ISO 9241-3 - Ergonomic requirements for office work with visual display terminals (VDTs): Visual display requirements

Submitted by superadmin on Mon, 10/22/2012 - 14:45
HP Activity Categories:
Design of working environment and human-machine interfaces [1]
Resource Type:
Guideline

Abstract:
This standard concern the ergonomic requirements for office work with visual display terminals (VDTs) and, in particular, visual display requirements. It specifies the ergonomics requirements for display screens which ensure that they can be read comfortably, safely and efficiently to perform office tasks. Although it deals specifically with displays used in offices, it is appropriate to specify it for most applications that require general purpose displays to be used in an office-like environment.

It establishes image quality requirements (performance specifications) for the design and evaluation of single- and multi-colour VDTs. At present, the recommendations are based on Latin, Cyrillic, and Greek origin alphabetic characters, and Arabic numerals and they cover activities such as data entry, text processing, and interactive inquiry.

References

Developer and source:
ISO ? International Organisation for Standardization

Year of development / publication, updates etc:
1993

General Description

Purpose:

This part of ISO 9241 sets image quality requirements for the design and evaluation of monochrome and colour visual displays. The requirements in this part of ISO 9241 are stated as performance specifications and the standard provides test methods and conformance measurements. Although it deals specifically with displays used in offices, it is appropriate to specify it for most applications that require general purpose displays to be used in an office-like environment.

Type (e.g. observation, questionnaire, interview, checklist, measurement instrument, etc.):

Guidance material
Technical description of method or tool etc

Description of the content/study:

The specifications cover: design viewing distance; line-of-sight angle; angle of view; character height; stroke width; character width-to-height ratio; raster modulation and fill factor; character format; character size uniformity; between-character spacing; between-word spacing; between-line spacing; linearity; orthogonality; display luminance; luminance contrast; luminance balance; glare; image polarity; luminance uniformity; luminance coding; blink coding; temporal instability (flicker); spatial instability (jitter); and screen image colour.

There are four annexes. The first provides analytical techniques for predicting screen flicker. The second describes an empirical method for assessing temporal and spatial instability (flicker and jitter) on screen. The third describes a comparative user performance test method: this annex has since been updated and re-issued as a separate document (ISO 9241-3:1992/Amd 1:2000). The final annex is a bibliography.

Technical requirements for using the method, tool, etc:

The norm is available as paper version or electronically as a PDF document. No special technical requirements are necessary for applying the norm.

Measure/Response Type:

not applicable

Results obtained and interpretation:

not applicable

Evaluation

Disadvantages:

Outdated and deprecated.

Requires high degree of expertise.

Alternative Methods:

ISO 9241-3 is meanwhile deprecated and was replaced by ISO 9241-302:2008, Ergonomics of human-system interaction -- Part 302: Terminology for electronic visual displays. It provides a comprehensive terminology for electronic visual displays and explains the terms and definitions used in the other parts of ISO 9241.

Please note that from 2006 on, the 9241 standards were retitled to the more generic Ergonomics of Human System Interaction. As part of this change, ISO is renumbering some parts of the standard so that it can cover more topics.
ISO 9241-300:2008 provides an introduction to the other parts in the ISO 9241 300 subseries, and explains its modular structure. The ISO 9241 300 subseries establishes requirements for the ergonomic design of electronic visual displays. These requirements are stated as performance specifications, aimed at ensuring effective and comfortable viewing conditions for users with normal or adjusted-to-normal eyesight. Test methods and metrology, yielding conformance measurements and criteria, are provided for design evaluation.

The ISO 9241 300 subseries is applicable to the visual ergonomics design of electronic visual displays for a diversity of tasks in a wide variety of work environments.

ISO 9241-303:2008 establishes image-quality requirements, as well as providing guidelines, for electronic visual displays. These are given in the form of generic ? independent of technology, task and environment ? performance specifications and recommendations that will ensure effective and comfortable viewing conditions for users with normal or adjusted?to?normal eyesight.

However ISO 9241-303:2008 has the status ?withdrawn? (see iso.org, June 2012).

Other published ergonomic standards and guidance, drawn also from other domains, provide additional information which are of interest or complement this norm:


ISO 13406-1:1999 Ergonomic requirements for work with visual displays based on flat panels -- Part 1: Introduction.

ISO 13406-2:2001 Ergonomic requirements for work with visual displays based on flat panels -- Part 2: Ergonomic requirements for flat panel displays.

**Usability (ease of use, efficiency, effectiveness)**

Ease of use:
low

Efficiency:
low

Effectiveness:
medium

Constraints concerning conditions of use:

It is a technical standard that requires some knowledge of display design and human vision. It aims at manufacturers of visual displays (especially CRT displays) and people that need to evaluate the quality of visual displays.

The status of this norm is: ?Withdrawal of International Standard? (by Nov. 2008).

Reliability:
not applicable

Validity:
not applicable

Required effort (to conduct & to analyse):
Level of HF expertise needed (required user qualification)

This is a technical standard that requires some knowledge of display design and human vision. Advanced HF knowledge is required to understand, interpret and apply the recommendations provided.

High: high level of expertise required, only for experts, lots of training required
Other expertise needed (required user qualification):

In principle this standard is aimed at manufacturers of visual displays (especially CRT displays) and people that need to evaluate the quality of visual displays.

Cost Information

The norm 9241-3 is deprecated and not available at ISO.org. The successor ISO 9241-302:2008 is available for the cost of 184 CHF (June 2012) which equates to approx. 155 € therefore it is considered as

Low: (<1000 €) low costs to purchase, no special devices necessary
Experiences of use by SESAR partners (including references):

not available
Reported and/or published experiences of use (including references):

not available

Applicability to lifecycle phase (E-OCVM):

The guideline is of relevance after scope and feasibility are analysed and the decision for developing a certain system has been made and specific displays need to be procured. Thus the guideline applies for V3.

Application Area:

not available

Keywords:

Display technology, Photometry, Vision, Ergonomics, Colour, Color, Optical measurement

Short Description:

This standard concern the ergonomic requirements for office work with visual display terminals (VDTs) and, in particular, visual display requirements. It specifies the ergonomics requirements for display screens which ensure that they can be read comfortably, safely and efficiently to perform office tasks. Although it deals specifically with displays used in offices, it is appropriate to specify it for most applications that require general purpose displays to be used in an office-like environment.

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