
**Ergonomics of human-system
interaction —**

**Part 391:
Requirements, analysis and
compliance test methods for the
reduction of photosensitive seizures**

Ergonomie de l'interaction homme-système —

*Partie 391: Exigences, analyses et méthodes d'essai de conformité
pour la réduction des saisies photosensibles*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is 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 5: Workstation layout and postural requirements*
- *Part 6: Guidance on the work environment*
- *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*

ISO 9241 also consists of the following parts, under the general title *Ergonomics of human-system interaction*:

- *Part 20: Accessibility guidelines for information/communication technology (ICT) equipment and services*
- *Part 100: Introduction to standards related to software ergonomics [Technical Report]*
- *Part 110: Dialogue principles*

- *Part 112: Principles for the presentation of information¹⁾*
- *Part 129: Guidance on software individualization*
- *Part 143: Forms*
- *Part 151: Guidance on World Wide Web user interfaces*
- *Part 154: Interactive voice response (IVR) applications*
- *Part 161: Guidance on visual user-interface elements*
- *Part 171: Guidance on software accessibility*
- *Part 210: Human-centred design for interactive systems*
- *Part 220: Processes for enabling, executing and assessing human-centred design within organizations¹⁾*
- *Part 300: Introduction to electronic visual display requirements*
- *Part 302: Terminology for electronic visual displays*
- *Part 303: Requirements for electronic visual displays*
- *Part 304: User performance test methods for electronic visual displays*
- *Part 305: Optical laboratory test methods for electronic visual displays*
- *Part 306: Field assessment methods for electronic visual displays*
- *Part 307: Analysis and compliance test methods for electronic visual displays*
- *Part 308: Surface-conduction electron-emitter displays (SED) [Technical Report]*
- *Part 309: Organic light-emitting diode (OLED) displays [Technical Report]*
- *Part 310: Visibility, aesthetics and ergonomics of pixel defects [Technical Report]*
- *Part 331: Optical characteristics of autostereoscopic displays [Technical Report]*
- *Part 391: Requirements, analysis and compliance test methods for the reduction of photosensitive seizures*
- *Part 392: Ergonomic recommendations for the reduction of visual fatigue from stereoscopic images*
- *Part 400: Principles and requirements for physical input devices*
- *Part 410: Design criteria for physical input devices*
- *Part 411: Evaluation methods for the design of physical input devices [Technical Specification]*
- *Part 420: Selection of physical input devices*
- *Part 910: Framework for tactile and haptic interaction*
- *Part 920: Guidance on tactile and haptic interactions*
- *Part 940: Evaluation of tactile and haptic interactions¹⁾*
- *Part 960: Framework and guidance for gesture interactions¹⁾*

The following parts are under preparation:

- *Part 125: Guidance on visual presentation of information*

1) To be published.

— *Part 333: Stereoscopic displays using glasses*

For the other parts under preparation, see [Annex A](#).

Introduction

Recent progress of technology enables us to watch high-definition images, some of which can be stereoscopic. When those images are projected onto the retina of both eyes and processed as visual information, undesirable biomedical effects, such as photosensitive seizures, visually induced motion sickness, and visual fatigue from stereoscopic images can be induced. These undesirable biomedical effects need to be reduced where feasible. The prevention of these undesirable biomedical effects on human health has been referred to as “image safety”.

Image safety was first discussed by the ISO in the ISO/COPOLCO with respect to the users of image products. Then, in 2004, the ISO/International Workshop on Image Safety was held and resulted in the publication of ISO/IWA 3:2005 as the international workshop agreement.^[1] Following those discussions, the study group (ISO/TC 159/SC 4/SG on Image Safety) continued to evaluate strategies of the international standardizations until 2009. The basic concept of Image Safety is common with ISO/IEC Guide 71:2014^[18], in which the idea is that accessibility to and usability of products and services should be available to all people.

This part of ISO 9241 will help promote the production of safer images by reducing the risk of photosensitive seizures, and thereby result in the wider distribution of images that are free from constraints on which consumers can view them. A small proportion of the population is susceptible to seizures and other neurological effects when watching motion picture and video content with certain display features. Since these reactions depend on individual susceptibility have been documented with programming viewed through cathode-ray tube (CRT) displays, there is as yet less experience with high-definition displays.

This part of ISO 9241 belongs to a family of human-system interaction standards. Readers who need guidance on other aspects of human-system interaction should refer to the ISO 9241-series.

