

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Household and similar electrical appliances – Safety –
Part 2-97: Particular requirements for drives for rolling shutters, awnings, blinds
and similar equipment**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-97: Règles particulières pour les motorisations de volets, stores,
rideaux et équipements enroulables analogues**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-97: Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-2-97 consists of the second edition (2002) [documents 61/2230/FDIS and 61/2305/RVD], its amendment 1 (2004) [documents 61/2744/FDIS and 61/2796/RVD] and its amendment 2 (2008) [documents 61/3694/FDIS and 61/3748/RVD].

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

It bears the edition number 2.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

The French version of this standard has not been voted upon.

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

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

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for electric drives for rolling shutters, awnings, blinds and similar equipment.

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

NOTE 2 The following numbering system is used:

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

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

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

It is the recommendation of the committee that the content of the amendment 2 be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

- 2 | 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 2-97: Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **drives** for rolling equipment such as shutters, blinds and awnings, intended for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

Drives for equipment with a spring-controlled **driven part**, such as a folding arm awning, are also within the scope of this standard.

NOTE 101 Examples of rolling equipment that can be driven are

- awnings;
- blinds;
- 2 | - grilles covering doors and windows;
- projection screens;
- | - shutters covering doors and windows.

Examples are shown in Figure 101.

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

Appliances not intended for normal household use but that nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry, on farms and on industrial premises, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account playing with the appliance by young children but recognizes that children may be in the vicinity.

NOTE 103 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

NOTE 104 This standard does not apply to

- **drives** for vertically moving garage doors for residential use (IEC 60335-2-95);
- **drives** for rolling doors (IEC 60335-2-103);
- **drives** used in premises such as hangars or in heavy industry;
- **drives** for theatre curtains;
- sliding and trolley jack **drives**.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

60068-2-52:1996, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

normal operation

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

Drives supplied without a **driven part** are operated at **rated torque**.

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

3.101

drive

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

NOTE Examples of components are gears, controls and brakes.

3.102

driven part

movable part, such as a rolling shutter, awning or blind, that is operated by the **drive**

3.103

rated torque

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

3.104

rated operating time

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

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

3.105

rated number of operating cycles

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

3.106

biased-off switch

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

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.101 Drives incorporating a tubular motor that are supplied without a **driven part** are tested using the apparatus described in Figure 102.

NOTE This apparatus is considered to be the **driven part** for the tests of 20.101, 20.102 and 20.103.

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 Addition:

Parts of the **drive** for installation outdoors shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

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

- the **rated torque**, in newton-metres;
- the **rated operating time**, in minutes, unless the appliance is intended for continuous operation.

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

7.12 Addition:

The instructions for **drives** supplied with a **driven part** shall state that the **rated number of operating cycles** is not to be exceeded.

The instructions shall state the substance of the following:

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

The instructions shall include the substance of the following:

- do not allow children to play with fixed controls. Keep remote controls away from children;
- frequently examine the installation for imbalance and signs of wear or damage to cables and springs. Do not use if repair or adjustment is necessary;
- details on how to use the manual release.

The instructions for shutters shall also include the substance of the following:

- watch the moving shutter and keep people away until the shutter is completely closed;
- care should be taken when operating the manual release since an open shutter may fall rapidly due to weak or broken springs.

The instructions for awnings shall state the substance of the following:

Do not operate the awning when maintenance, such as window cleaning, is being carried out in the vicinity.

The instructions for automatically controlled awnings shall state the substance of the following:

Disconnect the awning from the supply when maintenance, such as window cleaning, is being carried out in the vicinity.

2 | *Modification:*

The instruction concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge is not applicable.

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.

The installation instructions shall indicate the type of **driven part** for which the **drive** is intended to be used.

They shall specify the mechanical parts necessary to couple the **drive** to the **driven part**.

NOTE 101 Mechanical parts to take account of variations in the **driven part** can be included in a website, catalogue or similar reference.

The installation instructions shall state the substance of the following:

- before installing the drive, remove any unnecessary cords and disable any equipment not needed for powered operation;
- install the actuating member of a manual release at a height less than 1,8 m;
- that the actuating member of a biased-off switch is to be located within direct sight of the driven part but away from moving parts. It is to be installed at a minimum height of 1,5 m;
- information if the drive is intended to be installed at a height of at least 2,5 m above floor level or other access level.

For **drives** supplied without a **driven part**, the installation instructions shall state the substance of the following:

- that the characteristics of the driven part must be compatible with the rated torque and rated operating time;
- the minimum tube diameter, for tubular drives;
- how to assemble the driven part and how to adjust the controls.

The installation instructions for awnings shall state that a horizontal distance of at least 0,4 m is to be maintained between the fully unrolled driven part and any permanent object.

7.15 Modification:

The marking of tubular **drives** may be concealed after installation.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.2 Modification:

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.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable except as follows.

10.1 Modification:

Instead of determining the mean value, the maximum value of power input is determined, the effect of inrush currents being ignored.

10.2 Modification:

Instead of determining the mean value, the maximum value of the current is determined, inrush currents being ignored.

11 Heating

This clause of Part 1 is applicable except as follows.

11.7 Replacement:

Drives for continuous operation are operated for consecutive cycles until steady conditions are established.

Other **drives** are operated as follows:

- **drives** supplied without a **driven part** are operated without rest periods for the **rated operating time** but for not less than 4 min;
- **drives** supplied with a **driven part** are operated without rest periods for the **rated number of operating cycles** but for not less than two cycles of operation.

12 Void

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.