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(Revision of
IEEE Std 260.1-1993)

IEEE Standards

260.1™

**IEEE Standard Letter Symbols for
Units of Measurement
(SI Units, Customary Inch-Pound Units,
and Certain Other Units)**

IEEE Standards Coordinating Committee 14

Sponsored by the
Standards Coordinating Committee on Quantities, Units, and Letter Symbols
(SCC14)



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**Standards Coordinating Committee on Quantities, Units, and Letter Symbols
(SCC14)**

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American National Standard Institute

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Abstract: Letter symbols for units of measurement are covered in this standard. It does not include abbreviations for technical terms, nor does it cover symbols for physical quantities.

Keywords: letter symbols, limited typography, metric, quantities, SI, units of measurement

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Introduction

This introduction is not part of IEEE Std 260.1-2004, IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units.)

This standard supersedes ANSI/IEEE Std 260.1-1993 in accordance with IEEE's policy of periodic standards review and update. Since the 1993 standard was approved, significant changes have occurred in the International System of Units (SI). Corresponding updates have been issued for some of the documents referred to by this standard. Significant, newly revised references are IEEE/ASTM SI 10-2002 (superseding ANSI/IEEE Std 268-1992 and ASTM E 380) and the seventh edition of *Le Système international d'unités* (The International System of Units, 1998, BIPM).

Since IEEE Std 260.1-1993 was issued, the IEEE has adopted Policy 9.19, Metric Policy, which calls upon all IEEE organizational units to support the use of the SI. The IEEE-SA Standards Board Implementation Plan for this policy, approved in 1995, states in part:

Stage III—After January 1, 2000: Proposed new standards and revised standards submitted for approval shall use metric units exclusively in the normative portions of the standard. Inch-pound data may be included, if necessary, in footnotes or annexes that are informative only.

Standards Coordinating Committee 14 (SCC14) shall work with the committees responsible for generating IEEE standards to help them carry out this implementation plan. Policy 9.19 recognizes the need for some exceptions and contains the following statement: "Necessary exceptions to this policy, such as where a conflicting world industry practice exists, must be evaluated on an individual basis and approved by the responsible major board of the Institute for a specific period of time." SCC14, as part of the coordination process, shall review requests for individual exceptions and shall report its recommendations to the IEEE-SA Standards Board.

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IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units)

1. Overview

1.1 Organization

This standard is divided into six clauses. Clause 1 provides the organization and scope of this standard. Clause 2 gives the reference to the IEEE/ASTM standard on metric practice. Clause 3 provides a list of abbreviations used throughout this standard. Clause 4 establishes the general principles of letter symbol standardization and includes a list of SI prefixes and their symbols. Clause 5 provides a list of units and their symbols. Clause 6 makes provisions for adaptation of this standard in cases where only a character set limited in capability is available.

This standard also contains two annexes. Annex A provides information about the identification of reference levels when using logarithmic scaling units. Annex B provides a bibliography.

1.2 Scope

This standard covers letter symbols¹ for units of measurement. It does not include abbreviations for technical terms, nor does it cover symbols for physical quantities.²

The symbols given in this standard are intended for all applications, including use in text and equations; in graphs and diagrams; and on panels, labels, and nameplates. Provision is made for modifications to be used when only character sets of limited capability are available.

¹“Letter symbol” as a technical term does not have the same meaning as either “name” or “abbreviation.” An abbreviation is a letter or a combination of letters that by convention represents a word or a name in a particular language. For example, the symbol for electromotive force is *E*, whereas the abbreviation is *emf* in English, *fem* in French, and *EMK* in German. The unit names ampere and second have sometimes been abbreviated *amp* and *sec*, respectively, but this usage is now deprecated. The standard unit symbols for ampere and second are *A* and *s*, respectively.

²As used in this standard, the term *physical quantity* means a measurable attribute of phenomena or matter. Examples are length, mass, and time.

2. References

This standard shall be used in conjunction with the latest version of the following publication:

IEEE/ASTM SI 10-2002, American National Standard for Use of the International System of Units (SI): The Modern Metric System.³

3. Abbreviations

ANSI American National Standards Institute

CGPM Conférence Générale des Poids et Mesures (General Conference on Weights and Measures)

cgs centimeter-gram-second

CIPM Comité International des Poids et Mesures (International Committee for Weights and Measures)

IEC International Electrotechnical Commission

IEEE Institute of Electrical and Electronics Engineers

ISO International Organization for Standardization

SI Système International d'Unités (International System of Units)

4. General principles of letter symbol standardization

4.1 Letter symbols

Letter symbols include symbols for physical quantities (quantity symbols) and symbols for the units in which these quantities are measured (unit symbols).

A quantity symbol is, in general, a single letter⁴ (for example, *I* for electric current) specified as to general form of type and modified when appropriate by one or more subscripts or superscripts. In a given work, the same letter symbol should appear throughout for the same physical quantity, regardless of the units employed or of special values assigned.

A unit symbol⁵ is a letter or group of letters (for example, mm for millimeter), or in a few cases a special sign, that may be used in place of the name of a unit. It may include numbers to indicate exponents (for example, m² for square meter) and multiplication or division operators (for example, m/s for meter per second).

³IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, USA (<http://standards.ieee.org/>).

⁴Symbols composed of two letters are sometimes used for numerical transport parameters, such as *Re* for Reynolds number.

⁵Unit symbols have sometimes been treated in the same manner as general abbreviations, but the recommendations of the International Committee for Weights and Measures (CIPM), and of many other international and national bodies concerned with standardization, emphasize the symbolic character of these designations and rigidly prescribe the manner in which they shall be treated. This concept of the unit symbol is therefore adopted in this standard.