
Varnostne zahteve za električno opremo za meritve, nadzor in laboratorijsko uporabo - 031. del: Varnostne zahteve za ročne sonde za električne meritve in preskušanje - Dopolnilo A1 (IEC 61010-031:2015/A1:2018)

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 61010-031:2015/A1:2018)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 031: Sicherheitsbestimmungen für handgehaltenes Messzubehör zum Messen und Prüfen (IEC 61010-031:2015/A1:2018)

Exigences de sécurité pour appareils électriques de mesure, de régulation et de laboratoire - Partie 031: Exigences de sécurité pour sondes équipées portatives et manipulées à la main pour mesurage et essais électriques (IEC 61010-031:2015/A1:2018)

Ta slovenski standard je istoveten z: EN 61010-031:2015/A1:2021

ICS:

19.080	Električno in elektronsko preskušanje	Electrical and electronic testing
71.040.10	Kemijski laboratoriji. Laboratorijska oprema	Chemical laboratories. Laboratory equipment

SIST EN 61010-031:2015/A1:2022 **en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61010-031:2015/A1

November 2021

ICS 19.080

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 61010-031:2015/A1:2018)**

Exigences de sécurité pour appareils électriques de
mesurage, de régulation et de laboratoire - Partie 031:
Exigences de sécurité pour sondes équipées portatives et
manipulées à la main pour mesurage et essais électriques
(IEC 61010-031:2015/A1:2018)

Sicherheitsbestimmungen für elektrische Mess-, Steuer-,
Regel- und Laborgeräte - Teil 031:
Sicherheitsbestimmungen für handgehaltenes
Messzubehör zum Messen und Prüfen
(IEC 61010-031:2015/A1:2018)

This amendment A1 modifies the European Standard EN 61010-031:2015; it was approved by CENELEC on 2018-07-03. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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This amendment 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.

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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

EN 61010-031:2015/A1:2021 (E)**European foreword**

The text of document 66/664/FDIS, future IEC 61010-031/A1, 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 61010-031:2015/A1:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2022-05-12 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2024-11-12 document have to be withdrawn

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

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of EN 61010-031:2015/A1:2021.

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

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Endorsement notice

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The text of the International Standard IEC 61010-031/A1:2018 was approved by CENELEC as a European Standard without any modification.



IEC 61010-031

Edition 2.0 2018-05

INTERNATIONAL STANDARD

GROUP SAFETY PUBLICATION

AMENDMENT 1

**iTeh STANDARD
PREVIEW****(standards.iteh.ai)****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**

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 19.080

ISBN 978-2-8322-5745-6

Warning! Make sure that you obtained this publication from an authorized distributor.

FOREWORD

This amendment 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
66/664/FDIS	66/670/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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.

A bilingual version of this publication may be issued at a later date.

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Title

Replace the part title as follows:

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

1 Scope and object

1.1.1 Probe assemblies included in scope

Figure 4 – Examples of Type D probe assemblies

Delete, in key 3, the words "or clamp".

3 Terms and definitions

3.1.1

TERMINAL

Note 1 to entry:

Delete the word “connectors,”.

3.1.5

CONNECTOR

Delete, in the definition, the words “a CONNECTOR of” so that the end of the sentence will read:

“...to connect to a TERMINAL of the equipment or to another probe assembly”.

3.4.11

MEASUREMENT CATEGORY

Replace the existing text of the definition with the following:

classification of testing and measuring circuits according to the types of mains to which they are intended to be connected

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4 Tests

4.3.9 Duty cycle

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Replace the existing title of 4.3.9 with the following:

4.3.9 Short-term or intermittent operation
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4.4.4.2 Temperature

Replace the existing second paragraph with the following:

This temperature is determined by measuring the temperature rise of the surface or part and adding it to the ambient temperature of 40 °C, or to the maximum RATED ambient temperature if higher.

4.5.2 Fuses

Replace, in the fourth sentence of the second paragraph, the word “MAINS” (in SMALL CAPS) with “mains” (in regular font).

5 Marking and documentation

5.1.5 RATING

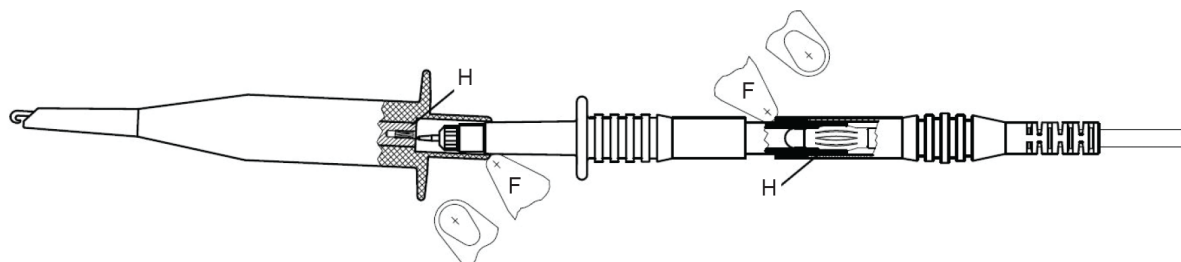
Replace, in list item a) of the first paragraph, the words “(see also 5.4.3 f) and g))” with “(see also 5.4.3 k))”.

6 Protection against electric shock

6.2.2 Examination

Figure 6 – Methods for determination of ACCESSIBLE parts (see 6.2) and for voltage tests (see 6.4.2)

Replace the existing subfigures 6c and 6d with the following new subfigures:



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Connecting parts are partially mated so as just to make electrical contact while allowing maximum access to the test finger.

Note the two possible positions of the test finger.

Figure 6c – Partially mated probe assemblies (see 6.2 and 6.4.2 b))



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Key

F rigid test finger (see Figure B.1)

H potentially HAZARDOUS LIVE part

Note the two possible positions of the test finger.

Figure 6d – Unmated parts of a probe assembly (see 6.2 and 6.4.2 c))

6.3.4.1 General

Replace, in the first paragraph, the existing list with the following:

- the probe body;
- hand-held or hand-manipulated parts of each CONNECTOR;
- 150 mm \pm 20 mm of the PROBE WIRE or the maximum length of the cable whichever is shorter;
- other hand-held or hand-manipulated parts.

Figure 8 – Voltage and touch current measurement

Delete, in the text of key item 2c, the words “(see 12.3.2)”.

6.3.4.2 Probe assemblies with floating outer conductors**Figure 10 – Voltage and touch current measurement with shielded test probe**

Delete, in the text of key item 2c, the words “(see 12.3.2)”.

6.3.4.3 High frequency test probes

Replace, in the fourth paragraph, “the circuit from A.3” with “the circuit from Figure A.3”.

6.4.1 General

Replace, in the third paragraph, the existing list with the following list:

- a) DOUBLE INSULATION, consisting of BASIC INSULATION plus SUPPLEMENTARY INSULATION (see 6.4.6)
- b) BASIC INSULATION plus impedance (see 6.4.4);
- c) REINFORCED INSULATION (see 6.4.6);
- d) PROTECTIVE IMPEDANCE (see 6.4.5);

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6.4.2 CONNECTORS

Add, at the end of the sentence of 6.4.2 c) 2), “(see Figure 5)”.

6.4.3.2 Protection by a PROTECTIVE FINGERGUARD

Replace the existing third paragraph with the following:

The height of the PROTECTIVE FINGERGUARD from the side where the fingers are intended to be applied shall be at least 2 mm.

6.4.3.4 Protection by tactile indicator

Replace the existing first paragraph with the following:

SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY II or without MEASUREMENT CATEGORY for maximum 300 V which require finger pressure at about 90° to the axis of the clip are acceptable without a PROTECTIVE FINGERGUARD, provided that there is a tactile indicator to indicate the limit of safe access for the OPERATOR.

6.4.3.5 PROBE TIPS used as CONNECTORS

Replace the text with the following text:

PROBE TIPS which can be used as CONNECTORS and are intended to be connected to specified accessories (for example to a SPRING-LOADED CLIP) shall, in combination with those accessories, also meet the requirements for CONNECTORS in fully-mated position and partially-mated position (see 6.4.2 a) and b)).

6.5.1.2.4 SOLID INSULATION

Delete the entire subclause including Table 4, Table 5, Figure 15, Figure 16 and Figure 17.

Add the following new subclause:

6.5.1.3 Solid insulation

The term “solid insulation” is used to describe many different types of construction, including monolithic blocks of insulating material and insulation subsystems composed of multiple insulating materials, organized in layers or otherwise.

The electric strength of a thickness of solid insulation is considerably greater than that of the same thickness of air. The insulating distances through solid insulation are therefore typically smaller than the distances through air. As a result, electric fields in solid insulation are typically higher, and often are less homogeneous.

Solid insulation material may contain gaps or voids. When a solid insulation system is constructed from layers of solid materials, there are also likely to be gaps or voids between layers. These voids will perturb the electric field so that a disproportionately large part of the electric field is located in the void, potentially causing ionization within the void, resulting in partial discharge. These partial discharges will influence the adjacent solid insulation and may reduce its service life.

Solid insulation is not a renewable medium: damage is cumulative over the life of the equipment. Solid insulation is also subject to ageing and to degradation from repeated high voltage testing.

Conformity is checked as specified in 6.5.2.5 and 6.5.2.6.

6.5.2.2 CLEARANCES for probe assemblies of MEASUREMENT CATEGORIES II, III and IV

Replace the existing Table 6 with the following:

Table 6 – CLEARANCES of probe assemblies RATED for MEASUREMENT CATEGORIES

Nominal a.c. r.m.s. line-to-neutral or d.c. voltage of mains to which the probe assembly is designed to be connected V	CLEARANCE mm					
	BASIC INSULATION and SUPPLEMENTARY INSULATION			REINFORCED INSULATION		
	MEASUREMENT CATEGORY II	MEASUREMENT CATEGORY III	MEASUREMENT CATEGORY IV	MEASUREMENT CATEGORY II	MEASUREMENT CATEGORY III	MEASUREMENT CATEGORY IV
≤ 50	0,04	0,1	0,5	0,10	0,32	1,4
> 50 ≤ 100	0,1	0,5	1,5	0,32	1,4	3,0
> 100 ≤ 150	0,5	1,5	3,0	1,4	3,0	6,0
> 150 ≤ 300	1,5	3,0	5,5	3,0	6,0	10,4
> 300 ≤ 600	3,0	5,5	8	6,0	10,4	15
> 600 ≤ 1 000	5,5	8	14	10,4	15	23,9
> 1 000 ≤ 1 500	8	11	18	16	22	36
> 1 500 ≤ 2 000	14	18	22	28	36	44
> 2 000 ≤ 3 000	18	22	25	36	44	50

Replace, in the conformity statement, the word “clearance” with “CLEARANCE” (in SMALL CAPS).

6.5.2.3.1 General

Replace, in the second paragraph, the words “required clearance” with “required CLEARANCE”.

Add the following two new subclauses: Table 4; Table 5; Table 14; Figure 15, Figure 16 and Figure 17:

6.5.2.5 Solid insulation of probe assemblies RATED for MEASUREMENT CATEGORIES

6.5.2.5.1 General

6.5.2.5.1.1 Solid insulation of probe assemblies RATED for MEASUREMENT CATEGORIES shall withstand the electrical and mechanical stresses that may occur in NORMAL USE and in all RATED environmental conditions (see 1.4) during the intended life of the probe assembly.

The manufacturer should take the expected life of the probe assembly into account when selecting insulating materials.

Conformity is checked by both of the following tests:

- the a.c. voltage test of 6.6.5.1 with a duration of at least 5 s using the applicable test voltage of Table 4 or the impulse voltage test of 6.6.5.3 using the applicable test voltage of Table 14;
- the a.c. voltage test of 6.6.5.1 or if stressed only by d.c., the d.c. voltage test of 6.6.5.2, with a duration of at least 1 min using the test voltage determined by 6.5.2.5.1.2.

NOTE Test a) checks the effects of transient overvoltages, while test b) checks the effects of long-term stress of solid insulation.