INTERNATIONAL STANDARD

ISO
9241-1

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

Part 1:
General introduction

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

Partie 1: Introduction générale

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, govern-mental 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.

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

International Standard ISO 9241-1 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Sub-Committee SC 4, *Signals and controls*.

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: Environmental requirements*

— *Part 7: Display requirements with reflections*

— *Part 8: Requirements for displayed colours*

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

— *Part 10: Dialogue principles*

— Part 11: *Usability statements*

— 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 and B of this part of ISO 9241 are for information only.

Introduction

ISO 9241 provides the ergonomic requirements for visual display ter-
minals (VDTs) in which display screen equipment is used for office tasks
including text and data processing.

The purpose of ISO 9241 is to promote good ergonomic design of VDT
work and thus to ensure that VDT users can operate display screen
equipment safely, efficiently, effectively and comfortably. In practice, this
can only be achieved by careful design of the VDTs themselves, the
workplaces and working environments in which they are used and the
way the VDT work is designed, organized and managed. ISO 9241 is
therefore intended for all those involved in ensuring safe and effective
VDT work. Much of ISO 9241 deals with the design of the VDT itself and
is provided to help designers and manufacturers to develop
ergonomically-sound visual display terminals. This information is also
relevant to purchasers who wish to specify VDTs for applications or
systems in their own organizations. It is also relevant to those who wish
to assess the suitability of existing or proposed equipment.

ISO 9241 also deals with the VDT workplace, the VDT working environ-
ment and the organization and management of VDT work. This infor-
mation is intended for VDT users and for those responsible for their
supervision and management.

ISO 9241 is concerned with the users operating the VDT rather than the
design of the VDT per se. Unlike many standards for computer equip-
ment, the emphasis is therefore on specifying factors affecting the user
performance rather than specifying the physical characteristics of the
equipment which might be assumed to give rise to the desired human
performance outcome.

The specification and assessment of user performance is dependent on
appropriate test methods and these form an important component of
ISO 9241. However it is recognised that not every user of ISO 9241 will
have the resources necessary to conduct user performance tests and
so, where possible, specific design guidance is given, based on existing
knowledge and current technology, which is known to achieve the same
result. Some aspects of VDT use and design are not amenable to such
user performance specification, for example the design of VDT tasks,
and here ISO 9241 provides guidelines to assist manufacturers, design-
ers, users and managers.

In view of the complexities of VDT ergonomics and the unfamiliar and
multipurpose nature of ISO 9241, it has been organized into a number
of parts, each dealing with a different aspect of VDT work. Unless oth-
erwise stated, each part of ISO 9241 deals with one aspect of VDT use
and makes the assumption that the other aspects are as specified in the
other parts. Overall, the requirements specified and the tests described
are designed to be appropriate to typical office VDT circumstances.

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

Part 1:
General introduction

1 Scope

This part of ISO 9241 applies to the ergonomic requirements for the use of visual display terminals for office tasks. For the purposes of this part of ISO 9241, office tasks include text and data processing but not computer-aided design tasks (CAD) or industrial process control tasks.

NOTE 1   VDTs typically comprise a display unit (often a cathode ray tube), a keyboard and some associated electronics and control circuitry. The VDT may be a terminal to a larger system or may be a self-contained computer. Other equipment including printers and communications devices may be connected and located at the VDT workplace or remotely.

This part of ISO 9241:

— introduces ISO 9241 as a whole;

— describes the basis of the user performance approach;

— gives an overview of the first six parts of ISO 9241; and

— provides guidance on how to use ISO 9241.

Annex A lists the planned further parts of ISO 9241 and summarizes their contents.

ISO 9241 does not cover electrical safety or radiation emission; some aspects of these are covered by the IEC publications listed in annex B.

2 Principles of the user performance approach

One of the main concerns of ergonomics is in ensuring that equipment is fit for human use. In general this involves matching the design of any controls, displays, material to be handled, workplace, working environment and tasks to the characteristics, strengths and limitations of the potential user under the appropriate working environment. Failure to take account of human limitations can lead to errors, reduced performance, discomfort and perhaps risk of injury. Failure to take account of human strengths can be wasteful, reduce efficiency and result in boring, tedious work.

In practice, all equipment users are different and it is important to understand in what ways they vary and to quantify the variation so that it is taken into account in the design. Good ergonomic design is important in any equipment designed for human use but it is especially important when the use is intensive or if the accuracy or speed of the user's performance is critical.

VDT use is often both intensive and sensitive to the user's performance and forms a significant part of many office workers' jobs. Increasingly, users, their representatives and managers are concerned with ensuring that VDTs are designed to appropriate ergonomic standards.

Design guidance relevant to current technology is useful to designers and has been included within ISO 9241. However, major emphasis is placed on specifying the factors affecting the performance of the user. Thus, for example, ISO 9241 sets legibility requirements for displays in terms of the performance which users should be able to achieve in performing typical office tasks. This user performance