2009 IEEE Standards Style Manual

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IEEE Standards Style Manual

1. Overview

This manual establishes preferred style for the preparation of proposed IEEE standards (drafts). Project editors of the IEEE Standards Activities Department are available for advice and assistance throughout this process. Please note that many of the suggested guidelines can be adapted and restructured to suit the needs of a particular group; however, it is strongly recommended that working groups consult with IEEE Standards project editors before deviating from this style. Failure to follow the requirements (shall) or recommendations (should) of this manual may result in delayed approval of the draft standard by the IEEE Standards Association Standards Board or delayed publication of the standard.

This 2009 Edition of the IEEE Standards Style Manual is applicable to all drafts submitted for IEEE Sponsor ballot or to the IEEE-SA Standards Board after 1 June 2009. A file showing highlighted changes to the 2007 Edition of the IEEE Standards Style Manual is available from the IEEE Standards Web site <http://standards.ieee.org/guides/style/index.html>. Any comments or queries concerning this document should be forwarded to stds-style@ieee.org or directly to a staff liaison. A clear description of the relevant text and the recommended changes, where applicable, must be provided.

This manual is not intended to be a guide to the procedural development of standards.[1] Recommended manuals on this subject are the *IEEE-SA Standards Board Bylaws* [B4][2] and the *IEEE-SA Standards Board Operations Manual* [B5], also published by the IEEE-SA.[3] For examples of IEEE Standards style of drafts, please see Annex B. An example amendment can be found in Annex C.

2. Helpful documents

In addition to this manual, the following documents are helpful resources for writing an IEEE Standards draft. Users are encouraged to consult the most recent version of undated sources.

ANSI Y32.9, American National Standard Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction.[4]

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[1] While this manual uses the term "standard," its rules apply generically to guides and recommended practices as well.

[2] The numbers in brackets correspond to those in the bibliography in Annex A.

[3] All IEEE Standards manuals are available on the IEEE Standards Web site <http://standards.ieee.org/guides/index.html>. Users are encouraged to visit this site for the most up-to-date information.

[4] This publication, as well as the subsequent ANSI standards appearing in this clause, is available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (http://standards.ieee.org/).

ANSI/IEEE Std 260.3™, American National Standard for Mathematical Signs and Symbols for Use in Physical Sciences and Technology.

ANSI/IEEE Std 260.4™, American National Standard Letter Symbols and Abbreviations for Quantities Used in Acoustics.

IEEE Std 91™, IEEE Standard Graphic Symbols for Logic Functions.[5, 6]

IEEE Std 260.1™, IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units).

IEEE Std 270™, IEEE Standard Definitions for Selected Quantities, Units, and Related Terms, with Special Attention to the International System (SI).

IEEE Std 315™, IEEE Standard Graphic Symbols for Electrical and Electronics Diagrams (Including Reference Designation Letters).

IEEE Std 945™, IEEE Recommended Practice for Preferred Metric Units for Use in Electrical and Electronics Science and Technology.

IEEE Std 991™, IEEE Standard for Logic Circuit Diagrams.

IEEE/ASTM SI 10, American National Standard for Use of the International System of Units (SI): The Modern Metric System.[7]

3. Responsibilities of the working group chair and sponsor

The sponsor/working group chair of each project is the primary point of contact for the project. This means he or she shepherds the draft through the development process. This entails submitting the draft for:

- Mandatory editorial coordination (MEC). MEC is initiated at the start of the ballot invitation period prior to the Sponsor ballot. The first MEC review shall be completed before the Sponsor ballot begins. IEEE Standards project editors review the draft mainly for editorial and structural issues that may impact approval, and for legal, safety, and intellectual property issues that should be resolved prior to distributing the draft in ballot.
- Standards Coordinating Committee 14 (SCC14) coordination: This coordination is for quantities, units, and letter symbols and occurs automatically during the Sponsor ballot.
- RAC coordination: Mandatory coordination for the registration of objects by the IEEE Registration Authority Committee (RAC) occurs during the Sponsor ballot if the Project Authorization Request (PAR) indicates that the possible registration of objects or numbers is to be included in or used by the project and/or if it becomes apparent through development of the draft that the registration of objects or numbers will be included in or used by the RAC and/or otherwise requested by the RAC.

As the draft nears completion and when ballot consensus is reached, the sponsor of each project shall be responsible for reviewing the final draft to ensure that it is the complete and accurate document approved

[5] IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (http://standards.ieee.org/).

[6] The IEEE standards or products referred to in this clause are trademarks of the Institute of Electrical and Electronics Engineers, Inc.

[7] Formerly numbered IEEE Std 268.

by the balloting group, that it meets the requirements of this manual, and that it is ready to be submitted to the IEEE-SA Standards Board. When approved by the IEEE-SA Standards Board, the draft will be prepared for publication by the IEEE Standards project editor.

After the draft is approved, the sponsor or a designated representative (usually the working group technical editor or chair) shall serve as the liaison between the working group and the IEEE Standards project editor. During the publication process, the sponsor or designee is given the opportunity to answer questions and to review the document when it is in its final stages of production to ensure that editorial changes have not affected the technical content of the standard.

4. Items to submit to the IEEE-SA

4.1 Editorial requirements for submission to the IEEE-SA Standards Board

The sponsor of an IEEE Standards project shall be responsible for providing the IEEE-SA Standards Board with a complete, technically accurate draft that meets the requirements of this manual for content, style, and legibility. It is strongly advised that drafts be developed using the official template (see 4.2.1), otherwise there may be delays during publication. A cover letter or e-mail should also be submitted that states the software program (including version number) used to create the document. (See 4.3 for further information on submittal to the IEEE-SA Standards Board.) If applicable, written permission for any copyrighted material (text, figures, or tables obtained from an outside source) used in a project shall be submitted to the IEEE-SA Standards Board as well (see 5.2).

During the ballot invitation period prior to balloting, the sponsor is required to submit online the draft and any relevant copyright permission letters for mandatory editorial coordination (which may include a legal review). IEEE Standards project editors are also available for questions that arise as the draft is prepared.

4.2 Requirements for the draft

4.2.1 Creating the draft using of IEEE templates

Whenever possible IEEE drafts should be developed using IEEE-approved templates, currently available in Microsoft® Word[8] and Adobe® FrameMaker®[9]. IEEE-SA templates and supporting documentation are available from the IEEE Standards Web site: <http://standards.ieee.org/resources/development/writing/writinginfo.html>. Questions on using IEEE-SA templates can be sent to ieee-sa_templates@ieee.org.

In addition to expediting document creation, the MS Word template also easily enables line numbering. It is recommended that drafts include line numbering in order to facilitate identification of the location of content (text, figures, tables, etc.). Line numbers should appear in the margins of the first page and should restart in the margins of each subsequent page. Software programs other than MS Word and Adobe FrameMaker may be supported by the IEEE-SA. Please contact an IEEE-SA project editor for guidance as early as possible in the development process.

[8] Microsoft is a registered trademark of Microsoft Corporation in the United States and/or other countries.

[9] Adobe and FrameMaker are trademarks of Adobe Systems Incorporated.

4.2.2 Draft labeling and designations

All drafts shall be clearly labeled to reflect their status as unapproved. The title of the document shall start with the word *Draft*. The term *IEEE* shall not be used in a title until a standard is approved by the IEEE-SA Standards Board. The draft designation and the date of the draft shall appear in the upper right corner of each page of the draft. The designation and date shall not be combined. (See Annex B for examples of appropriate draft labeling.)

The IEEE standards designation shall be structured, at a minimum, as IEEE Pxxx/DXX, where xxx represents the specific designation and XX represents the specific draft version of that document (see Table 1 for examples of designation formats). Draft versions shall be maintained, and are most important during a ballot; the draft number should be updated as least as often as the document is modified and/or recirculated.

Standards designations are allocated by the Administrator of the IEEE-SA Standards Board New Standards Committee (NesCom). Requests for specific designations should be submitted to the NesCom Administrator (nescom-admin@ieee.org) for consideration. Any additional labeling may be included at the discretion of the working group.

Table 1—Examples of draft designations

Type of draft	Example draft designations	Comments
Draft base standard	IEEE P1234/D1	IEEE designations are assigned by the NesCom Administrator.
Draft standard that is a part of a group of standards	IEEE P1234.1/D1, IEEE P1234.2/D1, etc.	A group of standards may or may not be derived from a single base, e.g., derived from IEEE 1234.
Draft amendment to a base standard	IEEE P1234a/D1, IEEE P1234b/D1, etc. IEEE P1234.1a/D1, IEEE P1234.1b/D1, etc.	Letters are only used in designations to indicate amendments to a base document (lowercase letters only). The lowercase letter shall follow the designation of the standard that is being amended.
Draft corrigendum to a base standard	IEEE P1234-200x/Cor 1/D1, IEEE P1234-200x/Cor 2/D1, etc.	Designations for corrigenda always refer to the base document being corrected, even if the base has been amended.
Draft conformance document to a base standard		
Single conformance document	IEEE P5678/D1 IEEE P11234/D1	A single conformance document can have a designation that is either unrelated to, or related to, the base. Related designations usually contain the designation of the base document preceded by a digit. The example shown has the digit 1 preceding the base designation IEEE 1234.
Multipart conformance document	IEEE P1234/Conformance01/D1, IEEE P1234/Conformance02/D1, etc.	This format shall always be used for multi-part conformance documents.

4.2.3 Draft copyright statements

All IEEE drafts are obligated to carry statements of copyright, as indicated by the PAR. As per legal counsel, the following information shall appear at the bottom of the title page of every IEEE Standards draft (please note that <current year> shall be replaced with the current year of distribution):

> Copyright © <current year> by IEEE.
> Three Park Avenue
> New York, NY 10016-5997, USA
> All rights reserved.
>
> This document is an unapproved draft of a proposed IEEE Standard. As such, this document is subject to change. USE AT YOUR OWN RISK! Because this is an unapproved draft, this document must not be utilized for any conformance/compliance purposes. Permission is hereby granted for IEEE Standards Committee participants to reproduce this document for purposes of international standardization consideration. Prior to adoption of this document, in whole or in part, by another standards development organization, permission must first be obtained from the IEEE Standards Activities Department (stds.ipr@ieee.org). Other entities seeking permission to reproduce this document, in whole or in part, must also obtain permission from the IEEE Standards Activities Department.
>
> IEEE Standards Activities Department
> 445 Hoes Lane
> Piscataway, NJ 08854, USA

The following information shall appear on every page of the draft, at the bottom of the page:

> Copyright © <current year> IEEE. All rights reserved.
> This is an unapproved IEEE Standards Draft, subject to change.

4.2.4 Required frontmatter

Drafts should contain a frontmatter and main text, and follow the style outlined in this manual. The draft pages should be numbered consecutively. For full details on the various elements of the frontmatter and how it should be constructed, see Clause 9. Frontmatter elements *required* in the draft prior to going to ballot are the designation, the title of the standard (see 9.2), draft copyright statements (see 4.2.3), a notice to users (laws and regulations, copyrights, updating of IEEE documents, errata, interpretations), and a patent statement. See Annex B for an example. Drafts without these frontmatter elements shall not be balloted.

4.3 Submission of IEEE drafts and source files to the IEEE-SA Standards Board

The items in the following list should all be submitted to the IEEE-SA Standards Board (during the RevCom submittal):

a) The PDF of the last balloted draft

b) The electronic source file(s) used to create the final PDF of the last balloted draft

c) Any unpublished draft references that are included as part of the normative references

d) Any files developed by the working group for use with the standard

e) Any electronic graphics files. For information on creating graphics, see 16.1.

IEEE has strict rules concerning the electronic posting of draft standards. It is permissible to place draft standards on a password-protected site for access by members of the working group or task group responsible for the development of the document. Draft standards shall not be placed on a site accessible to those outside the working group. Public review of the draft is obtained through specific coordination or through the IEEE Sponsor ballot process. Contact an IEEE Standards staff liaison for further information.

Corrections or changes to the final balloted draft that do not affect the technical content of the standard (e.g., grammatical changes and changes to style) may be submitted along with the submission of the final balloted draft to the Review Committee (RevCom) for approval by the IEEE-SA Standards Board. The corrections or changes to the final balloted draft should be listed in a separate file, and a description should be provided to indicate where they are to be inserted into the text. If corrections are extensive, a new corrected draft shall be submitted with changes clearly indicated by strikethroughs for deleted text and underscores for new text. During the publication process, the IEEE Standards project editor will determine whether the corrections or changes are acceptable, i.e., corrections may or may not be implemented based on the judgment of the editor. If changes are required, another recirculation of the draft should be conducted, and the corrections should be included in the recirculated draft.

Technical changes shall not be made to a draft after balloting without recirculation, and certain editorial changes that are extensive (i.e., considered substantial) or that affect the meaning of the text may require recirculation as well.

Any discrepancies regarding submitted files can cause serious delays in publication, and the IEEE-SA Standards Board may withhold approval until the correct electronic files are submitted.

5. Permissions

5.1 General

Information included in IEEE standards shall meet the following requirement (as noted in the permission letters in Annex D):

> The IEEE requires world rights for distribution and permission to modify and reprint in future revisions and editions in all media known or hereinafter known.

In addition, no limitations on the right of the IEEE to determine appropriate business arrangements for its standards shall be included as a stipulation for use of material. Contact the IEEE Standards Activities Department by e-mail (stds.ipr@ieee.org) with any questions regarding material that might not meet the requirement.

5.2 Excerpts of copyrighted material from other organizations

When standards developers use excerpts of copyrighted text, tables, or figures and possibly modify or adapt the material to suit their needs, permission to do so shall be requested from the copyright owner. It is strongly recommended, however, that copyrighted material be referenced rather than reprinted. Standards developers are encouraged to request permission from copyright owners as soon as the decision is made to include copyrighted material in a draft. As draft documents are made available to the public, the IEEE is required to acknowledge the ownership of any material that is not original.

The following credit line shall be used in the event that specific language from the copyright holder is not available:

<Indicate material> reprinted from <copyright owner, title of publication, year of publication.>

Standards developers incorporating any previously copyrighted material into an IEEE standard shall obtain written permission from the copyright owner (see Annex D for sample permission letters), which in most cases is the publisher, prior to submittal to the IEEE-SA for Sponsor ballot. If excerpted material is inserted during ballot resolution, permission letters will be required before the recirculation ballot of the draft. The permission letters received from copyright owners shall be submitted as part of mandatory editorial coordination, along with the draft, at the start of ballot invitation or to the staff liaison prior to a recirculation if the information is included during the ballot. All permission letters will be reviewed during the MEC and again when the draft is submitted to the IEEE-SA Standards Board for approval. If there are difficulties with obtaining permission responses, the working group may want to consider citing the information normatively rather than including an excerpt.

The sponsor is responsible for obtaining this permission. Any delay in obtaining the permission or agreement may result in approval conditional to receipt of permissions or it may delay publication of the standard. The sponsor is responsible for alerting the IEEE Standards Activities Department by e-mail (stds.ipr@ieee.org) in instances where legal agreements or licenses are required. Working groups shall not negotiate agreements with outside entities with regard to IEEE standards. Sample letters of request and permission appear in Annex D. Please contact the IEEE Standards Activities Department (stds.ipr@ieee.org) with any questions about copyright and permission.

5.3 Adoption of independently-developed documents as potential IEEE standards

The submission of independently-developed documents for consideration as potential IEEE standards, for inclusion within IEEE standards, or to serve as base documents for standards development is also permitted. In order to ensure unencumbered development from working group decisions through the consensus balloting process, standards developers shall obtain written permission release of unrestricted world rights to use a document as the basis for development of an IEEE standard and for all future revisions and editions of that standard in all media known or henceforth known and/or developed. The process of standards development may result in changes to the base document; the IEEE must maintain the right to amend the document as it sees fit to meet the needs of this process.

In some cases, as a part of the permission to use an independently-developed document as a potential IEEE standard, IEEE may need to establish a license agreement from the copyright owner allowing development and distribution of the standard. The copyright owner may also require that IEEE pay royalties or other valuable consideration on the use and distribution of the independently-developed document. The IEEE Standards Activities Department shall be alerted immediately by e-mail (stds.ipr@ieee.org) so that IEEE-SA staff will have sufficient time to make necessary arrangements. Working groups shall not negotiate agreements with outside entities with regard to IEEE standards.

It is also recognized that, in giving permission to use the document as the basis for an IEEE standard, the copyright owner(s) does not forfeit the copyright to their original text and its future development outside of the IEEE; however, the copyright owner(s) must agree not to refer to their document as an IEEE standard. The copyright owner(s) will be credited for their initial development of the base document in the frontmatter of the approved IEEE standard. Contact the IEEE Standards Activities Department (stds.ipr@ieee.org) if there is reason to believe that a license agreement might be required.

6. Patents

Working groups concerned about or interested in the relationship of patents and patent-related requirements to IEEE standards should consult the IEEE-SASB Patent Committee Web site at: <http://standards.ieee.org/board/pat/index.html>.

Please note that any reference to patents or patent applications shall be made only in the frontmatter of the standard.

7. Trademarks

References to commercial equipment or products in standards shall be generic. In other words, standards shall not require use of, or affiliation with, any trademarked items, products, etc. To this end, standards shall avoid, whenever possible, citation of trademarked items or other proprietary designations.

Citation of trademarked items or proprietary designations is permissible when a sole source exists for essential equipment or materials. In these cases, the equipment or materials shall be described generically in text and the name of the trademark owner supplied in a footnote accompanying the text. The following text is appropriate for the footnote:

> At the time of this publication [name of trademarked item] was an example of [name of generic product, etc.]. [Name of trademarked item] is a trademark of [name of trademark owner]. This information is given for the convenience of users of this standard and does not constitute an endorsement by the IEEE of these products. Equivalent products may be used if they can be shown to lead to the same results.

If every effort has been made to substitute a generic word or phrase in text for any trademarked items but no suitable substitute can be found, then observe the proper-use guidelines of the trademark owners and add the following footnote to accompany the citation:

> [Name of trademarked item] is a trademark of [name of trademark owner]. This information is given for the convenience of users of this standard and does not constitute an endorsement by the IEEE of these products. Equivalent products may be used if they can be shown to lead to the same results.

During draft development, working groups shall endeavor to identify any trademarked material referred to in their drafts. WGs shall determine what can and cannot be included in their drafts based on the conventions listed above. WGs shall also research the proper use guidelines for any trademarks appropriate for their drafts and ensure that no fees are required, limitations imposed, etc. This information is usually stated on the Web sites of the trademark owners. If used, any trademarked items shall be identified in the standard and marked as such (with either ® or ™), as appropriate, upon first reference. All trademarked items cited in standards shall be credited to the trademark owner in the frontmatter of the standard.

IEEE designations are trademarks of the IEEE and shall be identified as trademarks (® or ™, as appropriate) at first citation of each designation in the frontmatter and in the body of the draft.

8. Trial-use standards

The IEEE-SA Standards Board allows the publication of standards documents as trial-use standards if, subsequent to publication, input from a broad constituency is needed. All trial-use standards shall be approved according to the IEEE-SA Standards Board process. The IEEE Standards project editor shall insert the following disclaimer in each trial-use standard, replacing <18 months from publication date> with the trial-use comment submission deadline:

Publication of this trial-use standard for comment and criticism has been approved by the IEEE. Trial-Use standards are effective for 24 months from the date of publication. Comments for revision will be accepted for 18 months after publication. Suggestions for revision should be directed to the Secretary, IEEE-SA Standards Board, 445 Hoes Lane, Piscataway, NJ 08854, and should be received no later than *<18 months from publication date>*. It is expected that following the 24-month period, this trial-use standard, revised and balloted as necessary, shall be submitted to the IEEE-SA Standards Board for approval as a full-use standard.

9. The structure of an IEEE standard—frontmatter and body

9.1 Structuring the frontmatter of a standard

The frontmatter of an IEEE standard is informative, meaning it is not officially part of the standard, although it does provide very important information.

9.2 Title

The title should be exactly the same as that on the approved PAR, and in all cases shall reflect the scope of the standard in as few words as possible. During draft development, if the title of the draft standard changes from that listed on the PAR, the working group shall change the title of the draft standard to match that on the PAR or submit for a modified PAR.

All titles of IEEE drafts shall start with the word Draft, followed by:

a) "Standard [for]" when the standard specifies mandatory requirements

b) "Recommended Practice [for]" when the standard provides recommendations

c) "Guide [for]" when the standard furnishes information

d) "Trial-Use (Standard, Recommended Practice, or Guide) [for]" when the document will be published for a limited period, no longer than two years, before it becomes an official IEEE document

Working groups interested in publishing ancillary materials, such as interpretations (documents issued to explain and clarify passages within a standard), should contact an IEEE Standards project editor for more information.

When an IEEE standard covers only a limited range of quantities, such as voltage, current, power, and size, the numerical limits of the ranges covered shall be included in the title. The use of nonquantitative terms (such as high and low, large and small, wide and narrow) should be avoided. Acronyms and abbreviations should be avoided in titles of standards, except in the case of units of measurement (kV, mm, etc.). However, if such use is warranted, the procedure stated in 10.6 shall be followed.

9.3 Abstract and keywords

The inclusion of abstracts and keywords in IEEE standards allows the documents to be referenced in a wide range of bibliographic environments, thereby increasing their utility, visibility, and availability to the public. For this reason, abstracts and keywords shall be included on the title page of each standard. Abstracts should be based on the scope and purpose of the standard as indicated on the PAR and should

specify what the designation number of the project is. Abstracts should also be concise and no longer than 15 lines. Keywords should highlight key terms and phrases from the text of the draft standard.

9.4 Introduction and committee lists

An introduction should give the history of the standard, a description of its purpose, and, if the standard is a revision, an explanation of the principal changes from the previous edition. The introduction should also explain the document structure for multipart standards, or for documents within a family of standards. An introduction is not a part of a proposed standard and shall not contain requirements or recommendations; therefore, the following statement shall appear in a box rule above the text:

[This introduction is not part of IEEE Pxxx, title of draft.]

At a minimum, a roster of the officers and members of the working group that developed the document shall be provided by the working group. Individuals or entities that also contributed to the preparation of the document may be included in addition to the working group list (permission from entities shall be received prior to including the names in the draft).

In the working group roster, full first names are preferred over initials. Titles (Dr., Ms., P.E.) shall not be included with proper names.

The list of voting members of the balloting group, which is usually added by the IEEE Standards Activities Department during the publication preparation, is included in the introduction. Only the balloters (individuals or entities) who vote are listed in the standard; however, balloters may have voted for approval, disapproval, or abstention. The following paragraph shall be placed in the frontmatter of all IEEE drafts, above the list of voting members of the balloting group, and shall reflect the type of ballot that was conducted (individual or entity):

> The following members of the <individual/entity> balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

If footnotes are necessary in an introduction, they shall be noted with lowercase letters (a, b, c, d, etc.).

9.5 Acknowledgments

In the past, some sponsors have included special acknowledgments in the frontmatter of their published standards. Permission shall be requested from the Manager, Standards Editing and Production, before including such acknowledgments in the draft.

9.6 Table of contents

A table of contents listing the main clauses (identified by one digit) and the first series of subclauses under each clause (identified by two digits) should be supplied. The next series of subclauses (identified by three digits) may be included when deemed appropriate by the IEEE Standards project editor and the working group. If included, the table of contents shall be generated automatically, and not composed manually. Lists of tables and figures should not be included in the table of contents. Only the appropriate clauses, subclauses, and normative and/or informative annexes should be listed. (See Annex B for a sample table of contents.) All titles in the table of contents should be concise, and may be abbreviated versions of the titles within the document. It should be noted that tools for automatic generation within the table of contents may not support titles longer than one line.

10. Structuring the body of a standard

10.1 Normative and informative clauses

Normative text means information that is required to implement the standard and is therefore officially part of the standard. Informative text is provided for information only and is therefore not officially part of the standard.

Normative text (information *required* to implement the standard) includes:

- The main clauses of the documents including figures and tables
- Footnotes to tables
- Footnotes to figures
- Annexes marked "(normative)"

Informative text (text provided for information only) includes:

- Frontmatter
- Notes to text, tables, and figures
- Footnotes within text
- Annexes marked "(informative)", (e.g., Bibliography)

Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative. Identification of normative or informative text shall be reviewed during the ballot of a document; therefore, it is important that the working group consult an IEEE Standards project editor early with any questions.

10.2 Order of clauses

The first clause of a standard shall always be an overview (except for amendments and corrigenda, which do not usually have an overview, scope, or purpose). If the standard contains references and definitions, they shall be Clause 2 and Clause 3, respectively. The clauses that follow Clause 2 and Clause 3 can be ordered in any way by the working group. If clause and subclause titles begin with numbers, they should be spelled out, unless unavoidable (e.g., 10BASE-T).

10.3 The overview of the draft

10.3.1 General

The overview of the draft shall include the scope of the standard as written on the PAR. The overview may also include a purpose, applications, and other areas that the working group considers relevant. These optional topics may be presented as separate subclauses of the overview. If these separate subclauses are presented, a minimum of two subclauses are required.

This clause shall be entitled *Overview* unless it contains only a scope; in this case, the clause shall be entitled *Scope* without any further subdivision. The overview shall not contain detailed discussions of the general technical content of the standard nor shall it list the contents of the standard (since this is the purpose of the table of contents). If the standard contains annexes, the application of these annexes should be described in the overview.

10.3.2 Scope

The scope of the standard shall explain in statements of fact what is covered in the standard and, if necessary, what is not covered in the standard. In other words, the technical boundaries of the document shall be discussed. The scope should be succinct so that it can be abstracted for bibliographic purposes.

For new and revision projects, the scope of the draft standard submitted for ballot shall match the scope of the approved PAR.

For amendments and corrigenda, there is normally no scope in the draft. Therefore, on the PAR form, the scope shall state what the amendment/corrigendum is changing.

Regardless of project type, during draft development, if the scope of the draft deviates from the scope of the PAR, the working group shall modify either the draft to bring it into compliance with the PAR or revise the PAR so that the two match. During the MEC review, if IEEE-SA editorial staff discovers the scopes on the draft and PAR do not match, and the scope of the draft is to remain as is, the draft standard can proceed to ballot; however, the WG should notify the ballot group that the scope of the draft standard does not match that of the PAR. In addition, the WG shall submit a modified PAR to NesCom for approval by the IEEE-SA Standards Board.

Please note the distinction of the scope from the purpose of the standard discussed in 10.3.3.

10.3.3 Purpose

A paragraph describing the purpose is not mandatory in the draft standard. However, if included, the purpose of the standard and its intended application shall be included in a separate subclause. The purpose shall explain why the standards project is needed.

For new and revision projects, the purpose (if included) of the draft standard submitted for ballot shall match the purpose of the approved PAR.

For amendments and corrigenda, there is normally no purpose in the draft standard. Therefore, on the PAR form, the purpose shall state why the changes are being made.

Regardless of project type, if during MEC of the draft, IEEE-SA editorial staff discovers that the purposes on the draft and PAR do not match, and the purpose of the draft document is to remain as-is, the draft standard can proceed to ballot; however, the WG shall notify the ballot group that the purpose of the draft standard does not match that of the PAR. In addition, the WG shall submit a modified PAR to NesCom for approval by the IEEE-SA Standards Board.

Please note the distinction of the purpose from the scope of the standard discussed in 10.3.2.

10.4 Normative references

10.4.1 Citation as a normative reference

Normative references are those documents that contain material that must be understood and used to implement the standard. Thus, normative references are indispensable when applying the standard. ***Each normative reference shall be cited, and the role and relationship of each referenced document shall be explained in the body of the standard.*** If a reference is not specifically cited in the normative text of the document, then it shall not be listed in the normative references clause. In such cases, it shall be listed in the first or final informative annex, entitled Bibliography [see item h) below].

The following guidelines shall be followed when creating the normative references clause:

a) The balloting group shall approve the contents of the normative references clause during the ballot of the standard.

b) In an amendment, when inserting an introductory paragraph into the normative references clause, developers should take special care in determining whether the intent of the base standard is maintained in the amendment.

c) IEEE and other nationally or internationally recognized standards developing organizations (SDOs) are to be preferred as the source of normative references. Documents published by other organizations may be cited provided that the following is true:

   — The document is judged by the balloting group to have wide acceptance and authoritative status.

   — The document is publicly available at reasonable cost.

d) Dated and/or undated references are allowed in standards. Using undated references helps eliminate the burden of continuous updates to align standards as they are revised, while ensuring that the most up-to-date information on technologies and statutes is referenced (when appropriate). Dated references can be used in certain circumstances, such as when a high degree of specificity is needed. The responsibility of determining whether a reference should be dated or undated lies with the working and balloting groups, who shall determine what is best during implementation of a given standard, and therefore what is best for the standard's users.

e) References to specific clauses or subclauses, tables, and figures of another document shall be dated.

f) Using documents that are not standards presents the problem that they might be revised without notice in a manner that might adversely affect any standard that lists them as normative references. Documents that are cited as normative references, but that are developed by organizations that are not nationally or internationally recognized SDOs, shall include the edition or date of publication in the citation.

g) If the standard is intended for international adoption, the working group should take into consideration requirements for normative references by international organizations, such as the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). These requirements may include procedures for justification of normative references that are not international standards. Please contact an IEEE Standards project editor for information about specific requirements.

h) Documents to which reference is made only for information or background, and documents that served merely as references in the preparation of the standard are not normative references. Such documents may, however, be included in a bibliography. (See Clause 19 for the format of bibliographic entries.)

i) Reference to withdrawn standards may be made; however, Sponsors are cautioned that withdrawn standards may contain obsolete or erroneous information and may be difficult to retrieve.

j) Sponsors shall not use unpublished draft standards as normative references unless they are dated, readily available, and retrievable. If an IEEE draft is cited, the sponsor shall provide a copy of the draft to be placed on file in the IEEE Standards Activities Department. Please consult with an IEEE Standards project editor if such inclusion is necessary. If the IEEE draft that is referenced is approved prior to the publication of the document, the draft reference will be updated to reflect this change by the IEEE Standards project editor as part of the publication process. If the working group prefers that the draft reference remain as is, the citation shall be followed by "(this version)."

10.4.2 Structure of the normative references clause

The following guidelines shall be followed when structuring the normative references clause:

a) The normative reference clause is introduced with the following paragraph:

   The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

b) The IEEE Standards project editor will list the information (i.e., title) for the most current edition of the undated material cited. In some cases, the most current edition is not the one required. It is also important for the sponsor to remember that the dated edition listed in the balloted document will be the one that appears in the published document. Therefore, it is the responsibility of the sponsor to not only determine which edition of a document is applicable in each case, but also to ensure that the balloted document lists the correct edition.

c) The sponsor shall endeavor to supply complete and current information for normative references. Note that IEEE Standards project editors cannot verify that normative references to updated editions of documents (i.e., undated references) are accurate; therefore, it is up to the sponsor to consult the latest editions to see if they still apply.

10.4.3 Style for standards reference entries

Normative references shall be listed in alphanumeric order by designation, including the full title. Documents that are not standards, and that are cited as normative references, shall include the edition or date of publication in the citation. A footnote should be inserted in the text after the first cited normative reference in order to tell the reader where the references can be obtained.

For an example of a properly formatted normative references clause, see the sample draft in Annex B.

References should be cited by designation (e.g., IEEE Std 1226.6™ or IEEE Std 1625™-2004) in the text, in tables, in figures, or in notes at the point where the reference applies. Note that IEEE designations shall be identified as trademarks (® or ™, as appropriate) at first citation of each designation in the frontmatter and in the body of the draft.

10.4.4 Non-standards citations

Refer to *The Chicago Manual Style* [B1] for rules on citing sources other than standards.

For citing Internet sources, the following format should be used where <entity> is replaced with the name of the organization and <URL> is replaced by the Internet location:

"... is available from the <entity> Web site <URL>."

"(see the information at the following Internet location: <URL>)."

The URL should be the most stable location whenever possible to avoid inadvertent or intentional changes that would affect the site name, i.e., use the index to the page rather than the page itself.

Any information that is cited normatively in the standard shall be made available on the IEEE Standards Web site, or should exist on an established SDO site. The working group shall obtain permission where needed. The IEEE Standards Activities Department should be contacted (stds.ipr@ieee.org) in instances where legal agreements are required (see Clause 5).

If a document listed in a bibliography or normative reference is accessed from the Internet, the document title, date, version, or other pertinent information should be listed, followed by a footnote that gives the Internet location. If the document needs to be on the IEEE Standards Web site, the working group can insert the following placeholder until the site location is assigned:

"This document is available from the IEEE Standards Web site <insert IEEE Internet location>."

Contact an IEEE Standards project editor with any questions about documents that should be placed on the IEEE Standards Web site.

10.5 Definitions

10.5.1 General terminology usage

English words should be used in accordance with their definitions in the latest edition of *Webster's New Collegiate Dictionary* [B9]. Electrical and electronics terms not defined in *Webster's New Collegiate Dictionary* [B9] should be used in accordance with their definitions in the IEEE-SA Standards Definitions Database. Working groups are strongly encouraged to use definitions that already exist instead of creating new definitions or slightly modifying existing definitions. During the MEC review of the draft and during Sponsor ballot, working groups may be asked to validate the use and presentation of terms. For assistance, IEEE draft developers may also find useful the *IEC Multilingual Dictionary of Electricity, Electronics, and Telecommunications* [B2], and the IEC International Electrotechnical Vocabulary (IEV) [B3].

10.5.2 Construction of the definitions clause

A definitions clause is typically Clause 3 (unless the standard does not contain references in which case the definitions clause would be Clause 2). Definitions should appear in alphabetical order and the term defined should be written out completely and should not be inverted (e.g., "*drift rate*" rather than "*rate, drift*"). Each definition should be a brief, self-contained description of the term in question and shall not contain any other information, such as requirements and elaborative text. The term should not be used in its own definition.

All terms defined in IEEE standards are incorporated into the IEEE-SA Standards Definitions Database. For this reason, it is important that terms and definitions have as general an application as possible. Definitions should not include references to other parts of the standard. An explanatory note may be provided to refer the user to another part of the standard. Terms defined in other standards may be used in IEEE standards as long as they are properly cited. After the definition, the source shall be cited in parentheses. It is the sponsor's responsibility to obtain the appropriate permissions if a standard uses a term from another source (see 5.2).

The definition should follow the defined term as a sentence preceded by a colon. Subdefinitions of a term should be marked as **(A)**, **(B)**, etc. Cross-references should occur after the definition and may consist of the following classes, in the order shown: *Contrast:, Syn:, See:,* and *See also:*. *Contrast:* refers to a term with an opposite or substantially different meaning. *Syn:* refers to a synonymous term. *See:* refers to a term where the desired definition can be found. *See also:* refers to a related term. The cross-references listed under these headings should be in alphabetical order, in bold type, and separated by semicolons when there are more than one.

Below is an example of a correctly styled definitions clause.

X. Definitions

For the purposes of this document, the following terms and definitions apply. The IEEE-SA Standards Definitions Database should be referenced for terms not defined in this clause.

acceleration-insensitive drift rate: The component of systematic drift rate that has no correlation with acceleration. *See also:* **drift rate; systematic drift rate**.

code set: *See:* **coded character set**.

coded character set: A set of characters for which coded representation exist. *Syn:* **code set**.

drift rate: The slope at a stated time of the smoothed curve of tube voltage drop with time at constant operating conditions. (adapted from ISO/IEC 9945-1:2003)

input reference axis (IRA): The direction of an axis as defined by the case mounting surfaces, external case markings, or both. *Contrast:* **output reference axis**.

NOTE—See 6.7.[10]

output: (A) Data that has been processed. **(B)** The process of transferring data from an internal storage device to an external storage device.

systematic drift rate: That component of drift rate that is correlated with specific operating conditions.

10.6 Acronyms and abbreviations

Acronyms and abbreviations can be used to save time and space in the document. If the draft makes extensive use of acronyms or abbreviations, a subclause within the definitions clause entitled "Acronyms and abbreviations" may be provided. The acronyms and abbreviations subclause is not meant to take the place of the definitions clause. If acronyms and abbreviations are included in the definitions clause,

[10] Notes in text, tables, and figures of a standard are given for information only and do not contain requirements needed to implement this standard.

Clause 3 should be titled “Definitions, acronyms, and abbreviations” and 3.1 and 3.2 titled “Definitions” and “Acronyms and abbreviations,” respectively.

Within text, the acronym or abbreviation should follow the first use of the full term (the first time in the introduction, then the first time in the body of the document, and then the first time in any annexes in which the acronym appears). The abbreviation or acronym should be placed in parentheses when following the full term.

Acronyms and abbreviations, followed by the full term only, should be listed in alphanumeric order. For an example of an acronyms and abbreviations subclause, see the sample draft in Annex B.

Exceptions to the convention listed above are approved SI units. SI unit symbols are not abbreviations and shall not be included in a list of abbreviations and acronyms. The treatment of letter symbols for units (e.g., mm for millimeter), letter symbols for quantities (e.g., R for resistance), and mathematical symbols (e.g., log for logarithm) is covered in IEEE Std 260.1 and IEEE Std 280 (see also Clause 14).

Acronyms and abbreviations should be avoided in titles of standards. However, if such use is warranted, the procedure stated above should be followed.

10.7 Annexes

10.7.1 Ordering annexes

Normative and informative annexes shall be referred to as such [e.g., Annex A (normative), Annex B (informative)] in their titles and in the table of contents. Annexes should be referenced in the text by the word *Annex* and its letter only (e.g., “see Annex A”). Annexes should appear in the order in which they are referenced in the body of the standard (e.g., the first annex mentioned should be Annex A, the second Annex B, and so on). Note that this rule means that normative and informative annexes might be intermixed. An exception to this rule is the bibliography. The bibliography should be either the first or last annex of the standard (in instances where an index exists, all annexes would precede the index). If a glossary exists, it should either be the last annex or it should immediately precede the bibliography (if the bibliography is the last annex).

10.7.2 Normative annexes

Normative annexes are official parts of the standard that are placed after the body of the standard for reasons of convenience or to create a hierarchical distinction. In many cases, normative annexes are used for conformance test procedures or tables. Some standards place syntax definitions, lists of keywords, or printed source code in normative annexes. Normative annexes may also be used for context-specific applications of the standard.

10.7.3 Informative annexes

Informative annexes are included in a standard for information only. Standards writers should carefully consider the nature of the material placed in informative annexes. The working group should also understand that informative annex material is considered part of the balloted document and copyrighted to the IEEE. As such, it shall be submitted to the IEEE-SA Standards Board and is not subject to change after approval.

An example of an informative annex is a bibliography (see Clause 19 for information about bibliographic style).

10.8 Index

Indices are discouraged unless the document is very long or complicated. As most standards are now published in PDF format, the ability to electronically search for terms makes an index largely unnecessary. However, the working group may include an index in a draft standard when it is deemed necessary or helpful to the reader. Since most indices are generated electronically, it is important to consult with an IEEE Standards project editor before setting up index tags in an electronic file to ensure that the index tags can be maintained and updated for publication. The IEEE Standards Activities Department cannot guarantee that an index created for a draft standard will be published when the standard is approved; the quality of the index, its usefulness, and whether it can be properly updated or not will be factors in the decision of the IEEE Standards Activities Department whether to use it. (Note that preparing an index will add time to the publication schedule.) Working groups interested in including an index should consult *The Chicago Manual of Style* [B1] or another reliable source on index preparation.

11. Numbering the clauses and subclauses of a standard

11.1 Body clauses

The body of a standard is usually divided into several major clauses that are further divided into subclauses. The IEEE Standards system for numbering clauses uses Arabic numerals in sequence. A subclause should be numbered by adding a decimal point and number to the clause number (e.g., 5.1). Subclauses may be divided into further subclauses by adding a second decimal point and number (e.g., 5.1.1). Five numbers separated by decimal points is the maximum acceptable subdivision (e.g., 5.1.1.1.1). If necessary, the material should be reorganized to avoid subdivisions beyond this point. An exception to this numbering is allowed for amendments (see 22.2 for information on numbering in amendments and corrigenda).

Clauses and subclauses should be divided into further subclauses only when there is to be more than one subclause. In other words, clauses and subclauses should not be broken down into further subclauses if another subclause of the same level does not exist. For example, Clause 1 should not have a subclause 1.1 unless there is also a subclause 1.2.

All clause and subclause headings should consist of a number and a concise, but meaningful, title. Text immediately follows the subclause title, but on a new line. Hanging paragraphs (i.e., unnumbered paragraphs following a main clause head or main subhead) should not be used since reference to the text would be ambiguous. It may be necessary to include a subhead with the title “General” to avoid instances of hanging paragraphs, as shown in Figure 1.

4. Example of hanging paragraph

A hanging paragraph would follow the main clause head. All text following this head is a part of the clause, including all the text within subclauses, so reference to this paragraph would be ambiguous.

4.1 Subclause head

Subclause text.

5. Hanging paragraph corrected

5.1 General

Text that is no longer a hanging paragraph.

5.2 Subclause head

Subclause text.

Figure 1—Hanging paragraphs

The terms *clause* or *subclause* should not be used in headings or references except when referring to major clause headings (e.g., "see Clause 5") or at the beginning of a sentence. All other cross-references should be made by simply referring to the number (e.g., "see 5.1").

Standards are not published with line numbers (although numbers should be included in balloted drafts). Therefore, the working group should use only clause or subclause numbers in cross-references.

11.2 Numbering annexes

Consecutive capital letters and a title should be used to identify each annex. Text should be organized and numbered as described in 11.1, with the following exception: clause and subclause numbers should be prefaced with the identifying letter of the annex, followed by a period (see the example annex in Annex B). For standards containing only one annex, the letter A should appear in its title and should preface the clause and subclause numbers in the text. Figures and tables included in annexes should also carry the identifying letter of the annex in which they appear, followed by a period. For example, the first figure in Annex A should be identified as Figure A.1.

11.3 Lists

Lists in a subclause may be ordered or unordered. An ordered list of items within a subclause should be presented in outline form, with items lettered a), b), c), etc. If a further subdivision of the items is necessary, 1), 2), 3); i), ii), iii); dashed subdivision items, etc., should be used to form a tiered list. Only one occurrence of any level of an ordered list may be presented in any subclause to avoid confusing cross-references [e.g., it is OK to have an a) level list followed by a 1) level list , etc., but there should not be more than one a) level list in the same clause or subclause]. As an alternate solution, authors may want to consider adding an additional subclause. Dashed lists can also be used instead of an ordered list, where applicable. Annex B contains some examples of dashed lists. Closing punctuation should be omitted in lists of short items or phrases. Punctuation should be used for sentences. Figure 2 provides examples of the different levels in an ordered list.

a) Name of the manufacturer
b) Rated frequency, if other than 60 Hz
c) Connection chart showing
    1) Full winding development
    2) Taps
    3) Pole and pocket location
d) Instruction book number
e) Mutual reactance (for linear coupler transformers)
f) Self-impedance (for linear coupler transformers)
    1) Resistance
    2) Reactance
    3) Impedance
        i) For volts
        ii) For amperes

Figure 2—Example of a tiered list

11.4 Exceptions

If standards developers have a valid reason for wishing to diverge from the organization and numbering system described in this clause, they should consult with an IEEE Standards project editor as early as possible in the project's development.

12. Homogeneity

Uniformity of structure, of style, and of terminology should be maintained not only within each standard, but also within a series of associated standards. The structure of associated standards and the numbering of their clauses should be identical, as far as possible. Analogous wording should be used to express analogous provisions; identical wording should be used to express identical provisions.

The same term should be used throughout each standard or series of standards to designate a given concept. The use of an alternative term (synonym) for a concept already defined should be avoided. As far as possible, only one meaning should be attributed to each term used.

13. Word usage

13.1 *Shall*, *should*, *may*, and *can*

The word *shall* is used to indicate mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (*shall* equals *is required to*). The use of the word *must* is deprecated and shall not be used when stating mandatory requirements; *must* is used only to describe unavoidable situations. The use of the word *will* is deprecated and shall not be used when stating mandatory requirements; *will* is only used in statements of fact.

The word *should* is used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain course of action is deprecated but not prohibited (*should* equals *is recommended that*).

The word *may* is used to indicate a course of action permissible within the limits of the standard (*may* equals *is permitted to*).

The word *can* is used for statements of possibility and capability, whether material, physical, or causal (*can* equals *is able to*).

If a WG chooses to define these terms within a draft standard, the following text may be reproduced (under an early subclause entitled "Word usage") for the benefit of users of the standard:

> "In this document, the word *shall* is used to indicate a mandatory requirement. The word *should* is used to indicate a recommendation. The word *may* is used to indicate a permissible action. The word *can* is used for statements of possibility and capability."

13.2 *That* and *which*

The words *that* and *which* are commonly misused; they are not interchangeable. *That* is best reserved in essential (or restrictive) clauses; *which* is appropriate in nonessential (or nonrestrictive), parenthetical clauses. Simply stated, if a comma can be inserted before the word *that* or *which*, the word should be *which*. If a comma would not be used, the word to use is *that*.

Example:

a) Defining the inputs and outputs provides a better understanding of the steps *that* are necessary to complete the process.

b) Defining the inputs and outputs provides a better understanding of these steps, *which* are explained in 5.1 through 5.9.

13.3 Gender-neutral language

The IEEE-SA uses generic titles (e.g., *chair* rather than *chairman*) in the standard. The following practices shall apply:

a) When writing in the third person, the phrase *he or she* should be used. The male or female pronoun alone or the variations *he/she* or *s/he* should not be used. Also, the pronoun *they* should not be used as a singular pronoun.

b) If a particular sentence becomes cumbersome when *he or she* is used, the sentence should be rewritten in the plural or completely rewritten to avoid using pronouns. The indefinite pronoun *one* should be avoided. In references to a company, the pronoun *it*, not *we* or *they*, should be used.

13.4 Use of the terms *safe* or *safety*

Generally, it is preferable to avoid the use of the word *safe* in a standard unless the condition or practice referenced by the word safe has been tested under all cases as being, in fact, safe. Typically, this is not the case. Thus, unless it can be demonstrated that such condition or practice is safe, it should not be used. Words such as *safer* or *safest* can be used in a relative context if it can be demonstrated to be the case. For example, it is proper to say that one set of conditions or practices is safer than another, if in fact true, or that it is safer to employ a certain practice than not in a given situation. However, the term *safest* implies an absolute condition, which, in certain contexts, has the same implication as *safe* and, thus, should not be used. For example, *this is the safest set of conditions for using waveguide* is an improper usage.

The word *safety* should be avoided if it is being used to address a set of conditions or practices that have not been established for the purpose of promoting safety under all situations in which such conditions or practices will be employed. For example, *the following 10 safety considerations should be reviewed before implementing this practice* should not be used.

13.5 Use of the first- or second-person forms of address

The first-person form of address (*I, we*) or the second-person form of address (*you*) should not be used or implied in standards, e.g., "*You should avoid working on lines from which a shock or slip will tend to bring your body toward exposed wires.*" This sentence should be rewritten to identify the addressee, as follows: "*Employees should avoid working on lines from which a shock or slip will tend to bring their bodies toward exposed wires."*

13.6 Hyphenation

In most cases, compound adjectives (such as *fiber-optic cable*, *lead-acid batteries*, *power-operated valve assemblies*) should be hyphenated. IEEE-SA project editors check documents for consistency of hyphenation; when the working group has a decided preference (such as *life cycle process*), that preference will be enforced. The use of hyphenated multiple adjectives (such as *compressed-air-actuated power tools*) should be limited to cases where such use is necessary to ensure comprehension.

13.7 Capitalization

The initial letter of the first word should be capitalized in the following:

- Clause, subclause, and annex headings
- Specific cross-references in text [e.g., Table 1, Figure 12, NOTE 2, Equation (3)]
- Titles for figures
- Titles for tables
- Column and line headings in tables
- Lettered and numbered list entries

13.8 Using standard designations in text

When using standard designations in text, two simple rules apply:

a) When referring to the document, i.e., the standard that is published, IEEE Std 1234 should be used. For example, "*IEEE Std 1234 should be referenced for more information on protocol layering.*"

b) When referring to the technology that the document standardizes, IEEE 1234 should be used. For example, "*IEEE 1234 protocol layering is employed in the previous example.*"

14. Quantities, units, and letter symbols

14.1 General

The word *quantity* has many meanings; in this clause the word refers to physical quantities, which are described in units of measure such as length, mass, time, and temperature. A unit is a particular sample of a quantity, chosen so that an appropriate value may be specified. Meter, kilogram, hour, and degree Celsius are some of the units used for the four quantities noted previously.

The value of a quantity is generally expressed as the product of a number and a unit. Quantities and units may be represented in text by letter symbols, and are always so represented in equations. If a number and unit cannot be identified for a quantity, the discussion may concern an amount rather than a quantity, in which case the term *amount* should be used.

14.2 Numbers

The following rules should be observed:

a) The decimal marker should be a dot on the line (decimal point). This applies even when the standard in question is intended for international adoption (e.g., adoption by ISO/IEC); see Clause 22.

b) For numbers of magnitude less than one, a zero should be placed in front of the decimal point (see 15.3.2).

c) In general text, isolated numbers less than 10 should be spelled out. However, in equations, tables, figures, and other display elements, Arabic numerals should be used. Numbers applicable to the same category should be treated alike throughout a paragraph; numerals should not be used in some cases and words in others.

d) The value of a quantity shall be expressed by an Arabic numeral followed by a space and the appropriate unit name or symbol. An upright (Roman) type font should be used for the unit symbol even if the surrounding text uses a sloping (italic) font.

e) If tolerances are provided, the unit shall be given with both the basic value and the tolerance (150 m ± 5 mm). Ranges should repeat the unit (e.g., 115 V to 125 V). Dashes should never be used because they can be misconstrued for subtraction signs.

14.3 Metric system

In 1995, the IEEE implemented a metric policy (IEEE Policy 9.18) that calls for measured and calculated values of quantities to be expressed in metric units [SI (Système International d'Unités)] in IEEE

publications.[11] (See IEEE/ASTM SI 10 for guidance on metric practice.) The IEEE-SA Standards Board Implementation Plan for the IEEE metric policy states that proposed new standards and revised standards submitted for approval should use metric units exclusively in the normative portions of the standard. Inch-pound data may be included in parentheses after the metric unit if the sponsor believes that the audience for this document would benefit from the inclusion of inch-pound data, based on concerns for safety or clarity. Metric units shall always be the primary unit of measurement.

IEEE Policy 9.18 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." Standards Coordinating Committee 14, as part of the coordination process, shall review requests for individual exceptions, including those noted below, and shall report its recommendations to the IEEE-SA Standards Board.

Exceptions:

a) A specific exception is given for trade sizes, such as the AWG wire series and inch-based standards for fasteners. Such data need not be translated into metric terms.

b) Also excepted are those cases, such as plugs and sockets, where a mechanical fit to an inch-based product is required.

c) This Implementation Plan does not require metric products to be substituted for inch-based products. For further information, see IEEE/ASTM SI 10, IEEE Std 260.1, and IEEE Std 270.

14.4 Letter symbols

In IEEE standards, letter symbols should be used rather than abbreviations. Letter symbols include symbols for physical quantities (quantity symbols) and symbols for the units in which those quantities are measured (unit symbols). Unlike common abbreviations, letter symbols are invariant in singular and plural, they are not followed by a period, and case is maintained independent of the surrounding text (see IEEE Std 260.1).

For example, standard quantity symbols for length, mass, and time are *l*, *m*, *t*. They are set in *italic* letters. Unit symbols for the same three quantities are m, kg, and s, set in Roman (upright) letters. Note especially that V is the symbol for the unit "volt," and *V* (italic) is the symbol for the quantity "voltage." Unit symbols may not be used to stand for the quantity being measured; that is, do not write:

— "The km between the substations is 20," but write instead, "The distance between the substations is 20 km."

— "The amperes that flow into the ground," but write instead, "The current that flows into the ground."

— "Polarity shall be additive for all kVA transformers rated at 200," but write instead, "Polarity shall be additive for all transformers with an apparent power rating of 200 kVA."

[11] For more information on IEEE Policy see http://www.ieee.org/web/aboutus/whatis/policies/p9-18.html and http://standards.ieee.org/announcements/metric.html.

15. Tables

15.1 Labeling and presentation of tables

Tables provide a clear and concise way of presenting large amounts of data in a small space. The sample draft in Annex B shows examples of properly formatted tables.

Working groups shall obtain permission to use any table from another source, including from a manufacturer, preferably prior to using it in a draft standard (see 4.1 and Clause 5).

Formal tables should be given a number and a concise title and should be cited in the text with the word *Table* followed by the number. (See 15.2 for information on the numbering of tables.) Tables should be boxed and ruled. Whenever possible, tables should be organized to fit on a single page. When a table must carry over for more than one page, complete column headings should be repeated at the top of successive pages. The table number and title should be repeated at the top of the page as follows: "Table 1—Title *(continued)*."

15.2 Numbering and capitalization in tables

Tables should be numbered consecutively in a separate series and in the order of their reference in the text (e.g., Table 1, Table 2, Table 3). Hyphenated numbers should not be used except in standards of considerable length. In the latter case, it is appropriate to label the first table in a clause with the number 1, preceded by the clause number (e.g., Table 6-1, Table 6-2).

Tables included in annexes should also carry the identifying letter of the annex in which they appear, followed by a period. For example, the first table in Annex A should be identified as Table A.1.

Tables should be referenced in the text by the word Table and their number only (e.g., "see Table 1"). If referring to two or more tables in the same sentence, each should be named separately. For example, use "see Table 1, Table 2, and Table 3," instead of "see Tables 1 through 3."

Only the initial letter of the first word and proper nouns should be capitalized in

- Table titles
- Column and line headings in tables (see Table 2)

NOTE—See 16.2 for information on the numbering of figures.

15.3 Presentation of data and table format

15.3.1 Units of measure

Units of measure shall always be provided either in the title, in parentheses, or preceded by a solidus in the column headings [e.g., for volts either *E* (V) or *E*/*V* would be acceptable], or in a NOTE. The same units of measure shall be used throughout each column; ohms shall not be combined with megohms, millimeters with centimeters, or seconds with minutes. To save space, abbreviations and letter symbols should be used in column and line headings wherever possible. (See IEEE Std 260.1 and other standards in Clause 2 for the appropriate abbreviations and symbols for use in standards.)

15.3.2 Numerical values

To facilitate the comprehension of numbers, digits should be separated into groups of three, counting from the decimal point toward the left and right. The groups should be separated by a space, rather than by a comma, period, or dash. If the magnitude of the number is less than one, the decimal point should be preceded by a zero. In numbers of four digits, the space is not necessary, unless four-digit numbers are grouped in a column with numbers of five digits or more.

Examples:

73 722 7372 0.133 47

All numbers should be aligned at the decimal point. The width of the columns may vary to accommodate the length of the longest entry in each column. Only as many significant digits should be used as the precision of data justifies. Decimal fractions should be used in tabulations unless fractions are commonly used in the field.

Common fractions and decimal fractions shall not be combined in the same table. An em dash (—) should be used to indicate the lack of data for a particular cell in a table.

15.4 Notes and footnotes to tables

A note to a table is informative. A footnote to a table is normative. This distinction should be kept in mind when determining whether information should go in a table note or a table footnote.

A note to a table should immediately follow the table to which it belongs. If the text is mandatory, it should appear in the body of the standard or in a footnote to the table. Important information on safety, health, or the environment shall not be included in notes to tables.

Notes to a table should appear before any table footnotes in the following order:

a) *General notes and specific notes.* General notes apply to the entire table and should be introduced by “NOTE—” set in upright capital letters. Specific notes should detail specific material or parts of the table and should also be introduced by "NOTE—" set in upright capital letters. Multiple notes in sequence should be numbered “NOTE 1—”, “NOTE 2—”, etc.

b) *Crediting source.* Use either of the following credit lines:

   1) Reprinted with permission from... (Use when data is derived from another source from which permission to reproduce has been obtained.)

   2) Source: (Use when data is derived from another IEEE standard.)

Footnotes to a table contain normative information. They should be marked with lowercase letters starting with “a” for each table.

15.5 Informal tables

Simple tabulations that are not referred to outside of the subclause in which they appear may be organized into informal tables that do not exceed five or six lines in depth; no table number or title is required. However, it is recommended that all tables be numbered and titled if possible. See the sample draft in Annex B for an example of an informal table.

16. Figures

16.1 Requirements for creating figures

Figures should be created using any one of a number of recommended graphics programs. For more information on recommended graphics programs, please see the following Web site: http://standards.ieee.org/guides/style/graphics/graphics_index.html. For specific requirements concerning the preparation of figures see Table 2.

WGs should create their figures using programs that create vector output. Figures created in programs that do not support vector illustrations may result in bitmapped graphics or graphics that do not translate well into other applications, that may not scale appropriately, or that may not retain their quality. However, for revision projects for which the WG is unsure of how a graphic file was originally created, a TIFF version of the file should be submitted. For more information on acceptable file formats, see http://standards.ieee.org/guides/style/graphics/graphics_index.html.

When working with FrameMaker files, the FrameMaker graphics editor can be used for simple line drawings and TIFF versions do not need to be submitted.

Table 2—Figure preparation and requirements

Resolution	— Black and white: 300 DPI — Grayscale: 150 DPI — Line art: 600 DPI — Black and white photograph: 300 DPI
Size	— Maximum width: 7.5" — Maximum length: 10"
Color	Color in figures shall not be required for proper interpretation of the information.
Line drawings	Save line art as black and white.
Line drawings with shaded areas	Save line drawings with shaded areas as grayscale.
Line weight	Lines should be of an adequate thickness, at least 0.5 points to 1.0 points. Hairline rules may appear broken up in printed document, or not show up at all.
Photographs	Save photographs as grayscale
Fonts in graphics	— All fonts shall be embedded into the figure. — Provide any uncommon fonts. — Use Times New Roman and Arial fonts. — Letter symbols not normally capitalized should always be lowercase.
Point size	The IEEE Standards Department prefers the use of 8-point type size. In no case should captions be in a font smaller than 6 points, or type can become illegible. All capital letters or mixed uppercase and lowercase letters may be used, depending on the amount of text, as long as the presentation is consistent throughout the document.
Captions in graphics	— 6 point is the smallest font acceptable, while shorter captions should be 8 point. — A figure should be labeled by the word *Figure* followed by a number, an em dash, and a title (e.g., Figure 4—Title).

Table 2—Figure preparation and requirements *(continued)*

Cropping	— There should be no borders around the graphic. — Remove any excess white space around the image edges.
Original art	Whenever possible, original source files (from the graphics programs used) should also be submitted to the IEEE. The original art files should be grouped separately from those saved in the formats listed previously. All original art files will be archived for the working group.
Permissions	Working groups shall obtain permission to use any figure taken from another source, including from a manufacturer, prior to using it in a draft standard. See Clause 5 for more information on permission requirements.
Naming graphic files	A figure should be labeled by the word *Figure,* followed by a number (e.g., FIG1.tif). Multiple figures under a single figure number [e.g., Figure 2(a) and Figure 2(b)] should be saved as separate files with corresponding names (e.g., FIG2A.tif, FIG2B.tif). Although separate files, they should be submitted to the IEEE-SA on a single disk or CD-ROM.

See the sample draft in Annex B for an example of a properly formatted figure.

16.2 Figure numbering and titles

Figures should be numbered consecutively in a separate series and in the order of their reference in the text (e.g., Figure 1, Figure 2, Figure 3). Hyphenated numbers should not be used except in standards of exceptionable length. In the latter case, it is appropriate to label the first figure in a clause with the number 1, preceded by the clause number (e.g., Figure 6-1, Figure 6-2, Figure 6-3).

Figures included in annexes should carry the identifying letter of the annex in which they appear, followed by a period. For example, the first figure in Annex A should be identified as Figure A.1.

A figure should be referenced in the text by the word Figure and its number only (e.g., “see Figure 1”). If referring to two or more figures in the same sentence, each should be named separately. For example, use “see Figure 1, Figure 2, and Figure 3,” instead of “see Figures 1 through 3.”

Only the initial letter of the first word and proper nouns should be capitalized in figure titles.

NOTE—See 15.3 for information on the numbering of tables.

16.3 Notes and footnotes to figures

A note to a figure is informative. A footnote to a figure is normative. This distinction should be kept in mind when determining whether information should go in a figure note or a footnote.

Important information on safety, health, or the environment shall not be included in notes to figures. Notes to a figure should appear in the following order:

a) *General notes and specific notes.* General notes apply to the entire figure and should be introduced by “NOTE—” set in upright capital letters. Specific notes should detail specific material or parts of the figure and should also be introduced by "NOTE—" set in upright capital letters. Multiple notes in sequence should be numbered “NOTE 1—”, “NOTE 2—”, etc.

b) *Crediting source.* Use either of the following credit lines:

   1) Reprinted with permission from... (Use when the figure is derived from another source from which permission to reproduce has been obtained.)

   2) Source: (Use when figure is derived from another IEEE standard.)

Footnotes to figures may contain normative information. They should be marked with lowercase letters starting with "a" for each figure. (See Figure A.1 in Annex B.)

17. Mathematical expressions

17.1 Letter symbols and units

Letter symbols defined in applicable IEEE standards (see Clause 2) should be used in preparing mathematical expressions. (See 14.4 for a discussion of letter symbols.)

All terms shall be defined, including both quantities and units, in a tabulation following the equation [see Equation (1)]. The list should be preceded by the word *where*, followed by the list of variables and corresponding definitions.

17.2 Numbering of equations

If the standard contains more than one equation, then equations of key importance should be numbered consecutively in parentheses at the right margin. Derivations of equations or examples where values are substituted for variables need not be numbered.

An equation should be cited in the text by the word Equation and its number only [e.g., "see Equation (1)"]. If referring to two or more equations in the same sentence, each should be named separately. For example, use "see Equation (1), Equation (2), and Equation (3)," instead of "see Equations (1) through (3)."

Equations in annexes should be numbered beginning with the letter of the annex where they are found. For example, the first equation in Annex A would be numbered "(A.1)" and the reference to it would be to "see Equation (A.1)."

17.3 Presentation of equations

A multiplication sign (×), rather than the letter "x" or a multidot (·), should be used to indicate multiplication of numbers and numerical values, including those values with units (e.g., 3 cm × 4 cm).

Although the stacked style of fractions is preferred, exceptions should be made in text to avoid printing more than two lines of type. For example, in text *a/b* is preferable to $\frac{a}{b}$.

The general rules regarding the use of upright (Roman) and italic text in equations [see Equation (1)] are as follows:

— Quantity symbols (including the symbols for physical constants), subscripts or superscripts representing symbols for quantities, mathematical variables, and indexes are set in italic text.

— Unit symbols, mathematical constants, mathematical functions, abbreviations, and numerals are set in upright (Roman) text.

Example:

$$x = r\sin\theta\cos\varphi \quad (1)$$

where

x is the x-coordinate on a cartesian plane
r is the length of the position vector
θ is the angle between the position vector and a coordinate axis
φ is the angle from the plane in which both the axis and the position vector lie to either of the coordinate planes including that axis

Table 3 lists a number of functions and operators that are set in upright (Roman) text.

Table 3—Examples of functions and operators set in upright (Roman) text

arg (argument)	hom (homology)	min (minimum)
cos (cosine)	Im (Imaginary)	mod (modulus)
cot (cotangent)	inf (inferior)	Re (Real)
det (determinant)	ker (kernal)	sin (sine)
diag (diagonal)	lim (limit)	sup (superior)
dim (dimension)	log (logarithm)	tan (tangent)
exp (exponential)	max (maximum)	var (variance)

Further examples of the presentation of equations are given in the sample draft in Annex B.

17.4 Quantity and numerical value equations

Equations shall be dimensionally correct. Equations may be in either quantity equation form or in numerical value equation form. Stipulation of units for substituted values in the variable list below the equation does not suffice to meet this requirement.

A quantity equation is valid regardless of the units used with the substituted values, once any unit conversions and prefix scaling factors have been taken into account. For example, $F = ma$ is always correct.

A numerical value equation depends on the use of particular units and prefixes. Such equations may be presented in one of two forms. One form represents a numerical relationship among quantities whose dimensions have been reduced to 1 due to division by the appropriate (prefixed) units. For example,

$$t/°C = T/K - 273.15$$

The other form annotates the quantities with the units to be used. For example,

$$\{t\}_{°C} = T\}_{K} - 273.15$$

18. Notes, footnotes, examples, warnings, and cautions

18.1 Notes

Explanatory statements may be used in the text for emphasis or to offer informative suggestions about the technical content of the standard. These notes provide additional information to assist the reader with a particular passage and shall not include mandatory requirements. A note in the text is an informative part of the approved standard; therefore, important information on safety, health, or the environment shall not be included. A note should follow that paragraph to which it belongs, and shall be set apart from the text by introducing the statement with the capitalized word "NOTE—." Within each subclause, multiple notes in sequence should be numbered "NOTE 1—", "NOTE 2—", etc. (See Annex B for examples.)

"Note that" is normative and is translated to mean "pay special attention to." "Note that" is usually part of a paragraph while "NOTE—" is set apart as its own paragraph.

18.2 Footnotes

Footnotes in text may be included in a standard only for information, clarification, and/or aid applicable to the use of the standard. Mandatory requirements shall not be included in text footnotes because these footnotes are not officially part of the standard. Note that footnotes to tables and figures follow different rules (see 15.4 and 16.3) and may contain normative information.

Footnotes in the frontmatter should be indicated separately from the body footnotes. Frontmatter footnotes should be indicated with lowercase letters.

Footnotes in the body and annexes should be numbered consecutively using Arabic numerals. When there are footnotes within tables and figures, they should be lettered. If a footnote is cited more than once, each additional citation should refer back to its first mention as follows:

[2] See Footnote 1.

18.3 Examples

Examples may be used as illustrations to aid understanding of the standard. Examples are not a normative part of the standard; therefore, requirements shall not be included in the text of the example. (See 18.4 and Clause 19 for illustrations of examples.)

18.4 Warnings and cautions

Warnings call attention to the use of materials, processes, methods, procedures, or limits that have to be followed precisely to avoid injury or death. Cautions call attention to methods and procedures that have to be followed to avoid damage to equipment. A warning is more important than a caution. If both are to be written for the same related clause or subclause, the warning shall precede the caution.

Warnings and cautions should start with a clear instruction, followed with a short explanation (if necessary). If the warning or caution is of a general nature (and is applicable throughout the text), it should be placed at the start of the text. This avoids the necessity of repeating the same warning or caution frequently throughout the text. Warnings and cautions shall not be placed in informative text or notes.

Example:

WARNING

Serious injury may result if the following parameters are not followed exactly.

19. Bibliography

19.1 General

Complete and current information for bibliographic entries shall be supplied by the working group (including publication dates, etc.). The bibliography shall always be an informative lettered annex that appears as either the first or last annex of the standard (if an index is included, the annexes would precede the index). (See Annex A for an example bibliography.)

If bibliographic items are cited in text, tables, figures, or notes, the citation should be placed at the point where reference is made to them. If the item is a standard, the designation (e.g., IEEE Std 1226.6-1996) and bibliographic reference number (e.g., [B4]) should be cited. If the reference is to an article, book, or other type of publication included in the bibliography, the title or author of the publication and the bibliographic reference number should be cited.

The bibliography should be ordered alphanumerically, without respect to the type of publication being cited.

19.2 Citing standards in a bibliography

Standards listed shall include designation and title.

Example:

[B1] ASME BPVC-I-2004, Boiler and Pressure Vessel Code, Section 1—Power Boilers.

[B2] Code of Federal Regulations Title 29 Part 1210 Section 354 (29CFR1210.354), Health and Safety Standards—Head injury.

[B3] ISO/IEC 7498-4, Information processing systems—Open Systems Interconnection—Basic Reference Model—Part 4: Management framework.

19.3 Articles in periodicals

Articles listed shall include the following information in the order shown:

a) Last name of author or authors and first name or initials, or name of organization
b) Title of article in quotation marks
c) Title of periodical in full and set in italics
d) Volume, number, and, if available, part
e) First and last pages of article
f) Date of issue

Example:

[B1] Boggs, S. A., and Fujimoto, N., "Techniques and instrumentation for measurement of transients in gas-insulated switchgear," *IEEE Transactions on Electrical Installation*, vol. ET-19, no. 2, pp. 87–92, Apr. 1984.

19.4 Books

Books listed shall include the following information in the order shown:

a) Last name of author or authors and first name or initials, or name of organization
b) Title of book (in italics)
c) Edition number (if applicable)
d) Place of publication (city)
e) Name of publisher
f) Year of publication
g) First and last page of reference

Example:

[B26] Peck, R. B., Hanson, W. E., and Thornburn, T. H., *Foundation Engineering*, 2d ed. New York: McGraw-Hill, 1972, pp. 230–292.

NOTE—Consult *The Chicago Manual of Style* [B1] for more information on how to list books and periodicals.

19.5 Other types of bibliographies

For instructions on citing sources other than those listed in this subclause refer to *The Chicago Manual of Style* [B1].

19.5.1 Annotated bibliography

[B10] Henry, S., and Selig, C., "Predicting source-code complexity at the design stage," *IEEE Software*, vol. 7, no. 2, pp. 36–44, Mar. 1990.

This paper states that the use of design metrics allows for determination of the quality of source code by evaluating design specifications before coding, causing a shortened development life cycle.

19.5.2 Articles in corporate reports

[B6] Dale, S. J., "Performance of a technical and economic feasibility study of an HVDC compressed gas-insulated transmission line," Westinghouse Electric Corporation, Trafford, PA, Final Report, Dec. 1983.

19.5.3 Articles presented at conferences

[B3] Cookson, A. H., and Pedersen, B. O., "Thermal measurements in a 1200 kV compressed gas insulated transmission line," *Seventh IEEE Power Engineering Society Transmission and Distribution Conference and Exposition*, Atlanta, GA, pp. 163–167, Apr. 1979.

19.5.4 Government publications

[B2] Cookson, A. H., "Particle Trap for Compressed Gas Insulated Transmission Systems," U.S. Patent no. 4554399, Nov.1985.

[B3] EPRI EL-2040, *Project 1352-1, Probability-Based Design of Wood Transmission Structures—Volume 3: User's Manual, POLEDA-80—POLE Design and Analysis*, Final Report, Goodman, J., Vanderbilt, M., Criswell, M., and Bodig, J.

19.5.5 Theses, dissertations, and other unpublished works

[B5] Diessner, A., "Studies on Compressed Gas Insulation." Master's thesis, Stanford University, 1969.

[B6] Hazel, R. L., "DC Breakdown and Anode Corona Characteristics of Sphere and Rod-Plane Gaps Insulated With Compressed Sulphur Hexa fluoride." Ph.D. diss., University of Windsor, 1974.

20. Revisions

Working groups with access to the electronic publishing tools used by the IEEE Standards Activities Department should be aware that source files of text and graphics are usually available for electronic revision. Therefore, those who are working on a revision should contact an IEEE Standards project editor.

21. Amendments, corrigenda, and errata

21.1 General

There are several ways of changing a published standard:

a) *Amendment.* A document that contains new material to be incorporated into an existing IEEE standard and that may contain technical corrections to that standard as well.

b) *Corrigendum*. A document that contains only technical corrections to an existing IEEE standard.

c) *Erratum*. A document that corrects errors introduced to an approved standard during the publication process. Errata changes are not balloted documents and are always available for free on the IEEE-SA Web site. Developers and users of IEEE standards are encouraged to regularly consult the IEEE-SA Web site for any issued errata at: http://standards.ieee.org/reading/ieee/updates/errata/index.html. For information on issuing an errata contact an IEEE Standards project editor.

21.2 Amendments and corrigenda

Amendments and corrigenda are balloted documents that give explicit instructions on how to change the text in an existing base standard or an existing amendment. The requirements for amendments and corrigenda are the same as for standards. However, these documents also contain editing instructions for each change. The editing instructions are important because the user should understand how the changes affect the base standard and because these documents are incorporated into the base standard sometime in the future.

Both types of documents have the same format. The following text shall appear at the beginning of either an amendment or a corrigendum:

> NOTE—The editing instructions contained in this <amendment/corrigendum> define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.
>
> The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Deletions and insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.

Editing instructions and text indicating the changes to the base document follow the NOTE. Change bars shall not be included. (See Annex C for an example of an amendment/corrigendum.) Only material being affected by the changes of the amendment/corrigendum shall be included with the appropriate clause/subclause headings.

21.2.1 Numbering in amendments and corrigenda

Amendments and corrigenda shall follow the clause numbering outlined in Clause 11. However, if text is inserted between existing consecutive clauses or subclauses, an additional letter may be included in the

heads (e.g., if clauses are inserted between Clause 4 and Clause 5, the new clauses would be labeled Clause 4A, Clause 4B, Clause 4C). This would also apply to subclauses (e.g., subclauses inserted between 4.1.3 and 4.1.4 would be labeled 4.1.3a, 4.1.3b, 4.1.3c). Subdivisions of inserted subclauses would follow the numbering outlined in Clause 11 (e.g., 4.1.3a.1, 4.1.3a.2, 4.1.3a.3). This numbering may be more appropriate for amendments with extensive changes that would affect numbering throughout the base standard (so it would be difficult to outline all the numbering changes that would occur), or for amendments to standards where exact references to clauses, figures, equations, and tables are required.

Additional amendments to a base standard may insert text between already amended clauses or subclauses. In these cases, numbering of clauses may become very complex. An IEEE Standards project editor can assist with complex numbering formats. Working groups should consider a revision of the document in these instances. For tables and figures in amendments and corrigenda, clause or subclause numbering should follow the numbering outlined in 15.2 and 16.2. However, if an amendment or corrigenda inserts a table between consecutive tables, or a figure between consecutive figures, the addition of a letter may be used.

Exceptions may be made for numbering established in previously published amendments. Exceptions shall only be valid until a revision occurs, after which the numbering described in Clause 11 will be implemented. Table 4 shows appropriate numbering formats that may be used for amendments and corrigenda. (See Annex C for examples of amendment numbering.)

21.2.2 Editorial instructions in amendments and corrigenda

Amendments submitted for ballot shall clearly indicate the changes to the existing standard. Editorial instructions shall clearly outline how the changes should be implemented in the base standard, as modified by all previously approved amendments or corrigenda. The instructions shall not require interpretation by the IEEE Standards project editor, by the balloter, or by any user. Therefore, the placement of the changes, as well as any renumbering that is required, shall be delineated in a manner that does not result in ambiguities.

Editorial instructions shall precede all changes, and should begin with one of the four types of editing instructions, which are formatted in bold italic: ***change***, ***insert***, ***delete***, and for figures or equations, ***replace***. ***Change*** shall be used when text or tables are being modified; therefore, strikethrough (for deletions) and underscore (for insertions) should be indicated. ***Insert*** shall be used to include new text, equations, tables, or figures in the standard. ***Delete*** shall be used to remove existing text, equations, tables, or figures without exchanging the information (i.e., it is not permissible to delete a paragraph and insert a new one rather than showing the changes in the paragraph using the change instruction). ***Replace*** shall be used only for figures and equations by removing the existing figure or equation and replacing it with a new one. (See Annex C for examples of editorial instructions in amendments or corrigenda.)

Additional tips for creating amendments and corrigenda are available from the IEEE Standards Web site <http://standards.ieee.org/guides/style/index.html>. IEEE Standards project editors are also available for questions that arise while preparing these documents.

21.2.3 Amendment versus revision

The greater the number of amendments or corrigenda associated with a standard, the more complex the editing instructions become for all subsequent amendments and corrigenda. If three amendments to a standard exist however, working groups are encouraged to revise the standard rather than develop an additional amendment (see 8.1.2 and 9.2 of the IEEE-SA Standards Board Operations Manual [B5] for additional information and exceptions).

For an amendment, only the changes and the respective editorial instructions go before balloters. For revisions, the entire document is open for comments.

Table 4 lists examples of numbering schemes for amended clauses included in amendments and corrigenda.

Table 4—Numbering of amended clauses

Location of inserted clause	Original order or clauses	Revised order of clauses
Clause heads First level	Clause 1 Clause 2	Clause 1 Clause 1A 1A.1 Clause 1B Clause 2
Second level	1.1 1.2	1.1 1.1a 1.1a.1 1.1b 1.2
Figures	Figure 1 Figure 2	Figure 1 Figure 1a Figure 1b Figure 2
Tables	Table 1 Table 2	Table 1 Table 1a Table 1b Table 2
Equations	Equation (1) Equation (2)	Equation (1) Equation (1a) Equation (1b) Equation (2)
Annexes Annex heads	Annex A Annex B	Annex A Annex A1 Annex A2 Annex B
First level	A.1 A.2	A.1 A1.a A.1a.1 A.1b A.2
Second level	A.1.1 A.1.2	A.1.1 A.1.1a A.1.1a.1 A.1.1b A.1.2

22. Global standardization activities

22.1 General

Working groups preparing IEEE standards may wish to develop their standard for global use. Some options available to working groups are to:

a) Submit a standard for adoption to another organization upon approval of the standard by the IEEE-SA Standards Board

b) Jointly develop a new standard with another organization

c) Jointly revise an existing standard with another organization

The IEEE-SA offers guidance to working groups on preparation of these documents from both a stylistic and technical perspective.

If there is an interest in such development/submissions, working group chairs should consult the IEEE-SA International Programs Web site (http://standards.ieee.org/intl/index.html) and also contact an IEEE Standards project editor early in the development cycle of their standards. Issues involving coordination and/or cooperation should be directed to an IEEE Standards staff liaison.

22.2 Adoption of an IEEE standard by another organization

IEEE standards may be adopted by other organizations. When submitting an IEEE standard for adoption by another organization, it is important that appropriate permissions are obtained from IEEE.

IEEE has specific agreements with ISO and IEC for the adoption of IEEE standards. Notify an IEEE Standards staff liaison early in the standards development process if intending to submit an IEEE standard to another organization for adoption.

22.2.1 Adoption of an IEEE standard via the ISO/IEEE Partner Standards Development Organization Agreement (ISO/IEEE PSDO Agreement)

The ISO/IEEE PSDO Agreement is an agreement of cooperation between ISO and IEEE and covers specific technical fields.

A published IEEE standard within the scope of the ISO technical committees covered in this agreement, which is used and accepted globally, may be proposed for adoption as an ISO International Standard. The adoption process is done through the ISO Final Draft International Standard (FDIS) process. Information about this process can be found at: http://standards.ieee.org/intl/.

Guidelines for the preparation of documents for potential submittal through the FDIS process can be found in 22.2.3.

22.2.2 Adoption of an IEEE standard via the IEC-IEEE Dual Logo Agreement

Under the IEC-IEEE Dual Logo Agreement, a published IEEE standard, which is used and accepted globally, may be proposed for adoption as an IEC Standard. If the IEEE standard is considered to be

appropriate, it will be submitted to the IEC Standardization Management Board for action. Information about this process can be found at http://standards.ieee.org/intl/.

Guidelines for the preparation of documents for potential submittal through the IEC-IEEE Dual Logo process can be found in 22.2.3.

22.2.3 Style for IEEE documents to be specifically adopted by ISO or IEC

The IEEE Standards Activities Department has harmonized many of its style conventions with the principles of ISO/IEC style, as stated in the *ISO/IEC Directives Part 2* [B6]. However, the IEEE has made some exceptions to the ISO/IEC directives, which should be followed when developing IEEE documents intended for adoption by ISO or IEC.

a) IEEE will continue to designate and to title standards according to 4.2.4 and 9.2. If a working group intends that its standard should one day be an ISO/IEC standard, the chair should consult with IEEE staff when preparing the PAR so that the designation and title incorporates ISO/IEC considerations.

b) IEEE will continue to use the period as a decimal sign rather than the comma.

c) Since American English is acceptable internationally, the IEEE will continue to use American English grammar and spelling in its standards. In cases where British spelling is used in an internationally recognized term (e.g., “Fibre Distributed Data Interface”), that spelling may be retained.

d) Working groups that intend to submit their drafts for review by JTC1 should ensure that any included normative references meet the JTC1 requirements for references. ISO/IEC requires that referenced standards that are not ISO or IEC standards be accompanied by appropriate documentation.

e) ISO and IEC use lowercase letters and periods in abbreviated terms consisting of the initial letters of words (e.g., “a.c.” for “alternating current”); however, the IEEE style of not using periods in abbreviations and acronyms is acceptable.

f) Stylistic changes may be considered technical changes by ISO or IEC (e.g., capitalization of “standard” to “Standard” when self-referencing the document). These stylistic requirements should be determined and then communicated to IEEE project editors as a part of the submission of the draft standard to RevCom for final approval by the IEEE-SA Standards Board.

g) The foreword should contain any mention of closely related standards, changes from any previous editions of the standard, and the structure of the normative and informative parts of the standard. Historical or specific technical commentary about the preparation of the standard should be included in the introduction.

h) The bibliography shall be the last annex (i.e., there is no option to place the bibliography as the first annex).

22.3 IEEE documents developed jointly with other organizations

IEEE standards may be developed jointly with other organizations with the appropriate agreements in place. IEEE already has specific agreements for the joint development of new and existing standards with ISO and IEC.

An IEEE Standards staff liaison shall be notified at the beginning of the standards development process if you intend to jointly develop a standard with another organization.

22.3.1 Joint Development of Standards via the ISO/IEEE Partner Standards Development Organization Agreement (ISO/IEEE PSDO Agreement)

Joint development may occur in instances where IEEE has developed a standard, or where IEEE is proposing or developing a standard (yet unpublished) that corresponds to a stated ISO committee need and that is within the scope of the technical committees covered in the ISO/IEEE PSDO Agreement.

For documents being developed under this program, the ISO template for the development of the standard should be used (http://www.iso.org/iso/standards_development/it_tools/iso_templates.htm).

Information on the process for the development of joint standards with ISO can be found at http://standards.ieee.org/intl/.

22.3.2 Joint Development of Standards via the IEC-IEEE Dual Logo Agreement

If it is determined that there is a need for a joint development project (either a new or existing standard), a joint development project can be initiated.

For documents being developed under this program, the IEC Standards Development Template (IECStd) should be used (http://www.iec.ch/tiss/forms-templ.htm).

Information on the process for the development of joint standards with IEC can be found at http://standards.ieee.org/intl/.

Annex A

(informative)

Bibliography

For general style not outlined in this manual, the IEEE Standards Activities Department follows *The Chicago Manual of Style* [B1] as the primary reference.

The most recent editions of the following texts are recommended as guides for IEEE Standards draft development:

[B1] *The Chicago Manual of Style*. Chicago: The University of Chicago Press.

[B2] *IEC Multilingual Dictionary—Electricity, Electronics, and Telecommunications,* 2005, Edition 6.[12]

[B3] IEC 60050, IEC International Electrotechnical Vocabulary.

[B4] *IEEE-SA Standards Board Bylaws*, New York: Institute of Electrical and Electronics Engineers, Inc., 2008.

[B5] *IEEE-SA Standards Board Operations Manual*, New York: Institute of Electrical and Electronics Engineers, Inc., 2008.

[B6] ISO/IEC Directives, Fifth Edition, 2004, Part 2, Rules for the structure and drafting of International Standards.

[B7] ISO/IEC Guide 21: 2005, Regional or national adoption of International Standards and other International Deliverables.

[B8] Miller, C., and Swift, K. *The Handbook of Nonsexist Writing*. New York: HarperCollins.

[B9] *Webster's New Collegiate Dictionary*. Eleventh Edition. Springfield, MA: Merriam-Webster, Inc.

[B10] *Words Into Type*. Englewood Cliffs, NJ: Prentice-Hall, Inc.

[12] Available on CD-ROM or via the Internet at http://www.electropedia.org.

Annex B

(informative)

Example draft standard

The following pages contain an example draft standard that points out common style issues. This example is meant to be used as a quick and easy reference to issues discussed in this manual. In most instances, a clause or subclause has been provided for easy reference.

IEEE P987.6™/D2
Draft Recommended Practice for How to Present an IEEE Standards Draft

Prepared by the W4 Working Group of the

Standards Staff Engineering Committee

IEEE Standards Activities Department
445 Hoes Lane
Piscataway, NJ 08854, USA

Abstract: Key discussion points covered in the draft are discussed here in a few complete sentences. The more specific the better since the abstract often populates search engines and catalog databases.
Keywords: designation, document development, draft, equation, figure, guide, introduction, list, purpose, recommended practice, scope, standard

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3 Park Avenue, New York, NY 10016-5997, USA

PDF: ISBN 978-0-XXXX-XXXX-X STDXXXX
Print: ISBN 978-0-XXXX-XXXX-X STDPDXXXX

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Introduction

This introduction is not part of IEEE P987.6/D2, Draft Recommended Practice for How to Present an IEEE Standards Draft.

The introduction of the frontmatter is informative. It serves to give readers context, including background, key themes, history, etc.

Notice to users

Laws and regulations

Users of these documents should consult all applicable laws and regulations. Compliance with the provisions of this standard does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

Updating of IEEE documents

Users of IEEE standards should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE Standards Association web site at http://ieeexplore.ieee.org/xpl/standards.jsp, or contact the IEEE at the address listed previously.

For more information about the IEEE Standards Association or the IEEE standards development process, visit the IEEE-SA web site at http://standards.ieee.org.

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: http://standards.ieee.org/reading/ieee/updates/errata/index.html. Users are encouraged to check this URL for errata periodically.

Interpretations

Current interpretations can be accessed at the following URL: http://standards.ieee.org/reading/ieee/interp/index.html.

Patents

Attention is called to the possibility that implementation of this recommended practice may require use of subject matter covered by patent rights. By publication of this recommended practice, no position is taken with respect to the existence or validity of any patent rights in connection therewith. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this recommended practice are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

Participants

At the time this draft recommended practice was submitted to the IEEE-SA Standards Board for approval, the W4 Working Group had the following membership:

Jaime Lee, *Chair*

Yan Smithivicz, *Vice Chair*

Thomas A. Edison	Grace Hopper	Ada Lovelace
Michael Faraday	Jack Kilby	Robert Noyce
Joseph Henry		Bill Nye

The following members of the individual balloting committee voted on this recommended practice. Balloters may have voted for approval, disapproval, or abstention.

(to be supplied by IEEE)

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Draft Recommended Practice for How to Present an IEEE Standards Draft

1. Overview

1.1 Scope

The scope here shall match the scope of the approved PAR—exactly.

1.2 Purpose

The purpose here shall match the purpose of the approved PAR—exactly.

2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

Accredited Standards Committee C2-2007, National Electrical Safety Code® (NESC®).[1,2]

IEEE Std 260.1™, IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units)[3, 4]

IEEE/ANSI SI 10™, American National Standard for Use of the International System of Units (SI): The Modern Metric System.

[1] National Electrical Safety Code and NESC are both registered trademarks and service marks of the Institute of Electrical and Electronics Engineers, Inc.

[2] The NESC is available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (http://standards.ieee.org/).

[3] IEEE publications are available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (http://standards.ieee.org/).

[4] The IEEE standards or products referred to in this clause are trademarks of the Institute of Electrical and Electronics Engineers, Inc.

IEEE P802.21™ (Draft 14, 21 November 2003), Draft Standard for Local and Metropolitan Area Networks—Media Independent Handover Services.[5]

ISO/IEC 9945-1:2003, Information technology—Portable Operating System Interface® (POSIX®)—Part 1: Base Definitions.[6]

NFPA 70, 2005 Edition, National Electrical Code® (NEC®).[7,8]

3. Definitions, acronyms, and abbreviations

3.1 Definitions

For the purposes of this document, the following terms and definitions apply. The IEEE-SA Standards Definitions Database should be referenced for terms not defined in this clause.

acceleration-insensitive drift rate: The component of … *See also:* **drift rate; systematic drift rate**.

code set: *See:* **coded character set**.

coded character set: A set of characters … *Syn:* **code set**.

drift rate: The slope at a stated time of ... (adapted from ISO/IEC 9945-1:2003)

input reference axis (IRA): The direction of an axis ... *Contrast:* **output reference axis**.

NOTE—See 6.7.[9]

output: (A) Data that ... **(B)** The process of ...

systematic drift rate: That component of drift rate that ...

3.2 Acronyms and abbreviations

DER	distributed emission regeneration
DIS	distributed interactive simulation
ISDN	integrated services digital network
ISO	International Organization for Standardization
LAN	local area network

[5] Numbers preceded by P are IEEE authorized standards projects that were not approved by the IEEE-SA Standards Board at the time this publication went to Sponsor ballot/press. For information about obtaining drafts, contact the IEEE.

[6] ISO publications are available from the ISO Central Secretariat, Case Postale 56, 1 rue de Varembé, CH-1211, Genève 20, Switzerland/ Suisse (http://www.iso.ch/). ISO publications are also available in the United States from the Sales Department, American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036, USA (http://www.ansi.org/).

[7] National Electrical Code and NEC are both registered trademarks of the National Fire Protection Association, Inc.

[8] The NEC is published by the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, USA (http://www.nfpa.org/). Copies are also available from the Institute of Electrical and Electronics Engineers, 445 Hoes Lane, Piscataway, NJ 08854, USA (http://standards.ieee.org/).

[9] Notes in text, tables, and figures of a standard are given for information only and do not contain requirements needed to implement this standard.

PDU protocol data unit

4. Important elements of IEEE Standards drafts

4.1 General

IEEE drafts should be built using one of the approved IEEE-SA templates. The templates have macro features that allow for easy tagging of each of the elements of IEEE drafts.[10]

Any standards listed in the normative references clause should also be cited in text. Explain the role and significance of each normative reference. Note that drafts may be included in the normative references clause as long as they are properly cited. See reference to IEEE P802.21.

NOTE 1—A normative reference is a document that users of the standard must have and understand in order to correctly implement the material contained in an IEEE draft.

NOTE 2—Documents that serve as supplemental information that authors of the standard found useful when researching the material but that do not carry the same weight as the normative references are usually informative and therefore would belong in a bibliography (informative annex).

All IEEE standards shall use metric units as the primary units of measure. Customary equivalents may be included in the text after the metric units in parentheses. In the case of tables, separate tables for metric and customary units may be included. See NESC® and NEC® for examples. For more information on the use of metric in IEEE standards, see IEEE/ANSI SI 10. For guidance on the use of letter symbols for units of measurement, refer to IEEE Std 260.1.

4.2 Lists

Lists in a clause or subclause may be ordered or unordered.

The following is an example of a properly formatted ordered list:

a) Name of the manufacturer
b) Connection chart showing
    1) Full winding development
    2) Taps
c) Self-impedance (for linear coupler transformers)
    1) Reactance
    2) Impedance
        i) For volts
        ii) For amperes

[10] IEEE-SA approved templates can be found online at http://standards.ieee.org/resources/development/writing/writinginfo.html.

The following is an example of a properly formatted dashed list:

— Begin with a capital letter.

— Include ending punctuation if is a complete sentence but no ending punctuation if there is not at least one complete sentence in the list.

— If at least one of the items in the dashed list is a complete sentence then add ending punctuation to all of the items in the list.

4.3 Tables

Tables should be cited in text and the significance of the tables explained. Table titles are positioned above the tables themselves. Table 1 shows the nomenclature of a properly formatted table that can be built using one of the IEEE-SA templates or any basic word processing or design program.

Table 1—Table formatting

Column heading	Column heading	Column heading	
		Column heading	Column heading
Line heading Subheading Subheading	Tabulated data (individual positions within the body of the table are called *cells*)		
Line heading			

Table 2 shows an example of table format. Note that column headings are in bold and centered. If a table must be split to cover more than one page, carry the title of the table over to each subsequent page with "*(continued)*" after the title itself.

Table 2—An example of a continued table

Type of source(s)	Type of calculation					
	First cycle		Interrupting		Multiple-voltage circuit breaker closer and latch[a]	
	Rate multiplier	Winding multiplier (see NOTE 2)	Rate multiplier	Winding multiplier (see NOTE 2)	Rate multiplier	Winding multiplier (see NOTE 2)
Induction motors Above 75kW at 1800 r/min	1.0	1.0	0.667	1.5	1.000	1.0

Table 2—An example of table format *(continued)*

Type of source(s)	Type of calculation					
	First cycle		Interrupting		Multiple-voltage circuit breaker closer and latch[a]	
	Rate multiplier	Winding multiplier (see NOTE 2)	Rate multiplier	Winding multiplier (see NOTE 2)	Rate multiplier	Winding multiplier (see NOTE 2)
Above 190 kW at 3600 r/min	1.0	1.0	0.667	1.6	1.000	1.0
All others 37 kW and above	1.0	1.0	0.333	3.0	0.833	1.2
All smaller than 37 kW	1.0	1.0	NEGLECT	NEGLECT	—	—

NOTE 1—This table is provided as an example. The structure of actual tables may vary depending on the data being displayed.
NOTE 2—Use 0.75 X*d* for hydrogenerators without amortisseur windings.

[a]Refers to calculations for medium-voltage circuit breakers.

The following is an example of an informal table. Note that there is no title.

Cable type	Rated voltage (kV)
High pressure	69–161
Low pressure gas-filled	10–29 30–46
Low and medium pressure liquid-filled	15–161 230

4.4 Figures

Figures should be cited in text and the significance of the figures explained. Figure titles are positioned below the figures themselves. Figures can be created using a word processing or design program. Figure 2 and Figure 2 show properly formatted figures.

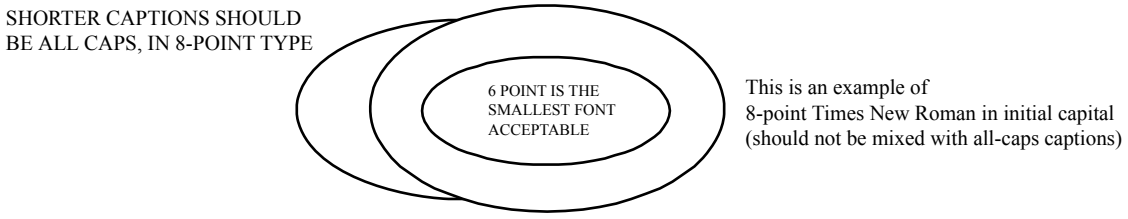

Figure 1—Typographical specifications for figure captions

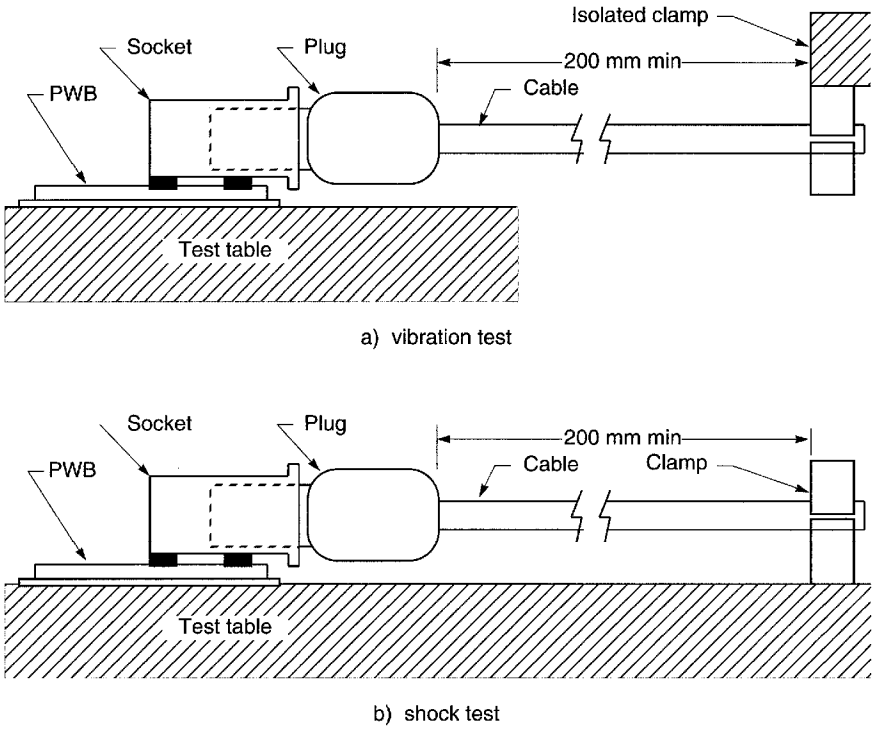

Figure 2—A sample of figure presentation

4.5 Equations

Equations should be cited in text and the significance of the equations explained. Equations can be created using one of the IEEE-SA templates or any basic word processing or design program. Equations should be numbered to the edge of the right-hand margin. See Equation (1).

$$Y(x) = Y_0 \exp[-(x - x_0)^2 / (2f^2)] \quad (1)$$

where

$Y(x)$ is the amplitude of the Gaussian function at channel x
Y_0 is the height of the Gaussian at the centroid channel
x is the channel number
x_0 is the centroid of the Gaussian
f is the width of the Gaussian

Annex A

(informative)

Sample bibliography

[B1] *Name of Book Title in Italics*. City of Publication, State: Name of Publisher. Year of Publication. First and Last Page of Reference.

[B2] *IEEE Std XXX-YEAR, IEEE Standard for Something Industry Needs.*

Annex B

(normative)

Structure of a sample annex

B.1 Overview

B.1.1 Title

Every annex shall be given a title and shall be designated either a normative or an informative annex.

B.1.2 Clause and subclause organization

The material in an annex should be organized into clauses and subclauses just like the body text. There should be at least two items in any subdivision so that if there is one second-level header, there should be at a minimum one other one.

B.2 Material in annexes

Tables, figures, equations, lists, etc. are all permitted in an annex and are formatted like they would be in the body of the text except that:

— Tables are numbered according to the annex letter (e.g., “Table A.1—”)

— Figures are labled according to the annex letter (e.g., “Figure B.1—”)

Annex C

(informative)

Example amendment

The following pages contain an example amendment. It contains the body of the amendment only. Please follow the instructions in Annex B for the title page, copyright information, and introduction.

For additional guidance on amendments, a presentation entitled “Amendment Tips and Tools” is available from the IEEE Standards Web site <http://standards.ieee.org/guides/style/index.html>.

IEEE P987.6a-2008™/D1
Draft Recommended Practice for How to Present an IEEE Standards Draft

Amendment 1: Glossary

Prepared by the W4 Working Group of the

Standards Staff Engineering Committee

IEEE Standards Activities Department
445 Hoes Lane
Piscataway, NJ 08854, USA

Abstract: A glossary that should have been included in the original draft as an informative annex is added to the base via this amendment.
Keywords: circuit breaker, continuous current, loading

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Introduction

This introduction is not part of IEEE P987.6a-2008/D1, Draft Recommended Practice for How to Present an IEEE Standards Draft—Amendment 1: Glossary.

This amendment adds a glossary as an informative annex to the base standard. The terms included in this annex are not new and therefore do not belong in a normative definitions clause. Rather, the terms have been previously defined by other IEEE standards and are repeated here in an informative annex for the benefit of users of IEEE Std 987.6a.

Notice to users

Laws and regulations

Users of these documents should consult all applicable laws and regulations. Compliance with the provisions of this standard does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

This document is copyrighted by the IEEE. It is made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making this document available for use and adoption by public authorities and private users, the IEEE does not waive any rights in copyright to this document.

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Users of IEEE standards should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE Standards Association web site at http://ieeexplore.ieee.org/xpl/standards.jsp, or contact the IEEE at the address listed previously.

For more information about the IEEE Standards Association or the IEEE standards development process, visit the IEEE-SA web site at http://standards.ieee.org.

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: http://standards.ieee.org/reading/ieee/updates/errata/index.html. Users are encouraged to check this URL for errata periodically.

Interpretations

Current interpretations can be accessed at the following URL: http://standards.ieee.org/reading/ieee/interp/index.html.

Patents

Attention is called to the possibility that implementation of this recommended practice may require use of subject matter covered by patent rights. By publication of this recommended practice, no position is taken with respect to the existence or validity of any patent rights in connection therewith. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this recommended practice are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

Participants

At the time this draft recommended practice was completed, the W4 Working Group had the following membership:

Jaime Lee, *Chair*

Yan Smithiwitz, *Vice Chair*

Thomas A. Edison	Grace Hopper	Ada Lovelace
Michael Faraday	Jack Kilby	Robert Noyce
Joseph Henry		Bill Nye

The following members of the individual balloting committee voted on this recommended practice. Balloters may have voted for approval, disapproval, or abstention.

(to be supplied by IEEE)

CONTENTS

Annex C (informative) Glossary 2

Draft Recommended Practice for How to Present an IEEE Standards Draft

Amendment 1: Glossary

NOTE—The editing instructions contained in this corrigendum define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.

The editing instructions are shown in ***bold italic***. Four editing instructions are used: change, delete, insert, and replace. ***Change*** is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using ~~strikethrough~~ (to remove old material) and underscore (to add new material). ***Delete*** removes existing material. ***Insert*** adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. ***Replace*** is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editing instructions, change markings, and this NOTE will not be carried over into future editions because the changes will be incorporated into the base standard.

Annex C

(informative)

Glossary

Insert Annex C to follow Annex B and to it add the following three terms as shown:

circuit breaker: A device designed to open and close a circuit by nonautomatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating.

continuous current: The maximum constant rms power frequency current that can be carried continuously without causing further measurable increase in temperature rise underprescribed conditions of test, and within the limitations of established standards.

loading: The modification of a basic antenna such as a dipole or monopole caused by the addition of conductors or circuit elements that change the input impedance or current distribution or both.

Annex D

(informative)

Sample permission letters for working groups

When previously copyrighted material is to be reprinted or modified for use in an IEEE standard, permission to use that material is required. The working group shall obtain clear, written permission from the copyright holder as early as possible in the process, but in no event later than submittal of the document for approval by the IEEE-SA Standards Board.

The following pages provide sample letters for requesting permission to reprint material from a previously copyrighted publication, as well as to modify copyrighted material. In each case, the first letter is to be completed by the working group chair or designated contact. This is the letter of request for permission to use the identified material. The second letter, which is to be completed by the copyright holder, grants the working group permission to use the material as requested. These permissions shall be obtained in writing on letterhead of the copyright holder.

NOTE—Copies of these letters may be found at

<http://www.standards.ieee.org/guides/style/annexD1.gif>
<http://www.standards.ieee.org/guides/style/annexD2.gif>
<http://www.standards.ieee.org/guides/style/annexD3.gif>
<http://www.standards.ieee.org/guides/style/annexD4.gif>

These letters are only samples. The text of these letters may be altered to meet the needs of the working group and the intended use of the material.

- Royalty-free permission
- World rights for distribution
- Permission to modify and reprint in future revisions and all media known or hereinafter known

Copies of any correspondence regarding copyrights shall be sent to the IEEE Standards Activities Department (stds.ipr@ieee.org).

If the working group is planning to use a previously copyrighted document in its entirety or as a base document in a proposed IEEE standard, these sample letters may not be sufficient. It may be necessary for the IEEE Standards Activities Department staff to negotiate a license agreement with the copyright owner, so it is advisable that the staff be notified as early in the process as possible. Working groups shall not negotiate agreements with outside entities with regard to IEEE standards.

<Name of IEEE Working Group Chair>

<Street Address>

<City, State Zip>

<Date>

<Copyright Holder>

<Street Address>

<City, State Zip>

Dear ,

The working group of the Society of The IEEE is in the process of developing the standard document listed below:

<Project Number, Project Title>

We would like to request permission to reprint the following material from your copyrighted text:

<Title, Author(s), Year of Publication>

<Page Number, Reference Number to Clauses, or Pages Used (Be very specific here.)>

The IEEE requests royalty-free permission, and requires world rights for distribution and permission to modify and reprint in future revisions and editions in all media known or hereinafter known. A standard credit line will be used unless specific text is provided. If you do not hold the copyright for this material, please inform us of this and, if possible, of the name of the actual copyright holder. The form that should b used to grant permission is attached for your convenience. The form should be returned to the IEEE on company letterhead, where applicable.

Thank you for your attention to this matter. I look forward to hearing from you soon.

Sincerely,

IEEE Working Group Chair or Representative

To be submitted on the letterhead of the company or institution granting permission

<Copyright Holder>

<Street Address>

<City, State Zip>

<Date>

<Name of IEEE Working Group Chair>

<Name of IEEE Working Group>

<Street Address>

<City, State Zip>

Dear ,

I am authorized to grant permission to the IEEE to reprint the material mentioned below in:

<IEEE Project Number, IEEE Project Title>

<Title, Author(s), Year of Publication, Copyright Holder>

< Page Number, Reference Number to Clauses, or Pages Used (Be very specific here.)>

Royalty-free permission to use this material is granted for world rights distribution, with permission to modify and reprint in all future revisions and editions in all media known or hereinafter known.

<Authorized Signature> <Date>

<Title>, <Affiliation>

The following acknowledgment requirements should be met:

☐ Include an acknowledgment in the front matter and use the standard IEEE attribution footnote as shown:

<Material> reprinted with permission from <copyright owner>, <title of work from which material is excerpted>, ©, <copyright year>.

☐ Include the specific attribution or front matter acknowledgment shown below:

☐ Additional requirements are listed below:

<Name of IEEE Working Group Chair>

<Name of IEEE Working Group>

<Street Address>

<City, State Zip

<Date>

<Copyright Holder>

<Street Address>

<City, State Zip>

Dear ,

The working group of the Society of the IEEE is in the process of developing the standard document listed below:
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