IEC 60445

Edition 6.0 2017-08

REDLINE VERSION

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BASIC SAFETY PUBLICATION

Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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BASIC AND SAFETY PRINCIPLES FOR MAN-MACHINE INTERFACE, MARKING AND IDENTIFICATION – IDENTIFICATION OF EQUIPMENT TERMINALS, CONDUCTOR TERMINATIONS AND CONDUCTORS

FOREWORD

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This Redline version provides you with a quick and easy way to compare all the changes between this standard and its previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

This document has been prepared by IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols.

It has the status of a basic safety publication in accordance with IEC Guide 104.

This sixth edition cancels and replaces the fifth edition of IEC 60445, published in 2010.

This edition includes the following significant technical changes with respect to the previous edition:

a) the text of the introduction has been moved into the scope in accordance with IEC Guide 104;
b) colour codes for the identification of line conductors of DC systems;
c) colour code for the identification of functional earthing conductor;
d) update of Table A.1 with colour codes for DC line conductors;
e) conversion of notes containing non-mandatory requirements to normative text;
f) the terminology is aligned with IEC 60050-195.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
3/1313/FDIS	3/1326/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The reader's attention is drawn to the fact that Annex B lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this standard.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The contents of the corrigendum of November 2017 have been included in this copy.

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BASIC AND SAFETY PRINCIPLES FOR MAN-MACHINE INTERFACE, MARKING AND IDENTIFICATION – IDENTIFICATION OF EQUIPMENT TERMINALS, CONDUCTOR TERMINATIONS AND CONDUCTORS

1 Scope

This document applies to the identification and marking of terminals of electrical equipment such as resistors, fuses, relays, contactors, transformers, rotating machines and, wherever applicable, to combinations of such equipment (e.g. assemblies), and also applies to the identification of terminations of certain designated conductors. It also provides general rules for the use of certain colours or alphanumeric notations to identify conductors with the aim of avoiding ambiguity and ensuring safe operation. These conductor colours or alphanumeric notations are intended to be applied in cables or cores, busbars, electrical equipment and installations.

This basic safety publication is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

It is not intended for use by manufacturers or certification bodies. One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements of this basic safety publication will not apply unless specifically referred to or included in the relevant publications.

~~In this fifth edition of IEC 60445, the terminology has been aligned with IEC 60050-195.~~

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60417, *Graphical symbols for use on equipment*

IEC 60617, *Graphical symbols for diagrams*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

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Edition 6.0 2017-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals, conductor terminations and conductors

Principes fondamentaux et de sécurité pour les interfaces homme-machine, le marquage et l'identification – Identification des bornes de matériels, des extrémités de conducteurs et des conducteurs

IEC 60445:2017-08(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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PRINCIPES FONDAMENTAUX ET DE SÉCURITÉ POUR LES INTERFACES HOMME-MACHINE, LE MARQUAGE ET L'IDENTIFICATION – IDENTIFICATION DES BORNES DE MATÉRIELS, DES EXTRÉMITÉS DE CONDUCTEURS ET DES CONDUCTEURS

AVANT-PROPOS

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Le présent document a été établi par le comité d'études 3 de l'IEC: Structures d'informations, documentation et symboles graphiques.

Elle a le statut d'une publication fondamentale de sécurité, conformément au Guide 104 de l'IEC.

Cette sixième édition annule et remplace la cinquième édition de l'IEC 60445, parue en 2010.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) le texte de l'introduction a été déplacé dans le domaine d'application conformément au Guide 104 de l'IEC;

b) codes couleur permettant l'identification des conducteurs de ligne dans les systèmes à courant continu;

c) code couleur permettant l'identification d'un conducteur de mise à la terre fonctionnelle;

d) mise à jour du Tableau A.1 intégrant les codes couleur des conducteurs de ligne à courant continu;

e) conversion des notes comportant des exigences non obligatoires en texte normatif;

f) la terminologie est alignée sur l'IEC 60050-195.

Le texte de la présente Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
3/1313/FDIS	3/1326/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

L'attention du lecteur est attirée sur le fait que l'Annexe B énumère tous les articles traitant des différences à caractère moins permanent inhérentes à certains pays, concernant le sujet de la présente norme.

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Le contenu du corrigendum de novembre 2017 a été pris en considération dans cet exemplaire.

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PRINCIPES FONDAMENTAUX ET DE SÉCURITÉ POUR LES INTERFACES HOMME-MACHINE, LE MARQUAGE ET L'IDENTIFICATION – IDENTIFICATION DES BORNES DE MATÉRIELS, DES EXTRÉMITÉS DE CONDUCTEURS ET DES CONDUCTEURS

1 Domaine d'application

Le présent document s'applique à l'identification et au marquage des bornes de matériels électriques, tels que résistances, coupe-circuits à fusibles, relais, contacteurs, transformateurs, machines tournantes et, chaque fois que cela est possible, à des combinaisons de tels matériels (par exemple des ensembles) et s'applique aussi à l'identification des extrémités de certains conducteurs désignés. Il prévoit également des règles générales concernant l'utilisation de certaines couleurs ou de certains caractères alphanumériques pour identifier les conducteurs dans le but d'éviter toute ambiguïté et de garantir la sécurité de fonctionnement. Ces couleurs ou ces caractères alphanumériques destinés aux conducteurs doivent être appliqués aux câbles ou aux noyaux, aux barres omnibus, aux matériels et aux installations électriques.

La présente publication fondamentale de sécurité est principalement destinée à être utilisée par les comités d'études lors de l'élaboration des normes conformément aux principes énoncés dans le Guide IEC 104 et le Guide ISO/IEC 51.

Elle n'est pas destinée à être utilisée par les constructeurs ou les organismes de certification. L'une des responsabilités d'un comité d'études est, le cas échéant, d'avoir recours aux publications fondamentales relatives à la sécurité lors de l'élaboration de ses publications. Les exigences de la présente publication fondamentale de sécurité ne s'appliqueront pas, sauf mention spécifique dans les publications en question.

2 Références normatives

Les documents suivants cités dans le texte constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60417, *Symboles graphiques utilisables sur le matériel*

IEC 60617, *Symboles graphiques pour schémas*

Guide IEC 104, *Elaboration des publications de sécurité et utilisation des publications fondamentales de sécurité et publications groupées de sécurité*

Guide ISO/IEC 51, *Aspects liés à la sécurité – Principes directeurs pour les inclure dans les normes*