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Information technology — Portable computer keyboard layouts

Technologies de l'information — Dispositions de clavier pour ordinateur portable

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 15412 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

Annex A of this International Standard is for information only.

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Introduction

The portable computer is used in a wide range of business environments. A significant number of users use a portable computer either as their primary working computer or in association with an office desktop computer; many users alternate between a portable and a desktop computer. For these reasons, the overall appearance and functional layout of a portable computer keyboard (together with its ergonomic characteristics) should be such as to allow the user to make a smooth transition between desktop and portable work environments to maintain adequate levels of productivity and satisfaction.

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Information technology — Portable computer keyboard layouts

1 Scope

For the purposes of this International Standard, a portable computer is defined as a computer with a screen and an attached keyboard that is capable of running on battery power for extended periods of time and is relatively easy to transport from one location to another by a single individual.

This International Standard gives design guidance for product designers; this International Standard indicates those requirements and recommendations contained in ISO/IEC 9995 and ISO 9241-4:1998 that are to be considered in designing portable computers keyboards.

This International Standard strives to maintain consistency, as far as practical, between keyboards for portable computers and desktop computers. To accomplish this goal, this International Standard has reviewed ISO/IEC 9995 and ISO 9241-4:1998 to identify those design features of these two base standards which are to be followed, which are exempted from this International Standard and which are permitted variations.

This International Standard is intended primarily to apply to full size portable keyboards (e.g. A4). It may also apply to other keyboards outside this scope. ISO 9241-4 contains a proposed alternative method for conformance by a test based on user performance and subjective rating scales.

This International Standard consists of two major categories of guidelines for portable computers:

1. Layout characteristics

2. Physical (ergonomic) characteristics

2 Conformance

Conformance with this International Standard can be achieved by meeting all of the requirements in clauses 5 (Layout) and 6 (Physical).

ISO 9241-4 contains a proposed alternative method for conformance of the physical requirements. Conformance to clause 6 by a test based on this proposed test method is therefore possible.

3 Normative references

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

ISO/IEC 9995 (all parts), *Information technology — Keyboard layouts for text and office systems*.

ISO 9241-4: 1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 4: Keyboard requirements*.

ISO 7000:1989, *Graphical symbols for use on equipment — Index and synopsis*.

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4 Definitions

For the purposes of this International Standard, the definitions given in ISO/IEC 9995-1 and ISO 9241-4 and the following apply.

4.1
pitch
the measurement of centre to centre or edge to edge spacing between adjacent keys

4.2
embedded numeric section
a group of keys which have the alternate capability of generating the codes for the numbers and functions usually found on the numeric keypad section

4.3
legends
markings applied to the surface of a key top for the purpose of identifying the character(s) generated by, or the function(s) assigned to, that key when actuated

4.4
portable computer
a lightweight compactly designed computer with a screen and attached keyboard that is capable of running on battery power for extended periods of time and is relatively easy to transport from one location to another by a single individual

5 Layout requirements

The sections of a keyboard are defined in ISO/IEC 9995-1.

5.1 Alphanumeric section

The layout and the allocation of graphic characters to keys is under the responsibility of the relevant national standards committees. To ensure a smooth transition between the desktop and portable work environments the layout and the allocation of graphic characters to keys should be as similar as possible, if not identical, between keyboards used in the two environments.

The alphanumeric section shall be as defined in ISO/IEC 9995-2. All qualifier keys should have a perceived differing appearance from the graphic keys.

5.2 Numeric section

The layouts of the numeric section, if present, shall be according to ISO 9995-4. In addition to this requirement, if there is a numeric section embedded within the alphanumeric section, no specific layout is recommended in this standard, but it is recommended that the legends be in location of group 3 level 3 according to ISO/IEC 9995-1. There should be a means of locking the keyboard in the embedded numeric pad state.

5.3 Editing section

Due to space constraints, keyboards for portable computers typically do not have a separate identifiable editing section as described in ISO/IEC 9995-5.

5.3.1 Editing keys

The keys normally allocated in the editing zone of the editing section, if present, shall be arranged such that complementary functions (e.g. page up/down) are allocated in a logical manner within the editing section.

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5.3.2 Cursor control

Cursor control keys shall be arranged as specified in ISO/IEC 9995-5 and allocated to complement the editing keys.

5.4 Function section

The requirements of ISO/IEC 9995-6 apply with the following exceptions which are necessary due to space constraints.

5.4.1 Escape key

The escape key, if provided, may be allocated in the left most position of row K or L.

6 Physical requirements

The portable computer keyboard shall comply with ISO 9241-4, clause 6 – Design recommendations and clause 7 – Measurement as indicated below.

All of 6.1.1 and 7.2.1- Palm-rests
All of 6.1.5 and 7.2.5- Profile of keyboard
All of 6.1.6 and 7.2.6- Keyboard surfaces and material properties of keyboards
All of 6.2.2 and 7.3.2- Keytop design
All of 6.2.3 and 7.3.3- Key displacement and force
All of 6.2.4 and 7.3.4- Keying feedback
All of 6.2.5 and 7.3.5- Rebound action (bounce)
All of 6.2.6 and 7.3.6- Key roll-over
All of 6.2.7 and 7.3.7- Key repeat function
All of 6.2.8.1 and 7.3.8.1- Graphical symbols
All of 6.2.8.3 and 7.3.8.3- Number and positioning of legends
All of 6.2.8.4 and 7.3.8.4- Durability of legends
All of 6.2.9 and 7.3.9- Cursor keys and keys in the editing section

The following subclauses are applicable in part only.

6.2.11 and 7.3.11 Keytop shape shall be applicable only to the alphanumeric keys of the alphanumeric section.

6.2.1 and 7.3.1 Key layout and centre line spacing shall be applicable only to the keys of the alphanumeric section.

The following subclauses are exempted:

All of 6.1.2 and 7.2.3- Sections of the keyboard
All of 6.1.3 and 7.2.3- Home row height
All of 6.1.4 and 7.2.4- Slope of the keyboard
All of 6.1.7 and 7.2.7- Keyboard placement
All of 6.1.8 and 7.2.8- Keyboard slope adjustment
All of 6.2.8.2 and 7.3.8.2- Geometric design of legends
All of 6.2.10 and 7.3.10- Numeric keypad

6.1 Key legend size

The minimum size of the legends on the keys shall be as follows:

Function and editing key legends shall be a minimum of 1,2 mm.

All other keys shall have legends which are a minimum of 2,6 mm.

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Annex A
(informative)

Design guidelines related to keyboards for portable computers

A.1 Cursor control and pointing device

Within the portable total keyboard area, there should be a cursor manipulation device in addition to the traditional inverted tee cursor keys. The operation of any built-in pointing device should be directly compatible with the external desktop equipment.

A.2 Escape keys

The escape key, if present, should have a perceived differing appearance from the text entry keys.

A.3 Flexibility

It should be possible to connect a desktop keyboard to the portable computer.

A.4 Keying noise

As portable computers are commonly used in social environments, it is important that design of portable keyboards are such that they are as quiet as possible, keeping mechanical noises to a minimum.

A.5 Portable controls

Within the portable total keyboard area, the additional function to control audio, screen and other device functions should be provided. If these keys are also part of the keyboard function section, access to each of these controls should be achieved by a non programmable key.

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