

ELEKTRIOHUTUS MADALPINGEVÕRKUDES
VAHELDUVPINGEGA KUNI 1000 V JA ALALISPINGEGA
KUNI 1500 V. KAITSESÜSTEEMIDE KATSETUS-, MÕÕTE-
JA SEIRESEADMED. OSA 1: ÜLDNÕUDED

Electrical safety in low voltage distribution systems up
to 1 000 V AC and 1 500 V DC - Equipment for testing,
measuring or monitoring of protective measures - Part
1: General requirements (IEC 61557-1:2019)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 61557-1:2021 sisaldab Euroopa standardi EN IEC 61557-1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 61557-1:2021 consists of the English text of the European standard EN IEC 61557-1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.12.2021.	Date of Availability of the European standard is 10.12.2021.
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ICS 17.220.20, 29.080.01, 29.240.01

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English Version

Electrical safety in low voltage distribution systems up to 1 000 V
AC and 1 500 V DC - Equipment for testing, measuring or
monitoring of protective measures - Part 1: General
requirements
(IEC 61557-1:2019)

Sécurité électrique dans les réseaux de distribution basse
tension au plus égale à 1 000 V c.a. et 1 500 V c.c. -
Dispositifs de contrôle, de mesure ou de surveillance de
mesures de protection - Partie 1: Exigences générales
(IEC 61557-1:2019)

Elektrische Sicherheit in Niederspannungsnetzen bis AC 1
000 V und DC 1 500 V - Geräte zum Prüfen, Messen oder
Überwachen von Schutzmaßnahmen - Teil 1: Allgemeine
Anforderungen
(IEC 61557-1:2019)

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 85/689/FDIS, future edition 3 of IEC 61557-1, prepared by IEC/TC 85 "Measuring equipment for electrical and electromagnetic quantities" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61557-1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-08-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-11-10

This document supersedes EN 61557-1:2007 and all of its amendments and corrigenda (if any).

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The text of the International Standard IEC 61557-1:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60359	NOTE	Harmonized as EN 60359
IEC 60364-1	NOTE	Harmonized as HD 60364-1
IEC 60364-6	NOTE	Harmonized as HD 60364-6
IEC 60664-1	NOTE	Harmonized as EN IEC 60664-1
IEC 61326 (series)	NOTE	Harmonized as EN IEC 61326 (series)
IEC 61326-2-4	NOTE	Harmonized as EN IEC 61326-2-4
IEC 62430	NOTE	Harmonized as EN IEC 62430
IEC 62474	NOTE	Harmonized as EN IEC 62474

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60038 (mod)	2009	IEC standard voltages	EN 60038	2011
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013
IEC 61010-1	2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	EN 61010-1	2010
+ A1 (mod)	2016		+ A1	2019
IEC 61010-031	-	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test	EN 61010-031	-
IEC 61010-2-030	2017	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-030: Particular requirements for equipment having testing or measuring circuits	EN IEC 61010-2-030	2021
-	-		+ A11	2021
IEC 61010-2-032	-	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-032: Particular requirements for hand-held and hand-manipulated current sensors for electrical test and measurement	EN IEC 61010-2-032	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61010-2-034	2017	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-034: Particular requirements for measurement equipment for insulation resistance and test equipment for electric strength	EN IEC 61010-2-034	2021
-	-		+ A11	2021
IEC 61326-1	2012	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN 61326-1	2013
IEC 61557-8	2014	Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 8: Insulation monitoring devices for IT systems	EN 61557-8	2015
IEC 61557-9	2014	Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 9: Equipment for insulation fault location in IT systems	EN 61557-9	2015

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electrical safety in low voltage distribution systems up to 1 000 V a.c. and
1 500 V d.c. – Equipment for testing, measuring or monitoring of protective
measures**

Part 1: General requirements

**Sécurité électrique dans les réseaux de distribution basse tension au plus égale
à 1 000 V c.a. et 1 500 V c.c. – Dispositifs de contrôle, de mesure ou de
surveillance de mesures de protection**

Partie 1: Exigences générales



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electrical safety in low voltage distribution systems up to 1 000 V a.c. and
1 500 V d.c. – Equipment for testing, measuring or monitoring of protective
measures**

Part 1: General requirements

**Sécurité électrique dans les réseaux de distribution basse tension au plus égale
à 1 000 V c.a. et 1 500 V c.c. – Dispositifs de contrôle, de mesure ou de
surveillance de mesures de protection**

Partie 1: Exigences générales

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 Requirements	12
4.1 General requirements	12
4.2 Influence quantities – Operating uncertainty (B), percentage operating uncertainty (B [%])	12
4.3 Rated operating conditions	13
4.4 Battery test facility	14
4.5 Safety	14
4.6 Electromagnetic compatibility.....	14
4.6.1 Immunity.....	14
4.6.2 Emission.....	14
4.7 Mechanical strength against vibration	14
5 Marking and operating instructions	15
5.1 General.....	15
5.2 Marking.....	15
5.3 Operating instructions	15
5.3.1 Performance requirements.....	15
5.3.2 Other information.....	15
6 Tests	16
6.1 General.....	16
6.2 Operating uncertainty.....	16
6.2.1 General	16
6.2.2 Influence of changing position	16
6.2.3 Influence of temperature	16
6.2.4 Influence of the supply voltage	16
6.3 Battery test facility	16
6.4 Safety tests.....	16
6.5 EMC tests	16
6.6 Mechanical requirements	17
6.7 Marking and operating instructions.....	17
6.8 Records	17
Annex A (informative) Explanation of the application of GUM in series IEC 61557	18
A.1 Overview.....	18
A.2 Basic model of evaluation of results under operational conditions	18
A.2.1 General	18
A.2.2 Standard uncertainty of a result	18
A.2.3 Expanded uncertainty	19
A.2.4 Relative operating uncertainty	19
A.2.5 Calibration uncertainty.....	19
A.3 Operating uncertainty calculations as basis for 4.1	20
A.3.1 Standard uncertainty	20
A.3.2 Operating uncertainty in accordance with 4.1.....	20

Annex B (informative) Environmental aspects	21
B.1 Overview.....	21
B.2 Guidelines to establish a material declaration and end-of-life information	21
B.2.1 General	21
B.2.2 Guidelines for material declaration	22
B.2.3 Guidelines for end-of-life (EoL)	22
B.2.4 Example of a material declaration and end-of-life information	22
Bibliography.....	25
 Figure B.1 – Components listed for EoL of a product	 24
 Table B.1 – Material content according to IEC 62474 material classes.....	 23

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL SAFETY IN LOW VOLTAGE DISTRIBUTION SYSTEMS UP TO 1 000 V AC AND 1 500 V DC – EQUIPMENT FOR TESTING, MEASURING OR MONITORING OF PROTECTIVE MEASURES

Part 1: General requirements

FOREWORD

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International Standard IEC 61557-1 has been prepared by technical committee 85: Measuring equipment for electrical and electromagnetic quantities.

This third edition cancels and replaces the second edition published in 2007. This edition constitutes a technical revision.

This third edition includes the following significant technical changes with respect to the previous edition:

- a) terms aligned with IEC 60050;
- b) measurement of uncertainty revised according to the equations in 4.2 of ISO/IEC Guide 98-3:2008 (GUM);
- c) updated references for safety and EMC requirements;

- d) updated references for marking and operating instructions;
- e) updated references for testing safety and EMC;
- f) Annex A contains an explanation of GUM;
- g) Annex B addresses environmental aspects.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
85/689/FDIS	85/692/RVD

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

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

A list of all parts in the IEC 61557 series, published under the general title *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC – Equipment for testing, measuring or monitoring of protective measures*, 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 "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

INTRODUCTION

IEC 60364-6 stipulates standardized conditions for the initial test of power installations in TN, TT or IT systems for continuous monitoring and for testing these installations after modifications. In addition to general references for the performance of the tests, IEC 60364-6 contains requirements that have to be verified by measurements. Only in a few instances, for example when measuring the insulation resistance, does IEC 60364-6 contain details of the characteristics of the measuring device to be used. Circuits which are given as examples in IEC 60364-6, and referred to within the text of that document, are generally not suitable for practical use.

The tests are carried out in installations where hazardous voltages can occur and where careless use or a defect in the equipment can easily cause an accident. Therefore, the technician has to rely on measuring devices which ensure safe test methods, in addition to simplifying the measurements.

The application of the general safety regulations for electrical and electronic measuring devices (IEC 61010-1) for testing the protective measures is not sufficient in itself. The performance of measurements in the installation can cause hazards not only to the technician, but also to third persons, depending on the measuring method used.

Likewise, reliable and comparable results of measurement with measuring devices from different manufacturers are an important precondition in order to obtain an objective assessment about the installation, for example when the installation is handed over for periodic tests, for continuous insulation monitoring or in the case of performance warranty.

The IEC 61557 series has been established with the aim of stipulating common principles for measuring and monitoring equipment for testing electrical safety and measuring performances in systems with nominal voltages up to 1 000 V AC and 1 500 V DC which correspond to the above-mentioned characteristics.

For that reason, the following common requirements have been stipulated in IEC 61557-1 (other parts of IEC 61557 can specify additional requirements or deviations):

- protection against extraneous voltages;
- class II protection (except insulation monitoring devices and insulation fault location systems);
- requirements and safety precautions against hazardous touch voltages at the measuring device;
- requirements for the assessment of connection configurations with respect to wiring errors in the tested equipment;
- special mechanical requirements;
- measuring methods;
- measured quantity;
- specification of the maximum operating uncertainty;
- requirements for testing the influencing quantity and the calculation of the operating uncertainty;
- uncertainties of the measuring device at the thresholds specified in the respective standards;
- specification of the nature of type and routine tests and the required conditions for testing.

Contrary to the usual convention, terms and definitions that occur more than once in another part of the series are listed in IEC 61557-1:2019, Clause 3. Only terms and definitions specific to the respective part of IEC 61557 are listed in Clause 3 of that part.