

Safety requirements for electrical equipment for measurement, control, and laboratory use —

**Part 2-031: Particular requirements for
hand-held probe assemblies for
electrical measurement and test**

The European Standard EN 61010-2-031:1994 has the status of a
British Standard

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Standard was prepared, comprises the national committees of the following countries:

Austria	Italy
Belgium	Luxembourg
Denmark	Netherlands
Finland	Norway
France	Portugal
Germany	Spain
Greece	Sweden
Iceland	Switzerland
Ireland	United Kingdom

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 January 1995

© BSI 03-1999

The following BSI references relate to the work on this standard:
Committee reference EEL/66
Draft for comment 90/25716 DC

ISBN 0 580 23546 7

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Cooperating organizations	Inside front cover
National foreword	ii
Foreword	2
Text of EN 61010-2-031	3
National annex NA (informative) Committees responsible	Inside back cover

National foreword

This Part of BS EN 61010 has been prepared under the direction of the Electrotechnical Sector Board and is the English language version of EN 61010-2-031:1994 *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 2-031: Particular requirements for hand-held probe assemblies for electrical measurement and test*, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 1010-2-031:1993, published by the International Electrotechnical Commission (IEC).

This British Standard is to be read in conjunction with BS EN 61010-1:1993 *General requirements*, which it supplements or modifies. The many references to Part 1 should be read as references to BS EN 61010-1, which is the English language version of EN 61010-1 and which was derived from IEC 1010-1:1990 and its amendment 1:1992.

This standard is directly related to the CENELEC Low-voltage Directive 73/23/EEC.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

ICS 19.080

Descriptors: Electrical equipment for measurement, electrical equipment for control, electrical equipment for laboratory use, safety requirements, hand-held probe assemblies

English version

Safety requirements for electrical equipment for
measurement, control and laboratory use —
Part 2-031: Particular requirements for hand-held probe
assemblies for electrical measurement and test

(IEC 1010-2-031:1993)

Règles de sécurité pour appareils électriques de
mesurage, de régulation et de laboratoire
Partie 2-031: Prescriptions particulières pour
sondes équipées manuelles de mesurage et d'
essais électriques
(CEI 1010-2-031:1993)

Sicherheitsbestimmungen für elektrische
Meß-, Steuer-, Regel- und Laborgeräte
Teil 2-031: Besondere Anforderungen an
handgehaltene Meß, Prüf- und
Verbindungsleitungen (Meßzubehör) zum
(elektrischen) Messen, Prüfen und
Experimentieren
(IEC 1010-2-031:1993)

This European Standard was approved by CENELEC on 1994-03-08. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The CENELEC questionnaire procedure, performed for finding out whether or not the International Standard IEC 1010-2-031:1993 could be accepted without textual changes, has shown that no common modifications were necessary for the acceptance as a European Standard.

The reference document was submitted to the CENELEC members for formal vote and was approved by CENELEC as EN 61010-2-031 on 8 March 1994.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1995-03-15
- latest date of withdrawal of conflicting national standards (dow) 1995-03-15

For products which have complied with the relevant national standard before 1995-03-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-03-15.

This Part 2 is intended to be used in conjunction with EN 61010-1:1993. Consideration may be given to future editions of, or amendments to EN 61010-1.

This Part 2 supplements or modifies the corresponding clauses in EN 61010-1. Where a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. Where this Part states “addition”, “modification” or “replacement”, the relevant text in Part 1 should be adapted accordingly.

Contents

	Page
1 Scope and object	3
2 Normative references	3
3 Definitions	3
4 Tests	3
5 Marking and documentation	3
6 Protection against electric shock	6
7 Protection against mechanical hazards	13
8 Mechanical resistance to shock, vibration and impact	13
9 Equipment temperature limits and protection against the spread of fire	14
10 Resistance to heat	14
11 Resistance to moisture and liquids	14
12 Protection against radiation, including laser sources, and against sonic and ultrasonic pressure	15
13 Protection against liberated gases, explosion and implosion	15
14 Components	15
15 Protection by interlocks	15
Annexes	16
Figure 101 — Examples of type A and type C PROBE ASSEMBLIES	4
Figure 102 — Examples of type B PROBE ASSEMBLIES	5
Figure 103 — Methods for determination of ACCESSIBLE parts (see 6.2) and for voltage tests (see 6.4.102)	7
Figure 104 — ACCESSIBLE current measurement (see 6.3)	8
Figure 105 — Application of metal foil for ACCESSIBLE current measurement (see Figure 104)	9
Figure 106 — Accessibility protection (see 6.7.101)	12
Figure 107 — Impact swing test (see 8.101)	14

1 Scope and object

This clause of part 1 is applicable except as follows:

1.1 Scope

Replacement:

This International Standard applies to hand-held and hand-manipulated PROBE ASSEMBLIES of the types described below, and related accessories. These PROBE ASSEMBLIES are for use in the interface between an electrical phenomenon and a measuring or test instrument. They may be stand-alone PROBE ASSEMBLIES which are themselves within the scope of part 1, or accessories to other equipment within the scope of part 1.

a) Low-voltage and high-voltage, non-attenuating PROBE ASSEMBLIES (type A).

Non-attenuating PROBE ASSEMBLIES for direct connection to voltages not exceeding 63 kV r.m.s. or d.c. They do not incorporate active components, nor are they intended to provide a voltage divider function or a signal conditioning function, but they may contain passive non-attenuating components such as fuses.

b) High-voltage attenuating or divider PROBE ASSEMBLIES (type B).

Attenuating or divider PROBE ASSEMBLIES for direct connection to voltages exceeding 1 kV r.m.s. or 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 in the test or measuring equipment intended to be used with the PROBE ASSEMBLY.

c) Low-voltage attenuating or divider PROBE ASSEMBLIES (type C).

Attenuating, divider or other signal conditioning PROBE ASSEMBLIES for direct connection to voltages exceeding 30 V r.m.s. or 42,4 V peak or 60 V d.c., but not exceeding 1 kV r.m.s., peak or d.c. The signal conditioning function may be carried out wholly within the PROBE ASSEMBLY, or partly within the test or measuring equipment intended to be used with the PROBE ASSEMBLY.

2 Normative references

This clause of part 1 is applicable.

3 Definitions

This clause of part 1 is applicable with the following additions:

Additional definitions:

3.101 PROBE ASSEMBLIES and parts

3.101.1

PROBE ASSEMBLY

a device for making temporary contact between measuring or test equipment and a point on an electrical circuit being measured or tested. It includes the cable and the means for making a connection with the measuring or test equipment

NOTE See Figure 101 and Figure 102 for examples of PROBE ASSEMBLIES and an explanation of the function of their parts.

3.101.2

PROBE TIP

the part of the PROBE ASSEMBLY which makes the connection to the point being measured or tested

3.101.3

REFERENCE CONNECTOR

a device used to connect a reference point in the measuring or test equipment (usually the FUNCTIONAL EARTH TERMINAL) to a reference point on the electrical circuit being measured or tested

4 Tests

This clause of part 1 is applicable with the following addition:

Additional subclause:

4.4.2.101 Components

Components (except HIGH INTEGRITY components) of type B and type C PROBE ASSEMBLIES shall be short-circuited or open-circuited, whichever is less favourable.

5 Marking and documentation

This clause of part 1 is applicable except as follows:

5.1.2 Identification

Replacement:

Each PROBE ASSEMBLY and separable mating part of a PROBE ASSEMBLY shall, as a minimum, be identified by marking showing:

- the name or registered trade mark of the manufacturer or supplier;
- in addition for types B and C only, the model number or name or other means of identifying the PROBE ASSEMBLY or part.

NOTE It is not necessary to mark small general-purpose accessory parts such as alligator/crocodile clips, spade lugs, and screw-on or detachable PROBE TIPS.