

Australian Standard[®]

Screen-based workstations

Part 1: Visual display units

This Australian Standard was prepared by Committee SF/38, Screen-based Workstations. It was approved on behalf of the Council of Standards Australia on 27 November 1989 and published on 2 April 1990.

The following interests are represented on Committee SF/38:

Australian Bank Employees' Union
Australian Bankers Association
Australian Information Industry Association
Australian Journalists' Association
Australian Optometrical Association
Australian Taxation Office
Confederation of Australian Industry
Department of Administrative Services
Department of Health, Tas.
Department of Labour, Vic.
Ergonomics Society of Australia and New Zealand
Health Department, W.A.
Melbourne and Metropolitan Board of Works
Micrographics Association of Australia
Municipal Officers' Association, Victoria
Office Equipment Industry Association of Australia
Royal Australian College of Ophthalmologists
Safety Institute of Australia
South Australian Health Commission
State Electricity Commission of Victoria
Telecom Australia
WorkCover Authority of N.S.W.
Worksafe Australia

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 87269.

Australian Standard[®]

Screen-based workstations
Part 1: Visual display units

First published as AS 3590.1—1990.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6050 9

PREFACE

This Standard was prepared by the Standards Australia Committee on Screen-based Workstations at the direction of the Safety Standards Board.

The Standard is one of a series of three Standards dealing with screen-based workstations, the others being as follows:

Part 2: *Workstation furniture*

Part 3: *Input devices*

The purpose of this series of Standards is to facilitate the development of safe working environments for people performing screen-based tasks. However, there are essential elements in the process of developing safe working environments which are outside the scope of this Standard. The Standard should therefore be implemented in conjunction with other documents such as AS 2713, *Lighting and the visual environment of screen-based tasks*, and *Worksafe Australia Guidance Note for the prevention of occupational overuse syndrome in keyboard employment*. (The latter covers the organization and design of work systems, work places, training, and education.)

In the absence of suitable data on the Australian population, published American data have been used to specify dimensions to accommodate people in the 2.5 percentile female to 97.5 percentile male range.

To minimize design restriction, performance requirements rather than design requirements have been included wherever possible. In particular, a performance test has been included for legibility instead of specifying requirements for features such as dot matrix size and font style.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
1 SCOPE	4
2 REFERENCED DOCUMENTS	4
3 DEFINITIONS	4
4 CONSTRUCTION	4
5 ADJUSTABILITY	5
6 DISPLAY CHARACTERS	5
7 DISPLAY CHARACTERISTICS	5
8 NOISE	7
9 MARKING	7
10 CLEANING INSTRUCTIONS	7
 APPENDICES	
A MEASUREMENT OF LUMINANCE FACTOR	8
B METHOD FOR THE DETERMINATION OF LEGIBILITY	9
C METHOD FOR THE MEASUREMENT OF DISPLAY LUMINANCE AND PIXEL (SPOT) SIZE	11
D METHOD FOR THE MEASUREMENT OF CHARACTER DIMENSIONS	14
E METHOD FOR THE MEASUREMENT OF GEOMETRIC STABILITY (JITTER) OF CHARACTERS	15
F PROGRAM FOR THE GENERATION OF RANDOM CHARACTERS	17

STANDARDS AUSTRALIA

Australian Standard
Screen-based workstation

Part 1—Visual display units

1 SCOPE. This Standard specifies performance requirements for visual display units (VDUs) incorporating cathode-ray tubes. The Standard does not apply to CAD units or to test equipment.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS

- 1217 Acoustics — Determination of sound power levels of noise sources
- 1217.2 Part 2: Precision methods for broad-band sources in reverberation rooms
- 1680 Code of practice for interior lighting and the visual environment
- 2654 Microfiche readers for intermittent use
- 2713 Lighting and the visual environment for screen-based tasks
- 3260 Approval and test specification—Safety of information technology equipment including electrical business equipment

ANSI/HFS Human factors engineering of visual display terminal workstations (Revised review draft, July 1986)

Worksafe Australia Guidance Note for the prevention of occupational overuse syndrome in keyboard employment.

International Commission on Illumination (CIE) No 15, Colorimetry.

3 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 1687 and those below apply.

3.1 Brightness — the attribute of visual sensation according to which a surface appears to emit or reflect more or less light.

3.2 Contrast ratio — ratio between character luminance and background luminance.

3.3 Flicker — periodic, perceptible, temporal variation of luminance in a visual field.

3.4 Geometric stability (jitter) — perceptible horizontal or vertical movement of the picture elements composing an image that is supposed to be stationary.

3.5 Legibility — an attribute of alphanumeric characters that makes it possible for each one to be distinguished from all others.

3.6 Luminance — the objective measure of the brightness of a surface or of an extended light source.

3.7 Negative polarity — light characters on a dark background.

3.8 Pixel — a contraction for the words 'picture element'. The smallest, discrete, addressable subsection of a visual display.

3.9 Positive polarity — dark characters on a light background.

3.10 Readability — a quality that makes the recognition, interpretation and understanding of the information conveyed by alphanumeric characters presented in meaningful groups, i.e. words, sentences, and continuous text.

3.11 Luminance factor — the ratio of the luminance of a surface to that of a diffusely reflecting reference white surface having a reflectance of not less than 0.9 (e.g. magnesium oxide (MgO) block) placed in the same position.

NOTE: Luminance factor is a measure of reflectance and depends on the direction of the incident light and the angle of observation.

3.12 Shall — indicates a mandatory statement.

3.13 Should — indicates a recommendation.

4 CONSTRUCTION.

4.1 General. Visual display units shall comply with AS 3260.

NOTES:

- The requirements of AS 3260 can be briefly summarized as aiming at the prevention of injury from electric shock, fire, heat, and mechanical, radiation, or chemical hazards. Requirements are included to ensure that equipment is mechanically stable and structurally sound, that there are no sharp edges, that dangerous parts are adequately guarded and that operators do not have access to internal components and adjustments.
- The construction clause does not cover faults which may occur as a result of environmental factors, e.g. magnetic fields can affect the display stability of VDUs placed in close proximity to some lift wells.

4.2 Screen and image controls.

4.2.1 General. Screen and image controls should be clearly labelled, readily accessible, easy to use, and located so as to prevent accidental operation.

4.2.2 Brightness control. The VDU shall have a control for adjusting the brightness of the image and background together. The control shall be independent of the on-off switch and positioned so that an operator can view the screen while adjusting the brightness.

4.2.3 Contrast control. If the VDU has, or is capable of having, a negative polarity display, it shall include a contrast control for adjusting the brightness of the image in relation to the background. The control shall be independent of the on-off switch and positioned so that an operator can view the screen while adjusting the contrast.