

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

**Part 3-010: Conformity verification
report for IEC 61010-2-010, Particular
requirements for laboratory equipment
for the heating of materials**

ICS 03.120.20; 71.040.20

National foreword

This British Standard reproduces verbatim IEC 61010-3-010:1999 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee EPL/66, Safety requirements for electrical equipment for measurement, control, and laboratory use, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
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Summary of pages

This document comprises a front cover, an inside front cover, the IEC title page, pages 2 to 61 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 October 1999

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ISBN 0 580 32959 3

TECHNICAL REPORT

IEC 61010-3-010

First edition
1999-02

**Safety requirements for electrical equipment
for measurement, control, and laboratory use –**

**Part 3-010:
Conformity verification report for IEC 61010-2-010,
Particular requirements for laboratory equipment
for the heating of materials**

*Règles de sécurité pour appareils électriques de mesure,
de régulation et de laboratoire –*

*Partie 3-010:
Rapport de vérification de la conformité de la CEI 61010-2-010,
Prescriptions particulières pour appareils de laboratoire utilisés
pour l'échauffement des matières*



Reference number
IEC 61010-3-010:1999(E)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3-010: Conformity verification report for IEC 61010-2-010, Particular requirements for laboratory equipment for the heating of material

FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 61010-3-010, which is a technical report, has been prepared by IEC technical committee 66: Safety of measuring, control, and laboratory equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
66/178/CDV	66/202/RVC

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

This report is a Technical Report and is of a purely informative nature and is therefore by itself not to be regarded as an International Standard. It is for use by testhouses and other users to assist them with determining and recording verification of conformity of the equipment under test with the requirements of:

IEC 61010-2-010:1992 + amendment 1:1996

The protocol for completion of this report is contained in publication IEC 61010-3:1997.

The IEC sells read-only PDF files as a general rule. In the present instance, and quite exceptionally, to enable the user to fill in the forms, a revisable file is included in a pocket affixed to the back cover of this publication.

This publication can also be downloaded from the Web as a PDF file. There is, however, at the end of the document, a revisable file containing the forms. Please use the zip/unzip function.

Conformity Verification Report IEC 61010-2-010: Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-010:1992, Particular requirements for laboratory equipment for the heating of materials (including amendment 1:1996)	
Report reference No: Compiled by (+ signature).....: Approved by (+ signature): Date of issue.....:	
Testing organization: Address.....: Testing location:	
Applicant.....: Address.....:	
Standard: Copyright blank test report	IEC 61010-1:1990 + A1:1992 + A2:1995 IEC 61010-2-010:1992 + A1:1996 This report has been prepared by IEC TC 66, which retains responsibility for any changes or corrections required.
Test procedure: Procedure deviation: Non-standard test method	
Type of item tested: ☐ Measurement ☐ Control ☐ Laboratory Trade mark.....: Model/type reference: Manufacturer: Rating:	
Copy of rating plate:	

Description of equipment function.....:

INSTALLATION/OVERVOLTAGE CATEGORY.....:

POLLUTION DEGREE:

Environmental rating: ☐ Standard ☐ Other (specify):

Equipment mobility: ☐ Portable ☐ Hand-held ☐ Floorstanding ☐ Fixed
☐ Built in ☐ Benchmounted ☐ Other (specify):

Connection to mains supply: ☐ Permanent ☐ Detachable ☐ Non detachable ☐ None

Operating conditions: ☐ Continuous ☐ Short-time ☐ Intermittent

Overall size of the equipment (length x width x height):

Mass of the equipment (kg):

Marked degree of protection to IEC 60529: IP ____

Accessories and detachable parts included in the evaluation:

Options:

NOTE – "(see Form A.X)" refers to a form appended to the report.

Table 1 – Documents attached to this report

[illegible]

Table 2 – Test equipment list

[illegible]

Table 3 – List of components relied on for safety

Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer and part number (note 1)	RATING (note 2)	Licence number, file number or other documentary evidence of acceptance
NOTE 1 – List all manufacturers concerned. NOTE 2 – Electrical, mechanical, flammability, etc.				

Clause Subclause	Requirement	Result	Comments
5	Marking and documentation		
5.1.1	General Required equipment markings are: a) visible: – from the exterior - or – after removing a cover - or – opening a door - or – after removal from a rack or panel b) not put on parts which can be removed by an OPERATOR c) Letter symbols (IEC 60027) used d) Graphic symbols (IEC 61010-1: table 1) used		
5.1.2	Identification Equipment is identified by: – manufacturer's name or registered trademark – model number, name or other means – the degree of protection, if any, according to IEC 60529		
5.1.3	Mains supply Equipment is marked as follows: a) nature of supply: – a.c. RATED mains frequency or range of frequencies – d.c. with symbol 1 b) RATED supply voltage(s) or range c) – maximum RATED power (W or VA) or input current If more than one voltage range: – separate values marked - or – values differ by less than 20 % (see Form A.3)		
F			

Result: P = Pass F = Fail NA = Not Applicable

Clause Subclause	Requirement	Result	Comments
	d) OPERATOR-set for different RATED supply voltages: – indicates the equipment set voltage – PORTABLE EQUIPMENT indication is visible from the exterior – changing the setting changes the indication e) Accessory mains socket-outlets accepting standard mains plugs are marked: – with the voltage if it is different from the mains supply voltage – for use only with specific equipment If not marked for specific equipment it is marked with: – the maximum RATED current or power, and maximum permitted leakage current - or – symbol 14 with full details in the documentation		
5.1.4	F The measured value not more than 110 % (see Form A.3) Fuses OPERATOR replaceable fuse marking (see also 5.4.5)		
5.1.5	Measuring circuit TERMINALS RATED maximum working voltage or current marked Unless clear indication that below limits: – maximum RATED voltage to earth is marked - or – for specific connection only, and means for identifying provided – is adjacent to TERMINALS - or – if insufficient space: – on the RATING plate or scale plate - or – if the TERMINAL is marked with symbol 14		

Clause Subclause	Requirement	Result	Comments
5.1.6	INSTALLATION CATEGORY marked		
	TERMINALS permanently connected and not ACCESSIBLE		
	TERMINALS and operating devices		
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators		
	Mains supply TERMINALS identified		
	Power supply switch on or off position marked if used as disconnecting device		
	TERMINAL marking:		
	a) FUNCTIONAL EARTH TERMINALS		
	b) PROTECTIVE CONDUCTOR TERMINALS:		
	– symbol 6 is placed close to or on the TERMINAL		
	or		
	– part of appliance inlet		
	c) TERMINALS of measuring and control circuits		
	d) TERMINALS supplied from the interior		
	e) ACCESSIBLE FUNCTIONAL EARTH TERMINALS		
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		
	Protected throughout (symbol 11 used)		
	Only partially protected (symbol 11 not used)		
5.1.8	Battery charging		
	Equipment with means to charge rechargeable batteries is marked:		
	– to warn against the charging of non-rechargeable batteries		
	– to indicate the type of rechargeable battery used		

Clause Subclause	Requirement	Result	Comments
5.2	Warning markings		
	– visible when ready for NORMAL USE		
	– if necessary marked with symbol 14		
	– are near or on applicable parts		
	– statement to isolate or disconnect		
	– advice how to avoid contact with ACCESSIBLE HAZARDOUS LIVE parts		
	– TERMINAL voltage exceeding 1 kV (symbol 12)		
	– easily touched high temperature parts (symbol 13)		
5.2.101	Equipment with high ACCESSIBLE current		
	– marking against non-permanent connection		
	– marking location		
	– repeated in installation instructions		
5.3	Durability of markings		
F	The required markings remain clear and legible in NORMAL USE (see Form A.4)		
5.4	Documentation		
5.4.1	General		
	Equipment is accompanied by documentation which includes:		
	– technical specification		
	– instructions for use		
	– name and address of manufacturer or supplier		
	Definition of INSTALLATION CATEGORY		
	Warning statements and a clear explanation of warning symbols:		
	– provided in the documentation		
	or		
	– information is marked on the equipment		

Result: P = Pass F = Fail NA = Not Applicable

Clause Subclause	Requirement	Result	Comments
5.4.2	Equipment RATINGS		
	Documentation includes:		
	– supply voltage or voltage range		
	– frequency or frequency range		
	– power or current RATING		
	– a description of all input and output connections		
	– RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE		
5.4.3	– statement of the range of environmental conditions		
	Equipment installation		
	Documentation includes instructions for:		
	– assembly, location and mounting		
	– warning against mounting on surface of flammable material		
	– protective earthing		
	– connections to supply		
	and		
	– residual current operated circuit-breaker (see 6.1.101)		
	– ventilation requirements		
	– special services		
	– maximum sound power level		
	– instructions about sound pressure		
	– warning of any need for extraction system, additional temperature limiting devices etc,		
	Additional for permanently connected equipment:		
	– supply wiring		
	– any external switch or circuit-breaker (including location)		
	– any external overcurrent protection		

Clause Subclause	Requirement	Result	Comments
5.4.3.101	Drying out		
	– period of operation to dry out the equipment		
	– warning about lack of safety during drying out		
5.4.4	Equipment operation		
	Instruction for use include:		
	– identification of operating controls		
	– positioning for disconnection		
	– interconnection		
	– specification of intermittent operation limits		
	– explanation of symbols used		
	– replacement of consumable materials		
	– cleaning and decontamination (see 11.2)		
	A warning against use in a manner not specified by the manufacturer		
	– additional protection needed by the OPERATOR		
	– a warning about explosion, implosion or release of toxic or flammable gases		
	– specification of heat transfer media		
5.4.4.101	Cleaning and decontamination		
	Documentation shall indicate:		
	– user responsibility for decontamination		
	– recommendations for cleaning/ decontamination and generic names		
	Wording in quotes appears in the documentation		
	Withstands steam sterilisation (table 1A)		
5.4.5	Equipment maintenance		
	Instructions include:		
	– sufficient preventive maintenance and inspection information		

Result: P = Pass F = Fail NA = Not Applicable

Clause Subclause	Requirement	Result	Comments
6	– replacement of hoses, etc.		
	– specific battery type		
	– any manufacturer specified parts		
	– RATING and characteristics of fuses		
	– replacement of high temperature or other special cables		
	– specification of checks for protective devices and systems		
	Protection against electric shock (see Form A.5)		
	6.1 General		
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.12		
	6.1.1 Exceptions		
	F Capacitance test (see Forms A.6 and A.7)		
	6.1.101 Exception relating to laboratory heating equipment		
	Exception conditions for ovens or furnaces: (see Forms A.6 and A.7)		
	Instructions for use:		
6.2	– states the OPERATOR must be protected against shock		
	– describes the means to achieve protection against shock		
	Warning marking and lamp		
	Conveyor belt, etc.		
	Instructions on operator safety		
	Determination of ACCESSIBLE parts (see Form A.6)		
	6.3 Permissible limits for ACCESSIBLE parts		
	6.3.1 Values in NORMAL CONDITION (see Form A.7)		

Clause Subclause	Requirement	Result	Comments
6.3.2 F	Values in SINGLE FAULT CONDITION (see Form A.8)		
6.4	Protection in NORMAL CONDITION (see 6.8 and 8.1)		
6.5	Protection in SINGLE FAULT CONDITION Additional protection is provided by: — one or more of 6.5.1 to 6.5.3 or — automatic disconnection of the supply		
6.5.1	Protective earthing ACCESSIBLE conductive parts: — bonded to the protective conductor terminal or — separated by screen or BARRIER from parts which are HAZARDOUS LIVE (For indirect bonding of measurement and test equipment see 6.5.1.4)		
6.5.1.1	PROTECTIVE BONDING PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		
6.5.1.2 F	Bonding impedance of plug-connected equipment (see Form A.9)		
6.5.1.3 F	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT (see Form A.9)		
6.5.1.4 F	Indirect bonding for measuring and test equipment (see Form A.9)		
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION (see 6.7, 6.8 and 6.9.2)		
6.5.3 F	PROTECTIVE IMPEDANCE (see Form A.10) Components wires and connections are RATED as required		

Result: P = Pass F = Fail NA = Not Applicable

Clause Subclause	Requirement	Result	Comments
6.5.4	Built-in panel meters If after building-in the requirements of 6.5.1 to 6.5.3 are not met: – panel meter: – has no ACCESSIBLE conductive parts – has basic insulation of ACCESSIBLE surfaces – has DOUBLE/REINFORCED INSULATION of ACCESSIBLE surface of parts intended to be grasped		
6.6	External circuits		
6.6.1	Separation of internal circuits F (see list in forms A.1 and A.5) If the other internal circuit exceeds the values of 6.3.2 in NORMAL CONDITION and only BASIC INSULATION: a) short-circuit could not make external circuit HAZARDOUS LIVE b) manufacturer's instructions include: – a statement that the TERMINAL for external circuits is for use only with equipment which has no live parts which are ACCESSIBLE – the RATING of the insulation required for external circuits – the connection to be used at the remote end of external circuits – the type of equipment which may be connected to the TERMINAL		
6.6.2	TERMINALS for external circuits ACCESSIBLE TERMINALS are not HAZARDOUS LIVE except as permitted by 6.1.1 The following TERMINALS are not HAZARDOUS LIVE: – PROTECTIVE CONDUCTOR TERMINALS – FUNCTIONAL EARTH TERMINALS – headphone TERMINALS		