



# SLOVENSKI STANDARD

## SIST EN 61340-5-1:2008

01-februar-2008

Nadomešča:

SIST EN 61340-5-1:2002

---

**Elektrostatika - 5-1. del: Zaščita elektronskih naprav pred elektrostatskimi pojavi - Splošne zahteve (IEC 61340-5-1:2007)**

Electrostatics -- Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements

Elektrostatik -- Teil 5-1: Schutz von elektronischen Bauelementen gegen elektrostatische Phänomene - Allgemeine Anforderungen

Electrostatique -- Partie 5-1: Protection des dispositifs électroniques contre les phénomènes électrostatiques - Exigences générales

**Ta slovenski standard je istoveten z: EN 61340-5-1:2007**

---

**ICS:**

17.220.99	Drugi standardi v zvezi z električno in magnetizmom	Other standards related to electricity and magnetism
-----------	---	--

**SIST EN 61340-5-1:2008**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61340-5-1:2008

<https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-d6f18e8fe1f4/sist-en-61340-5-1-2008>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61340-5-1**

October 2007

ICS 17.220.99; 29.020

Supersedes EN 61340-5-1:2001

English version

**Electrostatics -  
Part 5-1: Protection of electronic devices from electrostatic phenomena -  
General requirements  
(IEC 61340-5-1:2007)**

Electrostatique -  
Partie 5-1: Protection des dispositifs  
électroniques contre les phénomènes  
électrostatiques -  
Exigences générales  
(CEI 61340-5-1:2007)

Elektrostatik -  
Teil 5-1: Schutz von elektronischen  
Bauelementen gegen elektrostatische  
Phänomene -  
Allgemeine Anforderungen  
(IEC 61340-5-1:2007)

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

This European Standard was approved by CENELEC on 2007-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 101/249/FDIS, future edition 1 of IEC 61340-5-1, prepared by IEC TC 101, Electrostatics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61340-5-1 on 2007-10-01.

This European Standard supersedes EN 61340-5-1:2001 + corrigendum April 2001.

The main changes with respect to EN 61340-5-1:2001 are listed below:

EN 61340-5-1:2007 focuses on the requirements for an ESD control program. In addition, EN 61340-5-1:2007 has been aligned with other major ESD control program standards used throughout the world.

The following dates were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2008-07-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2010-10-01

Annex ZA has been added by CENELEC.

## ~~iTeh STANDARD PREVIEW~~ (standards.iteh.ai)

### Endorsement notice

The text of the International Standard IEC 61340-5-1:2007 was approved by CENELEC as a European Standard without any modification. [SIST EN 61340-5-1:2008](https://standards.iteh.ai/catalog/standards/sist/4190d757-57f6-40a1-bd5e-d6118e8fe114/sist-en-61340-5-1-2008)

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60749-27 NOTE Harmonized as EN 60749-27:2006 (not modified).

---

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60364 (mod)	Series	Low-voltage electrical installations	HD 384/ HD 60364	Series
IEC/TS 60479-1	– <sup>1)</sup>	Effects of current on human beings and livestock - Part 1: General aspects	–	–
IEC/TS 60479-2	– <sup>1)</sup>	Effects of current on human beings and livestock - Part 2: Special aspects	–	–
IEC 60749-26	– <sup>1)</sup>	Semiconductor devices - Mechanical and climatic test methods - Part 26: Electrostatic discharge (ESD) sensitivity testing - Human body model (HBM)	EN 60749-26	2006 <sup>2)</sup>
IEC 61010-1	– <sup>1)</sup>	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1 + corr. June 2002	2001 <sup>2)</sup> 2002
IEC 61140	– <sup>1)</sup>	Protection against electric shock - Common aspects for installation and equipment	EN 61140	2002 <sup>2)</sup>
IEC 61340-2-3	– <sup>1)</sup>	Electrostatics - Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation	EN 61340-2-3	2000 <sup>2)</sup>
IEC 61340-4-1	– <sup>1)</sup>	Electrostatics - Part 4-1: Standard test methods for specific applications - Electrical resistance of floor coverings and installed floors	EN 61340-4-1	2004 <sup>2)</sup>
IEC 61340-4-3	– <sup>1)</sup>	Electrostatics - Part 4-3: Standard test methods for specific applications - Footwear	EN 61340-4-3	2001 <sup>2)</sup>
IEC 61340-4-5	– <sup>1)</sup>	Electrostatics - Part 4-5: Standard test methods for specific applications - Methods for characterizing the electrostatic protection of footwear and flooring in combination with a person	EN 61340-4-5	2004 <sup>2)</sup>

<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC/TR 61340-5-2	– <sup>1)</sup>	Electrostatics - Part 5-2: Protection of electronic devices from electrostatic phenomena - User guide	–	–
ANSI/ESD S1.1	– <sup>1)</sup>	Standard Test Method for the protection of electrostatic charge susceptible items - Wrist Straps	–	–
ANSI/ESD STM2.1	– <sup>1)</sup>	Standard Test Method for the protection of electrostatic discharge susceptible items - Garments	–	–
ANSI/ESD STM3.1	– <sup>1)</sup>	Standard Test Method for the electrostatic discharge susceptible items - Ionization	–	–
ANSI/ESD STM11.31	– <sup>1)</sup>	Standard Test Method for evaluating the performance of electrostatic discharge shielding materials - Bags	–	–

## iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 61340-5-1:2008

<https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-d6f18e8fe1f4/sist-en-61340-5-1-2008>



IEC 61340-5-1

Edition 1.0 2007-08

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

Electrostatics – **iTeh STANDARD PREVIEW**  
Part 5-1: Protection of electronic devices from electrostatic phenomena –  
General requirements (standards.iteh.ai)

[SIST EN 61340-5-1:2008](https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-9901914e1008/sist-en-61340-5-1-2008)  
Electrostatique – <https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-9901914e1008/sist-en-61340-5-1-2008>  
Part 5-1: Protection des dispositifs électroniques contre les phénomènes  
électrostatiques – Exigences générales

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

**R**

## CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	8
4 Personnel safety.....	9
5 ESD control program .....	9
5.1 General.....	9
5.1.1 ESD control program requirements .....	9
5.1.2 ESD coordinator .....	9
5.1.3 Tailoring .....	9
5.2 ESD control program administrative requirements .....	9
5.2.1 ESD control program plan.....	9
5.2.2 Training plan .....	10
5.2.3 Compliance verification plan.....	10
5.3 ESD control program plan technical requirements .....	10
5.3.1 Grounding/equipotential bonding systems .....	11
5.3.2 Personnel grounding.....	12
5.3.3 ESD protected areas (EPA) .....	13
5.3.4 Packaging .....	15
5.3.5 Marking .....	15
Annex A (normative) Test methods .....	16
Figure 1 – Schematic of an EPA with a ground reference.....	11
Figure 2 – Schematic of an equipotential bonding system .....	12
Figure A.1 – Wrist strap testing.....	16
Figure A.2 – Footwear testing (example).....	17
Table 1 – Grounding/bonding requirements.....	12
Table 2 – Personnel grounding requirements .....	13
Table 3 – EPA Requirements .....	14
Table 4 – Packaging .....	15

ITAI STANDARD PREVIEW  
(standards.iteh.ai)  
SIST EN 61340-5-1:2008  
<https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-d6f18e8fe1f4/sist-en-61340-5-1-2008>



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ELECTROSTATICS –

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

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61340-5-1 has been prepared by IEC technical committee 101: Electrostatics.

This first edition cancels and replaces the technical specification published in 1998. It constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

This version of IEC 61340-5-1 focuses on the requirements for an ESD control program. In addition, this version of IEC 61340-5-1 has been aligned with other major ESD control program standards used throughout the world.

The text of this standard is based on the following documents:

FDIS	Report on voting
101/249/FDIS	101/251/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61340-5-1:2008](#)

<https://standards.iteh.ai/catalog/standards/sist/4190d757-57fc-40a1-bd5e-d6f18e8fe1f4/sist-en-61340-5-1-2008>

## INTRODUCTION

This part of IEC 61340 covers the requirements necessary to design, establish, implement and maintain an electrostatic discharge (ESD) control program for 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 greater than or equal to 100 V human body model (HBM). This standard covers the ESD control program requirements necessary for setting up a program to handle ESD-sensitive devices (ESDS), based on the historical experience of both military and commercial organizations. The fundamental ESD control principles that form the basis of this standard are as follows:

- avoid a discharge from any charged, conductive object (personnel and especially automated handling equipment) into the ESDS. This can be accomplished by bonding or electrically connecting all conductors in the environment, including personnel, to a known ground or contrived ground (as on board ship or on aircraft). This attachment creates an equipotential balance between all conducting objects and personnel. Electrostatic protection can be maintained at a potential different from a “zero” voltage ground potential as long as all conductive objects in the system are at the same potential;
- avoid a discharge from any charged ESD sensitive device. Charging can result from direct contact and separation or it can be field induced. Necessary insulators in the environment cannot lose their electrostatic charge by attachment to ground. Ionization systems provide neutralization of charges on these necessary insulators (circuit board materials and some device packages are examples of necessary insulators). Assessment of the ESD hazard created by electrostatic charges on the necessary insulators in the work place is required to ensure that appropriate actions are implemented, according to the risk;
- once outside of an electrostatic discharge protected area (hereinafter referred to as an EPA) it is often not possible to control the above items, therefore, ESD protective packaging may be required. ESD protection can be achieved by enclosing ESD sensitive products in static protective materials, although the type of material depends on the situation and destination. Inside an EPA, static dissipative materials may provide adequate protection. Outside an EPA, static discharge shielding materials are recommended. Whilst all of these materials are not discussed in this standard, it is important to recognize the differences in their application.

Each company has different processes, and so will require a different blend of ESD prevention measures for an optimum ESD control program. It is vital that these measures are selected, based on technical necessity and carefully documented in an ESD control program plan, so that all concerned can be sure of the program requirements.

Training is an essential part of an ESD control program in order to ensure that the personnel involved understand the equipment and procedures they are to use in order to be in compliance with the ESD control program plan. Training is also essential in raising awareness and understanding of ESD issues. Without training, personnel are often a major source of ESD risk. With training, they become an effective first line of defence against ESD damage.

Regular compliance verification checks and tests are essential to ensure that equipment remains effective and that the ESD control program is correctly implemented in compliance with the ESD control program plan.