SVENSK STANDARD

SS-EN IEC 61010-031, utg 3:2023

2023-11-15

COMMENTED VERSION

Elektrisk utrustning för mätning, styrning och för laboratorieändamål – Säkerhet – Del 031: Särskilda fordringar på handhållna och handmanövererade elektriska sonder för mätning och provning

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

En så kallad ”Commented Version” (CMV) innehåller både den fastställda IEC-standarden och en kommenterad och ändringsmarkerad standard. Alla tillägg och borttagningar sedan den tidigare utgåvan är markerade med färg. Med en CMV sparar du mycket tid när du ska identifiera och förklara aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut CMV i de fall den finns tillgänglig från IEC.

IEC 61010-031

Edition 3.0 2022-12
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

GROUP SAFETY PUBLICATION

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

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 19.080

ISBN 978-2-8322-6316-7

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement

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.
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This commented version (CMV) of the official standard IEC 61010-031:2022 edition 3.0 allows the user to identify the changes made to the previous IEC 61010-031:2015+AMD1:2018 CSV edition 2.1. Furthermore, comments from IEC TC 66 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 61010-031 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment. It is an International Standard.

It has the status of a group safety publication in accordance with IEC Guide 104.

This third edition cancels and replaces the second edition published in 2015, and Amendment 1:2018. IEC 61010-031 is a stand-alone standard.

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

a) the scope has been made succinct. General information from the scope of Edition 2 has been moved to a new Clause 4. Consequently, Clause 4 to Clause 8 of Edition 2 have been renumbered. Clause 9 of Edition 2 has been deleted;
b) in Clause 2, normative references have been dated and new normative references have been added;
c) in 3.1.4, the definition of PROBE TIP has been modified;
d) in 4.1, there is no longer any differentiation between high voltage and low voltage probe assemblies. Type C probe assemblies have been merged with Type B probe assemblies;
e) in 4.1 d) "Kelvin" probes have been added to the list of probe assemblies as a new Type E and a new Figure 5;
f) in 4.1 e), probes for voltage measurement without electrical connection to conductors have been added to the list of probe assemblies as a new Type F and a new Figure 6;
g) in 4.2.1, spread of fire is no longer considered as a HAZARD;
h) Subclause 4.4.2.5 from Edition 2 has been deleted;
i) Subclause 4.4.4.3 from Edition 2 has been deleted;
j) in 5.4.4.1 consideration has been given to SPACINGS and impedance;
k) in 6.1.1, removable parts of PROBE TIPS which bear markings are allowed;
l) in 6.1.5, the voltage to be marked for MEASUREMENT CATEGORIES is the AC line-to-neutral or DC voltage;
m) in 7.4.2, requirements for unmated CONNECTORS have been modified as follows:
    1) Table 2 has been modified and expanded,
    2) a calculation method for CLEARANCES of CONNECTORS above 20 kV has been defined,
    3) CREEPAGE DISTANCES have been aligned with CLEARANCES;
n) in 7.4.3.1 and 7.4.3.5, requirements for IP2X PROBE TIPS with retractable sleeve have been added;
o) in 7.4.3.2, PROBE TIPS are now applicable to non-contact probe assemblies;
p) in 7.5.2.3.2, the values of Table 5 have been modified;
q) in 7.6.2, voltage tests of CLEARANCES are done without humidity preconditioning;
r) pre-treatments for rigidity test from Clause 10 of Edition 2 have been moved to 9.2;
s) Subclause 11.1 of Edition 2 has been deleted;
t) addition of an exception for Type E probe assembly in 13.2. Removable parts of PROBE TIPS which bear markings are allowed;
u) Figure F.1 has been modified;
v) Annex G has been added, for determination of CLEARANCES for Table 2**;**
w) Annex H has been added, covering line-to-neutral voltages for common mains supply systems.

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

Draft	Report on voting
66/770/FDIS	66/771/RVD

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 International Standard 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.

A list of all parts of 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.

In this document the following print types are used:

– requirements and definitions: in roman type;
– NOTES and EXAMPLES: in smaller roman type;
– *conformity and tests: in italic type;*
– terms used throughout this document which have been defined in Clause 3: SMALL ROMAN CAPITALS.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

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

Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement

1 Scope ~~and object~~ 1

~~1.1 Scope~~

~~1.1.1 Probe assemblies included in scope~~

This part of IEC 61010 specifies safety requirements for hand-held and hand-manipulated probe assemblies ~~of the types described below~~ for electrical test and measurement, and their related accessories. These probe assemblies are for non-contact 2 or direct electrical connection between a part and electrical test and measurement equipment. They ~~may~~ can be fixed to the equipment or be detachable accessories for the equipment.

This group safety publication focusing on safety essential requirements is primarily intended to be used as a product safety standard for the products mentioned in the scope, but is also intended to be used by technical committees in the preparation of publications for products similar to those mentioned in the scope of this group safety publication, in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications and/or group safety publications in the preparation of its publications. 3

2 Normative references 4

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 60027 (all parts), *Letters symbols to be used in electrical technology*~~

IEC 60027-1:1992, *Letter symbols to be used in electrical technology – Part 1: General*
IEC 60027-1:1992/AMD1:1997
IEC 60027-1:1992/AMD2:2005

IEC 60027-2:2019, *Letter symbols to be used in electrical technology – Part 2: Telecommunications and electronics*

IEC 60027-4:2006, *Letter symbols to be used in electrical technology – Part 4: Rotating electric machines*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
IEC 61010-1:2010/AMD1:2016

IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*

~~IEC 61180-1:1992, *High-voltage test techniques for low-voltage equipment – Part 1: Definitions, test and procedure requirements*~~

~~IEC 61180-2, *High-voltage test techniques for low-voltage equipment – Part 2: Test equipment*~~

~~IEC GUIDE 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*~~

~~ISO/IEC GUIDE 51, *Safety aspects – Guidelines for their inclusion in standards*~~

SVENSK STANDARD

SS-EN IEC 61010-031, utg 3:2023

Fastställd	Sida	Ansvarig kommitté
2023-11-15	1 (103)	SEK TK 66

Elektrisk utrustning för mätning, styrning och för laboratorieändamål – Säkerhet – Del 031: Särskilda fordringar på handhållna och handmanövererade elektriska sonder för mätning och provning

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

Som svensk standard gäller europastandarden EN IEC 61010-031:2023. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61010-031:2023.

Nationellt förord

Europastandarden EN IEC 61010-031:2023

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61010-031, Third edition, 2022 - 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**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61010-031, utg 2:2015 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2026-03-06.

ICS 19.080.00

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: www.elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

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Stora delar av arbetet sker internationellt

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Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61010-031

May 2023

ICS 19.080

Supersedes EN 61010-031:2015; EN 61010-031:2015/A1:2021; EN 61010-031:2015/A11:2021

English Version

Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement (IEC 61010-031:2022)

Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire - Partie 031: Exigences de sécurité pour sondes équipées tenues à la main et manipulées pour mesurage et essais électriques (IEC 61010-031:2022)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 031: Sicherheitsbestimmungen für handgehaltenes und handgeführtes Messzubehör zum elektrischen Messen und Prüfen (IEC 61010-031:2022)

This European Standard was approved by CENELEC on 2023-03-06. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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

Ref. No. EN IEC 61010-031:2023 E

European foreword

The text of document 66/770/FDIS, future edition 3 of IEC 61010-031:2022, prepared by IEC/TC 66 "Safety of measuring control and laboratory equipment" was submitted to the IEC-CENELEC parallel vote and approved by CEN-CENELEC as EN IEC 61010-031:2023.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2023-12-06
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2026-03-06

This document supersedes EN 61010-031:2015 and all of its amendments and corrigenda (if any).

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

This document has been prepared under a Standardization Request given to CEN-CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN and CENELEC websites.

Endorsement notice

The text of the International Standard IEC 61010-031:2022 was approved by CEN-CENELEC as a European Standard without any modification.

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

IEC 60364-4-44:2007	NOTE	Approved as HD 60364-4-442:2012 (modified)
IEC 60664-1:2020	NOTE	Approved as EN IEC 60664-1:2020 (not modified)
IEC 60664-4:2005	NOTE	Approved as EN 60664-4:2006 (not modified)
IEC 60990:2016	NOTE	Approved as EN 60990:2016 (not modified)
IEC 61010-2-030	NOTE	Approved as EN IEC 61010-2-030
IEC 61010-2-032:2019	NOTE	Approved as EN IEC 61010-2-032:2021 (not modified) + A11:2021
IEC 61010-2-033	NOTE	Approved as EN IEC 61010-2-033
IEC 61010-2-034	NOTE	Approved as EN IEC 61010-2-034
IEC 61032:1997	NOTE	Approved as EN 61032:1998 (not modified)
IEC 61557-17	NOTE	Approved as EN IEC 61557-17

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 When 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60027-1 + AMD1 + AMD2	1992 1997 2005	Letters symbols to be used in electrical technology - Part 1: General	EN 60027-1 + A2	2006 2007
IEC 60027-2	2019	Letter symbols to be used in electrical technology - Part 2: Telecommunications and electronics	EN IEC 60027-2	2019
IEC 60027-4	2006	Letter symbols to be used in electrical technology - Part 4: Rotating electric machines	EN 60027-4	2007
IEC 60529 + AMD1 + AMD2	1989 1999 2013	Degrees of protection provided by enclosures (IP Code)	EN 60529 + Corrigendum + A1 + A2 + A2:2013/AC + AC	1991 May 1993 2000 2013 2019-02 2016-12
IEC 61010-1 + AMD1	2010 2016	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements	EN 61010-1 + A1 + A1:2019/AC	2010 2019 2019-04
IEC 61180	2016	High-voltage test techniques for low-voltage equipment - Definitions, test and procedure requirements, test equipment	EN 61180	2016

Annex ZZ
(informative)

Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered

This European Standard has been prepared under a Commission's standardization request relating to harmonized standards in the field of the Low Voltage Directive, M/511, to provide one voluntary means of conforming to safety objectives of Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits [2014 OJ L96].

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding safety objectives of that Directive, and associated EFTA regulations.

Table ZZ.1 — Correspondence between this European standard and Annex I of Directive 2014/35/EU [2014 OJ L96]

Safety objectives of Directive 2014/35/EU (Annex I)	Clause(s) / subclause(s) of this EN	Remarks / Notes
1. General conditions		
1 (a) the essential characteristics, the recognition and observance of which will ensure that electrical equipment will be used safely and in applications for which it was made, shall be marked on the electrical equipment, or, if this is not possible, on an accompanying document	6	This standard only deals with accessories for measuring equipment.
1 (b) the electrical equipment, together with its component parts, shall be made in such a way as to ensure that it can be safely and properly assembled and connected	6.4	
1 (c) the electrical equipment shall be so designed and manufactured as to ensure that protection against the hazards set out in points 2 and 3 is ensured, providing that the equipment is used in applications for which it was made and is adequately maintained	6.4, Annex F See also the details in points 2 and 3	
2. Protection against hazards arising from the electrical equipment Measures of a technical nature shall be laid down in accordance with point 1, in order to ensure that:		
2 (a) persons and domestic animals are adequately protected against the danger of physical injury or other harm which might be caused by direct or indirect contact	5, 7, 9.1, 9.2, 11, Annex A, Annex D	

Safety objectives of Directive 2014/35/EU (Annex I)	Clause(s) / subclause(s) of this EN	Remarks / Notes
2 (b) temperatures, arcs or radiation which would cause a danger, are not produced	5, 5.5.2, 7.3.1, 7.3.2, 9.2, 10, 12, 13	The products dealt with in this standard are all passive accessories.
2 (c) persons, domestic animals and property are adequately protected against non-electrical dangers caused by the electrical equipment which are revealed by experience	8, 11.2	The products dealt with in this standard are all passive accessories.
2 (d) the insulation is suitable for foreseeable conditions	5, 7.7, 9 Annex D	
3. Protection against hazards which may be caused by external influences on the electrical equipment Technical measures shall be laid down in accordance with point 1, in order to ensure that the electrical equipment:		
3 (a) meets the expected mechanical requirements in such a way that persons, domestic animals and property are not endangered	5, 8, 9.1, 11.2	
3 (b) is resistant to non-mechanical influences in expected environmental conditions, in such a way that persons, domestic animals and property are not endangered	5, 7.5, 9.2, 10	
3 (c) does not endanger persons, domestic animals and property in foreseeable conditions of overload	5, 9.1, 10, 12, 13	

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WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

IEC 61010-031

Edition 3.0 2022-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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GROUP SAFETY PUBLICATION
PUBLICATION GROUPÉE DE SÉCURITÉ

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

Exigences de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire – Partie 031: Exigences de sécurité pour sondes équipées tenues à la main et manipulées pour mesurage et essais électriques

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement

FOREWORD

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IEC 61010-031 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment. It is an International Standard.

It has the status of a group safety publication in accordance with IEC Guide 104.

This third edition cancels and replaces the second edition published in 2015, and Amendment 1:2018. IEC 61010-031 is a stand-alone standard.

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

a) the scope has been made succinct. General information from the scope of Edition 2 has been moved to a new Clause 4. Consequently, Clause 4 to Clause 8 of Edition 2 have been renumbered. Clause 9 of Edition 2 has been deleted;

b) in Clause 2, normative references have been dated and new normative references have been added;

c) in 3.1.4, the definition of PROBE TIP has been modified;

d) in 4.1, there is no longer any differentiation between high voltage and low voltage probe assemblies. Type C probe assemblies have been merged with Type B probe assemblies;

e) in 4.1 d) "Kelvin" probes have been added to the list of probe assemblies as a new Type E and a new Figure 5;

f) in 4.1 e), probes for voltage measurement without electrical connection to conductors have been added to the list of probe assemblies as a new Type F and a new Figure 6;

g) in 4.2.1, spread of fire is no longer considered as a HAZARD;

h) Subclause 4.4.2.5 from Edition 2 has been deleted;

i) Subclause 4.4.4.3 from Edition 2 has been deleted;

j) in 5.4.4.1 consideration has been given to SPACINGS and impedance;

k) in 6.1.1, removable parts of PROBE TIPS which bear markings are allowed;

l) in 6.1.5, the voltage to be marked for MEASUREMENT CATEGORIES is the AC line-to-neutral or DC voltage;

m) in 7.4.2, requirements for unmated CONNECTORS have been modified as follows:

   1) Table 2 has been modified and expanded,

   2) a calculation method for CLEARANCES of CONNECTORS above 20 kV has been defined,

   3) CREEPAGE DISTANCES have been aligned with CLEARANCES;

n) in 7.4.3.1 and 7.4.3.5, requirements for IP2X PROBE TIPS with retractable sleeve have been added;

o) in 7.4.3.2, PROBE TIPS are now applicable to non-contact probe assemblies;

p) in 7.5.2.3.2, the values of Table 5 have been modified;

q) in 7.6.2, voltage tests of CLEARANCES are done without humidity preconditioning;

r) pre-treatments for rigidity test from Clause 10 of Edition 2 have been moved to 9.2;

s) Subclause 11.1 of Edition 2 has been deleted;

t) addition of an exception for Type E probe assembly in 13.2. Removable parts of PROBE TIPS which bear markings are allowed;

u) Figure F.1 has been modified;

v) Annex G has been added, for determination of CLEARANCES for Table 2**;**

w) Annex H has been added, covering line-to-neutral voltages for common mains supply systems.

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

Draft	Report on voting
66/770/FDIS	66/771/RVD

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 International Standard 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.

A list of all parts of 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.

In this document the following print types are used:

– requirements and definitions: in roman type;

– NOTES and EXAMPLES: in smaller roman type;

– *conformity and tests: in italic type;*

– terms used throughout this document which have been defined in Clause 3: SMALL ROMAN CAPITALS.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under 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.

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

Part 031: Safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement

1 Scope

This part of IEC 61010 specifies safety requirements for hand-held and hand-manipulated probe assemblies for electrical test and measurement, and their related accessories. These probe assemblies are for non-contact or direct electrical connection between a part and electrical test and measurement equipment. They can be fixed to the equipment or be detachable accessories for the equipment.

This group safety publication focusing on safety essential requirements is primarily intended to be used as a product safety standard for the products mentioned in the scope, but is also intended to be used by technical committees in the preparation of publications for products similar to those mentioned in the scope of this group safety publication, in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications and/or group safety publications in the preparation of its publications.

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 60027-1:1992, *Letter symbols to be used in electrical technology – Part 1: General*
IEC 60027-1:1992/AMD1:1997
IEC 60027-1:1992/AMD2:2005

IEC 60027-2:2019, *Letter symbols to be used in electrical technology – Part 2: Telecommunications and electronics*

IEC 60027-4:2006, *Letter symbols to be used in electrical technology – Part 4: Rotating electric machines*

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529:1989/AMD1:1999
IEC 60529:1989/AMD2:2013

IEC 61010-1:2010, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
IEC 61010-1:2010/AMD1:2016

IEC 61180:2016, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*