

**Information and Communication
Technology Equipment – Part 1: Safety Requirements,
UL 62368-1**

Section 3
Terms and Definitions

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Safety Requirements, UL 62368-1

- **Background**

- Is intended to ultimately **replace** IEC 60065 and IEC 60950-1;
- IEC Standard initially published in 2010 with a minimum five (5) year effective date that is being recommended by IEC TC108;
- Its Test Report Form (**TRF**) has been published;
- Publication of national standards based on IEC 62368-1 expected to follow after the publication of IEC 62368-1.
 - It is hoped that National/Regional Committees will adopt effective dates that will coincide with the effective date timing recommended by IEC TC108, but this cannot be guaranteed.
 - Since the five-year transition period is the **best case scenario**, there's no guarantee that one or more **regulators** will not adopt the standard sooner.
 - **Retailers** and other major **customers** may demand a product to be certified to IEC 62368-1 sooner than the transition period.

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- **Background**
 - **IEC 62368-1/UL 62368-1**
 - New Safety Standard for
 - **Consumer Electronic** (Audio/Video) Apparatus,
 - **Information Technology Equipment**, and
 - **Communication Technology Equipment**
 - **NOT** a simple merger of IEC 60065 and IEC 60950-1
 - **IEC 62368-1 published 2010-01-21**
 - (www.ansi.org – cost \$370 US)
 - **UL 62368-1 published 2012-2-17**
 - (www.comm-2000.com – cost \$579 US)
 - **CSA 62368-1-12 published 2012-2-17**
 - (www.shop.csa.ca – cost \$330 US)

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- **Background**

- **IEC 62368-1**

- Its **scope** is broad and inclusive of the current IEC 60065 and IEC 60950-1.
- Follows a different approach to safety using **HBSE** principles – but it is not a full HBSE or Risk Based standard – it relies on performance tests to demonstrate safety.
- It's Hazard Based approach is different than that of the more prescriptive approach taken by the existing standards, i.e., IEC 60065 and IEC 60950-1.

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- **Workshop Format**
 - **Series of presentations**
 - **Each presentation will go thru the standard, Section by Section**
 - **Section 0, Principles of Product Safety,**
 - **Section 1, Scope (skip)**
 - **Section 2, Normative References (skip)**
 - **Section 3, Terms and Definitions**
 - **Section 4, General Requirements**
 - **Section 5, Electrically Caused Injuries**
 - **Section 6,**
 - **Open discussion**

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- **3.2.1 Terms in alphabetical order**
 - **Term Description**
 - ES Electrical energy source
 - ES1 Electrical energy source class 1
 - ES2 Electrical energy source class 2
 - ES3 Electrical energy source class 3

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- **3.2.1 Terms in alphabetical order**
 - **Term Description**
 - MS Mechanical energy source
 - MS1 Mechanical energy source class 1
 - MS2 Mechanical energy source class 2
 - MS3 Mechanical energy source class 3

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- **3.2.1 Terms in alphabetical order**
 - **Term Description**
 - PS Power source see 6.2
 - PS1 Power source class 1
 - PS2 Power source class 2
 - PS3 Power source class 3

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- **3.2.1 Terms in alphabetical order**
 - **Term Description**
 - RS Radiation energy source see 10.2
 - RS1 Radiation energy source class 1
 - RS2 Radiation energy source class 2
 - RS3 Radiation energy source class 3

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- **3.2.1 Terms in alphabetical order**
 - **Term Description**
 - TS Thermal energy source see 9.2
 - TS1 Thermal energy source class 1
 - TS2 Thermal energy source class 2
 - TS3 Thermal energy source class 3

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- **3.3.1 Circuit terms**
 - **3.3.1.1 external circuit – electrical circuit that is external to the equipment and is not mains**
 - **NOTE An external circuit is classified as ES1, ES2 or ES3, and PS1, PS2, or PS3.**

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- **3.3.1 Circuit terms**

- **3.3.1.2 mains – a.c. or d.c. power distribution system (external to the equipment) that supplies** operating power to the equipment and is PS3

- **NOTE Mains include public or private utilities and, unless otherwise specified in this standard, equivalent sources such as motor driven generators and uninterruptible power supplies.**

- **3.3.1.2DV D2 Modify 3.3.1.2 by adding the following text:**

- **3.3.1.3DV.1 telecommunication network – metallicly terminated transmission medium intended for communication between equipment that may be located in separate buildings, excluding:**
 - – the mains system for supply, transmission and distribution of electrical power, if used as a telecommunication transmission medium;
 - – cable distribution systems;
 - – ES1 circuits connecting units of audio/video, information and communication technology equipment.

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- **3.3.3 Equipment terms**
 - **3.3.3.5 pluggable equipment type A – equipment that is intended for connection to the mains via a non-industrial plug and socket-outlet (IEC/TR 60083 or national equivalent) or via a non-industrial appliance coupler (IEC 60320-1), or both**
 - **3.3.3.5DV DE Modify 3.3.3.5 by adding the following NOTE:**
 - **NOTE 1-15, 2-15, 2-20, 5-15 and 5-20 plugs and outlets as specified in IEC/TR 60083 are considered to be non-industrial within the meaning of this standard.**

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- **3.3.6 Miscellaneous**
 - **3.3.6.6 restricted access area – area accessible only to skilled persons and instructed persons with the proper authorization**

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- **3.3.7 Operating and fault conditions**
 - **3.3.7.8 reasonably foreseeable misuse – use of a product, process or service in a way not intended** by the supplier, but which may result from readily predictable human behaviour

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- **3.3.8 Persons**

- **3.3.8.1 instructed person – person instructed or supervised by a skilled person as to energy sources and who can responsibly employ equipment and precautionary safeguards with respect to those energy sources**
 - NOTE Supervised, as used in the definition, means having the direction and oversight of the performance of others.
- **3.3.8.2 ordinary person – person who is neither a skilled person nor an instructed person**
- **3.3.8.3 skilled person – person with relevant education or experience to enable him or her to avoid dangers and to reduce the likelihood of risks that may be created by the equipment**

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- **3.3.9 Potential ignition sources**
 - **3.3.9.1 potential ignition source PIS – location where electrical energy can cause ignition**
 - **3.3.9.2 arcing PIS – location where an arc may occur due to the opening of a conductor or a contact**
 - NOTE 1 An electronic protection circuit or additional constructional measures may be used to prevent a location from becoming an **arcing PIS**.
 - NOTE 2 A faulty contact or interruption in an electric connection that may occur in conductive patterns on printed boards is considered to be within the scope of this definition.
 - **3.3.9.3 resistive PIS – location where a component may ignite due to excessive power dissipation**

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- **3.3.11 Safeguards**

- **3.3.11.1 basic safeguard – safeguard that provides protection under normal operating conditions and under abnormal operating conditions whenever an energy source capable of causing pain or injury is present in the equipment**
- **3.3.11.2 double safeguard – safeguard comprising both a basic safeguard and a supplementary safeguard**
- **3.3.11.3 equipment safeguard – safeguard that is a physical part of the equipment**

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- **3.3.11 Safeguards**

- **3.3.11.4 installation safeguard – safeguard that is a physical part of a man-made installation**
- **3.3.11.5 instructional safeguard – instruction invoking specified behaviour to avoid contact with or exposure to a class 2 or class 3 energy source (see 4.2)**
- **3.3.11.6 personal safeguard – personal protective equipment that is worn on the body**
- **3.3.11.7 precautionary safeguard – instructed person behaviour to avoid contact with or exposure to a class 2 energy source based on supervision or instructions given by a skilled person**

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- **3.3.11 Safeguards**
 - **3.3.11.11 reinforced safeguard – single safeguard that is operational under:**
 - – normal operating conditions,
 - – abnormal operating conditions, and
 - – single fault conditions

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- **3.3.11 Safeguards**

- **3.3.11.14 skill safeguard – skilled person behaviour to avoid contact with or exposure to a class 2 or class 3 energy source based on education and experience**
- **3.3.11.15 supplementary safeguard – safeguard applied in addition to the basic safeguard that is or becomes operational in the event of failure of the basic safeguard**

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- **3.3.11 Safeguards**

- **3.3.16.5 personal protective equipment – PPE – personal safeguard, typically worn on the body, that reduces the known exposure of a person to a class 3 energy source**

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