

**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 +
IEC 61557-1:2019/AMD1:2024)**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN IEC 61557-1:2021+A1:2025 sisaldab Euroopa standardi EN IEC 61557-1:2021 ja selle muudatuse A1:2025 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 61557-1:2021+A1:2025 consists of the English text of the European standard EN IEC 61557-1:2021 and its amendment A1:2025.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 10.12.2021, muudatus A1 20.12.2024.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 10.12.2021, for A1 20.12.2024.
Muudatusega A1 lisatud või muudetud teksti algus ja lõpp on tekstis tähistatud sümbolitega $\boxed{A_1}$ $\langle A_1 \rangle$.	The start and finish of text introduced or altered by amendment A1 is indicated in the text by tags $\boxed{A_1}$ $\langle A_1 \rangle$.
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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 + IEC 61557-1:2019/AMD1:2024)**

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 + IEC 61557-1:2019/AMD1:2024)

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 + IEC 61557-1:2019/AMD1:2024)

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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

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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

A1 Amendment A1 European foreword

The text of document 85/900/CDV, future edition 3 of IEC 61557-1/AMD1, prepared by 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/A1:2024.

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) 2025-12-31
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Endorsement notice

The text of the International Standard IEC 61557-1:2019/AMD1:2024 was approved by CENELEC as a European Standard without any modification. **A1**

INTERNATIONAL STANDARD



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



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IEC 61557-1

Edition 3.1 2024-10
CONSOLIDATED VERSION

INTERNATIONAL STANDARD



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

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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.

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Amendment 1 to IEC 61557-1:2019 has been prepared by TC 85: Measuring equipment for electrical and electromagnetic quantities.

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

Draft	Report on voting
85/900/CDV	85/926/RVC

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 Amendment 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/.

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- revised. [A1](#)

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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.

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

1 Scope

This part of IEC 61557 specifies the general requirements applicable to measuring and monitoring equipment for testing the electrical safety in low-voltage distribution systems with nominal voltages up to 1 000 V AC and 1 500 V DC.

When measuring equipment or measuring installations involve measurement tasks of various measuring equipment covered by this series of standards, then the part of this series relevant to each of the measurement tasks is applicable.

NOTE The term "measuring equipment" will hereafter be used to designate "testing, measuring and monitoring equipment".

Other parts of IEC 61557 can specify additional requirements or deviations.

This document does not cover functional safety or cybersecurity.

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 60038:2009, *IEC standard voltages*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013¹

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*

IEC 61010-1:2010/AMD1:2016²

IEC 61010-031, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held and hand-manipulated assemblies for electrical test and measurement*

¹ A consolidated version of this publication exists, comprising IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

² A consolidated version of this publication exists, comprising IEC 61010-1:2010 and IEC 61010-1:2010/AMD 1:2016.

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*

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*

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*

IEC 61326-1:2012, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

▣ IEC 61326-2-4, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-4: Particular requirements – Test configurations, operational conditions and performance criteria for insulation monitoring devices according to IEC 61557-8 and for equipment for insulation fault location according to IEC 61557-9* ▣

IEC 61557-8:2014, *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 8: Insulation monitoring devices for IT systems*

IEC 61557-9:2014, *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 9: Equipment for insulation fault location in IT systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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>

3.1

nominal system voltage

U_n

value of the voltage by which the distribution system is designated and to which certain characteristics are assigned

3.2

voltage against earth

U_o

<in distribution systems with an earthed neutral point> voltage between a phase conductor and the earthed neutral point

3.3

voltage against earth

U_o

<in all other distribution systems> voltage present between the remaining phase conductors and earth when one of the phase conductors is short-circuited to earth