

TECHNICAL REPORT



**Audio/video, information and communication technology equipment –
Part 2: Explanatory information related to IEC 62368-1**



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**AUDIO/VIDEO, INFORMATION AND
COMMUNICATION TECHNOLOGY EQUIPMENT –****Part 2: Explanatory information related to IEC 62368-1:2014**

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IEC 62368-2, which is a technical report, has been prepared by subcommittee TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology.

This second edition cancels and replaces the first edition published in 2011. This edition constitutes a technical revision.

This second edition updates the first edition of IEC 62368-2 published in 2011 to take into account changes made to IEC 62368-1:2010 as identified in the Foreword of IEC 62368-1:2014.

This Technical Report is informative only. In case of a conflict between IEC 62368-1 and IEC TR 62368-2, the requirements in IEC 62368-1 prevail over this Technical Report.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
108/540/DTR	108/553/RVC

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

In this standard, the following print types are used:

- notes/explanatory matter: in smaller roman type;
- tables and figures that are included in the rationale have linked fields (shaded in grey if “field shading” is active).

In this standard, "HBSDT" stands for Hazard Based Standard Development Team, which is the Working Group of TC 108 responsible for the development and maintenance of IEC 62368-1.

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

A list of all parts of the IEC 62368 series can be found, under the general title *Audio/video, information and communication technology equipment*, on the IEC website.

In this document, only those subclauses considered to need further background reference information or explanation of their content to benefit the reader are included. Therefore, not all numbered subclauses are cited. Unless otherwise noted, all references are to clauses, subclauses, annexes, figures or tables are located in IEC 62368-1:2014.

The committee has decided that the contents of this publication 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
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AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT –

Part 2: Explanatory information related to IEC 62368-1:2014

Clause 0 Principles of this product safety standard

Clause 0 is informational and provides a rationale for the normative clauses of the standard.

0.5.1 General

ISO IEC Guide 51:2014, 6.3.5 states:

“When reducing risks the order of priority shall be as follows:

- a) inherently safe design;*
- b) guards and protective devices;*
- c) information for end users.*

Inherently safe design measures are the first and most important step in the risk reduction process. This is because protective measures inherent to the characteristics of the product or system are likely to remain effective, whereas experience has shown that even well-designed guards and protective devices can fail or be violated and information for use might not be followed.

Guards and protective devices shall be used whenever an inherently safe design measure does not reasonably make it possible either to remove hazards or to sufficiently reduce risks. Complementary protective measures involving additional equipment (for example, emergency stop equipment) might have to be implemented.

The end user has a role to play in the risk reduction procedure by complying with the information provided by the designer/supplier. However, information for use shall not be a substitute for the correct application of inherently safe design measures, guards or complementary protective measures.”

In general, this principle is used in IEC 62368-1. The table below shows a comparison between the hierarchy required in ISO IEC Guide 51 and the hierarchy used in IEC 62368-1:2014:

ISO IEC Guide 51	IEC 62368-1
a) inherently safe design	1. inherently safe design by limiting all energy hazards to class 1
b) guards and protective devices	2. equipment safeguards
	3. installation safeguards
c) information for end users	4. behavioral safeguards
	5. instructional safeguards

0.5.7 Equipment safeguards during skilled person service conditions

Purpose: To explain the intent of requirements for providing safeguards against involuntary reaction.

Rationale: By definition, a skilled person has the education and experience to identify all class 3 energy sources to which he may be exposed. However, while servicing one class 3 energy source in one location, a skilled person may be exposed to another class 3 energy source in a different location.

In such a situation, either of two events is possible. First, something may cause an involuntary reaction of the skilled person with the consequences of contact with the class 3 energy source in the different location. Second, the space in which the skilled person is located may be small and cramped, and inadvertent contact with a class 3 energy source in the different location may be likely.

In such situations, this standard may require an equipment safeguard solely for the protection of a skilled person while performing servicing activity.

Clause 1 Scope

Purpose: To identify the purpose and applicability of this standard and the exclusions from the scope.

Rationale: The scope excludes requirements for functional safety. Functional safety is addressed in IEC 61508-1. Because the scope includes computers that may control safety systems, functional safety requirements would necessarily include requirements for computer processes and software.

Clause 2 Normative references

The list of normative references is a list of all documents that have a normative reference to it in the body of the standard. As such, referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Recently, there were some issues with test houses that wanted to use the latest edition as soon as it was published. As this creates serious problems for manufacturers, since they have no chance to prepare, it was felt that a reasonable transition period should be taken into account. This is in line with earlier decisions taken by the SMB that allow transition periods to be mentioned in the foreword of the standards. Therefore TC 108 decided to indicate this in the introduction of the normative references clause, to instruct test houses to take into account any transition period, effective date or date of withdrawal established for the document.

These documents are referenced, in whole, in part or as alternative requirements to the requirements contained in this standard. Their use is specified, where necessary, for the application of the requirements of this standard.

Clause 3 Terms, definitions and abbreviations

Rationale is provided for definitions that deviate from IEC 60050 definitions or from pilot standard definitions.

3.3.2.1 electrical enclosure

Source: IEC 60050-195:1998, 195-06-13

Purpose: To support the concept of safeguards as used in this standard.

Rationale: The definition is modified to use the term “safeguard” in place of the word “protection”. The word “safeguard” identifies a physical “thing” whereas the word “protection” identifies the act of protecting. This standard sets forth requirements for use of physical safeguards and requirements for those safeguards. The safeguards provide “protection” against injury from the equipment.

3.3.5.1 basic insulation

Source: IEC 60050-195:1998,195-06-06

Purpose: To support the concept of safeguards as used in this standard.

Rationale: The definition is modified to use the term “safeguard” in place of the word “protection”. The word “safeguard” identifies a physical “thing” whereas the word “protection” identifies the act of protecting. This standard sets forth requirements for use of physical safeguards and requirements for those safeguards. The safeguards provide “protection” against injury from the equipment.

3.3.5.2 double insulation

Source: IEC 60050-195:1998,195-06-08

Purpose: To support the concept of safeguards as used in this standard.

Rationale: See 3.3.5.1, basic insulation.

3.3.5.5 solid insulation

Source: IEC 60664-1:2007, 3.4

Purpose: To support the concept that safeguards are interposed between an energy source and a body part.

Rationale: IEC 60664-1 defines insulation as material interposed between two conductive parts. The IEC 60664-1 definition is modified by adding that insulation is also “between a conductive part and a body part.” For safety purposes, solid insulation is not only used between conductors, but is also used between a conductor and a body part. For example, a Class II equipment employs solid insulation in this manner.

3.3.5.6 supplementary insulation

Source: IEC 60050-195:1998, 195-06-07

Purpose: To support the concept of safeguards as used in this standard.

Rationale: See 3.3.5.1, basic insulation.

3.3.6.7 restricted access area

Source: IEC 60050-195:1998, 195-04-04

Purpose: To use the concept of “instructed persons” and “skilled persons” as used in this standard.

Rationale: The definition is modified to use the terms “instructed persons” and “skilled persons” rather than “electrically instructed persons” and “electrically skilled persons.”

3.3.7.8 reasonably foreseeable misuse

Source: ISO IEC Guide 51:2014, definition 3.14

Rationale: Misuse depends on personal objectives, personal perception of the equipment, and the possible use of the equipment (in a manner not intended by the manufacturer) to accomplish those personal objectives. Equipment within the scope of this standard ranges from small handheld equipment to large, permanently installed equipment. There is no commonality among the equipment for readily predicting human behaviour leading to misuse of the equipment and resultant injury. Where a possible reasonably foreseeable misuse that may lead to an injury is not covered by the requirements of the standard, manufacturers are encouraged to consider reasonably foreseeable misuse of equipment and provide safeguards, as applicable, to prevent injury in the event of such misuse. (Not all reasonably foreseeable misuse of equipment results in injury or potential for injury.)

3.3.8.1 instructed person

Source: IEC 60050-826:2004, 826-18-02

Rationale: The definition is modified to use the terms “energy sources”, “skilled person”, and “precautionary safeguard”. The definition is made stronger by using the term “instructed” rather than “advised”.

3.3.8.3 skilled person

Source: IEC 60050-826:2004, 826-18-01

Rationale: The definition is modified to use the phrase “to reduce the likelihood of”. IEC 62368-1 does not use the word “hazard”.

3.3.14.4 prospective touch voltage

Source: IEC 60050-195:1998, 195-05-09

Purpose: To properly identify electric shock energy source voltages.

Rationale: The definition is modified to delete “animal”. The word “person” is also deleted as all of the requirements in the standard are with respect to persons.

3.3.14.9 working voltage

Source: IEC 60664-1:2007, definition 3.5

Purpose: To distinguish between r.m.s. working voltage and peak working voltage.

Rationale: The IEC 60664-1 definition is modified to delete “r.m.s”. IEC 62368-1 uses both r.m.s. working voltage and peak working voltage; each term is defined.

3.3.15.2 class II construction

Source: IEC 60335-1:2010, 3.3.11

Purpose: Although the term is not used in the standard, for completeness, it was decided to retain this definition.

Rationale: The word “appliance” is changed to “equipment”.

Clause 4 General requirements

Purpose: To explain how to investigate and determine whether or not safety is involved.

Rationale: In order to establish whether or not safety is involved, the circuits and construction are investigated to determine whether the consequences of possible fault conditions would lead to an injury. Safety is involved if, as a result of a single fault condition, the consequences of the fault lead to a risk of injury.

If a fault condition should lead to a risk of injury, the part, material, or device whose fault was simulated may comprise a safeguard.

Rationale is provided for questions regarding the omission of some traditional requirements appearing in other safety standards. Rationale is also provided for further explanation of new concepts and requirements in this standard.

Reasonable foreseeable misuse

Rationale: Apart from Annex M, this standard does not specifically mention foreseeable misuse. Nevertheless, the requirements of the standard cover many kinds of foreseeable misuse, such as covering of ventilation openings, paper jams, stalled motors etc.