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# Telecommunications Industry Association (TIA)

## Standards Style Guide

### For Engineering Committees

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**TELECOMMUNICATIONS  
INDUSTRY ASSOCIATION**

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## FOREWORD

The purpose of this manual is to provide guidelines for the format and style of technical standards to be published by the Telecommunications Industry Association (TIA). It contains instructions for tables of contents, text, figures, tables, and indexes, and examples to illustrate the format and style prescribed.

This manual has been prepared by members of the Technical Standards Subcommittee (TSSC) and TIA staff Germaine Palangdao, PMP, and was approved by the TSSC.

Uniformity of format and style for similar types of publications will achieve several purposes: it will enhance their understanding and use by readers worldwide; it will enhance the image of TIA through use of a common style; and, most importantly, it will allow TIA standards to be submitted for consideration by international standards organizations without extensive re-editing.

This manual is based upon the IEC/ISO Directives, Part 2 Rules for the Structure *Drafting and Drafting of International Standards* (2011), adopted in principle by the American National Standards Institute (ANSI) for American National Standards and by TIA for TIA standards. The provisions of that standard have been adapted to the needs of TIA Engineering Committees and to include TIA requirements not otherwise covered. Other sources used in its preparation include the *ANSI Style Guide-sheet 2003 (replaced ANSI Style Manual—Preparation of Proposed American National Standards, and is the most current version as of January 15, 2015)*.

Although close adherence to this style manual is strongly encouraged, conformity with every detail is not mandatory. Formulating groups may deviate from this manual when it makes clear, good sense to do so, provided that the deviations do not prejudice potential international use or consideration of the standard.

The TIA Technical Standards Subcommittee (TSSC) will be the final authority for determining admissibility of deviations from the style prescribed herein. By following the rules and procedures set forth in this manual, persons preparing draft standard for publication will minimize editorial changes and facilitate additions and modifications as the standard evolve.

There are five annexes in this manual. Annexes A, B, and C are normative and are considered necessary to comply with this manual; Annexes D, and E are informative and are intended to assist in the understanding or use of the standard but are not necessary to comply with this manual.

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## 1 GENERAL PRINCIPLES

### 1.1 Objectives

The objective of this manual is to define clear and unambiguous guidelines to facilitate the preparation of a standard developed by TIA Engineering Formulating Groups. Such standards include but are not limited to standards, specifications, bulletins, and engineering publications. Unless otherwise stated in this manual, the term *standard* is used generically to apply to standards listed above. To achieve the objective, such standard shall

- be as complete as necessary within the limits specified by its scope;
- be consistent, clear and accurate;
- take full account of the state of the art;
- provide a framework for future technological development and;
- be comprehensible to qualified persons who have not participated in its preparation.

### 1.2 Style

The rules are intended to ensure that such a standard prepared by the formulating groups are drafted in as uniform a manner as feasible, regardless of the technical content. To facilitate understanding by all readers, the style shall be as simple and concise as possible. This is particularly important for standards that might be of interest to readers in other countries.

It does not specify topography and layout of published standards, which are determined by the committee.

For language and spelling, reference should be made to the latest version of Merriam-Webster's *New Collegiate Dictionary*).

### 1.3 Homogeneity

Uniformity of structure, of style, and of terminology shall 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, insofar as possible, shall be identical. Analogous wording shall be used to express analogous provisions; identical wording shall be used to express identical provisions.

The same term shall 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 shall be avoided. Insofar as possible, only one meaning shall be attributed to each chosen term.

These requirements are particularly important not only to ensure comprehension of the standard, or of the series of associated standards, but also to derive the maximum benefit available through automated text processing techniques and computer aided translation.

#### 1.4 Consistency of standards

In order to achieve the aim of consistency within the complete assemblage of TIA standards, the text of every standard shall follow the same basic style.

- General style guidelines:
  - Heavy emphasis on technical integrity rather than on cosmetic "look", i.e., a spelling error wouldn't usually damage the functional integrity of a document but a missing figure or inaccurate Normative Reference would have serious impact.
  - Strive for consistency throughout document : consistency of formatting, presentation, capitalization, terms, etc.
- No requirements in informative (and some normative –e.g., scope; terms and definitions) text:
  - No requirements in the foreword, introduction, scope, terms and definitions, informative annexes, notes, examples, footnotes to text, notes to figures, notes to tables.
- Correct use of "shall", "should" and "must", i.e., correct form of requirements and recommendations:
  - The correct verb form for indicating a requirement is "shall". The correct verb form for indicating a recommendation is "should". Universally accepted "standardese" does not recognize "must". Use "shall" for indicating a mandatory aspect or an aspect on which there is no option.
- Full and complete Normative References:
  - Make sure all standards on which the document is contingent are fully and correctly listed, with availability footnotes, where necessary. Any document cited in the standard as being indispensable for the application of the standard needs to be listed in Normative References. Informative references - those for information only, or for use as background reading, are to be listed in a Bibliography, which comprises the final annex (appendix). (Note: preferred term for this component of a standard is "annex".)
- Completeness and consistency of document. Confirm that:

- All pages, figures and tables, included and numbered correctly. Clauses/subclauses, footnotes numbered consistently
- Cross references - to other documents and to other parts of standard, cited correctly.
- Running heads/designation correct - year added not 200x
- Symbols and names of units shall not be mixed - e.g., use "km" or "kilometers" consistently, not a mix of both
- Variables and quantities to be indicated in italics, in accordance with widely accepted mathematical style

## **1.5 Implementation**

The text of a TIA standard shall be drawn up in such a way as to facilitate its direct application; and its adoption without change as an international standard; and to enhance its understanding and use worldwide.

## **1.6 Planning**

In order to ensure the timely publication of a standard, or of a series of associated standards, a list of all aspects to be covered shall be defined before detailed drafting begins so that scope(s), structure(s), and interrelationships can be established. In the case of a multipart standard, a list of the intended parts together with their titles shall be defined. These rules for the drafting and presentation of TIA standard shall be applied from the very beginning of the work and throughout all subsequent stages to avoid delay of any stage.

## 2 FRAMEWORK, STRUCTURE, AND CONTENTS

### 2.1 General Arrangement

The elements that together form a standard are classified in three groups:

- *preliminary elements* are those elements that identify the standard, introduce its content, and explain its background, its development, and its relationship with other standards and;
- *normative elements* are those elements setting out the provisions with which it is necessary to comply in order to be able to claim conformity with the standard;
- *informative elements* are those elements that provide additional information intended to assist the understanding or use of the standard.

These groups of elements are described in the following subclauses. An arrangement often used for standards, with references to the appropriate subclauses in this manual, is indicated in Table 1. The order of arrangement provided is the order that shall be used.

Notes integrated into the text (see 2.5.3) may be part of any element except the title page, the title, and footnotes.

A standard need not contain all the *technical normative elements* shown, and it may contain technical normative elements other than those shown. Both the nature of the technical normative elements and their sequence are determined by the nature of the standard in question.

**Table 1 – Arrangement of Elements**

<b>Type of Element Clause</b>	<b>Element (in order)</b>	<b>For Details Refer to Subclause</b>
PRELIMINARY (INFORMATIVE)	Title Page Contents Foreword Introduction	2.2.1 2.2.2 2.2.3 2.2.4
GENERAL (NORMATIVE)	Title Scope Normative References	2.3.1 2.3.2 2.3.3
TECHNICAL (NORMATIVE)	Terms and Definitions Symbols/abbreviations Requirements Sampling Test methods Classification/coding/designation Marking, labeling, packaging Normative annexes	2.4.1 2.4.2 2.4.3 2.4.4 2.4.5 2.4.6 2.4.7 2.4.8
GENERAL (INFORMATIVE)	Informative references	TBD
TECHNICAL (INFORMATIVE)	Informative annexes Alternative test methods	2.5.1 TBD

## **2.2 Preliminary Elements**

### **2.2.1 Title Page**

The title page is prepared in a standard format by TIA. This page replaces the working standard cover page.

The project number of the standard is assigned by TIA upon approval of a Project Request.

### 2.2.2 Contents

The contents shall appear in every standard; it enhances the overall view of the standard and facilitates its consultation. The table of contents shall be entitled “Contents” and shall list clauses and if appropriate, subclauses with titles, annexes together with their status, and annexes. Figures and tables are shown at the option of the formulating group. All elements listed shall be cited with their full titles. Terms in the “Terms and definitions” clause shall not be listed in the contents.

### 2.2.3 Foreword

The foreword shall appear in every standard. It shall not contain requirements, recommendations, figures or tables.

It consists of a general part giving information relating to the organization responsible and to standards in general and a specific part giving as many of the following as are appropriate:

- an indication of the committee that prepared the standard;
- information regarding the approval of the standard,
- an indication of any other organization that has contributed to the preparation of the standard;
- a statement that the standard cancels and replaces other standards in whole or in part;
- a statement of significant technical changes from the previous edition of the standard;
- the relationship of the standard to other standards or other standards;
- a statement of which annexes are normative and which are informative (e.g., There are two annexes in this Standard. Annex A is normative and is considered part of this Standard; Annex B is informative and is not considered part of this Standard).

The following disclaimer shall appear above the text:

(This foreword is not part of this Standard)

## 2.2.4 Introduction

The introduction is an optional preliminary element used to give specific information or commentary about the technical content of the standard and about the reasons prompting its preparation. It shall not contain requirements. The introduction shall not be numbered.

## 2.3 General Normative Elements

### 2.3.1 Title

The title page shall contain the title of the standard.

The wording of the title shall be established with the greatest care; while being concise as possible, it shall indicate, without ambiguity, the subject matter of the standard in such a way as to distinguish it from that of other standards, without going into unnecessary detail. Any necessary additional particulars shall be given in the scope.

The title shall be composed of separate elements, each as short as possible, proceeding from the general to the particular. In general, not more than the following three elements shall be used:

- a) an *introductory element* indicating the general field to which the standard belongs (this often can be based upon the title of the committee);
- b) a *main element* indicating the principal subject treated within that general field;
- c) a *complementary element* indicating the particular aspect of the principal subject or giving details that distinguish the standard from other standards, or other parts of the same standard.

Detailed rules for the drafting of titles are given in Annex A “Elements of Title” (normative).

### 2.3.2 Scope

This element shall appear at the beginning of every standard to define without ambiguity the subject of the standard and the aspect(s) covered, thereby indicating the limits of applicability of the standard or particular parts of it. It shall not contain requirements.

In standards that are subdivided into parts, the scope of each part shall define the subject of that part of the standard only.

The scope shall be succinct so that it can be used as a summary for bibliographic purposes.

### **2.3.3 Normative References**

This element shall give a list of normative standards to which reference is made in the text in such a way as to make them indispensable for the application of the standard. For dated references, each shall be given with its year of publication. The year of publication or dash shall not be given for undated references. When an undated reference is to all parts of a standard, the publication number shall be followed by the indication “(all parts)” and the general title of the series of parts (i.e. the introductory and main elements).

The list shall be introduced by the following wording:

“The following standard contains provisions that, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards published by them.”

The above wording is also applicable to a part of a multipart standard.

The list shall not include the following:

- (1) standards that are not publicly available;
- (2) standards to which only informative reference is made;
- (3) standards that have merely served as references in the preparation of the standard.

Such standards can be listed in the informative reference section.

Standards shall be listed alphanumerically by Standard Number and Title, with American National Standards listed first. Designation numbers of standards listed in the normative references Clause shall contain the year of publication.

Titles of referenced standards shall be set in italics and use Title Case. Capital letters shall be used for principal words. Articles, conjunctions, and prepositions

do not get capital letters unless they start the title. Publications and books listed as references shall retain their original capitalization.

Future revisions shall not be referenced.

References shall be listed in the style and order indicated below.

- **American National Standards:** List alphanumerically by designation, including the full title and year of publication.

**EXAMPLE 1** – *ANSI/TIA-4966-2014 – Telecommunications Infrastructure Standard for Educational Facilities*. (ANSI is included in the title when it is referred to as a reference. However, it should not be used in the header of the ballot or final standard for publication.)

- **Other standards:** List the designation, full title, and year of publication. The name and address of the organization issuing the standard shall be provided in a bibliography index.

**EXAMPLE 2** – *IEC/ISO Directives, Part 2, Rules for the Structure and Drafting of International Standards, 2011*.

- **Books:** List in order, the last name of author, followed by first and middle names or initials; title; city of publication; name of publisher; year of publication; number of pages (optional).

**EXAMPLE 3**– Doe, John E., *How to Write*, Any City, Podunk Press, 2014, 85 pages.

- **Articles in journals:** List in order, the last name of author, followed by first and middle names or initials; title of article (in upright type); title of journal in full (in italics); volume number; issue number; first and last pages of article; and date of publication.

**EXAMPLE 4**– Swanson, R.H., Emerging Technologies for Network Management, *Business Communications Review*, 21(8), 53-58, August 2014.

**Note:** Alternatively, the publication date may follow the journal title.

## 2.4 Technical Normative Elements

### 2.4.1 Terms and Definitions

This is an optional element giving definitions necessary for the understanding of certain terms used in the standard. The definitions shall be introduced by the following wording:

“For the purposes of this Standard, the following definitions apply.”

In the case where terms defined in one or more other standards also apply for example, in the case of a series of associated standards where Part 1 specifies the terms and definitions for several or all of the part(s), the following introductory wording shall be used, altered as necessary:

“For the purposes of this standard, the terms and definitions given in ... and the following apply.”

Rules for the drafting and presentation of terms and definitions are given in Annex B, together with special rules for terminology standards, such as vocabularies, nomenclatures or lists.

## **2.4.2 Symbols and Abbreviations**

This is an optional element giving a list of symbols and abbreviations necessary for the understanding of the standard.

Unless there is a need to list symbols in a specific order to reflect technical criteria, all symbols should be listed in alphabetical order in the following sequence:

- Upper case Arabic letter followed by lower case Arabic letter (A, a B, b, etc.);
- Letters without indices preceding letters with indices, and with letter indices preceding numerical ones (B, b, C, C<sub>m</sub>, C<sub>2</sub>, d d<sub>ext</sub>, d<sub>int</sub>, d<sub>1</sub>, etc);
- Greek letters following Arabic letters (Z, z, A, a, B, β, ..., Λ, λ, etc.);
- Any other special symbols.

For convenience, this element may be combined with element 2.4.1 in order to bring together terms and their definitions, symbols, abbreviations, and perhaps units under an appropriate composite title such as “Definitions, symbols, and abbreviations.”

## **2.4.3 Requirements**

This element shall include the following:

- a) all characteristics relevant to the aspect(s) of the product(s), process(es) or service(s) covered by the standard, either explicitly or by reference;
- b) the required limiting values of quantifiable characteristics and;
- c) for each requirement, either a reference to the test method for determining or verifying the values of the characteristic (see 2.4.5) of the test method itself.

A clear distinction shall be made between normative requirements and statements, and recommendations included only for information or guidance (reference Annex C).

Contractual requirements (concerning claims, covering of expenses, etc.) shall not be included.

In some standards, it may be necessary to specify that the product shall be accompanied by warning notices or by instructions to the user or installer, and to specify their nature. Specific requirements concerning use or installation as such shall be included in a separate standard since they are not requirements applicable to the product itself.

Standards listing characteristics for which suppliers are required to state values that are not specified by the standard itself shall specify how the values are to be measured and stated.

#### **2.4.4 Sampling**

This optional element specifies the conditions and methods of sampling, as well as the method for the preservation of the sample(s). This information may appear at the beginning of element 2.4.5.

#### **2.4.5 Test Methods**

This element gives all the instructions concerning the procedure for determining the values of characteristics or for checking compliance with stated requirements, and for ensuring that the results can be reproduced. Where appropriate, tests shall be identified to indicate whether they are type tests, routine tests, sampling tests, and so on. In addition, the standard shall specify the sequence of testing if the sequence can influence the results.

Instructions relating to the test methods may be subdivided in the following order (where appropriate):

- a) principle;
- b) reagents materials or both;
- c) apparatus;
- d) preparation and preservation of test samples and test pieces;
- e) procedure (see 4.12.8 for warning statement);
- f) expression of results, including method of calculation and precision of the test method and;
- g) test report.

Test methods may be presented as separate Clauses, be incorporated in element 2.4.3, or be presented as annexes or separate parts (see 3.3.1). A test method shall be established as a separate standard if it is likely to be referred to in a number of other standards.

Requirements, sampling and test methods are interrelated elements of product standardization and shall be considered together even though the different elements may appear in separate clauses in a standard, or in separate standards.

When drafting test methods, account shall be taken of standards for general test methods and of related tests for similar characteristics in other standards. Non-destructive test methods shall be chosen whenever they can replace, within the same level of confidence, destructive test methods.

Standards specifying test methods involving the use of hazardous products, apparatus or processes shall include a general warning and appropriate specific warnings. For recommended wording, see 4.12.2.7.

A standard which specifies test methods shall not imply any obligation to carry out any kind of test. It shall merely state the method by which the assessment, if required and referred to (for example in the same or another standard, in a regulation, or in contracts), is to be carried out.

If a statistical method for the assessment of the conformity of a product, process or service is specified in the standard, any statements of compliance with the standard only relate to the conformity of the population or the lot.

If it is specified in the standard that every single item is to be tested in accordance with the standard, any statements concerning the conformity of the

product to the standard mean that every single item has been tested and that each has fulfilled the corresponding requirements.

#### **2.4.6 Classification, Coding and Designation**

This optional element may establish a system of classification, designation, coding of products, processes, services or a combination thereof that conforms to stated requirements. For convenience, this element may be combined with element 2.4.3. It is left to the relevant formulating group to decide whether requirements concerning designation are to be included in a given standard. If they are included, the requirements shall conform to 2.4.3. This element may be supplemented by an informative annex, giving an example of ordering information.

#### **2.4.7 Marking, Labeling, and Packaging**

Marking, labeling and packaging are complementary aspects that shall be included wherever relevant, particularly for product standards concerning consumer goods.

If necessary, the means of marking shall also be specified or recommended.

This element may specify the marking of a product (e.g., manufacturer's or vendor's trademark, model, or type number). It may include requirements for the labeling and packaging of the product (e.g., handling instructions, hazard warnings, date of manufacture) as appropriate.

Symbols specified for marking shall be in conformity with relevant national standards.

This element may be supplemented by an informative annex giving an example of the requirements specified.

#### **2.4.8 Normative Annexes**

Normative annexes are integral parts of the standard that are necessary to comply in order to be able to claim conformity with the standard. For reasons of convenience normative annexes are placed after all other normative elements. The fact that an annex is normative (as opposed to informative – see 2.5.1) shall be made clear by the way it is referred to in the text, by a statement to this effect in the foreword (see 2.2.3), and by an indication at the head of the annex itself.

### **2.5 Supplementary Elements**

### 2.5.1 Informative Annexes

Informative annexes give additional information and are placed after the normative elements of a standard. They shall not contain requirements. The fact that an annex is informative (as opposed to normative – see 2.4.8) shall be made clear by the way in which it is referred to in the text, by a statement to this effect in the foreword (see 2.2.3), and by an indication at the head of the annex itself.

Informative annexes may contain optional requirements. For example, a test method that is optional may contain requirements but there is no need to comply with these requirements to claim compliance with the standard.

### 2.5.2 Footnotes

Footnotes give additional information, but their use shall be kept to a minimum. They shall not contain requirements.

Footnotes shall be placed at the foot of the relevant page and be separated from the text by a short, thin horizontal line on the left of the page.

### 2.5.3 Notes and Examples Integrated into the Text

Notes and examples integrated into the text of a standard shall be used only for giving additional information that is essential to the understanding of the standard. They shall not contain requirements or any information considered indispensable for the use of the standard not covered elsewhere.

Notes normally should be placed after the clause, subclause, or paragraph to which they refer.

All lines of a note shall be inset from the left margin of the main text so that the extent of the note and the text to which it applies can be correctly understood.

A single note shall be preceded by the title “NOTE,” placed at the beginning of the first line of the text of the note and followed by a colon. If two or more notes are grouped together, they shall be placed under the title “NOTES,” this word being on a line by itself; the text of each note then shall be preceded only an Arabic numeral at the beginning of its first line. Each group of notes shall be separately numbered, (i.e., 1, 2, 3, etc.)

If isolated notes occur at separate places within the same numbered subdivision of text, they may be designated “NOTE 1,” “NOTE 2,” etc.

Alternatively, all notes integrated into the text may be numbered in a continuous sequence throughout the standard.

**EXAMPLE 1– NOTE 1:** The scalability of a single switch can be alleviated to some extent by connecting several switches into one large virtual switch.

#### **2.5.4 Notes to Tables and Figures**

Notes to tables and figures shall be treated independently from footnotes (see 2.5.2) and notes integrated into the text (see 2.5.3). They shall be located within the frame of the relevant table or immediately above the title of the relevant figure. A separate numbering sequence shall be used for each table and each figure. Such notes may explain requirements but may not contain requirements not covered elsewhere.

### 3 DIVISIONS AND SUBDIVISIONS

#### 3.1 General

Standards are so diverse, as regards both the nature of their content and their length, that no universally applicable rules can be established for splitting them up into divisions and subdivisions. However, such splitting up is necessary to ensure that the standard is logically structured and therefore easy to understand, refer to, and apply.

#### 3.2 Names of Divisions and Subdivisions

The terms shown in Table 2 shall be used to designate the divisions and subdivisions in a standard. The period is merely a separator and is not a decimal. For an example of numbering, see Annex E (informative).

#### 3.3 Description of Divisions and Subdivisions

##### 3.3.1 Part

A part is one of a series of standards published separately under the same standard number. See the Engineering Committee Operating Procedures for the numbering system.

The title of a part shall be composed in the same way as that of a normal standard (see 2.3.1). All the individual titles in a series of parts shall contain the same introductory and main elements, while the complementary element shall be different in each case in order to distinguish the parts from one another.

If a standard is published in the form of a number of separate parts, the first part shall include in its foreword (see 2.2.3) an explanation of the intended structure. In the foreword of each part belonging to the series, a reference shall be made to the titles of all other parts that have been or are to be published.

This division is only used for very large standards where each of these divisions of the standard is published separately. Each part would contain its own preliminary information as defined in 2.2.

Table 2 – Names of divisions and subdivisions

Term	Example of Numbering
Clause	1
Subclause	1.1
Subclause	1.1.1

Subclause	1.1.1.1
Subclause	1.1.1.1.1
Paragraph	(no number)

### 3.3.2 Section

For practical reasons, it may be desirable to subdivide a lengthy standard, or a lengthy part of one, into sections. In such cases, the sections shall be numbered with Arabic numerals beginning with 1. The numbers of the clauses within a section shall include, as their first numeral, the number of the section; (e.g., clauses in Section 2 would be numbered 2.1, 2.2, 2.3, etc.).

If the standard is very large and the sections are published separately, each section should have its own Table of Contents.

### 3.3.3 Clause

A clause is the basic component in the subdivision of the content of a standard.

The clauses in each standard or part shall be numbered with Arabic numerals, beginning with 1 for "Scope" clause. The numbering shall be continuous up to but excluding any annexes (see 3.3.6).

Each clause shall have a title in upper case letters, placed immediately after its number, on a line separate from the text that follows.

### 3.3.4 Subclause

A subclause is a numbered subdivision of a clause. A primary subclause may be further subdivided into secondary subclauses, and this process of further subdivision may be continued as far as the fifth level (e.g., 1.1.1.1.1).

A subclause shall not be created unless there is at least one further subclause at the same level. For example, text in clause 1 shall not be designated subclause 1.1 unless there is a subclause 1.2.

Each primary subclause preferably should be given a title that shall be placed immediately after its number, on a line separate from the text that follows it. However, the use of titles shall be uniform; i.e., all subclauses within one clause or subclause shall bear a title or all shall be untitled. In the absence of titles, key terms or phrases (underlined in typed texts and composed in distinctive type in printed standards) appearing at the beginning of the text of the subclause may be used to call attention to the subject matter dealt with in the various subclauses.

### 3.3.5 Paragraph

A paragraph is an unnumbered subdivision of a clause or subclause. Hanging paragraphs (i.e. a paragraph where all lines other than the first are indented) shall be avoided.

### 3.3.6 Annex

For the description of the two types of annexes, see 2.4.8 and 2.5.1.

The word “Annex” shall be followed by the letter designating its serial order and by the word “normative” or “informative” in parentheses followed by the title of the annex. Numbers given to the clauses, subclauses, of an annex shall be preceded by the letter assigned to that annex (e.g., A.1.2). Numbers given to tables, figures and equations may continue the numbering scheme used in the body of the Standard or may be preceded by the letter assigned to that annex (e.g., Figure A.1). The numbering shall start afresh with each annex. A single annex shall be designated “Annex A”. The layout of annexes should conform to 3.4.

## 3.4 Layout of Divisions and Subdivisions

In drafts of standards at all stages of preparation, the numbers and the text of divisions and subdivisions shall be aligned on the left-hand margin of the page. However, as an aid to composition of the printed text, list (see 4.1.3) and notes integrated into the text (see 2.5.3) shall be inset from the margin.

For an example, see Annex E (informative).

## 4 EDITORIAL DETAILS

### 4.1 Text of the Standard

#### 4.1.1 Wording of “Scope” Clause

This element shall be worded as a series of statements of fact. Forms of expression such as the following shall be used:

“This Standard

- specifies
  - the dimensions of ...”
  - a method of ...”
  - the characteristics of ...”

- establishes
  - a system for ...”
  - general principles for ...”
- gives guidance on ...”
- defines terms ...”

Statements of applicability of the standard shall be introduced by the following wording:

“This Standard is applicable to ...”

#### 4.1.2 Verbal Forms for the Expression of Requirements

A standard does not in itself impose any obligation upon anyone to follow it. However, such an obligation may be imposed, for example, by legislation or by a contract. In order to be able to claim compliance with a standard, the user needs to be able to identify the requirements he/she is obliged to satisfy. The user also needs to be able to distinguish these requirements from other provisions where the user has a certain freedom of choice.

Clear rules for the use of verbal forms are therefore essential.

Annex C (normative) gives, in the first column of each table, the verbal form that shall be used to express each kind of provision. The equivalent expressions given in the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons.

#### 4.1.3 Lists

Lists may be introduced either by a complete grammatical proposition followed by a colon (see example 1), or by the first part of a proposition without a colon (see example 2), completed by the items in the list.

**EXAMPLE 1** - No switch is required for any of the following categories of apparatus:

- apparatus having a power consumption not exceeding 10 W under normal
- operating conditions;
- **standard** apparatus having a power consumption

- not exceeding 50 W, measured 2 in after the application of any of the fault
- conditions; apparatus intended for continuous operation.

**EXAMPLE 2** - Vibrations in the apparatus may be caused by

- unbalance in the rotating elements;
- slight deformations in the frame;
- the rolling bearings; aerodynamic loads.

Each item in a list shall be preceded by a dot or, by a lower-case letter followed by a parenthesis. If it is necessary to subdivide further an item in such a list, Arabic numerals followed by one parenthesis shall be used.

To aid comprehension, it may be preferable not to continue a sentence after the end of the type of list given in Example 2. Key terms or phrases may be composed in distinctive type to draw attention to the subject matter dealt with in the various items in the list. Such terms or phrases shall not be listed in the table of contents; if it is necessary that they be included in the contents, they shall not be presented as list items but as subclause titles.

**EXAMPLE**

- a) .....
- b) .....
  - 1) .....
  - 2) .....
- c) .....

**4.1.4 Spelling and Abbreviation of Names or Organizations**

The spelling of the names of organizations and their abbreviations shall be as used by those organizations.

To facilitate understanding by all readers, the style shall be as simple and concise as possible.

Abbreviated terms shall be used with care, and their use shall be limited to those cases where it is not likely to cause confusion.

If a list of an abbreviated term is not given in the standard, then the first time that an abbreviated term is used, the full term shall be given with the abbreviated term following in parentheses.

An abbreviated term shall be specified only if used subsequently in the standard.

The general rule is that an abbreviated term comprises capital letters, without a full-stop after each letter. Exceptionally, abbreviated terms consisting of the initial letters of words printed in lower case letters with a full-stop placed after each letter are used (for example “a.c.” for “alternating current”). However, technical specifications regarding marking may impose other requirements.

When a sentence begins with an abbreviated term, which, within the sentence, would consist of several lower case letters, all the letters of the abbreviated term shall be capital letters, for example “A.C.”.

#### 4.1.5 Use of Trade Names

A correct designation or description of a product shall be given rather than a trade name.

Proprietary trade names for a particular product should, insofar as possible, be avoided, even if they are in common use.

If, exceptionally, trade names cannot be avoided, their nature shall be indicated; e.g., by the symbol <sup>TM</sup> for a trademark, ® for a registered trademark, © for copyright, and <sup>SM</sup> for a service mark. An appropriate explanation shall be given as in the following examples.

**EXAMPLE 1** – Instead of “Teflon,” write (polytetrafluoroethylene) “(PTFE).”

If it is known that only one product that is suitable for the successful application of the standard is currently available, the trade name of the product may be given in the text of the standard but shall be associated with a footnote as follows:

**EXAMPLE 2** – “1) (Trade name of product) is the trade name of a product supplied by (supplier). This information is given for the convenience of users of this standard and does not constitute an endorsement by TIA of the product named. Equivalent products may be used if they can be shown to lead to the same results.”

If it is considered to be essential to give an example (or examples) of commercially available products suitable for successful application of the standard because the product characteristics are difficult to describe in detail, trade names may be given in a footnote as follows:

**EXAMPLE 3** – “1) [Trade name(s) of product(s)] ... (is/are) (an) example(s) of (a) suitable product(s) available commercially. This

information is given for the convenience of users of this Standard and does not constitute an endorsement by TIA of (this/these) product(s).”

#### 4.1.6 Effective Dates

Effective dates shall not be part of a standard approved by ANSI. However, some applications may require the establishment of effective dates for the provisions of the standard. Such dates may be included only when considered necessary by the formulating group and only if it is clearly shown that they are not part of the standard. Effective dates may appear on the cover, in the foreword, as footnotes, or in parentheses following a provision to which such a date applies.

When an effective date appears in any portion of an ANSI accredited standard, the following statement shall be included:

“The effective date is established by TIA and not by the American National Standards Institute.”

#### 4.1.7 Special Word Usage

##### 4.1.7.1 “And/or”

The term and/or shall be avoided. Wherever possible, the statement shall be rewritten to clarify the meaning.

**EXAMPLE 1** – “compatibility advantages, performance advantages, or both; not compatibility and/or performance advantages.”

**EXAMPLE 2** – “nuts, screws, bolts, or a combination thereof; not nuts, screws, and/or bolts.”

##### 4.1.7.2 “That” and “which”

“That” is a defining or restrictive pronoun. “Which” is a non-defining or non-restrictive pronoun.

**EXAMPLE 1** – “The lawn mower that is in the garage is broken.” (Tells which one).

**EXAMPLE 2** – “The lawn mower, which is broken, is in the garage.” (Adds a fact about the only mower in question.)

##### 4.1.7.3 “e.g.” and “i.e.”

The abbreviation “e.g.” means “for example”. The abbreviation “i.e.” means “that is”. These terms are usually used in parentheses as part of a sentence to provide additional clarity to a more general statement in the sentence. When providing a complete list of items the term “i.e.” shall be used. When providing a partial list of items the term “e.g.” shall be used. The abbreviation for et cetera (i.e. “etc”) shall not be used with either of these terms, “i.e.” provides the complete list and “e.g.” by definition is an incomplete list. Both abbreviations should be followed by a comma when used in text.

**EXAMPLE 1** – “There are many types of trees in this area (e.g., oak, pine, and maple).” (An incomplete list.)

**EXAMPLE 2** - “The abbreviation for et cetera (i.e., “etc”) shall not be used with either of these terms.” (A complete list.)

## 4.2 Tables

### 4.2.1 Usage

Tables should be used wherever appropriate to present information in an easily comprehensible form. Each table shall be referred to explicitly in the text so that its significance in relation to the provisions of the standard is made clear.

### 4.2.2 Headings

The first word in the heading of each column shall begin with a capital letter. The units used in a given column shall be indicated at the bottom of the column heading.

#### EXAMPLE 1

Type	Linear density kg/m	Inside diameter mm	Outside diameter mm
------	------------------------	--------------------------	---------------------------

As an exception to this rule, when all units are the same, a suitable statement (for example, Dimensions in millimeters) shall instead be placed above the right-hand corner of the table.

#### EXAMPLE 2

Dimensions in millimeters

Type	Length	Inside diameter	Outside diameter
------	--------	-----------------	------------------

### 4.2.3 Continuation of tables

When a table is continued over two or more pages, repeat the number of the table, followed by the appropriate word as in the following examples:

- Table 1 (*continued*) on intermediate pages;
- Table 1 (*concluded*) on the final page.

The column headings shall be repeated on every page after the first.

## 4.3 Figures

### 4.3.1 Usage

Figures should be used wherever appropriate to present information in an easily comprehensible form. Each figure shall be referred to explicitly in the text so that its significance in relation to the provisions of the standard is made clear.

### 4.3.2 Form

Figures shall be in the form of line drawings. Photographs may be used however, photocopies are not usable.

It is preferable to supply computer-generated artwork in accordance with the requirements for provision of graphics of TIA (see 4.12.1.3 Graphics).

### 4.3.3 Numbering

Figures shall be numbered with Arabic numerals, beginning with 1, in the order in which they are first mentioned in the text. This numbering shall be continuous and independent of the numbering of the clauses and of any tables. A single figure shall be designated "Figure 1."

### 4.3.4 Layout of Title

The title shall be centered below the figure and laid out as in the following example:

**Figure 1 – Details of apparatus**

### 4.3.5 Choice of Symbols

Symbols used on figures to represent general cases of angular or linear quantities shall be in accordance with ANSI/IEEE 260 and ANSI X3.50,

subscripts being used where necessary to differentiate between different applications of a given symbol.

#### **4.3.6 Style of Lettering**

Inclined (italic) letters shall be used for

- symbols for quantities;
- subscripts representing symbols for quantities;
- letter symbols representing numbers.

Vertical (upright) style shall be used for all other lettering.

#### **4.3.7 Units**

The units in which any values are expressed shall be indicated.

### **4.4 References**

When possible, references to particular pieces of text shall be used instead of repetition of the original source material because such repetition involves the risk of error or inconsistency and increases the length of the standard. If it is not possible to avoid repetition of such material, its source shall be identified precisely.

Cross-references within the main text or within the annexes shall not contain the year unless they appear before the normative references clause, except as provided in 4.4.4, second example.

References shall be made in the forms indicated below and shall not be made to page numbers.

#### **4.4.1 References to the Standard as a Whole in its Own Text**

Generally, the form “this Standard...” should be used, except in the introductory texts for the “Normative references” and the “Terms and definitions” clauses, and in any patent notice.

However, to avoid possible confusion in the case where a standard is published in separate parts, the following forms may be used:

- this part of ANSI/TIA-999” (reference to a part only);
- “ANSI/TIA-999” (reference to a whole series of parts).

#### 4.4.2 References to Elements of Text

Elements of text shall be referred to in forms such as the following:

- “in accordance with clause 3”;
- “according to 3.1”;
- “details as given in 3.1.2”;
- “see Annex B.”

It is unnecessary to use the term “subclause.”

#### 4.4.3 References to Tables and Figures

Tables and figures shall be cited in the text in the form “table X” and “figure X” (see 4.11.1).

Tables and figures shall be referred to in forms as the following:

- “given in table 2”;
- “(see table 2)”;
- shown in figure 3”;
- “(see figure 3).”

The figures shall always be referenced in proper numeric order. However, a figure also may be referenced in the text out of numerical sequence when the context requires it.

#### 4.4.4 References to Other Standards

Other standards to which reference is made in the text of a standard shall be indicated by their reference number only since full details of the title and date are given in the “Normative references” clause (see 2.3.3).

##### **EXAMPLE 1** – “ANSI/TIA-999.”

References to particular elements of other standards shall be made using the forms given in 4.4.2 and 4.4.3, together with the date of publication.

**EXAMPLE 2** – “according to 3.1.1 of ANSI/TIA-999-2014.”

## 4.5 Mathematical Style

### 4.5.1 Equations

Equations shall be expressed in mathematically correct form, the various quantities being represented by letter symbols, the meanings of which are explained below the equation unless they appear in a “symbol and abbreviations” clause (see 2.4.2). Descriptive terms or names of quantities shall not be arranged in the form of an equation.

The following style shall be used:

$$RL = 20 \log [Z_{tt} + Z_{ref}] / [Z_{tt} - Z_{ref}] \text{ dB}$$

where

RL is return loss of a 2-wire interface;

$Z_{tt}$  is the impedance of the 2-wire tie trunk;

$Z_{ref}$  is a reference impedance composed of 600  $\Omega$  resistance in series with 2.15  $\mu\text{F}$  capacitance.

**NOTE:** Names of units are spelled out in full when they are not preceded by a numerical value.

If a standard contains more than one equation, all equations should be numbered.

The numbering shall be independent of the numbering of clauses, tables, and figures.

### 4.6.1 Symbols

Symbols for quantities shall be chosen, wherever possible, from ANSI/IEEE 280 Standard Letter Symbols for Quantities Used in electrical Science and Electrical Engineering or other appropriate ANSI standards. Mathematical signs and symbols shall be in accordance with IEEE 260.3 American National Standard Mathematical Signs and Symbols for Use in Physical Sciences and Technology.

### 4.6.2 Subscripts

Insofar as possible, symbols having subscripts which themselves bear subscripts should be avoided.

## **4.7 Representation of Numerical Values**

### **4.7.1 Units of Measure, Time, and Quantity**

Arabic numbers shall be used with all units of measure, time, and quantity.

### **4.7.2 Decimal Point**

The decimal sign shall be a period on the line.

### **4.7.3 Value Less Than One**

If a value less than 1 is written in decimal form, the decimal point shall be preceded by a zero.

**EXAMPLE** – 0.001.

### **4.7.4 Multiple Digit Numbers**

Each group of three digits, reading to the left or to the right of a decimal sign, shall be separated by a space from the preceding digits or following digits, respectively. In numbers of four digits on either side of the decimal point, the space usually is not necessary except for uniformity in tables.

**EXAMPLES** – 2.343 456; 2 345; 2.345 67; 73 722; 7372.

### **4.7.5 Multiplication Sign**

A multiplication sign (x), rather than a point, shall be used to indicate multiplication of numerical values.

### **4.7.6 Numbers of Items**

To express numbers of items (as opposed to numerical values of physical quantities), the numerals one to nine shall be spelled out in full, except for contrast within a paragraph.

**EXAMPLE 1** - “Carry out the test on five tubes, each 5 m long.”

**EXAMPLE 2** - “Select a further 15 tubes for the pressure test.”

**EXAMPLE 3** - “The test shall be performed on 5 to 15 tubes. When performed on fewer than 9 tubes, the test shall be repeated.”

To express numerical values of physical quantities, Arabic numerals, accompanied by the international symbol for the unit (see ANSI/IEEE 280 Standard Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering), shall be used.

## **4.8 Quantities, Units and Symbols**

The International System of Units (SI), as specified in ANSI/IEEE-268, shall be used in TIA standards. Equivalent U.S. Customary Units, rounded to the intended accuracy may be added in parentheses following the SI unit value; ( 6.4 m (21 ft). If metric equivalents are not used, the reason shall be explained in the foreword or introduction.

### **4.8.1 Combination of Units**

Many units have been derived from the seven basic SI units by forming combinations of symbols. When units are used in combination to express quotients, such as any quantity per unit of time, weight, area, degree temperature, or distance, symbols shall be separated by a forward slash (/) with no spaces.

**EXAMPLE** – “kilobits per second (Kb/s)”

### **4.8.2 Numeric Value and Unit Symbol**

When a quantity is expressed as a numerical value and a unit symbol, a space shall be left between them.

**EXAMPLE** – “33 mm (not 33mm)”

**EXCEPTION:** No space is left between the numerical value and the symbol for degree, minute, and second of a plane angle.

**EXAMPLE** – 90° angle.

### **4.8.3 Numerical Value and a Unit**

When a quantity expressed as a numerical value and a unit is used as an adjective, a hyphen should be used in lieu of a space between the number and the unit name.

**EXAMPLE 1** - A three-meter pole

**EXAMPLE 2** - A 33-cm rule

#### **4.8.4 Number of Degrees Temperature**

To express the number of degrees temperature, a space shall be left between the numerical value and the symbol for the temperature scale. The symbol for degree and the symbol for temperature scale shall not be separated by a space.

**EXAMPLE** – 21 °C (NOT 21° C)

## 4.9 Abbreviations

Abbreviations shall be used with care, and their use shall be limited to those cases where it cannot give rise to confusion. Generally, abbreviations should conform to ANSI/ASME Y1.1 Abbreviations for Use on Drawings and in Text.

If a list of abbreviations is not given in the standard (see 2.4.2), then the first time that an abbreviation is used, the full term shall be given with the abbreviation following in parentheses.

Generally, except for acronyms and abbreviations derived from proper names, lower case letters are used for abbreviations in text. Capital letters are used in drawings. Abbreviations (i.e., acronyms) derived from initial letters of words (i.e., acronyms) should be written close together with no spaces (abbreviations of some words are spaced) or punctuation except the forward slash (/) and the hyphen (-).

Generally, the same abbreviations shall be used for all tenses, participle endings, the possessive case, the singular and plural, and the noun and modifying forms of a term.

If it is necessary to begin a sentence with an abbreviation, all letters of the abbreviation shall be capitalized.

## 4.10 Indication of Dimensions and Tolerances

Dimensions and tolerances shall be indicated in an unambiguous manner (see ANSI/IEEE-268).

**EXAMPLE 1** - 80 mm x 25 mm x 50 mm (not 80 x 25 x 50 mm)

**EXAMPLE 2** - 80 mm +/- 2 mm

**EXAMPLE 3** - 80 + 2/0 mm (not 80+2/-0 mm)

**EXAMPLE 4** - 80 mm +5/-2 mm

To avoid misunderstanding, tolerances on percentages shall be expressed in a mathematically correct form.

**EXAMPLE 1** - Write “from 63% to 67%” to express a range.

**EXAMPLE 2** - Write “(65 +/- 2)% to” express a center value with tolerance.

In neither case, shall the form “65 +/- 2%” be used.

## **4.11 Capitalization and Punctuation**

### **4.11.1 Capitalization**

The first letter of the first word of element titles (except clause titles, see 3.3.3) shall be capitalized. All other common words shall be expressed in lower case letters.

Generally accepted capitalization rules shall apply to text. Proper names shall be expressed in upper and lower case letters. Also see 4.9.

In text, the word *Standard* shall be capitalized when referring to a specific Standard (e.g., in this Standard) and shall be written in lower case when referring to standards in general (e.g., in TIA standards).

The terms clause, table, annex, and figure shall be capitalized in cross-references. Also see 2.3.3.

### **4.11.2 Punctuation**

Punctuation generally shall be in conformity with *The Associated Press Stylebook*.

## **4.12 Submission Format**

Standards shall follow the general style of this manual and shall be submitted to TIA in final form ready for printing, whenever possible.

### **4.12.1.1 Submission Media**

Standards proposals shall be submitted to TIA using the TIA website and shall include an editable electronic copy and a pdf file.

### **4.12.1.2 Acceptable Word Processing Programs**

The preferred file format is Microsoft (MS) Word latest version.

### **4.12.1.3 Graphics**

Correctly prepared tables, figures, drawings, sketches, graphs, etc. shall be incorporated into the text standard and submitted in a publication-ready format.

### **4.12.2 Printing**

#### 4.12.2.1 Paper Size and Margins

Although all standards are submitted in electronic format, all standards shall be set up to print single-spaced on 8-1/2 x 11 inch paper. All margins: top, bottom, left and right shall be 1 inch. Standards shall be prepared for two-sided reproduction.

#### 4.12.2.2 Fonts

The standards proposals should be set in the type approved by the committee. Generally, type size should be 11-point or 12-point. Depending upon the nature of the content, scalable type may be useful in special application such as figures, notes, complex formulas, or certain superscript or subscript characters to adjust the type size for readability. Titles shall be of uniform size (see 2.3.1).

#### 4.12.2.3 Headers

Headers for ballots shall include the project number and the publication identification number flush with the outside margin of odd (right) and even (left) numbered pages. Headers for final publication shall have the publication identification number only with the outside margin of odd (right) and even (left) numbered pages.

**NOTE:** The above requirements are easily accomplished when setting up the standard by selecting different odd and even, different first page, and apply to whole standard in page setup (this applies to standards developed in Microsoft Word).

**EXAMPLE 1** – Ballots – ANSI/TIA-PN-XXX  
(to be published as ANSI/TIA-XXX)

**EXAMPLE 3** - Published standard – ANSI/TIA-XXX

**NOTE:** At the discretion of the committee the ballot headers may be placed on one line to reduce the length of the standard.

#### 4.12.2.4 Page Numbering

Page numbers shall be centered at the bottom of each page. Preliminary elements, commonly known as front matter, shall be numbered with lower-case Roman numerals. All other pages shall be numbered with Arabic numerals beginning with 1.

#### 4.12.2.5 Paragraph Alignment

Paragraph alignment (align left or justified) shall be at the discretion of the committee.

#### 4.12.2.6 Boldface and Italics

Boldface and italic type styles shall be used only in the following instances:

- Titles of clause and subclauses;
- Titles of figures and tables;
- Certain mathematical symbols (vectors) or command words in algorithms (usually in computer language standards);
- Introductory terms such as “**DANGER**,” “**WARNING**”, and “**CAUTION**” used on hazard warnings (as used elsewhere in this manual).

Boldface shall not be used for emphasis.

- Italics: Italic type shall be used only in the following cases: variables (i.e.,  $n$  bits,  $n-1$  bits, or  $F = a + b$ );
- headings in lists, when needed (Only the title and the punctuation following the title shall be italicized.);
- titles of standards, books and journals or magazines in the text, the normative references clause, or the informative references clause;
- symbols in figures (see 4.3.6).

#### 4.12.2.7 “Warning” statement

If any tests or procedures required by a standard are believed to involve potential safety hazards, the following paragraph shall be placed in the standard’s scope:

“Some of the tests or procedures specified in this Standard may involve the presence of hazardous voltages and currents or other potential dangers to personnel. Some of these hazards have been identified, and appropriate warnings have been included in the text specifying such tests or procedures. However, appropriate safety precautions are always recommended when performing any laboratory test or procedure.”

The following statement shall be placed in the text preceding each test or procedure that may involve potential hazards. Using upper case letters, underlining and bold type shall emphasize the warning statement.

**EXAMPLE – “WARNING! ADEQUATE SAFETY PRECAUTIONS SHOULD BE OBSERVED!”**

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## Annex A (normative) - Elements of Title

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### A.1 Drafting of Titles

As specified in 2.3.1, up to three elements may be included in a title:

- a) an introductory element;
- b) a main element;
- c) a complementary element.

When the title is cited in a text, these elements shall be separated by dashes.

#### A.1.1 The Introductory Element

The introductory element is necessary if, without it, the subject indicated in the main element is not well defined.

##### EXAMPLE 1

###### RIGHT

- a) Telecommunications
- b) Carrier-to-customer installation
- c) DS1 metallic interface

###### WRONG

- a) –
- b) Carrier-to-customer installation
- c) DS1 metallic interface

If the main element together with the complementary element of the title unequivocally covers the subject treated in the standard, the introductory element shall be omitted.

##### EXAMPLE 2

###### RIGHT

- a) --
- b) Fiber optic cable
- c) Buffered fiber bend test

###### WRONG

- a) Telecommunications
- b) Fiber optic cable
- c) Buffered fiber bend test

### A.1.2 The Main Element

The main element shall always be included.

### A.1.3 The Complementary Element

The complementary element is necessary if the standard covers only one or a few aspects of the subject indicated in the main element or if it is necessary to distinguish it from another standard.

When a standard is published as a series of separate parts, the complementary element serves to distinguish and identify the parts (the introductory element, if used, and the main element remaining the same for each part).

#### EXAMPLE 1

ANSI/TIA 999-001-2015	Telecommunications	(element a)
	Private branch exchange	(element b)
	Part 1: Interface specifications	(element c)
ANSI/TIA 999-002-2015	Telecommunications	(element a)
	Private branch exchange	(element b)
	Part 2: Impedance specifications	(element c)

If the standard covers several aspects of the subject indicated in the main element, the aspects covered shall be referred to by a general term such as “specification” or “test methods” rather than be enumerated one by one.

The complementary element shall be omitted if the standard and after the first list item, indicated in the main element; and

- covers all essential aspects of the subject indicated in the main element; and
- is (and is intended to remain) the only standard relating to this subject.

#### EXAMPLE 2

##### RIGHT

- a) ---
- b) Dry reed switches
- c) —

##### WRONG

- a) ---
- b) Dry reed switches
- c) Terminology, symbols, material, dimension, test method, packaging

## **A.2 Avoidance of Unintentional Limitation of the Scope**

The title shall not contain details that might risk implying an unintentional limitation of the scope of the standard. However, if the standard pertains to a specific type of product, this fact shall be reflected in the title.

## **A.3 Wording**

Uniformity shall be maintained in the terminology used in the title of standard standards for indicating the same concept.

For standards dealing with test methods, one of the following expressions shall be used whenever possible: “Test method” or “Determination of ...”. Expressions such as “Method of testing,” “Method for the determination of ...,” “Test on ...,” and the use of the word “standard” in the title shall be avoided.

## **Annex B (normative) - Drafting and Presentation of Terms and Definitions**

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### **B.1 General Principles**

#### **B.1.1 Types of Standard**

Terminology may take the form of an independent terminology standard (a vocabulary, nomenclature, or list of equivalent terms) or be included in a “Definitions” clause in a standard that also deals with other aspects. See B.3.1 for layout.

#### **B.1.2 Choice of Concepts to be Defined**

Any term that is not self-explanatory or commonly known, or which may be differently interpreted in different contexts, shall be clarified by defining the relevant concept.

Common dictionary or current technical terms shall be included only if they are used with a specific meaning in the relevant context.

Trade names and archaic and colloquial terms shall be avoided.

In an independent terminology standard, the concepts defined shall be restricted to the field corresponding to the title and scope of the standard. In other standard standards, only such concepts shall be defined as are used in those standard standards, apart from any additional concepts and their terms that may be deemed necessary for the understanding of those definitions.

#### **B.1.3 Avoidance of Duplications and Contradictions**

Before a term and a definition are established for a concept, it should be ascertained that no other term and definition for that concept exists in another standard.

If the concept is used in several standards, it is preferable that it should be defined in the most general of those standards or in an independent terminology standard. The other standard should then refer to that standard without repeating the definition of the concept.

When the repetition of a definition is necessary, an informative reference shall be made to the standard from which it is reproduced.

**EXAMPLE** – “Cross-connect: A group of connection points, wall or rack mounted, used to mechanically terminate and administer building wiring. [3.1 of ANSI/TIA-568-2011]”

If a term is defined in one standard, the introduction in another standard of a different term (synonym) for the defined concept is strongly discouraged.

#### **B.1.4 Drafting of Definitions**

##### **B.1.4.1 Contents of Definitions**

A definition shall contain all necessary and sufficient elements to enable the concept considered to be well understood and its boundaries to be determined.

##### **B.1.4.2 Intended Purpose of Definitions**

A definition shall be adequate for its intended purpose. It shall be theoretically correct with the precision needed in the relevant context.

##### **B.1.4.3 Structure of Definitions**

The preferred structure of a definition is: a basic part stating the class to which the concept belongs and another part enumerating the characteristics that distinguish the concept from other members of the class. The narrowest well-defined or well-known class shall be chosen.

**EXAMPLE** – “hybrid computer” - computer using both analog representations and discrete representations of data.”

##### **B.1.4.4 Structure of Definitions (Exception 1)**

If it is difficult or not applicable to structure a definition in the way indicated in B.1.4.3, enumerating the important parts of the concept may draw up the definition.

**EXAMPLE** – “The concept ‘aircraft’ comprises balloons and airships, kites and gliders, and other flying machines.”

##### **B.1.4.5 Structure of Definition (Exception 2)**

If it is difficult or not applicable to structure a definition according to either of the ways indicated in B.1.4.3 and B.1.4.4, the definition may be replaced by examples or by some explanation.

#### **B.1.4.6 Terms in a Definitions**

All terms used in a definition shall be unambiguous or shall be separately defined.

#### **B.1.4.7 Concepts in a Definitions**

Definitions, in which a second concept, and the second by the first define one concept, shall be avoided.

#### **B.1.4.8 Drawings in Definitions**

A drawing may be used to clarify the content of a definition, but the text of the definition shall be complete in itself without the drawing.

#### **B.1.4.9 Requirements in Definitions**

A definition shall not take the form of, or contain, a requirement.

#### **B.1.4.10 Special Meanings in Definitions**

A definition given without an indication of its applicability may be taken as representing the general meaning of the term. Special meanings in particular contexts shall be indicated by a suitable qualification or complementary expression (see B.3.4).

**EXAMPLE 1** - “index (of a file or of a standard): List of contents of a file or of a standard, together with keys or references for locating the contents.”

**EXAMPLE 2** - “index (of a measuring instrument): Fixed or movable part of the indicating device (pointer, luminous spot, liquid surface, recording pen, point, etc.), whose position with reference to the scale marks enables the results of the measurement to be determined.”

### **B.2 Arrangement of Terms in Independent Terminology Standards**

An independent terminology standard containing terms and definitions preferably should be classified according to the hierarchy of the concepts. The terms and definitions of general concepts shall precede those of less general concepts. If a mixed system of concepts is used in which several groupings (according to different criteria) appear, each grouping shall be kept separate, and the relevant criteria shall be indicated.

The grouping of terms shall be evident from their numbering. Each term defined shall be given a reference number.

### B.3 Presentation

The following rules apply to the presentation of both independent terminology standards and the “Definitions” clause of other standards.

#### B.3.1 Layout

Each term defined (set in bold type in the printed publication) shall be placed at the beginning of the line, after its reference number if applicable, starting with a lower-case letter, and followed by a colon ( : ) unless the definition starts on a new line. The definition shall have the form of a dictionary definition, not repeating the term and without any intervening words.

**EXAMPLE** – “**3.3.14 plasticity**: Tendency of a material to remain deformed after reduction of the deforming stress to or below its yield point.”

#### B.3.2 Synonyms

A semicolon shall separate synonyms.

**EXAMPLE** – “snap ring; retaining ring: Split ring whose diameter can be made larger or smaller by elastic deformation.”

#### B.3.3 Grammatical Form of Terms

Terms shall be presented in their basic grammatical form; (i.e., in general, nouns in the singular, verbs in the infinitive).

#### B.3.4 Multiple Meanings

If a term is used to represent several concepts, all meanings shall be qualified (see B.1.4.10). If this is not possible, the different meanings may be distinguished by adding Arabic numerals so that separate entries are formed.

**EXAMPLE** - “film speed”

**EXAMPLE 1** - Index number specifying the sensitivity of a photographic emulsion.

**EXAMPLE 2** - Frame rate of linear speed of film passing through equipment.”

### **B.3.5 Parentheses and Brackets**

#### **B.3.5.1 Parentheses Enclosing**

Parentheses ( ) enclosing a part of a term indicate that the part of the term placed between them may be omitted if, in the context in which the term is used, no confusion can arise.

**EXAMPLE** – “compound (word)”

The parentheses indicate that the term “compound” can be used alone, in the field of terminology, as having the same meaning as “compound word.”

#### **B.3.7.2 Square Brackets Enclosing**

Square brackets [ ] enclosing a part of a term indicate that the words placed between them may replace all or some of the preceding words. The convention should be used only when it is necessary to economize on space or to show at first sight the construction of synonyms.

**EXAMPLE** – “bending load; flexural load; transverse load”  
May also be presented as “bending [flexural] [transverse] load.”

## Annex C (normative) – Verbal Forms

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(Only singular forms are shown)

### C.1 Requirements in Verbal Form

The verbal forms shown in table C.1 are used to indicate requirements to be followed strictly in order to conform to the standard and from which no deviation is permitted.

**Table C.1 – Requirement**

Verbal form	Equivalent Expressions (see 4.1.2)
Shall	<p>is to ...  is required to ...  it is required that ...  has to ...  only ... is permitted  it is necessary ...</p>
shall not	<p>It is not allowed [permitted] [acceptable]  [permissible]  Is required to be not ...  Is required that ... be not  Is not to be ...</p>
<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1 Do not use “must” except to describe “unavoidable” situations.</li> <li>2 Do not use “may not” instead of “shall not” to express a prohibition.</li> <li>3 To express a direct instruction, such as referring to steps in a procedure, use the imperative tense.</li> </ol> <p><b>EXAMPLE</b> – “Switch on the recorder.”</p>	

## C.2 Suitable Verbal Forms

The verbal forms shown in table C.2 are used to indicate that one of several possibilities recommended is particularly suitable, without mentioning or excluding others; that a certain course of action is preferred but not necessarily required; or that, in the negative form, a certain possibility or course of action is discouraged but not prohibited.

**Table C.2 – Recommendation**

<b>Verbal Form</b>	<b>Equivalent Expression (see 4.1.2)</b>
Should	it is recommended that ... ought to ...
should not	it is recommended that ... not ought not to ...

## C.3 Course of Action Verbal Forms

The verbal forms shown in this table are used to indicate a course of action permissible within the limits of the standard.

**Table C.3 - Permission**

<b>Verbal Form</b>	<b>Equivalent Expressions (see 4.1.2)</b>
may	is permitted is allowed is permissible
need not	it is not required that ... no ... is required
<b>NOTES:</b>	
<ol style="list-style-type: none"> <li>1 See also the note under table C.4.</li> <li>2 Do not use “can” instead of “may” in this context.</li> <li>3 Do not use “possible” or “impossible” in the context.</li> </ol>	

#### C.4 Statements in Verbal Form

The verbal forms shown in this table are used for statements of possibility and capability, whether material, physical, or causal.

**Table C.4 – Possibility**

Verbal Form	Equivalent Expressions (see 4.1.2)
Can	to be able to ... to be in a position to ... there is a possibility of ... it is possible to ...
Cannot	to be unable to ... to be not in a position to ... there is no possibility of ... it is impossible to ...
<p><b>NOTE:</b> “May” signifies permission expressed by the standard, whereas “can” refers to the ability of a user of the standard or to a possibility open to him/her.</p>	



**Annex D (informative) - Example of Numbering of Divisions and Subdivisions**

		Clause Number	Subclause Number		
General normative elements	Scope	1			
	Normative	2			
Technical normative elements		3			
		4	6.1	6.4.1	
		5	6.2	6.4.2	
		6	6.3	6.4. 6.4.4.1	
		7	6.4	6.4.4 6.4.4.2	
		8	6.5	6.4.5 6.4.4.3	
		9	6.6	6.4.6 6.4.4.4	
		10	6.7	6.4.7	
		11		6.4.8	
		12		6.4.9	
	Supplementary elements	Annex A (normative)	A.1		
			A.2		
A.3					
Annex B (informative)		B.1			
		B.2	B.2.1		
	B.3	B.2.2			
	B.4				
	B.5				

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**Annex E (Informative) - Sample of Layout of Divisions and Subdivisions**


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**1 SCOPE**

Text		text	text
text		text	text
text		text	text

**2 NORMATIVE REFERENCES**

Text		text	text
text		text	text

**3 (TITLE)****3.1 (Title)**

<b>3.1.1</b>	Text		text	text
	text			

<b>NOTE:</b>	Text		text	text
	text			

<b>3.1.3</b>	Text		text	text
	text			

**3.2 (Title)**

Text		text	text
text		text	text

a)	Text		text	text
	text		text	text
	text		text	text

b)	Text		text	text
	text			

Text		text	text
text		text	text
text		text	text

**3.3 (Title)<sup>1</sup>**

Text		text		text
text		text		text
text		text		text

**4 (TITLE)**

**4.1 (Title)<sup>2</sup>**

**4.1.1 (Title)**

Text		text		text
text		text		text
text		text		text

**4.1.2 (Title)**

Text		text		text
text		text		text
text		text		text

<b>NOTE 1:</b>	Text		text		text
	text			text	
	text				

	Text			text	
	text				
	text			text	
	text				

<b>NOTE 2:</b>	Text		text		text
	text		text		text
	text		text		text

---

1)	Text		text		text
2)	Text		text		text

**4.2 (Title)**

**4.2.1** Text text text  
text

**4.2.2** Text text text  
text

**NOTES:**

1 Text text text  
text

2 Text text text  
text

**4.2.3 (Title)**

Text text text  
text text text  
text text text

