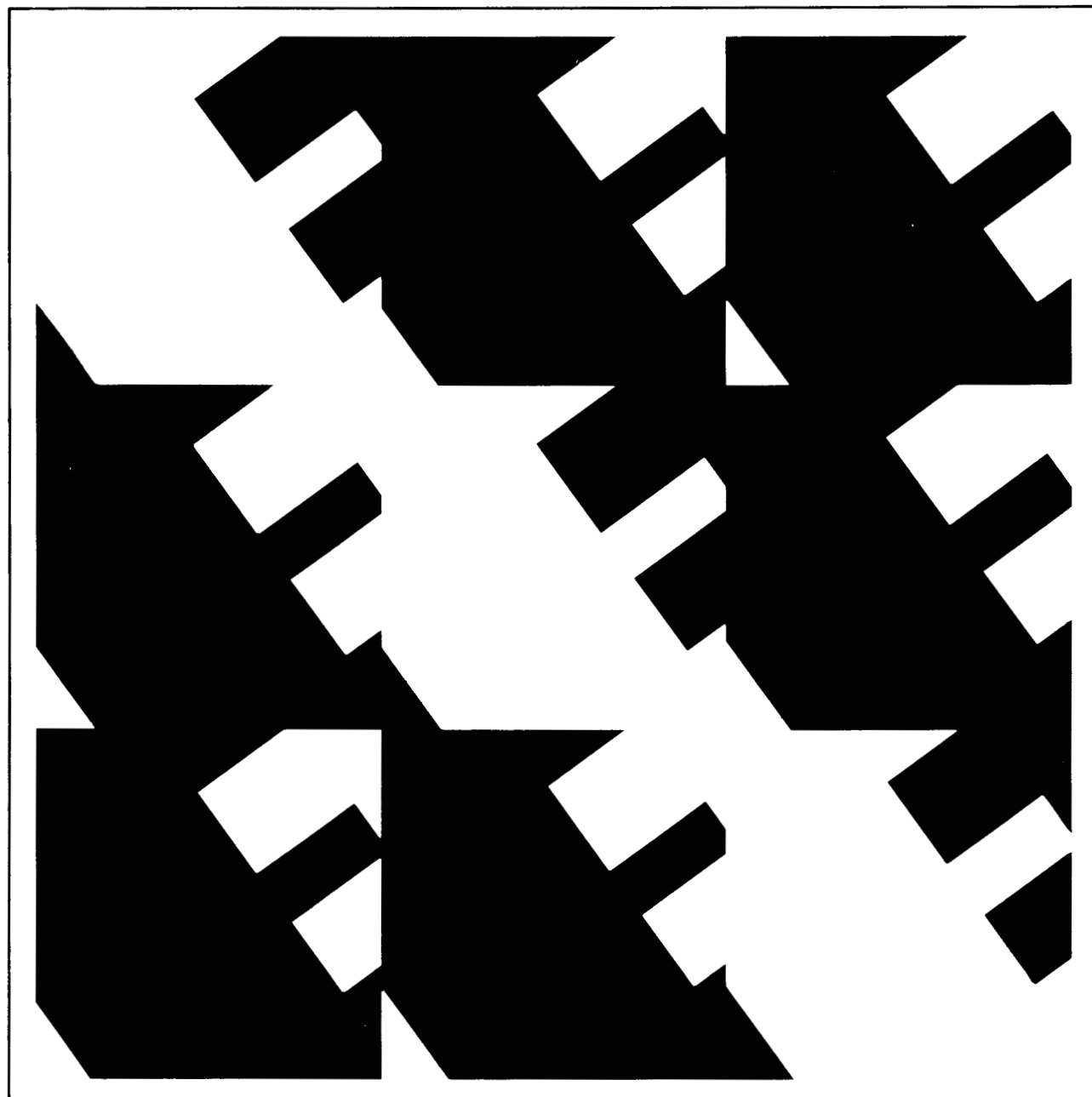


IEEE Standard for Electrical Measuring Transducer for Converting AC Electrical Quantities into DC Electrical Quantities



ANSI/IEEE Std 460-1988



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**IEEE Standard for
Electrical Measuring Transducer for
Converting AC Electrical Quantities into
DC Electrical Quantities**

Sponsor
**Power System Instrumentation and Measurements Committee
of the
IEEE Power Engineering Society**

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Foreword

(This Foreword is not a part of ANSI/IEEE Std 460-1988, IEEE Standard for Electrical Measuring Transducer for Converting AC Electrical Quantities into DC Electrical Quantities.)

This standard applies to transducers with an electrical input and output for making measurements of alternating electrical quantities. The output, which is in the form of a direct current or voltage, may be used for operating a dc electrical measuring instrument or for other purposes. It does not cover transducers for measuring dc quantities, nonelectrical quantities or those having other than a dc output.

The standard is modeled on the International Electrotechnical Commission (IEC) Publication 688-1 (1980), 1st ed, "Electrical Measuring Transducers for Converting AC Electrical Quantities into DC Electrical Quantities." While the format and much of the text of this IEEE Standard are similar if not identical to the IEC Standard, it is important to note that there are significant differences. These differences are most evident in various tables specifying tolerances and other numerical data.

For those unfamiliar with the language and concepts underlying IEC Standards, it may be advisable to read the definitions of terms used in this IEEE Standard carefully since some of the terms may be unfamiliar or may have slightly different meanings from the commonly accepted engineering terminology. The reader is also referred to IEC Publication 51-1 (1984), "Direct Acting Indicating Analogue Electrical Measuring Instruments and Their Accessories, Part 1: Definitions and General Requirements Common to All Parts," particularly Appendix B1, for the way error is defined and for concepts related to error such as *variations* and *add-on influence error outside reference conditions*. Finally, it should be noted that some of the terms used in this standard are different from those in the IEC Publication 51-1 (1984) due to the fundamental difference between indicating instruments and measuring transducers.

The Accuracy Class Index System of classification used in this standard is based upon IEC Publication 51-1 (1984). Under the Accuracy Class Index System the permitted errors due to varying influence quantities, ambient temperature, voltage, frequency, etc, are specified as a percentage of the Class Index. Thus the Class Index fixes the intrinsic accuracy and the additional errors permissible. Errors are expressed as percent of the fiducial value.

For the unfamiliar with the Accuracy Class Index System, a word of warning is necessary. If a transducer is classified, for example, as Class 1, it does not follow that the error under practical conditions of use will be within 1% of the full output value. It means that the error will not exceed 1% of the *fiducial value under specified reference conditions*. If the influence quantities are varied between the limits specified by the nominal ranges of use, an additional error of a specified percentage of the Class Index may be incurred for each influence quantity.

The permissible error of a transducer under working conditions is the sum of the permissible intrinsic error and of the permissible variation due to each of the influence quantities. However, the actual error may be smaller, as not all of the influence quantities are likely to be simultaneously at their most unfavorable values, and some of the variations may cancel one another. It is important that these facts be taken into consideration when specifying transducers for a particular purpose. (The accuracy under working conditions is known as the "Operating Accuracy.")

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