



东莞世鸿电子科技技术有限公司
Cerpass Technology (DongGuan) Co., Ltd.

Report No.: T1706078-535

TEST REPORT

EN 60950-1

**Information technology equipment – Safety –
Part 1: General requirements**

Report Reference No.	T1706078-535
Tested by (printed name and signature)	Vita Sun
Reviewed by (printed name and signature)	June Chen
Approved by (Manager) (printed name and signature)	Bruce Yang
Date of issue	2017-07-25
Testing Laboratory Name	Cerpass Technology (Dong Guan) Co., Ltd.
Address	1F. No.10, Taida Rd., ChangAn, Dongguan City, Guangdong 523850, China.
Applicant's name	Shenzhen Yinghuiyuan Electronics Co., Ltd
Address	3F A Building NongDian Industrial Park, East of Baishixia, FuYong Town, BaoAn District, SHENZHEN 518103, P.R. China
Test specification:	
Standard	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013
Test procedure	Service of CE Marking in LVD
Non-standard test method	N/A
Test item description	AC/DC ADAPTER
Trade Mark	None
Manufacturer	Same as the applicant
Model/Type reference	YHY-XXXYYYYYY (XXX=050-300 means output voltage, three digits, for example: 050 can be 5V, 300 can be 30V, min. rise step is 0.01V; YYYYY=00001-10000 means output current, five digits, for example: 00001 can be 0.01A, 10000 can be 10A, min. rise step is 0.01A)
Serial number	Test sample without serial number
Ratings	I/P: 100-240Vac, 50-60Hz, 2.5A O/P: See general product information for details



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Particulars: test item vs. test requirements

Equipment mobility	: Movable
Connection to the mains.....	: Pluggable equipment type A, Detachable power supply cold
Operating condition	: Continuous
Access location	: Operator accessible
Over voltage category (OVC)	: II
Mains supply tolerance (%) or absolute mains supply values	: -10%, +10%
Tested for IT power systems	: N/A
IT testing, phase-phase voltage (V)	: N/A
Class of equipment	: Class I
Considered current rating (A)	: 16A
Pollution degree (PD)	: PD2
IP protection class	: IPX0
Altitude during operation (m)	: Up to 5000
Altitude of test laboratory (m)	: Below 2000
Mass of equipment (kg)	: Max. 0.63kg

Possible test case verdicts:

- test case does not apply to the test object..... : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement..... : F (Fail)

Testing

Date of receipt of test item.....	: 2017-06-20
Date(s) of performance of tests	: 2017-06-20 to 2017-06-27



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General remarks:

If any questions of the inspection report, please proposed with in 15 days from receiving the report, deadline will not be accepted.

Report would be inefficiency if any scrawling or modification was made.

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 point is used as the decimal separator.

The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.

This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.

This report justified only the submitted samples exclusively and not necessarily implies that all other samples are also to be found in same result.

The CE marking may only be used if all relevant and effective EC directives are complied with.



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Factor(ies):

Shenzhen Yinghuiyuan Electronics Co., Ltd

3F A Building NongDian Industrial Park, East of Baishixia, FuYong Town, BaoAn District, SHENZHEN
518103, P.R. China

General product information:

The equipments are Class I AC/DC Adapter used for information technology equipment.

The equipment's top enclosure is secured to bottom enclosure by ultrasonic welding.

The equipment is desktop with Appliance inlet with Class I construction.

The manufacturer declared that the maximum ambient temperature is 26°C.

The equipment is intended to be operated under altitude up to 5000m, so the clearance is multiplied by the altitude correction factor 1.48 specified in table A.2 of IEC 60664-1.

Model list:

Model	Input rating	Transformer	Output rating		
			Voltage (V)	Current (A)	W
YHY-XXXXYYYY	100-240Vac, 50-60Hz, 2.5A	TF32-050120	5.0	0.01-10.00	50
			5.1-6.0	0.01-10.00	60
			6.1-7.0	0.01-10.00	70
			7.1-8.0	0.01-10.00	80
			8.1-9.0	0.01-10.00	90
			9.1-10.0	0.01-10.00	100
			10.1-11.0	0.01-10.00	110
			11.1-12.0	0.01-10.00	120
		TF32-121300	12.1-13.0	0.01-9.20	119.6
			13.1-14.0	0.01-8.50	119
			14.1-15.0	0.01-8.00	120
			15.1-16.0	0.01-7.50	120
			16.1-17.0	0.01-7.00	119
			17.1-18.0	0.01-6.60	118.8
			18.1-19.0	0.01-6.30	119.7
			19.1-20.0	0.01-6.00	120
			20.1-21.0	0.01-5.70	119.7
			21.1-22.0	0.01-5.40	118.8
			22.1-23.0	0.01-5.20	119.6
			23.1-24.0	0.01-5.00	120



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24.1-25.0	0.01-4.80	120
25.1-26.0	0.01-4.60	119.6
26.1-27.0	0.01-4.40	118.8
27.1-28.0	0.01-4.20	117.6
28.1-29.0	0.01-4.10	118.9
29.1-30.0	0.01-4.00	120

Note: YHY-XXXYYYYYY (XXX=050-300 means output voltage, three digits, For example: 050 can be 5V, 300 can be 30V, Min. rise step is 0.01V; YYYYY=00001-10000 means output current, five digits, For example: 00001 can be 0.01A, 10000 can be 10A, Min. rise step is 0.01A)

Model difference:

Model YHY-XXXYYYYYY is identical to others except for model name, transformer output rating and secondary components rating.

Other comments:

None

Copy of marking plate and summary of test results (information/comments):

(Representative)



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AC/DC ADAPTER 

MODEL NO.:YHY-12010000

PART NO.:DS120120C14-W

INPUT:100-240VAC

50-60Hz,2.5A

OUTPUT:12V---10A 

⚠ CAUTION

INDOOR USE ONLY.
RISK OF ELECTRIC SHOCK DO
NOT OPEN.

⚠ WARNING

FOR USE WITH IT EQUIPMENT ONLY.
POUR UTILISATION AVEC DU MATERIEL
DE TRAITEMENT DE L'INFORMATION
EULEMENT NUR ZUM GEBRAUCH MIT
IT GERÄTEN



HU10870-16001A



www.tuv.com
ID 1419032240



 US
LISTED
E480146



Tested to comply with
FCC standard.
For home or office use.



CE RoHS



MANUFACTURE:
SHENZHEN YINGHUI YUAN ELECTRONIC CO., LTD
www.cn-yhy.com N/S:201706160003

MADE IN CHINA

Note(s): The above label is a draft of an artwork for marking plate pending approval by National Certification Bodies and it shall not be affixed to products prior to such an approval.



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1	GENERAL		P
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1.5	Components		P
1.5.1	General	See below.	P
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	Components certified to IEC standards and/or their harmonized standards, are used within their ratings and are checked for correct application. Components, which no relevant IEC-Standard exists, are used within their ratings and are tested under the conditions occurring in the equipment	P
1.5.3	Thermal controls	No thermal controls.	N/A
1.5.4	Transformers	Transformer used are suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C.	P
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors bridging insulation	X and Y capacitors according to IEC 60384-14.	P
1.5.7	Resistors bridging insulation	See below.	P
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Bleeder resistors as functional insulation.	P
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		N/A
1.5.9	Surge suppressors	See below.	P
1.5.9.1	General	(see appended table 1.5.1)	P
1.5.9.2	Protection of VDRs	The current fuse (F1) provide the protection.	P
1.5.9.3	Bridging of functional insulation by a VDR		P



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1.5.9.4	Bridging of basic insulation by a VDR	No such components.	N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR	No such components.	N/A

1.6	Power interface		P
1.6.1	AC power distribution systems	TN power system.	P
1.6.2	Input current	Highest load according to 1.2.2.1 for this equipment is the operation with the max. specified DC-load. (see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held equipment.	N/A
1.6.4	Neutral conductor	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases.	P

1.7	Marking and instructions		P
1.7.1	Power rating and identification markings	See below.	P
1.7.1.1	Power rating marking	All relevant markings are provided on a label.	P
	Multiple mains supply connections.....:	Only one mains supply connections.	N/A
	Rated voltage(s) or voltage range(s) (V)	100-240Vac	P
	Symbol for nature of supply, for d.c. only.....:	Mains from AC source.	N/A
	Rated frequency or rated frequency range (Hz):	50-60Hz	P
	Rated current (mA or A)	2.5A	P
1.7.1.2	Identification markings	See below.	P
	Manufacturer's name or trade-mark or identification mark	See Label	P
	Model identification or type reference	See general product information for details.	P
	Symbol for Class II equipment only	Class I equipment.	N/A
	Other markings and symbols	Additional symbols or marking do not give rise to misunderstanding.	P



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1.7.1.3	Use of graphical symbols	Graphical symbols are all explained in the user's manual.	P
1.7.2	Safety instructions and marking	See below.	P
1.7.2.1	General	The user's manual contains information for operation, installation, servicing, transport, storage and technical data. The operation guide is provided to the user.	P
1.7.2.2	Disconnect devices	This equipment is for building-in. It's shall be evaluated in the final system.	P
1.7.2.3	Overcurrent protective device	Not such equipment.	N/A
1.7.2.4	IT power distribution systems		N/A
1.7.2.5	Operator access with a tool	This equipment is for building-in. Compliance shall be investigated in final system.	N/A
1.7.2.6	Ozone	The equipment not containing Ozone.	N/A
1.7.3	Short duty cycles	The equipment is intended for continuous operation.	N/A
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)	Current fuse (F1) used, marking adjacent to it: T5.0A, 250V.	P
1.7.7	Wiring terminals	See below.	P
1.7.7.1	Protective earthing and bonding terminals	The symbol of IEC 60417-5019 was located on metal chassis.	P
1.7.7.2	Terminals for a.c. mains supply conductors	Not permanently connected equipment or equipment with ordinary non-detachable power supply cords.	N/A
1.7.7.3	Terminals for d.c. mains supply conductors	No such terminals.	N/A
1.7.8	Controls and indicators	See below.	P
1.7.8.1	Identification, location and marking.....		N/A



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1.7.8.2	Colours	Only functional indicators use colours.	P
1.7.8.3	Symbols according to IEC 60417	No switches or buttons provided.	N/A
1.7.8.4	Markings using figures	No indicators for different positions.	N/A
1.7.9	Isolation of multiple power sources		N/A
1.7.10	Thermostats and other regulating devices	No thermostats or other regulating devices.	N/A
1.7.11	Durability	The label was subjected to the permanence of marking test. The label was rubbed with cloth soaked with water for 15 s and then again for 15s with the cloth soaked with petroleum spirit. After this test there was no damage to the label. The marking on the label did not fade. There was neither curling nor lifting of the label edge	P
1.7.12	Removable parts	No removable parts provided.	N/A
1.7.13	Replaceable batteries	No battery provided.	N/A
	Language(s)		—
1.7.14	Equipment for restricted access locations	No restricted access location.	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	See below.	P
2.1.1.1	Access to energized parts	No access with test finger and test pin to any parts with only basic insulation to ELV or hazardous voltage.	P
	Test by inspection		P
	Test with test finger (Figure 2A)		P
	Test with test pin (Figure 2B)		P
	Test with test probe (Figure 2C)	No TNV circuits in the equipment.	N/A



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2.1.1.2	Battery compartments	No battery compartments.	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring in operator accessible area.	N/A
	Working voltage (Vpeak or Vrms); minimum distance through insulation (mm)		—
2.1.1.4	Access to hazardous voltage circuit wiring	This equipment is for building-in. Compliance shall be investigated in final system.	N/A
2.1.1.5	Energy hazards	(See appended table 2.1.1.5.)	P
2.1.1.6	Manual controls	Not connected to and sufficiently separated from hazardous voltages.	N/A
2.1.1.7	Discharge of capacitors in equipment	See below.	P
	0 Measured voltage (V); time-constant (s)...:	88V after 1s, Vpeak: 376V, 139.12V measured 0.679s.	—
2.1.1.8	Energy hazards – d.c. mains supply	Connected to a.c. mains.	N/A
	a) Capacitor connected to the d.c. mains supply ...:		N/A
	b) Internal battery connected to the d.c. mains supply		N/A
2.1.1.9	Audio amplifiers	No Audio amplifiers.	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 below.	P
2.2.2	Voltages under normal conditions (V)	Between any conductors of the SELV circuits 42.4 V peak or 60 V d.c. are not exceeded. (See appended table 2.2.2.)	P
2.2.3	Voltages under fault conditions (V)	The circuit complied SELV circuits after transformer secondary terminal, the test can be waived.	P
2.2.4	Connection of SELV circuits to other circuits	See above.	P

2.3	TNV circuits		N/A
2.3.1	Limits	No TNV circuits in the equipment.	N/A



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	Type of TNV circuits		—
2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions		N/A
2.3.3	Separation from hazardous voltages		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	P
2.4.1	General requirements	P
2.4.2	Limit values	0.7mA. Annex D.1 used.
	Frequency (Hz).....	60
	Measured current (mA)	(See appended table 2.4.2.)
	Measured voltage (V)	(See appended table 2.4.2.)
	Measured circuit capacitance (nF or μ F)	CY3= 2200pF
2.4.3	Connection of limited current circuits to other circuits	See 2.2.2 and 2.2.3. No direct connection between SELV and any primary circuits.

2.5	Limited power sources	N/A
	a) Inherently limited output	N/A
	b) Impedance limited output	N/A
	c) Regulating network limited output under normal operating and single fault condition	N/A
	Use of integrated circuit (IC) current limiters	N/A
	d) Overcurrent protective device limited output	N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)	N/A
	Current rating of overcurrent protective device (A) ..	N/A



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2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing	The trace is connected from PE pin of primary connector, and fixed on the AC inlet	P
2.6.2	Functional earthing	Secondary functional ground separated to primary by reinforced or double insulation.	P
	Use of symbol for functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		—
2.6.3.1	General		—
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm^2), AWG		—
2.6.3.3	Size of protective bonding conductors	See 2.6.3.4.	P
	Rated current (A), cross-sectional area (mm^2), AWG		—
	Protective current rating (A), cross-sectional area (mm^2), AWG		—
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	(See appended table 2.6.3.4)	P
2.6.3.5	Colour of insulation.....		N/A
2.6.4	Terminals	See below.	—
2.6.4.1	General	See below.	—
2.6.4.2	Protective earthing and bonding terminals	The PE pin of primary connector is considered as protective earthing terminal.	—
	Rated current (A), type, nominal thread diameter (mm)		N/A
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing	See below.	—



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2.6.5.1	Interconnection of equipment	The equipment has its own protective earthing connection, any other equipment can connect only via the output connector.	P
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No such component.	P
2.6.5.3	Disconnection of protective earth	The PE pin of primary connector provided.	P
2.6.5.4	Parts that can be removed by an operator	The protective earthing connection is made earlier and broken later than the supply connection.	P
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance	All part comprising the connections are plated and metal to metal which comply with annex J.	P
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system	No TNV.	N/A

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements	Equipment relies on 16A rated fuse or circuit breaker of the wall outlet installation protection of the building installation in regard to L to N short circuit. Over-current protection is provided by the current fuse.	P
	Instructions when protection relies on building installation	Not applicable for pluggable equipment type A.	N/A
2.7.2	Faults not simulated in 5.3.7	The protection device is well dimensioned and mounted.	P
2.7.3	Short-circuit backup protection	Pluggable equipment type A. Building installation is considered as providing short-circuit backup protection.	P
2.7.4	Number and location of protective devices	Over current protection by one building-in current fuse.	P



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2.7.5	Protection by several devices	Only one fuse (F1) used as protective devices.	N/A
2.7.6	0 Warning to service personnel.....:	No service work necessary.	N/A

2.8	Safety interlocks		N/A
2.8.1	General principles	No safety interlock provided.	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm) :		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic material are not used.	P
2.9.2	Humidity conditioning	120 hrs. All sources of optical isolators and transformers were performed and passed the test , see appended table 1.5.1 for details.	P
	Relative humidity (%), temperature (°C)	95%, 40°C	—
2.9.3	Grade of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P
2.9.4	Separation from hazardous voltages	See below.	P
	Method(s) used	Method 1 used.	—



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2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	See below.	P
2.10.1.1	Frequency	Considered.	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	The functional are comply with 5.3.4 a) and c)	P
2.10.1.4	Intervening unconnected conductive parts	No such part.	N/A
2.10.1.5	Insulation with varying dimensions	No such insulations.	N/A
2.10.1.6	Special separation requirements	Not used.	N/A
2.10.1.7	Insulation in circuits generating starting pulses	No such part.	N/A
2.10.2	Determination of working voltage	See below.	P
2.10.2.1	General	Considered.	P
2.10.2.2	RMS working voltage	(See appended table 2.10.2)	P
2.10.2.3	Peak working voltage	(See appended table 2.10.2)	P
2.10.3	Clearances	See below.	P
2.10.3.1	General	See below and alternative method of annex G is not considered.	P
2.10.3.2	Mains transient voltages	Normal transient voltage considered.	P
	a) AC mains supply	Ovvoltage category II for primary circuit and transient voltage 2500Vpeak.	P
	b) Earthed d.c. mains supplies	Mains from AC source.	N/A
	c) Unearthed d.c. mains supplies	Same as above.	N/A
	d) Battery operation	Same as above.	N/A
2.10.3.3	Clearances in primary circuits	(See appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Clearances in secondary circuits	See 5.3.4.	N/A
2.10.3.5	Clearances in circuits having starting pulses	No such circuit.	N/A
2.10.3.6	Transients from a.c. mains supply	Ovvoltage category II for secondary circuit and transient voltage 1500Vpeak.	P
2.10.3.7	Transients from d.c. mains supply	Mains from AC source.	N/A



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2.10.3.8	Transients from telecommunication networks and cable distribution systems	No TNV circuits in the equipment.	N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network :		N/A
2.10.4	Creepage distances	See below.	P
2.10.4.1	General	(see appended table 2.10.3 and 2.10.4)	P
2.10.4.2	Material group and comparative tracking index	Material group IIIb is assumed to be used.	P
	CTI tests	CTI rating for all materials of min. 100.	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation	Complied with sub-clauses 2.10.5.2 to 2.10.5.14 and 5.2.	P
2.10.5.1	General	See below.	P
2.10.5.2	Distances through insulation	(See appended table 2.10.5)	P
2.10.5.3	Insulating compound as solid insulation	Certified sources of optical isolator used. No other components applied for. See sub-clause 2.10.5.2 and 2.10.10.	P
2.10.5.4	Semiconductor devices	Approved optocoupler with dti. $\geq 0.4\text{mm}$ used.	P
2.10.5.5.	Cemented joints	No cemented joints.	N/A
2.10.5.6	Thin sheet material – General	The thin sheet materials of polyester tape used in transformer T1, HS1 and HS2.	P
2.10.5.7	Separable thin sheet material	Two layers of polyester tape wrapped around the body of transformer T1, HS1 and HS2 were used as reinforced insulation.	P
	Number of layers (pcs).....:	2	—
2.10.5.8	Non-separable thin sheet material	Not applicable.	N/A



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2.10.5.9	Thin sheet material – standard test procedure	Not applicable.	N/A
	Electric strength test		—
2.10.5.10	Thin sheet material – alternative test procedure	See below.	P
	Electric strength test	(see appended table 2.10.5)	P
2.10.5.11	Insulation in wound components	See below.	P
2.10.5.12	Wire in wound components	See below.	P
	Working voltage :	(see appended table C.2)	P
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation	Reinforced insulation.	P
	c) Compliance with Annex U	Approved triple insulated wire used in transformer of T1.	P
	Two wires in contact inside wound component; angle between 45° and 90°	Mechanical stress relief achieved by tube and insulation tape.	P
2.10.5.13	Wire with solvent-based enamel in wound components	No such construction provided.	N/A
	Electric strength test		—
	Routine test		—
2.10.5.14	Additional insulation in wound components	No such construction.	N/A
	Working voltage		N/A
	- Basic insulation not under stress		N/A
	- Supplementary, reinforced insulation		N/A
2.10.6	Construction of printed boards	See below.	P
2.10.6.1	Uncoated printed boards	(See appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	No such parts.	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	No such parts.	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board	No such parts.	N/A
	Distance through insulation		—
	Number of insulation layers (pcs).....:		—
2.10.7	Component external terminations	No such parts.	N/A
2.10.8	Tests on coated printed boards and coated components	No such parts.	N/A



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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		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	No such components.	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	P
3.1	General	P
3.1.1	Current rating and overcurrent protection	P
3.1.2	Protection against mechanical damage	The output cord anchorage is satisfactory
3.1.3	Securing of internal wiring	P
3.1.4	Insulation of conductors	P
3.1.5	Beads and ceramic insulators	N/A
3.1.6	Screws for electrical contact pressure	P
3.1.7	Insulating materials in electrical connections	N/A
3.1.8	Self-tapping and spaced thread screws	No such part.
3.1.9	Termination of conductors	P
	10 N pull test	Break away or pivot on its terminal is unlikely.
3.1.10	Sleeving on wiring	No sleeving used to provide supplementary insulation.

3.2	Connection to a mains supply	P
3.2.1	Means of connection	P
3.2.1.1	Connection to an a.c. mains supply	Appliance inlet was used
3.2.1.2	Connection to a d.c. mains supply	N/A
3.2.2	Multiple supply connections	N/A
3.2.3	Permanently connected equipment	N/A



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	Number of conductors, diameter of cable and conduits (mm)		—
3.2.4	Appliance inlets	Approved appliance inlet used	P
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	Diameter or minor dimension D (mm); test mass (g)		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N/A

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	No permanently connected equipment and equipment with ordinary non-detachable power supply cords.	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²).....		—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type, nominal thread diameter (mm)		—
3.3.6	Wiring terminal design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A



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3.4	Disconnection from the mains supply	P
3.4.1	General requirement	P
3.4.2	Disconnect devices	Appliance inlet used
3.4.3	Permanently connected equipment	N/A
3.4.4	Parts which remain energized	N/A
3.4.5	Switches in flexible cords	N/A
3.4.6	Number of poles – single-phase and d.c. equipment	Appliance inlet disconnects both poles simultaneously.
3.4.7	Number of poles – three-phase equipment	N/A
3.4.8	Switches as disconnect devices	N/A
3.4.9	Plugs as disconnect devices	N/A
3.4.10	Interconnected equipment	N/A
3.4.11	Multiple power sources	N/A

3.5	Interconnection of equipment	P
3.5.1	General requirements	P
3.5.2	Types of interconnection circuits:	SELV Circuit.
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.
3.5.4	Data ports for additional equipment	N/A

4	PHYSICAL REQUIREMENTS	P
4.1	Stability	N/A
	Angle of 10	This equipment is for building-in. Compliance shall be investigated in final system.
	Test force (N)	N/A

4.2	Mechanical strength	P
4.2.1	General	See below. After the tests, the equipment complies with the requirements of sub-clauses 2.1.1, 2.6.1, 2.10 and 4.4.1.
	Rack-mounted equipment.	N/A



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4.2.2	Steady force test, 10 N	10 N applied to all components other than the parts serving as an enclosure.	P
4.2.3	Steady force test, 30 N		N/A
4.2.4	Steady force test, 250 N		P
4.2.5	Impact test		P
	Fall test	No crack and hazardous part could be user access.	P
	Swing test		N/A
4.2.6	Drop test; height (mm)	750mm, No hazard as result from drop test	N/A
4.2.7	Stress relief test	After 7 hours at temperature of 85°C and cooling down to room temperature, no shrinkage, distortion or loosening any enclosure part was noticeable on the adapter	P
4.2.8	Cathode ray tubes	No cathode ray tube.	N/A
	Picture tube separately certified		N/A
4.2.9	High pressure lamps	No high pressure lamp.	N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	Not wall or ceiling mounted equipment.	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 handles or controls provided.	N/A
4.3.3	Adjustable controls	No 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	Mismatching of connectors either not possible.	P
4.3.6	Direct plug-in equipment	Not direct plug-in equipment.	N/A
	Torque		N/A
	Compliance with the relevant mains plug standard		N/A
4.3.7	Heating elements in earthed equipment	No heating elements provided	N/A



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4.3.8	Batteries	No battery provided.	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 and 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	See below.	P
4.3.13.1	General	See below.	—
4.3.13.2	Ionizing radiation	No ionizing radiation or flammable liquids present.	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	No UV radiation.	N/A
	Part, property, retention after test, flammability classification		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs	See below.	P
4.3.13.5.1	Lasers (including laser laser diodes)		N/A
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)	The LED indicator is considered as indicating light.	P
4.3.13.6	Other types	No such consideration.	N/A



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4.4	Protection against hazardous moving parts		N/A
4.4.1	General	No moving part within equipment.	N/A
4.4.2	Protection in operator access areas		N/A
	Household and home/office document/media shredders		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A
4.4.5.1	General		N/A
	Not considered to cause pain or injury. a).....:		N/A
	Is considered to cause pain, not injury. b)		N/A
	Considered to cause injury. c)		N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning		N/A

4.5	Thermal requirements		P
4.5.1	General	See below.	P
4.5.2	Temperature tests	(See appended table 4.5)	P
	Normal load condition per Annex L	See 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	Phenolic bobbin material used in transformer (T2) and choke (T1) without further test. Others see appended table 4.5.5.	P



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4.6	Openings in enclosures		N/A
4.6.1	Top and side openings	No opening	N/A
	Dimensions (mm)		—
4.6.2	Bottoms of fire enclosures		N/A
	Construction of the bottom, dimensions (mm) ...:		—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks).....:		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Use of materials with the required flammability classes.	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		N/A
4.7.2	Conditions for a fire enclosure	See below.	P
4.7.2.1	Parts requiring a fire enclosure	With having the following parts: - Components in primary - Components in secondary (not supplied by LPS); - Components having unenclosed arcing parts at hazardous voltage or energy level. The fire enclosure is required.	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P



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4.7.3.1	General	Parts mounted on PCB of flammability class V-1 or better.	P
4.7.3.2	Materials for fire enclosures	V-1 or better.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No such component.	N/A
4.7.3.4	Materials for components and other parts inside fire enclosures	Other materials inside fire enclosure are minimum V-2 material.	P
4.7.3.5	Materials for air filter assemblies	No air filter.	N/A
4.7.3.6	Materials used in high-voltage components	No high-voltage components.	N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General	See sub-clauses 5.1.2 to 5.1.6.	P
5.1.2	Configuration of equipment under test (EUT)		P
5.1.2.1	Single connection to an a.c. mains supply	The EUT has only one a.c. mains connection.	P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	Equipment of figure 5A used.	P
5.1.4	Application of measuring instrument	Using measuring instrument in annex D.	P
5.1.5	Test procedure	The touch current was measured from mains to secondary circuit and enclosure.	P
5.1.6	Test measurements	See below.	P
	Supply voltage (V)	(See appended table 5.1.6)	—
	Measured touch current (mA)	(See appended table 5.1.6)	—
	Max. allowed touch current (mA)	(See appended table 5.1.6)	—
	Measured protective conductor current (mA)		—
	Max. allowed protective conductor current (mA)....		—



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5.1.7	Equipment with touch current exceeding 3,5 mA	The touch current does not exceed 3.5mA.	N/A
5.1.7.1	General		—
5.1.7.2	Simultaneous multiple connections to the supply		—
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks	Not connected to telecommunication networks.	N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V)		—
	Measured touch current (mA)		—
	Max. allowed touch current (mA)		—
5.1.8.2	Summation of touch currents from telecommunication networks	Not connected to a telecommunication network.	N/A
	a) EUT with earthed telecommunication ports		—
	b) EUT whose telecommunication ports have no reference to protective earth		—

5.2	Electric strength	P
5.2.1	General	(see appended table 5.2)
5.2.2	Test procedure	Table 5B used.

5.3	Abnormal operating and fault conditions	P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)
5.3.2	Motors	No motors.
5.3.3	Transformers	With the shorted o/p of the transformer, no high temperature of the transformer was recorded. Results of the short-circuit tests see appended table 5.3 and Annex C.
5.3.4	Functional insulation.....:	Method c). Test results see appended table 5.3.



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5.3.5	Electromechanical components	No electromechanical components in secondary circuits.	N/A
5.3.6	Audio amplifiers in ITE	No audio amplifiers inside equipment.	N/A
5.3.7	Simulation of faults	(see appended table 5.3)	P
5.3.8	Unattended equipment	None of the listed components was provided.	N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions	See below.	P
5.3.9.1	During the tests	No fire occurred beyond the equipment, no molten metal emitted and no deformation of enclosure.	P
5.3.9.2	After the tests	Electric strength test made.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS	N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment	N/A
6.1.1	Protection from hazardous voltages	N/A
6.1.2	Separation of the telecommunication network from earth	N/A
6.1.2.1	Requirements	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	N/A
6.2.1	Separation requirements	6.2.1-6.2.2.3: No TNV circuits.
6.2.2	Electric strength test procedure	N/A
6.2.2.1	Impulse test	N/A
6.2.2.2	Steady-state test	N/A
6.2.2.3	Compliance criteria	N/A

6.3	Protection of the telecommunication wiring system from overheating	N/A
	Max. output current (A)	—



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	Current limiting method		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS	N/A
7.1	General	7.1-7.4.3: Not connected to cable distribution systems.
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	
7.3	Protection of equipment users from overvoltages on the cable distribution system	
7.4	Insulation between primary circuits and cable distribution systems	
7.4.1	General	
7.4.2	Voltage surge test	
7.4.3	Impulse test	

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 18kg, and of stationary equipment (see 4.7.3.2)	See below.
A.1.1	Samples.....: Product mass <18kg	N/A
	Wall thickness (mm).....: —	—
A.1.2	Conditioning of samples; temperature (°C)	N/A
A.1.3	Mounting of samples	N/A
A.1.4	Test flame (see IEC 60695-11-3)	N/A
	Flame A, B, C or D	—
A.1.5	Test procedure	N/A
A.1.6	Compliance criteria	N/A
	Sample 1 burning time (s)	—
	Sample 2 burning time (s)	—
	Sample 3 burning time (s)	—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)	N/A
A.2.1	Samples, material.....:	N/A



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	Wall thickness (mm)		—
A.2.2	Conditioning of samples; temperature (°C)		N/A
A.2.3	Mounting of samples		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.2.7	Alternative test acc. To IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s)		—
	Sample 2 burning time (s)		—
	Sample 3 burning time (s)		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		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	N/A
	Position	—
	Manufacturer	—
	Type	—
	Rated values	—
B.2	Test conditions	N/A
B.3	Maximum temperatures	N/A
B.4	Running overload test	N/A
B.5	Locked-rotor overload test	N/A
	Test duration (days)	—
	Electric strength test: test voltage (V)	—



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B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V)	:	N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V)	:	N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V)	:	—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)	P
	Position	T2
	Manufacturer	(see appended table 1.5.1)
	Type	(see appended table 1.5.1)
	Rated values	Class B
	Method of protection.....	By protection circuit design.
C.1	Overload test	(see appended table 5.3)
C.2	Insulation	(see appended table 5.2)
	Protection from displacement of windings	By tube or insulation tape.

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)	P
D.1	Measuring instrument	Figure D.1 used.
D.2	Alternative measuring instrument	N/A

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)	N/A
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)	P
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES	N/A
G.1	Clearances	N/A
G.1.1	General	N/A
G.1.2	Summary of the procedure for determining minimum clearances	N/A
G.2	Determination of mains transient voltage (V)	N/A
G.2.1	AC mains supply	N/A
G.2.2	Earthed d.c. mains supplies	N/A
G.2.3	Unearthed d.c. mains supplies	N/A
G.2.4	Battery operation	N/A
G.3	Determination of telecommunication network transient voltage (V)	N/A
G.4	Determination of required withstand voltage (V)	N/A
G.4.1	Mains transients and internal repetitive peaks	N/A
G.4.2	Transients from telecommunication networks	N/A
G.4.3	Combination of transients	N/A
G.4.4	Transients from cable distribution systems	N/A
G.5	Measurement of transient voltages (V)	N/A
	a) Transients from a mains supply	N/A
	For an a.c. mains supply	N/A
	For a d.c. mains supply	N/A
	b) Transients from a telecommunication network	N/A
G.6	Determination of minimum clearances	N/A

H	ANNEX H, IONIZING RADIATION (see 4.3.13)	N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)	P
	Metal(s) used.....	Metal alloy.



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K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)	N/A
K.1	Making and breaking capacity	N/A
K.2	Thermostat reliability; operating voltage (V)	N/A
K.3	Thermostat endurance test; operating voltage (V):	N/A
K.4	Temperature limiter endurance; operating voltage (V)	N/A
K.5	Thermal cut-out reliability	N/A
K.6	Stability of operation	N/A

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)	P
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	P

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)	N/A
M.1	Introduction	N/A
M.2	Method A	N/A
M.3	Method B	N/A
M.3.1	Ringing signal	N/A
M.3.1.1	Frequency (Hz)	—
M.3.1.2	Voltage (V)	—
M.3.1.3	Cadence; time (s), voltage (V)	—
M.3.1.4	Single fault current (mA)	—
M.3.2	Tripping device and monitoring voltage	N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage	N/A
M.3.2.2	Tripping device	N/A
M.3.2.3	Monitoring voltage (V)	N/A



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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	—
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)	P
	- Preferred climatic categories	(see appened table 1.5.1)
	- Maximum continuous voltage	
	- Combination pulse current	
	Body of the VDR Test according to IEC60695-11-5.....:	N/A
	Body of the VDR. Flammability class of material (min V-1).....:	(see appened table 1.5.1)

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
		—

U	Annex U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.12)	P
	(see appended table 1.5.1)	—



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V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)	P
V.1	Introduction	See below.
V.2	TN power distribution systems	Single-phase TN power system considered and used for the testing.

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)	P
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)	N/A
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BB	ANNEX BB, CHANGES IN THE SECOND EDITION	—
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CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters	N/A
CC.1	General	N/A



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CC.2	Test program 1.....:		N/A
CC.3	Test program 2.....:		N/A
CC.4	Test program 3.....:		N/A
CC.5	Compliance.....:		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
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
EE.2	Markings and instructions	N/A
	Use of markings or symbols.....:	N/A
	Information of user instructions, maintenance and/or servicing instructions.....:	N/A
EE.3	Inadvertent reactivation test.....:	N/A
EE.4	Disconnection of power to hazardous moving parts:	N/A
	Use of markings or symbols.....:	N/A
EE.5	Protection against hazardous moving parts	N/A
	Test with test finger (Figure 2A)	N/A
	Test with wedge probe (Figure EE1 and EE2)	N/A



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EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013 – CENELEC COMMON MODIFICATIONS				
	Clauses, subclauses, notes, tables and figures which are additional to those in IEC60950-1 and it's amendmets are prefixed "Z"			P
Contents (A2:2013)	Add the following annexes: Annex ZA (normative) Annex ZB (normative) Annex ZD (informative)			P
	Normative references to international publications with their corresponding European publications Special national conditions IEC and CENELEC code designations for flexible cords			
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 4.7.3.1 Note 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
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
General (A2:2013)	Delete all the "country" notes in the reference document (IEC 60950-1:2005/A2:2013) according to the following list: 2.7.1 Note * 2.10.3.1 Note 2 6.2.2. Note * Note of secretary: Text of Common Modification remains unchanged.			N/A
1.1.1 (A1:2010)	Replace the text of NOTE 3 by the following. NOTE 3 The requirements of EN 60065 may also be used to meet safety requirements for multimedia equipment. See IEC Guide 112, Guide on the safety of multimedia equipment. For television sets EN 60065 applies.			N/A



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Clause	Requirement + Test	Result - Remark	Verdict
1.3.Z1	<p>Add the following subclause:</p> <p>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.</p> <p>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.</p>		N/A
(A12:2011)	<p>In EN 60950-1:2006/A12:2011 Delete the addition of 1.3.Z1 / EN 60950-1:2006 Delete the definition 1.2.3.Z1 / EN 60950-1:2006 /A1:2010</p>		N/A
1.5.1 (Added info*)	<p>Add the following NOTE:</p> <p>NOTE Z1 The use of certain substances in electrical and electronic equipment is restricted within the EU: see Directive 2002/95/EC. New Directive 2011/65/11 *</p>		P
1.7.2.1 (A1:2010)	<p>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.</p>		N/A
1.7.2.1 (A12.2011)	<p>In EN 60950-1:2006/A12:2011 Delete NOTE Z1 and the addition for Portable Sound System. Add the following clause and annex to the existing standard and amendments.</p> <p>Zx Protection against excessive sound pressure from personal music players</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.1 General</p> <p>This sub-clause specifies requirements for protection against excessive sound pressure from personal music players that are closely coupled to the ear. It also specifies requirements for earphones and headphones intended for use with personal music players.</p> <p>A personal music player is a portable equipment for personal use, that:</p> <ul style="list-style-type: none">is designed to allow the user to listen to recorded or broadcast sound or video; andprimarily uses headphones or earphones that can be worn in or on or around the ears; andallows the user to walk around while in use. <p>NOTE 1 Examples are hand-held or body-worn portable CD players, MP3 audio players, mobile phones with MP3 type features, PDA's or similar equipment.</p> <p>A personal music player and earphones or headphones intended to be used with personal music players shall comply with the requirements of this sub-clause.</p> <p>The requirements in this sub-clause are valid for music or video mode only.</p> <p>The requirements do not apply:</p> <ul style="list-style-type: none">while the personal music player is connected to an external amplifier; orwhile the headphones or earphones are not used. <p>NOTE 2 An external amplifier is an amplifier which is not part of the personal music player or the listening device, but which is intended to play the music as a standalone music player.</p> <p>The requirements do not apply to:</p> <ul style="list-style-type: none">hearing aid equipment and professional equipment; <p>NOTE 3 Professional equipment is equipment sold through special sales channels. All products sold through normal electronics stores are considered not to be professional equipment.</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>analogue personal music players (personal music players without any kind of digital processing of the sound signal) that are brought to the market before the end of 2015.</p> <p>NOTE 4 This exemption has been allowed because this technology is falling out of use and it is expected that within a few years it will no longer exist. This exemption will not be extended to other technologies.</p> <p>For equipment which is clearly designed or intended for use by young children, the limits of EN 71-1 apply.</p>		N/A
	<p>Zx.2 Equipment requirements</p> <p>No safety provision is required for equipment that complies with the following:</p> <p>equipment provided as a package (personal music player with its listening device), where</p> <ul style="list-style-type: none">the acoustic output $L_{Aeq,T}$ is ≤ 85 dBA measured while playing the fixed "programme simulation noise" as described in EN 50332-1; anda personal music player provided with an analogue electrical output socket for a listening device, where the electrical output is ≤ 27 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" as described in EN 50332-1. <p>NOTE 1 Wherever the term acoustic output is used in this clause, the 30 s A-weighted equivalent sound pressure level $L_{Aeq,T}$ is meant. See also Zx.5 and Annex Zx.</p> <p>All other equipment shall:</p> <ul style="list-style-type: none">a) protect the user from unintentional acoustic outputs exceeding those mentioned above; andb) have a standard acoustic output level not exceeding those mentioned above, and automatically return to an output level not exceeding those mentioned above when the power is switched off; and		N/A



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	<p>c) provide a means to actively inform the user of the increased sound pressure when the equipment is operated with an acoustic output exceeding those mentioned above. Any means used shall be acknowledged by the user before activating a mode of operation which allows for an acoustic output exceeding those mentioned above. The acknowledgement does not need to be repeated more than once every 20 h of cumulative listening time; and</p> <p>NOTE 2 Examples of means include visual or audible signals. Action from the user is always required.</p> <p>NOTE 3 The 20 h listening time is the accumulative listening time, independent how often and how long the personal music player has been switched off.</p> <p>d) have a warning as specified in Zx.3; and</p> <p>e) not exceed the following:</p> <ol style="list-style-type: none">1) equipment provided as a package (player with its listening device), the acoustic output shall be ≤ 100 dBA measured while playing the fixed "programme simulation noise" described in EN 50332-1; and2) a personal music player provided with an analogue electrical output socket for a listening device, the electrical output shall be ≤ 150 mV measured as described in EN 50332-2, while playing the fixed "programme simulation noise" described in EN 50332-1. <p>For music where the average sound pressure (long term $L_{Aeq,T}$) measured over the duration of the song is lower than the average produced by the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA. In this case T becomes the duration of the song.</p> <p>NOTE 4 Classical music typically has an average sound pressure (long term $L_{Aeq,T}$) which is much lower than the average programme simulation noise. Therefore, if the player is capable to analyse the song and compare it with the programme simulation noise, the warning does not need to be given as long as the average sound pressure of the song is below the basic limit of 85 dBA.</p> <p>For example, if the player is set with the programme simulation noise to 85 dBA, but the average music level of the song is only 65 dBA, there is no need to give a warning or ask an acknowledgement as long as the average sound level of the song is not above the basic limit of 85 dBA.</p>		N/A



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Clause	Requirement + Test	Result - Remark	Verdict
	<p>Zx.3 Warning</p> <p>The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:</p> <p>the symbol of Figure 1 with a minimum height of 5 mm; and</p> <p>the following wording, or similar:</p> <p>“To prevent possible hearing damage, do not listen at high volume levels for long periods.”</p>  <p>Figure 1 – Warning label (IEC 60417-6044)</p> <p>Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.</p>		N/A
	<p>Zx.4 Requirements for listening devices (headphones and earphones)</p>		
	<p>Zx.4.1 Wired listening devices with analogue input</p> <p>With 94 dBA sound pressure output $L_{Aeq,T}$, the input voltage of the fixed “programme simulation noise” described in EN 50332-2 shall be ≥ 75 mV.</p> <p>This requirement is applicable in any mode where the headphones can operate (active or passive), including any available setting (for example built-in volume level control).</p> <p>NOTE The values of 94 dBA – 75 mV correspond with 85dBA – 27 mV and 100 dBA – 150 mV.</p>		N/A



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	<p>Zx.4.2 Wired listening devices with digital input</p> <p>With any playing device playing the fixed “programme simulation noise” described in EN 50332-1 (and respecting the digital interface standards, where a digital interface standard exists that specifies the equivalent acoustic level), the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>This requirement is applicable in any mode where the headphones can operate, including any available setting (for example built-in volume level control, additional sound feature like equalization, etc.).</p> <p>NOTE An example of a wired listening device with digital input is a USB headphone.</p>		N/A
	<p>Zx.4.3 Wireless listening devices</p> <p>In wireless mode:</p> <p>with any playing and transmitting device playing the fixed programme simulation noise described in EN 50332-1; and</p> <p>respecting the wireless transmission standards, where an air interface standard exists that specifies the equivalent acoustic level; and</p> <p>with volume and sound settings in the listening device (for example built-in volume level control, additional sound feature like equalization, etc.) set to the combination of positions that maximize the measured acoustic output for the abovementioned programme simulation noise, the acoustic output $L_{Aeq,T}$ of the listening device shall be ≤ 100 dBA.</p> <p>NOTE An example of a wireless listening device is a Bluetooth headphone.</p>		N/A
	<p>Zx.5 Measurement methods</p> <p>Measurements shall be made in accordance with EN 50332-1 or EN 50332-2 as applicable. Unless stated otherwise, the time interval T shall be 30 s.</p> <p>NOTE Test method for wireless equipment provided without listening device should be defined.</p>		N/A



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2.7.1	<p>Replace the subclause as follows:</p> <p>Basic requirements</p> <p>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):</p> <p>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;</p> <p>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;</p>		P
	<p>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.</p> <p>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.</p>		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



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3.2.5.1	<p>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”.</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6 </td><td>0,75 ^{a)} </td></tr><tr><td>Over 6 up to and including 10 (0,75) ^{b)}</td><td>1,0 </td></tr><tr><td>Over 10 up to and including 16 (1,0) ^{c)}</td><td>1,5 </td></tr></table> <p>In the conditions applicable to Table 3B delete the words “in some countries” in condition ^{a)}.</p> <p>In NOTE 1, applicable to Table 3B, delete the second sentence.</p>	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		N/A
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								
3.2.5.1 (A2:2013)	NOTE Z1 The harmonised code designations corresponding to the IEC cord types are given in Annex ZD		N/A						
3.3.4	<p>In Table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <table><tr><td>Over 10 up to and including 16 1,5 to 2,5 1,5 to 4 </td></tr></table> <p>Delete the fifth line: conductor sizes for 13 to 16 A</p>	Over 10 up to and including 16 1,5 to 2,5 1,5 to 4		N/A					
Over 10 up to and including 16 1,5 to 2,5 1,5 to 4									
4.3.13.6 (A1:2010)	<p>Replace the existing NOTE by the following:</p> <p>NOTE Z1 Attention is drawn to:</p> <p>1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz, and</p> <p>2006/25/EC: Directive on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents (artificial optical radiation).</p>		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	<p>Replace the last paragraph of this annex by:</p> <p>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.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete NOTE 2.</p>		N/A						



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

Bibliograph y	Additional EN standards.		—
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ZA	NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR CORRESPONDING EUROPEAN PUBLICATIONS	—
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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 (A11:2009)	In Norway and Sweden , for requirements see 1.7.2.1 and 7.3 of this annex.		N/A
1.5.7.1 (A11:2009)	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



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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.2.1	<p>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.</p> <p>The marking text in the applicable countries shall be as follows:</p> <p>In Finland: "Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan"</p> <p>In Norway: "Apparatet må tilkoples jordet stikkontakt"</p> <p>In Sweden: "Apparaten skall anslutas till jordat uttag"</p>		N/A
1.7.2.1 (A11:2009)	<p>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.</p> <p>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.</p> <p>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:</p> <p>"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)." Page 47 of 82</p>		
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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>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.</p> <p>Translation to Norwegian (the Swedish text will also be accepted in Norway):</p> <p>"Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet</p> <p>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."</p> <p>Translation to Swedish:</p> <p>"Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan</p> <p>utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för</p> <p>brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät</p> <p>galvanisk isolator finnas mellan utrustningen och kabel-TV nätet."</p>		N/A
1.7.2.1 (A2:2013)	<p>In Denmark, 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.</p> <p>The marking text in Denmark shall be as follows: In Denmark: "Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord."</p>		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
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. 1.7.5 (A11:2009) For CLASS II EQUIPMENT the socket outlet shall be in accordance with Standard Sheet DKA 1-4a.		N/A
1.7.5 (A2:2013)	In Denmark , socket-outlets for providing power to other equipment shall be in accordance with the DS 60884-2-D1:2011. For class I equipment the following Standard Sheets are applicable: DK 1-3a, DK 1-1c, DK 1-1d, DK 1-5a or DK 1-7a, with the exception for STATIONARY EQUIPMENT where the socket-outlets shall be in accordance with Standard Sheet DK 1-1b, DK 1-1c, DK 1-1d or DK 1-5a. Socket outlets intended for providing power to Class II apparatus with a rated current of 2,5 A shall be in accordance with DS 60884-2-D1 standard sheet DKA 1-4a. Other current rating socket outlets shall be in compliance with DS 60884-2-D1 Standard Sheet DKA 1-3a or DKA 1-3b. Justification the Heavy Current Regulations, 6c		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.		P
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



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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
3.2.1.1	<p>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.</p> <p>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.</p> <p>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.</p>		N/A
3.2.1.1 (A2:2013)	<p>In Denmark, supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to DS 60884-2-D1.</p> <p>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.</p> <p>If a single-phase equipment having a RATED CURRENT exceeding 13 A or if a poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with the standard sheets DK 6-1a in DS 60884-2-D1 or EN 60309-2.</p> <p>Justification the Heavy Current Regulations, 6c</p>		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
3.2.1.1	<p>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.</p> <p>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.</p> <p>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.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A
3.2.1.1	<p>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.</p> <p>NOTE 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A
3.2.1.1	<p>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.</p>		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 mm ² is allowed for equipment with a rated current over 10 A and up to and including 13 A.		N/A



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ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
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: <ul style="list-style-type: none">• 1,25 mm² to 1,5 mm² 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



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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7.1	<p>In Finland, Norway and Sweden TOUCH CURRENT measurement results exceeding 3,5 mA r.m.s. are permitted only for the following equipment:</p> <ul style="list-style-type: none">• STATIONARY PLUGGABLE EQUIPMENT TYPE A that<ul style="list-style-type: none">is intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, for example, in a telecommunication centre; andhas provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR; andis provided with instructions for the installation of that conductor by a SERVICE PERSON;• STATIONARY PLUGGABLE EQUIPMENT TYPE B;• STATIONARY PERMANENTLY CONNECTED EQUIPMENT.		N/A



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)	<p>In Finland, Norway and Sweden, add the following text between the first and second paragraph of the compliance clause:</p> <p>If this insulation is solid, including insulation forming part of a component, it shall at least consist of either</p> <ul style="list-style-type: none">- 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. <p>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</p> <ul style="list-style-type: none">- 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



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Clause	Requirement + Test	Result - Remark	Verdict

ZB ANNEX (normative) SPECIAL NATIONAL CONDITIONS (EN)			
Clause	Requirement + Test	Result - Remark	Verdict
	<p>It is permitted to bridge this insulation with an optocoupler complying with 2.10.5.4 b).</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 60384-14:2005, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 60384-14:2005, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none">- 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	<p>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.</p>		N/A
7.2	<p>In Finland, Norway and Sweden, for requirements see 6.1.2.1 and 6.1.2.2 of this annex.</p> <p>The term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.</p>		N/A
7.3 (A11:2009)	In Norway and Sweden , for requirements see 1.2.13.14 and 1.7.2.1 of this annex.		N/A



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Clause	Requirement + Test	Result - Remark	Verdict

Annex ZD
(informative)

IEC and CENELEC code designations for flexible cords

Type of flexible cord	Code designations	
	IEC	CENELEC
PVC insulated cords		
Flat twin tinsel cord	60227 IEC 41	H03VH-Y
Light polyvinyl chloride sheathed flexible cord	60227 IEC 52	H03VV-F H03VVH2-F
Ordinary polyvinyl chloride sheathed flexible cord	60277 IEC 53	H05VV-F H05VVH2-F
Rubber insulated cords		
Braided cord	60245 IEC 51	H03RT-F
Ordinary tough rubber sheathed flexible cord	60245 IEC 53	H05RR-F
Ordinary polychloroprene sheathed flexible cord	60245 IEC 57	H05RN-F
Heavy polychloroprene sheathed flexible cord	60245 IEC 66	H07RN-F
Cords having high flexibility		
Rubber insulated and sheathed cord	60245 IEC 86	H03RR-H
Rubber insulated, crosslinked PVC sheathed cord	60245 IEC 87	H03RV4-H
Crosslinked PVC insulated and sheathed cord	60245 IEC 88	H03V4V4-H



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1.5.1	TABLE: list of critical components					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾	
1. Enclosure	Sabic Innovative Plastics Us L L C	945 (GG)	V-0, min.1.5mm thickness, 120°C.	UL 94	UL E121562	
2. AC Inlet (CON1)	Zhejiang LECI Electronics Co., Ltd	DB-14-3	10A, 250Vac, C14 type	IEC/EN 60320-1	VDE	
PCB	Interchangeable	Interchangeable	V-1 or better min. 130°C	UL 94, UL 796, UL 746C	UL	
X-Capacitor (CX1, CX2) (X2 or X1 type)	Carli	MPX	CX1: max. 0.22µF, CX2: max. 0.47µF, 250Vac, 100°C	IEC/EN 60384-14	VDE	
	Shantou High-New Technology Developmnt Zone Songtian Enterprise Co Ltd	MPX	CX1: max. 0.22µF, CX2: max. 0.47µF, 250Vac, 100°C	IEC/EN 60384-14	VDE	
	Cheng Tung Industrial Co Ltd	CTX	CX1: max. 0.22µF, CX2: max. 0.47µF, 250Vac, 100°C	IEC/EN 60384-14	VDE	
Bleeder resistor (R1, R2, R3, R4)	Interchangeable	Interchangeable	Each max. 750Kohm, 1/4W	--	Tested with appliance	
Y- Capacitor (CY1, CY2) (Y2 or Y1 type) (Optional)	Shenzhen Haotian Electronics Co Ltd	HT	Each max. 1000 pF, 250Vac, 125°C	IEC/EN 60384-14	TUV	
	Guangdong South Hongming Electronic Science & Technology Co Ltd	F	Each max. 1000 pF, 250Vac, 125°C	IEC/EN 60384-14	VDE	
	Shantou High-New Technology Development	CD	Each max. 1000 pF, 250Vac, 125°C	IEC/EN 60384-14	VDE	



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	Zone Songtian Enterprise Co Ltd				
Fuse (F1)	XC Electronics (Shenzhen) Corp Ltd	5T	T5A, 250Vac	IEC/EN 60127-1 IEC/EN 60127-3	VDE
Line choke (LF1)	Shenzhen Yinhuiyuan	T14*9*5	130°C	--	Tested with appliance
Line choke (LF2, LF3)	Shenzhen Yinhuiyuan	T18*10*7	130°C	--	Tested with appliance
Line choke (L1)	Shenzhen Yinhuiyuan	T80-26	130°C	--	Tested with appliance
Varistor (MOV1) (Optional)	Thinking Electronic Industrial Co Ltd	TVR10561-D, TVR10561-V TVR14561, TVR14561-K , TVR14621, TVR14621-K	Min. 300Vac, complied with IEC 60950-1:2005, Annex Q, coating V-1 min.	IEC/EN 61051-1 IEC/EN 61051-2	VDE
	Shantou High-New Technology Developmnt Zone Songtian Enterprise Co Ltd	10D471K, 14D471K	Min. 300Vac, complied with IEC 60950-1:2005, Annex Q, coating V-1 min.	IEC/EN 61051-1 IEC/EN 61051-2	VDE
	Success Electronics Co Ltd	10D471K, 14D471K	Min. 300Vac, complied with IEC 60950-1:2005, Annex Q, coating V-1 min.	IEC/EN 61051-1 IEC/EN 61051-2	VDE
Bridge Rectifier (DB1)	Interchangeable	Interchangeable	Min. 6A, min. 600Vac	--	Tested with appliance
Electrolytic capacitors (C1, C2)	Interchangeable	Interchangeable	474-684µF, min. 400Vac, min. 105°C	--	Tested with appliance
Electrolytic capacitors (EC1)	Interchangeable	Interchangeable	150µF, min. 400Vac, min. 105°C	--	Tested with appliance
Transistor (Q1, Q2)	Interchangeable	Interchangeable	Each min.20A, min. 600Vac	--	Tested with appliance
Resistor (R21)	Interchangeable	Interchangeable	max. 0.1ohm, 1/8W	--	Tested with appliance
Line choke (T1)	Shenzhen Yinhuiyuan	PQ2625	130°C	--	Tested with appliance



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-Tape	Jingjiang Yahua	CT	130°C	UL 510	UL
-Bobbin	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic, V-0, 150°C, min. 0.71 mm thickness	UL 94, UL746C	UL
Bridging Capacitor (CY3)	Shenzhen Haotian Electronics Co Ltd	HT	Max. 2200pF, 250 Vac, min. 125°C, Y1 type	IEC/EN 60384-14	VDE
	Guangdong South Hongming Electronic Science & Technology Co Ltd	F	Max. 2200pF, 250 Vac, min. 125°C, Y1 type	IEC/EN 60384-14	VDE
	Shantou High-New Technology Development Zone Songtian Enterprise Co Ltd	CD	Max. 2200pF, 250 Vac, min. 125°C, Y1 type	IEC/EN 60384-14	VDE
Optical isolator (IC3)	Everlight Electronics Co Ltd	EL817	Dti: ≥ 0.4 mm, Int. dcr. ≥ 7.6mm, min. 110°C	IEC/EN 60950-1 IEC/EN 60747-5-2	VDE
	Lite-On Technology Corp	LTV-817	Dti: = 0.6 mm, Int. dcr. ≥ 7.4mm, min. 100°C	IEC/EN 60950-1 IEC/EN 60747-5-2	VDE
Transformer (T2) (for output voltage 5V-12V)	Shenzhen Yinhuiyuan	TF32-050120	Class B	--	Tested with appliance
Transformer (T2) (for output voltage 12.1V-30V)	Shenzhen Yinhuiyuan	TF32-121300	Class B	--	Tested with appliance
-Bobbin	Sumitomo Bakelite	PM-9820	Phenolic, V-0, 150°C, min. 0.71 mm thickness	UL 94	UL
-Insulating Tape	Jingjiang Yahua Pressure	CT	130°C	UL 510	UL



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	Sensitive Glue Co Ltd				
-Triple insulation wire	Furukawa Electric Co Ltd	TEX-E	130°C	IEC/EN 60950-1	VDE
-Tube	Great Holding Industrial Co Ltd	TFT	300V, 200°C, VW-1	UL 224	UL
	Interchangeable	Interchangeable	300V, 200°C, VW-1	UL 224	UL
-Varnish	John C Dolph Co	BC-346A	220°C	UL 510	UL
	Interchangeable	Interchangeable	Min. 130°C	UL 510	UL
Insulation sheet	SABIC JAPAN L L C	EFR65	V-0, 150°C. Min. 0.25mm thickness	UL 94	UL
	Shenzhen Bornsun Industrial Co Ltd	BN-FP	V-0, 120°C. Min. 0.25mm thickness	UL 94	UL
	Shenzhen Bornsun Industrial Co Ltd	BN-ZD16	V-0, 115°C. Min. 0.25mm thickness	UL 94	UL
	Kunshan Zhongdi Materials Technology Co Ltd (E343369)	TSP-9000	V-0, 150°C. Min. 0.25mm thickness	UL 94	UL
	Formex, Div Of Illinois Tool Works Inc, Formerly (E121855)	FORMEX GK-(a)(b)(f1)	VTM-0, 115°C. Min. 0.25mm thickness	UL 94	UL
-Description	Insulation sheet is used between PCB trace or enclosure				
Insulation tape	Jingjiang Yahua Pressure Sensitive Glue Co., Ltd.	CT	130°C	UL 510	UL
-Description	Insulation tape is used in HS1, HS2				
Note:					



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1.6.2	TABLE: Electrical data (in normal conditions)						P
U (V/Hz)	I (A)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status	
Model: YHY-12010000							
90/50Hz	1.81	--	139.5	F1	1.81	Normal load (12Vdc/10A)	
90/60Hz	1.77	--	139.5	F1	1.77	Normal load (12Vdc/10A)	
100/50Hz	1.44	2.5	137.7	F1	1.44	Normal load (12Vdc/10A)	
100/60Hz	1.44	2.5	137.5	F1	1.44	Normal load (12Vdc/10A)	
240/50Hz	0.65	2.5	134.3	F1	0.65	Normal load (12Vdc/10A)	
240/60Hz	0.65	2.5	134.1	F1	0.65	Normal load (12Vdc/10A)	
254.4/50Hz	0.91	--	133.5	F1	0.91	Normal load (12Vdc/10A)	
254.4/60Hz	0.89	--	133.4	F1	0.89	Normal load (12Vdc/10A)	
264/50Hz	0.88	--	133.3	F1	0.88	Normal load (12Vdc/10A)	
264/60Hz	0.87	--	133.3	F1	0.87	Normal load (12Vdc/10A)	
Model: YHY-30004000							
90/50Hz	1.66	--	134.8	F1	1.66	Normal load (30Vdc/4A)	
90/60Hz	1.64	--	134.6	F1	1.64	Normal load (30Vdc/4A)	
100/50Hz	1.41	2.5	133.2	F1	1.41	Normal load (30Vdc/4A)	
100/60Hz	1.41	2.5	132.9	F1	1.41	Normal load (30Vdc/4A)	
240/50Hz	0.73	2.5	131.1	F1	0.73	Normal load (30Vdc/4A)	
240/60Hz	0.73	2.5	130.5	F1	0.73	Normal load (30Vdc/4A)	
254.4/50Hz	0.73	--	130.3	F1	0.73	Normal load (30Vdc/4A)	
254.4/60Hz	0.73	--	130.5	F1	0.73	Normal load (30Vdc/4A)	
264/50Hz	0.90	--	129.8	F1	0.90	Normal load (30Vdc/4A)	
264/60Hz	0.90	--	129.5	F1	0.90	Normal load (30Vdc/4A)	
Supplementary information:							

2.1.1.5 c) 1)	TABLE: max. V, A, VA test					N/A
	Voltage (rated) (V)	Current (rated) (A)	Voltage (max.) (V)	Current (max.) (A)	VA (max.) (VA)	
Model: YHY-12010000						
	12	10	12.0	14	159.32(11.38V×14A)	



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Model: YHY-30004000				
30	4	30.0	5.8	169.42(29.21V×5.8A)
supplementary information:				
Under highest Rated Voltage.				

2.1.1.5 c) 2)	TABLE: stored energy			N/A		
Capacitance C (μ F)		Voltage U (V)		Energy E (J)		
--		--		--		
supplementary information:						

2.1.1.7	TABLE: discharge test				P
Condition		τ calculated (s)	τ measured (s)	t u→ 0V (s)	Comments
System on		0.69	0.679	--	Vpeak measured: 376V 37% Vpeak: 139.12V measured voltage in 1 Sec: 88V
supplementary information:					
Test voltage: 264V 60Hz Overall capacity: CX1=0.22uF, CX2=0.47uF Discharge resistor: R1=R2=R3= R4=1.0 M Ω Total=1.0M Ω					

2.2	TABLE: evaluation of voltage limiting components in SELV circuits			P
Component (measured between)		max. voltage (V) (normal operation)		Voltage Limiting Components
		V peak	V d.c.	
Model: YHY-12010000				
T1 pin CT1 – pin CT2	52.0	--	--	
Q6 pin S – T1 pin CT1	--	12.2	Q6	
Q6 pin G – T1 pin CT1	16.0	--	Q6	
Q5 pin G – T1 pin CT1	16.0	--	Q5	
After R107 – T1 pin CT1	50.0	--	R107	
IC5 pin 3 – T1 pin CT1	3.68	--	IC5	
After C101 – T1 pin CT1	37.2	--	C101	
Model: YHY-30004000				
T1 pin CT1 – pin CT2	45.2	--	--	



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Q6 pin S – T1 pin CT1	--	29.1	Q6
Q6 pin G – T1 pin CT1	32.0	--	Q6
Q5 pin G – T1 pin CT1	32.2	--	Q5
After R107 – T1 pin CT1	44.8	--	R107
IC5 pin 3 – T1 pin CT1	2.79	--	IC5
After C101 – T1 pin CT1	50.0	--	C101
Fault test performed on voltage limiting components	Voltage measured (V) in SELV circuits (V peak or V d.c.)		
Model: YHY-12010000			
Q6 short	0(Unit shut down)		
Q5 short	0(Unit shut down)		
R107 short	Unit normal operate(11.64)		
C101 short	Unit normal operate(11.64)		
Model: YHY-30004000			
Q6 short	0(Unit shut down)		
Q5 short	0(Unit shut down)		
R107 short	Unit normal operate(29.36)		
C101 short	Unit normal operate(29.36)		
supplementary information:			

2.4.2	TABLE: limited current circuit measurement					P
Location	Voltage (V)	Current (mA)	Freq. (Hz)	Limit (mA)	Comments	
CY3 Secondary pin to Earth	0.344	0.688	--	0.7	Test with Annex (U/500)	
supplementary information:						
CY3= 2200pF						

2.5	TABLE: limited power sources				N/A				
Circuit output tested:									
Measured Uoc (V) with all load circuits disconnected: --									
conditions		I_{sc} (A)		VA					
		Meas.	Limit	Meas.	Limit				
Normal condition (V out)		--	--	--	--				



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Single fault:	--	--	--	--
Single fault:	--	--	--	--
supplementary information:				
1 ^o : Unit shut down immediately				

2.6.3.4	TABLE: Resistance of earthing measurement			P
Location	Resistance measured (mΩ)	Comments		
PE pin to Metal enclosure	13.1	32A, 1min		
Supplementary information:				

2.10.2	Table: working voltage measurement			P
Location	RMS voltage (V)	Peak voltage (V)	Comments	
Model: YHY-12010000				
T1 pin 1 - pin CT1	310	608	--	
T1 pin 3- pin CT1	259	352	--	
T1 pin 5 - pin CT1	182	456	--	
T1 pin 6 - pin CT1	177	368	--	
T1 pin 1 - pin CT2	329	620	The maximum Vpeak and Vrms of T1	
T1 pin 3- pin CT2	260	364	--	
T1 pin 5 - pin CT2	184	488	--	
T1 pin 6 - pin CT2	178	408	--	
CY3 primary pin – secondary pin	169	364	--	
IC3 pin 1- pin 3	175	368	--	
IC3 pin 2 - pin 3	176	372	--	
IC3 pin 1- pin 4	175	368	--	
IC3 pin 2- pin 4	175	368	--	
Model: YHY-30004000				
T1 pin 1 - pin CT1	357	670	--	
T1 pin 3- pin CT1	243	350	--	
T1 pin 5 - pin CT1	195	430	--	
T1 pin 6 - pin CT1	193	410	--	



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T1 pin 1 - pin CT2	378	710	The maximum Vpeak and Vrms of T1
T1 pin 3- pin CT2	245	370	--
T1 pin 5 - pin CT2	201	480	--
T1 pin 6 - pin CT2	196	440	--
CY3 primary pin – secondary pin	173	380	--
IC3 pin 1- pin 3	191	410	--
IC3 pin 2 - pin 3	190	411	--
IC3 pin 1- pin 4	191	410	--
IC3 pin 2- pin 4	190	410	--
supplementary information:			
Test voltage: 240 V			
Test frequency: 60 Hz			

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:							
Line to Neutral before Fuse	420	250	2.3(1.5*1.48)	3.3	2.5	3.3	
Between fuse F1 two ends on PCB	420	250	2.3(1.5*1.48)	3.2	2.5	5.0	
Basic/supplementary:							
Across CY2	420	250	3.0(2.0*1.48)	5.3	3.0	5.3	
Primary trace to earth trace	420	250	3.0(2.0*1.48)	3.0	3.0	3.0	
Reinforced:							
IC3 primary trace to secondary trace	420	250	6.0(4.0*1.48)	6.6	6.0	6.6	
CY3 primary to secondary	420	250	6.0(4.0*1.48)	6.9	6.0	7.8	
R114 trace to R39 trace	420	250	6.0(4.0*1.48)	7.2	6.0	7.2	
R108 trace to C4 trace	420	250	6.0(4.0*1.48)	6.8	6.0	6.8	
Primary heat sink to CY3 secondary	420	250	6.0(4.0*1.48)	6.5	6.0	6.5	
T2 primary winding to secondary winding	710	378	7.2(4.8*1.48)	9.5	7.6	9.5	



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supplementary information:

1. Core of transformer (T2) is considered as free body.
2. This equipment is intended to be operated under altitude up to 5000m, so the clearance is multiplied by the altitude correction factor 1.48 specified in table A.2 of IEC 60664-1.

2.10.5	TABLE: Distance through insulation measurements					P
Distance through insulation (DTI) at/of:		U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
One layer insulation tape (used in Transformer and heat sink) (Reinforced Insulation)		420	250	3000V _a c	--	1)
Optical isolator (Reinforced Insulation) (all sources)		420	250	3000V _a c	Min. 0.4	1)
Insulation sheet (all sources)		420	250	3000	0.4	0.4
Enclosure		420	250	3000	0.4	2.0
Supplementary information:						
1). See appended table 1.5.1.						

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	--	--	--	--	--	--	--	--	--	--		



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Test results:	--	Verdict
- Chemical leaks	--	--
- Explosion of the battery	--	--
- Emission of flame or expulsion of molten metal	--	--
- Electric strength tests of equipment after completion of tests	--	--
Supplementary information:		

4.3.8	TABLE: Batteries	N/A
Battery category	: (Lithium, NiMh, NiCad, Lithium Ion ...)	
Manufacturer	: --	
Type / model	: --	
Voltage	: --	
Capacity	: --	
Tested and Certified by (incl. Ref. No.).....	: --	
Circuit protection diagram:	--	

MARKINGS AND INSTRUCTIONS (1.7.2.1, 1.7.13)	
Location of replaceable battery	--
Language(s)	--
Close to the battery.....	--
In the servicing instructions.....	--
In the operating instructions.....	--

4.5	TABLE: Thermal requirements	P		
	Supply voltage (V)	90V/50Hz	264V/50Hz	--
	Ambient T _{min} (°C)	--	--	--
	Ambient T _{max} (°C).....	--	--	--
Maximum measured temperature T of part/at::		T (°C)		
		Measured	Shift to 40	Measured Shift to 40
Model: YHY-12010000		54.5	55.8	44.1 45.2 70.0
AC inlet				



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CX1 body	62.8	65.3	51.6	52.9	100.0
MOV1 body	74.6	75.4	60.3	60.9	85.0
LF1 coil	74.8	75.3	59.4	59.8	130.0
CX2 body	77.0	77.4	60.3	60.7	100.0
LF2 coil	77.6	77.0	58.4	58.7	130.0
CY2 body	76.8	77.0	58.7	59.0	125.0
LF3 coil	93.5	93.5	66.8	67.2	130.0
PCB near DB1	77.9	80.9	58.1	60.0	130.0
L1 coil	88.0	88.0	67.5	67.9	130.0
C1 body	92.1	92.1	72.8	73.1	105.0
T1 coil	93.9	93.8	68.1	68.5	130.0
PCB near D1	95.5	95.4	75.0	75.2	130.0
PCB near Q1	95.7	96.2	72.8	73.5	130.0
PCB near IC1	85.5	84.8	66.3	66.0	130.0
IC3 body	91.9	93.4	76.3	77.6	100.0
T2 coil	102.9	102.7	86.2	85.5	110.0
T2 core	97.4	96.6	80.9	79.9	110.0
PCB near Q2	105.9	105.9	84.3	84.7	130.0
PCB near Q5	90.6	91.2	76.9	77.4	130.0
CY3 body	92.7	93.2	76.6	76.8	125.0
Input wire	75.2	75.6	59.2	59.7	80.0
output wire	78.0	78.9	67.9	68.5	80.0
Enclosure inside near of T1	71.6	74.7	58.8	61.5	120.0
Enclosure outside near of T1	57.4	66.4	48.1	55.8	95.0
Ambient	28.6	28.7	28.2	28.2	--
Model: YHY-30004000					
AC inlet	54.6	53.5	47.0	47.5	70.0
CX1 body	63.3	63.3	57.2	57.6	100.0
MOV1 body	68.4	67.8	60.9	61.2	85.0
LF1 coil	69.5	68.9	60.9	61.1	130.0
CX2 body	74.5	73.9	63.8	64.1	100.0
LF2 coil	79.5	78.1	64.2	64.4	130.0
CY2 body	74.6	73.7	62.3	62.5	125.0
LF3 coil	89.0	85.7	66.4	66.2	130.0
PCB near DB1	99.6	102.2	70.2	72.6	130.0



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L1 coil	80.4	79.2	65.8	66.1	130.0
C1 body	87.1	86.0	76.0	76.1	105.0
T1 coil	87.6	86.5	59.1	60.1	130.0
PCB near D1	91.2	89.8	77.2	77.4	130.0
PCB near Q1	86.7	86.2	74.8	75.9	130.0
PCB near IC1	81.5	81.1	64.2	64.4	130.0
IC3 body	87.2	87.6	80.7	82.0	100.0
T2 coil	93.3	91.9	87.8	87.4	110.0
T2 core	88.5	87.1	76.7	76.2	110.0
PCB near Q2	83.2	82.4	74.4	74.8	130.0
PCB near Q5	87.1	86.5	83.6	83.9	130.0
CY3 body	82.5	81.2	74.8	74.9	125.0
Input wire	65.8	65.0	57.4	57.6	80.0
output wire	64.5	63.2	60.1	59.8	80.0
Enclosure inside near of T1	69.5	68.9	57.7	61.5	120.0
Enclosure outside near of T1	47.1	59.7	44.3	55.6	95.0
Ambient	25.4	25.1	25.3	25.3	--

Supplementary information:

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: Supplementary information:

- The temperatures were measured under worst normal mode defined in 1.2.2.1 and as described in sub-clause 1.6.2 and at voltages as described above.

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:				
The bobbin of transformer(T2) material is phenolic, no test is needed.				

4.6.1, 4.6.2	Table: enclosure openings			N/A
Location	Size (mm)	Comments		



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Note(s): No openings.

4.7	TABLE: Resistance to fire					P
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Metal Enclosure	--	--	1)	Metallic	1)	
PCB	--	--	--	V-1 or better	1)	
Supplementary information:						
1) For details refer to table 1.5.1.						

5.1	TABLE: touch current measurement				P		
Measured between:	Measured (mA)	Limit (mA)	Comments/conditions				
L→Output connector	0.01	0.25	Switch "e" closed				
N→ Output connector	0.01	0.25	Switch "e" closed				
L→ Metal Enclosure	0.30	3.5	Switch "e" opened				
N→ Metal Enclosure	0.30	3.5	Switch "e" opened				
supplementary information:							
Input voltage: 264Vac Input frequency: 60Hz Overall capacity: CY3:2200pF, CY1=CY2:1000pF							

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	
L and N of input (without fuse)	AC	1500	No	
Primary and secondary(for unit)	AC	3000	No	
Transformer T2 primary and secondary	AC	3000	No	
Transformer T2 primary and core to secondary	AC	3000	No	
Insulation sheet (all sources)	AC	3000	No	
One layer insulation tape of T2 and heat-sink (all sources)	AC	3000	No	
Supplementary information:				
Transformer core considered as primary.				

5.3	TABLE: Fault condition tests			P
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	Ambient temperature (°C)..... : 25°C if not specified					—
	Power source for EUT: Manufacturer, model/type, output rating					—
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation
Model: YHY-30004000						
DB1 pin 1 - pin 2	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
C1	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
Q1 pin D - pin S	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
Q1 pin D - pin G	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
Q1 pin G - pin S	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Q2 pin D - pin S	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
Q2 pin D - pin G	s-c	240	1sec	F1	0	Fuse opened immediately. No hazards.
Q2 pin G - pin S	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
T1 pin 1 –pin 3	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
T1 pin 5 –pin 6	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
T1 pin CT1 – pin CT2	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC1pin 8- pin 6	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC2 pin 8- pin 2	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC2 pin 8 - pin 4	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC3 pin 1	o-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC3 pin 3	o-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
IC3 pin 1 - pin 2	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.



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IC3 pin 3 - pin 4	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
R42	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Q5	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Q6	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Output +/-	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Output +/-	o-l	240	7hrs 54 min	F1	0.73-> 0.80-> 0.02	Temperature was stable at 5.5 A, increased to 5.6A, unit shut down, the maximum temperature were: T1 coil= 104.3 degree C, T1 core = 100.1 degree C, Ambient=24.7 degree C, no damage, no hazards.
T1 Pin CT1 – GND	o-l	240	7hrs 47 min	F1	0.73-> 0.80-> 0.02	Temperature was stable at 1.6 A, increased to 1.7A, unit shut down, the maximum temperature were: T1 coil= 107.2 degree C, T1 core = 102.5 degree C, Ambient=24.8 degree C, no damage, no hazards.

Model: YHY-12010000

Output +/-	s-c	240	10 min	F1	0.02	Unit shut down immediately, no damaged, no hazards.
Output +/-	o-l	240	5hrs 31 min	F1	0.65-> 0.68-> 0.02	Temperature was stable at 11A, increased to 12A, unit shut down, the maximum temperature were: T1 coil= 100.9 degree C, T1 core = 91.1 degree C, Ambient=28.0 degree C, no damage, no hazards.
T1 Pin CT1 – GND	o-l	240	5hrs 47 min	F1	0.65-> 0.68-> 0.02	Temperature was stable at 0.1A, increased to 0.2A, unit shut down, the maximum temperature were: T1 coil= 105.4 degree C, T1 core = 93.9 degree C, Ambient=27.8 degree C, no damage, no hazards.



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Supplementary information:

- 1). After each fault condition, the output did not exceed the SELV requirement.
- 2). Based on the circuit diagram and input power measured and engineering judgment, additional heating test is not necessary.
- 3). After fuse opened condition, same result came out for each source of fuse used and the fuse does not cracked.



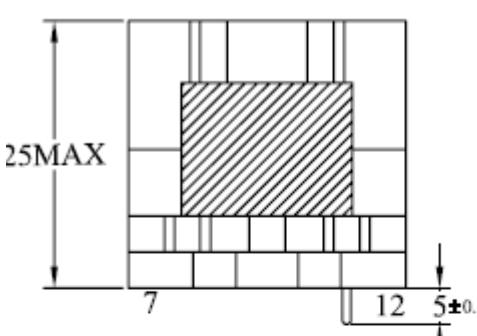
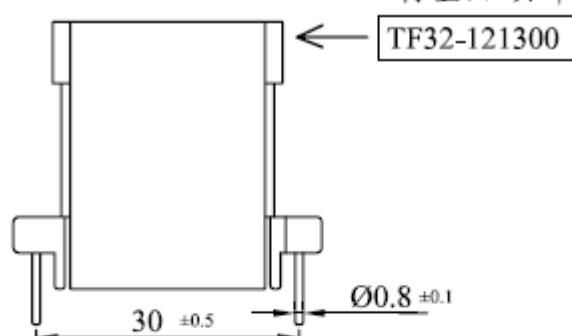
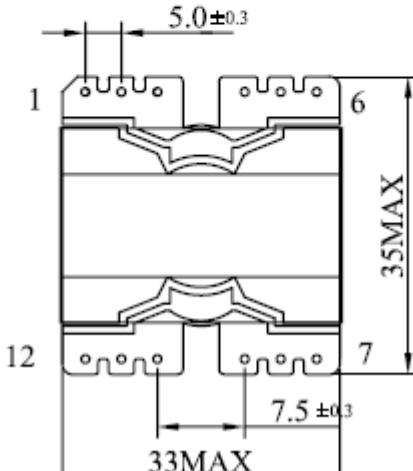
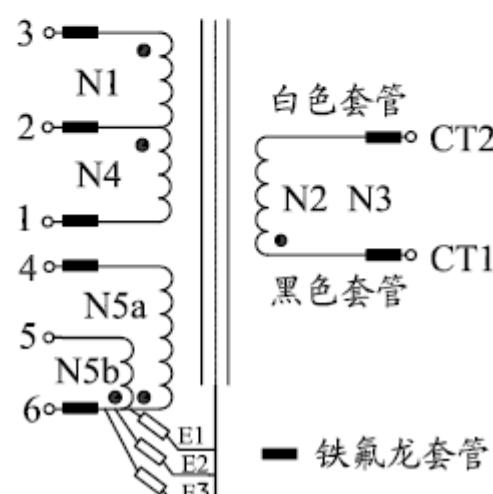
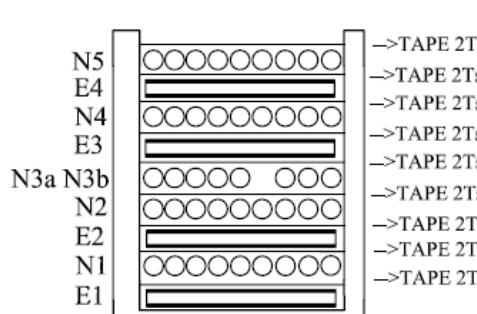
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C.2	TABLE: transformers							P			
Loc.	Tested insulation	Working voltage peak / V (2.10.2)	Working voltage rms / V (2.10.2)	Required electric strength (5.2)	Required clearance / mm (2.10.3)	Required creepage distance / mm (2.10.4)	Required creepage distance / mm (2.10.4)	Required distance insul. (2.10.5)			
T1 primary winding to secondary winding	RI	710	378	3000Vac	7.2	7.6	7.6	0.4			
T1 core to primary winding	BI	710	378	3000Vac	7.2	7.6	7.6	0.4			
Loc.	Tested insulation			Test voltage/ V	Measured clearance / mm	Measured creepage dist./ mm	Measured distance insul. / mm; number of layers				
T1 primary winding to secondary winding	RI			3000Vac	10.0	10.0	Triple insulation wire is used in primary				
T1 core to primary winding	BI			3000Vac	10.0	10.0	Triple insulation wire is used in primary				
supplementary information:											
1. Transformer core considered as primary.											
2. This equipment is intended to be operated under altitude up to 5000m, so the clearance is multiplied by the altitude correction factor 1.48 specified in table A.2 of IEC 60664-1.											



C.2	TABLE: transformers	P																											
Transformer: TF32-121300																													
1. 主视图 																													
3. 左视图 																													
2. 底视图 																													
4. 原理图 																													
 <table border="1"> <thead> <tr> <th>绕线顺序</th> <th>绕径</th> <th>圈数</th> </tr> </thead> <tbody> <tr> <td>N1 3 - 2</td> <td>0.37mm*2 ,2UEW</td> <td>16Ts 密绕</td> </tr> <tr> <td>E1 6 - NC</td> <td>0.05*13mm</td> <td>1.1Ts 置中</td> </tr> <tr> <td>N2 CT1 - CT2</td> <td>0.50mm*4, TEX-B</td> <td>5Ts 密绕</td> </tr> <tr> <td>N2 CT1 - CT2</td> <td>0.50mm*4, TEX-B</td> <td>5Ts 密绕</td> </tr> <tr> <td>E2 6 - NC</td> <td>0.05*13mm</td> <td>1.1Ts 置中</td> </tr> <tr> <td>N2 2 - 1</td> <td>0.37mm*2 ,2UEW</td> <td>16Ts 密绕</td> </tr> <tr> <td>N3a 6 - 4</td> <td>0.25mm*1 ,2UEW</td> <td>7Ts 同层均绕</td> </tr> <tr> <td>N3b 6 - 5</td> <td>0.25mm*1 ,2UEW</td> <td>3Ts 且分开绕</td> </tr> </tbody> </table>			绕线顺序	绕径	圈数	N1 3 - 2	0.37mm*2 ,2UEW	16Ts 密绕	E1 6 - NC	0.05*13mm	1.1Ts 置中	N2 CT1 - CT2	0.50mm*4, TEX-B	5Ts 密绕	N2 CT1 - CT2	0.50mm*4, TEX-B	5Ts 密绕	E2 6 - NC	0.05*13mm	1.1Ts 置中	N2 2 - 1	0.37mm*2 ,2UEW	16Ts 密绕	N3a 6 - 4	0.25mm*1 ,2UEW	7Ts 同层均绕	N3b 6 - 5	0.25mm*1 ,2UEW	3Ts 且分开绕
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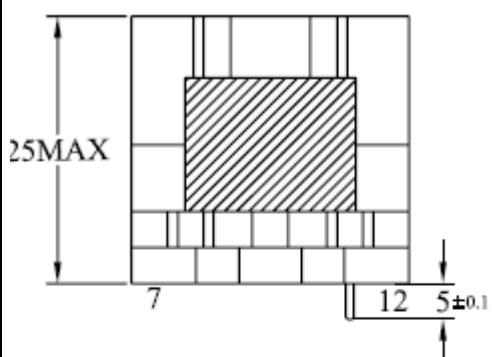


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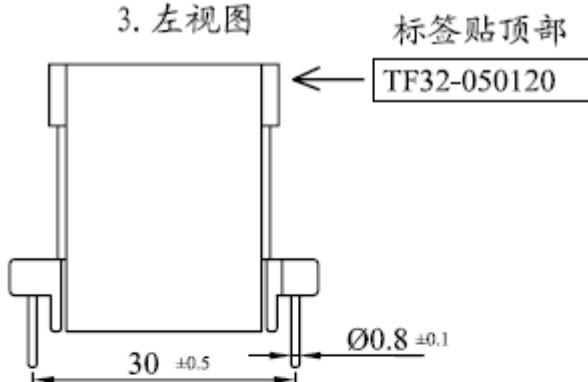
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Transformer: TF32-050120

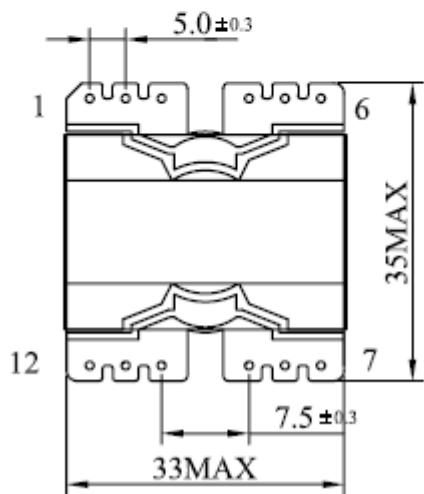
1. 主视图



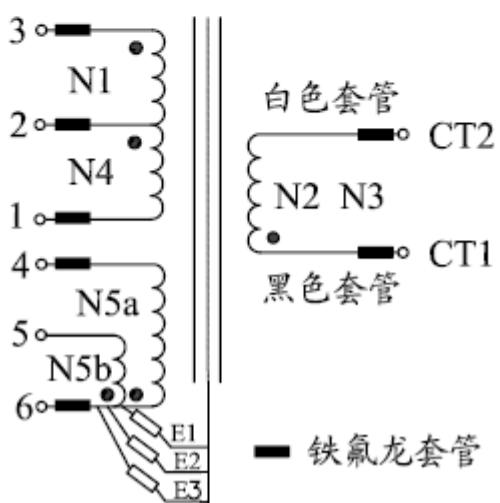
3. 左视图



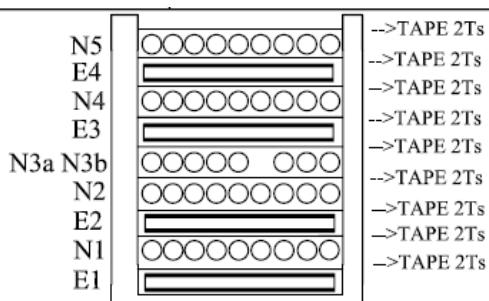
2. 底视图



4. 原理图



绕线顺序		绕径	圈数
N1	3 - 2	0.37mm*2 ,2UEW	16Ts
E1	6 - NC	0.05*13mm	1.1Ts
N2	CT1 - CT2	0.55mm*4, TEX-B	4Ts
N2	CT1 - CT2	0.55mm*4, TEX-B	4Ts
E2	6 - NC	0.05*13mm	1.1Ts
N2	2 - 1	0.37mm*2 ,2UEW	16Ts
N3a	6 - 4	0.25mm*1 ,2UEW	12Ts
N3b	6 - 5	0.25mm*1 ,2UEW	6Ts





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Photo(s)

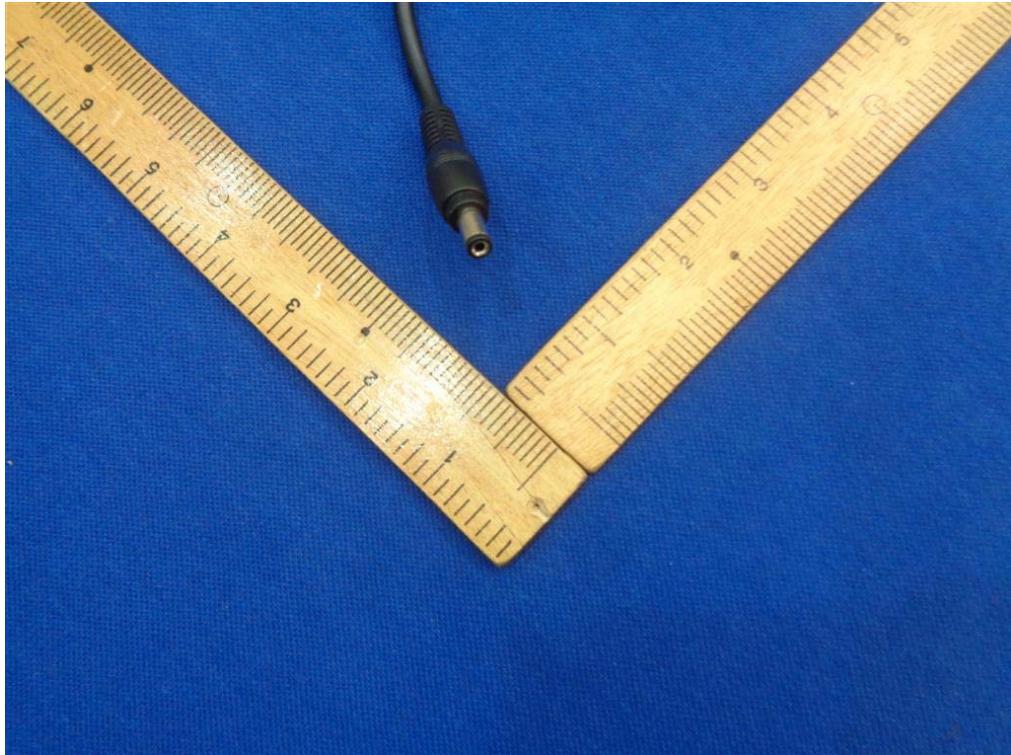




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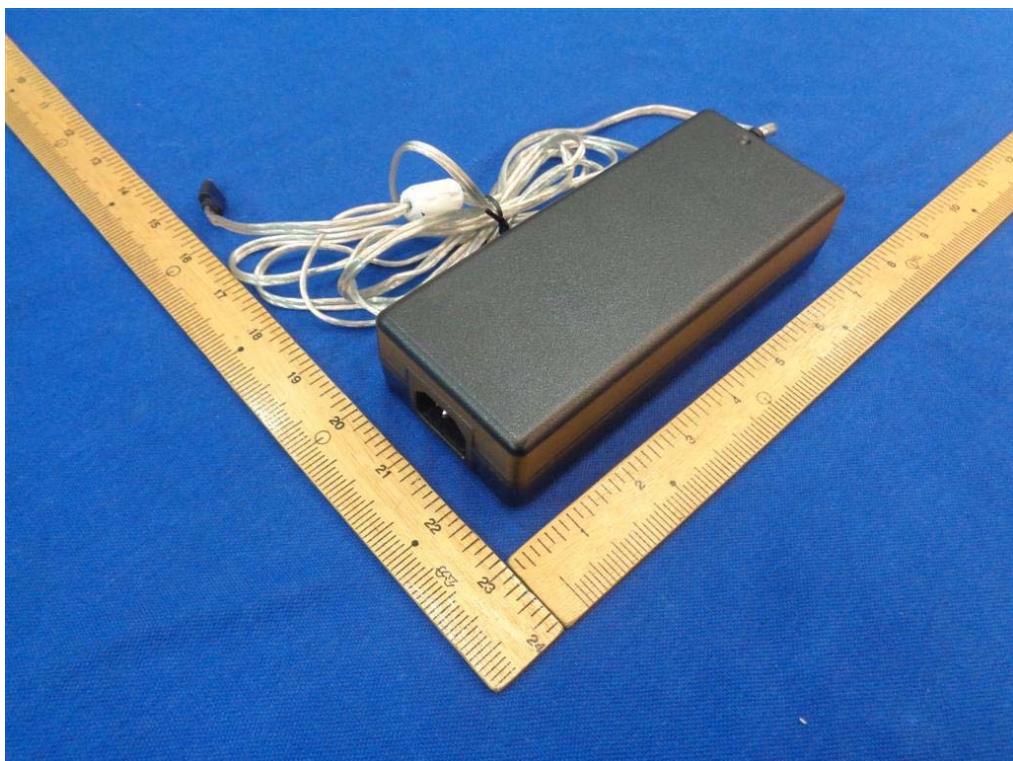




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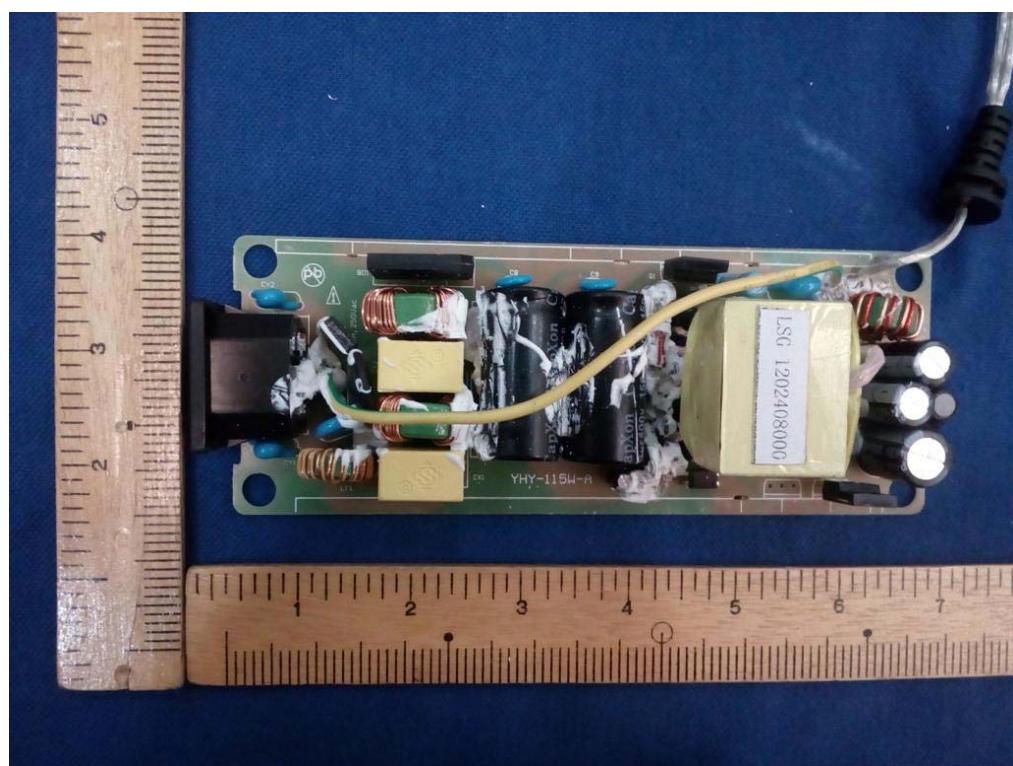




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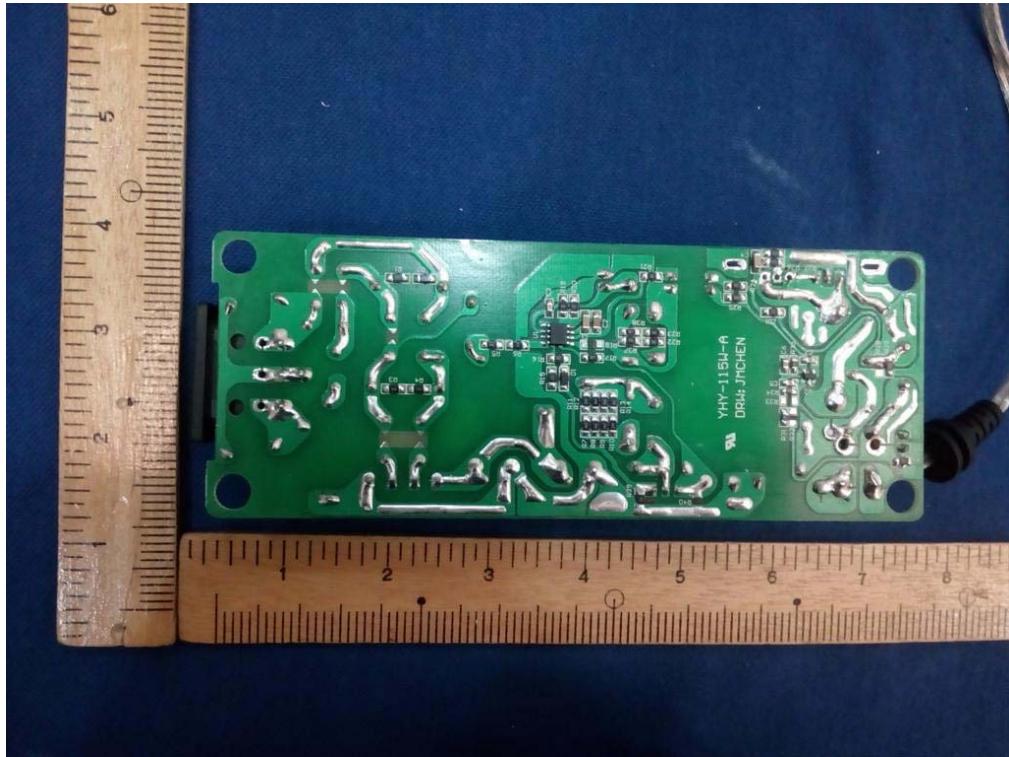




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