SLOVENSKI STANDARD
SIST EN 81714-2:2000

01-februar-2000

Design of graphical symbols for use in the technical documentation of products - Part 2: Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for interchange (IEC 81714-2:1998)

Design of graphical symbols for use in the technical documentation of products -- Part 2: Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange

Gestaltung von graphischen Symbolen zur Anwendung in der technischen Produktdokumentation -- Teil 2: Spezifikation für graphische Symbole in rechnerinterpretierbarer Form einschließlich graphischer Symbole für eine Referenzbibliothek und Anforderungen für ihren Datenaustausch

Création de symboles graphiques utilisables dans la documentation technique de produits -- Partie 2: Spécification pour symboles graphiques sous forme adaptée à l'ordinateur, y compris symboles pour bibliothèque de références, et prescriptions relatives à leur échange

Ta slovenski standard je istoveten z: EN 81714-2:1998

ICS:

01.080.50	Grafični simboli za uporabo v tehničnih risbah v informacijski tehnologiji in telekomunikacijah ter v ustrezni tehnični proizvodni dokumentaciji	Graphical symbols for use on information technology and telecommunications technical drawings and in relevant technical product documentation

SIST EN 81714-2:2000 en

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 81714-2

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ICS 01.080.50

Descriptors: Data base, technical documentation, information interchange, specifications, graphical symbol, data processing

English version

Design of graphical symbols for use in the technical documentation of products Part 2: Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange (IEC 81714-2:1998)

Création de symboles graphiques utilisables dans la documentation technique de produits
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(IEC 81714-2:1998)

This European Standard was approved by CENELEC on 1998-08-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 81714-2:1998 E

Foreword

The text of document 3B/220/FDIS, future edition 1 of IEC 81714-2, prepared by SC 3B, Documentation, of IEC TC 3, Documentation and graphical symbols, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 81714-2 on 1998-08-01.

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) 1999-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2001-08-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes E, F, G, J, K and ZA are normative and annexes A, B, C, D, H, L and M are informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 81714-2:1998 was approved by CENELEC as a European Standard without any modification.

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

IEC 61360-1	NOTE: Harmonized as EN 61360-1:1995 (not modified).
IEC 61360-4	NOTE: Harmonized as EN 61360-4:1997 (not modified).
IEC 61666	NOTE: Harmonized as EN 61666:1997 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60617	series	Graphical symbols for diagrams	EN 60617	series
IEC 61082-1	1991	Preparation of documents used in electrotechnology Part 1: General requirements	EN 61082-1	1993
A1	1995		A1	1995
A2	1996		A2	1996
IEC 61286	1995	Information technology - Coded graphic character set for use in the preparation of documents used in electrotechnology and for information interchange	EN 61286	1995
IEC 61346-1	1996	Industrial systems, installations and equipment and industrial products Structuring principles and reference designations Part 1: Basic rules	EN 61346-1	1996
ISO 128-20	1996	Technical drawings - General principles of presentation Part 20: Basic conventions for lines	-	-
ISO 128-21	1996	Part 21: Preparation of lines by CAD-systems	-	-
ISO 639	1988	Code for the representation of names of languages	-	-
ISO 3098-0	1997	Technical product documentation - Lettering Part 0: General requirements	-	-
ISO 3098-5	1997	Part 5: CAD lettering of the Latin alphabet, numerals and marks	-	-
ISO 3166-1	1997	Codes for the representation of names of countries and their subdivisions Part 1: Country codes	-	-

Publication	Year	Title	EN/HD	Year
ISO 6428	1982	Technical drawings - Requirements for microcopying	-	-
ISO 6523	1984	Data interchange - Structures for the identification of organizations	-	-
ISO/IEC 646	1991	Information technology - ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 6429	1992	Information technology - Control functions for coded character sets	-	-
ISO/IEC 9592-1	1997	Information technology - Computer graphics and image processing - Programmer's Hierarchical Interactive Graphics System (PHIGS) Part 1: Functional description	-	-
ISO 81714-1	1998	Design of graphical symbols for use in the technical documentation of products Part 1: Basic rules	-	-
IEC 81714-3	1998	Part 3: Classification of connect nodes, networks and their encoding	-	-

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INTERNATIONAL STANDARD

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Création de symboles graphiques utilisables dans la documentation technique de produits –

Partie 2:
Spécification pour symboles graphiques sous forme adaptée à l'ordinateur, y compris symboles pour bibliothèque de références, et prescriptions relatives à leur échange

Design of graphical symbols for use in the technical documentation of products –

Part 2:
Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange

International Electrotechnical Commission
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch 3, rue de Varembé Geneva, Switzerland
IEC web site http: //www.iec.ch

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DESIGN OF GRAPHICAL SYMBOLS FOR USE IN THE TECHNICAL DOCUMENTATION OF PRODUCTS –

Part 2: Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange

FOREWORD

1) The IEC (International Electrotechnical Commission) is a world-wide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.

4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.

6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 81714-2 has been prepared by IEC subcommittee 3B: Documentation, of IEC technical committee 3: Documentation and graphical symbols.

The text of this standard is based on the following documents of IEC:

FDIS	Reports on voting
3B/220/FDIS	3B/240/RVD

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

In order to collect all requirements concerning relevant graphical symbols within one single numerical series, ISO technical committee 145: Graphical symbols and IEC technical committee 3 in conjunction with ISO technical committee 10: Technical drawings, product definition and related documentation, agreed to publish all parts of this International Standard within the 81714 series.

The Technical Management Board of ISO and the Committee of Action of IEC have decided that, for each part of this series, one organization shall be chosen responsible. The technical committees involved have agreed not to change any part of International Standard 81714 without mutual agreement.

International Standard 81714 consists of the following parts, under the general title Design of graphical symbols for use in the technical documentation of products:

Part 1: 1996, Basic rules *(published by ISO actually as ISO/IEC 11714-1)*

NOTE – The Technical Management Board of ISO has decided to modify the actual number to ISO 81714-1 according to the agreement concerning a common numbering system between ISO and IEC.

Part 2: 1998, Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange *(published by IEC)*

Part 3: 1998, Classification of connect nodes, networks and their encoding *(published by IEC)*

Further parts specific to individual subject fields are under consideration.

Part 2 serves as the basis for the design of graphical symbols for use in CAx–systems in all fields of the technical documentation of products. Applications of the standard are, for example, future editions of IEC 60617 and ISO 14617 as well as the future web based data bases of those standards.

Annexes E, F, G, J and K form an integral part of this standard. Annexes A, B, C, D, H, L and M are for information only.

Annex A describes the relations between this standard, IEC 60617 and the future edition of ISO 14617 [8][1].

Annex B contains information concerning the interchange of graphical symbol libraries among computer–aided systems.

Annex C contains the EXPRESS-G [2,18] model of the requirements specified in this standard.

Annex D contains an EXPRESS–G model of how to identify a product worldwide, and how to correlate the identified product with a specific functional representation of this product by means of graphical symbols.

Annex E lists data types, recommended lengths and default values of the attributes used in the EXPRESS–G model of annex D.

Annex F contains requirements concerning lines actually not included in the present edition of ISO 128.

Annex G contains requirements concerning text actually not included in the present editions of ISO 3098–0 and 3098–5.

Annex H specifies predefined hatching patterns for possible use in drawings and graphical symbols.

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1) Figures in square brackets refer to the bibliography given in annex L.

Annex J contains a description of different library versions which may be produced by implementing this standard.

Annex K contains requirements concerning global definitions of graphical symbols within a library.

Annex L contains a list of bibliographic references.

Annex M specifies examples of data element types used in the context of IEC 60617.

DESIGN OF GRAPHICAL SYMBOLS FOR USE IN THE TECHNICAL DOCUMENTATION OF PRODUCTS –

Part 2: Specification for graphical symbols in a computer sensible form, including graphical symbols for a reference library, and requirements for their interchange

1 Scope

This part of International Standard 81714 specifies requirements for graphical symbols to be included in a reference symbol library in a computer sensible form, and requirements for their interchange among computer aided tools. The reference symbol library may be used as a basis for the design and editing of documents, and for the interchange of documents and graphical symbol libraries among computer-aided tools. The specification of a physical file format required for the interchange is not included in this standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of 81714. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of 81714 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60617 (all parts), *Graphical symbols for diagrams*

IEC 61082-1:1991, *Preparation of documents used in electrotechnology – Part 1: General requirements*
Amendment 1: 1995
Amendment 2: 1996

IEC 61286:1995, *Information technology – Coded graphic character set for use in the preparation of documents used in electrotechnology and for information interchange*

IEC 61346-1:1996, *Industrial systems, installations and equipment, and industrial products – Structuring principles and reference designations – Part 1: Basic rules*

ISO 128-20:1996, *Technical drawings – General principles of presentation – Part 20: Basic conventions for lines*

ISO 128-21:1996, *Technical drawings – General principles of presentation – Part 21: Preparation of lines by CAD-systems*

ISO 639:1988, *Code for the representation of names of languages*

ISO 3098-0:1997, – *Technical product documentation – Lettering – Part 0: General requirements*

ISO 3098-5:1997, – *Technical product documentation – Lettering – Part 5: CAD lettering of the Latin alphabet, numerals and marks*

ISO 3166-1:1997, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

ISO 6428:1982, *Technical drawings – Requirements for microcopying*

ISO 6523:1984, *Data interchange – Structures for the identification of organizations*

ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange*

ISO/IEC 6429:1992, *Information technology – Control functions for coded character sets*

ISO/IEC 9592-1:1997, *Information technology – Computer graphics and image processing – Programmer's Hierarchical Interactive Graphics System (PHIGS) – Part 1: Functional description*

ISO 81714-1:1998, *Design of graphical symbols for use in the technical documentation of products – Part 1: Basic rules (actually as ISO/IEC 11714-1:1996)*

IEC 81714-3:1998, *Design of graphical symbols for use in the technical documentation of products – Part 3: Classification of connect nodes, network and their encoding*

3 Definitions

For the purpose of this part and in addition to the definitions contained in ISO 81714-1 and IEC 61346-1, the following definitions apply.

3.1 *Graphical symbols for use on documents*

3.1.1 function symbol: Graphical symbol representing an object with a defined behaviour, and provided with input and output functional nodes.

NOTE – Example of function symbol: the symbol for an AND–function.

3.1.2 product symbol: Graphical symbol representing an object with a defined behaviour, and provided with nodes, specifically implemented in either hardware or software.

3.1.3 graphical symbol occurrence: Graphical symbol presented in a diagram including the presentation of data associated with the object being represented.

3.1.4 reference symbol: Graphical symbol unambiguously identified and provided with openings for presentation of data associated with an object represented in a diagram by a graphical symbol occurrence.

NOTE – Examples for graphical symbols equipped with openings are shown in figures 12 and 13.

3.2 *Nodes*

3.2.1 connect node; port; terminal: Point of access of an object intended for connection.

NOTE – The connection may refer to

a) a physical interface among conductors and/or contacts, or piping and/or duct systems to provide a signal or energy or material flow path;

b) an association of functional nature established among logical elements, software modules, etc. for conveying information.

3.2.2 (schematic) connect node: Location on a graphical symbol intended for connection.

NOTES

1 (Schematic) connect nodes represent the terminals of the object of interest.

2 A (schematic) connect node may not have a graphical shape. It may consist of an imaginary point associated with a graphical symbol.

3.2.3 node name: Identification of a connect node.

3.2.4 coded connect node class: Encoded classification of a connect node.

3.2.5 (schematic) electrical node: Connect node designed for connecting to a representation of an electrical network.

3.2.6 (schematic) functional node: Connect node designed for connecting to a representation of a functional network.