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ELEKTRIMÕÕTMIS- JA KATSETUSSEADMETELE**

**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**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN 61010-031:2015 sisaldab Euroopa standardi EN 61010-031:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 61010-031:2015 consists of the English text of the European standard EN 61010-031:2015.
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English Version

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
(IEC 61010-031:2015)

Règles de sécurité pour appareils électriques de mesurage,
de régulation et de laboratoire - Partie 031: Exigences de
sécurité pour sondes équipées tenues à la main pour
mesurage et essais électriques
(IEC 61010-031:2015)

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

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document 66/569/FDIS, future edition 2 of IEC 61010-031, 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.

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document have to be withdrawn

This document supersedes EN 61010-031:2002.

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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 61010-031:2015 was approved by CENELEC as a European Standard without any modification.

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

IEC 60065	NOTE	Harmonized as EN 60065.
IEC 60270	NOTE	Harmonized as EN 60270.
IEC 60364-4-44	NOTE	Harmonized as HD 60634-4-44.
IEC 60664-1	NOTE	Harmonized as EN 60664-1.
IEC 60664-3:2003	NOTE	Harmonized as EN 60664-3:2003.
IEC 60664-3:2003/AMD1:2010	NOTE	Harmonized as EN 60664-3:2003/A1:2010.
IEC 60664-4:2005	NOTE	Harmonized as EN 60664-4:2006.
IEC 60990	NOTE	Harmonized as EN 60990.
IEC 61010 (series)	NOTE	Harmonized as EN 61010 (series).
IEC 61032:1997	NOTE	Harmonized as EN 61032:1998.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60027	series	Letter symbols to be used in electrical technology	EN 60027	series
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 61010-1	2010	Safety requirements for electrical equipment for measurement, control and laboratory use -- Part 1: General requirements	EN 61010-1	2010
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment -- Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
IEC 61180-2	-	High-voltage test techniques for low-voltage equipment -- Part 2: Test equipment	EN 61180-2	-
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	-	-

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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

1 Scope and object

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, and their related accessories. These probe assemblies are for direct electrical connection between a part and electrical test and measurement equipment. They may be fixed to the equipment or be detachable accessories for the equipment.

- a) Type A: low-voltage and high-voltage, non-attenuating probe assemblies. Non-attenuating probe assemblies that are **RATED** for direct connection to voltages exceeding 30 V r.m.s., 42,4 V peak, or 60 V d.c., but not exceeding 63 kV. They do not incorporate components which are intended to provide a voltage divider function or a signal conditioning function, but they may contain non-attenuating components such as fuses (see Figure 1.)
- b) Type B: high-voltage attenuating or divider probe assemblies. Attenuating or divider probe assemblies that are **RATED** for direct connection to secondary voltages exceeding 1 kV r.m.s. or 1,5 kV d.c. but not exceeding 63 kV r.m.s. or d.c. The divider function may be carried out wholly within the probe assembly, or partly within the test or measurement equipment to be used with the probe assembly (see Figure 2).
- c) Type C: low-voltage attenuating or divider probe assemblies. Attenuating or divider probe assemblies for direct connection to voltages not exceeding 1 kV r.m.s. or 1,5 kV d.c. The signal conditioning function may be carried out wholly within the probe assembly, or partly within the test or measurement equipment intended to be used with the probe assembly (see Figure 3).
- d) Type D: low-voltage attenuating, non-attenuating or other signal conditioning probe assemblies, that are **RATED** for direct connection only to voltages not exceeding 30 V r.m.s., or 42,4 V peak, or 60 V d.c., and are suitable for currents exceeding 8 A (see Figure 4).

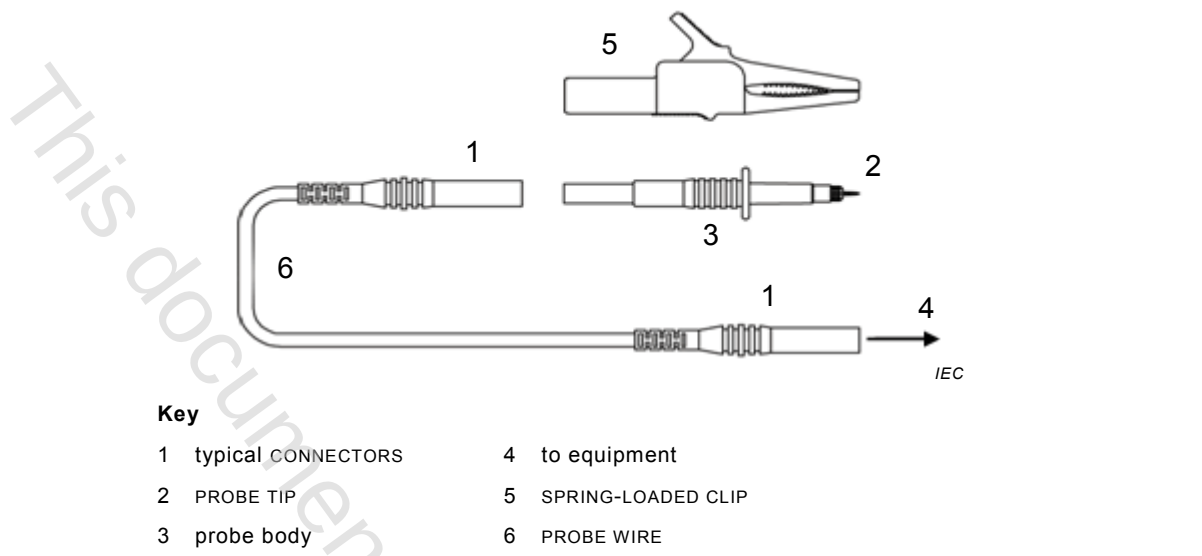


Figure 1 – Examples of type A probe assemblies

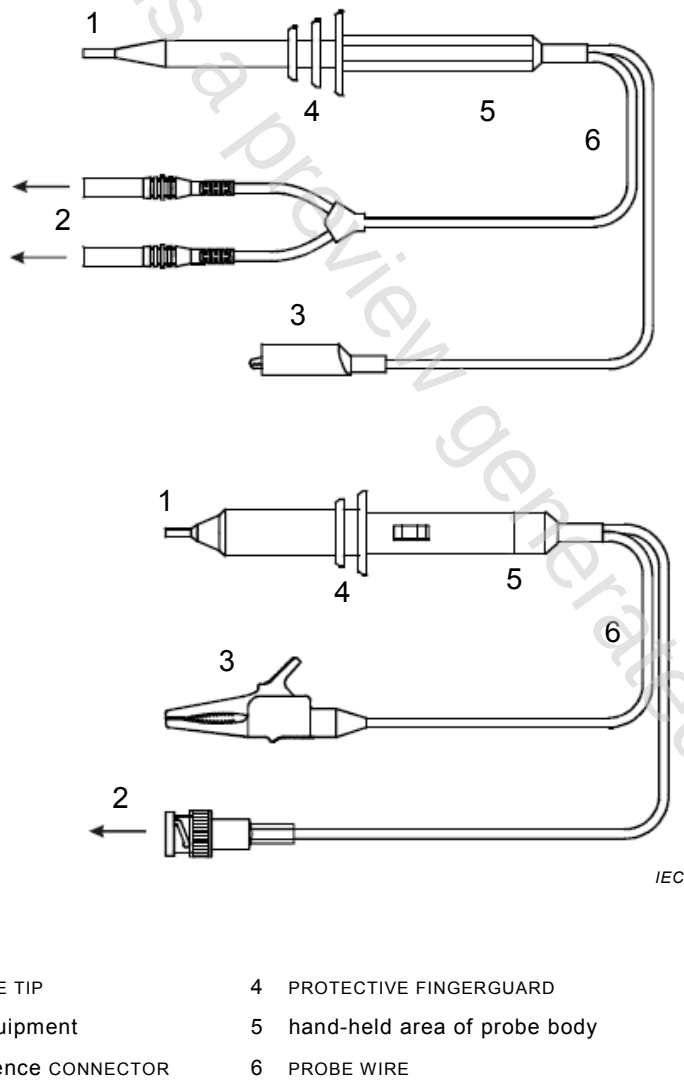
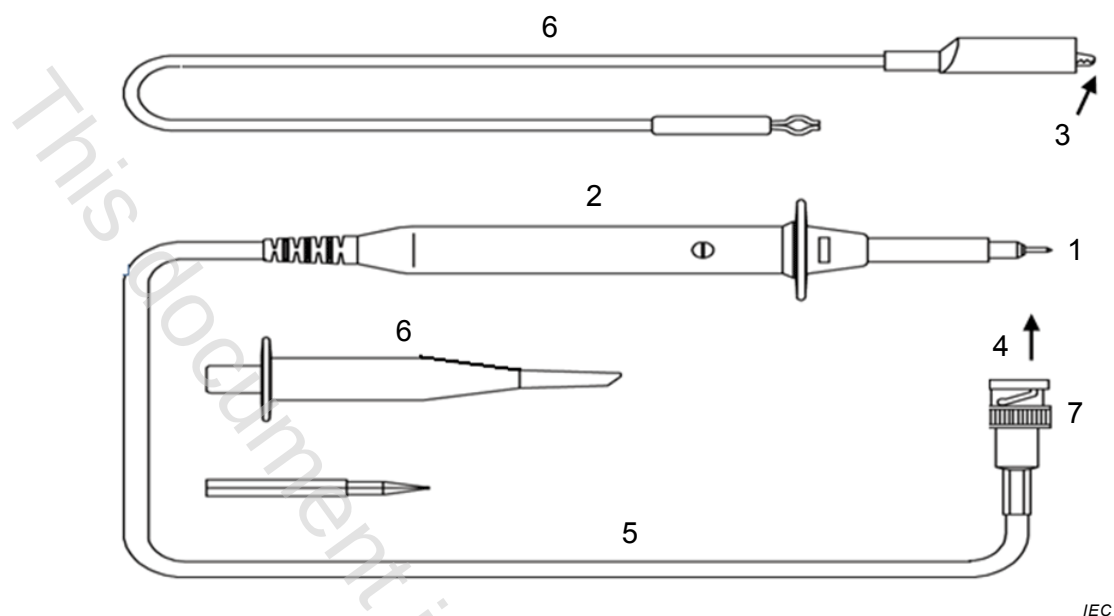


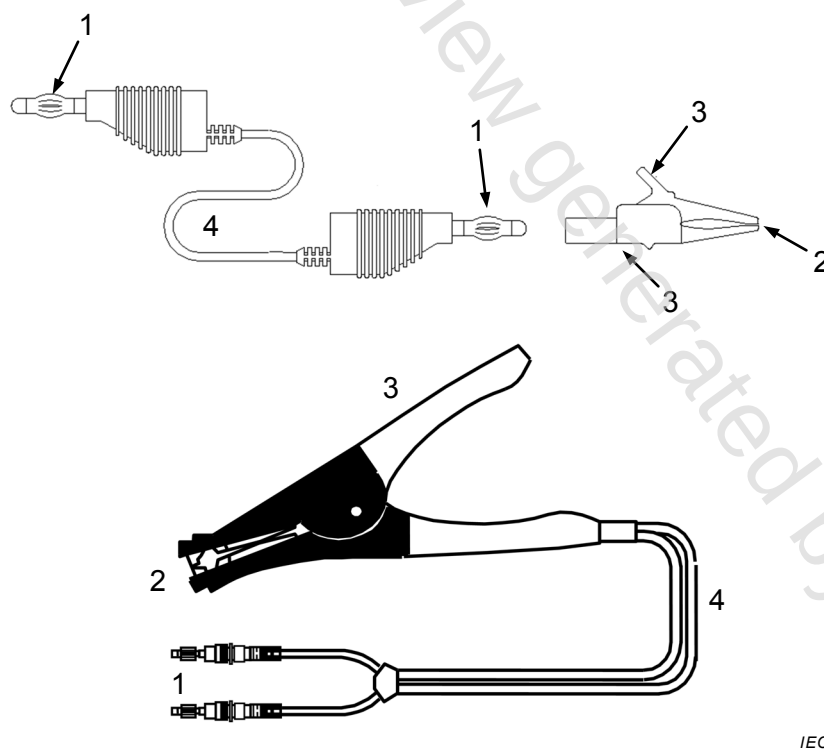
Figure 2 – Examples of type B probe assemblies



Key

- | | |
|-----------------------|---------------------------|
| 1 PROBE TIP | 5 PROBE WIRE |
| 2 probe body | 6 examples of accessories |
| 3 reference CONNECTOR | 7 BNC CONNECTOR |
| 4 to equipment | |

Figure 3 – Examples of type C probe assemblies



Key

- | | |
|-------------|---|
| 1 CONNECTOR | 3 hand-held area of SPRING-LOADED CLIP or clamp |
| 2 PROBE TIP | 4 PROBE WIRE |

Figure 4 – Examples of type D probe assemblies

1.1.2 Probe assemblies excluded from scope

This standard does not apply to current sensors within the scope of IEC 61010-2-032 (Hand-held and hand-manipulated current sensors), but may apply to their input measuring circuit leads and accessories.

1.2 Object

1.2.1 Aspects included in scope

The purpose of the requirements of this standard is to ensure that HAZARDS to the OPERATOR and the surrounding area are reduced to a tolerable level.

Requirements for protection against particular types of HAZARDS are given in Clauses 6 to 13, as follows:

- a) electric shock or burn (see Clauses 6, 10 and 11);
- b) mechanical HAZARDS (see Clauses 7, 8 and 11);
- c) excessive temperature (see Clause 9);
- d) spread of fire from the probe assembly (see Clause 9);
- e) arc flash (see Clause 13).

Additional requirements for probe assemblies which are designed to be powered from a low-voltage mains supply, or include other features not specifically addressed in this standard are in other parts of IEC 61010.

NOTE Attention is drawn to the possible existence of additional requirements regarding the health and safety of labour forces.

1.2.2 Aspects excluded from scope

This standard does not cover:

- a) reliable function, performance, or other properties of the probe assembly;
- b) effectiveness of transport packaging.

1.3 Verification

This standard also specifies methods of verifying that the probe assembly meets the requirements of this standard, through inspection, TYPE TESTS, and ROUTINE TESTS.

1.4 Environmental conditions

1.4.1 Normal environmental conditions

This standard applies to probe assemblies designed to be safe at least under the following conditions:

- a) altitude up to 2 000 m;
- b) ambient temperature of 5 °C to 40 °C;
- c) maximum relative humidity of 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C;
- d) applicable POLLUTION DEGREE of the intended environment.

1.4.2 Extended environmental conditions

This standard applies to probe assemblies designed to be safe not only in the environmental conditions specified in 1.4.1, but also in any of the following conditions as RATED by the manufacturer of the probe assemblies: