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IEC 61340-5-2:1999
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Interim Australian Standard™

Electrostatics

Part 5.2: Protection of electronic devices from electrostatic phenomena—User guide

Standards Australia

This Interim Australian Standard was prepared by Committee EL-025, Control of Undesirable Static Charges. It was approved on behalf of the Council of Standards Australia on 21 November 2000 and published on 23 January 2001.

The following interests are represented on Committee EL-025:

Australasian Plastics and Rubber Institute

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PREFACE

This Interim Standard was prepared by the Standards Australia Committee EL-025, Control of Undesirable Static Charges.

This Interim Standard is Part 5.2 of a series which when complete will consist of the following main Parts:

AS		
61340	Electrostatics	
61340.1	Part 1:	General
61340.2	Part 2:	Measurement methods in electrostatics
61340.3	Part 3:	Methods for simulating electrostatic effects
61340.4	Part 4:	Standard test methods for specific applications
61340.5	Part 5:	Protection of electronic devices from electrostatic phenomena
61340.6	Part 6:	Techniques to control electrostatic phenomena and methods to assess their effectiveness

This Interim Standard is identical in technical content to and has been reproduced from IEC Technical Specification IEC 61340-5-2:1999, *Electrostatics – Part 5-2: Protection of electronic devices from electrostatic phenomena –User guide*.

The objective of this Interim Standard is to provide clear guidelines to help the user implement the general requirements of AS 61340.5.1.

This Interim Standard will have a currency of two years from its date of publication. At the conclusion of that period it will either be superseded by another Standard, confirmed as an interim Standard in its present form for a further two year period or withdrawn.

A reference to an International Standard identified in the Normative References Clause by strikethrough (~~example~~) is replaced by a reference to the Australian or Australian/New Zealand Standard(s) listed immediately thereafter and identified by shading (example). Where the struck-through referenced document and the referenced Australian or Australian/New Zealand Standard are identical, this is indicated in parenthesis after the title of the latter.

As this Interim Standard is reproduced from an International Technical Specification, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this technical specification' should read 'this Interim Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

The terms 'normative' and 'informative' have been used in this Interim Standard to define the application of the annex to which they apply. A 'normative' annex is an integral part of a Standard, whereas an 'informative' annex is only for information and guidance.

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Part 5.2: Protection of electronic devices from electrostatic phenomena—User guide

1 Scope

1.1 This technical specification is intended to cover the protection from ESD damage of all electronic devices with voltage sensitivity of not lower than 100 V through their entire life. This is from the commencement of manufacture, through product assembly, product use and possible repair until the end of the product life.

This technical specification is intended to cater for electronic components, assemblies and subassemblies with a sensitivity of 100 V or greater (human body model (HBM)), and as such covers most items available. There are on the market a few items which may suffer damage at lower levels. Where these are used, additional or alternative methods should be used. These are not covered by either IEC 61340-5-1 or this user guide, as it would not be reasonable or economic to equip the general EPA to cater for these. Additional information on these may be found in many of the references in the bibliography.

The HBM has been chosen as the major criteria, as damage from human contact is still the most common source even in today's automated society. There are several values given in different sources for HBM, but the chosen one is 100 pF and 1 500 Ω.

1.2 Low humidity

At low relative humidities the dissipation of static charges often becomes more difficult, and some materials may not work efficiently. Above about 20 % relative humidity most materials maintain most of their efficiency. Where relative humidity may go lower the user should pay particular attention that the materials selected will perform effectively at the minimum expected relative humidity. This is of particular importance in very cold and non-oceanic climates.

1.3 Clean rooms

For clean rooms the specialist areas are considered to be class 100 or tighter. Many of the techniques in current use for ESD protection will not satisfy the clean room constraints, for example carbon breaking down, ionics from spray or particles from ionizer needles. Some alternative materials are available, with improved ones still being developed, that will cope with both conditions and these should be used. This area is particularly important as clean operation is an essential part of semiconductor manufacture. Damage occurring at this stage may result in undetected "walking wounded" devices which can have very expensive results. The clean room application is currently the most difficult to control, particularly in class 10 and class 1 rooms. IEC 61340-5-1 embodies current technology. As new and improved materials and techniques become available this area will be improved, with benefits in reliability.