



BSI Standards Publication

Household and similar electrical appliances - Safety

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

National foreword

This British Standard is the UK implementation of EN IEC 60335-2-103:2023+A11:2023. It is derived from IEC 60335-2-103:2015, incorporating amendments 1:2017 and 2:2019. It supersedes BS EN 60335-2-103:2015, which will be withdrawn on 12 May 2026.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by A1 A1.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee CPL/61/1, Motorised appliance group.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Household and similar electrical appliances - Safety - Part 2-103:
Particular requirements for drives for gates, doors and windows
(IEC 60335-2-103:2015)

Appareils électrodomestiques et analogues - Sécurité -
Partie 2-103: Exigences particulières pour les motorisations
de portails, portes et fenêtres
(IEC 60335-2-103:2015)

Sicherheit elektrischer Geräte für den Hausgebrauch und
ähnliche Zwecke - Teil 2-103: Besondere Anforderungen für
Antriebe für Tore, Türen und Fenster
(IEC 60335-2-103:2015)

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European Committee for Electrotechnical Standardization
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The following dates are fixed:

- latest date by which this document has to be (dop) 2023-11-12
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identical national standard or by endorsement
- latest date by which the national standards (dow) 2026-05-12
conflicting with this document have to be withdrawn

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European foreword to amendment A1

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European foreword to amendment A2

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European foreword to amendment A11

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The numbering system for European clauses, subclauses, notes, tables, figures and annexes that are additional to those in the IEC standard are prefixed with the letter "Z".

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

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CONTENTS

FOREWORD	5
INTRODUCTION	7
1 Scope	8
2 Normative references	9
3 Terms and definitions	10
4 General requirement	11
5 General conditions for the tests	12
6 Classification	12
7 Marking and instructions	13
8 Protection against access to live parts	16
9 Starting of motor-operated appliances	16
10 Power input and current	16
11 Heating	16
12 Void	17
13 Leakage current and electric strength at operating temperature	17
14 Transient overvoltages	17
15 Moisture resistance	17
16 Leakage current and electric strength	17
17 Overload protection of transformers and associated circuits	17
18 Endurance	17
19 Abnormal operation	18
20 Stability and mechanical hazards	18
21 Mechanical strength	19
22 Construction	19
23 Internal wiring	20
24 Components	20
25 Supply connection and external flexible cords	20
26 Terminals for external conductors	21
27 Provision for earthing	21
28 Screws and connections	21
29 Clearances, creepage distances and solid insulation	21
30 Resistance to heat and fire	21
31 Resistance to rusting	22
32 Radiation, toxicity and similar hazards	22
Annexes	25
Annex R (normative) Software evaluation	26
Annex AA (normative) Drives for powered pedestrian doors used in emergency routes and emergency exits	27
Annex BB (normative) Drives for windows	28
Annex CC (normative) Drives for pedestrian doors	34

Annex DD (normative) Drives for horizontally and vertically moving doors and gates	39
Annex EE (normative) Measuring point for protective devices of horizontally moving pedestrian doors	46
Annex FF (normative) Reference bodies	47
Annex GG (normative) Test method of entrapment protection system of drives for revolving doors	48
Annex HH (normative) Limitation of impact forces of pedestrian doors	49
Annex II (normative) Measuring points for limitation of impact forces of pedestrian doors	50
Annex JJ (normative) Low energy movement of pedestrian doors	51
Annex KK (normative) Speed setting for low energy movement of pedestrian doors	52
Annex LL (normative) Safeguarding of swing pedestrian doors	53
Bibliography	54
Figure 101 – Examples of driven parts	23
Figure 102 – Inactive floor areas of pressure-sensitive pads	24
Figure CC.1 – Safety distances for opening movement of swing door	38

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

FOREWORD

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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 third edition constitutes a technical revision.

The principal changes in this edition as compared with the second edition of IEC 60335-2-103 are as follows (minor changes are not listed):

- modification of requirements in Clause 20 by introduction of new annexes.

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

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 fifth edition (2010) 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 60335-1, 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.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments 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.

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 this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

The following differences exist in the countries indicated below.

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

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.

A11 The relevant requirements of Annex ZE of Part 1 have been incorporated in the text of this Part 2.

The intended use of the **drives** covered by this document is for them to be installed together with windows and with horizontally and vertically moving gates and doors for pedestrian use as well as for vehicles and the necessary ancillary components (e.g. controls, safety devices) to create a power operated **window**, gate or door.

The safety of horizontally and vertically moving gates and doors is ensured by this document and EN 12453. The safety of pedestrian doors is ensured by this document and EN 16005.

The safety of **windows** is ensured by this document.

This document covers the hazards generated by the **drive**.

Drives put on the market as machines may be installed by the final user. The requirements of this document cover **drives** and also the foreseeable misuse of the power operated horizontally and vertically moving gates and doors for pedestrian use as well as for vehicles, garage doors and **windows**.

Drives placed on the market as partly completed machines should not be installed by the final user. In case of partly completed machines, reference should be made to the specific procedures of the Machinery Directive; this document can be used as guidance.

This document does not deal with any specific requirements on noise emitted from **drives** for gates, doors and **windows** as the generated noise is not considered to be a relevant hazard.

With European Amendment A11, EN 60335-2-103:2015 is superseded.

This European Amendment A11 supplements or modifies the corresponding clauses of the standards below:

— EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A14:2019+A2:2019+A15:2021+FprA16:—¹
(Part 1)

— EN IEC 60335-2-103:2023+A1:2023+A2:2023 (Part 2) **A11**

¹ To be published in 2023. Stage at the time of publication: FprEN 60335-1:2012/A16:2021.

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, garage doors and **windows** for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase **drives** and A1 600 A1 V for other **drives**. A11 It also covers the hazards generated by the power transmission of the **drive** to the **driven part** of horizontally and vertically moving gates and doors, pedestrian doors and windows for household and similar purposes.

Hazards associated with the movement of the **driven part** of horizontally and vertically moving gates and doors for household and similar purposes, are covered by this document and EN 12453.

Hazards associated with the movement of the **driven part** of pedestrian doors are covered by this document and EN 16005.

Hazards associated with the movement of the **driven part** of windows are covered by this document. A11

Battery-operated drives and other d.c. supplied **drives** are within the scope of this standard. Dual supply **drives**, either mains-supplied or battery-operated, are regarded as battery-operated **drives** when operated in the battery mode.

Drives not intended for normal household use but which nevertheless may be a source of danger to the public, such as **drives** intended to be used by laymen in shops, offices, hotels, restaurants, hospitals, in industry and on farms, are within the scope of this standard.

A11 NOTE Z101 Household environment includes the dwelling and its associated buildings, the garden, etc. A11

Requirements for **drives** for doors that may be used in emergency routes and exits are given in A11 EN 16005. A11

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**.

A11 NOTE Z102 Attention is drawn to the fact that for drives for powered pedestrians doors used in emergency routes and exits additional requirements as given in EN 16005 are applicable. A11

A11 This document deals with the reasonably foreseeable hazards presented by **drives** that are encountered by all persons in and around the installation place. However, in general, it does not take into account:

- **children** playing with the appliance;
- the use of the appliance by **very young children**;
- the use of the appliance by **young children** without supervision.

It is recognized that **very vulnerable people** can have needs beyond the level addressed in this document. **A11**

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 shutters covering doors and **windows** (including locations where the door is set back from the shutter), 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 doors;
- for natural smoke exhaust ventilators not used as **windows** **A11** (EN 12101-2) **A11**;
- intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

A11 – for side curtains ventilation systems

- for doors on vehicles;
- lock gates and dock gates;
- doors on lifts;
- armoured doors;
- doors mainly for the retention of animals, unless they are at the site perimeter;
- theatre textile curtains;
- doors outside the reach of people (such as crane gantry fences);
- barriers;
- doors used in industrial processes;
- partition walls;
- turnstiles;
- platform doors. **A11**

NOTE 105 This standard does not apply to movement of a pedestrian door where such movement is based solely on stored energy.

A11 NOTE Z103 Within the document the terms **drive** and appliance are interchangeable. **A11**

A11 Products covered by this document and installed according to the manufacturer instructions do not create a noise hazard. **A11**

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

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

IEC 60825-1:2014, *Safety of laser products – Part 1: Equipment classification and requirements*

A11 Text deleted **A11**

[A11] EN 12978:2003+A1:2009, *Industrial, commercial and garage doors and gates - Safety devices for power operated doors and gates - Requirements and test methods*

EN 16005:2012², *Power operated pedestrian doorsets - Safety in use - Requirements and test methods*

EN 12453:2017+A1:2021, *Industrial, commercial and garage doors and gates. Safety in use of power operated doors. Requirements and test methods* **[A11]**

3 Terms and 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 1 to entry: Examples of components are gears, controls, brakes, components for power transmission from the **drive** to the **driven part** and **entrapment protection systems**.

[A11] Note Z101 to entry: Examples of components for power transmission from the **drive** to the **driven part**: trolleys, rails, levers, etc. **[A11]**

3.102

driven part

part of a gate, door, garage door or **window** that is intended to be moved by the **drive**

3.103

window

part in a building that opens and closes in order to regulate the air and light and that 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 1 to entry: 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**cycle**

complete opening and closing movement of the **driven part**

A11 For revolving doors a **cycle** means the necessary rotation to allow a person to pass through it. **A11**

Note 1 to entry: For revolving doors a **cycle** means the necessary rotation to allow a person to pass through it.

3.108**entrapment protection system**

part of the **drive** that protects against crushing

Note 1 to entry: An **entrapment protection system** may consist of one or more devices, such as pressure sensitive edges, passive infrared and active light sensing devices, **biased-off switches** or motor current monitoring devices.

Note 2 to entry: An **entrapment protection system** may be incorporated in the motor assembly or installed separately.

A11 Note Z101 to entry: Trapping is covered by the manual release of BB.20.102, CC.20.101 or DD.20.102 as applicable. **A11**

3.109**biased-off switch**

hold to run device that initiates and maintains the **drive** movement only as long as the manual control is actuated **A11** by the user **A11**

3.110**automatic drive**

drive that operates the **driven part** in at least one direction without intentional activation by the user

3.111**horizontally moving pedestrian door**

swinging, sliding or rotating door **A11** intended **A11** for pedestrian use

3.112**reversible drive**

drive that can be manually operated with or without power in both directions by manual action on the **driven part**

A2 3.113**main closing edge**

edge(s) of a pedestrian door leaf, whose distance from a parallel **opposing closing edge** or surface determines the usable pathway

3.114**opposing closing edge**

edge(s) of a pedestrian door leaf formed by the **main closing edge** and a fixed edge or a surface against which the pedestrian door leaf is moving **A2**

4 General requirement

A11 This clause of Part 1 is applicable except as follows.

Modification:

Add at the end of the first paragraph of Part 1:

Drives shall also be constructed in such a way that they ensure transportation, installation, adjusting, maintenance may be carried out safely. **A11**

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.*

5.3 Modification:

Add at the end of the clause of Part 1:

*When a **drive** incorporates a sub-assembly or a part which has already been tested against relevant clause(s) of this document, those tests need not be repeated, if the incorporation of the sub-assembly or part into the **drive** does not change the performance of the sub-assembly or part. *

5.5 Addition:

 *When a test has to be carried out with a **driven part** with a wicket door, this is kept in the safe position during the tests.*

Safe position of a wicket door is the fully closed position when it travels together with the door or the fully open or completely removed position when it does not travel with the door. 

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, BB.20.101, BB.20.105, BB.20.106, BB.20.107, BB.20.109, CC.20.103, CC.20.104, CC.20.105, CC.20.106, DD.20.105, DD.20.106, DD.20.107, DD.20.108, and 21 are carried out at the most unfavourable marked temperature.*

5.101 Drives shall be tested for compliance with this standard for any of the following modes of operation as intended by the manufacturer:

- automatic operation (operation in at least one direction without intentional activation by the user);
- impulse activation (operation in either direction with an intentional activation by the user);
- biased-off (hold to run) operation.

Whenever required by the instructions, components shall be added or changed to perform the tests.

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:

Replace the fourth and fifth dashed items in Part 1 as follows:

- Trade mark or identification mark. Business name and postal address or code of the manufacturer and, where applicable, his authorized representative. When, due to the size of the **drive**, this is not possible, trade mark or identification mark are acceptable on the product and business name and full address are included in the instructions;
- Model or type reference, serial number, if any, and production year;

NOTE Z101 Production year is the year when the production process is completed. The production year can be part of the serial number.

Add the following new dashed item after the eight dash in Part 1:

- designation of the **drive**. The designation enables the identification of the drive as specified in the instructions and may be the generic denomination and function of the product (e.g. the terms used in the title of this document – drive for window, drive for gate, etc. – may be used) or a combination of letters and/or numbers. 

Addition:

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

- the **rated load**, in newtons (N) or in newton-metres (Nm), unless the **drive** is supplied with a **driven part**;
- the **rated number of operating cycles** or the **cycles** per hour, unless the **drive** is intended for continuous operation. 

7.6 Addition:



[symbol ISO 7000-0533 (2004-01)]

upper limit of temperature



[symbol ISO 7000-0534 (2004-01)]

lower limit of temperature

7.12 Modification:

Replace the first sentence of the first paragraph in Part 1 by:

The specific instructions related to the safe operation of this drive (as given in 7.12) shall be collated together in the front section of the user instructions, or in a separate dedicated document.

Add the following text after the first paragraph in Part 1:

The instructions shall contain at least the following information: 

- the business name and full address of the manufacturer, if relevant explanation of code and, where applicable, his authorized representative;
- model or type reference of the drive as marked on the drive itself, except for the serial number;
- the possible reasonably foreseeable misuse and, whenever relevant, a warning against the effects it may have on the safe use of the drive;
- designation of the drive together with its explanation if it is composed by a combination of letters and/or numbers. A11

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.

A11 **WARNING:** the drive shall be disconnected from its power source during cleaning, maintenance and when replacing parts. A11

A2 The instructions shall state the substance of the following:

- A11 do not allow children to play with door/gate controls. Keep remote controls away from children;
- watch the moving door/gate and keep people away until the door is completely opened or closed (not necessary for automatic drives); A11
- activation of the manual release may cause uncontrolled movement of the **driven part** due to mechanical failures or an out-of-balance condition; (if applicable);
- when operating a **biased-off switch**, make sure that other persons are kept away;
- when closing a window that has been opened by a smoke control system, make sure that other persons are kept away;
- frequently examine the installation for imbalance where applicable and signs of wear or damage to cables, springs and mounting. Do not use if repair or adjustment is necessary;
- A11 *Text deleted* A11

The instructions shall include the following information:

- explanation of mode indicators;
- details on how to use any manual release, or **reversible drive** used as a manual release;
- details on how to re-adjust controls, (if applicable);
- where the operation of the **drive** is specified in **cycles** per hour, the rest period required between **cycles**. A2

A11 The instructions shall state that the A-weighted emission sound pressure level of the drive is equal to or less than 70 dB(A), e.g. by writing $L_{pA} \leq 70 \text{ dB(A)}$.

NOTE Z101 The influence of the sound pressure level from the structure including the driven part, to which the drive will be connected to, is not considered. A11

7.12.1 Addition:

The installation instructions shall state the substance of the following:

WARNING: Important safety instructions. Follow all instructions since incorrect installation can lead to severe injury.