
Varnostne zahteve za električno opremo za meritve, nadzorovanje in laboratorijsko uporabo - 2-033. del: Posebne zahteve za ročne multimetre in druge ročne merilnike za domačo in profesionalno uporabo, ki omogočajo merjenje omrežne napetosti (IEC 61010-2-033:2012)

Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-033: Particular requirements for hand-held multimeters and other hand-held meters, for domestic and professional use, capable of measuring mains voltage (IEC 61010-2-033:2012)

STANDARD PREVIEW
(standards.iteh.ai)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 2-033: Besondere Anforderungen an handgehaltene Multimeter und andere handgehaltene Messgeräte für den Haushalt und professionellen Gebrauch, geeignet zur Messung von Netzspannungen (IEC 61010-2-033:2012)

Règles de sécurité pour appareils électriques de mesure, de régulation et de laboratoire - Partie 2-033: Exigences particulières pour les multimètres portatifs et autres mesureurs, pour usage domestique et professionnel, capables de mesurer la tension réseau (CEI 61010-2-033:2012)

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SIST EN 61010-2-033:2012

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61010-2-033

June 2012

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English version

**Safety requirements for electrical equipment for measurement, control,
and laboratory use -
Part 2-033: Particular requirements for hand-held multimeters and other
meters, for domestic and professional use, capable of measuring mains
voltage
(IEC 61010-2-033:2012)**

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

The text of document 66/461/FDIS, future edition 1 of IEC 61010-2-033, prepared by IEC/TC 66, "Safety of measuring, control and laboratory equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61010-2-033:2012.

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) 2013-02-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-05-09

EN 61010-2-033:2012 is to be used in conjunction with EN 61010-1:2010, on the basis of which it was established. Consideration may be given to future editions of, or amendments to, EN 61010-1.

This Part 2-033 supplements or modifies the corresponding clauses in EN 61010-1 so as to convert that publication into the European Standard: *Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage.*

Where a particular subclause of Part 1 is not mentioned in this Part 2-033, that subclause applies as far as is reasonable. Where this part states "addition", "modification", "replacement", or "deletion" the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

In this standard:

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a) the following print types are used:

- requirements: in roman type; [SIST EN 61010-2-033:2012](https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012)
- NOTES: in small roman type; <https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012>
- *conformity and test: in italic type;*
- terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS;

b) subclauses, figures, tables and notes which are additional to those in Part 1 are numbered starting from 101. Additional annexes are numbered AA and BB.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC)

Endorsement notice

The text of the International Standard IEC 61010-2-033:2012 was approved by CENELEC as a European Standard without any modification.

Add the following entries to the bibliography of EN 61010-1:

IEC 61010-2-030	NOTE	Harmonized as EN 61010-2-030.
IEC 61010-2-032	NOTE	Harmonized as EN 61010-2-032.
IEC 61557 series	NOTE	Harmonized in EN 61557 series.



IEC 61010-2-033

Edition 1.0 2012-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Safety requirements for electrical equipment for measurement, control, and laboratory use –
Part 2-033: Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage**

<https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-sist/en/61010-2-033:2012>

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire –

Partie 2-033: Exigences particulières pour les MULTIMÈTRES PORTATIFS et autres MESUREURS, pour usage domestique et professionnel, capables de mesurer la tension RÉSEAU

INTERNATIONAL
ELECTROTECHNICAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –**
**Part 2-033: Particular requirements for HAND-HELD MULTIMETERS
and other METERS, for domestic and professional use,
capable of measuring MAINS voltage**

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.
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International Standard IEC 61010-2-33 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

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

FDIS	Report on voting
66/461/FDIS	66/464/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 Part 2-033 is to be used in conjunction with third edition of IEC 61010-1 (2010), on the basis of which it was established. Consideration may be given to future editions of, or amendments to, IEC 61010-1.

This Part 2-033 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage.*

Where a particular subclause of Part 1 is not mentioned in this Part 2-033, that subclause applies as far as is reasonable. Where this part states “addition”, “modification”, “replacement”, or “deletion” the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

In this standard:

- a) the following print types are used:
- requirements: in roman type;
 - NOTES: in small roman type;
 - *conformity and test: in italic type;*
 - terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS;
- b) subclauses, figures, tables and notes which are additional to those in Part 1 are numbered starting from 101. Additional annexes are numbered AA and BB.

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

A list of all the parts in the IEC 61010 series, published under the general title *Safety requirements for electrical equipment for measurement, control, and laboratory use*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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.

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 61010-1 specifies the safety requirements that are generally applicable to all equipment within its scope. For certain types of equipment, the requirements of IEC 61010-1 will be supplemented or modified by the special requirements of one, or more than one, particular part 2's of the standard which must be read in conjunction with the Part 1 requirements.

This Part 2-033 specifies the safety requirements for HAND HELD METERS that have a primary purpose of measuring voltage on a live MAINS CIRCUIT.

Part 2-032 specifies the safety requirements that are generally applicable to HAND-HELD and hand-manipulated current sensors.

Part 2-030 specifies the safety requirements for testing and measuring circuits which are connected for test or measurement purposes to devices or circuits outside the measurement equipment itself.

VOLTMETER and similar equipment that are not within the scope of Part 2-033 are considered to be covered by the requirements of Part 2-030 or Part 2-032. But for equipment within the scopes of both Part 2-032 and Part 2-033, the two standards must be read in conjunction.

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SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 2-033: Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage

1 Scope and object

This clause of Part 1 is applicable except as follows:

1.1.1 Equipment included in scope

Replacement:

Replace the existing text with the following:

This part of IEC 61010 specifies safety requirements for METERS.

The METERS that have a primary purpose of measuring voltage on a live MAINS CIRCUIT are within the scope of this standard. They have various names, but all of them have capability for measurements of voltages on a live MAINS CIRCUIT. Some of the names given to this equipment are as follows:

- MULTIMETER; [SIST EN 61010-2-033:2012](https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012)
- digital MULTIMETER; <https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012>
- VOLTMETER;
- clamp METER (see also Part 2-032).

For the purpose of this standard, the term METER is used for these HAND-HELD measuring instruments.

NOTE Parts of the equipment that are not within the scope of this Part 2-033 are considered to be covered by the requirements of Part 1 or other part 2's of IEC 61010 and then will also need to meet the requirements of these other parts.

1.1.2 Equipment excluded from scope

Addition:

Add the following new item to the list:

- aa) IEC 61557 (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 – Parts 1 through 12).

Addition:

Add the two following paragraphs at the end of the subclause:

Equipment that is not capable of measuring MAINS voltages is not within the scope of this Part 2-033. See IEC 61010-2-030 for requirements pertaining to such equipment.

Such equipment, including other HAND-HELD equipment such as oscilloscopes, wattmeters, process control MULTIMETERS, and communications test sets is not within the scope of this Part 2-033.

1.2.1 Aspects included in scope

Addition:

Add the following paragraph at the end of the subclause:

Requirements for protection against HAZARDS resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE of measuring circuits are given in Clause 101.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.1 Equipment and states of equipment

Addition:

Add the following new definitions:

3.1.101 <https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012>
MULTIMETER
 multirange multifunction measuring instrument intended to measure voltage and sometimes other electrical quantities such as current and resistance

[SOURCE: IEC 60050-300:2001, 312-02-24, modified]

3.1.102

VOLTMETER

instrument intended to measure the value of a voltage

[SOURCE: IEC 60050-300:2001, 313-01-03]

3.1.103

METER

voltage measuring instrument which is either a HAND-HELD VOLTMETER or a HAND-HELD MULTIMETER

3.1.104

HAND-HELD (equipment)

intended to be supported by one hand during NORMAL USE

3.5 Safety terms

Replacement:

Replace definitions 3.5.4 and 3.5.5 with the following new definitions:

3.5.4

MAINS

low voltage electricity supply system to which the METER concerned is designed to be connected for the purposes of measurements

3.5.5

MAINS CIRCUIT

circuit which is intended to be directly connected to the MAINS for measurements

Addition:

Add the following new definition:

3.5.101

MEASUREMENT CATEGORY

classification of testing and measuring circuits according to the type of MAINS CIRCUITS to which they are intended to be connected

NOTE MEASUREMENT CATEGORIES take into account OVERVOLTAGE CATEGORIES, short-circuit current levels, the location in the building installation at which the test or measurement is to be made, and some forms of energy limitation or transient protection included in the building installation. See Annex AA for more information.

4 Tests

This clause of Part 1 is applicable except as follows.

4.4.2 Application of fault conditions

4.4.2.1 General

[SIST EN 61010-2-033:2012
https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012](https://standards.iteh.ai/catalog/standards/sist/792bbccc-6c81-41db-b095-6fd0d8d1794/sist-en-61010-2-033-2012)

Replacement:

Replace the first sentence with the following text:

Fault conditions shall include those specified in 4.4.2.2 to 4.4.2.14 and in 4.4.2.101.

Addition:

Add the following new subclause:

4.4.2.101 Input voltages

For measuring circuit TERMINALS RATED for MAINS CIRCUITS voltage measurements:

- a) up to 600 V a.c. r.m.s., the voltage applied to the TERMINALS is the RATED voltage multiplied by 1,90 but not to exceed 920 V a.c. r.m.s.;
- b) above 600 V a.c. r.m.s. and up to 1 000 V a.c. r.m.s., the voltage applied to the TERMINALS is 1 100 V a.c. r.m.s.;
- c) above 1 000 V a.c. r.m.s., the voltage applied to the TERMINALS is the RATED voltage multiplied by 1,1;
- d) of d.c. voltage, the d.c. voltage applied to the TERMINALS is the RATED voltage multiplied by 1,1.

These voltages are applied with the METER set to each voltage measurement range capable of MAINS voltage measurements.