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INTERNATIONAL STANDARD



**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**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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**

- 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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 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.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

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.

IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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~~ 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, ~~the standard contains~~ 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, ~~apart from simplification of the measurements,~~ 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 ~~execution~~ performance of measurements in the installation can cause hazards not only to the technician, but also to third persons, depending on the measuring method, ~~also to third persons~~ used.

Likewise, reliable and comparable results of measurement with measuring devices from different manufacturers are an important precondition in order to obtain an objective ~~judgement~~ 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 ~~specifications~~ requirements have been stipulated in ~~Part 1 and other individual parts of the series of standards~~ 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);
- ~~specifications~~ requirements and safety precautions against hazardous touch voltages at the measuring device;
- ~~specifications~~ requirements for the ~~judgement~~ 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;
- ~~specifications~~ requirements for testing the influencing quantity and the calculation of the ~~operational~~ 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 ~~for~~ 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:~~1983-1~~ 2009, *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:~~2004~~1989, *Degrees of protection provided by enclosures (IP code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013²

IEC 61010-1:~~2004~~2010, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*

IEC 61010-1:2010/AMD1:2016³

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

² A consolidated version of this publication exists, comprising IEC 60529:1989, IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013.

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*

IEC 61010-2-030:2017, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: ~~Special~~ Particular requirements for equipment having testing ~~and~~ or measuring circuits⁴⁾*

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 61326-2-2:2005, 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~~

~~IEC 61326-2-4:2006, Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2: 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 61557-2, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 2: Insulation resistance~~

~~IEC 61557-3, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 3: Loop impedance~~

~~IEC 61557-4, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 4: Resistance of earth connection and equipotential bonding~~

~~IEC 61557-5, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 5: Resistance to earth~~

~~IEC 61557-6, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 6: Residual current devices (RCD) in TT and TN systems~~

~~IEC 61557-7, Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 7: Phase sequence~~

³ A consolidated version of this publication exists, comprising IEC 61010-1:2010 and IEC 61010-1:2010/AMD 1:2016.

⁴⁾ ~~To be published.~~

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*

~~IEC 61557-10, *Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 10: Combined measuring equipment for testing, measuring or monitoring of protective measures*~~

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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- d) updated references for marking and operating instructions;
- e) updated references for testing safety and EMC;
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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.

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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.

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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.

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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 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*

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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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La Norme internationale IEC 61557-1 a été établie par le comité d'études 85 de l'IEC: Equipement de mesure des grandeurs électriques et électromagnétiques.

Cette troisième édition annule et remplace la deuxième édition parue en 2007. Cette édition constitue une révision technique.

Cette troisième édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) alignement des termes sur ceux de l'IEC 60050;

- b) mesure de l'incertitude revue conformément aux équations données en 4.2 du Guide ISO/IEC 98-3:2008 (GUM);
- c) mise à jour des références aux exigences de sécurité et de CEM;
- d) mise à jour des références au marquage et aux instructions de fonctionnement;
- e) mise à jour des références aux essais de sécurité et de CEM;
- f) l'Annexe A comporte une explication du GUM;
- g) l'Annexe B porte sur les aspects environnementaux.

Le texte de cette Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
85/689/FDIS	85/692/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 61557, publiées sous le titre général *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*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "<http://webstore.iec.ch>" dans les données relatives au document recherché. A cette date, le document sera

- reconduit,
- supprimé,
- remplacé par une édition révisée, ou
- amendé.

INTRODUCTION

L'IEC 60364-6 stipule les conditions normalisées de l'essai initial des installations de distribution dans les réseaux TN, TT ou IT pour la surveillance permanente et pour les essais de ces installations après des modifications. Outre des indications générales relatives à la réalisation des essais, l'IEC 60364-6 contient des exigences qui doivent être vérifiées par des mesures. Dans certains cas seulement, par exemple lors de la mesure de la résistance d'isolement, l'IEC 60364-6 contient quelques indications précises concernant les caractéristiques de l'appareil de mesure à utiliser. Les circuits de mesure fournis comme exemples dans l'IEC 60364-6 et cités dans le texte de ce document ne sont généralement pas adaptés à un usage pratique.

Les essais sont effectués dans des installations où des tensions dangereuses peuvent être présentes et où une imprudence ou une panne peut facilement être à l'origine d'un accident. Le technicien doit donc utiliser des dispositifs de mesure qui non seulement simplifient les mesures, mais garantissent également des méthodes d'essai sûres.

L'application des exigences de sécurité générales relatives aux dispositifs de mesure électriques et électroniques (IEC 61010-1) n'est pas suffisante pour les essais des mesures de protection. Selon la méthode de mesure utilisée, la prise des mesures au sein de l'installation peut présenter des dangers pour le technicien et pour les tierces personnes.

De même, des résultats de mesure fiables et comparables avec des appareils de mesure de différents fabricants constituent une condition préalable importante pour une évaluation objective de l'installation, par exemple lors du transfert de l'installation pour essais périodiques, pour la surveillance permanente de l'isolation ou en cas de prestations de garantie.

La série IEC 61557 a été établie dans le but de développer des principes communs pour les dispositifs de mesure et de surveillance utilisés aux fins d'essai de la sécurité électrique et de mesure des performances dans des réseaux à des tensions nominales jusqu'à 1 000 V c.a. et 1 500 V c.c. correspondant aux caractéristiques susmentionnées.

Pour cette raison, les exigences communes suivantes ont été établies dans l'IEC 61557-1 (les autres parties de l'IEC 61557 peuvent spécifier des exigences supplémentaires ou des écarts):

- protection contre les tensions extérieures;
- protection de classe II (à l'exception des contrôleurs d'isolement et des dispositifs de localisation de défaut d'isolement);
- exigences et précautions de sécurité contre les tensions de contact dangereuses au niveau de l'appareil de mesure;
- exigences relatives à l'appréciation des configurations de branchement par rapport aux erreurs de câblage dans l'installation soumise à essai;
- exigences mécaniques particulières;
- méthodes de mesure;
- grandeur mesurée;
- spécification relative à l'incertitude de fonctionnement maximale;
- exigences relatives aux essais de la grandeur d'influence et au calcul de l'incertitude de fonctionnement;
- incertitudes de l'appareil de mesure aux seuils spécifiés dans les normes respectives;
- spécification relative à la nature des essais de type et des essais individuels de série et aux conditions exigées pour ces essais.

Contrairement à la convention habituelle, les termes et définitions utilisés plusieurs fois dans une autre partie de la série sont répertoriés à l'Article 3 de l'IEC 61557-1:2019. Seuls les termes et définitions propres à la partie concernée de l'IEC 61557 sont répertoriés à l'Article 3 de cette partie.

SECURITE ELECTRIQUE DANS LES RESEAUX 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

1 Domaine d'application

La présente partie de l'IEC 61557 spécifie les exigences générales applicables aux dispositifs de mesure et de surveillance utilisés aux fins d'essai de la sécurité électrique dans les réseaux de distribution basse tension au plus égale à 1 000 V c.a. et 1 500 V c.c.

Lorsque des appareils ou installations de mesure impliquent des mesures avec différents appareils couverts par la présente série de normes, la partie de cette série de normes qui est pertinente pour un type de mesure donné est applicable.

NOTE Le terme "appareil de mesure" est utilisé dans la suite du texte pour désigner un "dispositif de contrôle, de mesure et de surveillance".

Les autres parties de l'IEC 61557 peuvent spécifier des exigences supplémentaires ou des écarts.

La présente norme ne couvre pas la sécurité fonctionnelle ou la cybersécurité.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60038:2009, *Tensions normales de l'IEC*

IEC 60529:1989, *Degrés de protection procurés par les enveloppes (code IP)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013¹

IEC 61010-1:2010, *Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 1: Exigences générales*

IEC 61010-1:2010/AMD1:2016²

IEC 61010-031, *Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 031: Prescriptions de sécurité pour sondes équipées portatives et manipulées à la main pour mesurage et essais électriques*

¹ Il existe une version consolidée de cette publication, comprenant l'IEC 60529:1989, l'IEC 60529:1989/AMD1:1999 et l'IEC 60529:1989/AMD2:2013.

² Il existe une version consolidée de cette publication, comprenant l'IEC 61010-1:2010 et l'IEC 61010-1:2010/AMD1:2016.

IEC 61010-2-030:2017, *Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 2-030: Exigences particulières pour les appareils équipés de circuits d'essai ou de mesure*

IEC 61010-2-032, *Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 2-032: Exigences particulières pour les capteurs de courant, portatifs et manipulés à la main, de test et de mesure électriques*

IEC 61010-2-034:2017, *Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 2-034: Exigences particulières applicables aux appareils de mesure de la résistance d'isolement et aux appareils d'essai de rigidité diélectrique*

IEC 61326-1:2012, *Matériel électrique de mesure, de commande et de laboratoire – Exigences relatives à la CEM – Partie 1: Exigences générales*

IEC 61557-8:2014, *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 8: Contrôleur permanent d'isolement pour réseaux IT*

IEC 61557-9:2014, *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 9: Dispositifs de localisation de défauts d'isolement pour réseaux IT*