

TECHNICAL REPORT

IEC TR 61010-3-1

Second edition
2003-04

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

Part 3-1: Conformity verification report for IEC 61010-1:2001 – General requirements

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

*Partie 3-1:
Rapport de vérification de la conformité
de la CEEI 61010-1:2001 –
Prescriptions générales*



Reference number
IEC/TR 61010-3-1:2003(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site** (www.iec.ch)

- **Catalogue of IEC publications**

The on-line catalogue on the IEC web site (http://www.iec.ch/searchpub/cur_fut.htm) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

This summary of recently issued publications (http://www.iec.ch/online_news/justpub/jp_entry.htm) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

Email: custserv@iec.ch
Tel: +41 22 919 02 11
Fax: +41 22 919 03 00

TECHNICAL REPORT

IEC TR 61010-3-1

Second edition
2003-04

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

Part 3-1: Conformity verification report for IEC 61010-1:2001 – General requirements

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

*Partie 3-1:
Rapport de vérification de la conformité
de la CEI 61010-1:2001 –
Prescriptions générales*

© IEC 2003 — Copyright - all rights reserved

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Electrotechnical Commission, 3, rue de Varembe, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE **XB**

For price, see current catalogue

CONTENTS

FOREWORD	3
Conformity verification report for IEC 61010-1: 2001	5
5 Marking and documentation	11
6 Protection against electric shock	14
7 Protection against mechanical HAZARDS	20
8 Mechanical resistance to shock and impact.....	20
9 Protection against the spread of fire.....	21
10 Equipment temperature limits and resistance to heat	22
11 Protection against HAZARDS from fluids.....	23
12 Protection against radiation, including laser sources, and against sonic and ultrasonic pressure.....	24
13 Protection against liberated gases, explosion and implosion.....	24
14 Components.....	25
15 Protection by interlocks.....	26
16 Test and measurement equipment	26
Annex F – Routine tests	26
Annex AA – RISK management.....	27
Annex BB – Instructions for use for self-test IVD medical equipment.....	27
Annex A – List of applicable and omitted clauses/subclauses in the test report	62
Table 1 – Documents reviewed	8
Table 2 – Test equipment list	9
Table 3 – List of components and circuits relied on for safety.....	10
Form A.1 to Form A.33.....	27 to 61

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –****Part 3-1: Conformity verification report for IEC 61010-1:2001
General requirements**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this Technical Report may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC 61010-3-1, 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
66/278/DTR	66/316 /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 publication has been drafted in accordance with the IEC/ISO Directives, Part 2.

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 to assist users of the standard with determining and recording verification of conformity of the equipment under test with the requirements of:

IEC 61010-1: 2001 2nd edition

The protocol for completion of this report is contained in publication IEC 61010-3:2003 2nd edition.

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 file 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.

WARNING – Experience has shown that if a version is downloaded in Word 97 or Word 2000 and is subsequently converted to Word 6, some of the symbols may have been incorrectly changed in the conversion. Care must, therefore, be taken to verify the symbols used in the converted document.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

IEC TR 61010-3-1:2003

<https://standards.iteh.ai/catalog/standards/iec/2dc3a008-1f3b-403d-8834-b118795de5d4/iec-tr-61010-3-1-2003>

TEST REPORT IEC 61010-1:2001 Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1: General requirements	
Report Reference No. : Tested by (name and signature) . : Approved by (name and signature) : Date of issue : Contents : Pages	
Testing organisation : Address : Testing location :	
Applicant's name : Address :	
Test specification: Standard : IEC 61010 – 1 : 2001 (2 nd Edition); Copyright blank test report : 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 :	
Test item description :	
Trademark :	
Model/Type reference :	
Rating(s) :	

Test item particulars :	
Type of item tested	Measurement / Control / Laboratory
Description of equipment function	:
Intended use	:
INSTALLATION/OVERVOLTAGE CATEGORY	:
POLLUTION DEGREE	:
Environmental rating	standard / extended (specify):
Equipment mobility	portable / hand-held / floorstanding / fixed / built in/ benchmounted/other (specify):
Connection to mains supply	Permanent / detachable cord set / non detachable cord set / none
Operating conditions	continuous / short-time / intermittent
Overall size of the equipment (L x W x H)	:
Mass of the equipment (kg)	:
Marked degree of protection to IEC 60529	IP _____
Accessories and detachable parts included in the evaluation	
Options included	
Test case verdicts:	
Test case does not apply to the test object	N/A
Test object does meet the requirement	P(Pass)
Test object does not meet the requirement	F(Fail)
General remarks:	
The test results presented in this report relate only to the item(s) tested. "(see remark #)" refers to a remark appended to the report. "(see Annex #)" refers to an annex appended to the report. "(see Form A.#)" refers to a table appended to the report. Throughout this report a comma (point) is used as the decimal separator.	

Copy of equipment markings :

Summary of test results (information/comments):

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

IEC TR 61010-3-1:2003

<https://standards.iteh.ai/catalog/standards/iec/2dc3a008-1f3b-403d-8834-b118795de5d4/iec-tr-61010-3-1-2003>

TABLE 1 – Documents reviewed[illegible]

TABLE 2 – Test equipment list

[illegible]

Note 1 Or interval between calibrations

Note 2 Range used to be noted using the Instrument Code on the specific Form.

TABLE 3 – List of components and circuits relied on for safety

Unique component reference or location (including drawing reference if required)	Safety Function	Manufacturer (note 1)	Part number	RATING (note 2)	Evidence of acceptance (note 3)
NOTE 1 - List all manufacturers concerned. NOTE 2 - Electrical, mechanical, flammability, etc. NOTE 3 - Licence number, file number or other documentary evidence of acceptance					

Clause	Requirement – Test	Result - Remarks	Verdict
5	MARKING AND DOCUMENTATION		
5.1.1	General		
	Required equipment markings are:		
	visible:		
	From the exterior; or		
	After removing a cover; or		
	Opening a door		
	After removal from a rack or panel		
	Not put on parts which can be removed by an OPERATOR		
	Letter symbols (IEC 60027) used		
	Graphic symbols (IEC 61010-1: Table 1) used		
5.1.2	Identification		
	Equipment is identified by:		
5.1.2a)	Manufacturer's or supplier's name or trademark		
5.1.2b)	Model number, name or other means		
	Manufacturing location identified		
5.1.3	Mains supply		
	Equipment is marked as follows:		
5.1.3a)	Nature of supply:		
	1) A.C. RATED mains frequency or range of frequencies		
	2) D.C. with symbol 1		
5.1.3b)	RATED supply voltage(s) or range :		
5.1.3c)	Max. RATED power (W or VA) or input current :		
	The measured value not more than 110 %	(See Form A.3)	
	If more than one voltage range:		
	Separate values marked; or		
	Values differ by less than 20 %	(See Form A.3)	
5.1.3d)	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		
5.1.3e)	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; or		
	Symbol 14 with full details in the documentation		
5.1.4	Fuses		
	OPERATOR replaceable fuse marking (see also 5.4.5) :		

Clause	Requirement – Test	Result - Remarks	Verdict
5.1.5	TERMINALS, connections and operating devices		
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		
	If insufficient space, symbol 14 used		
5.1.5.1	TERMINALS		
	Mains supply TERMINALS identified		
	Other TERMINAL marking :		
5.1.5.1a)	FUNCTIONAL EARTH TERMINALS (symbol 5 used)		
5.1.5.1b)	PROTECTIVE CONDUCTOR TERMINALS:		
	Symbol 6 is placed close to or on the TERMINAL; or		
	Part of appliance inlet		
5.1.5.1c)	TERMINALS of measuring and control circuits (symbol 7 used)		
5.1.5.1d)	HAZARDOUS LIVE TERMINALS supplied from the interior		
	Standard MAINS socket outlet; or		
	RATINGS marked; or		
	Symbol 14 used		
5.1.5.1e)	ACCESSIBLE FUNCTIONAL EARTH TERMINALS:		
	Self-evident; or		
	Indication (symbol 8 acceptable)		
5.1.5.2	Measuring circuit TERMINALS		
	For TERMINALS other than those permanently connected and not ACCESSIBLE:		
	RATED voltage or current marked		
	Unless clear indication that below limits:		
	Maximum RATED voltage to earth is marked; or		
	For specific connection to other equipment TERMINALS only, and means for identifying provided		
	Appropriate measurement category marked (CAT II, CAT III or CAT IV); or		
	No measurement category marked (CAT I)		
	Required markings are adjacent to TERMINALS; OR		
	If insufficient space:		
	On the RATING plate or scale plate; or		
	TERMINAL is marked with symbol 14		
5.1.6	Switches and circuit breakers		
	If disconnecting device, on or off position marked		
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	Field-wiring TERMINAL boxes		
	If TERMINAL or ENCLOSURE exceeds 60 °C:	(See 10.3a))	
	Cable temperature RATING marked		
	Marking visible or beside TERMINAL		