

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Audio/video, information and communication technology equipment –
Part 3: Safety aspects for DC power transfer through communication cables and
ports**

**Équipements des technologies de l'audio/vidéo, de l'information et de la
communication –**

**Partie 3: Aspects liés à la sécurité relatifs au transfert de puissance en courant
continu au moyen de câbles et d'accès de communication**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT –

Part 3: Safety aspects for DC power transfer through communication cables and ports

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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International Standard IEC 62368-3 has been prepared by IEC technical committee 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology.

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

FDIS	Report on voting
108/695/FDIS	108/696/RVD

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

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

This International Standard is to be used in conjunction with IEC 62368-1:2014.

It has the status of a group safety publication in accordance with IEC Guide 104.

The subclauses of IEC 62368-1 apply as far as reasonable. Where safety aspects are similar to those of IEC 62368-1, the relevant clause or subclause of IEC 62368-1 is given for reference in a note in the relevant subclause. Where a requirement in IEC 62368-3 refers to a requirement or criterion of IEC 62368-1, a specific reference to IEC 62368-1 is made.

In this standard, the following print types are used:

- requirements proper and normative annexes: in roman type;
- *compliance statements and test specifications: in italic type;*
- notes and other informative matter: in smaller roman type;
- normative conditions within tables: in smaller roman type;
- terms that are defined in Clause 3 and in IEC 62368-1:2014: in **bold type**.

The following differing practices of a less permanent nature exist in the countries indicated below.

- 6.1: other requirements apply regarding power transfer using RFT (US);
- 6.3.3.1: regarding separation from other circuits and parts, see note in 4.1.15 of IEC 62368-1:2014 (Norway);
- A.1: RFT-V systems and requirements (North America).

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

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

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

AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT –

Part 3: Safety aspects for DC power transfer through communication cables and ports

1 Scope

This part of IEC 62368 applies to equipment intended to supply and receive operating power through communication cables or ports. It covers particular requirements for circuits that are designed to transfer DC power from a **power sourcing equipment (PSE)** to a **powered device (PD)**.

The power transfer uses voltages at ES1 or ES2 or in very specific cases voltage levels at ES3.

NOTE 1 ES1 can generally be assumed to have similar limits as non-hazardous voltage definitions used in other standards (for example, SELV, PELV).

NOTE 2 ES2 can generally be assumed to have similar limits for **single fault conditions** as non-hazardous voltage definitions used in other standards.

NOTE 3 PS2 circuits are generally expected to provide less than 100 W to an undefined load under both **normal operating conditions** and **single fault conditions**.

EXAMPLES

- For power transfer using voltages at ES1: USB, PoE, ISDN S0, etc.
- For power transfer using voltages at ES2: analogue telephone during ringing, ISDN U, etc.
- For power transfer using voltages at ES3: power feeding used by communications service providers and utilities communication circuits (for example, RFT circuits, such as line powered HDSLx, SHDSLx, VDSLx and G.fast).

NOTE 4 Any cable provided with a connector defined by an industry standard that permits DC power transfer between equipment is considered a communication cable even if communication does not take place. For example, a USB cable can be used just to recharge a portable device **battery**.

This group safety publication is primarily intended to be used as a product safety standard for the products mentioned in the scope, but shall also be used by technical committees in the preparation of standards for products similar to those mentioned in the scope of this standard, in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications and/or group safety publications in the preparation of its publications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62368-1:2014, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62368-1:2014 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1.1

power sourcing equipment

PSE

equipment, other than dedicated external power supply units intended to supply specific equipment within the scope of IEC 62368-1, supplying DC power to other equipment through communication cables or ports

Note 1 to entry: It should be noted that the IEEE 802.3-2015 standard has a similar but different definition.

Note 2 to entry: This note applies to the French language only.

3.1.2

powered device

PD

equipment supplied DC power by a **PSE** through communication cables or ports

Note 1 to entry: It should be noted that the IEEE 802.3-2015 standard has a similar but different definition.

Note 2 to entry: Some in line devices may just function as a **PSE** to inject power into the cable connecting to **PD** equipment. IEEE 802.3-2015 identifies such devices as Midspan **PSE**.

Note 3 to entry: Some **PD** equipment may also have a **PSE** output to pass on unused power to other **PD** equipment.

Note 4 to entry: This note applies to the French language only.

3.1.3

information and communication technology network

ICT network

metallically terminated transmission medium and its associated equipment and communication cables

Note 1 to entry: The cable consists of two or more conductors intended for communication and/or power transfer between the various pieces of equipment. The equipment may be located within the same or separate structures, buildings or locations, excluding:

- the mains system for supply, transmission and distribution of electrical power, if used as a communication transmission medium;
- a dedicated HBES/BACS network.

Note 2 to entry: This may include twisted pairs, and may include circuits, that are subjected to transients as indicated by ID1 in Table 14 of IEC 62368-1:2014 (assumed to be 1,5 kV).

Note 3 to entry: An **ICT network** may be:

- publicly or privately owned;
- subject to longitudinal (common mode) voltages induced from nearby power lines or electric traction lines.

Note 4 to entry: Examples of **ICT networks** are: