Inimese-masina-liidese üld- ja ohutuspõhimõtted, märgistus ja tuvastamine. Seadmeklemmide, juhtide otste ja juhtide tuvastamine

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 60445:2011 sisaldab Euroopa standardi EN 60445:2010 ingliskeelset teksti.	This Estonian standard EVS-EN 60445:2011 consists of the English text of the European standard EN 60445:2010.
Standard on kinnitatud Eesti Standardikeskuse 31.12.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.12.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 05.11.2010.	Date of Availability of the European standard text 05.11.2010.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 29.020

Võtmesõnad: identifitseerimine, inimese-masina-liides, juhi ots, klemm, märgistus,

Inglisekeelsed võtmesõnad: identification, man-machine, man-machine interface, marking, markings for conductors, terminal markings, termination,

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60445

November 2010

ICS 29.020

Supersedes EN 60445:2007, EN 60446:2007

English version

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

(IEC 60445:2010)

Principes fondamentaux et de sécurité pour les interfaces homme-machines, le marquage et l'identification - Identification des bornes de matériels, des extrémités de conducteurs et des conducteurs
(CEI 60445:2010)

Grund und Sicherheitsregeln für die Mensch-Maschine-Schnittstelle - Kennzeichnung von Anschlüssen elektrischer Betriebsmittel, angeschlossenen Leiterenden und Leitern
(IEC 60445:2010)

This European Standard was approved by CENELEC on 2010-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60445:2010 E

Foreword

The text of document 16/479/FDIS, future edition 5 of IEC 60445, prepared by IEC TC 16, Basic and safety principles for man-machine interface, marking and identification, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60445 on 2010-11-01.

This European Standard supersedes EN 60445:2007 and EN 60446:2007.

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

This European Standard includes the following significant technical changes with respect to EN 60445:2007 and EN60446:2007:

– addition of new definitions in Clause 3;

– revision of some clauses to use words from reference IEC standards. These revisions did not change any technical requirements but to clarify the wording;

– addition of Annex B (informative) “List of notes concerning certain countries”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-08-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-11-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60445:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60079-11:2006	NOTE	Harmonized as EN 60079-11:2007 (not modified).
IEC 60601 series	NOTE	Harmonized in EN 60601 series (partially modified).
IEC 61666:1997	NOTE	Harmonized as EN 61666:1997 (not modified).
IEC 62491:2008	NOTE	Harmonized as EN 62491:2008 (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
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	-	-

CONTENTS

INTRODUCTION

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.

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

1 Scope

This International Standard 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.

2 Normative references

The following referenced documents are indispensable for the application 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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE The terms are sorted in alphabetical order in the English language.

3.1
electrical equipment
item used for purposes like generation, conversion, distribution or utilization of electric energy (e.g. electrical machines, transformers, switchgear and controlgear, measuring instruments, wiring systems, current-using equipment, etc.)

[IEC 60050-826:2004, 826-16-01, modified]

3.2
functional bonding conductor
conductor provided for functional- equipotential bonding

[IEC 60050-195:1998, 195-02-16]