

# SLOVENSKI STANDARD

## SIST EN 60335-2-103:2015

01-april-2015

Nadomešča:

SIST EN 60335-2-103:2003

SIST EN 60335-2-103:2003/A11:2009

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**Gospodinjski in podobni električni aparati - Varnost - 2-103. del: Posebne zahteve za pogonske sklope vrat in oken**

Household and similar electrical appliances - Safety -- Part 2-103: Particular requirements for drives for gates, doors and windows

**iTeh STANDARD PREVIEW**

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

[SIST EN 60335-2-103:2015](#)

Appareils électrodomestiques et analogues - Sécurité -- Partie 2-103: Règles particulières pour les motorisations de portails, portes et fenêtres

**Ta slovenski standard je istoveten z: EN 60335-2-103:2015**

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**ICS:**

13.120	Varnost na domu	Domestic safety
91.060.50	Vrata in okna	Doors and windows

**SIST EN 60335-2-103:2015** en

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EUROPEAN STANDARD

**EN 60335-2-103**

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2015

ICS 13.120; 91.060.50

Supersedes EN 60335-2-103:2003

English Version

## Household and similar electrical appliances - Safety - Part 2-103: Particular requirements for drives for gates, doors and windows (IEC 60335-2-103:2006 , modified + A1:2010 , modified)

Appareils électrodomestiques et analogues - Sécurité -  
Partie 2-103: Règles particulières pour les motorisations de  
portails, portes et fenêtres  
(CEI 60335-2-103:2006 , modifiée + A1:2010 , modifiée)

Sicherheit elektrischer Geräte für den Hausgebrauch und  
ähnliche Zwecke - Teil 2-103: Besondere Anforderungen für  
Antriebe für Tore, Türen und Fenster  
(IEC 60335-2-103:2006 , modifiziert + A1:2010 , modifiziert)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

This document (EN 60335-2-103:2015) consists of the text of IEC 60335-2-103:2006 + A1:2010 prepared by IEC/TC 61 "Safety of household and similar electrical appliances", together with the common modifications prepared by CLC/TC 61 "Safety of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2015-09-29  
at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2017-09-29

This document supersedes EN 60335-2-103:2003 + A11:2009.

The principal changes as compared with EN 60335-2-103:2003 + A11:2009 are as follows. Minor changes are not listed.

- Adds definitions for automatic drive, horizontally moving pedestrian door and reversible drive (3.109, 3.110, 3.111).
- Clarifies the marking requirements for reversible drives and horizontal moving pedestrian doors (7.12 and 7.12.1).
- Clarifies requirements for the use of a biased-off switch (19.11.2, 20.109, 22.107).
- Clarifies the mechanical hazard requirements for drives (20.105, 20.107 to 20.107.2.3).
- Adds requirements for the use of pressure sensitive pads (20.107.1.4, Figure 102).
- Modifies the requirements for batteries supplied with automatic opening doors (22.204.2 in Annex AA).

This Part 2 is to be used in conjunction with EN 60335-1:2012.

NOTE 1 When "Part 1" is mentioned in this standard, it refers to EN 60335-1.

This Part 2 supplements or modifies the corresponding clauses in EN 60335-1, so as to convert that publication into the European Standard: *Safety requirements for 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" it is to be understood as addition or modification or replacement to the published IEC Part 2, unless the introductory sentence mentions Part 1.

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.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

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.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 60335-2-103:2006 + A1:2010 are prefixed "Z".

CENELEC draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning entrapment protection systems defined in 3.107 and the particular function to override an entrapment protection system under fault conditions as described in 19.11.2 and 22.107.

CENELEC takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured CENELEC that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from:

The Chamberlain Group Inc.  
845 Larch Avenue  
Elmhurst, IL 60126  
USA

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

### Endorsement notice

The text of the International Standard IEC 60335-2-103:2006 + A1:2010 was approved by CENELEC as a European Standard with agreed common modifications.

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COMMON MODIFICATIONS  
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## Introduction

*Add:*

This European Standard has been prepared to provide a means of conforming to essential safety requirements of the Machinery Directive 2006/42/EC. Other requirements and other EU Directives may be applicable to the drives falling within the scope of this standard.

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

Therefore, compliance with the requirements of EN 60335-1 and of this Part 2 gives presumption of conformity of the product with the Essential Health and Safety Requirements (EHSR) of Directive 2006/42/EC as stated in Annex ZZ.

Drives put on the market as machines may be installed by the final user. The requirements of this standard also cover 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 2006/42/EC.

## 1 Scope

*Replacement:*

*This clause of Part 1 is replaced by the following.*

This European 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 480 V for other **drives**. It also covers the hazards associated with the movement of the gates, doors, garage doors and **windows**.

NOTE Z101 Battery-operated appliances and other d.c. supplied appliances are within the scope of this standard.

NOTE Z102 Examples of places where gates, doors, garage doors and **windows** for household environment may also be used by non-expert users:

- shops, offices and other working environments
- farm houses;
- hotels, motels and other residential type environments where they are used by clients;
- bed and breakfast type environments.

NOTE Z103 Household environment includes the dwelling and its associated buildings, the garden, etc.

**Drives** being part of power operated doors, gates, **windows** and garage doors which are intended to be used by trained users in shops, in light industry and on farms, are also within the scope of this standard.

NOTE Z104 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 Z105 **Drives** may be supplied with a **driven part**.

NOTE Z106 Within the standard the terms **drive** and appliance are interchangeable.

This standard 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** may have needs beyond the level addressed in this standard.

NOTE Z107 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 Z108 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.

NOTE Z109 This standard does not apply to **drives**

- for vertically moving garage doors for residential use (EN 60335-2-95);
- for rolling shutters, awnings, blinds and similar equipment (EN 60335-2-97);
- for specific purposes, such as fire barrier doors;
- for doors on vehicles;
- for doors on lifts;
- for natural smoke exhaust ventilator not used as **windows** (EN 12101-2)

NOTE Z110 This standard does not apply to movement of a pedestrian door where such movement is based solely on stored mechanical energy.

This European Standard does not deal with any specific requirements on noise emitted from these drives as the generated noise is not considered to be a relevant hazard. Thus the emission sound pressure level  $L_{pA}$  is considered to be  $L_{pA} \leq 70$  dB(A).

## 2 Normative references

Add the following references:

EN 16005:2012, *Power operated pedestrian doorsets – Safety in use – Requirements and test methods*

EN 12978, *Industrial, commercial and garage doors and gates – Safety devices for power operated doors and gates – Requirements and test methods*

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Delete footnote to the text.

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**3 Definitions** <https://standards.iteh.ai/catalog/standards/sist/758b1041-1006-4e15-8c09-f918b513d10/sist-en-60335-2-103-2015>

**3.101** Replace the text of the note to entry by the following:

Examples of components are gears, controls, brakes, components for power transmission from the drive to the **driven part** (e.g. trolleys, rails, levers, etc.) and **entrapment protection systems**.

**3.102** Replace the definition by the following:

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

**3.106** Add the following note:

Note Z101 to entry: For **driven parts**, other than revolving ones, a cycle consists of a complete opening and closing movement. For revolving doors a cycle means the necessary rotation to allow a person to pass through it.

**3.107** Modification:

**entrapment protection system**

system that provides protection against crushing

Addition:

Note Z101 to entry: Trapping is covered by the manual release of 20.ZAA.3, 20.ZBB.3 or 20.ZCC.3 as applicable.

**3.108 Replacement:****biased-off switch**

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

**3.110 Modification**

Void

**3.111 Modification:****reversible drive**

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

*Add the following new definitions:*

**3.Z101****mode of operation**

way the movement of the **driven part** is initiated

**3.Z102****cycle**

complete opening and closing movement of the driven part. For revolving doors the cycle means the necessary rotation to allow the person to pass through

**4 General requirement**

*Add to the first paragraph:*

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

**5 General conditions for the tests****5.3 Addition:**

*When a **drive** incorporates a sub-assembly or a part which has already been tested against relevant clause(s) of this standard, 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 Replace the addition by:**

*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 complete removed position when it does not travel with the door.*

**5.7 Replace the addition by:**

*If the drive is marked with an ambient temperature range beyond the range of +5 °C to +40 °C, the tests of Clauses 11, 13, 21 and the appropriate clauses 20.ZAA.6 to 20.ZAA.9, 20.ZBB.6 to 20.ZBB.9 and 20.ZCC.6 to 20.ZCC.9 are carried out at the most unfavourable temperature*

Add one new sub-clause:

**5.Z101 Drives** shall be tested for compliance with this standard for any of the following **modes of operation** as intended by the manufacturer.

**Modes of operation** are:

- automatic operation (only one activation needed for at least one cycle);
- impulse operation (one activation needed for a movement);
- biased-off (hold to run) operation.

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

## 7 Marking and instructions

### 7.1 Delete the text

“Modification

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

#### 7.1 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;
- 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.

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Replace the addition by the following: [SIST EN 60335-2-103:2015](https://standards.iteh.ai/catalog/standards/sist/en-60335-2-103-2015)

**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.
- 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 standard – drive for **window**, drive for gate, etc. - may be used) or a combination of letters and/or numbers.

#### 7.12 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 appliance;
- designation of the **drive** together with its explanation if it is composed by a combination of letters and/or numbers.

*Add after the first warning the new warning:*

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

*Replace the first dashed item by:*

- do not allow children to play with the appliance or its controls, including remotes;

*Replace the 6<sup>th</sup> dashed item with the following:*

- details on how to re-adjust controls if the re-adjustment is intended to be carried out by the user;

*Delete the last dashed item.*

*Add after the dashed items:*

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.

#### **7.12.Z1 Modification:**

*Replace the first sentence of the first paragraph by:*

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

**7.12.1** *Replace the paragraph after the warning by the following:*

The installation instructions shall specify all components needed for compliance with this standard. When components are not delivered with the drive, the instructions shall either give reference needed to correctly identify these components or give reference to a website, catalogue or similar where details shall be made available.

*Replace the third dashed item by the following:*

- information if a hazardous part of the drive is intended to be installed at a height of at least 2,5 m above floor level or other access level;

*Replace the fourth dashed item by the following:*

- that the drive cannot be used with a **driven part** incorporating a wicket door unless the drive can only be operated with the wicket door in the safe position;

*Replace the sentence after the four bullet points in the sixth dashed item by the following:*

If these distances cannot be achieved, safeguarding is needed;

*Delete the seventh dashed item.*

*Replace the eighth dashed item by the following:*

- details for the installation of the **drive**, including any separately installed protection devices or deformable edges;

*Add the following new dashed item:*

- a list of all components included in the **drive** when the **drive** is delivered not assembled.

Add the following new paragraphs:

The installation instructions shall contain a specification of the type of gate, door, garage door or **window drive** is intended for, size and mass of the **driven part** or mass of the **driven part** and torque required and position(s) where the **drive** can be installed.

When applicable, the installation instructions shall also inform about the need of safeguarding against dropping and/or uncontrolled movements of vertical operating doors and gates.

## 8 Protection against access to live parts

*Replacement:*

This clause of Part 1 is applicable except as follows.

### 8.2 Addition:

**Basic insulation** and parts separated from **live parts** by **basic insulation** may be touched during adjustment, if a **tool** is needed to gain access to the adjustment means.

## 11 Heating

11.7 Replace the second paragraph starting with “Other **drives**” by the following:

**Drives** not for continuous operation are operated as follows:

- **Drives** for gates for one household and horizontally moving garage doors for one household:
  - **drives** are operated without rest periods for three cycles or the **rated number of operating cycles**, whichever is longer.
- **Drives for windows:**
  - **drives** are operated without rest periods for the **rated number of operating cycles** declared by the manufacturer.
- **Other drives:** <https://standards.iteh.ai/catalog/standards/sist/758b1041-1006-4e15-8c09-fc918b513d10/sist-en-60335-2-103-2015>
  - **drives** are operated without rest periods for the **rated number of operating cycles** but for not less than five **cycles** of operation.
  - **drives** not suitable for operation without rest period are operated for 20% more than the rated number of **cycles** per hour and relevant rest period declared by the manufacturer.

## 15 Moisture resistance

### 15.1.2 Modification

In the addition, delete “**IPX4**” at the beginning of the sentence.

## 19 Abnormal operation

19.10 Delete the addition.

**19.11.2 Replacement:**

If the **drive** can be operated when any of the fault conditions are simulated, the applicable tests of the following are carried out:

- 20. ZAA.5 and 20.ZAA.8 for **drives** for **windows** or,
- 20. ZBB.8 for drives for pedestrian doors or,
- 20. ZCC.5 and 20.ZCC.8 for **drives** for doors, garage doors and gates,

the **drive** being supplied at **rated voltage**.

Either the **drive** continues to fulfil the requirements, or, after a maximum of one cycle of operation, it shall stop with the **driven part** in a safe position, or the **drive** shall change to a **biased-off switch mode of operation**.

**19.11.4.8 Add the following note:**

NOTE Z101 Same point of operating cycle should be understood as the same movement of the operating cycle (i.e. closing or opening) and not as the same point of the travelling of the **driven part**.

**20 Stability and mechanical hazards**

Replace the whole clause with all subclauses by the following:

The requirements of Clause 20 are contained in the following annexes:

- Annex ZAA for **drives** for **windows**;
- Annex ZBB for **drives** for pedestrian doors;
- Annex ZCC for **drives** for doors, garage doors and gates.

**21 Mechanical strength** [SIST EN 60335-2-103:2015](https://standards.iteh.ai/catalog/standards/sist/758b1041-1006-4e15-8c09-fc918b513d10/sist-en-60335-2-103-2015)

Replacement:

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This clause of Part 1 is applicable except as follows.

**21.1 Replace the first paragraph by the following:**

**Drives** shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use, during transportation, assembly, dismantling, scrapping and any other action involving the **drive**.

**22 Construction****22.102 Add after the first sentence:**

When the **drive** is provided with a dedicated stop button, that stop button shall be unambiguously identifiable.

**22.103 Replace the requirement by the following:**

When several **modes of operation** can be selected by the user, the selected mode shall be clearly indicated.

**22.105 Replace the word “open” by “not in the safe position”.**

Add the following new subclauses:

**22.Z101** The fixing systems of fixed **guards** shall only be removable with the use of tools.

The fixing systems shall remain attached to the guards or to the machinery when the guards are removed.

Where possible, guards shall be incapable of remaining in place without their fixings.

*Compliance is checked by inspection.*

## 24 Components

*Add the following new subclause:*

**24.Z101** *Entrapment protection equipment in compliance with EN 12978 is considered to fulfill the requirements of Clauses 8, 11, 15 and 19 of this standard.*

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**Annex AA**  
(normative)

**Drives for powered pedestrians doors  
used in emergency routes and exits**

*Delete Annex AA.*

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Add the following new annexes:

## Annex ZAA (normative)

### Stability and mechanical hazards for drives for windows

#### 20 Stability and mechanical hazards

Clause 20 of Part 1 is applicable except as follows.

**20.1** Not applicable

**20.2** *Addition:*

Moving parts of **drives** intended to be installed at a height of at least 2,5 m above the ground or other access level are considered to be positioned so to provide adequate protection against personal injury in normal use.

NOTE Z101 Stairs and terraces are examples of access levels. Surfaces not normally used for standing on, such as **window-sills**, and movable equipment such as ladders, are not considered to be access levels.

*Add the following new subclauses.*

**20.ZAA.1** **Drives** shall prevent vertically moving **windows** from closing unexpectedly.

*Compliance is checked by the following test.*

*The **drive** is supplied at the most unfavourable voltage between 0,94 and 1,06 times **rated voltage** but is not operated. Automatic operation of **automatic drives** is disabled. It is loaded with 1,2 times the **rated load** applied for 30 min. If the **drive** is supplied with a **window**, the load is applied to the **window** and is equal to the highest force exerted by it.*

*There shall be no movement except for initial removal of any play in the system.*

*If there is **creepage** in the **drive**, the **window** shall not move faster than 1mm/s.*

NOTE ZAA.1 The highest force is determined with the **window** in the most unfavourable position, the **drive** not being energized.

NOTE ZAA.2 It is to be noted that compliance with this clause does not necessarily cover risks due to operation of the **window**, anti-drop or equivalent safety devices might be necessary.

*The test is repeated with the power supply disconnected.*

**20.ZAA.2** **Drives** for **windows** shall operate so that the movement of the **window** is not likely to cause an injury.

*Compliance is checked as follows:*

- **drives** controlled by a **biased-off switch**, by the test of 20.ZAA.5;
- **drives** incorporating an **entrapment protection system**, by the relevant tests of 20.ZAA.8 and 20.ZAA.9.

*Other **drives** are subjected to the following test.*

*The **drive** is installed with a **window** and supplied at the most unfavourable voltage between 0,94 and 1,06 times **rated voltage**. The **drive** is adjusted for the highest opening and closing forces, if the adjustment is mentioned in the instructions.*

*The **drive** is operated to open the **window**. The speed of the leading edge shall not exceed 50 mm/s.*

*When fully open, the gap shall not exceed 200 mm, unless the opening movement is controlled by a smoke control system. The **drive** is then operated to close the **window**. The speed of the leading edge shall not exceed 15 mm/s.*

**20.ZAA.3** A manual release or **reversible drive** shall be easy to operate. Operation of the release shall not give rise to a hazard such as kickback or unexpected operation of the **drive**.