SLOVENSKI STANDARD
SIST EN ISO 9241-9:2002

01-januar-2002

Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices (ISO 9241-9:2000)

Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices (ISO 9241-9:2000)

Ergonomische Anforderungen für Bürotätigkeiten mit Bildschirmgeräten - Teil 9: Anforderungen an Eingabemittel-ausgenommen Tastaturen (ISO 9241-9:2000)

Exigences ergonomiques pour travail de bureau avec terminaux a écrans de visualisation (TEV) - Partie 9: Exigences relatives aux dispositifs d'entrée autres que les claviers (ISO 9241-9:2000)

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ICS:

13.180	Ergonomija	Ergonomics
35.180	Terminalska in druga periferna oprema IT	IT Terminal and other peripheral equipment

SIST EN ISO 9241-9:2002 **en**

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English version

Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices (ISO 9241-9:2000)

Exigences ergonomiques pour travail de bureau avec terminaux à écrans de visualisation (TEV) - Partie 9: Exigences relatives aux dispositifs d'entrée autres que les claviers (ISO 9241-9:2000)

Ergonomische Anforderungen für Bürotätigkeiten mit Bildschirmgeräten - Teil 9: Anforderungen an Eingabemittel-ausgenommen Tastaturen (ISO 9241-9:2000)

This European Standard was approved by CEN on 24 January 2000.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard ISO 9241-9:2000 has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with CMC.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

NOTE FROM CEN/CS: The foreword is susceptible to be amended on reception of the German language version. The confirmed or amended foreword, and when appropriate, the normative annex ZA for the references to international publications with their relevant European publications will be circulated with the German version.

Endorsement notice

The text of the International Standard ISO 9241-9:2000 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 9241-9

First edition
2000-02-15

Ergonomic requirements for office work with visual display terminals (VDTs) —

Part 9: Requirements for non-keyboard input devices

Exigences ergonomiques pour travail de bureau avec terminaux à écrans de visualisation (TEV) —

Partie 9: Exigences relatives aux dispositifs d'entrée autres que les claviers

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 9241 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 9241-9 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

ISO 9241 consists of the following parts, under the general title *Ergonomic requirements for office work with visual display terminals (VDTs)*:

— *Part 1: General introduction*

— *Part 2: Guidance on task requirements*

— *Part 3: Visual display requirements*

— *Part 4: Keyboard requirements*

— *Part 5: Workstation layout and postural requirements*

— *Part 6: Guidance on the work environment*

— *Part 7: Requirements for display with reflections*

— *Part 8: Requirements for displayed colours*

— *Part 9: Requirements for non-keyboard input devices*

— *Part 10: Dialogue principles*

— *Part 11: Guidance on usability*

— *Part 12: Presentation of information*

— *Part 13: User guidance*

— *Part 14: Menu dialogues*

— *Part 15: Command dialogues*

— *Part 16: Direct manipulation dialogues*

— *Part 17: Form filling dialogues*

Annexes A, B, C and D of this part of ISO 9241 are for information only.

Introduction

Non-keyboard input devices are commonly used by operators to perform tasks with interactive office computer systems. Input device design can have a significant impact on efficiency, effectiveness and satisfaction. The requirements and recommendations are based on ergonomic principles.

The design requirements and recommendations are intended to address the fifth to ninety-fifth percentile of the population. However, when possible, non-keyboard input devices should be designed to accommodate the anthropometric characteristics of the intended user population.

Annexes A to D are included to provide information on potential methods of testing input devices and to encourage institutions or individuals to conduct research on these methods such that further validation can be supplied.

Ergonomic requirements for office work with visual display terminals (VDTs) —

Part 9: Requirements for non-keyboard input devices

1 Scope

This part of ISO 9241 provides requirements and recommendations for the design of non-keyboard input devices. It only includes devices for which there exists sufficient published ergonomic information.

This part of ISO 9241 applies to several types of non-keyboard input devices designed for stationary use. It provides guidance based on ergonomic factors for the following input devices: mice, pucks, joysticks, trackballs, tablets and overlays, touch-sensitive screens, styli, and light pens. It gives guidance on the design of these devices used for typical office tasks so that the limitations and capabilities of users are considered. This part of ISO 9241 specifies methods for determining conformance through observation, performance, and by measuring the physical attributes of the various devices.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 9241. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 9241 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9241-3, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 3: Visual display requirements*.

ISO 9241-3:1992, Amendment 1:—[1)], Annex C (normative): *Visual performance and comfort test*.

ISO 9241-5, *Ergonomic requirements for office work with visual display terminals (VDTs)— Part 5: Workstation layout and postural requirements*.

ISO 9241-7, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 7: Requirements for display with reflections*.

ISO 9241-8, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 8: Requirements for displayed colours*.

ISO 13406-2, *Ergonomic requirements for work with visual displays based on flat panels — Part 2: Requirements for flat panel displays*.

1) To be published.

3 Terms and definitions

For the purposes of this part of ISO 9241, the following terms and definitions apply. The illustrations of the devices used in this clause do not necessarily represent the design requirements and recommendations of this part of ISO 9241.

3.1 Actions

3.1.1
click
depression and release of a button or actuation point on an input device

3.1.2
drag
moving one or more objects on a display by translating it along a path determined by a pointer

3.1.3
free-hand input
input where the input device controls the movement of the cursor without any constraints following the manual input of the user

3.1.4
pointing
operation with a graphic user interface in which an input device is used to move a small display image (such as a pointer) to a specific location on the display

3.1.4.1
direct pointing
hitting a target unaided by system feedback

EXAMPLE By direct pointing with a finger or stylus.

3.1.4.2
indirect pointing
using system visual feedback to hit a target

EXAMPLE When the system is controlling a screen pointer in response to a mouse movement.

3.1.5
selecting
choosing one or more items on a display

3.1.6 Touch strategies

3.1.6.1
first-contact touch strategy
actuation of display area upon touching the display surface

3.1.6.2
last-contact touch strategy
actuation of display area upon withdrawing touch from the display surface

3.1.7
tracing
following the outline of an image by moving the cursor or input device over the lines or shape of an image

3.1.8
tracking
moving a pointer or predefined symbol across the surface of a display screen in order to follow a target

3.2 Feedback

3.2.1
feedback
indicators (such as tactile, auditory or visual) sensed by a user of an action (such as movement or actuation of an input device)

NOTE Display feedback refers to a change on the display resulting from an input device movement or activation.

3.2.1.1
kinesthetic feedback
action perceived by the mechano-receptors in joints, muscles, and tendons resulting in awareness of position, movement, weight, and resistance of the limbs or other body parts

3.2.1.2
tactile feedback
indication of the results of a user action transmitted through the sense of touch

3.3 Hardware

3.3.1
button
mechanical object integrated into an input device, which responds to force when depressed, and provides input to the computer

3.3.2
goniometer
instrument which measures the angle of the joints

3.3.3
input device
user-controlled device that transmits information to a system

3.3.4
joystick
lever mounted on a fixed base (see Figure 1) used to control the movement of objects displayed on a screen and which controls the relationship between the force or movement applied to the lever and the movement of a pointer

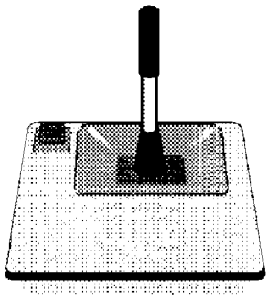

Figure 1 — Side view of example of a joystick

3.3.4.1
displacement joystick
joystick with a lever that tilts in the direction of applied force from a home position moving the display pointer in proportion to the displacement distance

3.3.5
light-pen
light-sensitive input device that, when pointed onto a specific location on a display, identifies its position to the system (see Figure 2)

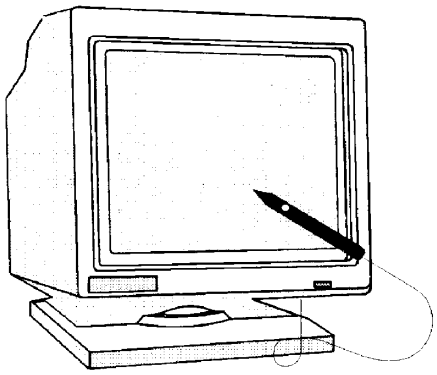

Figure 2 — Example of a light-pen against a display

3.3.6
mouse
computer input device having one or more buttons and capable of two-dimensional rolling motion which can drive a cursor on the display and performs a variety of selection options or commands

3.3.7
overlay
thin template on the surface of a tablet (see Figure 3) used to indicate the graphic functions available to the user

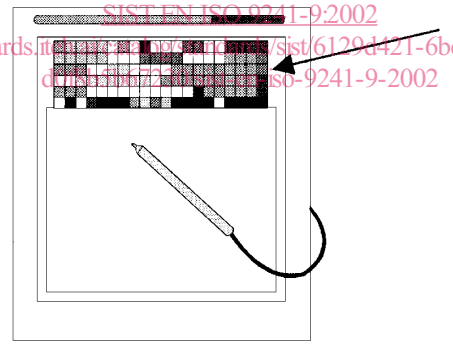

Figure 3 — Top view of example of a tablet with a graphic overlay (indicated by arrow)

3.3.8
palm rest
surface which supports the palm of the hand when using an input device (see Figure 4)

NOTE A palm rest is smaller than a wrist rest which provides support for both the palm and wrist, or the wrist only.

Figure 4 — Top view and side view examples of palm rests used with mice

3.3.9
pointer
symbol on a display which indicates the input or selection position whose movement is controlled by an input device

3.3.10
puck
hand-held device similar to a mouse but with a reticle view port and that is typically used with a digitizing tablet (see Figure 5)

Figure 5 — Top view examples of two types of pucks

3.3.11
reticle
orthogonal lines in the lens of a puck used to visually align the puck to an image (see Figure 6)

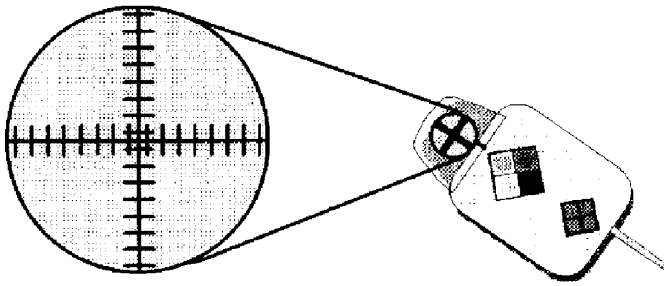

Figure 6 — Top view of example of a puck with reticle (indicated in exploded view on left)

3.3.12
selector button
actuator located on an input device