

INTERNATIONAL STANDARD

NORME INTERNATIONALE

BASIC SAFETY PUBLICATION

PUBLICATION FONDAMENTALE DE SÉCURITÉ

Protection against electric shock – Common aspects for installations and equipment

Protection contre les chocs électriques – Aspects communs aux installations et aux matériels



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Protection against electric shock – Common aspects for installations and equipment

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CONTENTS

FOREWORD.....	5
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 Fundamental rule of protection against electric shock.....	18
4.1 General.....	18
4.2 Normal conditions	19
4.3 Single-fault conditions.....	20
4.3.1 General	20
4.3.2 Protection by independent protective provisions	20
4.3.3 Protection by an enhanced protective provision	20
4.4 Additional protection	20
4.5 Protection against electric burns	21
4.6 Protection against physiological effects without adverse health effect	21
4.6.1 General	21
4.6.2 Muscular reaction	21
4.6.3 Effects of touch current of discharge of electrostatic charges.....	22
4.6.4 Thermal effects.....	22
5 Protective provisions (elements of protective measures).....	22
5.1 General.....	22
5.2 Provisions for basic protection	22
5.2.1 General	22
5.2.2 Basic insulation	22
5.2.3 Protective barriers or enclosures	23
5.2.4 Obstacles	23
5.2.5 Placing out of arm's reach	23
5.2.6 Limitation of voltage	24
5.2.7 Limitation of steady-state touch current and energy	24
5.2.8 Potential grading	25
5.2.9 Other provisions for basic protection.....	25
5.3 Provisions for fault protection.....	25
5.3.1 General	25
5.3.2 Supplementary insulation.....	25
5.3.3 Protective-equipotential-bonding.....	25
5.3.4 Protective screening	27
5.3.5 Indication and disconnection in high-voltage installations and systems	27
5.3.6 Automatic disconnection of supply	27
5.3.7 Simple separation (between circuits)	28
5.3.8 Non-conducting environment	28
5.3.9 Potential grading	28
5.3.10 Other provisions for fault protection	28
5.4 Enhanced protective provisions.....	28
5.4.1 General	28
5.4.2 Reinforced insulation	29
5.4.3 Protective separation between circuits.....	29
5.4.4 Limited current source	29

5.4.5	Protective impedance device	29
5.4.6	Other provisions for enhanced protection.....	30
5.5	Provisions for additional protection	30
5.5.1	Additional protection by residual current protective device (RCD) $I_{\Delta n} \leq 30 \text{ mA}$	30
5.5.2	Additional protection by supplementary equipotential bonding	30
6	Protective measures	30
6.1	General.....	30
6.2	Protection by automatic disconnection of supply	31
6.3	Protection by double or reinforced insulation.....	31
6.4	Protection by protective equipotential bonding	31
6.5	Protection by electrical separation	31
6.6	Protection by non-conducting environment (low-voltage).....	31
6.7	Protection by SELV system	32
6.8	Protection by PELV system	32
6.9	Protection by limitation of steady-state touch current and charge	32
6.10	Additional protection	32
6.10.1	Additional protection by residual current protective device (RCD) $I_{\Delta n} \leq 30 \text{ mA}$	32
6.10.2	Additional protection by supplementary protective equipotential bonding	32
6.11	Protection by other measures	33
7	Co-ordination between electrical equipment and protective provisions within an electrical installation	33
7.1	General.....	33
7.2	Class 0 equipment	33
7.3	Class I equipment	34
7.3.1	General	34
7.3.2	Insulation.....	34
7.3.3	Connection to the protective conductor	34
7.3.4	Accessible surfaces of parts of insulating material	34
7.3.5	Connection of a protective conductor	35
7.4	Class II equipment	35
7.4.1	General	35
7.4.2	Insulation.....	35
7.4.3	Protective bonding.....	36
7.4.4	Marking	36
7.5	Class III equipment	36
7.5.1	General	36
7.5.2	Voltages	36
7.5.3	Protective bonding.....	37
7.5.4	Marking	37
7.6	Touch currents, protective conductor currents.....	37
7.6.1	General	37
7.6.2	Touch currents	37
7.6.3	Protective conductor currents	37
7.6.4	Other requirements.....	39
7.6.5	Other effects.....	39
7.7	Safety and boundary clearances and hazard marking for high-voltage installations	39

7.8	Functional earthing	40
8	Special operating and servicing conditions	40
8.1	General.....	40
8.2	Devices to be operated manually and components intended to be replaced manually	40
8.2.1	General	40
8.2.2	Devices to be operated or components intended to be replaced by ordinary persons in low-voltage installations, systems and equipment	40
8.2.3	Devices to be operated or components intended to be replaced by skilled or instructed persons	41
8.3	Electrical values after isolation.....	41
8.4	Devices for isolation.....	42
8.4.1	General	42
8.4.2	Devices for isolation for low voltage.....	42
8.4.3	Devices for isolation for high voltage	43
	Annex A (informative) Survey of protective measures as implemented by protective provisions	45
	Annex B (informative) Index of terms	48
	Annex C (informative) List of notes concerning certain countries	53
	Bibliography.....	54
	Figure A.1 – Protective measures with basic and fault protection	45
	Figure A.2 – Protective measures with limited values of electrical quantities	46
	Figure A.3 – Protective measure: additional protection (in addition to basic and/or fault protection)	47
	Table 1 – Limits for voltage bands	19
	Table 2 – Touch voltage thresholds for reaction.....	21
	Table 3 – Application of equipment in a low-voltage installation	33
	Table 4 – Maximum protective conductor current for frequencies up to 1 kHz	38
	Table 5 – Maximum protective conductor current for DC	38
	Table 6 – Minimum impulse withstand voltage of devices for isolation related to the nominal voltage	43

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PROTECTION AGAINST ELECTRIC SHOCK –
COMMON ASPECTS FOR INSTALLATION AND EQUIPMENT**

FOREWORD

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International Standard IEC 61140 has been prepared by IEC technical committee 64: Electrical installations and protection against electric shock.

This fourth edition cancels and replaces the third edition published in 2001 and Amendment 1:2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Introduction of the content of IEC 60449
- b) Better distinction between provisions and measures
- c) Consideration of effects other than ventricular fibrillation
- d) Additional protection was introduced
- e) ELV defined as part of LV
- f) Devices suitable for isolation required for automatic disconnection of supply (LV)

- g) Requirements relating to current in the protective conductor were moved to the main body of the standard

The text of this standard is based on the following documents:

FDIS	Report on voting
64/2076/FDIS	64/2091/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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

It has the status of a basic safety publication in accordance with IEC Guide 104.

The reader's attention is drawn to the fact that Annex C lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this standard.

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

PROTECTION AGAINST ELECTRIC SHOCK – COMMON ASPECTS FOR INSTALLATIONS AND EQUIPMENT

1 Scope

This International Standard is a basic safety publication primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

It is not intended to be used as a stand-alone standard.

According to IEC Guide 104, technical committees, when preparing, amending, or revising their publications, are required to make use of any basic safety publication such as IEC 61140.

This International Standard applies to the protection of persons and livestock against electric shock. The intent is to give fundamental principles and requirements which are common to electrical installations, systems and equipment or necessary for their coordination, without limitations with regard to the magnitude of the voltage or current, or the type of current, and for frequencies up to 1 000 Hz.

Some clauses in this standard refer to low-voltage and high-voltage systems, installations and equipment. For the purposes of this standard, low-voltage is any rated voltage up to and including 1 000 V a.c. or 1 500 V d.c.. High voltage is any rated voltage exceeding 1 000 V a.c. or 1 500 V d.c..

It should be noted that, for an efficient design and selection of protective measures, the type of voltage that may occur and its waveform needs to be considered, i.e. a.c. or d.c. voltage, sinusoidal, transient, phase controlled, superimposed d.c., as well as a possible mixture of these forms. The installations or equipment may influence the waveform of the voltage, e.g. by inverters or converters. The currents flowing under normal operating conditions and under fault conditions depend on the described voltage.

2 Normative references

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.

IEC 60038, *IEC standard voltages*

IEC 60068 (all parts), *Environmental testing*

IEC 60071-1, *Insulation coordination – Part 1: Definitions, principles and rules*

IEC 60071-2, *Insulation coordination – Part 2: Application guide*

IEC 60364-5-54:2011, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60417, *Graphical symbols for use on equipment*
(available at <http://www.graphical-symbols.info/equipment>)