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REPORT

Prepared For:

Elections Systems and Software, LLC
11208 John Galt Blvd
Omaha, NE 68137 USA

Equipment: Voting Machine
Model Nos: DS950

Prepared By:

National Technical Systems

1736 Vista View Dr.
Longmont, CO 80504
Phone: 303-776-7249

Report Number: TR-PR125496

Project Number: PR125496

TABLE OF CONTENTS

REVISION SUMMARY

The following is a list of revisions that have been made to the report.

Document History				
Revision	***Issue Date***	***Affected Pages***	***Description Of Modifications***	***Revised By***
0			Initial Release	

NOTE: Latest revisions to report are identified by Bold Double Underlined Font.

REPORT SUMMARY

PREPARED FOR
Elections Systems and Software
11208 John Galt Blvd
Omaha, NE 68137 USA

STANDARD	**TITLE**
EN 62368-1:2014 (2nd Edition)	Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements
UL 62368-1:2019 (3rd Edition)	Audio/Video, Information and Communication Technology Equipment – Part 1: Safety Requirements

Job Number: PR125496 Date of Issue: 11/13/2020
Report Number: TR-PR125496 Revision Date: N/A

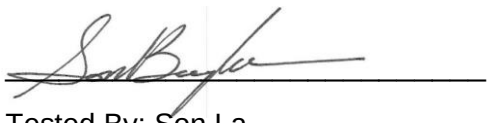
TESTING LABORATORY'S INFORMATION

Name: National Technical Systems
Address: 1736 Vista View Dr.
Longmont, CO 80504
Phone: 303-776-7249

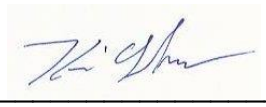
TEST LOCATION INFORMATION

National Technical Systems
1736 Vista View Dr.
Longmont, CO 80504
303-776-7249

Test Engineer:

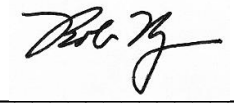


Tested By: Son La
Product Safety Engineer



Kevin Johnson
Quality Assurance Representative

Reviewed By:



Reviewer: Bob Ng
Senior Product Safety Engineer

Greg Gagne
Final Report Preparer

MANUFACTURER'S INFORMATION

Name: Elections Systems and Software, LLC
Address: 11208 John Galt Blvd
Omaha, NE 68137
USA

Contact: Sue McKay
Phone: 402-321-3840
Fax: 402-970-1285
E-Mail: slmckay@essvote.com

Equipment: Voting Machine
Model Name: DS950

Overview

The DS950® is a high-speed central count scanner and tabulator with ballot sorting capabilities. It can scan a variety of ballot sizes, including ExpressVote cards, and it can read both sides of the ballots in any of four orientations, even folded ballots. The DS950 scans, tabulates, and automatically sorts ballots, separating them into one of three discrete output bins without interrupting scanning. Optionally, this device may be configured to transmit tabulation results to the results server through a closed network connection rather than using physically transported USB flash drives.

The DS950 is mounted on a cart with supporting separately certified equipment, including a certified laser printer and certified UPS.

Model Similarities and Differences

N/A

Ratings:

Model	Electrical Ratings: Volts	Amps	Hz	Dimensions: (L x W x H cm)	Equipment Mobility:
DS590	120	3.0	60	792 x 1310 x 609	stationary

Operating Condition:	Protection Class:	Enclosure Protection Rating:	External Power Supply Electrical Ratings: Volts	Amps	Hz
Continuous	I	IPX0	N/A	N/A	N/A

GENERAL INFORMATION REGARDING THE REPORT FORMAT

Non-compliance: A summary of non-compliances identified in this report is located in the Findings Summary section of this report.

Resolution of Non-compliance: All resolutions to the non-compliances listed in this report are to be addressed by the manufacturer and included as part of the technical file maintained for this product.

CONCLUSION

The purpose of this report is to demonstrate compliance with accepted standards for product safety and as proof of compliance to the EU's Low Voltage Directive. Subsequent pages give the details of this investigation.

This report is based on the following standards: IEC 62368-1:2014. The wording of the requirements listed in this test report are provided for reference and informational purposes only and should not be considered a precise transcription of the standard as adopted by CENELEC. In case of doubt, reference should be made to the aforementioned standard.

FINDINGS SUMMARY

The Findings Summary is a summary of the discrepancies and non-compliances to the aforementioned standard(s). The requirement and its section number corresponding to the standard are given for each item. The Observations include a brief description of why we believe the product is not in compliance as well as recommendations on how to rectify the issue(s).

Item No.	Section	Requirements & Observations
1.		None

EVALUATION CHECKLIST

Test Report issued under the responsibility of:

National Technical Systems

TEST REPORT

EN 62368-1

Audio/Video, Information and Communication Technology Equipment

Part 1: Safety Requirements

Report Number. ..... :	TR-PR125496
Date of issue ..... :	11/13/2020
Total number of pages	84
CE Testing Laboratory ..... :	National Technical Systems
Address ..... :	1736 Vista View Dr. Longmont, Colorado 80504
Applicant's name ..... :	Elections Systems and Software, LLC
Address ..... :	11208 John Galt Blvd Omaha, NE 68137 USA
Manufacturer's name……..:	Elections Systems and Software
Address ..... :	11208 John Galt Blvd Omaha, NE 68137 USA
Test specification:	
Standard ..... :	EN 62368-1:2014 (Second Edition)
Test procedure ..... :	Informative test report for technical file & to support manufacturer's Declaration of Conformity.
Non-standard test method……..:	N/A
Test Report Form No. ..... :	IEC62368_1B
Test Report Forms Originator ..... :	UL(US)
Master TRF ..... :	2014-03

Test item description ..... **:**	Voting Machine
Trade Mark ..... :	
Manufacturer ..... :	Election Systems and Software, LLC
Model/Type reference ..... :	DS950

Ratings ..... :	120Vac, 60Hz, 3.0A

Testing procedure and testing location:			
☒	**CE Testing Laboratory**:	National Technical Systems	
Testing location/ address ..... :		1736 Vista View Dr. Longmont, Colorado 80504	
☐	**Associated Testing Laboratory:**		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Approved by (name + signature) ..... :		
☐	Testing procedure:		
Testing location/ address ..... :			
	Tested by (name + signature) ..... :		
	Approved by (name + signature) ..... :		
	Supervised by (name + signature) ... :		

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

1. **National Differences ……..…. 10 pages**
2. **Components …….. 1 page**
3. **Photos ……. 5 pages**
4. **Operation Manual ……. 4 pages**
5. **Block Diagram/Spec Sheet …… 1 page**

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Classification of electrical energy sources **5.2** Temperature measurements **5.4.1.4, 6.3.2, 9.0, B.2.6** Electric strength test **5.4.2.4** Resistance of protective conductors and terminations **5.6.6.2** Durability, legibility and permanence of marking **F.3.10** Stored discharge on capacitors **5.5.2.2** Earthed accessible conductive part **5.7.2.2, 5.7.4** Electrical power sources (PS) measurements for classification **6.2.2** Input test **B.2.5** Fault condition tests **B.4** Static stability test **8.6.2, 8.6.3, 8.6.5**	National Technical Systems 1736 Vista View Dr. Longmont, Colorado 80504

Summary of compliance with National Differences

List of countries addressed: USA

☒ The product fulfills the requirements of UL62368-1:2019 (3rd Edition)

Copy of marking plate

Test item particulars .....:	
Classification of use by.....:	☐ Ordinary person ☒ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection .....:	☒ AC Mains ☐ DC Mains ☐ External Circuit - not Mains connected - ☐ ES1 ☒ ES2 ☐ ES3
Supply % Tolerance .....:	☒ +10%/-10% ☐ +20%/-15% ☐ +____%/ -_____% ☐ None
Supply Connection – Type .....:	☒ pluggable equipment type A - ☐ non-detachable supply cord ☒ appliance coupler ☐ direct plug-in ☐ mating connector ☐ pluggable equipment type B - ☐ non-detachable supply cord ☐ appliance coupler ☐ permanent connection ☐ mating connector ☐ other:_____
Considered current rating of protective device as part of building or equipment installation.....:	15 A; Installation location: ☒ building; ☐ equipment

Equipment mobility ..... :	☐ movable ☐ hand-held ☐ transportable ☒ stationary ☐ for building-in ☐ direct plug-in ☐ rack-mounting ☐ wall-mounted
Over voltage category (OVC) ..... :	☐ OVC I ☒ OVC II ☐ OVC III ☐ OVC IV ☐ other: _____
Class of equipment ..... :	☒ Class I ☐ Class II ☐ Class III
Access location ..... :	☒ restricted access location ☐ N/A
Pollution degree (PD) ..... :	☐ PD 1 ☒ PD 2 ☐ PD 3
Manufacturer's specified maxium operating ambient... :	35°C
IP protection class ..... :	☒ IPX0 ☐ IP___
Power Systems ..... :	☐ TN ☐ TT ☐ IT - ____ V L-L
Altitude during operation (m) ..... :	☒ 3352.8 m or less ☐ _____ m
Altitude of test laboratory (m) ..... :	☒ 2000 m or less ☐ _____ m
Mass of equipment (kg) ..... :	☒ 204.1_____Kg
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 ..... :	21 September 2020
Dates of performance of tests ..... :	28 September 2020 to 9 October 2020

General remarks:

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

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

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :	Elections Systems and Software 11208 John Galt Blvd Omaha NE 68137 USA

General product information:

Product Description –

The DS950® is a high-speed central count scanner and tabulator with ballot sorting capabilities. It can scan a variety of ballot sizes, including ExpressVote cards, and it can read both sides of the ballots in any of four orientations, even folded ballots. The DS950 scans, tabulates, and automatically sorts ballots, separating them into one of three discrete output bins without interrupting scanning. Optionally, this device may be configured to transmit tabulation results to the results server through a closed network connection rather than using physically transported USB flash drives.

The DS950 is mounted on a cart with supporting separately certified equipment, including a certified laser

printer and certified UPS. Model Differences – N/A
Additional application considerations – (Considerations used to test a component or sub-assembly) – N/A

Abbreviations used in the report:

- normal conditions	NC	- single fault conditions	SFC
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

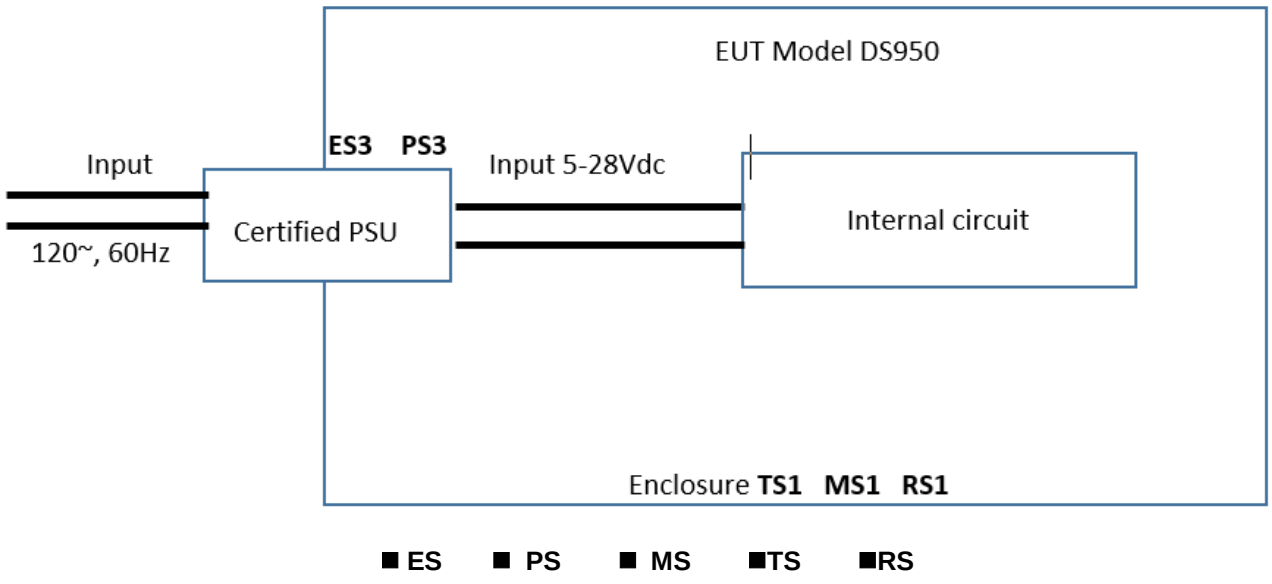
Indicate used abbreviations (if any)

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
(Note 1: Identify the following six (6) energy source forms based on the origin of the energy.) (Note 2: The identified classification e.g., ES2, TS1, should be with respect to its ability to cause pain or injury on the body or its ability to ignite a combustible material. Any energy source can be declared Class 3 as a worse case classification e.g. PS3, ES3.	
Electrically-caused injury (Clause 5): (Note: Identify type of source, list sub-assembly or circuit designation and corresponding energy source classification) Example: +5 V dc input ES1	
Source of electrical energy	**Corresponding classification (ES)**
Certified AC/DC power supply input 120V, 60Hz All DC circuitry	ES3
Electrically-caused fire (Clause 6): (Note: List sub-assembly or circuit designation and corresponding energy source classification) Example: Battery pack (maximum 85 watts): PS2	
Source of power or PIS	**Corresponding classification (PS)**
Certified AC/DC power supply input 120V, 60Hz All DC circuitry	PS3
Injury caused by hazardous substances (Clause 7) (Note: Specify hazardous chemicals, whether produces ozone or other chemical construction not addressed as part of the component evaluation.) Example: Liquid in filled component Glycol	
Source of hazardous substances	**Corresponding chemical**
N/A	N/A
Mechanically-caused injury (Clause 8) (Note: List moving part(s), fan, special installations, etc. & corresponding MS classification based on Table 35.) Example: Wall mount unit MS2	
Source of kinetic/mechanical energy	**Corresponding classification (MS)**

ENERGY SOURCE IDENTIFICATION AND CLASSIFICATION TABLE:	
Output/Input tray moving ballot	MS1
Equipment mass All motors	MS3
Thermal burn injury (Clause 9) (Note: Identify the surface or support, and corresponding energy source classification based on type of part, location, operating temperature and contact time in Table 38.) Example: Hand-held scanner – thermoplastic enclosure TS1	
Source of thermal energy	**Corresponding classification (TS)**
All Accessible parts	TS1
Radiation (Clause 10) (Note: List the types of radiation present in the product and the corresponding energy source classification.) Example: DVD – Class 1 Laser Product RS1	
Type of radiation	**Corresponding classification (RS)**
LED	RS1
SENSOR LED	RS1

ENERGY SOURCE DIAGRAM

Indicate which energy sources are included in the energy source diagram. Insert diagram below



OVERVIEW OF EMPLOYED SAFEGUARDS		
Clause	**Possible Hazard**	
5.1	Electrically-caused injury	
Body Part	Energy Source	Safeguards

OVERVIEW OF EMPLOYED SAFEGUARDS				
Clause	**Possible Hazard**			
(e.g. Ordinary)	(ES3: Primary Filter circuit)	Basic	Supplementary	Reinforced (Enclosure)
Instructed person	ES3: Primary circuit	N/A	N/A	Enclosure
6.1	Electrically-caused fire			
Material part (e.g. mouse enclosure)	Energy Source (PS2: 100 Watt circuit)	Safeguards		
		Basic	Supplementary	Reinforced
All circuits	PS3: Declare	1. No ignition occurred 2. No parts exceeding 90% of its spontaneous ignition temperature	1. PCB is complied with V-0 material 2. All other components: at least V-2, V-1 material or small parts of combustible material	Metallic enclosure
Switching power supply	PS3: Declare	Certified PSU	Certified PSU	Metallic enclosure
7.1	Injury caused by hazardous substances			
Body Part (e.g., skilled)	Energy Source (hazardous material)	Safeguards		
		Basic	Supplementary	Reinforced
N/A	N/A	N/A	N/A	N/A
8.1	Mechanically-caused injury			
Body Part (e.g. Ordinary)	Energy Source (MS3:High Pressure Lamp)	Safeguards		
		Basic	Supplementary	Reinforced (Enclosure)
Instructed person	MS1: Sharp edges and corners	N/A	N/A	N/A
Instructed person	MS3: Equipment mass	N/A	N/A	N/A
9.1	Thermal Burn			
Body Part (e.g., Ordinary)	Energy Source (TS2)	Safeguards		
		Basic	Supplementary	Reinforced
Instructed person	TS1: Accessible enclosure	N/A	N/A	N/A
10.1	Radiation			
Body Part (e.g., Ordinary)	Energy Source (Output from audio port)	Safeguards		
		Basic	Supplementary	Reinforced
Instructed person	LED indicate light and sensor: exempt group	N/A	N/A	N/A

OVERVIEW OF EMPLOYED SAFEGUARDS	
Clause	**Possible Hazard**
Supplementary Information: (1) See attached energy source diagram for additional details. (2) “N” – Normal Condition; “A” – Abnormal Condition; “S” Single Fault	

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	**GENERAL REQUIREMENTS**		P
4.1.1	Acceptance of materials, components and subassemblies	See appended table 4.1.2	P
4.1.2	Use of components	Components which are certified to IEC and/or national standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
4.1.3	Equipment design and construction	No accessible part which could cause injury	P
4.1.15	Markings and instructions .....:	(See Annex F)	P
4.4.4	Safeguard robustness	See below	P
4.4.4.2	Steady force tests .....:	Steady force test at 250 N	P
4.4.4.3	Drop tests.....:	Due to mass of equipment 204 kg drop tests is not applicable	N/A
4.4.4.4	Impact tests.....:	No sign of damage on the metallic enclosure	P
4.4.4.5	Internal accessible safeguard enclosure and barrier tests:		N/A
4.4.4.6	Glass Impact tests .....:		N/A
4.4.4.74	Thermoplastic material tests.....:		N/A
4.4.4.8	Air comprising a safeguard .....:		N/A
4.4.4.9	Accessibility and safeguard effectiveness	No damage	P
4.5	Explosion	No explosion occurs during normal/abnormal operation and single fault conditions	P
4.6	Fixing of conductors	SELV wire is short, primary connect wire secured. Short circuit of creepage, spacing distances not likely occur.	N/A
4.6.1	Fix conductors not to defeat a safeguard		N/A
4.6.2	10 N force test applied to .....:		N/A
4.7	Equipment for direct insertion into mains socket - outlets		N/A
4.7.2	Mains plug part complies with the relevant standard:		N/A
4.7.3	Torque (Nm).....:		N/A
4.8	Products containing coin/button cell batteries	No batteries employed	N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
4.8.2	Instructional safeguard		N/A
4.8.3	Battery Compartment Construction		N/A
	Means to reduce the possibility of children removing the battery.....:		—
4.8.4	Battery Compartment Mechanical Tests .....:		N/A
4.8.5	Battery Accessibility		N/A
4.9	Likelihood of fire or shock due to entry of conductive object .....:		N/A
5	**ELECTRICALLY-CAUSED INJURY**		P
5.2.1	Electrical energy source classifications.....:	(See appended table 5.2)	P
5.2.2	ES1, ES2 and ES3 limits	ES3	P
5.2.2.2	Steady-state voltage and current.....:	See appended table 5.2)	P
5.2.2.3	Capacitance limits.....:		N/A
5.2.2.4	Single pulse limits.....:		N/A
5.2.2.5	Limits for repetitive pulses .....:		N/A
5.2.2.6	Ringing signals .....:		N/A
5.2.2.7	Audio signals .....:		N/A
5.3	Protection against electrical energy sources		P
5.3.1	General Requirements for accessible parts to ordinary, instructed and skilled persons		P
5.3.2.1	Accessibility to electrical energy sources and safeguards	Enclosure with key & lock prevents access to ES3	N/A
5.3.2.2	Contact requirements		N/A
	a) Test with test probe from Annex V.....:		N/A
	b) Electric strength test potential (V) .....:		N/A
	c) Air gap (mm) .....:		N/A
5.3.2.4	Terminals for connecting stripped wire		N/A
5.4	Insulation materials and requirements		N/A
5.4.1.2	Properties of insulating material	Evaluated in certified component power supply	N/A
5.4.1.3	Humidity conditioning.....:		N/A
5.4.1.4	Maximum operating temperature for insulating materials:		N/A
5.4.1.5	Pollution degree .....:	2	—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.4.1.5.2	Test for pollution degree 1 environment and for an insulating compound	No such insulating parts	N/A
5.4.1.5.3	Thermal cycling		N/A
5.4.1.6	Insulation in transformers with varying dimensions	Evaluated in certified component power supply	N/A
5.4.1.7	Insulation in circuits generating starting pulses		N/A
5.4.1.8	Determination of working voltage		P
5.4.1.9	Insulating surfaces		N/A
5.4.1.10	Thermoplastic parts on which conductive metallic parts are directly mounted		N/A
5.4.1.10.2	Vicat softening temperature ..... :		N/A
5.4.1.10.3	Ball pressure ..... :		N/A
5.4.2	Clearances	Part of certified PSU	N/A
5.4.2.2	Determining clearance using peak working voltage		N/A
5.4.2.3	Determining clearance using required withstand voltage		N/A
	a) AC mains transient voltage ..... :	1500V	—
	b) DC mains transient voltage ..... :		—
	c) external circuit transient voltage ..... :		—
	d) transient voltage determined by measurement ... :		—
5.4.2.4	Determining the adequacy of a clearance using an electric strength test		N/A
5.4.2.5	Multiplication factors for clearances and test voltages		N/A
5.4.3	Creepage distances ..... :	(See appended table 5.4.3)	P
5.4.3.1	General		P
5.4.3.3	Material Group ..... :	III	—
5.4.4	Solid insulation		N/A
5.4.4.2	Minimum distance through insulation ..... :		N/A
5.4.4.3	Insulation compound forming solid insulation		N/A
5.4.4.4	Solid insulation in semiconductor devices		N/A
5.4.4.5	Cemented joints		N/A
5.4.4.6	Thin sheet material		N/A
5.4.4.6.1	General requirements		N/A
5.4.4.6.2	Separable thin sheet material		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Number of layers (pcs) .....:		N/A
5.4.4.6.3	Non-separable thin sheet material		N/A
5.4.4.6.4	Standard test procedure for non-separable thin sheet material .....:		N/A
5.4.4.6.5	Mandrel test		N/A
5.4.4.7	Solid insulation in wound components		N/A
5.4.4.9	Solid insulation at frequencies >30 kHz .....:		N/A
5.4.5	Antenna terminal insulation		N/A
5.4.5.1	General		N/A
5.4.5.2	Voltage surge test		N/A
	Insulation resistance (MΩ).....:		—
5.4.6	Insulation of internal wire as part of supplementary safeguard .....:		N/A
5.4.7	Tests for semiconductor components and for cemented joints		N/A
5.4.8	Humidity conditioning		N/A
	Relative humidity (%).....:		—
	Temperature (°C) .....:		—
	Duration (h) .....:		—
5.4.9	Electric strength test .....:	(See appended table 5.4.9)	P
5.4.9.1	Test procedure for a solid insulation type test		N/A
5.4.9.2	Test procedure for routine tests		N/A
5.4.10	Protection against transient voltages between external circuit	No connection to external circuits	N/A
5.4.10.1	Parts and circuits separated from external circuits		N/A
5.4.10.2	Test methods		N/A
5.4.10.2.1	General		N/A
5.4.10.2.2	Impulse test .....:		N/A
5.4.10.2.3	Steady-state test.....:		N/A
5.4.11	Insulation between external circuits and earthed circuitry :		N/A
5.4.11.1	Exceptions to separation between external circuits and earth		N/A
5.4.11.2	Requirements		N/A
	Rated operating voltage U_{op} (V).....:		—

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Nominal voltage U_{peak} (V).....:		—
	Max increase due to variation U_{sp} .....:		—
	Max increase due to ageing ΔU_{sa} .....:		—
	$U_{op}= U_{peak} + \Delta U_{sp} + \Delta U_{sa}$ .....:		—
5.5	Components as safeguards		P
5.5.1	General		P
5.5.2	Capacitors and RC units	Certified AC filter/power inlet module.	P
5.5.2.1	General requirement		P
5.5.2.2	Safeguards against capacitor discharge after disconnection of a connector.....:	(See appended table 5.5.2.2)	P
5.5.3	Transformers		N/A
5.5.4	Optocouplers		N/A
5.5.5	Relays		N/A
5.5.6	Resistors		N/A
5.5.7	SPD's		N/A
5.5.7.1	Use of an SPD connected to reliable earthing		N/A
5.5.7.2	Use of an SPD between mains and protective earth		N/A
5.5.8	Insulation between the mains and external circuit consisting of a coaxial cable.....:		N/A
5.6	Protective conductor		P
5.6.2	Requirement for protective conductors	green-and-yellow	P
5.6.2.1	General requirements		P
5.6.2.2	Color of insulation	green-and-yellow	P
5.6.3	Requirement for protective earthing conductors		P
	Protective earthing conductor size (mm^2) ..... :	0.8 mm^2	—
5.6.4	Requirement for protective bonding conductors		P
5.6.4.1	Protective bonding conductors		P
	Protective bonding conductor size (mm^2). ..... :	0.8 mm^2 or 18 AWG	—
	Protective current rating (A) ..... :	3	—
5.6.4.3	Current limiting and overcurrent protective devices	Certified power inlet with fuse Certified AC inlet filter with 10A current limit for Line and Neutral	P

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.5	Terminals for protective conductors		P
5.6.5.1	Requirement		P
	Conductor size (mm^2), nominal thread diameter (mm):	green-and-yellow, 0.8 mm^2	P
5.6.5.2	Corrosion		P
5.6.6	Resistance of the protective system		P
5.6.6.1	Requirements		P
5.6.6.2	Test Method Resistance (Ω)..... :	(See appended table 5.6.6.2)	P
5.6.7	Reliable earthing		P
5.7	Prospective touch voltage, touch current and protective conductor current		P
5.7.2	Measuring devices and networks		P
5.7.2.1	Measurement of touch current..... :	(See appended table 5.7.4)	P
5.7.2.2	Measurement of prospective touch voltage		P
5.7.3	Equipment set-up, supply connections and earth connections		P
	System of interconnected equipment (separate connections/single connection) ..... :	No such component.	—
	Multiple connections to mains (one connection at a time/simultaneous connections) ..... :	Single input source only	—
5.7.4	Earthed conductive accessible parts ..... :	(See appended Table 5.7.4)	P
5.7.5	Protective conductor current	(See appended Table 5.7.4)	P
	Supply Voltage (V)..... :		—
	Measured current (mA)..... :		—
	Instructional Safeguard..... :	(See F.4 and F.5) The current not exceed 5 % . Protective earthing conductor serving as a reinforced safeguard. Reliable earthing provide	P
5.7.6	Prospective touch voltage and touch current due to external circuits	No connection to the external circuits	N/A
5.7.6.1	Touch current from coaxial cables	No connection coaxial cables	N/A
5.7.6.2	Prospective touch voltage and touch current from external circuits		N/A
5.7.7	Summation of touch currents from external circuits		N/A
	a) Equipment with earthed external circuits Measured current (mA)..... :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Equipment whose external circuits are not referenced to earth. Measured current (mA) ..... :		N/A
6	**ELECTRICALLY- CAUSED FIRE**		P
6.2	Classification of power sources (PS) and potential ignition sources (PIS)		P
6.2.2	Power source circuit classifications	PS3	P
6.2.2.1	General		P
6.2.2.2	Power measurement for worst-case load fault.... :	(See appended table 6.2.2)	P
6.2.2.3	Power measurement for worst-case power source fault :		N/A
6.2.2.4	PS1 ..... :		N/A
6.2.2.5	PS2 ..... :		P N/A
6.2.2.6	PS3 ..... :	(See appended table 6.2.2)	P
6.2.3	Classification of potential ignition sources		P
6.2.3.1	Arcing PIS ..... :	(See appended table 6.2.3.1)	P
6.2.3.2	Resistive PIS ..... :		N/A
6.3	Safeguards against fire under normal operating and abnormal operating conditions		
6.3.1 (a)	No ignition and attainable temperature value less than 90 % defined by ISO 871 or less than 300 °C for unknown materials ..... :	(See appended table 5.4.1.5, 6.3.2, 9.0, B.2.6)	P
6.3.1 (b)	Combustible materials outside fire enclosure		N/A
6.4	Safeguards against fire under single fault conditions		P
6.4.1	Safeguard Method		P
6.4.2	Reduction of the likelihood of ignition under single fault conditions in PS1 circuits		N/A
6.4.3	Reduction of the likelihood of ignition under single fault conditions in PS2 and PS3 circuits		N/A
6.4.3.1	General		N/A
6.4.3.2	Supplementary Safeguards		N/A
	Special conditions if conductors on printed boards are opened or peeled		N/A
6.4.3.3	Single Fault Conditions ..... :		N/A
	Special conditions for temperature limited by fuse		N/A
6.4.4	Control of fire spread in PS1 circuits		N/A
6.4.5	Control of fire spread in PS2 circuits		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.4.5.2	Supplementary safeguards .....:	(See appended tables 4.1.2 and Annex G)	P
6.4.6	Control of fire spread in PS3 circuit	PCB: V-0, certified component power supply	P
6.4.7	Separation of combustible materials from a PIS		N/A
6.4.7.1	General .....:		N/A
6.4.7.2	Separation by distance		N/A
6.4.7.3	Separation by a fire barrier		N/A
6.4.8	Fire enclosures and fire barriers		N/A
6.4.8.1	Fire enclosure and fire barrier material properties		N/A
6.4.8.2.1	Requirements for a fire barrier		N/A
6.4.8.2.2	Requirements for a fire enclosure		N/A
6.4.8.3	Constructional requirements for a fire enclosure and a fire barrier		N/A
6.4.8.3.1	Fire enclosure and fire barrier openings		N/A
6.4.8.3.2	Fire barrier dimensions		N/A
6.4.8.3.3	Top Openings in Fire Enclosure: dimensions (mm):		N/A
	Needle Flame test		N/A
6.4.8.3.4	Bottom Openings in Fire Enclosure, condition met a), b) and/or c) dimensions (mm) .....:		N/A
	Flammability tests for the bottom of a fire enclosure:		N/A
6.4.8.3.5	Integrity of the fire enclosure, condition met: a), b) or c):		N/A
6.4.8.4	Separation of PIS from fire enclosure and fire barrier distance (mm) or flammability rating..... :		N/A
6.5	Internal and external wiring		
6.5.1	Requirements		N/A
6.5.2	Cross-sectional area (mm^2) .....:		—
6.5.3	Requirements for interconnection to building wiring :		N/A
6.6	Safeguards against fire due to connection to additional equipment		N/A
	External port limited to PS2 or complies with Clause Q.1		N/A
7	**INJURY CAUSED BY HAZARDOUS SUBSTANCES**		N/A
7.2	Reduction of exposure to hazardous substances		N/A
7.3	Ozone exposure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.4	Use of personal safeguards (PPE)		N/A
	Personal safeguards and instructions.....:		—
7.5	Use of instructional safeguards and instructions		N/A
	Instructional safeguard (ISO 7010) .....:		—
7.6	Batteries ..... :		N/A
8	**MECHANICALLY-CAUSED INJURY**		P
8.1	General		P
8.2	Mechanical energy source classifications	Sharp edges and corners, classified as MS1 Equipment mass classified as MS3	P
8.3	Safeguards against mechanical energy sources		P
8.4	Safeguards against parts with sharp edges and corners	No sharp edges or corners	N/A
8.4.1	Safeguards		N/A
8.5	Safeguards against moving parts		N/A
8.5.1	MS2 or MS3 part required to be accessible for the function of the equipment		N/A
8.5.2	Instructional Safeguard ..... :		—
8.5.4	Special categories of equipment comprising moving parts	Cart with four wheels pass the tilt test	P
8.5.4.1	Large data storage equipment		N/A
8.5.4.2	Equipment having electromechanical device for destruction of media		N/A
8.5.4.2.1	Safeguards and Safety Interlocks..... :	(See Annex F.4 and Annex K)	P
8.5.4.2.2	Instructional safeguards against moving parts		P
	Instructional Safeguard ..... :	Warning label	—
8.5.4.2.3	Disconnection from the supply	Provide in manual	P
8.5.4.2.4	Probe type and force (N)..... :		N/A
8.5.5	High Pressure Lamps	LED indicator and sensor	N/A
8.5.5.1	Energy Source Classification	RS1	N/A
8.5.5.2	High Pressure Lamp Explosion Test ..... :		N/A
8.6	Stability		P
8.6.1	Product classification		P
	Instructional Safeguard ..... :	Provide in the user manual	—

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Clause	Requirement + Test	Result - Remark	Verdict
8.6.2	Static stability		P
8.6.2.2	Static stability test	Equipment remains stable after being tilled 10°	P
	Applied Force .....:		—
8.6.2.3	Downward Force Test		N/A
8.6.3	Relocation stability test		P
	Unit configuration during 10° tilt.....:	No sign of tip over	—
8.6.4	Glass slide test		N/A
8.6.5	Horizontal force test (Applied Force) .....:	100N	P
	Position of feet or movable parts .....:	No sign of tip over	—
8.7	Equipment mounted to wall or ceiling		N/A
8.7.1	Mounting Means (Length of screws (mm) and mounting surface) .....:		N/A
8.7.2	Direction and applied force .....:		N/A
8.8	Handles strength		N/A
8.8.1	Classification		N/A
8.8.2	Applied Force .....:		N/A
8.9	Wheels or casters attachment requirements	Device not intended to be moved in normal operating	N/A
8.9.1	Classification		N/A
8.9.2	Applied force .....:		—
8.10	Carts, stands and similar carriers	Device not intended to be moved in normal operating	N/A
8.10.1	General		N/A
8.10.2	Marking and instructions		P
	Instructional Safeguard .....:	Installation manual provided	—
8.10.3	Cart, stand or carrier loading test and compliance	Equipment not intended to install where child accessible	N/A
	Applied force .....:		—
8.10.4	Cart, stand or carrier impact test		N/A
8.10.5	Mechanical stability		N/A
	Applied horizontal force (N) .....:		—
8.10.6	Thermoplastic temperature stability (°C) .....:		N/A
8.11	Mounting means for rack mounted equipment		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.11.1	General		N/A
8.11.2	Product Classification		N/A
8.11.3	Mechanical strength test, variable *N* ..... :		N/A
8.11.4	Mechanical strength test 250N, including end stops		N/A
8.12	Telescoping or rod antennas ..... :		N/A
	Button/Ball diameter (mm) ..... :		—
9	**THERMAL BURN INJURY**		P
9.2	Thermal energy source classifications	All accessible surfaces are classified as TS1, see appended table 5.4.1.4, 6.3.2, 9.0, B.2.6	P
9.3	Safeguard against thermal energy sources		N/A
9.4	Requirements for safeguards		N/A
9.4.1	Equipment safeguard	Enclosure temperatures do not exceed TS1 limits.	N/A
9.4.2	Instructional safeguard .....:		N/A
10	**RADIATION**		P
10.2	Radiation energy source classification	RS1	P
10.2.1	General classification		N/A
10.3	Protection against laser radiation		N/A
	Laser radiation that exists equipment:		—
	Normal, abnormal, single-fault.....:		N/A
	Instructional safeguard .....:		—
	Tool .....:		—
10.4	Protection against visible, infrared, and UV radiation	No such component	N/A
10.4.1	General		N/A
10.4.1.a)	RS3 for Ordinary and instructed persons .....:		N/A
10.4.1.b)	RS3 accessible to a skilled person .....:		N/A
	Personal safeguard (PPE) instructional safeguard:		—
10.4.1.c)	Equipment visible, IR, UV does not exceed RS1 .:		N/A
10.4.1.d)	Normal, abnormal, single-fault conditions .....:		N/A
10.4.1.e)	Enclosure material employed as safeguard is opaque:		N/A
10.4.1.f)	UV attenuation .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.4.1.g)	Materials resistant to degradation UV.....:		N/A
10.4.1.h)	Enclosure containment of optical radiation.....:		N/A
10.4.1.i)	Exempt Group under normal operating conditions:		N/A
10.4.2	Instructional safeguard .....:		N/A
10.5	Protection against x-radiation	No such x-radiation generated from the equipment.	N/A
10.5.1	X- radiation energy source that exists equipment :		N/A
	Normal, abnormal, single fault conditions		N/A
	Equipment safeguards.....:		N/A
	Instructional safeguard for skilled person ..... :		N/A
10.5.3	Most unfavorable supply voltage to give maximum radiation ..... :		—
	Abnormal and single-fault condition.....:		N/A
	Maximum radiation (pA/kg).....:		N/A
10.6	Protection against acoustic energy sources	No such consideration for the purpose of personal music players.	N/A
10.6.1	General		N/A
10.6.2	Classification		N/A
	Acoustic output, dB(A) .....:		N/A
	Output voltage, unweighted r.m.s. .....:		N/A
10.6.4	Protection of persons		N/A
	Instructional safeguards.....:		N/A
	Equipment safeguard prevent ordinary person to RS2:		—
	Means to actively inform user of increase sound pressure:		—
	Equipment safeguard prevent ordinary person to RS2:		—
10.6.5	Requirements for listening devices (headphones, earphones, etc.)		N/A
10.6.5.1	Corded passive listening devices with analog input		N/A
	Input voltage with 94 dB(A) L_{Aeq} acoustic pressure output:		—
10.6.5.2	Corded listening devices with digital input		N/A
	Maximum dB(A) .....:		—
10.6.5.3	Cordless listening device		N/A
	Maximum dB(A) .....:		—

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Clause	Requirement + Test	Result - Remark	Verdict
B	**NORMAL OPERATING CONDITION TESTS, ABNORMAL OPERATING CONDITION TESTS AND SINGLE FAULT CONDITION TESTS**		P
B.2	Normal Operating Conditions		P
B.2.1	General requirements ..... :	(See Test Item Particulars and appended test tables)	P
	Audio Amplifiers and equipment with audio amplifiers :		N/A
B.2.3	Supply voltage and tolerances	+10% / -10%	P
B.2.5	Input test ..... :	(See appended table B.2.5)	P
B.3	Simulated abnormal operating conditions		P
B.3.1	General requirements ..... :	(See appended table B.3)	P
B.3.2	Covering of ventilation openings		P
B.3.3	D.C. mains polarity test		N/A
B.3.4	Setting of voltage selector ..... :		N/A
B.3.5	Maximum load at output terminals..... :	No output terminals of equipment supplying power to other equipment,	N/A
B.3.6	Reverse battery polarity		N/A
B.3.7	Abnormal operating conditions as specified in Clause E.2.	No audio amplifier	N/A
B.3.8	Safeguards functional during and after abnormal operating conditions		N/A
B.4	Simulated single fault conditions		P
B.4.2	Temperature controlling device open or short-circuited :		N/A
B.4.3	Motor tests	Certified DC stepper motor and certified fans.	N/A
B.4.3.1	Motor blocked or rotor locked increasing the internal ambient temperature ..... :		N/A
B.4.4	Short circuit of functional insulation	In addition by circuit analysis, any failure of functional insulation will not compromise basic, supplementary or reinforced safeguards.	P
B.4.4.1	Short circuit of clearances for functional insulation	See above	P
B.4.4.2	Short circuit of creepage distances for functional insulation	Evaluated in certified component power supply. See B.4.4. Above.	N/A
B.4.4.3	Short circuit of functional insulation on coated printed boards		N/A
B.4.5	Short circuit and interruption of electrodes in tubes and semiconductors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
B.4.6	Short circuit or disconnect of passive components		N/A
B.4.7	Continuous operation of components		N/A
B.4.8	Class 1 and Class 2 energy sources within limits during and after single fault conditions		N/A
B.4.9	Battery charging under single fault conditions....:		N/A
C	**UV RADIATION**		N/A
C.1	Protection of materials in equipment from UV radiation		N/A
C.1.2	Requirements		N/A
C.1.3	Test method		N/A
C.2	UV light conditioning test		N/A
C.2.1	Test apparatus		N/A
C.2.2	Mounting of test samples		N/A
C.2.3	Carbon-arc light-exposure apparatus		N/A
C.2.4	Xenon-arc light exposure apparatus		N/A
D	**TEST GENERATORS**		N/A
D.1	Impulse test generators		N/A
D.2	Antenna interface test generator		N/A
D.3	Electronic pulse generator		N/A
E	**TEST CONDITIONS FOR EQUIPMENT CONTAINING AUDIO AMPLIFIERS**		N/A
E.1	Audio amplifier normal operating conditions		N/A
	Audio signal voltage (V).....:		—
	Rated load impedance (Ω) .....:		
E.2	Audio amplifier abnormal operating conditions		N/A
F	**EQUIPMENT MARKINGS, INSTRUCTIONS, AND INSTRUCTIONAL SAFEGUARDS**		P
F.1	General requirements		P
	Instructions – Language ..... :	English version checked	—
F.2	Letter symbols and graphical symbols		P
F.2.1	Letter symbols according to IEC60027-1	Letter symbols for quantities and units are complied with IEC 60027-1.	P
F.2.2	Graphic symbols IEC, ISO or manufacturer specific	Graphical symbols are complied with IEC 60417, ISO 3864-2, ISO 7000 or ISO 7010.	P
F.3	Equipment markings		P

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.1	Equipment marking locations	Equipment marking is located on the exterior surface and is easily visible.	P
F.3.2	Equipment identification markings		P
F.3.2.1	Manufacturer identification .....:	Trade mark identified	—
F.3.2.2	Model identification .....:	Model identification is marked on nameplate	—
F.3.3	Equipment rating markings	120V, 60Hz	P
F.3.3.1	Equipment with direct connection to mains		P
F.3.3.2	Equipment without direct connection to mains		N/A
F.3.3.3	Nature of supply voltage..... :	AC	—
F.3.3.4	Rated voltage..... :	120V	—
F.3.3.4	Rated frequency ..... :	60Hz	—
F.3.3.6	Rated current or rated power..... :	3.0 A	—
F.3.3.7	Equipment with multiple supply connections	Only one supply connection.	N/A
F.3.4	Voltage setting device	No such device on the equipment.	N/A
F.3.5	Terminals and operating devices		P
F.3.5.1	Mains appliance outlet and socket-outlet markings :	No outlet or socket-outlet	N/A
F.3.5.2	Switch position identification marking.....:	ON/OFF (IEC 60417-5007)	P
F.3.5.3	Replacement fuse identification and rating markings :	250V, 10A (each pole)	P
F.3.5.4	Replacement battery identification marking.....:		N/A
F.3.5.5	Terminal marking location	Terminal marking are located near input terminal	P
F.3.6	Equipment markings related to equipment classification		P
F.3.6.1	Class I Equipment		P
F.3.6.1.1	Protective earthing conductor terminal		P
F.3.6.1.2	Neutral conductor terminal		P
F.3.6.1.3	Protective bonding conductor terminals		P
F.3.6.2	Class II equipment (IEC60417-5172)		N/A
F.3.6.2.1	Class II equipment with or without functional earth		N/A
F.3.6.2.2	Class II equipment with functional earth terminal marking		N/A
F.3.7	Equipment IP rating marking .....:		—
F.3.8	External power supply output marking	IPX0	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
F.3.9	Durability, legibility and permanence of marking		P
F.3.10	Test for permanence of markings	The label was subjected to the permanence of marking test, 15 sec. for water and 15 sec. for petroleum spirit. After each test, the marking remained legible.	P
F.4	Instructions		P
	a) Equipment for use in locations where children not likely to be present - marking		N/A
	b) Instructions given for installation or initial use		P
	c) Equipment intended to be fastened in place		N/A
	d) Equipment intended for use only in restricted access area		P
	e) Audio equipment terminals classified as ES3 and other equipment with terminals marked in accordance F.3.6.1		N/A
	f) Protective earthing employed as safeguard		P
	g) Protective earthing conductor current exceeding ES 2 limits	ES3	N/A
	h) Symbols used on equipment		P
	i) Permanently connected equipment not provided with all-pole mains switch	Not a permanently connected equipment	N/A
	j) Replaceable components or modules providing safeguard function		N/A
F.5	Instructional safeguards		P
	Where “instructional safeguard” is referenced in the test report it specifies the required elements, location of marking and/or instruction		P
G	**COMPONENTS**		P
G.1	**Switches**		P
G.1.1	General requirements		P
G.1.2	Ratings, endurance, spacing, maximum load		P
G.2	**Relays**		N/A
G.2.1	General requirements	Evaluated in certified component power supply.	N/A
G.2.2	Overload test		N/A
G.2.3	Relay controlling connectors supply power		N/A
G.2.4	Mains relay, modified as stated in G.2		N/A
G.3	**Protection Devices**		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.3.1	Thermal cut-offs	No thermal cut-off provided within the equipment.	N/A
G.3.1.1a) &b)	Thermal cut-outs separately approved according to IEC 60730 with conditions indicated in a) & b)		N/A
G.3.1.1c)	Thermal cut-outs tested as part of the equipment as indicated in c)		N/A
G.3.1.2	Thermal cut-off connections maintained and secure		N/A
G.3.2	Thermal links		N/A
G.3.2.1a)	Thermal links separately tested with IEC 60691		N/A
G.3.2.1b)	Thermal links tested as part of the equipment		N/A
	Aging hours (H)..... :		—
	Single Fault Condition..... :		—
	Test Voltage (V) and Insulation Resistance (Ω) . :		—
G.3.3	PTC Thermistors		N/A
G.3.4	Overcurrent protection devices		N/A
G.3.5	Safeguards components not mentioned in G.3.1 to G.3.5		
G.3.5.1	Non-resettable devices suitably rated and marking provided		N/A
G.3.5.2	Single faults conditions ..... :		N/A
G.4	**Connectors**		
G.4.1	Spacings	Evaluated in certified component power supply.	N/A
G.4.2	Mains connector configuration .....:		N/A
G.4.3	Plug is shaped that insertion into mains socket-outlets or appliance coupler is unlikely		N/A
G.5	**Wound Components**		N/A
G.5.1	Wire insulation in wound components		N/A
G.5.1.2 a)	Two wires in contact inside wound component, angle between 45° and 90°		N/A
G.5.1.2 b)	Construction subject to routine testing		N/A
G.5.2	Endurance test on wound components		N/A
G.5.2.1	General test requirements		N/A
G.5.2.2	Heat run test		N/A
	Time (s).....:		—
	Temperature (°C).....:		—
G.5.2.3	Wound Components supplied by mains		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.3	**Transformers**		N/A
G.5.3.1	Requirements applied (IEC61204-7, IEC61558-1/-2, and/or IEC62368-1) .....:	Evaluated in certified component power supply.	N/A
	Position .....:		—
	Method of protection .....:		—
G.5.3.2	Insulation		N/A
	Protection from displacement of windings ..... :		—
G.5.3.3	Overload test .....:		N/A
G.5.3.3.1	Test conditions		N/A
G.5.3.3.2	Winding Temperatures testing in the unit		N/A
G.5.3.3.3	Winding Temperatures - Alternative test method		N/A
G.5.4	**Motors**		N/A
G.5.4.1	General requirements	Certified DC stepper motor and certified fans.	N/A
	Position .....:		—
G.5.4.2	Test conditions		N/A
G.5.4.3	Running overload test		N/A
G.5.4.4	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
G.5.4.5	Running overload test for DC motors in secondary circuits		N/A
G.5.4.5.2	Tested in the unit		N/A
	Electric strength test (V) .....:		—
G.5.4.5.3	Tested on the Bench - Alternative test method; test time (h) :		N/A
	Electric strength test (V) .....:		—
G.5.4.6	Locked-rotor overload test for DC motors in secondary circuits		N/A
G.5.4.6.2	Tested in the unit		N/A
	Maximum Temperature .....:		N/A
	Electric strength test (V) .....:		N/A
G.5.4.6.3	Tested on the bench - Alternative test method; test time (h) :		N/A
	Electric strength test (V) .....:		N/A
G.5.4.7	Motors with capacitors		N/A
G.5.4.8	Three-phase motors		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.5.4.9	Series motors		N/A
	Operating voltage .....:		—
G.6	**Wire Insulation**		N/A
G.6.1	General		N/A
G.6.2	Solvent-based enamel wiring insulation		N/A
G.7	**Mains supply cords**		P
G.7.1	General requirements		P
	Type ..... :	SVT VW-1. 60°C	—
	Rated current (A) ..... :	7A consideration	—
	Cross-sectional area (mm^2), (AWG) ..... :	824 mm^2 , 18AWG	—
G.7.2	Compliance and test method	Detachable power cord	N/A
G.7.3	Cord anchorages and strain relief for non-detachable power supply cords		N/A
G.7.3.2	Cord strain relief		N/A
G.7.3.2.1	Requirements		N/A
	Strain relief test force (N) .....:		—
G.7.3.2.2	Strain relief mechanism failure		N/A
G.7.3.2.3	Cord sheath or jacket position, distance (mm) ....:		—
G.7.3.2.4	Strain relief comprised of polymeric material		N/A
G.7.4	Cord Entry ..... :		N/A
G.7.5	Non-detachable cord bend protection		N/A
G.7.5.1	Requirements		N/A
G.7.5.2	Mass (g) .....:		—
	Diameter (m) .....:		—
	Temperature (°C) .....:		—
G.7.6	Supply wiring space		N/A
G.7.6.2	Stranded wire		N/A
G.7.6.2.1	Test with 8 mm strand		N/A
G.8	**Varistors**		N/A
G.8.1	General requirements	Evaluated in certified component power supply.	N/A
G.8.2	Safeguard against shock		N/A
G.8.3	Safeguard against fire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
G.8.3.2	Varistor overload test..... :		N/A
G.8.3.3	Temporary overvoltage..... :		N/A
G.9	**Integrated Circuit (IC) Current Limiters**		N/A
G.9.1 a)	Manufacturer defines limit at max. 5A.	Evaluated in certified component power supply.	N/A
G.9.1 b)	Limiters do not have manual operator or reset		N/A
G.9.1 c)	Supply source does not exceed 250 VA .....:		—
G.9.1 d)	IC limiter output current (max. 5A).....:		—
G.9.1 e)	Manufacturers' defined drift .....:		—
G.9.2	Test Program 1		N/A
G.9.3	Test Program 2		N/A
G.9.4	Test Program 3		N/A
G.10	**Resistors**		N/A
G.10.1	General requirements	Evaluated in certified component power supply.	N/A
G.10.2	Resistor test		N/A
G.10.3	Test for resistors serving as safeguards between the mains and an external circuit consisting of a coaxial cable		N/A
G.10.3.1	General requirements		N/A
G.10.3.2	Voltage surge test		N/A
G.10.3.3	Impulse test		N/A
G.11	**Capacitor and RC units**		N/A
G.11.1	General requirements		N/A
G.11.2	Conditioning of capacitors and RC units		N/A
G.11.3	Rules for selecting capacitors		N/A
G.12	**Optocouplers**		N/A
	Optocouplers comply with IEC 60747-5-5:2007 Spacing or Electric Strength Test (specify option and test results) :		N/A
	Type test voltage Vini .....:		—
	Routine test voltage, Vini,b .....:		—
G.13	**Printed boards**		P
G.13.1	General requirements		P
G.13.2	Uncoated printed boards		P

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Clause	Requirement + Test	Result - Remark	Verdict
G.13.3	Coated printed boards		N/A
G.13.4	Insulation between conductors on the same inner surface		N/A
	Compliance with cemented joint requirements (Specify construction) .....:		—
G.13.5	Insulation between conductors on different surfaces		N/A
	Distance through insulation ..... :		N/A
	Number of insulation layers (pcs) .....:		—
G.13.6	Tests on coated printed boards		N/A
G.13.6.1	Sample preparation and preliminary inspection		N/A
G.13.6.2a)	Thermal conditioning		N/A
G.13.6.2b)	Electric strength test		N/A
G.13.6.2c)	Abrasion resistance test		N/A
G.14	**Coating on components terminals**		N/A
G.14.1	Requirements ..... :		N/A
G.15	**Liquid filled components**		N/A
G.15.1	General requirements		N/A
G.15.2	Requirements		N/A
G.15.3	Compliance and test methods		N/A
G.15.3.1	Hydrostatic pressure test		N/A
G.15.3.2	Creep resistance test		N/A
G.15.3.3	Tubing and fittings compatibility test		N/A
G.15.3.4	Vibration test		N/A
G.15.3.5	Thermal cycling test		N/A
G.15.3.6	Force test		N/A
G.15.4	Compliance		N/A
G.16	**IC including capacitor discharge function (ICX)**		N/A
a)	Humidity treatment in accordance with sc5.4.8 – 120 hours		N/A
b)	Impulse test using circuit 2 with Uc = to transient voltage:		N/A
C1)	Application of ac voltage at 110% of rated voltage for 2.5 minutes		N/A
C2)	Test voltage .....:		—
D1)	10,000 cycles on and off using capacitor with smallest capacitance resistor with largest resistance specified by manufacturer		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
D2)	Capacitance .....:		—
D3)	Resistance .....:		—
H	**CRITERIA FOR TELEPHONE RINGING SIGNALS**		N/A
H.1	General		N/A
H.2	Method A		N/A
H.3	Method B		N/A
H.3.1	Ringing signal		N/A
H.3.1.1	Frequency (Hz) ..... :		—
H.3.1.2	Voltage (V) ..... :		—
H.3.1.3	Cadence; time (s) and voltage (V) ..... :		—
H.3.1.4	Single fault current (mA): ..... :		—
H.3.2	Tripping device and monitoring voltage..... :		N/A
H.3.2.1	Conditions for use of a tripping device or a monitoring voltage complied with		N/A
H.3.2.2	Tripping device		N/A
H.3.2.3	Monitoring voltage (V)..... :		—
J	**INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION**		N/A
	General requirements		N/A
K	**SAFETY INTERLOCKS**		P
K.1	General requirements		N/A
K.2	Components of safety interlock safeguard mechanism		N/A
K.3	Inadvertent change of operating mode		N/A
K.4	Interlock safeguard override		N/A
K.5	Fail-safe		N/A
	Compliance..... :		N/A
K.6	Mechanically operated safety interlocks		N/A
K.6.1	Endurance requirement		N/A
K.6.2	Compliance and Test method ..... :		N/A
K.7	Interlock circuit isolation		N/A
K.7.1	Separation distance for contact gaps & interlock circuit elements (type and circuit location) ..... :		N/A
K.7.2	Overload test, Current (A) ..... :		N/A
K.7.3	Endurance test		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
K.7.4	Electric strength test ..... :		N/A
L	**DISCONNECT DEVICES**		P
L.1	General requirements		P
L.2	Permanently connected equipment		N/A
L.3	Parts that remain energized		N/A
L.4	Single phase equipment		P
L.5	Three-phase equipment		N/A
L.6	Switches as disconnect devices		N/A
L.7	Plugs as disconnect devices		P
L.8	Multiple power sources		N/A
M	**EQUIPMENT CONTAINING BATTERIES AND THEIR PROTECTION CIRCUITS**		N/A
M.1	General requirements	No batteries employed	N/A
M.2	Safety of batteries and their cells		N/A
M.2.1	Requirements		N/A
M.2.2	Compliance and test method (identify method)...:		N/A
M.3	Protection circuits		N/A
M.3.1	Requirements		N/A
M.3.2	Tests		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
M.3.3	Compliance .....:		N/A
M.4	Additional safeguards for equipment containing secondary lithium battery		N/A
M.4.1	General		N/A
M.4.2	Charging safeguards		N/A
M.4.2.1	Charging operating limits		N/A
M.4.2.2a)	Charging voltage, current and temperature..... :		—
M.4.2.2 b)	Single faults in charging circuitry..... :		—
M.4.3	Fire Enclosure		N/A
M.4.4	Endurance of equipment containing a secondary lithium battery		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
M.4.4.2	Preparation		N/A
M.4.4.3	Drop and charge/discharge function tests		N/A
	Drop		N/A
	Charge		N/A
	Discharge		N/A
M.4.4.4	Charge-discharge cycle test		N/A
M.4.4.5	Result of charge-discharge cycle test		N/A
M.5	Risk of burn due to short circuit during carrying		N/A
M.5.1	Requirement		N/A
M.5.2	Compliance and Test Method (Test of P.2.3)		N/A
M.6	Prevention of short circuits and protection from other effects of electric current		N/A
M.6.1	Short circuits		N/A
M.6.1.1	General requirements		N/A
M.6.1.2	Test method to simulate an internal fault		N/A
M.6.1.3	Compliance (Specify M.6.1.2 or alternative method):		N/A
M.6.2	Leakage current (mA) .....:		N/A
M.7	Risk of explosion from lead acid and NiCd batteries		N/A
M.7.1	Ventilation preventing explosive gas concentration		N/A
M.7.2	Compliance and test method		N/A
M.8	Protection against internal ignition from external spark sources of lead acid batteries		N/A
M.8.1	General requirements		N/A
M.8.2	Test method		N/A
M.8.2.1	General requirements		N/A
M.8.2.2	Estimation of hypothetical volume *Vz* (m^3/s) .....:		—
M.8.2.3	Correction factors .....:		—
M.8.2.4	Calculation of distance *d* (mm) .....:		—
M.9	Preventing electrolyte spillage		N/A
M.9.1	Protection from electrolyte spillage		N/A
M.9.2	Tray for preventing electrolyte spillage		N/A
M.10	Instructions to prevent reasonably foreseeable misuse (Determination of compliance: inspection, data review; or abnormal testing) .....:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
N	**ELECTROCHEMICAL POTENTIALS**		N/A
	Metal(s) used.....:	Pollution degree considered	—
O	**MEASUREMENT OF CREEPAGE DISTANCES AND CLEARANCES**		N/A
	Figures O.1 to O.20 of this Annex applied .....:	Evaluated in certified component power supply.	—
P	**SAFEGUARDS AGAINST ENTRY OF FOREIGN OBJECTS AND SPILLAGE OF INTERNAL LIQUIDS**		N/A
P.1	General requirements	Complete enclosure	N/A
P.2.2	Safeguards against entry of foreign object	It's impossible entry of a conductive object from outside the equipment.	N/A
	Location and Dimensions (mm) .....:		—
P.2.3	Safeguard against the consequences of entry of foreign object		N/A
P.2.3.1	Safeguards against the entry of a foreign object		N/A
	Openings in transportable equipment		N/A
	Transportable equipment with metalized plastic parts:		N/A
P.2.3.2	Openings in transportable equipment in relation to metallized parts of a barrier or enclosure (identification of supplementary safeguard) .....:		N/A
P.3	Safeguards against spillage of internal liquids		N/A
P.3.1	General requirements		N/A
P.3.2	Determination of spillage consequences		N/A
P.3.3	Spillage safeguards		N/A
P.3.4	Safeguards effectiveness		N/A
P.4	Metallized coatings and adhesive securing parts		N/A
P.4.2 a)	Conditioning testing		N/A
	Tc (°C) .....:		—
	Tr (°C).....:		—
	Ta (°C).....:		—
P.4.2 b)	Abrasion testing .....:	(See G.13.6.2)	N/A
P.4.2 c)	Mechanical strength testing.....:	(See Annex T)	N/A
Q	**CIRCUITS INTENDED FOR INTERCONNECTION WITH BUILDING WIRING**		P
Q.1	Limited power sources		P
Q.1.1 a)	Inherently limited output		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
Q.1.1 b)	Impedance limited output		N/A
	Regulating network limited output under normal operating and simulated single fault condition		P
Q.1.1 c)	Overcurrent protective device limited output		N/A
Q.1.1 d)	IC current limiter complying with G.9		N/A
Q.1.2	Compliance and test method		N/A
Q.2	Test for external circuits – paired conductor cable		N/A
	Maximum output current (A) .....:		—
	Current limiting method .....:		—
R	**LIMITED SHORT CIRCUIT TEST**		N/A
R.1	General requirements	No such consideration.	N/A
R.2	Determination of the overcurrent protective device and circuit		N/A
R.3	Test method Supply voltage (V) and short-circuit current (A):		N/A
S	**TESTS FOR RESISTANCE TO HEAT AND FIRE**		P
S.1	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W	Metal enclosure used material was approved.	P
	Samples, material.....:		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	- Material not consumed completely		N/A
	- Material extinguishes within 30s		N/A
	- No burning of layer or wrapping tissue		N/A
S.2	Flammability test for fire enclosure and fire barrier integrity		N/A
	Samples, material.....:		—
	Wall thickness (mm) ..... :		—
	Conditioning (°C) ..... :		—
	Test flame according to IEC 60695-11-5 with conditions as set out		N/A
	Test specimen does not show any additional hole		N/A
S.3	Flammability test for the bottom of a fire enclosure		N/A

IEC 62368-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Samples, material.....:		—
	Wall thickness (mm) ..... :		—
	Cheesecloth did not ignite		N/A
S.4	Flammability classification of materials		N/A
S.5	Flammability test for fire enclosures and fire barrier materials of equipment where the steady state power does not exceed 4 000 W		N/A
	Samples, material.....:		—
	Wall thickness (mm) ..... :		—
	Conditioning (test condition), (°C) ..... :		—
	Test flame according to IEC 60695-11-20 with conditions as set out		N/A
	After every test specimen was not consumed completely		N/A
	After fifth flame application, flame extinguished within 1 min		N/A
T	**MECHANICAL STRENGTH TESTS**		P
T.1	General requirements	Mass of equipment 204 kg, metal enclosure min. 2.0 mm thickness. See below	P
T.2	Steady force test, 10 N ..... :	See T.5	N/A
T.3	Steady force test, 30 N ..... :	See T.5	N/A
T.4	Steady force test, 100 N ..... :	See T.5	N/A
T.5	Steady force test, 250 N ..... :	No sign of damage on the metallic enclosure	P
T.6	Enclosure impact test	No sign of damage on the metal enclosure	P
	Fall test	Due to mass of equipment 204 kg tests is not applicable	N/A
	Swing test	See above	N/A
T.7	Drop test ..... :	Due to mass of equipment 204 kg drop tests is not applicable	N/A
T.8	Stress relief test..... :	Metal enclosure min. 2.0 mm thickness	N/A
T.9	Impact Test (glass)	No such glass provided within the equipment.	N/A
T.9.1	General requirements		N/A
T.9.2	Impact test and compliance		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Impact energy (J) .....:		—
	Height (m).....:		—
T.10	Glass fragmentation test.....:		N/A
T.11	Test for telescoping or rod antennas		N/A
	Torque value (Nm) ..... :		—
U	**MECHANICAL STRENGTH OF CATHODE RAY TUBES (CRT) AND PROTECTION AGAINST THE EFECTS OF IMPLOSION**		N/A
U.1	General requirements		N/A
U.2	Compliance and test method for non-intrinsically protected CRTs		N/A
U.3	Protective Screen..... :		N/A
V	**DETERMINATION OF ACCESSIBLE PARTS (FINGERS, PROBES AND WEDGES)**		P
V.1	Accessible parts of equipment	No live parts are accessible.	N/A
V.2	Accessible part criterion		N/A

4.1.2	**TABLE: List of critical components**				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Marks of conformity[1]
- Description:					
Enclosure	Various	Various	Metal, min. 2.0 mm thickness	UL 62368-1	Evaluated in Equipment
Cart	Source One	Central Count Cart	Metal, min. 2.0 mm thickness overall provided with 4 locking casters	UL 62368-1	Evaluated in Equipment
UPS	CyberPower	OR1500PFCLCD	120VAC, 50/60HZ, 12A	UL1778 4th 107.3-05	E87679
Laser Printer	Oki Data Corp	B432	110-127VAC, 50-60Hz, 6A	UL 60950-1	cULus I.T.E 6K00
Monitor	TRU-Vu (Vita Electronics)	VT-150XAR1	Rated 12VDC, 2.0A	UL 60950-1	UR E147601
Scanner Module (CCD camera)	BAP Image Systems GmbH	B9.LC7KT.00002 .010	CCD, 1200dpi, 12V, 2A	UL 60950-1	Evaluated in Equipment
ATX power Supply	Systium electronics (FSP Group)	FSP220-60LE	Rated 100-240V, 4-2A, 60-50Hz Max. output 250W	UL 60950-1	UL E190414
Main Power Supply	Artesyn	LCC600	Rated 90-264VAC, 50-60Hz, Max. output 600W	UL 60950-1	cURus E190414
Terminal Block	Phoenix Contact	TYP ST 2.5	Rated 600V, 20A, 26-2 AWG., 2.0A	~~UL 508~~ UL1059	UR E60425
Mother Board	Kontron	KTQM87/mitx	Rated ATX power	UL 60950-1	UR E147705
Hard Drive	Delkin	DE1TFRAFC-35000-2	Rated 3.3VDC, 5VDC, 12VDC, Max. 0.54W	UL 60950-1	CE
PWB	Various	Various	Rated 94V-0, 105°C.	UL94	UR
Wiring	Various	Various	AWM, rated min 125V, VW-1, 80°C, min. 18AWG.	UL 758	UL

AC inlet Appliance Inlet C14 with Filter 2-Stage, Fuse holder 2-pole, Line Switch 2-pole	Schurter	Type FKID-711-1111-1200	Rated 125-250VAC, 50/60Hz, 10A	UL 1283	cURus E72928
Side Fan	Sunon	MF92251V1-1000U-A99	Rated 12VDC, 1.68W	UL 94V-0	UR
IPB Fan	Sunon	MF40100V2-10000-A99	Rated 5VDC, 0.47W	UL 94V-0	UR
Main Motor	Ebm-papst	ECI-63.20-K4-B00	Rated 24VDC, Max. 251W	Low Voltage Directive 2006/95/EC	cURus, CE
Hopper Motor	Faulhaber	2657W024CXR	Rated 24VDC, 1.2A	ANSI/ESD S20.20:2014	CE
Power Cord	Volex	SVT VW-1	300V, 10A, 60°C	UL 62	E67601
Fuse (each pole)	Cooper Bussman	Type MSA	15/250, 10A	UL 248-1	cULus E19180

Supplementary information: [1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

[2)] Description line content is optional. Main line description needs to clearly detail the component used for testing.

4.8.4, 4.8.5	**TABLE: Lithium coin/button cell batteries mechanical tests**	N/A

(The following mechanical tests are conducted in the sequence noted.)

4.8.4.2	**TABLE: Stress Relief test**		—
Part	**Material**	**Oven Temperature (°C)**	**Comments**

4.8.4.3	**TABLE: Battery replacement test**		—
Battery part no. .....:			—
Battery Installation/withdrawal		Battery Installation/Removal Cycle	Comments
		1	
		2	
		3	
		4	
		5	
		6	
		8	
		9	
		10	

4.8.4.4	**TABLE: Drop test**			—
Impact Area	Drop Distance	Drop No.	Observations	
		1		
		2		
		3		

4.8.4.5	**TABLE: Impact**		—
Impacts per surface	**Surface tested**	**Impact energy (Nm)**	**Comments**

4.8.4.6	**TABLE: Crush test**		—
Test position	**Surface tested**	**Crushing Force (N)**	**Duration force applied (s)**

Supplementary information:

4.8.5	**TABLE: Lithium coin/button cell batteries mechanical test result**	N/A

Test position	**Surface tested**	**Force (N)**	**Duration force applied (s)**

Supplementary information:

5.2	**Table: Classification of electrical energy sources**	P

5.2.2.2 – Steady State Voltage and Current conditions

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				U (Vrms or Vpk)	I (Apk or Arms)	Hz	
1	120	Power supply	Normal	120	1.48	60	ES3
			Abnormal	-	-	-	
			Single fault –SC/OC	-	-	-	
			Normal	-	-	-	
			Abnormal	-	-	-	
			Single fault –SC/OC	-	-	-	

5.2.2.3 - Capacitance Limits

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters		ES Class
				Capacitance, nF	Upk (V)	
			Normal			
			Abnormal			
			Single fault – SC/OC			

5.2.2.4 - Single Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Duration (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

5.2.2.5 - Repetitive Pulses

No.	Supply Voltage	Location (e.g. circuit designation)	Test conditions	Parameters			ES Class
				Off time (ms)	Upk (V)	Ipk (mA)	
			Normal				
			Abnormal				
			Single fault – SC/OC				

Test Conditions: Normal –

Abnormal -

Supplementary information: SC=Short Circuit, OC=Short Circuit

5.4.1.4, 6.3.2, 9.0, B.2.6	**TABLE: Temperature measurements**					P
	Supply voltage (V) ..... :	108V/60Hz	132V/60Hz	120V/60Hz		—
	Ambient T_{min} (°C) ..... :	21.16	22.42	20.81		—
	Ambient T_{max} (°C) ..... :	24.04	25.21	24.71		—
	Tma (°C) ..... :	~~35.0~~	~~35.0~~	~~35.0~~		—

Maximum measured temperature T of part/at:	T (°C)				Allowed T_{max} (°C)
1. Main Power Supply Enclosure	26.07	26.59	26.93		90
2. PSU-mains Connector	24.96	25.25	26.63		130
3. AC/DC Power Supply Enclosure	30.73	31.54	29.78		90
4. Controller Board Datawin –IC1 chip	30.30	31.13	29.91		130
5. DC Motor Empastst	28.43	29.08	25.16		80
6. DC fan Sumon	25.07	24.44	25.53		70
7. PWB-Daisychin	53.42	54.40	48.87		90
8. Step Motor Faulhaber	24.61	26.54	25.22		80
9. Metallic Enclosure	28.07	29.19	29.29		70
10. Ambient	23.79	23.03	23.94		--

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:

Note 1: Tma should be considered as directed by appliable requirement

Note 2: Tma is not included in assessment of Touch Temperatures (Clause 9)

5.4.1.10.2	**TABLE: Vicat softening temperature of thermoplastics**		N/A
Penetration (mm)..... :			—
Object/ Part No./Material	Manufacturer/trademark	T softening (°C)	

supplementary information:

5.4.1.10.3	**TABLE: Ball pressure test of thermoplastics**		N/A
Allowed impression diameter (mm) .....:		≤ 2 mm	—
Object/Part No./Material	Manufacturer/trademark	Test temperature (°C)	Impression diameter (mm)
Supplementary information:			

5.4.2.2, 5.4.2.4 and 5.4.3	**TABLE: Minimum Clearances/Creepage distance**						P
Clearance (cl) and creepage distance (cr) at/of/between:	Up (V)	U r.m.s. (V)	Frequency (kHz)[1]	Required cl (mm)	cl (mm) [2]	Required[3] cr (mm)	cr (mm)
AC Terminal Block (L/N to PE)	~~170~~	120	60	2.0	>6.5	2.0	>6.5

Supplementary information:

Note 1: Only for frequency above 30 kHz
Note 2: See table 5.4.2.4 if this is based on electric strength test
Note 3: Provide Material Group: III

5.4.2.3	**TABLE: Minimum Clearances distances using required withstand voltage**		N/A
	Overvoltage Category (OV):		
	Pollution Degree:		
Clearance distanced between:	Required withstand voltage	Required cl (mm)	Measured cl (mm)
Supplementary information:			

5.4.2.4	**TABLE: Clearances based on electric strength test**		P
Test voltage applied between:	Required cl (mm)	Test voltage (kV) peak/ r.m.s. / DC	Breakdown Yes / No
Line to PE	2.0	1500 r.m.s	No
Neutral to PE	2.0	1500 r.m.s	No

Supplementary information: **CL and Cr are part of power supply certification except BI of terminal block to enclosure**

5.4.4.2, 5.4.4.5c) 5.4.4.9	**TABLE: Distance through insulation measurements**	N/A

Distance through insulation di at/of:	Peak voltage (V)	Frequency (kHz)	Material	Required DTI (mm)	DTI (mm)

Supplementary information:

5.4.9	**TABLE: Electric strength tests**	P

Test voltage applied between:	Voltage shape (AC, DC)	Test voltage (V)	Breakdown Yes / No
Functional:			
Basic/supplementary:			
Line to PE	AC	1500	No
Neutral to PE	AC	1500	No
Reinforced:			
Routine Tests:			

Supplementary information:

5.5.2.2	**TABLE: Stored discharge on capacitors**	P

Supply Voltage (V) Hz	Test Location	Operating Condition (N, S)	Switch position On or off	Measured Voltage (after 2 seconds)	ES Classification
120V, 60Hz	Power Cord (UPS-Input)	N	On	0	ES1
120V, 60Hz	Power Cord (UPS-Input)	N	OFF	0	ES1
120V, 60Hz	Power Cord (DS950-Input)	N	On	0	ES1
120V, 60Hz	Power Cord (DS950-Input)	N	OFF	0	ES1

X-capacitors installed for testing are:

☐ bleeding resistor rating:

☐ ICX:

Notes:

A. Test Location: Phase to Neutral; Phase to Phase; Phase to Earth; and/or Neutral to Earth

B. Operating condition abbreviations: N – Normal operating condition (e.g., normal operation, or open fuse); S –Single fault condition

5.6.6.2	**TABLE: Resistance of protective conductors and terminations**				P
Accessible part		Test current (A)	Duration (min)	Voltage drop (V)	Resistance (Ω)
From ground input to enclosure		15	2	13.035	0.869
Supplementary information:					

5.7.2.2, 5.7.4	**TABLE: Earthed accessible conductive part**	P
Supply voltage .....:	120V, 60Hz	—
Location	Test conditions specified in 6.1 of IEC 60990 or Fault Condition No in IEC 60990 clause 6.2.2.1 through 6.2.2.8, except for 6.2.2.7	Touch current (mA)
Power source connection and ground (chassis) chassis/enclosure is earthed accessible conductive part the **touch current** shall not exceed the ES2 limits: 5 mA r.m.s *Equipment provide switch and detached power cord use.	1	0.54
	2*	-
	3 Open Ground	0.60
	4	-
	5	-
	6	-
	8	-

Supplementary Information:

Notes:

[1] Supply voltage is the anticipated maximum Touch Voltage

[2] Earthed neutral conductor [Voltage differences less than 1% or more]

[3] Specify method used for measurement as described in IEC 60990 sub-clause 4.3

[4] IEC60990, sub-clause 6.2.2.7, Fault 7 not applicable.

[5] (*) IEC60990, sub-clause 6.2.2.2 is not applicable if switch or disconnect device (e.g., appliance coupler) provided.

6.2.2	Table: Electrical power sources (PS) measurements for classification				P
Source	Description	Measurement	Max Power after 3 s	Max Power after 5 s*)	PS Classification
A	Power Supply (Nominal)	Power (W) :	177.60	177.60	PS3
		V_A (V) :	120.0	120.0	
		I_A (A) :	1.48	1.48	
B	Power Supply (+10%)	Power (W) :	253.44	253.44	PS3
		V_A (V) :	132.0	132.0	
		I_A (A) :	1.92	1.92	
C	Power Supply (-10%)	Power (W) :	185.76	185.76	PS3
		V_A (V) :	108.0	108.0	
		I_A (A) :	1.72	1.72	
Supplementary Information: (*) Measurement taken only when limits at 3 seconds exceed PS1 limits					

6.2.3.1	Table: Determination of Potential Ignition Sources (Arcing PIS)			N/A
Location	Open circuit voltage After 3 s (Vp)	Measured r.m.s current (Irms)	Calculated value (V_p x I_{rms})	Arcing PIS? Yes / No
Supplementary information: An Arcing PIS requires a minimum of 50 V (peak) AC or DC An Arcing PIS is established when the product of the open circuit voltage (V_p) and normal operating condition rms current (I_{rms}) is greater than 15.				

6.2.3.2	Table: Determination of Potential Ignition Sources (Resistive PIS)				N/A
Circuit Location (x-y)	Operating Condition (Normal / Describe Single Fault)	Measured wattage or VA During first 30 s (W / VA)	Measured wattage or VA After 30 s (W / VA)	Protective Circuit, Regulator, or PTC Operated? Yes/No (Comment)	Resistive PIS? Yes/No
Supplementary Information: A combination of voltmeter, VA and ammeter IA may be used instead of a wattmeter. If a separate voltmeter and ammeter are used, the product of (VA x IA) is used to determine Resistive PIS classification. A Resistive PIS: (a) dissipates more than 15 W, measured after 30 s of normal operation, or (b) under single fault conditions has either a power exceeding 100 W measured immediately after the introduction of the fault if electronic circuits, regulators or PTC devices are used, or has an available power exceeding 15 W measured 30 s after introduction of the fault.					

8.5.5	**TABLE: High Pressure Lamp**	N/A

Description	Values	Energy Source Classification
Lamp type .....:		—
Manufacturer.....:		—
Cat no.....:		—
Pressure (cold) (MPa).....:		MS_
Pressure (operating) (MPa).....:		MS_
Operating time (minutes).....:		—
Explosion method .....:		—
Max particle length escaping enclosure (mm).:		MS_
Max particle length beyond 1 m (mm).....:		MS_
Overall result .....:		

B.2.5	**TABLE: Input test**						P
U (V)	I (A)	I rated (A)	P (W)	P rated (W)	Fuse No	I fuse (A)	Condition/status
108	1.72	7.0	185.76	N/A	--	--	Runninng max load
120	1.48	7.0	177.60	N/A	--	--	Runninng max load
132	1.92	7.0	253.44	N/A	--	--	Runninng max load

Supplementary information: Equipment may be have rated current or rated power or both. Both should be measured

B.3	**TABLE: Abnormal operating condition tests**	P
Ambient temperature (°C) .....:	25.37	—
Power source for EUT: Manufacturer, model/type, output rating ..:	120V, 60Hz	—

Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation
Entire machine	Blocked vent	132	2	-	-	8	59.42	Unit working normally. No sign of damaged, no hazards.

B.3	**TABLE: Abnormal operating condition tests**								P
Ambient temperature (°C) .....:					25.37				—
Power source for EUT: Manufacturer, model/type, output rating ..:					120V, 60Hz				—
Component No.	Abnormal Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation	
Supplementary information: Test table is provided to record abnormal and fault conditions for all applicable energy sources including Thermal burn injury. Column “Abnormal/Fault.” Specify if test condition by indicating “Abnormal” then the condition for a Clause B.3 test or “Single Fault” then the condition for Clause B.4.									

B.4	**TABLE: Fault condition tests**								N/A
Ambient temperature (°C) .....:									—
Power source for EUT: Manufacturer, model/type, output rating .:									—
Component No.	Fault Condition	Supply voltage, (V)	Test time (ms)	Fuse no.	Fuse current, (A)	T-couple	Temp. (°C)	Observation	
Supplementary information:									

Annex M	**TABLE: Batteries**									N/A
The tests of Annex M are applicable only when appropriate battery data is not available										N/A
Is it possible to install the battery in a reverse polarity position?..... :										N/A
	Non-rechargeable batteries			Rechargeable batteries						
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging		
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	
Max. current during normal condition										
Max. current during fault condition										
Test results:										Verdict
- Chemical leaks										
- Explosion of the battery										

- Emission of flame or expulsion of molten metal		
- Electric strength tests of equipment after completion of tests		
Supplementary information:		

Annex M.4	**Table: Additional safeguards for equipment containing secondary lithium batteries**	N/A

Battery/Cell No.	Test conditions	Measurements			Observation
		U	I (A)	Temp (C)	
	Normal				
	Abnormal				
	Single fault –SC/OC				
	Normal				
	Abnormal				
	Single fault – SC/OC				

Supplementary Information:

Battery identification	Charging at T_{lowest} (°C)	Observation	Charging at $T_{highest}$ (°C)	Observation

Supplementary Information:

Annex Q.1	**TABLE: Circuits intended for interconnection with building wiring (LPS)**	N/A

Note: Measured UOC (V) with all load circuits disconnected:

Output Circuit	Components	U_{oc} (V)	I_{sc} (A)		S (VA)	
			Meas.	Limit	Meas.	Limit

Supplementary Information: SC=Short circuit, OC=Open circuit

T.2, T.3, T.4, T.5	**TABLE: Steady force test**	P

Part/Location	Material	Thickness (mm)	Force (N)	Test Duration (sec)	Observation
Rear Panel	Metal	2.0mm	250	5	No sign of damage

Supplementary information:					

T.6, T.9	**TABLE: Impact tests**			P
Part/Location	Material	Thickness (mm)	Vertical distance (mm)	Observation
Rear Panel	Metal	2.0mm	410	No sign of damage
Supplementary information:				

T.7	**TABLE: Drop tests**			N/A
Part/Location	Material	Thickness (mm)	Drop Height (mm)	Observation
Supplementary information:				

T.8	**TABLE: Stress relief test**				N/A
Part/Location	Material	Thickness (mm)	Oven Temperature (°C)	Duration (h)	Observation
Supplementary information:					

List of test equipment used:

Clause	Measurement / testing	Equipment ID#	Testing / measuring equipment / material used	Range used	Calibration date	Cal Due Date
5.1.3	Input Current	WC059500	Multimeter	Voltage/Amp	05/26/2020	05/26/2021
5.1.3	Input Current	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.1.3	Input Current	WC070617	Digital Storage O-Scope	Voltage/Amp	02/12/2020	02/12/2021
5.1.3	Input Current	WC059676	AC Power Supply	Voltage/Hz	NA	NA
5.2.2	Classification of electrical energy sources	WC059500	Multimeter	Voltage/Amp	05/26/2020	05/26/2021
5.2.2	Classification of electrical energy sources	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.2.2	Classification of electrical energy sources	WC070617	Digital Storage O-Scope	Voltage/Amp	02/12/2020	02/12/2021
5.2.2	Classification of electrical energy sources	WC059676	AC Power Supply	Voltage/Hz	NA	NA
5.3	Marking Durability	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.3	Marking Durability	WC064754	Stopwatch	Second	09/18/19	09/18/20
5.3	Marking Durability	WC070619	Dilution Water	Consumable	NA	NA
5.3	Marking Durability	WC700618	Isopropyl Alcohol 70%	Consumable	NA	NA
5.4.2.4	Electric Stength	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.4.2.4	Electric Stength	WC065121	Hipot Tester	Voltage/Amp	05/22/2020	05/22/2021
5.6.6.2	Ground Bonding	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.6.6.2	Ground Bonding	WC059500	Multimeter	Voltage/Amp	05/26/2020	05/26/2021
5.6.6.2	Ground Bonding	WC065019	Ground Bond	Amp/Ohm	11/20/2019	11/20/2020
5.7.4	Earthed accessible conductive part	WC059500	Multimeter	Voltage/Amp	05/26/2020	05/26/2021
5.7.4	Earthed accessible conductive part	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
5.7.4	Earthed accessible conductive part	WC070617	Digital Storage O-Scope	Voltage/Amp	02/12/2020	02/12/2021
5.7.4	Earthed accessible conductive part	WC059676	AC Power Supply	Voltage/Hz	NA	NA
5.7.4	Earthed accessible conductive part	WC065044	Leakage Current Tester	mA	12/05/2019	12/5/2020
8.6.2	Static stability	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
8.6.2	Static stability	WC065116	Digital Protractor	Angle Finder	02/26/2020	02/26/2021
8.6.3	Relocation stability	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
8.6.3	Relocation stability	WC065116	Digital Protractor	Angle Finder	02/26/2020	02/26/2021
8.6.5	Horizontal force	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
8.6.5	Horizontal force	WC065073	Force Gauge	Newton	03/30/2019	09/30/2021
10	Temperature Meas	WC059899	Thermometer	Celsius/Humidity	06/29/2020	06/29/2021
10	Temperature Meas	WC059500	Multimeter	Voltage/Amp	05/26/2020	05/26/2021
10	Temperature Meas	WC070617	Digital Storage O-Scope	Voltage/Amp	02/12/2020	02/12/2021
10	Temperature Meas	WC059676	AC Power Supply	Voltage/Hz	NA	NA
10	Temperature Meas	WC070520	Data Acquisition	Temp Log	02/28/2020	02/28/2021
T5	Steady force test, 250 N	WC065073	Force Gauge	Newton	09/03/2019	09/03/2020
T6	Enclosure impact test	Wc065058	Steel ball	50mm/500g	ICO	ICO

ATTACHMENT TO TEST REPORT IEC 62368-1 2TH ED. U.S.A. NATIONAL DIFFERENCES AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT – PART 1: SAFETY REQUIREMENTS	
Differences according to.....:	CSA/UL 62368-1:2014
Attachment Form No. .....:	US&CA_ND_IEC623681B
Attachment Originator.....:	UL(US)
Master Attachment .....:	Date 2015-06

Clause	Requirement + Test	Result - Remark	Verdict
IEC 62368-1 - US and Canadian National Differences Special National Conditions based on Regulations and Other National Differences			
1.1	All equipment is to be designed to allow installation according to the National Electrical Code (NEC), ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part I, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, for such equipment marked or otherwise identified, installation is allowed per the Standard for the Protection of Information Technology Equipment, ANSI/NFPA 75.		N/A
1.4	Additional requirements apply to some forms of power distribution equipment, including sub-assemblies.		N/A
4.1.17	*For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g., DP, CL2) specified in the NEC.*		N/A
	For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies that are not types specified in the NEC generally are required to have special construction features and identification markings.		N/A
4.8	Lithium coin / button cell batteries have modified special construction and performance requirements.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
5.6.3	Protective earthing conductors comply with the minimum conductor sizes in Table G.5, except as required by Table G.7ADV.1 for cord connected equipment, or Annex DVH for permanently connected equipment		P
5.7.7	Equipment intended to receive telecommunication ringing signals complies with a special touch current measurement tests.		N/A
6.5.1	PS3 wiring outside a fire enclosure complies with single fault testing in B.4, or be current limited per one of the permitted methods.		N/A
Annex F (F.3.3.8)	Output terminals provided for supply of other equipment, except mains, supply are marked with a maximum rating or references to which equipment it is permitted to be connected.		N/A
Annex G (G.7.1)	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.		N/A
Annex G (G.7.3)	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.		P
	Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.		N/A
Annex G (G.7.5)	Minimum cord length is required to be 1.5 m, with certain constructions such as external power supplies allowed to consider both input and output cord lengths into the requirement. Power supply cords are required to be no longer than 4.5 m in length if used in ITE Rooms.		P
Annex H.2	Continuous ringing signals under normal operating conditions up to 16 mA only are permitted if the equipment is subjected to special installation and performance restrictions.		N/A
Annex H.4	For circuits with other than ringing signals and with voltages exceeding 42.4 V_{peak} or 60 V d.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnected is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
Annex M	Battery packs for stationary applications comply with special component requirements.		N/A
Annex DVA (1)	Equipment intended for use in spaces used for environmental air are subjected to special flammability requirements for heat and visible smoke release.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
	For ITE room applications, automated information storage systems with combustible media greater than 0.76 m^3 (27 cu ft) have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
	Consumer products designed or intended primarily for children 12 years of age or younger are subject to additional requirements in accordance with U.S. & Canadian Regulations.		N/A
	Baby monitors additionally comply with ASTM F2951, Consumer Safety Specification for Baby Monitors.		N/A
Annex DVA (5.6.3)	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		P
Annex DVA (6.3)	The maximum quantity of flammable liquid stored in equipment complies with NFPA 30.		N/A
Annex DVA (6.4.8)	For ITE room applications, enclosures with combustible material measuring greater than 0.9 m^2 (10 sq ft) or a single dimension greater than 1.8 m (6 ft) have a flame spread rating of 50 or less. For equipment with the same dimensions for other applications, an external surface that is not a fire enclosure requires a min. flammability classification of V-1.		N/A
Annex DVA (10.3.1)	Equipment with lasers meets the U.S. Code of Federal Regulations 21 CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (10.5.1)	Equipment that produces ionizing radiation complies with the U.S. Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
Annex DVA (F.3.3.3)	Equipment for use on a.c. mains supply systems with a neutral and more than one phase conductor (e.g. 120/240 V, 3-wire) require a special marking format for electrical ratings. Additional considerations apply for voltage ratings that exceed the attachment cap rating or are lower than the “Normal Operating Condition” in Table 2 of CAN/CSA C22.2 No. 235.”	Single phase	N/A
Annex DVA (F.3.3.5)	Equipment identified for ITE (computer) room installation is marked with the rated current		N/A
Annex DVA (G.1)	Vertically-mounted disconnect switches and circuit breakers have the "on" position indicated by the handle in the up position		N/A

Clause	Requirement + Test	Result - Remark	Verdict
Annex DVA (G.3.4)	Suitable NEC/CEC branch circuit protection rated at the maximum circuit rating is required for all standard supply outlets and receptacles (such as supplied in power distribution units) if the supply branch circuit protection is not suitable.		P
Annex DVA (G.4.2)	Equipment with isolated ground (earthing) receptacles complies with NEC 250.146(D) and CEC 10-112 and 10-906(8).	Ground provide	N/A
Annex DVA (G.4.3)	Where a fuse is used to provide Class 2 or Class 3 current limiting, it is not operator-accessible unless it is non- interchangeable.		P
Annex DVA (G.5.3)	Power distribution transformers distributing power at 100 volts or more, and rated 10 kVA or more, require special transformer overcurrent protection.		N/A
Annex DVA (G.5.4)	Motor control devices are required for cord-connected equipment with a mains-connected motor if the equipment is rated more than 12 A, or if the equipment has a nominal voltage rating greater than 120 V, or if the motor is rated more than 1/3 hp (locked rotor current over 43 A).		N/A
Annex DVA (Annex M)	For ITE room applications, equipment with battery systems capable of supplying 750 VA for five minutes have a battery disconnect means that may be connected to the ITE room remote power-off circuit.		N/A
Annex DVA (Q)	Wiring terminals intended to supply Class 2 outputs according to the NEC or CEC Part 1are marked with the voltage rating and “Class 2” or equivalent; marking is located adjacent to the terminals and visible during wiring.		N/A
Annex DVB (1)	Additional requirements apply for equipment used for entertainment purposes intended for installation in general patient care areas of health care facilities.		N/A
Annex DVC (1)	Additional requirements apply for equipment intended for mounting under kitchen cabinets.		N/A

Clause	Requirement + Test	Result - Remark	Verdict
Annex DVE (4.1.1)	Some equipment, components, sub-assemblies and materials associated with the risk of fire, electric shock, or personal injury have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. Components required to comply include: appliance couplers, attachment plugs, battery back-up systems, battery packs, circuit breakers, communication circuit accessories, connectors (used for current interruption of non-LPS circuits), power supply cords, direct plug-in equipment, electrochemical capacitor modules (energy storage modules with ultra-capacitors), enclosures (outdoor), flexible cords and cables, fuses (branch circuit), ground-fault current interrupters, interconnecting cables, data storage equipment, printed wiring, protectors for communications circuits, receptacles, surge protective devices, vehicle battery adapters, wire connectors, and wire and cables.	Certified PSU provide	P
Annex DVH	Equipment for permanent connection to the mains supply is subjected to additional requirements.	Not permanent device	N/A
Annex DVH (DVH.1)	Wiring methods (terminals, leads, etc.) used for the connection of the equipment to the mains are in accordance with the NEC/CEC.		N/A
Annex DVH (DVH.3.2)	Terminals for permanent wiring, including protective earthing terminals, are suitable for U.S./Canadian wire gauge sizes, rated 125 percent of the equipment rating, and are specially marked when specified.		N/A
Annex DVH (DVH.3.2)	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3 mm^2).		N/A
Annex DVH (DVH.4)	Permanently connected equipment is required to have a suitable wiring compartment and wire bending space.		N/A
Annex DVH (DVH 5.5)	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, complies with special earthing, wiring, marking and installation instruction requirements.		N/A
Annex DVI (6.7)	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses.	Not connected telecommunication network	N/A

Clause	Requirement + Test	Result - Remark	Verdict
Annex DVJ (10.6.1)	Equipment connected to a telecommunication and cable distribution networks and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure requirements.		N/A

---------- END OF REPORT ----------

PHOTOGRAPHS

Photo 1

Photo 1: Overall front view of system

Photo 2

Photo 2: Overall rear view of system

Photo 3

Photo 3: Internal view of system with covers removed

Photo 4

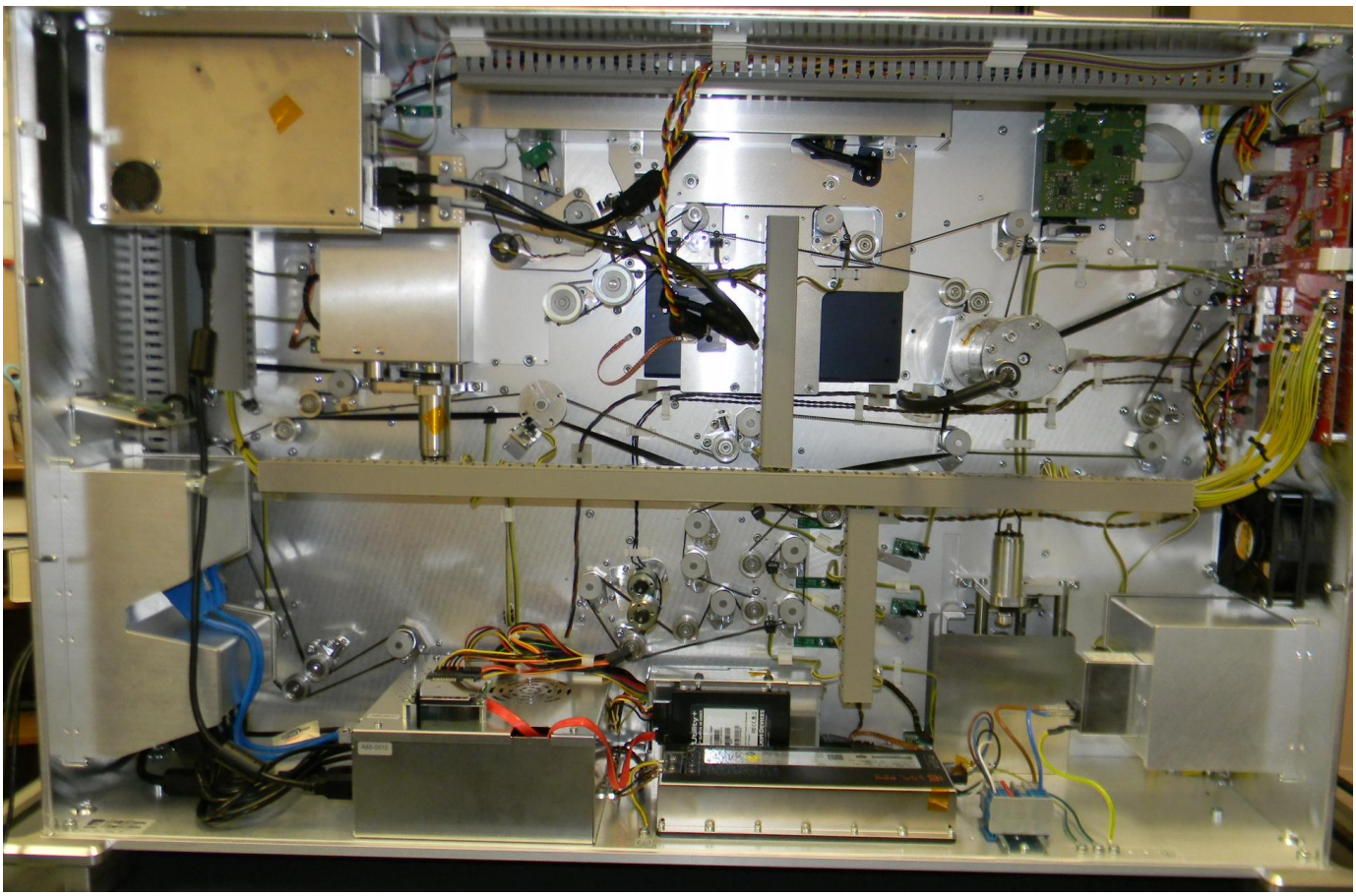


Photo 4: Internal view of system

Photo 5

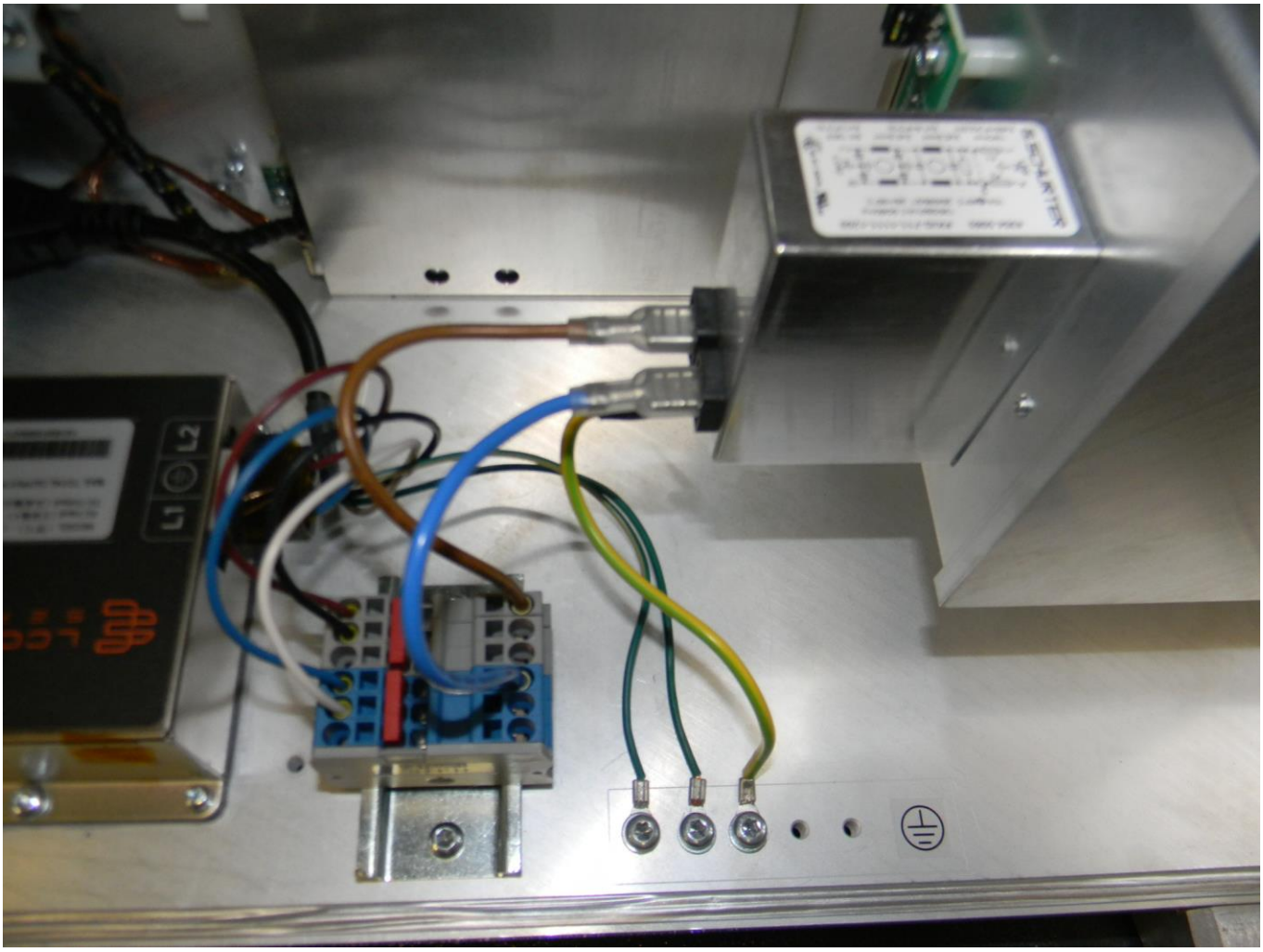


Photo 5: Internal view Chassis Ground

Photo 6

Photo 6: Lock & Key – Warning label

Photo 7: AC inlet/filter module- 2 poles fuse

AGENCY APPROVAL LICENSES AND COMPONENT SPECIFICATIONS

Component	No. of Pages
UPS	1

UL Product iQ™

YEDU.E187679 - Uninterruptible Power-supply Equipment

Uninterruptible Power-supply Equipment

See General Information for Uninterruptible Power-supply Equipment

CYBER POWER SYSTEMS INC E187679
11F NO 26 JINZHUANG RD
NEIHU DISTRICT
TAIPEI, 11469 TAIWAN

Accessory: battery cabinets Model(s) BP48VP2U01, BP48VP2U02, BPR48VP2U02

Uninterruptible power supplies Model(s) CP1000AVRxxxxxxxxxx (*), CP1500AVRxxxxxxxxxx (*), ELITE PRO 1000ERT2U, ELITE PRO 1000ERTXL2U, ELITE PRO 1500ERT2U, ELITE PRO 1500ERTXL2U, ELITE PRO 2000ERT2U, ELITE PRO 2000ERTXL2U, ELITE PRO 2200ERT2U, ELITE PRO 2200ERTXL2U, ELITE PRO 750ERT2U, ELITE PRO 750ERTXL2U, OL2200RTN JP, OR500LCDRM1Ua, OR700LCDRM1Ua, PR1000ERT2U, PR1000ERT2U JP, PR1000ERTXL2U, PR1000ERTXL2U JP, PR1500ERT2U, PR1500ERT2U JP, PR1500ERTXL2U, PR1500ERTXL2U JP, PR2000ERT2U, PR2000ERT2U JP, PR2000ERTXL2U, PR2000ERTXL2U JP, PR2200ERT2U, PR2200ERT2U JP, PR2200ERTXL2U, PR2200ERTXL2U JP, PR2200RT2U, PR2200RT2U JP, PR2200RTXL2U, PR2200RTXL2U JP, PR2200RTXL2UA, PR2200RTXL2UA JP, PR3000RT2U, PR3000RT2U JP, PR3000RTXL2U, PR3000RTXL2U JP, PR3000RTXL2UA, PR3000RTXL2UA JP, PR750ERT2U, PR750ERT2U JP, PR750ERTXL2U, PR750ERTXL2U JP

Investigated to ANSI/UL 1778 (Second Edition)

Uninterruptible power supplies Model(s) 1440AVR-HO, 1440AVR-TB, 1440AVR/HOMO, 1500AVR-HO, 1500AVR-TB, 1500AVR/HOMO, 25650, 25651, 25652, 25653, 25654, 550AE, 685BF, 700BF, 750AE, 760AE, 800BF, 827BF, ABMT1500, AC-500-T1, AC-625-T1, AC-725-T1, AC-750-T1, AC-825-T1, AC-900-T1, AE450, AE485, AE500, AE550, AE750, AE760, BC-500-T1, BC-650-T1, BC-650A-T1A, BC-700-T1, BC-750-T1, BC1000C, BC1000D, BC1185, BC1200, BC1200C, BC1200D, BC1285C, BC1285D, BC1300C, BC1300D, BC1500, BC1500A, BC1500C, BC1500D, BC900, BC900C, BC900D, BF650, BF685, BF700, BF700A, BF800, BF827, BH1185, BH1200, BH1500, BH900, BL1250U, BRG1350AVRLCD, BRG1350AVRLCDTAA, BRG1500AVRLCD, BRG1500AVRLCDTAA, BRK-1440-2U, BRK-1500-2U, BRK-1500B-2U, CP-1000N, CP-685N, CP-700N, CP1000AVR, CP1000AVRLCD, CP1000AVRLCDTAA, CP1000C, CP1000D, CP1185AVR, CP1200AVR, CP1200AVRa, CP1200AVRTAA, CP1200C, CP1200D, CP1285AVR, CP1285C, CP1285D, CP1300AVR, CP1300C, CP1300D, CP1350AVRLCD, CP1350AVRLCDa, CP1350AVRLCDTAA, CP1500AVR, CP1500AVRLCD, CP1500AVRLCDa, CP1500AVRLCDTAA, CP1500AVRT, CP1500AVRTa, CP1500AVRTAA, CP1500C, CP1500D, CP450SL, CP485SL, CP500SL, CP550SL, CP550SL-SR, CP585LCD, CP600LCD, CP600LCDTAA, CP650AVR, CP685AVR, CP700AVR, CP700AVRA, CP700LCD, CP750SL, CP760SL, CP785LCD, CP800AVR, CP800AVRTAA, CP825LCD, CP825LCDTAA, CP827AVR, CP850AVRLCD, CP850AVRLCDTAA, CP850LCD, CP900AVR, CP900AVRa, CP900AVRTAA, CP900C, CP900D, CPS1100AVR, CPS1100AVR-HO, CPS1440AVR, CPS1440AVR-HO, CPS1440AVR-TB, CPS1440AVR/HOMO, CPS1500ARB, CPS1500AVR, CPS1500AVR-HO, CPS1500AVR-TB, CPS1500AVR/HOMO, CPS1500AVRa, CPS1500AVRTAA, CPS325SL, CPS380SL, CPS425SL, CPS825AVR

CPSX1AVR, where X1 may be 650A, 620A, 600A, 585, 525, 500A, 480A or 450A.

CPSXAVR, where X may be 1000, 950, 900, 870, 850, 820, 800, 780, 750A, 720A or 700A.

CPSXAVR, where X may be 1250, 1225, 1200, 1175, 1150, 1125, 1100, 1075, 1050, 1025, 1000A, 975, 950A, 925 or 900A.

CPSXSL, UXR, CPSXSL-N, CPSXSL-F, CPSYSL and CPSYSL-F, where X may be 280, 300, 320, 350, 375, 385, 400, 420, Y may be 350, 385, 400, 420, 450, 480, 500, 520, 525, 550, 560, 575, 580, 585, 600, 620, 625, 650, 675, 700, 720, 725, 750, 775, 785, 800.

CPSYAVR, where Y may be 750, 720, 700, 680, 650, 620, 600, 580, 550, 520, 500, 480, 450, 420 or 400.

CPXSL, where X may be 420, 400, 385, 380, 350, 325, 320, 300 or 280.

CST1300AL, CST1300ALU, CST135XLU, CST1400G, CST1500ALU, CST150XLU, DX-800U, EP-400-UPS-8PS-600, ER-500, ER-HM450, ER-HM500, ER-HM650, ER-OF800, ER-PRO1000T2, GRK3000, GS-1000U, GS-1285U, GS-1500U, GS-685U, GS-700U, GS-875U, GS-975U, LX1000G, LX1100G, LX1325G, LX1325GU, LX1500G, LX1500GU, M1500-UPS, MN 325, MN 525, NUPS1000, NUPS485, OP-825, OP-825A, OP-850, OP-900, OP1440, OP1440-TB, Op1500, OP1500-T4, OP1500-TB, OP1500AVR-T4, OP1500AVR-T4-17, OP1500AVR-T4-20, OP1500AVR-T4-7.0, OP1500AVR-T4-7.2,

INSTALLATION INSTRUCTIONS

DS950®
Operator's Guide

Firmware Version 3.5.0.0

Election Systems & Software, LLC
Manual Version 1.1. Released: September 12, 2020
DS950_3'5'0'0_SOP

Chapter 2: Operational Environment

This chapter contains information about the environmental conditions under which the DS950 should be operated and stored. This chapter also contains information to help you safely operate the DS950.

2.1 Requirements and Specifications for DS950 Operation

The DS950 was designed for indoor use only and can be operated in any temperature-controlled facility. The DS950 is not protected against harmful ingress of moisture, and ballots must be kept dry.

During tabulation, ES&S recommends operating the DS950 in a room measuring a minimum of 10 feet by 10 feet, with a minimum of 3 feet of clearance in the front and back to allow operational access to the unit and its peripherals.

The DS950 is designed to be operated on its compatible ES&S cart, which provides sturdy support for the DS950 and makes it easy to move the DS950 into place. The cart also provides space for the report printer, an uninterruptible power source (UPS), and a drawer for other supplies.

During operation, the DS950 must be plugged into a standard 120V outlet. To prevent sudden interruption of functioning in the event of a power outage, you must use an uninterruptible power supply with the DS950. See sections *3.1.1 Setting up peripherals* and *15.2 Loss of Power to the Facility*.

The following list identifies further requirements and specifications for using the DS950.

Table 2-1: DS950 Requirements and Specifications

	Indoor Use Only The DS950 is not intended for outdoor use.
	Ordinary protection The DS950 is not waterproof. Do not place containers with liquids such as coffee, water or soda on or near the DS950. Do not operate the unit in an excessively damp environment. Store the DS950 in a cool, dry place.
	Caution The interior of the DS950 is not accessible to the user. Service operations inside the electrical enclosure must be done by trained and authorized personnel.

1.11 Specifications and Cautions

	Indoor Use Only
	Ordinary Protection (not protected against harmful ingress of moisture)
	The rear door of the DS950 must be locked at all times during normal use. Store the key to the door in a secure location while you are using the DS950.
	Weight: 200 lbs. (68 kg) - strictly 2 person lift
	Electrical input rating: 100-125V ~ 50/60Hz 3.0A for a single-phase power connection. Main supply voltage fluctuations are not to exceed ± 10 percent of the rated supply voltage range.
	Pollution Degree 2 for the ambient environment
	Operating relative humidity: 20% to 80% RH, non-condensing
	Operating temperature: 50 to 95 degrees Fahrenheit
	Altitude: -30 to 11,000 feet (from sea level)
	Transport and storage conditions: -4 to +140 degrees Fahrenheit
	Maintenance: For basic maintenance information, please refer to this manual.
	Warning: The interior of the DS950 is not accessible to the user. Service operations inside the electrical enclosure must be done by trained and authorized personnel.
	Battery disposal: Dispose of used batteries according to local regulations and conventions.

2.2 Important Safety Instructions

Refer to *Table 1-1: Symbols Used in This Manual* for a complete list of informational symbols used throughout the *DS950 Operator's Guide*. Pay special attention to the Electrical, Warning, and Caution symbols that appear next to the descriptions for any procedure that, if improperly executed, could harm the operator or damage the DS950.

Electrical 	Any operation that requires opening the DS950 enclosure exposes users to dangerous high voltages. To reduce the risk of fire or shock, do not attempt to open the DS950 enclosure unless you receive proper training from an ES&S technician.
Warning 	A Warning indicates a potentially serious issue that could result in data loss and significantly impact election processes. Carefully read all warnings and proceed with caution if you choose to carry out these tasks.
Caution 	Keep fingers, hands, and loose clothing clear of the areas where this symbol is displayed. Eliminate distractions and use extreme caution.

Read all of the instructions in this manual and use extra caution when you carry out any task that may pose a physical danger to yourself or the DS950.

2.2.1 Power Sources

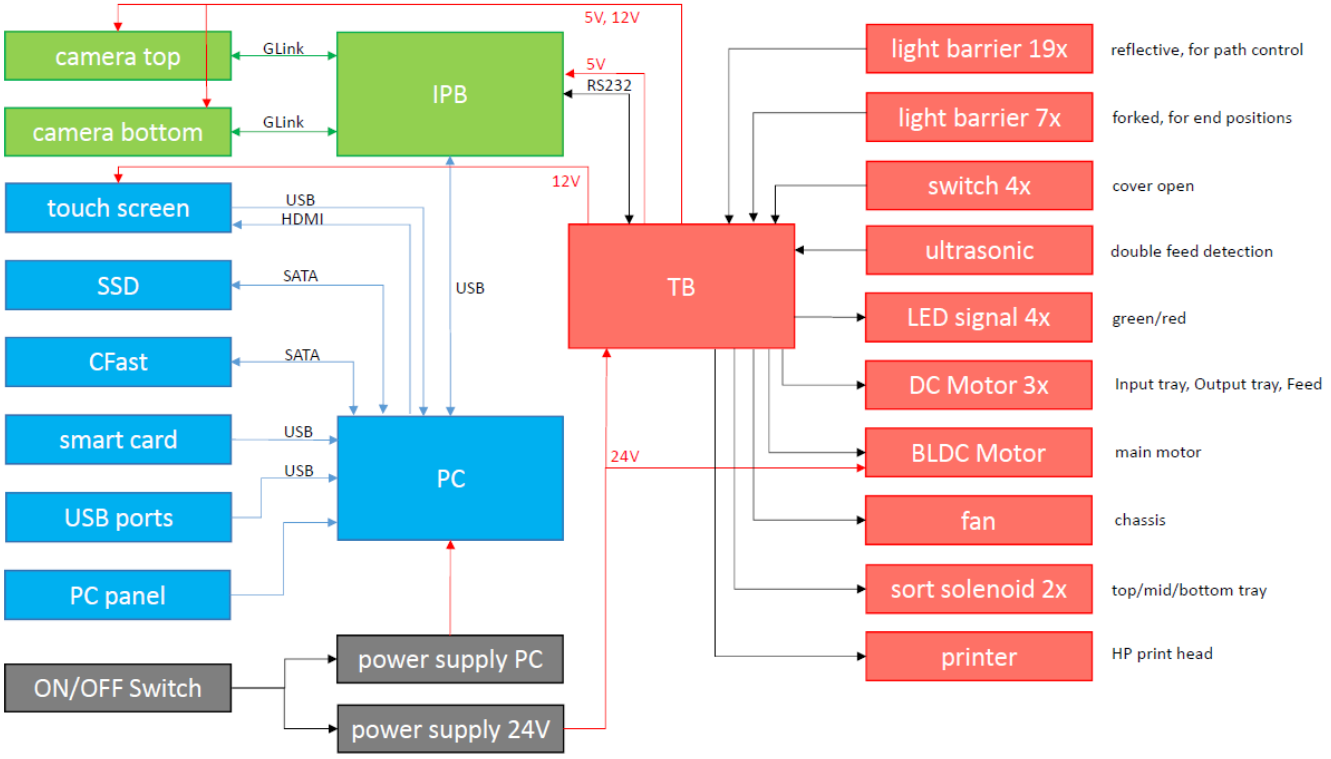
Operate this product only from the type of power source indicated in this manual.

This voting system was certified using an uninterruptible power supply (UPS). The DS950 must be used with the specified UPS to comply with Election Assistance Commission certification.

Plug the UPS into a grounded, three-pronged electrical outlet and then plug the DS950 into the lower left outlet on the UPS. ES&S does not recommend using an extension cord, but if this is unavoidable, use a grounded, three-pronged cord that bears a UL Listing Mark and is rated for use with a 15A circuit.

ES&S recommends you consult a licensed electrician in your area to ensure your electrical wiring is in compliance with all local and state laws. Consult your local building code before you install any ballot-scanning equipment.

SCHEMATIC DIAGRAMS AND SPECS



DS950

SPECIFICATIONS

Performance

- **Expected Speed:** 325 11-inch ballots per minute or 200 19-inch ballots per minute. Approx. 8,640 11-inch ballots/hour or 7,200 19-inch ballots per hour.[1]
- **Maximum Speed:** Optimal test speed is Approx. 11,500 11" ballots/hour or 8,870 19" ballots per hour.[2]
- **Tray/Bin Capacity:** Input Tray: 480 standard sized ballots. Output Bin: 480 standard sized ballots. Outstack Bins: 150 standard size ballots.
- **Memory:** 1TB HDD holds Approx. 5 million ballot images and related data.
- **Processing Frequency:** Between 14 and 18 full size batches per hour for 19" and 11" ballots, respectively.

Safety

- Protective guards around all rollers and diverters (flippers) to reduce pinch hazards.
- Safety Interlocks that disable the transport if either the camera or rear access panel are opened.
- Protective covers of the all power supplies.
- Lift assist cylinders on the camera lid and rear access panel to prevent these from dropping on the user.
- A DC motor driven transport which more quickly detects jam situations and quickly brings the transport to a safe stop.
- Large carrying handles for lifting and positioning the machine.
- Skid-resistant pads to keep unit from moving during operation.

Weights & Measures

Component	Size (HxWxD)	Weight
DS950 unit	26"x43"x20"	200 lbs
DS950 cart	30"x48"x26"	178 lbs
DS950 on cart w/accessories	30"x48"x26"	450 lbs
DS950 cart extension	2"x20"x26"	16 lbs

Backup

- **Battery Type:** N/A (no internal battery)
- **Backup Time:** N/A (no internal battery)
- Uninterruptable Power Supply (UPS) provides power to complete any interrupted run, save data, initiate a controlled shutdown, disposition the data on re-start. A backup generator is required for extended backup support.

END OF REPORT