TEST REPORT
IEC 60950-1:2005 (2nd Edition); Am 1:2009
EN 60950-1:2006 + A11:2009 + A1:2010+ A12:2011
Information technology equipment – Safety – Part 1: General requirements

Report Reference No......:	**S32933-01-00TJ**
Tested by (name + signature).....:	Thomas Janackovic
Approved by (name + signature) .....:	Josef Kellermeier (Manager Safety Group)
Date of issue.....:	2012-09-10

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Testing Laboratory.....:	mikes testingpartners gmbh
Address.....:	Ohmstrasse 2-4 94342 Strasskirchen Germany
Testing location / address.....:	mikes testingpartners gmbh Ohmstrasse 2-4 94342 Strasskirchen Germany

Applicant's name.....:	Weinzierl Engineering GmbH
Address.....:	Achatz 3 84508 Burgkirchen / Alz Germany

Test specification:	
Standard.....:	**IEC 60950-1:2005 (2nd Edition); Am 1:2009** **EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011**
Test procedure.....:	Compliance Test
Non-standard test method.....:	N/A

Test Report Form No......:	IECEN60950_1C
Test Report Form(s) Originator .....:	SGS Fimko Ltd
Master TRF.....:	2006-06

DAkkS Deutsche Akkreditierungsstelle D-PL-12030-01-02

ilac-MRA

Test item description .....:	IP-Router
Trade Mark .....:	Weinzierl Engineering GmbH
Manufacturer .....:	Weinzierl Engineering GmbH Achatz 3 84508 Burgkirchen / Alz Germany
Model/Type reference.....:	KNX/IP Router 750
Ratings .....:	12-24V AC/DC

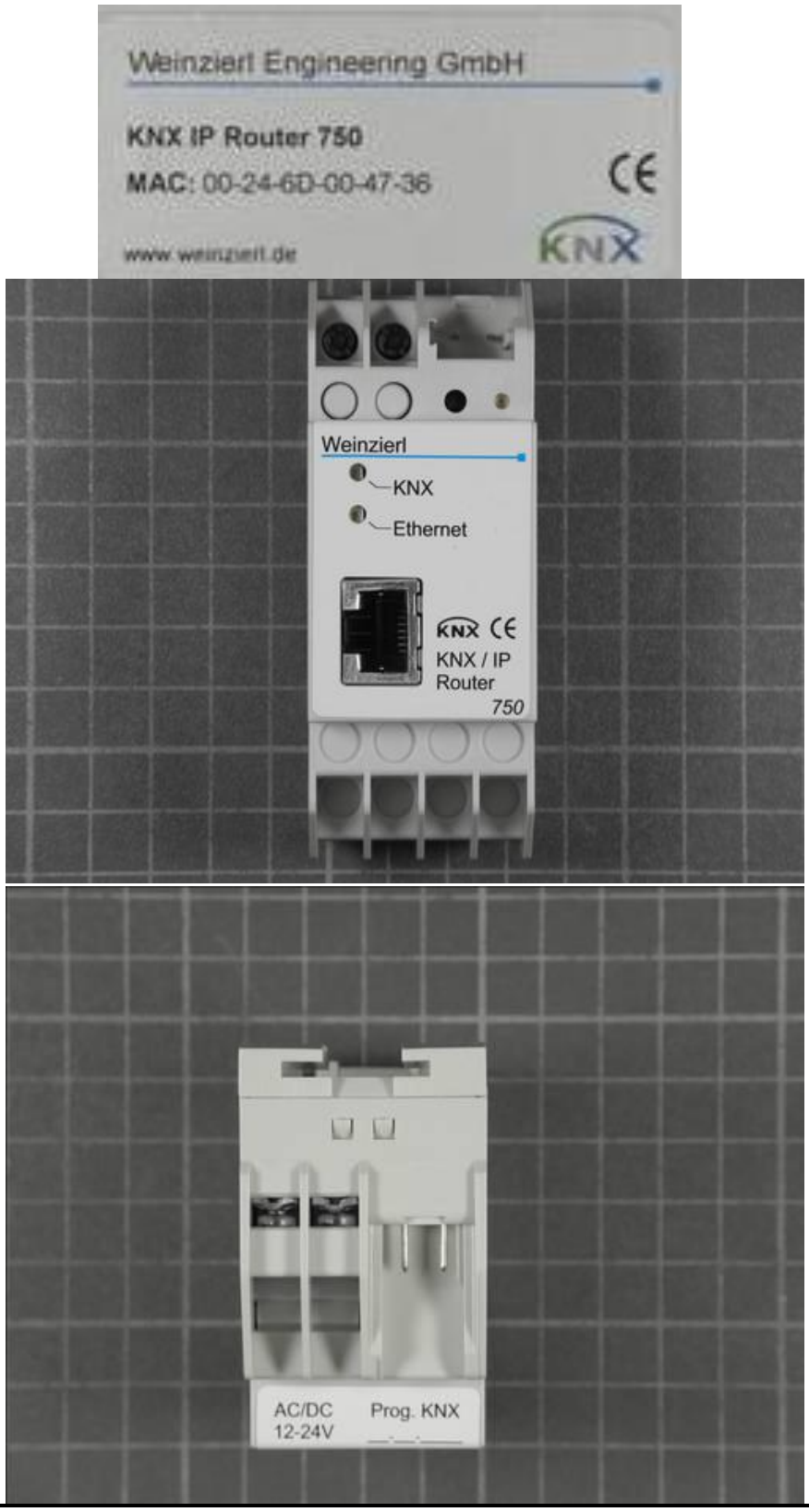
List of Attachments (including a total number of pages in each attachment):

S32933-01-01TJ_Attachment 1_Photo documentation (5 pages)

Summary of testing:

Clause	Requirement + Test	Remark
--	Power supply units	The unit is supplied from a switching power supply unit which is not part of this investigation. All power supplies shall be separate approved according applicable safety standards. e.g. EN 60950-1 Output values shall comply with the requirements according clause 2.5.

Copy of marking plate



Test item particulars.....:	See general product information
Equipment mobility.....:	[] movable [] hand-held [] transportable [x] stationary [] for building-in [] plug-in
Connection to the mains .....:	[] pluggable equipment [] type A [] type B [x] permanent connection [] detachable power supply cord [] non-detachable power supply cord [] not directly connected to the mains
Operating condition.....:	[x] continuous [] rated operating / resting time:
Access location .....:	[x] operator accessible [] restricted access location
Over voltage category (OVC) .....:	[] OVC I [] OVC II [] OVC III [] OVC IV [] other:
Mains supply tolerance (%) or absolute mains supply values .....:	Absolute valuse applied
Tested for IT power systems .....:	[] Yes [x] No
IT testing, phase-phase voltage (V) .....:	N/A
Class of equipment .....:	[] Class I [x] Class II [] Class III [] Not classified
Considered current rating of protective device as part of the building installlation (A) .....:	N/A
Pollution degree (PD) .....:	[] PD 1 [] PD 2 [] PD 3
IP protection class .....:	IP
Altitude during operation (m) .....:	2000 m ü.NN
Altitude of test laboratory (m) .....:	324 m ü.NN
Mass of equipment (kg) .....:	0.080kg
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A (or N)
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item.....:	2012-09-04
Date(s) of performance of tests.....:	2012-09-04 - 2012-09-010

FINAL ASSESSMENT:

The equipment under test **fulfills** the requirements cited in page one “Test specification”.

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was determined for all measurements listed in this test report acc. to GUM („Guide to the Expression of Uncertainty in Measurement“) and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Name and address of factory (ies) ..... : Weinzierl Engineering GmbH
Achatz 3
84508 Burgkirchen / Alz
Germany

General product information:

The EUT (Equipment Under Test) KNX IP Router forwards telegrams between different lines via a rapid LAN (IP) backbone. The KNX IP Router can also be used as an interface for accessing the bus via IP, replacing an RS232 or USB interface. It has an external 12 V to 24 V power supply, which is not part of this investigation, or can alternatively be powered via Power-over-Ethernet.

The EUT consists of following basic parts:

Plastic enclosure (HB Material)
Connector and control PCB (V-0 Material)

T ambient -5°C to + 45 °C

Abbreviations used in the report:

- normal conditions	N.C	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1	**GENERAL**		P
1.5	**Components**		P
1.5.1	General	Refer below:	P
	Comply with IEC 60950-1 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950 and the relevant component standard. Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950.	P
1.5.3	Thermal controls	No Thermal controls inside.	N/A
1.5.4	Transformers	Refer to power supply report.	N/A
1.5.5	Interconnecting cables	The interconnecting cables contain only SELV.	N/A
1.5.6	Capacitors bridging insulation	Equipment supplied by SELV circuits.	N/A
1.5.7	Resistors bridging insulation	No resistors bridging double or reinforced insulation.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation		N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits		N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable		N/A
1.5.8	Components in equipment for IT power systems	DC supplied system.	N/A
1.5.9	Surge suppressors	No such parts inside	N/A
1.5.9.1	General		N/A
1.5.9.2	Protection of VDRs		N/A
1.5.9.3	Bridging of functional insulation by a VDR		N/A
1.5.9.4	Bridging of basic insulation by a VDR		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A
1.6	**Power interface**		P
1.6.1	AC power distribution systems	Only DC supply.	N/A
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	The equipment is not hand-held.	N/A
1.6.4	Neutral conductor	Only DC mains supply.	N/A
1.7	**Marking and instructions**		P
1.7.1	Power rating and identification markings		P
1.7.1.1	Power rating marking	The required marking is located on the outside surface of the equipment.	P
	Multiple mains supply connections.....:	Only single supply.	N/A
	Rated voltage(s) or voltage range(s) (V) .....:	12-24 V	P
	Symbol for nature of supply, for d.c. only.....:	Power over Ethernet	N/A
	Rated frequency or rated frequency range (Hz) ....:	DC supplied	N/A
	Rated current (mA or A) .....:	Power over Ethernet	N/A
1.7.1.2	Identification markings		P
	Manufacturer's name or trade-mark or identification mark .....:	Weinzierl	P
	Model identification or type reference .....:	KNX IP Router 750	P
	Symbol for Class II equipment only .....:	Class III Equipment.	N/A
	Other markings and symbols .....:	--	N/A
1.7.2	Safety instructions and marking		N/A
1.7.2.1	General		N/A
1.7.2.2	Disconnect devices	No disconnect device applied.	N/A
1.7.2.3	Overcurrent protective device	No operator replaceable fuses.	N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool		N/A
1.2.7.6	Ozone	The device produces no ozone during normal or fault condition test.	N/A
1.7.3	Short duty cycles	Inteded for contionous operation.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
1.7.4	Supply voltage adjustment .....:	No voltage selector.	N/A
	Methods and means of adjustment; reference to installation instructions .....:		N/A
1.7.5	Power outlets on the equipment .....:	No power outlets provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....:	EUT is supplied from a limited power source according clause 2.5 No fuse provided.	N/A
1.7.7	Wiring terminals		N/A
1.7.7.1	Protective earthing and bonding terminals .....:	Refer below:	N/A
1.7.7.2	Terminals for a.c. mains supply conductors	No protective earthing or bonding terminal	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	Power over Ethernet	N/A
1.7.8	Controls and indicators	Refer below:	N/A
1.7.8.1	Identification, location and marking .....:	No controls and indicators effecting safety.	N/A
1.7.8.2	Colours .....:	No indicators with colours where safety is involved.	N/A
1.7.8.3	Symbols according to IEC 60417.....:	There is no all pole mains switch applied.	N/A
1.7.8.4	Markings using figures .....:	--	N/A
1.7.9	Isolation of multiple power sources .....:	--	N/A
1.7.10	Thermostats and other regulating devices .....:	No such parst inside.	N/A
1.7.11	Durability	The marking withstands required tests.	P
1.7.12	Removable parts	No removable parts.	N/A
1.7.13	Replaceable batteries .....:	No batteries inside	N/A
	Language(s) .....:	User manual in English language checked.	—
1.7.14	Equipment for restricted access locations.....:	Equipment not intended for installation in RAL.	N/A

2	**PROTECTION FROM HAZARDS**		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Refer below:	P
2.1.1.1	Access to energized parts	Checked by test finger and test pin. Only SELV.	P
	Test by inspection .....:	In compliance with the requirements.	P
	Test with test finger (Figure 2A) .....:	No access possible.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Test with test pin (Figure 2B) .....:	No hazard.	P
	Test with test probe (Figure 2C) .....:	TNV circuits are not accessible.	P
2.1.1.2	Battery compartments	No batteries sindie	N/A
2.1.1.3	Access to ELV wiring	No ELV.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)	(see appended tables 2.10.2 and 2.10.5)	—
2.1.1.4	Access to hazardous voltage circuit wiring	Only SELV Voltage inside.	N/A
2.1.1.5	Energy hazards .....:		N/A
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment		N/A
	Measured voltage (V); time-constant (s).....:		—
2.1.1.8	Energy hazards – d.c. mains supply	EUT is supplied from a limited power source according clause 2.5 No DC Mains	N/A
	a) Capacitor connected to the d.c. mains supply ..:		N/A
	b) Internal battery connected to the d.c. mains supply .....:		
2.1.1.9	Audio amplifiers .....:	No Audio amplifiers inside.	N/A
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations		N/A

2.2	**SELV circuits**		P
2.2.1	General requirements	(see appended table 2.2)	P
2.2.2	Voltages under normal conditions (V) .....:	24V	P
2.2.3	Voltages under fault conditions (V) .....:	24V	P
2.2.4	Connection of SELV circuits to other circuits .....:	SELV to SELV only	P

2.3	**TNV circuits**		P
2.3.1	Limits	Refer below	P
	Type of TNV circuits.....:	TNV 1	—
2.3.2	Separation from other circuits and from accessible parts	Basic	P
2.3.2.1	General requirements	Refer below	P
2.3.2.2	Protection by basic insulation		P
2.3.2.3	Protection by earthing	No earth connection.	N/A
2.3.2.4	Protection by other constructions .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.3.3	Separation from hazardous voltages	SELV only	N/A
	Insulation employed .....:		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed .....:		—
2.3.5	Test for operating voltages generated externally		N/A
2.4	**Limited current circuits**		N/A
2.4.1	General requirements	No such circuits inside.	N/A
2.5	**Limited power sources**		N/A
	a) Inherently limited output	See Summary of testing	N/A
2.6	**Provisions for earthing and bonding**		N/A
2.6.1	Protective earthing	No protective earth or functional earth connection.	N/A
2.7	**Overcurrent and earth fault protection in primary circuits**		N/A
2.7.1	Basic requirements	DC supplied unit. No mains circuits inside.	N/A
2.8	**Safety interlocks**		N/A
2.8.1	General principles	No safety interlocks applied.	N/A
2.9	**Electrical insulation**		P
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used.	P
2.9.2	Humidity conditioning	Humidity treatment performed for 48h.	P
	Relative humidity (%), temperature (°C) .....:	93% r.h; 25°C	—
2.9.3	Grade of insulation	Insulation is considered to be functional.	P
2.9.4	Separation from hazardous voltages	No hazardous voltages inside.	N/A
	Method(s) used .....:	--	—

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Clause	Requirement + Test	Result - Remark	Verdict

2.10	**Clearances, creepage distances and distances through insulation**		P
2.10.1	General	Refer below:	P
2.10.1.1	Frequency ..... :	For all frequencies the values of this sub-clause used	P
2.10.1.2	Pollution degrees ..... :	2	P
2.10.1.3	Reduced values for functional insualtion	For functional insulation in secondary circuits clause 5.3.4 c) was applied.	P
2.10.1.4	Intervening unconnected conductive parts		N/A
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage	Refer below	P
2.10.2.1	General		N/A
2.10.2.2	RMS working voltage	24V DC	P
2.10.2.3	Peak working voltage		N/A
2.10.3	Clearances		P
2.10.3.1	General		P
2.10.3.2	Mains transient voltages	DC supplied	N/A
	a) AC mains supply ..... :	Refer to c)	N/A
	b) Earthed d.c. mains supplies ..... :	2500V	P
	c) Unearthed d.c. mains supplies ..... :	--	N/A
	d) Battery operation ..... :	No primary circuits inside.	N/A
2.10.3.3	Clearances in primary circuits		N/A
2.10.3.4	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.5	Clearances in circuits having starting pulses		N/A
2.10.3.6	Transients from a.c. mains supply ..... :	DC supplied system.	N/A
2.10.3.7	Transients from d.c. mains supply ..... :	see 2.10.3.2	N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems ..... :	No TNV circuits applied.	N/A
2.10.3.9	Measurement of transient voltage levels	Values of Clause 2.10.3.2 used.	N/A
	a) Transients from a mains suplply		N/A
	For an a.c. mains supply ..... :	DC supplied system.	N/A
	For a d.c. mains supply ..... :	--	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Transients from a telecommunication network :	--	N/A
2.10.4	Creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.4.1	General	Refer below:	P
2.10.4.2	Material group and caomparative tracking index	Refer below:	P
	CTI tests ..... :	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances	Clause 5.3.4 c) applied. No hazard.	N/A
2.10.5	**Solid insulation**	Only inside the separate approved power supply units.	N/A
2.10.5.1	General		N/A
2.10.5.2	Distances through insulation		N/A
2.10.5.3	Insulating compound as solid insulation	Not used.	N/A
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints	No such parts applied.	N/A
2.10.5.6	Thin sheet material – General	Ni thinn sheet material.	N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs) ..... :	--	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.11	Insulation in wound components	No wound components.	N/A
2.10.5.12	Wire in wound components		N/A
	Working voltage ..... :		N/A
	a) Basic insulation not under stress ..... :		N/A
	b) Basic, supplemetary, reinforced insulation ..... :		N/A
	c) Compliance with Annex U ..... :		N/A
	Two wires in contact inside wound component; angle between 45° and 90° ..... :		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test	(see appended table 2.10.5)	—
	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Working voltage .....:		N/A
	- Basic insulation not under stress .....:		N/A
	- Supplemetary, reinforced insulation .....:		N/A
2.10.6	**Construction of printed boards**	PCB does not serve as insulation barrier.	N/A
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.2	Coated printed boards	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation	(see appended table 2.10.5)	N/A
	Number of insulation layers (pcs).....:		N/A
2.10.7	**Component external terminations**	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.8	Tests on coated printed boards and coated components	Not applied.	N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test	(see appended table 5.2)	N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	**WIRING, CONNECTIONS AND SUPPLY**		N/A
3.1	General		N/A
3.1.1	Current rating and overcurrent protection	No internal wiring.	N/A

3.2	**Connection to a mains supply**		N/A
3.2.1	Means of connection	DC supplied.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
3.3	**Wiring terminals for connection of external conductors**		P
3.3.1	Wiring terminals		P
3.3.2	Connection of non-detachable power supply cords	Connection only for KNX Bus and RJ 45 connections.	N/A
3.3.3	Screw terminals		P
3.3.4	Conductor sizes to be connected		P
	Rated current (A), cord/cable type, cross-sectional area (mm^2) ..... :	6A; 0.75mm^2; AWG 18	—
3.3.5	Wiring terminal sizes		P
	Rated current (A), type, nominal thread diameter (mm) ..... :	Screwterminal used; M3	—
3.3.6	Wiring terminal design	Adequate connection, checked by inspection.	P
3.3.7	Grouping of wiring terminals	Terminals located in proximity to each other.	P
3.3.8	Stranded wire	Tested, in compliance with the standard.	P
3.4	**Disconnection from the mains supply**		N/A
3.4.1	General requirement	No DC Mains	N/A
3.5	**Interconnection of equipment**		P
3.5.1	General requirements		P
3.5.2	Types of interconnection circuits ..... :	SELV circuit	P
3.5.3	ELV circuits as interconnection circuits	No ELV	N/A
3.5.4	Data ports for additional equipment	KNX BUS and RJ 45 port are tested and comply with the limits according Clause 2.5	P
4	**PHYSICAL REQUIREMENTS**		N/A
4.1	Stability		N/A
	Angle of 10°	EUT is intended for C rail installation.	N/A
	Test force (N) ..... :		N/A
4.2	**Mechanical strength**		P
4.2.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Rack-mounted equipment.	(see Annex DD)	N/A
4.2.2	Steady force test, 10 N	No hazard.	P
4.2.3	Steady force test, 30 N	No internal enclosure.	N/A
4.2.4	Steady force test, 250 N	No hazard. The test is performed at all external surfaces of enclosure.	P
4.2.5	Impact test	Refer below:	P
	Fall test	No hazard as result from the steel sphere fall test.	P
	Swing test	No hazard as result from the steel sphere swing test.	P
4.2.6	Drop test; height (mm) .....:	Drop test not applicable.	N/A
4.2.7	Stress relief test	No hazard occurred.	P
4.2.8	Cathode ray tubes	CRT(s) not used in the equipment.	N/A
	Picture tube separately certified .....:	--	N/A
4.2.9	High pressure lamps	No high pressure lamps in the equipment.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) .....:	Not intended for wall or ceiling installation.	N/A
4.2.11	Rotating solid media	CRT(s) not used in the equipment.	N/A
	Test to cover on the door.....:	--	N/A
4.3	**Design and construction**		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls; force (N) .....:	No knobs, grips, handles, lever etc.	N/A
4.3.3	Adjustable controls	No hazardous adjustable controls.	N/A
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	P
4.3.5	Connection by plugs and sockets	SELV connectors do not comply with IEC 60320 or IEC 60083.	P
4.3.6	Direct plug-in equipment	Not intended to plug directly into a wall socket-outlet.	N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Torque ..... :		N/A
	Compliance with the relevant mains plug standard ..... :		N/A
4.3.7	Heating elements in earthed equipment	No heating elements.	N/A
4.3.8	Batteries	No batteries inside.	N/A
	- Overcharging of a rechargeable battery		N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery		N/A
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N/A
4.3.10	Dust, powders, liquids and gases	The equipment does not contain flammable liquids or gases.	N/A
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N/A
4.3.12	Flammable liquids ..... :	The equipment does not contain flammable liquid.	N/A
	Quantity of liquid (l) ..... :		N/A
	Flash point (°C) ..... :		N/A
4.3.13	Radiation	Refer below:	N/A
4.3.13.1	General	Refer below:	N/A
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N/A
	Measured radiation (pA/kg) ..... :		—
	Measured high-voltage (kV) ..... :		—
	Measured focus voltage (kV) ..... :		—
	CRT markings ..... :		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce significant UV radiation.	N/A
	Part, property, retention after test, flammability classification ..... :	--	N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation ..... :	The equipment does not produce significant UV radiation.	N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	No LED	N/A
4.3.13.5.1	Lasers (including laser laser diodes)	--	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Laser class ..... :		N/A
4.3.13.5.2	Light emitting diodes (LEDs)	LED's are provided are diffuse.	P
4.3.13.6	Other types ..... :	The equipment does not generate other types of radiation.	N/A
4.4	**Protection against hazardous moving parts**		N/A
4.4.1	General	No moving parts.	N/A
4.5	**Thermal requirements**		P
4.5.1	General	Refer below:	P
4.5.2	Temperature tests	Refer to table 4.5	P
	Normal load condition per Annex L ..... :	--	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat ..... :	No parts carring hazardous voltage parts.	N/A
4.6	**Openings in enclosures**		N/A
4.6.1	Top and side openings	No openings.	N/A
4.7	**Resistance to fire**		P
4.7.1	Reducing the risk of ignition and spread of flame		P
	Method 1, selection and application of components wiring and materials	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	(see appended table 5.3)	P
4.7.2	Conditions for a fire enclosure	EUT is supplied from a limited power source according clause 2.5	N/A
4.7.2.1	Parts requiring a fire enclosure		N/A
4.7.2.2	Parts not requiring a fire enclosure		P
4.7.3	Materials		P
4.7.3.1	General	Components and materials have adequate flammability classification. See appended table 1.5.1.	P
4.7.3.2	Materials for fire enclosures	Fireenlcosure is not required	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.3	Materials for components and other parts outside fire enclosures		N/A
4.7.3.4	Materials for components and other parts inside fire enclosures		N/A
4.7.3.5	Materials for air filter assemblies	No air filter applied.	N/A
4.7.3.6	Materials used in high-voltage components	No parts exceeding 4kV	N/A
5	**ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS**		**N/A**
5.1	**Touch current and protective conductor current**		N/A
5.1.1	General	DC supplied unit	N/A
5.2	**Electric strength**		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure		P
5.3	**Abnormal operating and fault conditions**		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	No motors inside.	N/A
5.3.3	Transformers	No transformers inside.	N/A
5.3.4	Functional insulation.....:	Complies with c)	N/A
5.3.5	Electromechanical components	No such components inside.	N/A
5.3.6	Audio amplifiers in ITE .....:	No audio amplifier inside.	N/A
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	No fire or molten metal occurred and no deformation of enclosure during the tests. No reduction of clearance and creepage distances. Electric strength test is made on basic insulation.	P
5.3.9.1	During the tests	No fire or molten metal occurred and no deformation of enclosure during the tests.	P
5.3.9.2	After the tests		P

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Clause	Requirement + Test	Result - Remark	Verdict
6	**CONNECTION TO TELECOMMUNICATION NETWORKS**		P
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		P
6.1.1	Protection from hazardous voltages		P
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	No connection to protection earth	N/A
	Supply voltage (V) .....:		—
	Current in the test circuit (mA) .....:		—
6.1.2.2	Exclusions .....:		N/A
6.2	**Protection of equipment users from overvoltages on telecommunication networks**		P
6.2.1	Separation requirements	TNV 1 and SELV	P
6.2.2	Electric strength test procedure		P
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test	(see appended table 5.2)	P
6.2.2.3	Compliance criteria		P
6.3	**Protection of the telecommunication wiring system from overheating**		N/A
	Max. output current (A) .....:	PoE	—
	Current limiting method .....:	--	—
7	**CONNECTION TO CABLE DISTRIBUTION SYSTEMS**		N/A
7.1	General	EUT is not connected to a cable distribution system.	N/A
A	**ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE**		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)	HB Material	N/A
B	**ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)**		N/A
B.1	General requirements	No motors inside.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
C	**ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)**		N/A
	Position ..... :	No transformers inside.	—
D	**ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)**		N/A
D.1	Measuring instrument		N/A
D.2	Alternative measuring instrument		N/A
E	**ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)**		N/A
F	**ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)**		N/A
G	**ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES**		N/A
G.1	Clearances	Functional insulation.	N/A
H	**ANNEX H, IONIZING RADIATION (see 4.3.13)**		N/A
J	**ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)**		N/A
	Metal(s) used ..... :		—
K	**ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)**		N/A
K.1	Making and breaking capacity	No such parts inside.	N/A
L	**ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)**		N/A
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		N/A
M	**ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.1	Introduction		N/A
N	**ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)**		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	**ANNEX P, NORMATIVE REFERENCES**		—
Q	**ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)**		N/A
	a) Preferred climatic categories .....:		N/A
	b) Maximum continuous voltage .....:		N/A
	c) Pulse current .....:		N/A
R	**ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES**		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	**ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)**		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	**ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)**		N/A
		See separate test report	—
U	**ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)**		N/A
		See separate test report	—
V	**ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)**		N/A
V.1	Introduction		N/A
V.2	TN power distribution systems		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

W	**ANNEX W, SUMMATION OF TOUCH CURRENTS**		N/A
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A

X	**ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)**		N/A
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A

Y	**ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)**		N/A
Y.1	Test apparatus .....:		N/A
Y.2	Mounting of test samples .....:		N/A
Y.3	Carbon-arc light-exposure apparatus .....:		N/A
Y.4	Xenon-arc light exposure apparatus .....:		N/A

Z	**ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)**		N/A

AA	**ANNEX AA, MANDREL TEST (see 2.10.5.8)**		N/A

BB	**ANNEX BB, CHANGES IN THE SECOND EDITION**		—

CC	**ANNEX CC, Evaluation of integrated circuit (IC) current limiters**		N/A
CC.1	General		N/A
CC.2	Test program 1.....:		N/A
CC.3	Test program 2.....:		N/A

DD	**ANNEX DD, Requirements for the mounting means of rack-mounted equipment**		N/A
DD.1	General		N/A
DD.2	Mechanical strength test, variable N.....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
DD.3	Mechanical strength test, 250N, including end stops……:		N/A
DD.4	Compliance……:		N/A
EE	**ANNEX EE, Household and home/office document/media shredders**		N/A
EE.1	General		N/A

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
Contents	Add the following annexes: Annex ZA (normative) Normative references to international publications with their corresponding European publications Annex ZB (normative) Special national conditions		N/A
General	Delete all the "country" notes in the reference document (IEC 60950-1:2005) according to the following list: 1.4.8 Note 2, 1.5.1 Note 2 & 3, 1.5.7.1 Note 1.5.8 Note 2, 1.5.9.4 Note, 1.7.2.1 Note 4, 5 & 6 2.2.3 Note, 2.2.4 Note, 2.3.2 Note 2.3.2.1 Note 2, 2.3.4 Note 2, 2.6.3.3 Note 2 & 3 2.7.1 Note, 2.10.3.2 Note 2, 2.10.5.13 Note 3 3.2.1.1 Note, 3.2.4 Note 3., 2.5.1 Note 2 4.3.6 Note 1 & 2, 4.7 Note 4, 4.7.2.2 Note 4.7.3.1Note 2, 5.1.7.1 Note 3 & 4, 5.3.7 Note 1 6 Note 2 & 5, 6.1.2.1 Note 2, 6.1.2.2 Note 6.2.2 Note, 6.2.2.1 Note 2, 6.2.2.2 Note 7.1 Note 3, 7.2 Note, 7.3 Note 1 & 2 G.2.1 Note 2, Annex H Note 2		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
General (A1:2010)	Delete all the “country” notes in the reference document (IEC 60950-1:2005/A1:2010) according to the following list: 1.5.7.1 Note 6.1.2.1 Note 2 6.2.2.1 Note 2 EE.3 Note		N/A
1.3.Z1	Add the following subclause: 1.3.Z1 Exposure to excessive sound pressure The apparatus shall be so designed and constructed as to present no danger when used for its intended purpose, either in normal operating conditions or under fault conditions, particularly providing protection against exposure to excessive sound pressures from headphones or earphones. NOTE Z1 A new method of measurement is described in EN 50332-1, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 1: General method for “one package equipment”, and in EN 50332-2, Sound system equipment: Headphones and earphones associated with portable audio equipment - Maximum sound pressure level measurement methodology and limit considerations - Part 2: Guidelines to associate sets with headphones coming from different manufacturers.		N/A
1.5.1	Add the following NOTE: NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC		N/A
1.7.2.1 (A1:2010)	In addition, for a PORTABLE SOUND SYSTEM, the instructions shall include a warning that excessive sound pressure from earphones and headphones can cause hearing loss.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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;		N/A
	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.		N/A
2.7.2	This subclause has been declared ‘void’.		N/A
3.2.3	Delete the NOTE in Table 3A, and delete also in this table the conduit sizes in parentheses.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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-F2”. In Table 3B, replace the first four lines by the following: Up to and including 6 | 0,75 [a] | Over 6 up to and including 10| (0,75) [b] 1,0 | Over 10 up to and including 16| (1,0) [c] 1,5 | In the conditions applicable to Table 3B delete the words “in some countries” in condition [a]. In NOTE 1, applicable to Table 3B, delete the second sentence.		N/A
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		N/A
4.3.13.6 (A1:2010)	Replace the existing NOTE by the following: NOTE Z1 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, and 2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artifical optical radiation).		N/A
	Standards taking into account mentioned Recommendation and Directive which demonstrate compliance with the applicable EU Directive are indicated in the OJEC.		N/A
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.		N/A
Bibliography	Additional EN standards.		—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)			
Clause	Requirement + Test	Result - Remark	Verdict
ZA	**NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS**		—

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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.		N/A
1.2.13.14	In **Norway** and **Sweden**, for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1	In **Finland, Norway** and **Sweden**, resistors bridging BASIC INSULATION in CLASS I PLUGGABLE EQUIPMENT TYPE A must comply with the requirements in 1.5.7.1. In addition when a single resistor is used, the resistor must withstand the resistor test in 1.5.7.2.		N/A
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).		N/A
1.5.9.4	In **Finland**, **Norway** and **Sweden**, the third dashed sentence is applicable only to equipment as defined in 6.1.2.2 of this annex.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	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: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan" In Norway: “Apparatet må tilkoples jordet stikkontakt” In Sweden: “Apparaten skall anslutas till jordat uttag” In **Norway** and **Sweden**, the screen of the cable distribution system is normally not earthed at the entrance of the building and there is normally no equipotential bonding system within the building. Therefore the protective earthing of the building installation need to be isolated from the screen of a cable distribution system. It is however accepted to provide the insulation external to the equipment by an adapter or an interconnection cable with galvanic isolator, which may be provided by e.g. a retailer. The user manual shall then have the following or similar information in Norwegian and Swedish language respectively, depending on in what country the equipment is intended to be used in: “Equipment connected to the protective earthing of the building installation through the mains connection or through other equipment with a connection to protective earthing – and to a cable distribution system using coaxial cable, may in some circumstances create a fire hazard. Connection to a cable distribution system has therefore to be provided through a device providing electrical isolation below a certain frequency range (galvanic isolator, see EN 60728-11).”		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	NOTE In Norway, due to regulation for installations of cable distribution systems, and in Sweden, a galvanic isolator shall provide electrical insulation below 5 MHz. The insulation shall withstand a dielectric strength of 1,5 kV r.m.s., 50 Hz or 60 Hz, for 1 min. Translation to Norwegian (the Swedish text will also be accepted in Norway): "Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare. For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet." Translation to Swedish: "Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."		N/A
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. For **CLASS II EQUIPMENT** the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
2.2.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.2	In **Finland**, **Norway** and **Sweden** there are additional requirements for the insulation. See 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.3.4	In **Norway**, for requirements see 1.7.2.1, 6.1.2.1 and 6.1.2.2 of this annex.		N/A
2.6.3.3	In the **United Kingdom**, the current rating of the circuit shall be taken as 13 A, not 16 A.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
2.7.1	In the **United Kingdom**, to protect against excessive currents and short-circuits in the PRIMARY CIRCUIT of DIRECT PLUG-IN EQUIPMENT, tests according to 5.3 shall be conducted, using an external protective device rated 30 A or 32 A. If these tests fail, suitable protective devices shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT, so that the requirements of 5.3 are met.		N/A
2.10.5.13	In **Finland**, **Norway** and **Sweden**, there are additional requirements for the insulation, see 6.1.2.1 and 6.1.2.2 of this annex.		N/A
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, 16A SEV 5934-2.1998: Plug Type 23, L+N+PE .250 V, 16 A		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	In **Denmark**, supply cords of single-phase equipment having a rated current not exceeding13 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.		N/A
3.2.1.1	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.		N/A
3.2.1.1	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.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	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.		N/A
3.2.4	In **Switzerland**, for requirements see 3.2.1.1 of this annex.		N/A
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.		N/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 mm^2 to 1,5 mm^2 nominal cross-sectional area.		N/A
4.3.6	In the **United Kingdom**, the torque test is performed using a socket outlet complying with BS 1363 part 1:1995, including Amendment 1:1997 and Amendment 2:2003 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, 12.13, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C. Where the metal earth pin is replaced by an Insulated Shutter Opening Device (ISOD), the requirements of clauses 22.2 and 23 also apply.		N/A
4.3.6	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.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	In **Finland**, **Norway** and **Sweden** TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment: • STATIONARY PLUGGABLE EQUIPMENT TYPE A that is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; and has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; and is provided with instructions for the installation of that conductor by a SERVICE PERSON; • STATIONARY PLUGGABLE EQUIPMENT TYPE B; • STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
6.1.2.1 (A1:2010)	In **Finland**, **Norway** and **Sweden**, add the following text between the first and second paragraph of the compliance clause: 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. Alternatively for components, there is no distance through insulation requirements 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 2.10.11 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.10 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.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b). It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2. A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions: - the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 60384-14, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950-1:2006, 6.2.2.1; - the additional testing shall be performed on all the test specimens as described in EN 60384-14; - the impulse test of 2,5 kV is to be performed before the endurance test in EN 60384-14, in the sequence of tests as described in EN 60384-14.		N/A
6.1.2.2	In **Finland**, **Norway** and **Sweden**, the exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT, 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.		N/A
7.2	In **Finland**, **Norway** and **Sweden**, for requirements see 6.1.2.1 and 6.1.2.2 of this annex. The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.		N/A
7.3	In **Norway** and **Sweden**, for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A
7.3	In **Norway**, for installation conditions see EN 60728-11:2005.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

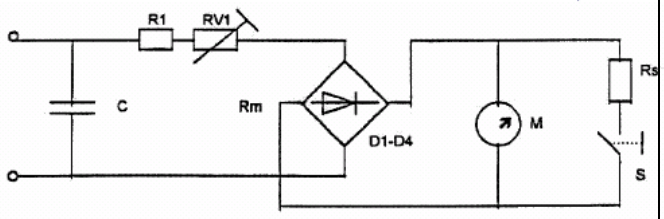
National Differences for (Germany)

	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.		N/A
Annex H	a) A license is required by those who operate an X-ray emission source. b) A license 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 _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 exceed 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 CTR.		N/A

Group differences

1.7.2	Delete note 4.		N/A
2.3.3	Delete Method 4 and the line in note 1 relating to this method.		N/A
2.3.6	Delete the note.		N/A
2.3.7	Replace the text of this subclause by: Void.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
2.5.2	Delete the note.		N/A
2.7.1	Replace the text of this sub-clause by: Basic requirements To protect against excess current, short-circuits and earth faults in primary circuits, protective devices shall be included either as integral parts of the equipment or as a part of the building installation, subject to the following a), b), c) and d): a) Except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.4 shall be included as integral 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 equipment with a rated current exceeding 16 A, which is 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 instruction. c) If reliance is placed on protection in the building installation, the installation instructions shall comply with 1.7.11 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 and 1.7.11 does not apply.		N/A
2.7.2	Replace the text of this sub-clause by: Void.		N/A
2.8.4	Delete the note.		N/A
2.11	Delete notes 1, 2 and 3.		N/A
3.2.2	Delete the note and in table 10, delete the values in parentheses.		N/A
3.2.4	Replace “245 IEC 53” by “H05 RR-F”, “227 IEC 52” by “HO3 VV-F or H03 VVH2-F” and “227 IEC 53” by “H05 VV-F or H05 VVH2-F”. In Table 11, replace the first four lines by the following: Up to and including 6 0,75 1) Over 6 up to and including 10 1,0 (0,75)2) Over 10 up to and including 16 1,5 (1,0)3) In the conditions applicable to table 11, delete the words “in some countries” in condition 1). In the Note delete the second sentence.		N/A
3.3.5	In table 13, replace the fourth and the fifth lines by: Over 10 up to and including 16 1,5 to 2,5 1,5 to by 4		N/A
4.4.4	Delete note 2.		N/A
6.2.1.2	and Add at the end of the sub-clause: This sub-clause only applies to TNV circuits normally operating in excess of the limits of SELV circuits.		N/A
6.2.1.4	Delete the notes.		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.1	Delete note 2.		N/A
6.4.2.1	Delete note 2.		N/A
Annex D	Until Annex D of Amd 1:1992 to IEC 950:1991 has been amended by IEC/TC74 in accordance with the decision taken at its meeting in May 1993, the measuring instrument for earth leakage current testing as given in Annex D of EN 60950:1992 (unamended) may be used instead of that in Annex D of EN 60950:1992/A1:1993. The original Annex D consisted of the following: **Measuring Instrument for earth leakage current test** (see 5.2 and annex G) The instrument comprises a rectifier / moving coil meter with additional series resistance, the two being shunted by a capacitor, as shown in figure D.1. The effect of the capacitor is to reduce the sensitivity to harmonics and other frequencies above power frequency. The instrument should also include a X 10 range obtained by shunting the meter coiled by a non-inductive resistor. It is permitted to include overcurrent protection also, provided that the method used does not affect the basic characteristics of the instrument.  Where: M — 0 mA - 1 mA moving coil movement R1 + RV1 + Rm at 0,5 mA d.c. — = 1 500 Ω ± 1 % with C = 150 nF ± 1 % or 2 000 Ω ± 1 % with C = 112 nF ± 1 % D1 - D4 — Rectifier Rs — Non-inductive shunt for X 10 range S — Sensitivity button (press for maximum sensitivity) **Figure D.1 - Measuring instrument for earth leakage current test** RV1 is adjusted for the desired value of total resistance at 0,5 mA d.c. The meter is calibrated at the following calibration points on the maximum sensitivity range at 50 Hz to 60 Hz sinusoidal: 0,25 mA 0,5 mA 0,75 mA The response is checked at the 0,5 mA calibration point as follows: Sensitivity at 5 kHz sinusoidal: 3,6 mA □□5% NOTE - Test methods for measurement of leakage current are under consideration. Annex P Replace the text of this annex by: See annex ZA. Annex Q Add the following notes for the standards indicated: IEC 127-1 NOTE: Harmonized as EN 60127-1:1991 (not modified) IEC 127-2 NOTE: Harmonized as EN 60127-2:1991 (not modified) IEC 127-3 NOTE: Harmonized as EN 60127-3:1991 (not modified)		N/A

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

	IEC 529 NOTE: Harmonized as EN 60529:1991 (not modified) IEC 707 NOTE: Harmonized as HD 441 S1:1983 (not modified) IEC 1032 NOTE: Harmonized as HD 601 S1:1991 (not modified)		

Group differences to am3

	Delete all the “in the country” notes that appear on the following pages of the reference document (IEC 950:1991/A3:1995): 73a, 79b, 89, 95, 103, 105a, 139, 177, 185, 185a, 221, 225, 227 and 231.		N/A
Corrections of typographical errors are required as follows:			
2.1.3.1	Table 0, first column, replace “Over 50” by “Over 350”.		N/A
Annex C	In the paragraph below Table C.1, replace “…power to the motor is…” by “…power to the transformer is…”.		

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: List of critical components				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity[1])
Enclosure Material	Various	ABS	HB	UL 94	UL
PCB Material	Various	FR 4	V-1 105°C	UL 94	UL
Optocouplers	Fairchild semiconductors	H11L1	85°C 1.2V DC 1.6 mA U iso 7500V	UL 1577	UL VDE
Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

1.5.1	TABLE: Opto Electronic Devices	P
Manufacturer ..... :	Fairchild semiconductors	
Type..... :	H11L1	
Separately tested..... :	Yes UL and VDE approved	
Bridging insulation ..... :	Basic	
External creepage distance ..... :	7mm	
Internal creepage distance ..... :	--	
Distance through insulation ..... :	0.4mm	
Tested under the following conditions ..... :	UL 1577 and VDE	
Input..... :	1.2 V	
Output..... :	1.6 V	
supplementary information		

1.6.2	TABLE: Electrical data (in normal conditions)					P
U (V)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
12	0.012	--	0.143	--	--	
24	0.006	--	0.155	--	--	
Supplementary information:						

2.1.1.5 c) 1)	TABLE: max. V, A, VA test	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)
supplementary information:				

2.1.1.5 c) 2)	TABLE: stored energy	N/A

Capacitance C (µF)	Voltage U (V)	Energy E (J)
supplementary information:		

2.2	TABLE: evaluation of voltage limiting components in SELV circuits	N/A

Component (measured between)	max. voltage (V) (normal operation)		Voltage Limiting Components
	V peak	V d.c.	

Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)
supplementary information:	
EUT is Supplied over PoE or a limited power source according clause 2.5	

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

2.5	TABLE: limited power sources	N/A

Circuit output tested:

Measured Uoc (V) with all load circuits disconnected:

	I_{sc} (A)		VA	
	Meas.	Limit	Meas.	Limit
Normal condition				
Single fault: …..				
Single fault: …..				
Single fault: …..				

supplementary information:

Sc=Short circuit, Oc=Open circuit

2.10.2	Table: working voltage measurement	P

Location	RMS voltage (V)	Peak voltage (V)	Comments
+ to Ground	--	24 V DC	

supplementary information:

2.10.3 and 2.10.4	TABLE: Clearance and creepage distance measurements	P

Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:						
+ tou ground	24 V	--	0.4	*	0.48	*

Supplementary information: For functional insulation clause 5.3.4. c.) was applied. No hazard occurred if functional insulation was shorted. EUT shall be supplied from a limited power source according clause 2.5

2.10.5	TABLE: Distance through insulation measurements	N/A

Distance through insulation (DTI) at/of:	U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

4.3.8	TABLE: Batteries		N/A
The tests of 4.3.8 are applicable only when appropriate battery data is not available			N/A
Is it possible to install the battery in a reverse polarity position?			N/A

	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition									
Max. current during fault condition									

Test results:		Verdict
- Chemical leaks		N/A
- Explosion of the battery		N/A
- Emission of flame or expulsion of molten metal		N/A
- Electric strength tests of equipment after completion of tests		N/A
Supplementary information: No batteries inside.		

4.3.8	TABLE: Batteries	

Battery category.....	:	(Lithium, NiMh, NiCad, Lithium Ion …)
Manufacturer	:	
Type / model.....	:	
Voltage	:	
Capacity.....	:	mAh
Tested and Certified by (incl. Ref. No.)	:	
Circuit protection diagram:		

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Clause	Requirement + Test	Result - Remark	Verdict

No batteries inside.

MARKINGS AND INSTRUCTIONS (1.7.12, 1.7.15)	
Location of replaceable battery	
Language(s) ……:	
Close to the battery ……:	
In the servicing instructions ……:	
In the operating instructions ……..:	

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.5	TABLE: Thermal requirements						P
	Supply voltage (V) .....:	24	*24	12	*12		—
	Ambient T_{min} (°C) .....:	24	24	24	24		—
	Ambient T_{max} (°C) .....:	24	24	24	24		—
Maximum measured temperature T of part/at::		T (°C)					Allowed T_{max} (°C)
Optocoupler		27	48	25	46		85
PCB near atmel Chip (right side)		25	46	25	46		105
PCB back side left		25	46	24	45		105
PCB top near +/- connector		25	46	24	45		105
+/- terminal		25	46	24	45		105
Enclosure left side		25	46	25	46		70
Enclosure right side near marking label		25	46	25	46		70
Enclosure top near USB port		25	46	25	46		70

Supplementary information:

* Tamb +45°C is calculated

Tmeas[°C] –Tamb[°C] + Tmra [°C] measured temperature
Tmeas : measured temperature
Tamb : ambient temperature
Tmra: max. allowed ambient temperature of EUT (+45°C)

Temperature T of winding:	t_1 (°C)	R_1 (Ω)	t_2 (°C)	R_2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class

Supplementary information:

4.5.5	TABLE: Ball pressure test of thermoplastic parts		N/A
	Allowed impression diameter (mm) .....:	≤ 2 mm	—

Part	Test temperature (°C)	Impression diameter (mm)

Supplementary information:

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

4.7	TABLE: Resistance to fire				P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence
PCB	Various	FR 4	1.6 mm	V-1	UL
Supplementary information:					

5.1	TABLE: touch current measurement		N/A
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions
supplementary information:			

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			P
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Basic/supplementary:				
Optocoupler In to out		AC	1500	No
Supplementary information:				

5.3	TABLE: Fault condition tests		P
	Ambient temperature (°C) .....:	22	—
	Power source for EUT: Manufacturer, model/type, output rating .....:	PoE	—

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Capacitor C 106	S.C	24 V Dc	1h	--	--	EUT is not running. No hazardous voltage or energy determined. EUT is supplied from a limited power source according clause 2.5
Supplementary information:						

C.2	TABLE: transformers						N/A
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required distance thr. insul. (2.10.5)
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance thr. insul. / mm; number of layers
supplementary information:							

C.2	TABLE: transformers	N/A
No Transformers inside.		

IEC/EN 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

List of test equipment used:

Test ID	Model Type	Kind of Equipment	Equipment No.
S HighVoltage	37-3B	High-Voltage-Tester	02-03/30-05-010
S InputCurrent	MetraHit 29S	TRMS-Multimeter	02-03/32-05-002
	MetraHit 29S	TRMS-Multimeter	02-03/32-08-002
S Temperature	MetraHit 29S	TRMS-Multimeter	02-03/32-05-002
	MetraHit 29S	TRMS-Multimeter	02-03/32-08-002
	Measuring Data Converter	Delphin Top Message	02-03/38-05-002