

INIMESE-MASINA-LIIDESE ÜLD- JA
OHUTUSPÕHIMÕTTED, MÄRGISTUS JA TUVASTAMINE.
SEADMEKLEMMIDE, JUHTIDE OTSASTUSTE JA JUHTIDE
TUVASTAMINE

Basic and safety principles for man-machine interface,
marking and identification - Identification of equipment
terminals, conductor terminations and conductors (IEC
60445:2017 + COR1:2017)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 60445:2017 sisaldab Euroopa standardi EN 60445:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 60445:2017 consists of the English text of the European standard EN 60445:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 24.11.2017.	Date of Availability of the European standard is 24.11.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 01.080.20, 13.110, 29.020

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Basic and safety principles for man-machine interface, marking
and identification - Identification of equipment terminals,
conductor terminations and conductors
(IEC 60445:2017 + COR1:2017)**

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 + COR1:2017)

Grund- und Sicherheitsregeln für die Mensch-Maschine-
Schnittstelle - Kennzeichnung von Anschlüssen elektrischer
Betriebsmittel, angeschlossenen Leiterenden und Leitern
(IEC 60445:2017 + COR1:2017)

This European Standard was approved by CENELEC on 2017-09-08. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 3/1313/FDIS, future edition 6 of IEC 60445, prepared by IEC/TC 3 "Information structures and elements, identification and marking principles, documentation and graphical symbols" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60445:2017.

The following dates are fixed:

- latest date by which the document has to be (dop) 2018-06-08
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2020-09-08
standards conflicting with the
document have to be withdrawn

This document supersedes EN 60445:2010.

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

Endorsement notice

The text of the International Standard IEC 60445:2017+COR1:2017 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 ¹ (not modified).
IEC 60601 Series	NOTE	Harmonized as EN 60601 Series.
IEC 61140:2016	NOTE	Harmonized as EN 61140:2016 (not modified).
IEC 61666:2010	NOTE	Harmonized as EN 61666:2010 (not modified).
IEC 62491:2008	NOTE	Harmonized as EN 62491:2008 (not modified).

¹ Superseded by EN 60079-11:2012 (IEC 60079-11:2011).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60617-DB	-	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

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Methods of identification	9
5 Application of identification means	10
6 Identification by colours	10
6.1 General	10
6.2 Use of single colours	11
6.2.1 Permitted colours	11
6.2.2 Neutral or mid-point conductor	11
6.2.3 Line conductor in AC system	11
6.2.4 Line conductor in DC system	11
6.2.5 Functional earthing conductor	11
6.3 Use of bi-colour combinations	11
6.3.1 Permitted colours	11
6.3.2 Protective conductor	11
6.3.3 PEN conductor	12
6.3.4 PEL conductor	12
6.3.5 PEM conductor	13
6.3.6 Protective bonding conductor	13
7 Identification by alphanumeric notation	13
7.1 General	13
7.2 Equipment terminal identification – Marking principles	14
7.3 Identification of certain designated conductors	16
7.3.1 General	16
7.3.2 Neutral conductor	16
7.3.3 Protective conductor	16
7.3.4 PEN conductor	17
7.3.5 PEL conductor	17
7.3.6 PEM conductor	17
7.3.7 Protective bonding conductor	17
7.3.8 Protective bonding conductor earthed	17
7.3.9 Protective bonding conductor unearthed	17
7.3.10 Functional earthing conductor	17
7.3.11 Functional bonding conductor	17
7.3.12 Mid-point conductor	17
7.3.13 Line conductor	17
Annex A (informative) Colours, alphanumeric notations and graphical symbols used for identification of conductors and terminals	18
Annex B (informative) List of notes concerning certain countries	20
Bibliography	26
Figure 1 – Single element with two terminals	14

Figure 2 – Single element with four terminals: Two endpoints and two intermediate points.....	14
Figure 3 – Three-phase equipment with six terminals.....	15
Figure 4 – Three-element equipment with twelve terminals: Six endpoints and six intermediate points	15
Figure 5 – Equipment with groups of elements.....	16
Figure 6 – Interconnection of equipment terminals and certain designated conductors.....	16
Table A.1 – Colours, alphanumeric notations and graphical symbols used for identification of conductors and terminals	18