IEC 60335-2-32

Edition 6.0 2024-09
COMMENTED VERSION

INTERNATIONAL STANDARD

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Household and similar electrical appliances – Safety – Part 2-32: Particular requirements for massage appliances

IEC 60335-2-32:2024-09 CMV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-32: Particular requirements for massage appliances

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 commented version (CMV) of the official standard IEC 60335-2-32:2024 edition 6.0 allows the user to identify the changes made to the previous IEC 60335-2-32:2019 edition 5.0. Furthermore, comments from IEC TC 61 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

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IEC 60335-2-32 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This sixth edition cancels and replaces the fifth edition published in 2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) alignment with IEC 60335-1:2020;

b) conversion of some notes to normative text (Clause 1);

c) application of test probe 19 (8.1.1, 20.2, B.22.3, B.22.4).

The text of this International Standard is based on the following documents:

Draft	Report on voting
61/7267/FDIS	61/7290/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements for massage appliances.

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 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.

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The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

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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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

https://www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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~~ can 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~~ Horizontal publications, basic safety publications and group safety publications 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.~~ 1

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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

– IEC standards published by TC 59 concerning methods of measuring performance;
– CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
– CISPR 14-2 concerning electromagnetic immunity;
– IEC standards published by TC 111 concerning environmental matters. 2

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-32: Particular requirements for massage appliances

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric massage appliances for household and similar purposes, their **rated voltage** being not more than 250 V for single phase appliances and 480 V for other appliances including direct current (DC) supplied appliances and **battery-operated appliances**. **3**

~~NOTE 101~~ Examples of appliances within the scope of this standard are

– foot massagers;
– water filled foot massagers;
– hand-held massagers;
– massage beds;
– massage belts;
– massage chairs;
– massage pads.

Appliances not intended for normal household use but that nevertheless ~~may~~ can be a source of danger to the public, such as appliances intended to be used by ~~laymen~~ laypersons in shops, in light industry and on farms, 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

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

~~NOTE 102~~ Attention is drawn to the fact that

– for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements can 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.

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~~NOTE 103~~ This standard does not apply to

– appliances intended exclusively for industrial purposes;
– appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
– electric foot care appliances that do not contain motors and other electric appliances for the care of skin or hair (IEC 60335-2-23);
– electric appliances for beauty care of persons and intended for household, commercial and similar purposes (IEC 60335-2-115[~~1~~]).

2 Normative references

This clause of Part 1 is applicable except as follows.

IEC 60335-2-17, *Household and similar electrical appliances – Safety – Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances*

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 ~~*Replacement*~~ *Modification:*
normal operation

Replace the first paragraph with the following: **4**

operation of the appliance under the following conditions:

Hand-held appliances are operated with no load other than that imposed by the vibrator head.

Appliances intended to be used under the feet of a sitting person are operated with the platform loaded with a mass of 5 kg, evenly distributed over an area of 100 mm × 300 mm. Appliances incorporating heating elements are operated with two sheets of thermal insulation placed on the foot platform. The sheets of thermal insulation are made of open cell polyether and have dimensions approximately 300 mm × 100 mm × 15 mm. They are positioned together and loaded with an evenly distributed mass of 10 kg. Appliances having a liquid container are filled with water in accordance with the instructions and loaded with a mass of 10 kg.

Note 101 to entry: The open-cell polyether has the following composition:

– cell count $18\ ^{+2}_{0}$ per cm;
– specific mass 30 kg/m^3 $^{+10}_{0}$ %
– hardness 120 N to 170 N at 40 % impression, measured according to ISO 2439.

Appliances intended to be used under the feet of a standing person are operated with the platform loaded with a mass of 90 kg, evenly distributed over an area of 200 mm × 300 mm.

~~[1] Under preparation. Stage at the time of publication: IEC 60335-2-115/CD:2019.~~

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Massage belts are operated with the belt loaded with a force of 200 N. The force is applied in a horizontal direction by means of a roller, the belt being approximately symmetrical about the roller.

Massage pads are operated with the pad positioned between two layers of felt and placed on a flat horizontal surface. The felt has a thickness of approximately 25 mm, a mass of 4 kg/m^2 ± 0,4 kg/m^2 and extends at least 15 mm beyond the edges of the pad. The upper layer of felt is loaded with a mass of 90 kg, evenly distributed over an area of 300 mm × 300 mm.

Massage chairs are operated without load.

Massage beds are loaded with a mass of 90 kg, evenly distributed over an area of 0,5 m × 2 m.

Foot massage appliances that use water are filled with water at a temperature of 40 °C ± 2 °C.

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable.

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 *Modification:*

Replace the first paragraph with the following:

Portable appliances shall be **class II** or **class III**. **Stationary appliances** shall be **class I**, **class II**, or **class III**.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.12 *Addition:*

The instructions for appliances having heated parts in contact with the skin shall include the substance of the following:

> The appliance has a heated surface. Persons insensitive to heat must be careful when using the appliance.

The instructions for appliances having a liquid container that is filled with water shall include the substance of the following:

> If water leaks from the appliance, the appliance should no longer be used.

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8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

In addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18. **5**

8.1.4 *Addition:*

All energized parts in foot massage appliances that use water are considered to be ***live parts****.*

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.

11 Heating

This clause of Part 1 is applicable except as follows.

11.2 *Modification:*

Replace the fourth paragraph with the following:

Combined appliances *are positioned as specified* ***for motor-operated appliances****.*

11.3 *Addition:*

Where the external ***accessible surfaces*** *are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external* ***accessible surfaces*** *specified in Table 101. The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

11.7 ~~*Replacement*~~ *Modification:*

Replace the first paragraph with the following: **6**

Hand-held appliances *are operated for 20 min.*

Other appliances are operated until steady conditions are established.

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Replace the first dashed item of the third paragraph with the following:

– *the **battery** that has been **fully discharged** is charged while the appliance is operated as specified for 1 h or the time specified, whichever comes first, if allowed by the construction of the appliance;* 7

11.8 ~~*Addition*~~ *Modification:*

Replace the first paragraph with the following:

During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101.

Addition:

The temperature rise of parts in contact with skin or hair shall not exceed the limits specified for handles that are continuously held.

The water temperature at the middle of the water volume shall not exceed 50 °C.

For massage pads with heating elements, the temperature limits specified for heating pads in IEC 60335-2-17 apply.

Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	*Temperature rise of external accessible surfaces* [a, e]	
	Surfaces of appliances situated on the floor	*Surfaces of hand-held appliances and other appliances*
Bare metal	*38*	*42*
Coated metal [b]	*42*	*49*
Glass and ceramic	*51*	*56*
Plastic and plastic coating > 0,4 mm [c, d]	*58*	*62*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.		

[a] *Temperature rises are not measured on the underside of appliances intended to be used on the floor, where these surfaces are inaccessible to a 75 mm diameter probe~~, applied with a force not exceeding 1 N,~~* 8 *having a hemispherical end.*

[b] *Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.*

[c] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.*

[d] *When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.*

[e] *The limits also apply to appliances intended for commercial use, such as those at airports, shopping malls, etc.*

12 ~~Void~~ Charging of metal-ion batteries

This clause of Part 1 is applicable. 9

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13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

13.2 *Modification:*

~~*For **stationary class I appliances**, except **fixed appliances**, the leakage current shall not exceed 0,75 mA.*~~

Replace the last two dashed items of the eighth paragraph with the following and delete the ninth paragraph:

– *for **stationary class I appliances**, except **fixed appliances***	*0,75 mA*
– *for **fixed class I motor-operated appliances***	*3,5 mA*
– *for **fixed class I combined appliances***	*3,5 mA or 0,75 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher* **10**

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.2 *Addition:*

Water filled foot massagers are completely filled with ~~*water containing approximately 1 % NaCl*~~ *the spillage solution* **11** *and are then emptied within 30 s by being tilted or overturned in the most unfavourable way.*

16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

16.2 *Modification:*

~~*For **stationary class I appliances**, except **fixed appliances**, the leakage current shall not exceed 0,75 mA.*~~

Replace the last two dashed items of the fourth paragraph with the following and delete the sixth paragraph:

– *for **stationary class I appliances**, except **fixed appliances***	*0,75 mA*
– *for **fixed class I motor-operated appliances***	*3,5 mA*
– *for **fixed class I combined appliances***	*3,5 mA or 0,75 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher* **12**

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17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 *Addition:*

Appliances incorporating a liquid container that has to be filled by the user are also subjected to the test of 19.101.

19.7 ~~*Modification*~~ *Addition:*

Appliances intended to be used under the feet of a sitting person, massage pads, chairs and beds are operated until steady conditions are established. Other appliances are operated for 30 s.

19.9 Not applicable.

19.10 *Addition:*

*The test is also carried out with **detachable parts** in place.*

19.13 *Addition:*

During the test of 19.101, the temperature rise of the surface of the container shall not exceed 60 K.

19.101 *Appliances incorporating a liquid container that has to be filled by the user are supplied at **rated voltage** and operated without liquid.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Addition:*

***Hand-held appliances** are subjected to the test while placed on their charging stands.*

Modification:

Replace the seventh paragraph with the following:

The appliance shall not overturn unless the appliance or part of the appliance which overturns complies with all of the following:

– *it only contains circuits operating at **safety extra-low voltage** according to 8.1.4;*

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– *it only contains low power circuits according to 19.11.1;*
– *it is dropped from a height of 1 m on a rigidly supported concrete surface 5 times, the appliance being held in different positions likely to occur. After the drops, the appliance or part of the appliance as relevant shall show no damage so that compliance with 15.1 and 20.2 is not impaired;*
– *it has a maximum weight of 450 g when ready for use;*
– *it does not have sharp edges when ready for use. An edge with a radius of 1 mm or more is not considered a sharp edge.*

20.2 *Addition:*

In addition to the use of test probe 18, test probe 19 of IEC 61032 is also applied wherever test probe 18 is used and with the same test conditions used for test probe 18. **13**

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

Appliances intended to be used under the feet of a sitting person are loaded as specified for ***normal operation*** *but with the mass increased to 90 kg. The mass is applied for 30 s.*

Hand-held parts of appliances are also subjected to the test of 21.101.

21.101 *The hand-held part of the appliance is placed in a sling that is constructed by tying together the four corners of a single layer of cheesecloth. The lowest point of the sling is suspended at a height of 900 mm above a concrete or similar hard surface.*

The hand-held part of the appliance in the sling is dropped from a stationary position. The test is carried out a total of five times with the hand-held part of the appliance being positioned so that it falls onto the concrete surface in five different orientations.

The appliance shall not be damaged to such an extent that compliance with 8.1 and Clause 29 is impaired.

22 Construction

This clause of Part 1 is applicable except as follows.

22.101 Appliances shall be constructed so that hair cannot be drawn into the appliance or be entangled in moving parts.

Compliance is checked by inspection.

22.102 Appliances that use water and in which air is circulated shall be constructed so that the water cannot penetrate into the motor and come into contact with **live parts** or **basic insulation**.

Compliance is checked by the following test.

The overflow outlet is blocked and the appliance is filled until water overflows. Non-return valves are rendered inoperative one at a time.

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After the test, there shall be no trace of water on insulation that could result in a reduction of clearances or creepage distances below the values specified in Clause 29.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.2 ~~*Modification*~~ *Addition:*

Massage pads may be fitted with a switch in the flexible cord.

Massage chairs and massage beds may be fitted with a control in the flexible cord, provided that the length of the flexible cord is such that the control cannot make contact with the floor in normal use.

A control that does not contain **live parts** may be fitted in the flexible cord regardless of the length of the cord.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.7 *Addition:*

Flat twin tinsel cord is allowed for **hand-held massage appliances** as long as they are fitted with a non-rewirable plug.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

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30.2 *Modification:*

Replace the two dashed items in the compliance criteria with the following:

– *for massage appliances, 30.2.2 is applicable.*

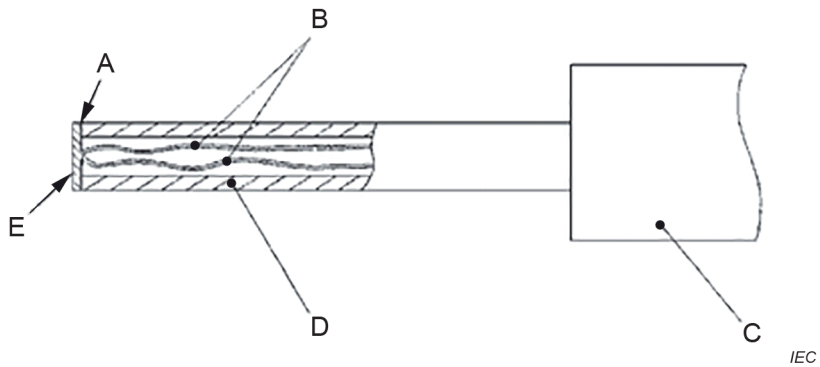
~~**30.2.3** *Not applicable.*~~ **14**

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

A adhesive

B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K ~~(chrome alumel)~~

C handle arrangement permitting a contact force of 4 N ± 1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures

Documents
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Full document details: IEC 60335-2-32 2024 CMV

Annexes

The annexes of Part 1 are applicable except as follows.

Documents
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Full document details: IEC 60335-2-32 2024 CMV