NEGARA BRUNEI DARUSSALAM

BRUNEI DARUSSALAM STANDARD
PIAWAI BRUNEI DARUSSALAM

PBD IEC 60335-1:2008
IEC 60335-1:2008
Edition 4.2

HOUSEHOLD & SIMILAR ELECTRICAL APPLIANCES - SAFETY PART 1: GENERAL REQUIREMENTS

ENERGY DIVISION, PRIME MINISTER'S OFFICE
IN COLLABORATION WITH MINISTRY OF DEVELOPMENT
NEGARA BRUNEI DARUSSALAM

FOREWORD

This Brunei Darussalam Electrical Standard was prepared by the Technical Committee on Electrical Standards [TECO (Electrical)], Energy Division at Prime Minister's Office in collaboration with the authority of the standards committee, Construction Planning and Research Unit (CPRU), Ministry of Development, Brunei Darussalam with the objective of developing the National Electrical Standards for electrical products, systems, equipment and facilities for the local industries and consumers with reference to international standards, guidelines and procedures. In developing the national electrical standards, the aim is to promote quality, technical integrity, health, safety and environmental standards for the local industries and consumers.

This Brunei Darussalam Electrical Standard is an adoption of the International Electro technical Commission IEC 60335-1 :2008 (Edition 4.2) standard and implements it as the Brunei Darussalam National Standard.

Attention is drawn to the fact that this Brunei Darussalam Electrical Standard does not confer any immunity from legal obligations in any contract for compliance to the Standard.

The National Electrical Standards are subject to periodical review according to the current needs of the local industries and consumers to keep abreast of progress in the industries and consumers concerned. Suggestions of amendments will be recorded and in due course brought to the notice of the committees concerned.

COMMITTEE MEMBERS

The Technical Committee on Electrical Standards [TECO (Electrical)] was tasked by the Energy Division at the Prime Minister's Office in collaboration with Construction Planning and Research Unit (CPRU), Ministry of Development, Brunei Darussalam for the preparation of this Brunei Darussalam Electrical Standard. The members of the Technical Committee are as follows:

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2. Awg Liaw Wai Khiong (Co-Chairman)	Brunei LNG Sdn Bhd
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4. Awg William Voon (Assistant Secretary 1)	Institution of Engineering and Technology, Brunei Network
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10. Awg Majid Ali	Ministry of Industry & Primary Resources
11. Awg Dennis Wong Tet Yin	Department of Mechanical & Electrical, PWD
12. Awg Nohi Irwan Surkarki Haji Pawi	Department of Fire & Rescue Services
13. Awg Martin Blundell	University Brunei Darussalam
14. Awg Haji Morsidi Haji Kassim	Institut Teknologi Brunei
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20. Steve Turner	Berakas Power Management Company
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INTERNATIONAL STANDARD

PIAWAI BRUNEI DARUSSALAM – BRUNEI DARUSSALAM STANDARD

Household and similar electrical appliances – Safety –
Part 1: General requirements

IEC 60335-1:2001+A1:2004+A2:2006

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This IEC International Standard has been adopted by CPRU, Ministry of Development, Negara Brunei Darussalam as a national standard under the IEC Affiliate Country Programme

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TC 61/Publication 60335-1 (2001) Amendment 1, Fourth edition/I-SH 01

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY – Part 1: General requirements

INTERPRETATION SHEET

This interpretation sheet has been prepared by technical committee 61: Safety of household and similar electrical appliances.

The text of this interpretation sheet is based on the following documents:

ISH	Report on voting
61/3142/ISH	61/3219/RVD

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

Subclause 22.46

This subclause introduced by amendment 1 is clarified by following:

Software used in **protective electronic circuits** shall be **software class B** or **software class C.**

If failure of the software in the presence of another fault in the appliance would result in a hazard, then **software class B** shall be used. If failure of software alone would result in a hazard, then **software class C** shall be used.

*Compliance is checked by evaluating the software in accordance with the relevant requirements of Annex R and, for checking if the correct software class is used, by assessing whether failure of the function controlled by the software can result in a **dangerous malfunction**, electric shock, fire, mechanical or other hazard.*

NOTE 1 Software class A denotes software used for functional purposes.

NOTE 2 In case the software is modified, the evaluation and relevant tests are repeated if the modification can influence the results of the tests involving protective electronic circuits.

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CONTENTS

PBD IEC 60335-1:2008 (Published by IEC in 2006)

PBD IEC 60335-1:2008 (Published by IEC in 2006)

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This part of international standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-1 consists of the fourth edition (2001) [documents 61/1965/FDIS and 61/1998/RVD], its amendment 1 (2004) [documents 61/2569/FDIS and 61/2639/RVD], its amendment 2 (2006) [documents 61/2996/FDIS and 61/3053/RVD] and its corrigenda of January 2002 and of December 2005.

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 4.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

This part is to be used in conjunction with the appropriate part 2 of IEC 60335. The parts 2 contain clauses to supplement or modify the corresponding clauses in this part to provide the relevant requirements for each type of appliance.

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PBD IEC 60335-1:2008 (Published by IEC in 2006)

PBD IEC 60335-1:2008 (Published by IEC in 2006)

Annexes B, C, D, E, F, G, H, I, J, K, M, N and R form an integral part of this standard.

Annexes A, L, O, P and Q are for information only.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

NOTE 1 The following annexes contain provisions suitably modified from other IEC standards:

–	Annex E	Needle flame test	IEC 60695-11-5
–	Annex F	Capacitors	IEC 60384-14
–	Annex G	Safety isolating transformers	IEC 61558-1 and IEC 61558-2-6
–	Annex H	Switches	IEC 61058-1
–	Annex J	Coated printed circuit boards	IEC 60664-3
–	Annex N	Proof tracking test	IEC 60112
–	Annex R	Software evaluation	IEC 60730-1

NOTE 2 The following print types are used:

– requirements: in roman type;

– *test specifications: in italic type;*

– notes: in small roman type.

Words in **bold** in the text are defined in clause 3. When a definition concerns an adjective, the adjective and associated noun are also in bold.

The following differences exist in the countries indicated below.

– Clause 3: Steady conditions are defined (Poland).

– 3.4.2: Safety extra-low voltage shall not exceed 30 V (42,4 V peak) (USA).

– 5.7: The ambient temperature is 25 °C ± 10 °C (China, Japan and USA).

– 5.14: Accessible metal parts that are not liable to become energized (such as metal nameplates or decorative parts on a plastic enclosure) do not need to be earthed. Accessible non-metallic parts need only provide basic insulation (USA).

– 6.1: Class 0 appliances and class 0I appliances are not allowed (Australia, Austria, Belgium, Czech Republic, Finland, France, Germany, Greece, Hungary, India, Israel, Ireland, Italy, Netherlands, New Zealand, Norway, Poland, Singapore, Slovakia, Sweden, Switzerland, United Kingdom, Yugoslavia).

– 6.2: Protection against harmful ingress of water is determined by methods other than those given in IEC 60529 (USA).

– 7.1: The IP number is not required to be marked (USA).

– 7.6: Some of these symbols are not used (USA).

– 7.8: Additional methods are permitted for identifying earthing terminals and terminals for neutral conductors (USA).

– 7.12.2: The requirements for full disconnection do not apply (Japan, USA).

– 7.14: Different tests are used (USA).

– 8.1.1: The test is not necessarily repeated with the 20 N force (USA).

– 8.1.1: Protection against contact with live parts of the lamp cap is not required (USA).

– 8.1.2 and 8.1.3: The test probe 13 and test probe 41 are not used (USA).

– 8.1.5: Built-in appliances, fixed appliances and appliances delivered in separate units are not required to be protected by at least basic insulation before installation (USA).

PBD IEC 60335-1:2008 (Published by IEC in 2006)

- Clause 9: The ability of a motor to start without blowing a quick-acting fuse is required (USA).
- 10.1 and 10.2: Positive limits of 5 % for heating appliances and 10 % for motor-operated appliances are required and in general there are no negative deviations (USA).
- 11.4, 11.5 and 11.6: Heating appliances and heater circuits of combined appliances are operated at rated power input or rated voltage, whichever is the more severe; all other appliances and circuits are operated at rated voltage (USA).
- 11.8, table 3: Temperature rise limits for certain materials are different (USA).
- 13.2: The test circuit and some leakage current limits are different (India, USA).
- 13.3: The values of certain test voltages are different depending on the rated voltage (USA).
- 13.3: A 500 VA test transformer is used (USA).
- 15.1.1 and 15.1.2: The IP system is not used and the tests are different (USA).
- 15.3: The test is conducted with a relative humidity of (88 ± 2) % at a temperature of 32 °C ± 2 °C (USA).
- 16.2: The test is conducted at nominal supply voltage, and some of the leakage current values are different (USA).
- 16.3: Some test voltages and methods are different (USA).
- 19.1: The circuit protection device is permitted to provide necessary protection (USA).
- 19.2 to 19.4: Generally the tests are conducted at nominal supply voltage or rated power input (USA).
- 19.11: Different tests are carried out to evaluate solid state devices used in protective electronic circuits (USA).
- 19.13: The temperature rise limits of table 9 are not applicable (USA).
- 20.1: A stability test at 15° is not conducted, and an appliance tested in an overturned position is judged under abnormal test criteria (USA).
- 21.1: The impact force is applied by a falling steel ball instead of the spring hammer (USA).
- Clause 22: The d.c. component in the appliance neutral is limited (Australia).
- 22.1: The IP system is not used and the tests are different (USA).
- 22.2: The second paragraph of this subclause dealing with single-phase class I appliances with heating elements cannot be complied with because of the supply system (France and Norway).
- 22.2: Double-pole switches or protective devices are required (Norway).
- 22.2: Disconnection of the neutral is not necessary for all stationary appliances (USA).
- 22.2: The supply cord is not required to be fitted with a plug (Ireland).
- 22.3: The test is different (USA).
- 22.6: This test is not conducted (USA).
- 22.11: Different criteria for snap-on constructions are required (USA).
- 22.12: Positive forms of securement are required (USA).
- 22.14: Sharp edges are evaluated by means of a sharp edge testing device (USA).
- 22.35 and 22.36: Metal parts are generally not required to be separated by double or reinforced insulation (USA).
- 22.44: Appliances may be acceptable based on additional evaluation (USA).
- 22.46: The evaluation of software is different (USA).
- 23.5: Requirements for insulated internal wiring are different (USA).
- 23.7: The requirement only applies to wiring that is accessible when making supply connections (USA).
- 24.1.3: The number of cycles is different and the note does not apply (USA).
- 24.1.4: The number of cycles is different and note 1 does not apply (USA).
- 24.3: The requirement for full disconnection does not apply (USA).
- 25.1: The supply cord is not required to be fitted with a plug (Ireland).
- 25.3: A set of supply leads is not permitted (Norway, Sweden, Denmark, Finland, Netherlands).
- 25.3: The use of a set of terminals for connection of a flexible cord is not generally permitted (USA).
- 25.8: Conductor cross-sectional areas are different (Australia, New Zealand and USA).

PBD IEC 60335-1:2008 (Published by IEC in 2006)

- 25.8: 0,5 mm^2 supply cords are not allowed for class I appliances (Australia and New Zealand).
- 25.10: Green insulation is also permitted (USA).
- 25.13: Only one separate insulation is required (USA).
- 25.16: A pull of 35 lbs is applied except for small appliances. Generally the torque test is not applied (USA).
- 26.3: The tests only apply to terminals for connection to fixed wiring (USA).
- 26.6: Cross-sectional areas are specified according to American Wire Gauge (AWG) (USA).
- 27.6: The requirement does not apply (USA).
- 28.1: Generally, tests of this type are not required (USA).
- Clause 29: The requirements for clearances and creepage distances are different (USA).
- 29.1 Different rated impulse voltages are used between 50 V and 150 V (Japan).
- 29.3 The third dashed item of the test specification does not apply (Germany).
- 30.1: The minimum value for the ball-pressure test for parts retaining live parts is 95 °C or 40 K higher than the clause 11 temperature rise. For enclosures, the minimum value is 75 °C or a mould-stress test is conducted at 10 K above the clause 11 temperature (USA).
- 30.2.1: An ignition test cannot be used to assure a slow burning rate (USA).
- Annex B, 7.12: Appliances having non-replaceable batteries shall be marked with an appropriate symbol when the batteries have a content of mercury or cadmium exceeding 0,025 % by weight (Sweden and Switzerland).
- Annex B, 21.101: The requirement is different (USA).
- Annex I: The annex applies to motors having a working voltage not exceeding 30 V (USA).

INTRODUCTION

It has been assumed in the drafting of this international standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If the functions of an appliance are covered by different parts 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

NOTE 1 Throughout this publication, when "Part 2" is mentioned, it refers to the relevant part of IEC 60335.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

Individual countries may wish to consider the application of the standard, as far as is reasonable, to appliances not mentioned in a part 2, and to appliances designed on new principles.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features which impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 2 Standards dealing with non-safety aspects of household appliances are

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1, IEC 61000-3-2 and IEC 61000-3-3 concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity.

PBD IEC 60335-1:2008 (Published by IEC in 2006)

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 1: General requirements

1 Scope

This International Standard deals with the safety of electrical appliances for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this standard.

NOTE 1 Examples of such appliances are catering equipment, cleaning appliances for industrial and commercial use, and appliances for hairdressers.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

NOTE 2 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 3 This standard does not apply to

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- audio, video and similar electronic apparatus (IEC 60065);
- appliances for medical purposes (IEC 60601);
- hand-held motor-operated electric tools (IEC 60745);
- personal computers and similar equipment (IEC 60950);
- transportable motor-operated electric tools (IEC 61029).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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