

CONSOLIDATED VERSION



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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 13.120; 91.060.50

ISBN 978-2-8322-4963-5

Warning! Make sure that you obtained this publication from an authorized distributor.

REDLINE VERSION



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

CONTENTS

FOREWORD	5
INTRODUCTION	8
1 Scope	9
2 Normative references	10
3 Terms and definitions	10
4 General requirement	11
5 General conditions for the tests	11
6 Classification	12
7 Marking and instructions	12
8 Protection against access to live parts	14
9 Starting of motor-operated appliances	15
10 Power input and current	15
11 Heating	15
12 Void	15
13 Leakage current and electric strength at operating temperature	15
14 Transient overvoltages	16
15 Moisture resistance	16
16 Leakage current and electric strength	16
17 Overload protection of transformers and associated circuits	16
18 Endurance	16
19 Abnormal operation	16
20 Stability and mechanical hazards	17
21 Mechanical strength	17
22 Construction	17
23 Internal wiring	18
24 Components	18
25 Supply connection and external flexible cords	18
26 Terminals for external conductors	19
27 Provision for earthing	19
28 Screws and connections	19
29 Clearances, creepage distances and solid insulation	19
30 Resistance to heat and fire	19
31 Resistance to rusting	20
32 Radiation, toxicity and similar hazards	20
Annexes	23
Annex R (normative) Software evaluation	24
Annex AA (normative) Drives for powered pedestrian doors used in emergency routes and emergency exits	25
Annex DD (normative) Drives for horizontally and vertically moving doors and gates	38
Annex EE (normative) Measuring point for protective devices of horizontally moving pedestrian doors	45
Annex BB (normative) Drives for windows	27

Annex CC (normative) Drives for pedestrian doors.....	33
Annex FF (normative) Reference bodies	54
Annex GG (normative) Test method of entrapment protection system of drives for revolving doors	56
GG.1 Main closing edge/opposing closing edge – no contact protection	56
GG.2 Main closing edge/opposing closing edge – contact protection	56
GG.3 Secondary closing edge/floor	56
GG.4 Main closing edge/inside wall.....	56
Annex HH (normative) Limitation of impact forces of pedestrian doors	57
HH.1 Permissible dynamic forces.....	57
HH.2 Permissible static forces	58
HH.3 Impact force measuring equipment	58
HH.4 Field impact force measuring equipment	59
Annex II (normative) Measuring points for limitation of impact forces of pedestrian doors	60
Annex JJ (normative) Low energy movement of pedestrian doors	63
JJ.1 Low energy movement	63
JJ.1.1 General	63
JJ.1.2 Additional requirements for low-energy movement of hinged and swing doorsets	63
Annex KK (normative) Speed setting for low energy movement of pedestrian doors.....	64
KK.1 Speed settings for low energy power operated swing doorsets.....	64
KK.2 Speed settings for low energy sliding doorsets.....	64
Annex LL (normative) Safeguarding of swing pedestrian doors	66
Bibliography.....	68
Figure 101 – Examples of driven parts	21
Figure 102 – Inactive floor areas of pressure-sensitive pads	22
Figure CC.1 – Safety distances for opening movement of swing door	37
Figure EE.1 – Single-leaf sliding doorset	45
Figure EE.2 – Double-leaf sliding doorset	45
Figure EE.3 – Single-leaf swing doorset.....	46
Figure EE.4 – Double-leaf swing doorset	46
Figure EE.5 – Folding doorset.....	47
Figure EE.6 – Revolving doorset, two leaves	49
Figure EE.7 – Revolving doorset, three leaves.....	51
Figure EE.8 – Revolving doorset, four leaves.....	53
Figure FF.1 – Reference bodies.....	55
Figure HH.1 – Force versus time.....	58
Figure II.1 – Single-leaf sliding doorset	60
Figure II.2 – Double-leaf sliding doorset.....	60
Figure II.3 – Folding doorset	61
Figure II.4 – Revolving doorset, 2-leaf	61
Figure II.5 – Revolving doorset, 3-leaf	62
Figure II.6 – Revolving doorset, 4-leaf	62
Figure LL.1 – Areas of the door sweep.....	66

Table HH.1 – Permissible dynamic forces	57
Table KK.1 – Speed settings.....	64
Table KK.2 – Minimum travelling time per doorset leaf vs. mass of door leaf	65
Table LL.1 – Minimum width of door leaf to be protected vs. radius of doorset and doorset travelling time.....	67

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

DISCLAIMER

This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of IEC 60335-2-103 bears the edition number 3.1. It consists of the third edition (2015-04) [documents 61/4877A/FDIS and 61/4913/RVD] and its amendment 1 (2017-10) [documents 61/5296/CDV and 61/5382A/RVC]. The technical content is identical to the base edition and its amendment.

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

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 amendment 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).

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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 2-103: 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 ~~480~~ 600 V for other **drives**. It also covers the hazards associated with the movement of the **driven part**.

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.

Requirements for **drives** for doors that may be used in emergency routes and exits 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 **drives** 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 **drive** safely without supervision or instruction;
- children playing with the **drive**.

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** (ISO 21927-2);
- intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

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

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*

IEC 61496-3:2008, *Safety of machinery – Electro-sensitive protective equipment – Part 3: Particular requirements for Active Opto-electronic Protective Devices responsive to Diffuse Reflection (AOPDDR)*

FINAL VERSION

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

CONTENTS

FOREWORD	5
INTRODUCTION	7
1 Scope	8
2 Normative references	9
3 Terms and definitions	9
4 General requirement	10
5 General conditions for the tests	10
6 Classification	11
7 Marking and instructions	11
8 Protection against access to live parts	13
9 Starting of motor-operated appliances	14
10 Power input and current	14
11 Heating	14
12 Void	14
13 Leakage current and electric strength at operating temperature	14
14 Transient overvoltages	15
15 Moisture resistance	15
16 Leakage current and electric strength	15
17 Overload protection of transformers and associated circuits	15
18 Endurance	15
19 Abnormal operation	15
20 Stability and mechanical hazards	16
21 Mechanical strength	16
22 Construction	16
23 Internal wiring	17
24 Components	17
25 Supply connection and external flexible cords	17
26 Terminals for external conductors	18
27 Provision for earthing	18
28 Screws and connections	18
29 Clearances, creepage distances and solid insulation	18
30 Resistance to heat and fire	18
31 Resistance to rusting	19
32 Radiation, toxicity and similar hazards	19
Annexes	22
Annex R (normative) Software evaluation	23
Annex AA (normative) Drives for powered pedestrian doors used in emergency routes and emergency exits	24
Annex DD (normative) Drives for horizontally and vertically moving doors and gates	37
Annex EE (normative) Measuring point for protective devices of horizontally moving pedestrian doors	44
Annex BB (normative) Drives for windows	26

Annex CC (normative) Drives for pedestrian doors.....	32
Annex FF (normative) Reference bodies	53
Annex GG (normative) Test method of entrapment protection system of drives for revolving doors	55
GG.1 Main closing edge/opposing closing edge – no contact protection	55
GG.2 Main closing edge/opposing closing edge – contact protection	55
GG.3 Secondary closing edge/floor	55
GG.4 Main closing edge/inside wall.....	55
Annex HH (normative) Limitation of impact forces of pedestrian doors	56
HH.1 Permissible dynamic forces.....	56
HH.2 Permissible static forces	57
HH.3 Impact force measuring equipment	57
HH.4 Field impact force measuring equipment	58
Annex II (normative) Measuring points for limitation of impact forces of pedestrian doors	59
Annex JJ (normative) Low energy movement of pedestrian doors	62
JJ.1 Low energy movement	62
JJ.1.1 General	62
JJ.1.2 Additional requirements for low-energy movement of hinged and swing doorsets	62
Annex KK (normative) Speed setting for low energy movement of pedestrian doors.....	63
KK.1 Speed settings for low energy power operated swing doorsets.....	63
KK.2 Speed settings for low energy sliding doorsets.....	63
Annex LL (normative) Safeguarding of swing pedestrian doors	65
Bibliography.....	67
 Figure 101 – Examples of driven parts	 20
Figure 102 – Inactive floor areas of pressure-sensitive pads	21
Figure CC.1 – Safety distances for opening movement of swing door	36
Figure EE.1 – Single-leaf sliding doorset	44
Figure EE.2 – Double-leaf sliding doorset	44
Figure EE.3 – Single-leaf swing doorset.....	45
Figure EE.4 – Double-leaf swing doorset	45
Figure EE.5 – Folding doorset.....	46
Figure EE.6 – Revolving doorset, two leaves	48
Figure EE.7 – Revolving doorset, three leaves.....	50
Figure EE.8 – Revolving doorset, four leaves.....	52
Figure FF.1 – Reference bodies.....	54
Figure HH.1 – Force versus time.....	57
Figure II.1 – Single-leaf sliding doorset	59
Figure II.2 – Double-leaf sliding doorset.....	59
Figure II.3 – Folding doorset	60
Figure II.4 – Revolving doorset, 2-leaf	60
Figure II.5 – Revolving doorset, 3-leaf	61
Figure II.6 – Revolving doorset, 4-leaf	61
Figure LL.1 – Areas of the door sweep.....	65

Table HH.1 – Permissible dynamic forces	56
Table KK.1 – Speed settings.....	63
Table KK.2 – Minimum travelling time per doorset leaf vs. mass of door leaf	64
Table LL.1 – Minimum width of door leaf to be protected vs. radius of doorset and doorset travelling time.....	66

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

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

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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

DISCLAIMER

This Consolidated version is not an official IEC Standard and has been prepared for user convenience. Only the current versions of the standard and its amendment(s) are to be considered the official documents.

This Consolidated version of IEC 60335-2-103 bears the edition number 3.1. It consists of the third edition (2015-04) [documents 61/4877A/FDIS and 61/4913/RVD] and its amendment 1 (2017-10) [documents 61/5296/CDV and 61/5382A/RVC]. The technical content is identical to the base edition and its amendment.

This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.

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 amendment 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.

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 600 V for other **drives**. It also covers the hazards associated with the movement of the **driven part**.

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.

Requirements for **drives** for doors that may be used in emergency routes and exits 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 **drives** 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 **drive** safely without supervision or instruction;
- children playing with the **drive**.

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** (ISO 21927-2);
- intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas).

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

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*

IEC 61496-3:2008, *Safety of machinery – Electro-sensitive protective equipment – Part 3: Particular requirements for Active Opto-electronic Protective Devices responsive to Diffuse Reflection (AOPDDR)*