

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

The European Standard EN 61557-1:2007 has the status of a British Standard

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National foreword

This British Standard was published by BSI. It is the UK implementation of EN 61557-1:2007. It is identical with IEC 61557-1:2007. It supersedes BS EN 61557-1:1997, which will be withdrawn on 1 March 2010.

The UK participation in its preparation was entrusted to Technical Committee PEL/85, Measuring equipment for electrical and electromagnetic quantities.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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**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
(IEC 61557-1:2007)**

Sécurité électrique dans les réseaux
de distribution basse tension
de 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
(CEI 61557-1:2007)

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 61557-1:2007)

This European Standard was approved by CENELEC on 2007-03-01. 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 85/290/FDIS, future edition 2 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 was approved by CENELEC as EN 61557-1 on 2007-03-01.

This European Standard supersedes EN 61557-1:1997.

The following changes were made with respect to EN 61557-1:1997:

- revision of the definitions;
- addition of influence quantities E_9 and E_{10} ;
- the subclause on Electromagnetic compatibility was complemented;
- inclusion of performance monitoring devices in the introduction;
- addition of new requirements for operating instructions.

This Part 1 specifies the general requirements. Parts 2 to 8 of EN 61557, which are to be used in conjunction with this Part 1, comprise specific specifications for individual measuring equipment.

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) | 2007-12-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2010-03-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61557-1:2007 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

IEC 60364-6:2006, stipulates standardized conditions for the initial test of power installations in TN, TT or IT (IEC 60364) systems, for continuous monitoring and for testing these installations after modifications. In addition to general references for the execution of the tests, IEC 60364-6 contains requirements which have to be verified by measurement. Only in a few instances, for example when measuring the insulation resistance, the standard contains 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, 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, apart from simplification of the measurements, safe test methods.

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 execution of measurements in the installation can cause hazards not only to the technician, but, depending on the measuring method, also to third persons.

Likewise, reliable and comparable results of measurement with measuring devices from different manufacturers are an important precondition in order to obtain an objective judgement 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.

This series of standards 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 a.c. and 1 500 V d.c. which correspond to the above-mentioned characteristics.

For this reason, the following common specifications have been stipulated in Part 1 and other individual parts of the series of standards:

- protection against extraneous voltages;
- protection class II (except insulation monitoring devices);
- specifications and safety precautions against hazardous touch voltages at the measuring device;
- specifications for the judgement 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;
- specifications for testing the influencing quantity and the calculation of the operational 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.

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

1 Scope

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

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 of standards 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".

2 Normative references

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.

IEC 60038:1983 ¹⁾, *IEC standard voltages*

Amendment 1: 1994

Amendment 2: 1997

IEC 60364-6:2006, *Electrical installations of buildings – Part 6: Verification*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests*

IEC 60529: 2001, *Degrees of protection provided by enclosures (IP code)*

IEC 61010-1:2001, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*

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

IEC 61326-2-2:2005, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems*

¹⁾ There exists a consolidated edition (6.2), which includes IEC 60038:1983 and its Amendments 1 (1994) and 2 (1997).

²⁾ To be published.