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Electrostatics -
Part 5-6: Protection of electronic devices from electrostatic phenomena - Process assessment techniques

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Electrostatics -
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FOREWORD

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IEC TS 61340-5-6 has been prepared by IEC technical committee 101: Electrostatics. It is a Technical Specification.

This Technical Specification cancels and replaces IEC PAS 61340-5-6 published in 2022. This first edition constitutes a technical revision.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
101/734/DTS	101/741/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61340 series, published under the general title *Electrostatics*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

This document describes a set of methodologies, techniques, and tools that can be used to characterize a process where ESD sensitive items (ESDS) are handled. This document's procedures are meant to be used by those possessing knowledge and experience with electrostatic measurements.

This document provides methods to determine the level of ESD risk that remains in the process after ESD control items and materials are implemented.

These test methods' objective is to identify if possibly damaging ESD events are occurring or if significant electrostatic charges are generated on people, equipment, materials, components, or printed circuit board assemblies (PCBA) even though there are ESD control precautions in place.

Sensitivities of ESDS are characterized by industry standard ESD testing and rated by their withstand voltages or withstand currents. This document is intended to provide methods to determine whether items of a given withstand voltage or withstand current are at risk in the process.

The wide variety of ESD control items and materials and the environment in which these items are used can require test setups different from those described in this document. Users of this document can adapt the test procedure and setups described in Annex A to produce meaningful data for the user's application.

Organizations performing these tests can determine if on-going process characterization is necessary, and if so, the time interval between observations. These observations can also be made when new products are introduced or when process changes occur. Examples of process changes include tools, fixtures, equipment, new items/products, and additional manufacturing steps.

The topics below are not addressed in this document:

- Program management: see IEC 61340-5-1.
- Compliance verification: see IEC TS 61340-5-4 [1][1].

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[1] Numbers in square brackets refer to the Bibliography.

1 Scope

This part of IEC 61340 establishes a set of methodologies, techniques, and instruments to characterize a process where electrostatic discharge (ESD) sensitive items (ESDS) are handled. ESD risk assessment covers risks by charged personnel, ungrounded conductors, charged ESDS, charged insulators, and ESDS in an electrostatic field.

This document applies to activities that manufacture, process, assemble, install, package, label, service, test, inspect, transport, or otherwise handle electrical or electronic parts, assemblies, and equipment susceptible to damage by electrostatic discharges.

This document does not apply to electrically initiated explosive items, flammable gases and liquids or powders.

The document does not address program management, compliance verification or program manager/coordinator certification.

Risks due to electromagnetic sources that produce AC fields are not considered.

Descriptions of measurement techniques are given in Annex A.

Annex B provides best practices for grounding automated handling equipment (AHE), Annex C summarizes the best practices to prepare an effective ESD risk assessment, and Annex D introduces mitigation measures resulting from the ESD process assessment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61340-2-3, *Electrostatics – Part 2-3: Methods of test for determining the resistance and resistivity of solid materials used to avoid electrostatic charge accumulation*

IEC 61010-2-030, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms and definitions given in IEC 61010-1, IEC 61010-2-030, IEC 61340-5-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp