

# INTERNATIONAL STANDARD

# IEC 60335-2-103

First edition  
2002-10

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## Household and similar electrical appliances – Safety –

### Part 2-103: Particular requirements for drives for gates, doors and windows

*Appareils électrodomestiques et analogues –  
Sécurité –*

*Partie 2-103:  
Règles particulières aux systèmes d'entraînement  
motorisé des portails, portes, barrières et  
éléments analogues*



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –  
SAFETY –****Part 2-103: Particular requirements for drives  
for gates, doors and windows**

## 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.
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- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

The text of this first edition is based on the following documents:

FDIS	Report on voting
61/2179/FDIS	61/2260/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 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.

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, so as to convert that publication into the IEC standard: Safety requirements for electric drives for gates, doors and windows.

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 this publication will remain unchanged until 2004. At this date, the publication will be

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- withdrawn;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

The following differences exist in the countries indicated below.

- 6.1: Class 0 and class 01 are allowed for appliances for indoor use having a rated voltage up to 150 V (Japan).

A bilingual version of this publication may be issued at a later date.

## 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.

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.

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.

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.

<https://standards.iteh.ai/>

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# HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

## Part 2-103: Particular requirements for drives for gates, doors and windows

### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **drives** for horizontally and vertically moving gates, doors and **windows** for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances. It also covers the hazards associated with the movement of the **driven part**.

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, offices, hotels, restaurants, hospitals, in industry and on farms, are within the scope of this standard.

Requirements for **drives** for doors that may be used in emergency are given in Annex AA.

NOTE 101 Examples of **drives** within the scope of this standard are **drives** for

- folding doors;
- revolving doors;
- rolling doors;
- roof **windows**;
- sectional overhead doors;
- swinging and sliding gates or doors.

Examples are shown in Figure 101.

NOTE 102 **Drives** may be supplied with a **driven part**.

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

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE 103 Attention is drawn to the fact that

- in many countries additional requirements are specified by the national authorities responsible for the protection of labour and similar authorities.

NOTE 104 This standard does not apply to **drives**

- for vertically moving garage doors for residential use (60335-2-95);
- for rolling shutters, awnings, blinds and similar equipment (60335-2-97);
- intended exclusively to be used by trained persons in commercial and industrial premises;
- for specific purposes, such as fire barriers;
- 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:*

60068-2-52, *Environment testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*.

60825-1:1998, *Safety of laser products – Part 1: Equipment classification, requirements and user's guide*.

## 3 Definitions

This clause of Part 1 is applicable except as follows.

### 3.1.9 Replacement:

#### **normal operation**

operation of the **drive** under the following conditions

**Drives** supplied without a **driven part** are operated with their **rated load**.

**Drives** supplied with a **driven part** are operated with the **driven part** installed in accordance with the instructions.

### 3.101

#### **drive**

motor and other components that control the movement of the **driven part**

NOTE Examples of components are gears, controls, brakes, trolleys and **entrapment protection systems**.

### 3.102

#### **driven part**

movable part of a gate, door or window that is operated by the **drive**

### 3.103

#### **window**

part in a building that opens and closes in order to regulate the air and which is not intended for passage

### 3.104

#### **rated load**

force or torque assigned to the **drive** by the manufacturer

### 3.105

#### **rated operating time**

duration of continuous operation assigned to the **drive** by the manufacturer

NOTE During continuous operation, the **drive** may reverse its direction.

### 3.106

#### **rated number of operating cycles**

number of uninterrupted cycles assigned to the **drive** by the manufacturer

### 3.107

#### **entrapment protection system**

part of the **drive** that provides protection against entrapment

NOTE 1 An **entrapment protection system** may consist of one or more devices, such as pressure sensitive edges, passive infrared and active light sensing devices.

NOTE 2 An **entrapment protection system** may be incorporated in the motor assembly or installed separately.

### 3.108

#### **biased-off switch**

switch that automatically returns to the **off position** when its actuating member is released

## 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:

*When a test has to be carried out with a **driven part**, the **driven part** specified for installation with the **drive** that gives the most unfavourable conditions for the test is used. The **drive** is adjusted in accordance with the instructions.*

*The **driven part** may be simulated by an artificial load.*

### 5.5 Addition:

*A wicket door is kept closed during the tests.*

### 5.7 Addition:

*If the **drive** is marked with an ambient temperature beyond the range of +5 °C to +40 °C, the tests of Clauses 11, 13, 20.105 to 20.110 and 21 are carried out at the most unfavourable marked temperature.*

## 6 Classification

This clause of Part 1 is applicable except as follows.

### 6.1 Modification:

**Drives** shall be **class I**, **class II** or **class III**.

### 6.2 Addition:

**Drives**, or parts of **drives**, that are intended for exposure to outdoor conditions shall be at least IPX4.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

### 7.1 Modification:

**Drives** shall be marked with the **rated power input**.

*Addition:*

**Drives** shall be marked with their ambient temperature range.

**Drives** supplied without a **driven part** shall be marked with

- the **rated load**, in newtons or in newton-metres;
- the **rated operating time**, in minutes, unless the **drive** is intended for continuous operation.

**Drives** supplied with a **driven part** shall be marked with the **rated number of operating cycles**, unless the **drive** is intended for continuous operation.

### 7.6 Addition:



[symbol 0533 of ISO 7000] maximum temperature



[symbol 0534 of ISO 7000] minimum temperature.

### 7.12 Addition:

The instructions shall state the substance of the following:

**WARNING:** Important safety instructions. It is important for the safety of persons to follow these instructions. Save these instructions.

The instructions shall include the substance of the following:

- do not allow children to play with fixed controls. Keep remote controls away from children;
- explanation of mode indicators;
- details on how to use any manual release, and if applicable, state that activation of the manual release may cause uncontrolled movement of the driven part due to mechanical failures or an out-of-balance condition;
- when operating a biased-off switch, make sure that other persons are kept away;
- when closing a window that has been opened by a fire-sensing system, make sure that other persons are kept away;
- details on how to re-adjust controls;
- frequently examine the installation for imbalance and signs of wear or damage to cables, springs and mounting. Do not use if repair or adjustment is necessary;
- disconnect the supply when cleaning or other maintenance is being carried out, if the appliance is automatically controlled.