EN 60950-1:2006

standard upgrade

Upgrade of standard for Information Technology Equipment (ITE) certified according to EN 60950-1

The Low Voltage Directive and EN 60950-1

"….All products in the scope of the Low Voltage Directive for CE-marking in Europe must be in line with the standards as listed in the OJ of the EU…":

Current version of the standard: **EN60950-1:2006+A11**

- After 01/24/2013: **EN60950-1:2006+A11:2009+A12:2011**
- After 03/01/2013: **EN60950-1:2006+A11:2009+A12:2011+A1:2010**

Corrigendum 1 August 2012 !

The Low Voltage Directive and EN 60950-1

History:

EN 60950-1:2002 (1st ED) + A11

EN 60950-1:**2006 (2nd ED)** + A11

EN 60950-1:2006 +A11+**A12**

EN 60950-1:2006 + A11+A12+A1

12/01/2010

01/24/2013

03/01/2013

IEC/EN 62368-1 Hazardous Based Standard [IT & A/V]

EN 60950-1:2006 / A12

‘A12’ has a new Annex ‘Zx’ and covers “excessive sound pressure from personal music players that are ***closely coupled to the ear***”

=> primarily uses headphones or earphones
=> allows the user to walk around while in use

NOTE: the requirements do not apply to:
→ hearing aid equipment ,
→ professional equipment
→ while connected to an external amplifier
→ analogue w/o digital processing before ‘2015

EN 60950-1:2006 / A12

No safety provisions required for

Equipment provided as a package => ***Acoustic output: $L_{Aeq,T}$ is ≤ 85 dBA***

A personal music player provided with an analogue electrical output socket for a listening device => ***electrical output is ≤ 27 mV***

Provisions are: automatically return to an output level not exceeding those levels above, provide a means to actively inform the user, and have a warning

"to prevent possible hearing damage, do not listen at high volume levels for long periods"

However the output never to exceed:

=> *Acoustic output: LAeq,T is ≤ 100 dBA*

=> *Electrical output is ≤ 150 mV*

EN 60950-1:2006 / A12

- Measurement methods are according to EN50332-1 or EN 50332-2
- ***Wired listening devices with analogue input***: at 94dBA sound pressure output the input voltage shall be ≥ 75 mV
- ***Wired listening devices with digital input:*** respecting the digital interface standard (if existing for specifying the equivalent acoustic level), the acoustic output LAeq,T of the listening device shall be ≤ 100 dBA

EN 60950-1:2006 / A1

- **Portable sound system** (instructions)
- Capacitor ratings & requirements for bridging caps (clarification)
- Resistors bridging double / reinforced insulation (clarification)
- VDR bridging basic insulation (clarification)
- **Separation requirements primary and secondary (correction & clarification)**
- ~~New requirements **rotating solid media**~~ → ***Corrigendum 1 to A1***
- Protection against **moving parts** (shredders & moving fan blades), including instructions
- Annex EE: household and home/office document/media shredders
- **Impact test on flat panel displays** not generally excluded
- Effect of **UV radiation** on materials and human exposure to (clarification)
- **LED's** excluded from IEC/EN60825 and must be evaluated according to IEC62471
- Annex ZB 'special national Conditions': Finland, Norway and Sweden insulation in **TNV circuits**
- Annex CC: evaluation of **integrated circuit (IC) current limiters** (-> cycle tests)
- Annex DD: requirements for the **mounting means of rack-mounted equipment**

EN 60950-1:2006 / A1

- New definition for household and home/office document/media **shredder** (see new requirements in Annex EE)
- Clarification of rules for capacitor ratings, table 1C and 1D (Informative)
- Clarification of note clause 1.5.7.1 (note reworked to address when a single bridging resistor is used
- Clarification clause 1.5.7.2 (resistors bridging DI or RI, reworked paragraph to include where to place ammeter when measuring the limited current circuit)
- New paragraph in clause 1.5.9.4 (permission to use a gas discharge tube (GDT), complying with requirements for FI, in series with a VDR)
- New **marking requirements** in clause 1.7 for products with *multiple mains*, *fan shelves*; *shredder* warnings (see more details below); permission to use PE ground symbol (w/ circle) to identify the separate PE terminal; also instructions and warnings for *portable sound system* (see Amendment A12 discussed before)

EN 60950-1:2006 / A1

- New note 2 in clause 2.4.1 ("..a limited current circuit may be derived from either a primary circuit or a secondary circuit…"
- New *alternate* compliance criterion for positive temperature coefficient device in clause 2.5 b);
- sub-clause c) of 2.5 to include use of an **integrated circuit (IC) current limiter** with reference to Annex CC
- New paragraph in clause 2.8.4 **('safety interlocks'), elaborating on "extreme hazard"** and introducing the use of 'separation distances'; a new 'Note' elaborates on what constitutes a safety interlock system; adding compliance criteria for 'fixed separation distances' in safety interlock system circuits
- Clarification table 2K to add note 'a': "…if the peak working voltage exceeds the peak value of the AC mans supply voltage, use the peak value of the AC mains supply voltage of this column and table 2L regarding additional clearances…"; table 2L added rule for rounding up linear interpolation calculation

EN 60950-1:2006 / A1

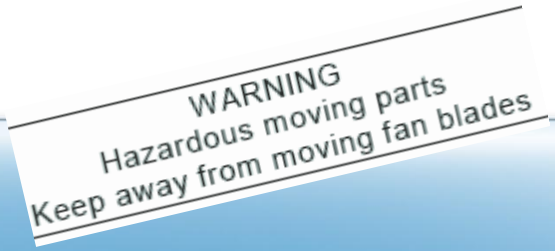
- Minimum clearances in secondary circuits, table 2M: existing value in '7000V'-row ***increased from 7.5 to 17.5mm***
- Clause 2.10.5.5 ('Cemented Joints'), added a qualifier as to where temperature of a printed board is taken (-> "…at any point on the printed board material…")
- Minimum separation distances for coated printed boards, table 2Q, allowing smaller distances at lower peak working voltages, rounding up linear interpolation calculation
- ~~Clause 4.2.11, new construction requirements for rotating solid media (-> speed higher than 8000rpm)~~ ***)**
- Impact test, clause 4.2.5: elaborated on description of ***flat panel displays not to exclude them generally***

  (excluded only if < 0.1m^2 / 450mm, or laminated glass or complies with clause 19.5 of IEC60065)

) *corrigendum 1 to A1 [August 2012]

EN 60950-1:2006 / A1

- Effect of UV radiation, clause 4.3.13.3, 4.3.13.4: elaborated on what constitutes “significant” UV radiation; added exemption for equipment that produces a combination of visible light and UV light under special conditions
- Lasers & LED’s, clause 4.3.13.5: considerations of laser diodes added to the requirements, separate clause for LED’s and to ***distinguish low power LEDs*** from those that produce optical radiation in excess of IEC62471 limits
- New requirements for fan blades, clause 4.4: ***classification of moving fan*** blades relative to their ability to cause injury with new equations for calculating K factor; additional construction, instruction and marking requirements for equipment with moving fan blades in operator- and service access areas
- Annex U (insulated winding wires), expanded coverage to stranded winding wires, before only “...round winding wires…”



EN 60950-1:2006 / A1

- Complete new **Annex CC** for the evaluation of integrated circuit (IC) current limiters (-> cycle tests as called out in individual 'test programs')
- Complete new **Annex DD** for the evaluation of mounting means of rack-mounted equipment, se also clause 4.2.1 (-> evaluation of slide rails)
- Complete new ***Annex EE*** providing additional construction, performance, markings, and compliance criteria for shredders
- **Annex ZB** *(EN-version of 'Amendment 1' covering special national conditions for Finland, Norway and Sweden for TNV circuits* [-> separation requirements, capacitors])

- NOTE: minor editorial changes, clarifications and typos are not discussed

(e.g = clause 2.9.2 for humidity testing allowing a slightly increased humidity range and air temperature tolerance => no impact on existing certification

= clause 4.2.7 for expanding compliance criteria by including the mould stress relief test of IEC 60695-10-3 as an alternative)

EN 60950-1:2006 / A1 → Corrigendum 1

IEC 60950-1:2005 / A1:2009

Corrigendum 1 - Amendment 1 was published on 2012-Aug-16

Major correction: deleting requirements of subclause 4.2.11 "Rotating solid media".

This document constitutes a "Technical Corrigendum": http://www.iec.ch/dyn/www/f?p=103:121:0
(see more details at the end of this document).

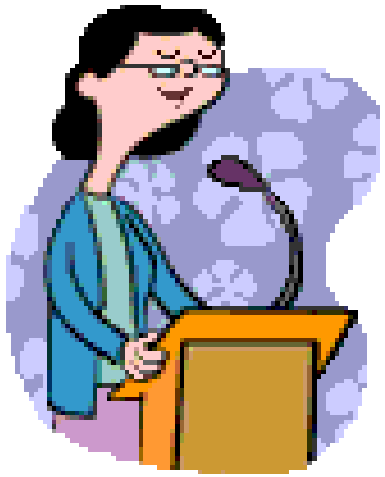
Status for EN 60950-1:2006 / A1:2010

Corrigendum of IEC document has been added to "Reference Document":
http://www.cenelec.eu/dyn/www/f?p=104:110:915540240649457::::FSP_ORG_ID,FSP_PROJECT,FSP_LANG_ID:85,21787,25

Details	
IEC Technical Body	IEC/TC 108
Reference Document	IEC 60950-1:2005/A1:2009 (MOD) + corrigendum Aug. 2012 (EQV)
ICS	35.020 - Information technology (IT) in general 35.260 - Office machines

Thank You!

……Questions:



TUV Rheinland of North America, Inc.
Business Field Electrical
Product Safety

Uwe Meyer
Technical Operations Manager - West
1819 Aston Avenue, Suite 103
Carlsbad, CA 92008, USA
Tel.: (760) 929-1780, Ext. 242#
e-mail: umeyer@us.tuv.com