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

Part 2-033: Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage

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

Partie 2-033: Exigences particulières pour les MULTIMÈTRES PORTATIFS et autres MESUREURS, pour usage domestique et professionnel, capables de mesurer la tension RÉSEAU



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CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope and object	6
2 Normative references.....	7
3 Terms and definitions	7
4 Tests	8
5 Marking and documentation	9
6 Protection against electric shock.....	11
7 Protection against mechanical hazards	14
8 Resistance to mechanical stress	14
9 Protection against the spread of fire	14
10 Equipment temperature limits and resistance to heat	14
11 Protection against HAZARDS from fluids	14
12 Protection against radiation, including laser sources, and against sonic and ultrasonic pressure	14
13 Protection against liberated gases and substances, explosion and implosion.....	14
14 Components and subassemblies.....	14
15 Protection by interlocks	15
16 HAZARDS resulting from application	15
17 RISK assessment	16
101 Measuring circuits.....	16
Annexes	20
Annex K (normative) Insulation requirements not covered by 6.7	20
Annex L (informative) Index of defined terms	25
Annex AA (normative) Measurement categories.....	26
Annex BB (informative) Hazards pertaining to measurements performed in certain environments	29
Bibliography.....	31
Figure 4 – Acceptable combinations of protective means against electric shock.....	12
Figure AA.1 – Example to identify the locations of measuring circuits	27
Table 101 – CLEARANCES and CREEPAGE DISTANCES for measuring circuit TERMINALS with HAZARDOUS LIVE conductive parts	13
Table 102 – Impulse withstand voltages.....	15
Table K.101 – CLEARANCES for measuring circuits of MEASUREMENT CATEGORIES III and IV ...	21
Table K.102 – Test voltages for testing electric strength of solid insulation in measuring circuits of MEASUREMENT CATEGORY III	22
Table K.103 –Test voltages for testing electric strength of solid insulation in measuring circuits of MEASUREMENT CATEGORY IV	22
Table K.104 – Test voltages for testing long term stress of solid insulation in measuring circuits.....	22
Table AA.1 – Characteristics of MEASUREMENT CATEGORIES	28

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –****Part 2-033: Particular requirements for HAND-HELD MULTIMETERS
and other METERS, for domestic and professional use,
capable of measuring MAINS voltage**

FOREWORD

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International Standard IEC 61010-2-33 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
66/461/FDIS	66/464/RVD

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

This Part 2-033 is to be used in conjunction with third edition of IEC 61010-1 (2010), on the basis of which it was established. Consideration may be given to future editions of, or amendments to, IEC 61010-1.

This Part 2-033 supplements or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into the IEC standard: *Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage.*

Where a particular subclause of Part 1 is not mentioned in this Part 2-033, that subclause applies as far as is reasonable. Where this part states “addition”, “modification”, “replacement”, or “deletion” the relevant requirement, test specification or note in Part 1 should be adapted accordingly.

In this standard:

- a) the following print types are used:
 - requirements: in roman type;
 - NOTES: in small roman type;
 - *conformity and test: in italic type;*
 - terms used throughout this standard which have been defined in Clause 3: SMALL ROMAN CAPITALS;
- b) subclauses, figures, tables and notes which are additional to those in Part 1 are numbered starting from 101. Additional annexes are numbered AA and BB.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 61010 series, published under the general title *Safety requirements for electrical equipment for measurement, control, and laboratory use*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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.

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INTRODUCTION

IEC 61010-1 specifies the safety requirements that are generally applicable to all equipment within its scope. For certain types of equipment, the requirements of IEC 61010-1 will be supplemented or modified by the special requirements of one, or more than one, particular part 2's of the standard which must be read in conjunction with the Part 1 requirements.

This Part 2-033 specifies the safety requirements for HAND HELD METERS that have a primary purpose of measuring voltage on a live MAINS CIRCUIT.

Part 2-032 specifies the safety requirements that are generally applicable to HAND-HELD and hand-manipulated current sensors.

Part 2-030 specifies the safety requirements for testing and measuring circuits which are connected for test or measurement purposes to devices or circuits outside the measurement equipment itself.

VOLTMETER and similar equipment that are not within the scope of Part 2-033 are considered to be covered by the requirements of Part 2-030 or Part 2-032. But for equipment within the scopes of both Part 2-032 and Part 2-033, the two standards must be read in conjunction.

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

Part 2-033: Particular requirements for HAND-HELD MULTIMETERS and other METERS, for domestic and professional use, capable of measuring MAINS voltage

1 Scope and object

This clause of Part 1 is applicable except as follows:

1.1.1 Equipment included in scope

Replacement:

Replace the existing text with the following:

This part of IEC 61010 specifies safety requirements for METERS.

The METERS that have a primary purpose of measuring voltage on a live MAINS CIRCUIT are within the scope of this standard. They have various names, but all of them have capability for measurements of voltages on a live MAINS CIRCUIT. Some of the names given to this equipment are as follows:

- MULTIMETER;
- digital MULTIMETER;
- VOLTMETER;
- clamp METER (see also Part 2-032).

For the purpose of this standard, the term METER is used for these HAND-HELD measuring instruments.

NOTE Parts of the equipment that are not within the scope of this Part 2-033 are considered to be covered by the requirements of Part 1 or other part 2's of IEC 61010 and then will also need to meet the requirements of these other parts.

1.1.2 Equipment excluded from scope

Addition:

Add the following new item to the list:

- aa) IEC 61557 (Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Parts 1 through 12).

Addition:

Add the two following paragraphs at the end of the subclause:

Equipment that is not capable of measuring MAINS voltages is not within the scope of this Part 2-033. See IEC 61010-2-030 for requirements pertaining to such equipment.

Such equipment, including other HAND-HELD equipment such as oscilloscopes, wattmeters, process control MULTIMETERS, and communications test sets is not within the scope of this Part 2-033.

1.2.1 Aspects included in scope

Addition:

Add the following paragraph at the end of the subclause:

Requirements for protection against HAZARDS resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE of measuring circuits are given in Clause 101.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

3.1 Equipment and states of equipment

Addition:

Add the following new definitions:

3.1.101

MULTIMETER

multirange multifunction measuring instrument intended to measure voltage and sometimes other electrical quantities such as current and resistance

[SOURCE: IEC 60050-300:2001, 312-02-24, modified]

3.1.102

VOLTMETER

instrument intended to measure the value of a voltage

[SOURCE: IEC 60050-300:2001, 313-01-03]

3.1.103

METER

voltage measuring instrument which is either a HAND-HELD VOLTMETER or a HAND-HELD MULTIMETER

3.1.104

HAND-HELD (equipment)

intended to be supported by one hand during NORMAL USE

3.5 Safety terms

Replacement:

Replace definitions 3.5.4 and 3.5.5 with the following new definitions: