measuring instrument is a technical instrument (device) designed for measurements, producing displays (signals), carrying an overview of the value of the magnitude being measured, or with Metrological characteristics that represent a repeat of the size of a given size and embody the indicators in moderation to other sources [1].

The accuracy with which an item is being prepared directly depends on the indicators of the measuring instruments.

When choosing measuring instruments, it is necessary to take into account their indicators, such as the value of the scale piece, the range of indications and measurements, measurement limits.

A scale measuring instrument will be part of a counting device, which will show a set of values corresponding to the number taking numbers and next to the signals corresponding to the series of quantities of the measured magnitude [2].

Materials and methods

This includes empirical methods such as modeling, fact, experiment, description and observation, as well as theoretical methods such as logical and historical methods, abstraction, deduction, induction, synthesis and analysis. The research materials are: scientific facts, the results of previous observations, surveys, experiments and tests; means of idealization and rationalization of the scientific approach.

A scale pointer is a symbol that corresponds to a certain amount of the magnitude being measured, indicated on the scale. A pointer placed next to the number taking numbers is called the number pointer of the scale. The pointer corresponding to the zero value of the measured magnitude is called the zero of the scale. The scale is one-sided (zero serves as the beginning and end of the scale), two-sided (scale pointers are located on both sides relative to zero), and zero-free.

The range of two adjacent pointers of a scale is called a scale piece. The length of the scale piece is the distance between the axes (centers) of the two adjacent pointers of the scale.

Scales in which a piece of scale is of constant length are called Equal-dimensional scales.

The value of a scale piece is the difference between the quantities of magnitudes corresponding to the two adjacent indicators of the scale.

Results and discussion:

The range of representations is the area of values bounded by the final and initial values of the scale, that is, the area between the largest and smallest values of the magnitude being measured. The range of measurements is the area of values of the magnitude being measured, where for this area the limit of allowable errors of the measuring instrument will be normalized. It will consist of the sum of the range of instructions and the range of shifts of the measuring instrument.

The measurement limit is the largest and smallest values of the measurement range.

When measuring in contact measurement style, the measurement strain is the strain directed along the line of the measurement Direction, formed between the sensitive element of the measuring machine and the detail. The measurement strain ensures the bearing grip of the measuring chain.

The difference in the measurement voltage has changed as a result of the deformation of the spring at the expense of a change in the position of the measuring instrument Turum, that is, the difference between the measurement voltages corresponding to the two limits of the range of the instrument indications.

The threshold of sensitivity of the measuring instrument is the smallest amount of the measured magnitude that the measuring instrument can change its display [3].

The tool display error is the difference between the actual amount of size measured by the tool display [4].

The measurement error is the difference between the measurement result and the actual value of the magnitude being measured.

The stability of the meter is an indicator that reflects the time invariance of Metrological descriptions of the meter. It is defined as the amount of greatest

difference between repeated indications of a measuring instrument when measuring a single magnitude multiple times, under invariant external conditions, and a constructive description of the instrument is calculated, indicating the quality of its preparation.

Conclusion:

The accuracy class of the measuring instrument is a generalized description of the measuring instrument, which is determined by the main and additional errors of the measuring instrument, as well as other characteristics that affect accuracy. The accuracy class describes the properties of the meter, but does not indicate the accuracy of the measurements performed, since it is necessary to also consider the method error, adjustment error, etc.when determining the measurement errors [5].

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