

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Household and similar electrical appliances – Safety –
Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances
having electrical connections**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-102: Règles particulières pour les appareils à combustion au gaz, au
mazout et à combustible solide comportant des raccordements électriques**

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INTERNATIONAL
ELECTROTECHNICAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-102: Particular requirements for gas, oil and solid-fuel
burning appliances having electrical connections**

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 60335-2-102 consists of the first edition (2004) [documents 61/2532/FDIS and 61/2576/RVD] and its amendment 1 (2008) [documents 61/3695/FDIS and 61/3749/RVD].

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

It bears the edition number 1.1.

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

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) of that standard and its Amendment 1.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for gas, oil and solid-fuel burning appliances having electrical connections.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 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 the associated noun are also in bold.

The committee has decided that the contents of the base publication and its amendments 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 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of the amendment 1 be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

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 an appliance within the scope of this standard also incorporates functions that are covered by another part 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.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

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.

NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

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 that 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections

1 Scope

This clause of Part 1 is replaced by the following.

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

This standard covers the electrical safety and some other safety aspects of these appliances. All safety aspects are covered when the appliance also complies with the relevant standard for the fuel-burning appliance. If the appliance incorporates electric heating sources, it also has to comply with the relevant part 2 of IEC 60335.

NOTE 101 Examples of appliances within the scope of this standard are

- central heating boilers;
- commercial catering equipment;
- cooking appliances;
- laundry and cleaning appliances;
- room heaters;
- warm air heaters;
- water heaters.

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.

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

NOTE 102 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 and similar authorities.

NOTE 103 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).

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 61558-2-3, *Safety of power transformers, power supply units and similar devices – Part 2-3: Particular requirements for ignition transformers for gas and oil burners*

ISO 3808, *Road vehicles – Unscreened high-voltage ignition cables – General specifications, test methods and requirements*

3 Definitions

This clause of Part 1 is applicable except as follows.

3.101

spark-ignition circuit

electrical circuit for producing sparks which ignite gaseous or liquid fuel

3.105

shut-down

de-energization of a control resulting from the action of a limiting device or detection of a fault in the control system, thus stopping the flow of gaseous or liquid fuel

3.106

lock-out

shut-down requiring a manual operation to restart the appliance

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.2 *Addition:*

A separate appliance may be used for the tests carried out on the fuel-burning appliance, in accordance with its relevant standard.

The tests of this standard may be carried out in conjunction with the tests of another part 2, if applicable.

5.3 *Addition:*

If a test has been carried out in accordance with the fuel-burning appliance standard, it is not repeated.

5.4 Addition:

When the appliance incorporates electric heating sources, the tests are carried out with all parts of the appliance in operation, as allowed by the construction.

5.101 Appliances are supplied as specified for **motor-operated appliances**.

6 Classification

This clause of Part 1 is applicable.

7 Marking and instructions

This clause of Part 1 is applicable.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1 Addition:

The requirement does not apply to **accessible parts** of **spark-ignition circuits**.

8.101 Parts of the **spark-ignition circuits** shall not be accessible if the limits in Table 101 are exceeded, unless they are piezoelectric igniters:

Table 101 – Accessible spark-ignition circuit limits

Interval between pulses (<i>t</i>)	Pulse duration (<i>d</i>)		
	<i>d</i> ≤ 0,1 ms	0,1 ms < <i>d</i> ≤ 100 ms	<i>d</i> > 100 ms
<i>t</i> < 40 ms	$V_o \leq 10 \text{ kV}$ and $I \leq 0,7 \text{ mA}$	$V_o \leq 10 \text{ kV}$ and $I \leq 0,7 \text{ mA}$	*
40 ms ≤ <i>t</i> < 250 ms	45 μC/pulse	$V_o \leq 10 \text{ kV}$ and $I \leq 0,7 \text{ mA}$	$V_o \leq 10 \text{ kV}$ and $I \leq 0,7 \text{ mA}$ (only applicable if <i>d</i> < <i>t</i>)*
<i>t</i> ≥ 250 ms	100 μC/pulse	100 μC/pulse	$V_o \leq 10 \text{ kV}$ and $I \leq 0,7 \text{ mA}$

NOTE 1 For the pulse duration (*d*) and the interval between pulses (*t*), see also Figure 101.

NOTE 2 V_o is the no-load voltage of the ignition circuit. V_o and *I* are peak values.

* If *t* < 40 ms and *d* > 100 ms or if 40 ms ≤ *t* < 250 ms and *d* > 100 ms when *d* < *t*, then parts of the **spark-ignition circuits** shall not be accessible.

Compliance is checked by inspection, by applying test probe B of IEC 61032 as described in 8.1.1 and by the following test.

The **spark-ignition circuit** is operated and the pulse duration measured across the spark gap until it has reduced to 10 % of its peak value, as shown in Figure 101.

A resistor having a nominal non-inductive resistance of 2 000 Ω is connected across the spark gap and the voltage measured. The current flowing through the resistor is calculated from the voltage measured across it.

The quantity of electricity in the discharge is calculated from the current and duration of the pulse.

NOTE The quantity of electricity is calculated from the sum of all areas recorded on the voltage/time graph without taking voltage polarity into account.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.8 Addition:

The temperature rises of the walls of the test corner, and the temperature rises of the surfaces of handles, knob grips and similar parts, are not measured.

The temperature rise limits for common parts of appliances having electric and fuel-burning heating sources are specified in the relevant part 2.

NOTE 101 Examples of common parts are components in the control panel of a combined gas and electric cooking range.

12 Void

13 Leakage current and dielectric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.2 Modification:

*The limit for **stationary class I motor-operated appliances** is applicable.*

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 Addition:

For cooking ranges, hobs and similar appliances, compliance is checked by the following tests.