

EUROPEAN STANDARD

EN 60950-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2001

ICS 35.020;35.260

Supersedes EN 60950:2000

English version

**Information technology equipment -
Safety
Part 1: General requirements
(IEC 60950-1:2001, modified)**

Matériels de traitement de l'information -
Sécurité
Partie 1: Prescriptions générales
(CEI 60950-1:2001, modifiée)

Einrichtungen der Informationstechnik -
Sicherheit
Teil 1: Allgemeine Anforderungen
(IEC 60950-1:2001, modifiziert)

This European Standard was approved by CENELEC on 2001-12-04. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 74/590/FDIS, future edition 1 of IEC 60950-1, prepared by IEC TC 74, Safety and energy efficiency of IT equipment, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60950-1 on 2001-12-04.

A draft amendment, prepared by the Technical Committee CENELEC TC 74, Safety and energy efficiency of information technology equipment, was submitted to the formal vote and was approved by CENELEC for inclusion in EN 60950-1 on 2001-12-04.

This European Standard supersedes EN 60950:2000.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2002-12-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-07-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, C, D, E, F, G, H, J, K, L, M, N, P, U, V, Y, ZA and ZB are normative and annexes Q, R, S, T, W, X and ZC are informative.

Annexes ZA, ZB and ZC have been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60950-1:2001 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

Delete all the "country" notes in the reference document according to the following list:

1.5.1	Note 2	1.5.8	Note 2	1.6.1	Note
1.7.2	Note 4	1.7.12	Note 2	2.1	Note
2.2.3	Note	2.2.4	Note	2.3.2	Note 2, Note 7 & Note 8
2.3.3	Note 1 & Note 2	2.3.4	Note 2 & Note 3	2.7.1	Note
2.10.3.1	Note 4	3.2.1.1	Note	3.2.3	Note 1 & Note 2
3.2.5.1	Note 2	4.3.6	Note 1 & Note 2	4.7.2.2	Note
4.7.3.1	Note 2	6.1.2.1	Note	6.1.2.2	Note
6.2.2	Note	6.2.2.1	Note 2	6.2.2.2	Note
7	Note 4	7.1	Note		
G2.1	Note 1 & Note 2	Annex H	Note 2		

2.7.1 **Replace** the subclause as follows:

Basic requirements

To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):

- a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;
- b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;
- c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.

If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.

2.7.2 This subclause has been declared '**void**'.

2.10.2 **Replace** in the first line "(see also 1.4.7)" by "(see also 1.4.8)".

3.2.3 **Delete** Note 1 and in Table 3A, **delete** the conduit sizes in parentheses.

- 3.2.5.1 **Replace** "60245 IEC 53" by "H05 RR-F";
 "60227 IEC 52" by "H03 VV-F or H03 VVH2-F";
 "60227 IEC 53" by "H05 VV-F or H05 VVH2-F".

In Table 3B, **replace** the first four lines by the following:

Up to and including 6		0,75 ¹⁾
Over 6 up to and including 10	(0,75) ²⁾	1,0
Over 10 up to and including 16	(1,0) ³⁾	1,5

In the Conditions applicable to Table 3B **delete** the words "in some countries" in condition¹⁾.

In Note 1, applicable to Table 3B, **delete** the second sentence.

- 3.3.4 In Table 3D, **delete** the fourth line: conductor sizes for 10 to 13 A, and **replace** with the following:

"| Over 10 up to and including 16 | 1,5 to 2,5 | 1,5 to 4 |"

Delete the fifth line: conductor sizes for 13 to 16 A.

- 4.3.13.6 **Add** the following note:

NOTE Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this Recommendation are currently under development.

- Annex H **Replace** the last paragraph of this annex by:

At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1 µSv/h (0,1 mR/h) (see note). Account is taken of the background level.

Replace the notes as follows:

NOTE These values appear in Directive 96/29/Euratom.

Delete Note 2.

- Annex P **Replace** the text of this annex by:

See annex ZA.

- Annex Q **Replace** the title of IEC 61032 by "Protection of persons and equipment by enclosures – Probes for verification".

Add the following notes for the standards indicated:

IEC 60127	NOTE Harmonized as EN 60127 (Series) (not modified).
IEC 60269-2-1	NOTE Harmonized as HD 630.2.1 S4:2000 (modified).
IEC 60529	NOTE Harmonized as EN 60529:1991 (not modified).
IEC 61032	NOTE Harmonized as EN 61032:1998 (not modified).
IEC 61140	NOTE Harmonized as EN 61140:2001 (not modified).
ITU-T Recommendation K.31	NOTE In Europe, the suggested document is EN 50083-1.

Annex ZA (normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-151	-	International Electrotechnical Vocabulary Part 151: Electrical and magnetic devices	-	-
IEC 60050-195	-	Part 195: Earthing and protection against electric shock	-	-
IEC 60065 (mod)	1998	Audio, video and similar electronic apparatus - Safety requirements	EN 60065 + corr. June	1998 1999
IEC 60073	1996	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indication devices and actuators	EN 60073	1996
IEC 60085	1984	Thermal evaluation and classification of electrical insulation	HD 566 S1	1990
IEC 60112	1979	Method for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions	HD 214 S2	1980
IEC 60216-4-1	1990	Guide for the determination of thermal endurance properties of electrical insulating materials - Part 4: Ageing ovens - Section 1: Single- chamber ovens	HD 611.4.1.S1	1992
IEC 60227 (mod)	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V	HD 21 ¹⁾	Series
IEC 60245 (mod)	Series	Rubber insulated cables of rated voltages up to and including 450/750V	HD 22 ²⁾	Series
IEC 60309	Series	Plugs, socket-outlets and couplers for industrial purposes	EN 60309	Series
IEC 60317-43	1997	Specifications for particular types of winding wires Part 43: Aromatic polyimide tape wrapped round copper wire, class 240	EN 60317-43	1997

1) The HD 21 series is related to, but not directly equivalent with the IEC 60227 series.

2) The HD 22 series is related to, but not directly equivalent with the IEC 60245 series.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60320 (mod)	Series	Appliance couplers for household and similar general purposes	EN 60320	Series
IEC 60364-3 (mod)	1993	Electrical installations of buildings - Part 3: Assessment of general characteristics	HD 384.3 S2	1995
IEC 60364-4-41 (mod)	1992 ³⁾	Part 4: Protection for safety - Chapter 41: Protection against electric shock	HD 384.4.41 S2	1996
IEC 60384-14	1993	Fixed capacitors for use in electronic equipment - Part 14: Sectional specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 132400 ⁴⁾ + A2 + A3 + A4	1994 1998 1998 2001
IEC 60417-1	-	Graphical symbols for use on equipment Part 1: Overview and application	EN 60417-1	-
IEC 60664-1 (mod)	1992	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	HD 625.1 S1 + corr. November	1996 1996
IEC 60695-2-2	1991	Fire hazard testing - Part 2: Test methods - Section 2: Needle-flame test	EN 60695-2-2	1994
IEC 60695-2-11	2000	Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001
IEC 60695-2-20	1995	Part 2: Glowing/hot-wire based test methods Section 20: Hot-wire coil ignitability test on materials	-	-
IEC 60695-10-2	1995	Part 10-2: Guidance and test methods for the minimization of the effects of abnormal heat on electrotechnical products involved in fires - Method for testing products made from non-metallic materials for resistance to heat using the ball pressure test.	-	-
IEC 60695-11-3	2000	Part 11-3: Test flames - 500 W flames: Apparatus and confirmational test methods	-	-
IEC 60695-11-4	2000	Part 11-4: Test flames - 50 W flames: Apparatus and confirmational test methods	-	-
IEC 60695-11-10	1999	Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	1999
IEC 60695-11-20	1999	Part 11-20: Test flames - 500 W flame test methods	EN 60695-11-20	1999

3) IEC 60364-4-41:1992 is superseded by IEC 60364-4-41:2001.

4) EN 132400, *Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D)*, and its amendments are related to, but not directly equivalent to IEC 60384-14.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60730-1 (mod)	1999	Automatic electrical controls for household and similar use - Part 1: General requirements	EN 60730-1	2000
IEC 60825-1	1993	Safety of laser products - Part 1: Equipment classification, requirements and user's guide	EN 60825-1 + corr. February + A11 + corr. July	1994 1995 1996 1997
IEC 60825-2	2000	Part 2: Safety of optical fibre communication systems	EN 60825-2	2000
IEC 60825-9	1999	Part 9: Compilation of maximum permissible exposure to incoherent optical radiation	-	-
IEC 60851-3	1996	Winding wires - Test methods - Part 3: Mechanical properties	EN 60851-3	1996
IEC 60851-5	1996	Part 5: Electrical properties	EN 60851-5	1996
IEC 60851-6	1996	Part 6: Thermal properties	EN 60851-6	1996
IEC 60885-1	1987	Electrical test methods for electric cables - Part 1: Electrical tests for cables, cords and wires for voltages up to and including 450/750 V	-	-
IEC 60990	1999	Methods of measurement of touch current and protective conductor current	EN 60990	1999
IEC 61058-1	2000	Switches for appliances - Part 1: General requirements	-	-
IEC 61965	2000	Mechanical safety of caray tubes	EN 61965	2001
ISO 178	1993	Plastics - Determination of flexural properties	EN ISO 178	1996
ISO 179	Series	Plastics - Determination of Charpy impact strength	EN ISO 179	Series
ISO 180	1993	Plastics - Determination of Izod impact strength	EN ISO 180	2000
ISO 261	1998	ISO general-purpose metric screw threads - General plan	-	-
ISO 262	1998	ISO general-purpose metric screw threads - Selected sizes for screws, bolts and nuts	-	-
ISO 527	Series	Plastics - Determination of tensile properties	EN ISO 527	Series
ISO 3864	1984	Safety colours and safety signs	-	-
ISO 4892	Series	Plastics - Methods of exposure to laboratory light sources	EN ISO 4892	Series
ISO 7000	1989	Graphical symbols for use on equipment - Index and synopsis	-	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 8256	1990	Plastics - Determination of tensile-impact strength	EN ISO 8256	1996
ISO 9772	1994	Cellular plastics - Determination of horizontal burning characteristics of small specimens subjected to a small flame	-	-
ISO 9773	1998	Plastics - Determination of burning behaviour of thin flexible vertical specimens in contact with a small-flame ignition source	EN ISO 9773	1998
ITU-T Recommendation K.17	1988	Tests on power-fed repeaters using solid-state devices in order to check the arrangements for protection from external interference	-	-
ITU-T Recommendation K.21	2000	Resistibility of telecommunication equipment installed in customer's premises to overvoltages and overcurrents	-	-

Annex ZB (normative)

Special national conditions

Special national condition: national characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions. If it affects harmonization, it forms part of the European Standard.

For the countries in which the relevant special national conditions apply, these provisions are normative; for other countries, they are informative.

<u>Clause</u>	<u>Special national condition</u>
1.2.4.1	In Denmark , certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.
1.5.8	In Norway , due to the IT power system used (see annex V, Figure V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).
1.7.2	In Finland, Norway and Sweden , CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet. The marking text in the applicable countries shall be as follows: In Finland : "Laitte on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan " In Norway : "Apparatet må tilkoples jordet stikkontakt" In Sweden : "Apparaten skall anslutas till jordat uttag"
1.7.5	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For STATIONARY EQUIPMENT the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.
2.2.4	In Norway , requirements according to this annex, 1.7.2 and 6.1.2.1 apply.
2.3.2	In Norway , requirements according to this annex, 6.1.2.1 apply.
2.3.3	In Norway , requirements according to this annex, 1.7.2 and 6.1.2.1 apply.
2.3.4	In Norway , requirements according to this annex, 1.7.2 and 6.1.2.1 apply.
2.6.3.3	In the United Kingdom , the current rating of the circuit shall be taken as 13 A, not 16 A.
2.7.1	In the United Kingdom , to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT.
2.10.3.1	In Norway , due to the IT power distribution system used (see annex V, Figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage and will remain at 230 V in case of a single earth fault.

Clause Special national condition

3.2.1.1 In **Switzerland**, supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:

SEV 6532-2.1991	Plug Type 15	3P+N+PE	250/400 V, 10 A
SEV 6533-2.1991	Plug Type 11	L+N	250 V, 10 A
SEV 6534-2.1991	Plug Type 12	L+N+PE	250 V, 10 A

In general, EN 60309 applies for plugs for currents exceeding 10 A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:

SEV 5932-2.1998	Plug Type 25	3L+N+PE	230/400 V, 16 A
SEV 5933-2.1998	Plug Type 21	L+N	250 V, 16 A
SEV 5934-2.1998	Plug Type 23	L+N+PE	250 V, 16 A

In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.

CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.

If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.

In **Spain**, supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.

Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.

CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.

If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.

In the **United Kingdom**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.

NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.

In **Ireland**, apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.

Clause Special national condition

3.2.5.1 In the **United Kingdom**, a power supply cord with conductor of 1,25 mm² is allowed for equipment with a rated current over 10 A and up to and including 13 A.

3.3.4 In the **United Kingdom**, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a RATED CURRENT of over 10 A up to and including 13 A is:
- 1,25 mm² to 1,5 mm² nominal cross-sectional area.

4.3.6 In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 and the plug part of DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C.

In **Ireland**, DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 - National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.

6.1.2.1 In **Finland, Norway and Sweden**, add the following text between the first and second paragraph:

If this insulation is solid, including insulation forming part of a component, it shall at least consist of either

- two layers of thin sheet material, each of which shall pass the electric strength test below, or
- one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.

If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES and CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition

- passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV), and
- is subject to ROUTINE TESTING for electric strength during manufacturing, using a test voltage of 1,5 kV.

It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.

A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:

- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950:2000, 6.2.2.1;
- the additional testing shall be performed on all the test specimens as described in EN 132400;
- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.

<u>Clause</u>	<u>Special national condition</u>
6.1.2.2	In Finland, Norway and Sweden , the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a service person.
7.1	In Finland, Norway and Sweden , requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.
G.2.1	In Norway , due to the IT power distribution system used (see annex V, Figure V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault.

Annex ZC
(informative)

A-deviations

A-deviation: national deviation due to regulations, the alteration of which is for the time being outside the competence of the CENELEC member.

This European Standard falls under Directive 73/23/EEC.

NOTE (from CEN/CENELEC IR Part 2, 3.1.9) Where standards fall under EC Directives, it is the view of the Commission of the European Communities (OJ No. C 59, 9.3.1982) that the effect of the decision of the Court of Justice in case 815/79 Cremonini/Vrankovich (European Court Reports 1980, p.3583) is that compliance with A-deviations is no longer mandatory and that the free movement of products complying with such a standard should not be restricted except under the safeguard procedure provided for in the relevant Directive.

A-deviations in an EFTA-country are valid instead of the relevant provisions of the European Standard in that country until they have been removed.

Clause Deviation

1.5.1 **Sweden** (Ordinance 1990:944)

Add the following:

NOTE In **Sweden**, switches containing mercury such as thermostats, relays and level controllers are not allowed.

Switzerland (Ordinance on environmentally hazardous substances SR 814.013, Annex 3.2, Mercury)

Add the following:

NOTE In **Switzerland**, switches containing mercury such as thermostats, relays and level controllers are not allowed.

1.7.2 **Denmark** (Heavy Current Regulations)

Supply cords of CLASS I EQUIPMENT, which is delivered without a plug, must be provided with a visible tag with the following text:

Vigtigt!
Lederen med grøn/gul isolation
må kun tilsluttes en klemme mærket



eller



If essential for the safety of the equipment, the tag must in addition be provided with a diagram, which shows the connection of the other conductors, or be provided with the following text:

"For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."

1.7.5 **Denmark** (Heavy Current Regulations)

CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.

<u>Clause</u>	<u>Deviation</u>
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| 1.7.12 | <p>Germany (Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment {Equipment safety law}], of 23rd October 1992, Article 3, 3rd paragraph, 2nd sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10th January 1996, article 2, 4th paragraph, item 2).</p> |
|--------|--|

Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.

NOTE Of this requirement, rules for use even only by service personnel are not exempted.

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| 1.7.15 | <p>Switzerland (Ordinance on environmentally hazardous substances SR 814.013)</p> |
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Annex 4.10 of SR 814.013 applies for batteries.

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|---------|---|
| Annex H | <p>Germany (Regulation on protection against hazards by X-ray, of 8th January 1987, Article 5 [Operation of X-ray emission source], clauses 1 to 4)</p> |
|---------|---|

a) A licence is required by those who operate an X-ray emission source.

b) A licence in accordance with clause 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if

- 1) the local dose rate at a distance of 0,1 m from the surface does not exceed 1 μ Sv/h, and
- 2) it is adequately indicated on the X-ray emission source that

- i) X-rays are generated, and
- ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.

c) A licence in accordance with clause 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 kV if

- 1) the X-ray emission source has been granted a type approval, and
- 2) it is adequately indicated on the X-ray emission source that

- i) X-rays are generated,
- ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded, and
- iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.

d) Furthermore, a licence in accordance with clause 1 is also not required by persons who operate X-ray emission sources on which the electron acceleration voltage does not exceed 30 kV if

- 1) the X-rays are generated only by intrinsically safe CRTs complying with Enclosure III, No. 6,
 - 2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measures and specified in the device, and
 - 3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT.
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