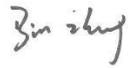




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TEST REPORT EN 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1: General requirements EN IEC 61010-2-034 Safety requirements for electrical equipment for measurement, control, and laboratory use Part 2-034: Particular requirements for Measurement Equipment for Insulation Resistance and Test Equipment for Electric Strength	
Report Number.....	231211155GZU-001
Date of issue.....	23 Mar 2024
Total number of pages.....	69
Name of Testing Laboratory preparing the Report.....	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Applicant's name	Uni-Trend Technology (China) Co., Ltd
Address	No. 6, Gong Ye Bei 1st Road, Songshan Lake National High-Tech Industrial Development Zone, DONGGUAN Guangdong Province 523808 CHINA
Test specification:	
Standard.....	EN 61010-1:2010 +A1:2019 & EN IEC 61010-2-034: 2021 +A11:2021
Test procedure	LVD
Non-standard test method	N/A
Test Report Form No.	TTRF_EN61010_2_034A
Test Report Form(s) Originator	Copyright © 2021 Intertek
Master TRF.....	2021-08
General disclaimer: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty. This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid	

Test item description :	PV Insulation Tester
Trade Mark :	UNI-T
Manufacturer	Same as applicant
Model/Type reference :	UT503PV
Ratings :	Powered: 6 x 1.5V LR6 AA Measurement: CAT III 600V, CAT II 1000Vdc

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input type="checkbox"/>	Testing Laboratory:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Testing location/ address		Room 101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, Guangzhou, Guangdong, China
Tested by (name, function, signature)..... :		Bin Zhong Engineer
		
Approved by (name, function, signature) .. :		Justin He Manager
		
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	N/A
Testing location/ address		
Tested by (name, function, signature)..... :		
Approved by (name, function, signature) .. :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	N/A
Testing location/ address		
Tested by (name + signature)..... :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) .. :		

List of Attachments (including a total number of pages in each attachment)		
Document No.	Documents included / attached to this report (description)	Page No.
Appendix 1	Product photos	5

Documents referenced by this report (available on request):		
Document Name or No.	Documents description	Page No.
None		

<p>Summary of testing: The equipment under test in this report comply with EN 61010-1:2010 +A1:2019 & EN IEC 61010-2-034: 2021 +A11:2021.</p>	
<p>Tests performed (name of test and test clause): All applicant clauses test performed.</p>	<p>Testing location: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Room 101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, Guangzhou, Guangdong, China</p>
<p>Summary of compliance with National Differences (List of countries addressed): None.</p> <p><input checked="" type="checkbox"/> The product fulfils the requirements of <u>EN 61010-1:2010 +A1:2019 & EN IEC 61010-2-034: 2021 +A11:2021.</u></p>	
<p>Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client)</p> <p><input type="checkbox"/> Internal procedure used for type testing through which traceability of the measuring uncertainty has been established: Procedure number, issue date and title:</p> <p>Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.</p> <p><input checked="" type="checkbox"/> Statement not required by the standard used for type testing</p>	

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

On front panel



After removing front cover

Warning

- UT503PV measures photovoltaic insulation resistance (Max. 1000VDC) and conventional insulation resistance (deenergized). Maximum output voltage: 1kV. Wear insulated gloves and take personal protective measures for safe operation.
- Ensure proper connection of the measured object to the test leads before pressing the TEST button. Keep the test clips away. Avoid contact with the measured object before pressing TEST to prevent electric shock.
- Please refer to the User Manual for the detailed operating rules and instructions.

Connection of Photovoltaic Measurement (Connect MC4 connector to P pole or N pole)

Connection of Conventional Resistance Measurement

Connection of Voltage Measurement

On rear panel

Function	Volts EN61557-1	Insulation EN61557-2
Display Range	DC5.0~1050V AC5.0~630V 50/60Hz	1.51 MΩ-4000MΩ
EN61557 Measurement Range Operating Error	DC5.0~1000V AC5.0~600V 50/60Hz ±(1%+4 LSD)	1.51 MΩ-4000MΩ ±(5%+6 LSD)
Nominal Values	Un=1000V DC Un=600AC F=50Hz	Un=125V/250V /500V/1000V In = 1.0 mA

WARNING

TO AVOID ELECTRICAL SHOCK, REMOVE TEST LEADS BEFORE OPENING CASE. READ THE USER'S MANUAL BEFORE OPERATION.

6 x 1.5V LR6 AA SIZE

CE IP54

www.uni-trend.com.cn

Measuring terminals



Test item particulars:

Type of item : Measurement
Description of equipment function..... : See general information
Connection to MAINS supply : Battery operated
Overvoltage category : Battery operated
Measurement category..... : CAT II, CAT III
POLLUTION DEGREE..... : 2
Means of protection..... : Class II
Environmental conditions : 0°C ~ 40°C: <80%RH (No condensation)
 40°C ~ 50°C: <70%RH
For use in wet locations : No
Equipment mobility..... : Portable
Operating conditions..... : Continuous
Overall size of equipment (W x D x H)..... : 161mm x 117.3mm x 63mm
Mass of equipment (kg)..... : 0.5kg (including battery)
Marked degree of protection to IEC 60529 : IP54
Accessories and detachable parts included in the evaluation..... : None
Options : None

Possible test case verdicts:

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

Testing:

Date of receipt of test item..... : 12 Dec 2023
Date (s) of performance of tests : 12 Dec 2023 – 14 Mar 2024

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 Form A.xx)" refers to a Table appended to the report.
Bottom lines for measurement Tables Forms A.xx are optional if used as record.

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

Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.
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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid

Name and address of factory (ies): Same as applicant

General product information and other remarks:

This tester can be used to measure photovoltaic energized (maximum: 1000V DC) insulation resistance and conventional insulation resistance (de-energized) and automatically identify AC/DC voltage. It has multiple functions including: photovoltaic insulation resistance measurement without solar panel in power outage/short circuit condition or at night, voltage stepping, Bluetooth transmission, automatic discharge, high voltage warning, remote-controlled test lead operation, and more. UT503PV is commonly applied to test insulation resistance for various equipment such as photovoltaic panel, battery energy storage system, new energy vehicles, etc.

Description of model differences:

None.

Description of special features:

None.

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
4	TESTS		P
4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests		P
4.4.2	Application of SINGLE FAULT CONDITIONS		P
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14		P
4.4.2.2	PROTECTIVE IMPEDANCE	NO PROTECTIVE IMPEDANCE	N/A
4.4.2.3	PROTECTIVE CONDUCTOR	No PROTECTIVE CONDUCTOR	N/A
4.4.2.4	Equipment or parts for short-term or intermittent operation	Continuous	N/A
4.4.2.5	Motors	No Motors	—
	– stopped while fully energized		N/A
	– prevented from starting		N/A
	– one phase interrupted (multi-phase)		N/A
4.4.2.6	Capacitors	No such capacitor	N/A
4.4.2.7	MAINS transformers	This a transformer inside equipment, not a MAINS transformer, no insulation	N/A
4.4.2.7.2	Short circuit		N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs		N/A
4.4.2.9	Equipment for more than one supply	Only one supply	N/A
4.4.2.10	Cooling	No such parts	—
	– air holes closed		N/A
	– fans stopped		N/A
	– coolant stopped		N/A
	– loss of cooling liquid		N/A
4.4.2.11	Heating devices	No such parts	—
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts	No such parts	N/A
4.4.2.13	Interlocks	No Interlocks	N/A
4.4.2.14	Voltage selectors	No such parts	N/A
4.4.3	Duration of tests		—
4.4.4	Conformity after application of fault conditions		P
5	MARKING AND DOCUMENTATION		P
5.1	Marking		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.1	General		P
	Required equipment markings		—
	– Visible from the exterior; or		P
	– Visible after removing cover or opening door	See “copy of marking plate”	P
	– Visible after removal from a rack or panel	No such markings	N/A
	Not put on parts which can be removed by an operator		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols of Table 1 used		P
5.1.2	Identification		P
	Equipment is identified by:		—
	a) Manufacturer’s or supplier’s name or trademark	UNI-T	P
	b) Model number, name or other means	UT503PV	P
	Manufacturing location identified	Only one manufacturing location	N/A
5.1.3	MAINS supply	Battery operated	N/A
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies		—
	2) d.c. with symbol 1		—
	b) RATED supply voltage(s) or range		—
	c) Max. RATED power (W or VA) or input current		—
	The marked value not less than 90 % of the maximum value		N/A
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
	d) OPERATOR-set for different RATED supply voltages:		—
	Indicates the equipment set voltage		N/A
	PORTABLE EQUIPMENT indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory MAINS socket-outlets accepting standard MAINS plugs are marked:		—
	With the voltage if it is different from the MAINS supply voltage.....		—
	For use only with specific equipment		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	If not marked for specific equipment it is marked with:		—
	The maximum RATED current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses	No fuse	N/A
	OPERATOR replaceable fuse marking (see also 5.4.5)..... :		—
5.1.5	TERMINALS, connections and operating devices		P
5.1.5.1	General		P
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		P
	Push-buttons and actuators of emergency stop devices and indicators:	No such device	—
	– used only to indicate a warning of danger; or		N/A
	– the need for urgent action		N/A
	– coloured red		N/A
	– coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		—
	– to safety of persons; or		N/A
	– safety of the environment		N/A
5.1.5.2	TERMINALS		—
	MAINS supply TERMINAL identified	Battery operated	N/A
	Other TERMINAL marking:		—
	a) FUNCTIONAL EARTH TERMINALS marked with symbol 5	No FUNCTIONAL EARTH TERMINALS	N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:	No PROTECTIVE CONDUCTOR TERMINALS	—
	Symbol 6 is placed close to or on the TERMINAL; or		N/A
	Part of appliance inlet		N/A
	c) TERMINALS of circuits (symbol 7 used)	No such TERMINALS	N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior	No such HAZARDOUS LIVE TERMINALS	N/A
	Standard MAINS socket outlet used; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.5.101	Measuring circuit TERMINALS		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.5.101.1	<i>General</i>		P
	<i>Some measuring circuit TERMINALS for the equipment within the scope of this standard also serve as output TERMINALS.</i>		P
	<i>Except as permitted in 5.1.5.101.5:</i>		-
	<i>a) The value of the RATED voltage to earth of measuring circuit TERMINALS is marked</i>	CAT III 600V, CAT II 1000Vdc	P
	<i>b) the value of the RATED voltage or the RATED current, as applicable, for each pair or set of measuring circuit TERMINALS that are intended to be used together are marked</i>		P
	<i>c) . the pertinent MEASUREMENT CATEGORY for each individual pair or set of measuring circuit TERMINALS or symbol 14 of Table 1 of Part 1 are marked</i>		P
	<i>Measuring circuit TERMINALS are usually supplied in pairs or sets. Each pair or set of TERMINALS may have a RATED voltage or a RATED current, or both, within that set, and each individual TERMINAL may have a RATED voltage to earth.</i>		P
	<i>For some equipment, the RATED voltage between TERMINALS may be different from the RATED voltage to earth. Markings shall be clear to avoid misunderstanding</i>	<i>Measuring RATED voltage same as RATED voltage to earth</i>	N/A
	<i>Symbol 14 of Table 1 is marked if current measuring TERMINALS are not intended for connection to current transformers without internal protection (see 101.2).</i>	<i>No current measuring TERMINALS</i>	N/A
	<i>Markings are placed adjacent to the TERMINALS, however, if there is insufficient space, the marking may be on the RATING plate or scale plate, or the TERMINAL may be marked with symbol 14 of Table 1.</i>		P
	<i>For any set of measuring circuit TERMINALS, symbol 14 of Table 1 does not need to be marked more than once, if it is close to the TERMINALS.</i>		P
5.1.5.101.2	<i>The relevant MEASUREMENT CATEGORY is marked for measuring circuit TERMINALS. The CATEGORY markings are "CAT II", "CAT III" or "CAT IV" as applicable.</i>	Rated for CAT III, CAT II	P
	<i>Marking more than one type of MEASUREMENT CATEGORY and its RATED voltage to earth is permissible</i>		P
5.1.5.101.3	<i>Symbol 14 of Table 1 shall be marked for measuring circuit TERMINALS RATED for connection to voltages above the levels of 6.3.1, but that are not RATED for measurements within MEASUREMENT CATEGORIES II, III or IV</i>	Rated for CAT III, CAT II	N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.5.101.4	Output TERMINALS of measurement equipment for insulation resistance and test equipment for electric strength which can be HAZARDOUS LIVE shall be marked with symbol 12 of Table 1 in close proximity to those TERMINALS.	No such Output TERMINALS	N/A
5.1.5.101.5	Permanently connected, dedicated or low voltage measuring circuit TERMINALS do not need to be marked if a), b), c) below apply	No such terminals	N/A
	a) they are intended to be permanently connected and not ACCESSIBLE (see 5.4.3 aa) and bb), or		N/A
	b) they are dedicated only for connection to specific TERMINALS of other equipment, or		N/A
	c) It is obvious from other indications that the RATED voltage is below the levels of 6.3.1.		N/A
5.1.6	Switches and circuit-breakers	No such device	N/A
	If disconnecting device, off position clearly marked		N/A
	If push-button used as power supply switch:		—
	– Symbol 9 and 15 used for on-position		N/A
	– Symbol 10 and 16 used for off-position		N/A
	– Pair of symbols 9, 15 and 10, 16 close together		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		P
	Protected throughout (symbol 11 used)		P
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes	No field-wiring TERMINAL boxes	N/A
	If TERMINAL or ENCLOSURE exceeds 60 °C:		—
	Cable temperature RATING marked :		—
	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings		P
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour:		—
	a) Symbols min 2,75 mm and text 1,5 mm high and contrasting in colour with background		P
	b) Symbols and text moulded, stamped or engraved in material min. 2,0 mm high and	Ink markings	N/A
	0,5 mm depth or raised if not contrasting in colour		N/A
	If necessary marked with symbol 14, or		P
	Additional symbols such as symbol 12, 13 or 17 used to indicate the nature of HAZARD	Symbol 12 used	P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Statement to place equipment in a safe state before access by using a tool to HAZARDOUS parts is permitted		P
5.3	Durability of markings		P
	The required markings remain clear and legible in NORMAL USE		P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation for service personnel authorized by the manufacturer		P
	Documentation necessary for safe operation is provided in printed media or		P
	in electronic media if available at any time		N/A
	Documentation includes:		—
	a) Intended use		P
	b) Technical specification		P
	c) Name and address of manufacturer or supplier		P
	d) Information specified in 5.4.2 to 5.4.6		P
	e) Information to mitigate residual RISK (see also subclause 17)	No residual RISK	N/A
	f) Accessories for safe operation of the equipment specified	No such accessories	N/A
	g) Guidance provided to check correct function of the equipment, if incorrect reading may cause a HAZARD from harmful or corrosive substances of HAZARDOUS live parts		p
	h) Instructions for lifting and carrying	Less than 18kg	N/A
	Warning statements and a clear explanation of warning symbols:		—
	– provided in the documentation; or		P
	– information is marked on the equipment		P
	<i>aa) information about each relevant MEASUREMENT CATEGORY if the measuring circuit has a RATING for MEASUREMENT CATEGORY II, III or IV (see 5.1.5.101.2).</i>		P
	<i>bb) for measuring circuits that do not have a RATING for MEASUREMENT CATEGORY II, III or IV, but could be misused by connection to such circuits, a warning not to use the equipment for measurements on MAINS, and a detailed RATING including TRANSIENT OVERVOLTAGES (see AA.2.4)</i>	Rated for CAT III, CATII	N/A
5.4.2	Equipment RATINGS		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Documentation includes:		—
	a) Supply voltage or voltage range..... :	6 x 1.5V LR6 AA	—
	Frequency or frequency range :		—
	Power or current rating..... :		—
	b) Description of all input and output connections in accordance to 6.6.1 a)	Type C USB port	P
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)		P
	d) Statement of the range of environmental conditions (refer to 1.4):		—
	1) indoor or outdoor use,	Indoor used	P
	2) altitude,	≤2000m	P
	3) temperature,	0°C -50°C	P
	4) relative humidity,	0°C -40°C: <80%RH (No condensation) 40°C -50°C: <70%RH	P
	5) MAINS supply voltage fluctuations,	Battery operated	N/A
	6) OVERVOLTAGE CATEGORY,	Battery operated	N/A
	7) WET LOCATION, if applicable,	Not used in WET LOCATION	N/A
	8) POLLUTION DEGREE of the intended environment	2	P
	e) Degree of ingress protection (IEC 60529)	IP54	P
	f) If impact rating less than 5 J:	Test with 5J	—
	IK code in accordance to IEC 62262 marked; or		N/A
	symbol 14 of Table 1 marked, with		N/A
	RATED energy level and test method stated		N/A
5.4.3	Equipment installation	Portable equipment, no installation requirement.	N/A
	Documentation includes instructions for:		—
	a) Assembly, location and mounting requirements		N/A
	b) Instructions for protective earthing		N/A
	c) Connections to supply		N/A
	d) PERMANENTLY CONNECTED EQUIPMENT:		—
	1) Supply wiring requirements		N/A
	2) If external switch or circuit-breaker, requirements and location recommendation		N/A
	e) Ventilation requirements		N/A
	f) Safety characteristics for special external services (e. g. maximum and minimum temperature, pressure, flow of air, cooling liquid)		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	g) Instructions relating to sound level		N/A
	<i>aa) for measuring circuit TERMINALS intended for permanent connection and that are RATED for MEASUREMENT CATEGORIES II, III or IV, information regarding the MEASUREMENT CATEGORY, RATED VOLTAGE, and RATED current, as applicable (see 5.1.5.101.2);</i>		N/A
	<i>bb) for measuring circuit TERMINALS intended for permanent connection and that are not RATED for MEASUREMENT CATEGORIES II, III or IV, information regarding the RATED VOLTAGE, RATED current, and RATED TRANSIENT OVERVOLTAGES as applicable (see 5.1.5.101.5).</i>		N/A
5.4.4	Equipment operation		P
	Instructions for use include:		—
	a) Identification and description of operating controls		P
	b) Positioning for disconnection	Battery operated	N/A
	c) Instructions for interconnection to accessories or other equipment		P
	d) Specification of intermittent operation limits	Continuous	N/A
	e) Explanation of symbols used		P
	f) Replacement of consumable materials		P
	g) Cleaning and decontamination		P
	h) Listing of any poisonous or injurious gases and quantities	No poisonous or injurious gases and quantities	N/A
	i) RISK reduction procedures relating to flammable liquids (see 9.5 c)	No flammable liquids	N/A
	j) RISK reduction procedures relating burn from surfaces permitted to exceed limits of 10.1	No parts exceed limits of 10.1	N/A
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids	No such parts	N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer		P
5.4.5	Equipment maintenance and service		P
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		—
	Instruction against the use of detachable MAINS supply cord with inadequate RATING	No MAINS supply cord	N/A
	Specific battery type of user replaceable batteries	LR6 AA	P
	Any manufacturer specified parts	No specified parts	N/A
	RATING and characteristics of fuses	No fuse	N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions include following subjects permitting safe servicing and continued safety:		—
	a) Product specific RISKS may affect service personnel		N/A
	b) Protective measures for these RISKS		N/A
	c) Verification of the safe state after repair		N/A
5.4.6	Integration into systems or effects resulting from special conditions		N/A
	Aspects described in documentation		N/A
5.101.1	<i>At least one of the following HAZARD indicators shall be provided:</i>		P
	a) <i>HAZARD indicator lamp</i>	LED indicator	P
	<i>Where a HAZARD indicator lamp is provided, it shall illuminate or flash when there are HAZARDOUS LIVE voltages present on the TERMINALS. It may start illuminating or flashing at any point the output is activated.</i>		P
	<i>The indicator lamp shall be red in colour.</i>		P
	<i>If the indicator lamp flashes, the frequency shall be 50 cycles per minute to 300 cycles per minute. The duty cycle shall be at least 40 %.</i>	Continuous	N/A
	b) <i>Variable visible indicator</i>	LCD screen	P
	<i>Where a variable visible indicator with contrasting colours is provided, it shall operate when there are HAZARDOUS LIVE voltages present on the TERMINALS. It may start operating at any point the output is activated.</i>		P
	<i>The visible indicator shall have equally spaced areas of significantly contrasting colours and / or patterns.</i>		P
	c) <i>Audible indicator</i>		P
	<i>Where an audible indicator is provided, it shall produce a sound with a minimum constant sound pressure level of 70 dBA and a frequency of the fundamental wave lower than 5 kHz to warn the OPERATOR or a bystander when there are HAZARDOUS LIVE voltages present on the TERMINALS. It may start producing a sound at any point the output is activated.</i>	71.2dBA at closest point 2.65kHz	P
5.101.2	<i>Where the test equipment can be permanently installed, provision shall be made to connect an external HAZARD indicator lamp.</i>	Portable equipment	N/A
	<i>The power source for the external indicator lamp may be separate from the test equipment.</i>		N/A
6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General		P
6.1.1	Requirements		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Protection against electric shock maintained in NORMAL CONDITION and SINGLE FAULT CONDITION		P
	ACCESSIBLE parts not HAZARDOUS LIVE		P
	Voltage, current, charge or energy below the limits in NORMAL CONDITION and in SINGLE FAULT CONDITION between:		—
	ACCESSIBLE parts and earth		P
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		P
6.1.2	Exceptions		P
	Following HAZARDOUS LIVE parts may be ACCESSIBLE to an OPERATOR:		—
	a) parts of lamps and lamp sockets after lamp removal	No such parts	N/A
	b) parts to be replaced by OPERATOR only by the use of tool and warning marking		P
	Those parts not HAZARDOUS LIVE 10 s after interruption of supply		P
	Capacitance test if charge is received from internal capacitor	No capacitance	N/A
	<i>aa) locking or screw-held type measuring TERMINALS, including TERMINALS which do not require the use of a TOOL.</i>	No such measuring terminals	N/A
6.2	Determination of ACCESSIBLE parts		P
6.2.1	General		P
	Unless obviously determination of ACCESSIBLE parts as specified in 6.2.2 to 6.2.4		P
6.2.2	Examination		P
	– with jointed test finger (as specified B.2)		P
	– with rigid test finger (as specified B.1) and a force of 10 N		P
6.2.3	Openings above parts that are HAZARDOUS LIVE	No openings	N/A
	– test pin with length of 100 mm and 4 mm in diameter applied		N/A
6.2.4	Openings for pre-set controls	No pre-set controls	N/A
	– test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.3	Limit values for ACCESSIBLE parts		P
6.3.1	Levels in NORMAL CONDITION		P
	a) Voltage limits less than 30 V r.m.s. and 42,4 V peak or 60 V d.c.		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	for WET LOCATIONS voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.	Not used in WET LOCATIONS	N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non-sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		P
	for WET LOCATIONS measuring circuit A.4 used	Not used in WET LOCATIONS	N/A
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies		P
	c) Levels of capacitive charge or energy less:	No capacitive	—
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.2	Levels in SINGLE FAULT CONDITION		P
	a) Voltage limits less than 50 V r.m.s. and 70 V peak or 120 V d.c.		P
	for WET LOCATIONS voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.	Not used in WET LOCATIONS	N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 3,5 mA r.m.s. for sinusoidal, 5 mA peak non-sinusoidal or mixed frequencies or 15 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		P
	for WET LOCATIONS measuring circuit A.4 used	Not used in WET LOCATIONS	N/A
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		P
	c) Levels of capacitive charge or energy less line B of Figure 3	No capacitive	N/A
6.4	Primary means of protection		P
6.4.1	General		P
	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		—
	a) ENCLOSURES or PROTECTIVE BARRIERS (see 6.4.2)		P
	b) BASIC INSULATION (see 6.4.3)		P
	c) Impedance (see 6.4.4)	No such protection	N/A
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS		P
	– meet rigidity requirements of 8.1		P
	– meet requirements for BASIC INSULATION, if protection is provided by insulation		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> – meet requirements of 6.7 for CREEPAGE and – CLEARANCES between ACCESSIBLE parts and – HAZARDOUS live parts, if protection is provided by – limited access 		P
6.4.3	BASIC INSULATION		P
	– meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		P
6.4.4	Impedance	No such protection	N/A
	Impedance used as primary means of protection meets all the following requirements:		—
	a) limits current or voltage to level of 6.3.2		N/A
	b) RATED for maximum WORKING VOLTAGE and the amount of power it will dissipate		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of BASIC INSULATION of 6.7		N/A
6.5	Additional means of protection in case of SINGLE FAULT CONDITION		P
6.5.1	General		P
	ACCESSIBLE parts are prevented from becoming HAZARDOUS live by the primary means of protection and supplemented by one of:		—
	a) PROTECTIVE BONDING (see 6.5.2)	No PROTECTIVE BONDING	N/A
	b) SUPPLEMENTARY INSULATION (see 6.5.3)		P
	c) automatic disconnection of the supply (see 6.5.5)	No such devices	N/A
	d) current- or voltage-limiting device (see 6.5.6)	No such devices	N/A
	Alternatively one of the single means of protection is used:		—
	e) REINFORCED INSULATION (see 6.5.3)		P
	f) PROTECTIVE IMPEDANCE (see 6.5.4)	No PROTECTIVE IMPEDANCE	N/A
6.5.2	PROTECTIVE BONDING	No PROTECTIVE BONDING	N/A
6.5.2.1	General		N/A
	ACCESSIBLE conductive parts, may become HAZARDOUS LIVE in SINGLE FAULT CONDITION:		—
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or		N/A
	Separated by conductive screen or barrier bonded to PROTECTIVE CONDUCTOR TERMINAL		N/A
6.5.2.2	Integrity of PROTECTIVE BONDING		—
	a) PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A
	b) Soldered connections:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Independently secured against loosening		N/A
	Not used for other purposes		N/A
	c) Screw connections are secured		N/A
	d) PROTECTIVE BONDING not interrupted; or		N/A
	except as removable part that carries MAINS SUPPLY input connection to the whole equipment		N/A
	e) Any movable PROTECTIVE BONDING connection specifically designed, and meets 6.5.2.4		N/A
	f) No external metal braid of cables used (not regarded as PROTECTIVE BONDING)		N/A
	g) IF MAINS SUPPLY passes through:		—
	Means provided for passing protective conductor;		N/A
	Impedance meets 6.5.2.4		N/A
	h) Protective conductors bare or insulated, if insulated, green/yellow		N/A
	Exceptions:		—
	1) earthing braids;		N/A
	2) internal protective conductors etc.;		N/A
	Green/yellow not used for other purposes		N/A
	TERMINAL suitable for connection of a PROTECTIVE CONDUCTOR, and meets 6.5.2.3		N/A
6.5.2.3	PROTECTIVE CONDUCTOR TERMINAL		—
	a) Contact surfaces are metal		N/A
	b) Appliance inlet used		N/A
	c) For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS		N/A
	d) If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		—
	Is near terminals of circuit for which protective earthing is necessary		N/A
	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to MAINS supply TERMINALS		N/A
	f) If plug-in, makes first and breaks last		N/A
	g) If also used for other bonding purposes, PROTECTIVE CONDUCTOR:		—
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	h) PROTECTIVE CONDUCTOR of measuring circuit:		—
	1) Current RATING equivalent to measuring circuit TERMINAL;		N/A
	2) <i>the PROTECTIVE BONDING is not be interrupted by any switching or interrupting device. Devices used for indirect bonding in test and measurement circuits (see 6.5.2.101) are permitted to be part of the PROTECTIVE BONDING.</i>		N/A
	i) FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
	j) If a binding screw used for PROTECTIVE CONDUCTOR TERMINAL:		—
	Suitable size for bond wire		N/A
	Not smaller than M 4		N/A
	At least 3 turns of screw engaged		N/A
	Passes tightening torque test		N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of PROTECTIVE BONDING of plug-connected equipment		N/A
	Impedance between PROTECTIVE CONDUCTOR TERMINAL and each ACCESSIBLE part where PROTECTIVE BONDING is specified, is:		—
	– less than 0,1 Ohm; or		N/A
	– less than 0,2 Ohm if equipment is provided with non-detachable cord		N/A
6.5.2.5	Impedance of PROTECTIVE BONDING of PERMANENTLY CONNECTED EQUIPMENT		N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen		N/A
	Transformer provided with screen for PROTECTIVE BONDING:		—
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N/A
	screen bonding with soldered connection (see 6.5.2.2 b) is:		—
	– Independently secured against loosening		N/A
	– Not used for other purposes		N/A
6.5.2.101	<i>Indirect bonding for testing and measuring circuits</i>		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	<i>Indirect bonding establishes a connection between the PROTECTIVE CONDUCTOR TERMINAL and ACCESSIBLE conductive parts if these become HAZARDUS LIVE as a result of fault. Devices to establish indirect bonding are:</i>		N/A
	<i>a) voltage limiting devices which become conductive when the voltage across them exceeds the relevant levels of 6.3.2 a), with overcurrent protection to prevent breakdown of the device</i>		N/A
	<i>The duration versus the current shall not exceed the levels of Figure 101.</i>		N/A
	<i>The current between the ACCESSIBLE conductive parts and the PROTECTIVE CONDUCTOR TERMINAL is measured with the circuit of Figure A. 1</i>		N/A
	<i>b) voltage-sensitive tripping devices which interrupt all poles of the MAINS supply or the hazardous LIVE voltage source, and connect the ACCESSIBLE conductive parts to the PROTECTIVE CONDUCTOR TERMINAL whenever the voltage across them reaches the relevant levels of 6.3.2 a).</i>		N/A
	<i>The tripping duration versus the current shall not exceed the levels of Figure 101</i>		N/A
	<i>The current between the ACCESSIBLE conductive parts and the PROTECTIVE CONDUCTOR TERMINAL is measured with the circuit of Figure A. 1.</i>		N/A
6.5.3	SUPPLEMENTARY INSULATION and REINFORCED INSULATION		P
	Meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		P
6.5.4	PROTECTIVE IMPEDANCE	No PROTECTIVE IMPEDANCE	N/A
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION		N/A
	CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of DOUBLE or REINFORCED INSULATION of 6.7		N/A
	The PROTECTIVE IMPEDANCE consists of one or more of the following:		—
	a) appropriate single component suitable for safety and reliability for protection, it is:		—
	1) RATED twice the maximum WORKING VOLTAGE		N/A
	2) resistor RATED for twice the power dissipation for maximum WORKING VOLTAGE		N/A
	b) combination of components		N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE		N/A
6.5.5	Automatic disconnection of the supply	No such devices	N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	a) RATED to disconnect the load within time specified in Figure 2		N/A
	b) RATED for the maximum load conditions of the equipment		N/A
6.5.6	Current- or voltage-limiting devices	No such devices	N/A
	Device complies with all of:		—
	a) RATED to limit the current or voltage to the level of 6.3.2		N/A
	b) RATED for the maximum WORKING VOLTAGE; and		N/A
	RATED for the maximum operational current if applicable		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7		N/A
6.6	Connections to external circuits	Type C USB port separated from internal hazard live parts by DI/RI	P
6.6.1	General		P
	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		—
	– the external circuits		P
	– the equipment		P
	Protection achieved by separation of circuits; or		P
	short circuit of separation does not cause a HAZARD		P
	Instructions or markings for each terminal include:		—
	a) RATED conditions for TERMINAL		P
	b) Required RATING of external circuit insulation		P
6.6.2	TERMINALS for external circuits	No such TERMINALS	N/A
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection		N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE	No HAZARDOUS LIVE terminals	N/A
	These circuits are:		—
	Not connected to ACCESSIBLE conductive parts; or		N/A
	Connected to ACCESSIBLE conductive parts, but are not MAINS CIRCUITS and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		N/A
6.6.4	Terminals for stranded conductors	No such terminals	N/A
	No RISK of accidental contact because:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	– Located or shielded		N/A
	– Self-evident or marked whether or not connected to ACCESSIBLE conductive parts		N/A
	Complies as applicable:		—
	a) Manufacturer's specified maximum length of removed insulation, or		N/A
	b) 8 mm length of insulation removed		P
6.6.101	<i>Conductive parts of each unmated measuring circuit TERMINAL which could become HAZARDOUS LIVE when the highest RATED voltage is applied to other measuring circuit TERMINALS on the equipment shall be separated by at least:</i>		P
	<i>a) for TERMINALS with voltage RATING up to 1 000 V a.c. or 1 500 V d.c., the applicable CLEARANCE and CREEPAGE DISTANCE of Table 101 from the closest approach of the test finger touching the external parts of the TERMINAL in the least favourable position</i>		P
	<i>b) for TERMINALS with voltage RATING exceeding 1 000 V a.c. or 1 500 V d.c., 2,8 mm for the CLEARANCE and CREEPAGE DISTANCE from the closest approach of the test finger touching the external parts of the TERMINAL in the least favourable position.</i>		N/A
	<i>Additionally, TERMINALS with voltage RATING exceeding 1 000 V a.c. or 1 500 V d.c. shall withstand the voltage test of 6.8 with a test voltage equal to the RATED voltage of the TERMINAL multiplied by 1,25 applied between the closest approach of the test finger touching the external parts of the TERMINAL in the least favourable position and the other measuring circuit TERMINALS.</i>		N/A
	<i>For WET LOCATIONS, there are no CLEARANCE and CREEPAGE DISTANCE requirements for voltages between 16 V a.c. r.m.s. and 30 V a.c. r.m.s., or between 35 V d.c. and 60 V d.c., but conductive parts of unmated measuring circuit TERMINAL shall not be ACCESSIBLE.</i>	Not used in WET LOCATIONS	N/A
6.6.102	<i>Components, sensors, and devices intended to be connected to specialized measuring circuit TERMINALS are not both ACCESSIBLE and HAZARDOUS LIVE, in either NORMAL CONDITION or SINGLE-FAULT CONDITION, even when the highest RATED voltage is applied to any other measuring circuit TERMINAL</i>	No specialized measuring circuit TERMINALS	N/A
	<i>a) highest RATED a.c. voltage at any RATED MAINS frequency;</i>		N/A
	<i>b) highest RATED d.c. voltage;</i>		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	<i>c) highest RATED a.c. voltage at the related maximum RATED measurement frequency.</i>		N/A
6.7	Insulation requirements		P
6.7.1	The nature of insulation		P
6.7.1.1	General		P
	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD		P
6.7.1.2	CLEARANCES		P
	Required CLEARANCES reflecting factors of 6.7.1.1		P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied	Up to 2000m	N/A
6.7.1.3	CREEPAGE DISTANCES		P
	Required CREEPAGE DISTANCES reflecting factors of 6.7.1.1 a) to d)		P
	CTI material group reflected by requirements		P
	CTI test performed		N/A
	<i>For HAND-HELD EQUIPMENT not powered from the MAINS or the measuring circuit, CREEPAGE DISTANCES are allowed to be according to material group I for all insulating materials.</i>		N/A
6.7.1.4	Solid insulation		N/A
	Required solid insulation reflecting factors of 6.7.1.1 a) to d)		N/A
6.7.1.5	<i>Requirements for insulation according to type of circuit</i>		P
	<i>6.7.2 mains circuits of overvoltage category II up to nominal supply voltage of 300 V</i>	All of internal circuits are considered to be rated for CAT III 600V, CAT II 1000Vdc	N/A
	<i>6.7.3 secondary circuits separated from circuits defined in a) only by means of a transformer</i>	See above	N/A
	<i>K.1 mains circuits of overvoltage category III and IV or overvoltage category II over 300 V</i>	See above	N/A
	<i>K.2 secondary circuits separated from circuits defined in c) only by means of a transformer</i>	See above	N/A
	<i>K.3 circuits having one or more of:</i>	See above	N/A
	<i>1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT</i>		N/A
	<i>2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT</i>		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	3) <i>WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage</i>		N/A
	4) <i>Working voltage includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform</i>		N/A
	5) <i>Working voltage with a frequency above 30 kHz</i>		N/A
	6) <i>circuit is a measuring circuit where MEASUREMENT CATEGORIES do not apply;</i>		N/A
	<i>in Clause K.101 for measuring circuits of MEASUREMENT CATEGORIES II, III and IV.</i>	All of internal circuits are considered to be rated for CAT III 600V, CAT II 1000Vdc	P
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V	All of internal circuits are considered to be rated for CAT III 600V, CAT II 1000Vdc	N/A
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES		—
	Values for MAINS CIRCUITS of Table 4 are met		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.2.2	Solid insulation		N/A
6.7.2.2.1	General		N/A
	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of 6.8.3 with values of Table 5		N/A
	Complies as applicable:		—
	a) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	b) moulded and potted parts requirements of 6.7.2.2.2		N/A
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N/A
	d) thin-film insulation requirements of 6.7.2.2.4		N/A
6.7.2.2.2	Moulded and potted parts		—
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N/A
6.7.2.2.3	Inner insulating layers of printed wiring boards		—
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION has adequate electric strength; one of following methods used:		—
	a) thickness of insulation is at least 0,4 mm		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for REINFORCED INSULATION		N/A
6.7.2.2.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.2.1		N/A
	REINFORCED INSULATION have adequate electric strength; one of the following methods used:		—
	a) thickness through the insulation at least 0,4 mm		N/A
	b) insulation is assembled of min. two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of min. three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for REINFORCED INSULATION		N/A
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V	All of internal circuits are considered to be rated for CAT III 600V, CAT II 1000Vdc	N/A
6.7.3.1	General		N/A
	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	– REINFORCED INSULATION		N/A
	– DOUBLE INSULATION		N/A
	– screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		N/A
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of Table 6 for REINFORCED INSULATION; or		N/A
	b) pass the voltage tests of 6.8 with values of Table 6;		N/A
	with following adjustments:		—
	1) values for reinforced insulation are 1,6 times the values for basic insulation		N/A
	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
	3) minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 mm for POLLUTION DEGREE 3		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.7.3.3	CREEPAGE DISTANCES		N/A
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION		N/A
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation		N/A
6.7.3.4.1	General		N/A
	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		—
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with VALUES of Table 6 for BASIC and SUPPLEMENTARY INSULATION		N/A
	values for REINFORCED INSULATION are 1,6 times the values of BASIC INSULATION		N/A
	b) if WORKING VOLTAGE exceeds 300 V, equipment passed voltage test of 6.8.3.1 for 1 min with a test voltage of 1,5 times working voltage for BASIC or SUPPLEMENTARY INSULATION		N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		—
	1) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	2) moulded and potted parts requirements of 6.7.3.4.2		N/A
	3) inner layers of printed wiring boards requirements of 6.7.3.4.3		N/A
	4) thin-film insulation requirements of 6.7.3.4.4		N/A
6.7.3.4.2	Moulded and potted parts		—
	Conductors between same two layers are separated by applicable distances of Table 8		N/A
6.7.3.4.3	Inner insulation layers of printed wiring boards		—
	Separated by at least the applicable distances of Table 8 between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	c) insulation is assembled of min. two separate layers, where the combination is RATED for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.3.2 and 6.7.3.3		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of min. two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min. three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:		—
	a.c. test of 6.8.3.1; or		N/A
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N/A
6.8	Procedure for voltage tests		P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	General		P
	If a failure could cause a HAZARD:		—
	a) security of wiring connections		P
	b) screws securing removable covers		P
	c) accidental loosening		P
	d) CLEARANCES and CREEPAGE DISTANCES not reduced below the values of basic insulation by loosening of parts or wires		P
6.9.2	Insulating materials		P
	Material not to be used for safety relevant insulation:		—
	a) easily damaged materials not used		P
	b) non-impregnated hygroscopic materials not used		P
6.9.3	Colour coding		N/A
	Green-and-yellow insulation shall not be used except:		—
	a) protective earth conductors;	No protective earth conductors	N/A
	b) PROTECTIVE BONDING conductors;	No PROTECTIVE BONDING conductors	N/A
	c) potential equalization conductors;	No potential equalization conductors	N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	d) functional earth conductors	No functional earth conductors	N/A
6.9.101	<i>If the equipment outputs could become HAZARDOUS LIVE, they shall be prevented from being energised unintentionally.</i>		P
	a) A test energising switch which requires the OPERATOR to apply continuous pressure for a period of at least 1 s.		P
	b) A test energising switch with a key operated mechanism.	No such parts	N/A
	c) A test energising switch under a spring loaded cover which shall be lifted to access the switch.	No such parts	N/A
	d) Two switches intended to restrict OPERATOR'S use of both hands, which are simultaneously depressed to active the test. The instruction of the equipment shall include a warning to press the two switches with both hands.		N/A
	An automatic operation to energise the equipment outputs shall be provided with interlocks (see Clause 15) and the documentation shall have a warning to keep distance from the unit under test.	Manual energize	N/A
6.9.102	<i>In case of power failure and subsequent restoration of the power supply, the equipment shall always power on in a safe condition, even if the test energising switch is held on while the power is restored.</i>		P
6.9.103	<i>The equipment shall be capable of safely discharging residual voltages on the line or unit under test. If resistors are used to discharge the residual voltage, they shall be RATED for the maximum output voltage and stored energy in a defined time.</i>		P
	<i>The line or unit capacitance is the capacitance between the conductors under test. The maximum RATED line or unit capacitance shall be stated in the user documentation.</i>	0.2uF	P
	<i>The discharge time t_d shall be less than $4 \times t_c$ or 10 s whichever is greater</i>		P
	<i>If the equipment is fitted with a voltage display, the voltage on the equipment TERMINALS shall be displayed if the TERMINALS are HAZARDOUS LIVE.</i>		P
6.9.104	<i>Insulation between MAINS CIRCUITS and output circuits</i>		P
6.10	Connection to MAINS supply source and connections between parts of equipment	Battery operated	N/A
6.10.1	MAINS supply cords	No MAINS supply cords	N/A
	RATED for maximum equipment current (see 5.1.3 c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	Heat-resistant if likely to contact hot parts		N/A
	Temperature RATING (cord and inlet)		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N/A
	Detachable cords with IEC 60320 MAINS connectors:		—
	Conform to IEC 60799; or		N/A
	Have the current RATING of the MAINS connector		N/A
6.10.2	Fitting of non-detachable MAINS supply cords		N/A
6.10.2.1	Cord entry		—
	a) inlet or bushing with a smoothly rounded opening; or		N/A
	b) insulated cord guard protruding >5 D (diameter)		N/A
6.10.2.2	Cord anchorage		—
	Protective earth conductor is the last to take the strain		N/A
	a) cord is not clamped by direct pressure from a screw		N/A
	b) knots are not used		N/A
	c) cannot push the cord into the equipment to cause a HAZARD		N/A
	d) no failure of cord insulation in anchorage with metal parts		N/A
	e) not to be loosened without a tool		N/A
	f) cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test		N/A
6.10.3	Plugs and connectors		N/A
	MAINS supply plugs, connectors etc., conform with relevant specifications		N/A
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor		N/A
	Accessory MAINS socket outlets:		—
	a) marking if accepts a standard MAINS supply plug (see 5.1.3e)		N/A
	b) input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source	Battery operated	N/A
6.11.1	Disconnects all current-carrying conductors		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
6.11.2	Exceptions		N/A
6.11.3	Requirements according to type of equipment		N/A
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment		N/A
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) switch or circuit-breaker to be included in building installation		N/A
	b) suitable location easily reached		N/A
	c) marking as disconnecting for the equipment		N/A
6.11.3.2	Single-phase cord-connected equipment		N/A
	Equipment is provided with one of the following:		—
	a) switch or circuit-breaker		N/A
	b) appliance coupler (disconnectable without tool)		N/A
	c) separable plug (without locking device)		N/A
6.11.4	Disconnecting devices		N/A
6.11.4.1	General		N/A
	Disconnecting device part of equipment		N/A
	Electrically close to the SUPPLY		N/A
	Power-consuming components not electrically located between the supply source and the disconnecting device		N/A
	Except electromagnetic interference suppression circuits permitted to be located on the supply side of the disconnecting device		N/A
6.11.4.2	Switches and circuit-breakers		N/A
	When used as disconnection device:		—
	Circuit breaker meets the relevant requirements IEC 60947-2 and is suitable for the application		N/A
	Switch meets the relevant requirements IEC 60947-3 and is suitable for the application		—
	Marked to indicate function		—
	Not incorporated in MAINS cord		N/A
	Does not interrupt PROTECTIVE EARTH CONDUCTOR		N/A
6.11.4.3	Appliance couplers and plugs		N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		—
	Readily identifiable and easily reached by the operator		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Single-phase portable equipment cord length not more than 3 m		N/A
	PROTECTIVE EARTH CONDUCTOR connected first and disconnected last		N/A

7	PROTECTION AGAINST MECHANICAL HAZARDS		P
7.1	General		P
	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION		P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges		P
	Easily-touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts	No moving parts	N/A
7.3.1	General		N/A
	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N/A
	RISK assessment in accordance with 7.3.3 carried out		N/A
7.3.2	Exceptions		N/A
	Access to HAZARDOUS moving parts permitted under following circumstances:		—
	a) obviously intended to operate on parts or materials external of the equipment		N/A
	inadvertent touching of moving parts minimized by equipment design (e .g. guards or handles)		N/A
	b) If OPERATOR access is unavoidable outside NORMAL USE following precautions have been taken:		—
	1) access requires TOOL		N/A
	2) statement about training in the instructions		N/A
	3) warning markings on covers prohibiting access by untrained OPERATORS		N/A
	or symbol 14 with full details in documentation		N/A
7.3.3	RISK assessment for mechanical HAZARDS to body parts		N/A
	RISK is reduced to a tolerable level by protective measures as specified in Table 12		N/A
	Minimum protective measures:		—
	A. Low level measures		N/A
	B. Moderate measures		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure		N/A
	Following levels are met in NORMAL and SINGLE FAULT CONDITION:		—
	Continuous contact pressure below 50 N / cm ² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm ² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts		N/A
7.3.5.1	Access normally allowed		—
	If levels of 7.3.4 exceeded and a body part may be inserted minimum gap as specified in Table 13 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.3.5.2	Access normally prevented		—
	Maximum gap as specified in Table 14 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.4	Stability		P
	Equipment not secured to building structure is physical stable		P
	Stability maintained after opening of drawers etc. by automatic means, or	No such parts	N/A
	warning marking requires the application of means		N/A
	Compliance checked by following tests as applicable:		—
	a) 10° tilt test for other than handheld equipment		P
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg		N/A
	c) downward force test for floor-standing equipment		N/A
	d) overload test with 4 times maximum load for castor or support foot that supports greatest load, or		N/A
	e) castor or support foot that supports greatest load removed from equipment		N/A
7.5	Provisions for lifting and carrying	Less than 18kg	N/A
7.5.1	General		N/A
	Equipment more than 18 kg..... :		N/A
	Has means for lifting or carrying; or		N/A
	Directions are given in documentation		N/A
7.5.2	Handles and grips		N/A
	Handles or grips withstand four times weight		N/A
7.5.3	Lifting devices and supporting parts		N/A
	RATED for maximum load; or		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Tested with four times maximum static load		N/A
7.6	Wall mounting		N/A
	Mounting brackets withstand four times weight		N/A
	One fastener removed and test repeated with two times weight		N/A
7.7	Expelled parts	No such parts	N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a tool		N/A

8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	General		P
	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		P
	Normal protection level is 5 J		P
	Levels below 5 J but not less than 1 J are acceptable if all of the following criteria are met:	Test with 5J	—
	a) Lower level justified by RISK assessment of manufacturer		N/A
	b) Equipment installed in its intended application is not easily touched		N/A
	c) Only occasional access during NORMAL USE		N/A
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		N/A
	for non-metallic ENCLOSURES rated below 2 °C ambient temperature value chosen for minimum RATED temperature		N/A
	impact energies between IK values, the IK code marked for nearest lower value		N/A
	Conformity is checked by performing following tests:		—
	1) Static test of 8.2.1		P
	2) Impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT		P
	if specified impact energy is not 5 J alternate method of IEC 62262 used		N/A
	3) Drop test of 8.3.1 or 8.3.2 except for FIXED EQUIPMENT and equipment with mass over 100 kg		P
	Equipment RATED with an impact rating of IK 08 that obviously meets the criteria		P
	After the tests inspection with following results:		—
	– HAZARDOUS LIVE parts above the limits of 6.3.2 not ACCESSIBLE		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	– insulation pass the voltage tests of 6.8		P
	i) No leaks of corrosive and harmful substances		P
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		P
	iii) CLEARANCES not less than their permitted values		P
	iv) Insulation of internal wiring remains undamaged		P
	v) PROTECTIVE BARRIERS not damaged or loosened		P
	vi) No moving parts exposed, except permitted by 7.3	No moving parts	N/A
	vii) No damage which could cause spread of fire		P
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test		P
	– 30 N with 12 mm rod applied to each part of ENCLOSURE		P
	– in case of doubt test conducted at maximum RATED ambient temperature	50°C	P
8.2.2	Impact test		P
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged		P
	Impact energy level and corresponding IK code.....:		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C	0°C	P
8.3	Drop test		P
8.3.1	Other than HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		P
	Tests conducted with a drop height or angle of		—
8.3.2	HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		N/A
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		N/A
	Drop test conducted with an height of 1 m		N/A

9	PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	General		P
	No spread of fire in NORMAL and SINGLE FAULT CONDITION		P
	MAINS supplied equipment meets requirements of 9.6 additionally	Battery operated	N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):		—
	a) SINGLE FAULT test of 4.4; or		P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		N/A
	c) Application of 9.3 (containment of fire within the equipment)		P
9.2	Eliminating or reducing the sources of ignition within the equipment	Containment of fire within the equipment	N/A
	a) 1) Limited-energy circuit (see 9.4); or		N/A
	2) BASIC INSULATION provided for parts of different potential; or		N/A
	Bridging the insulation does not cause ignition		N/A
	b) Surface temperature of liquids and parts (see 9.5)		N/A
	c) No ignition in circuits designed to produce heat		N/A
9.3	Containment of the fire within the equipment, should it occur		P
9.3.1	General		P
	Spread of fire outside equipment reduced to a tolerable level if:		—
	a) Energizing of the equipment is controlled by an OPERATOR held switch	No such parts	
	b) ENCLOSURE is conform with constructional requirements of 9.3.2; and		P
	Requirements of 9.5 are met	No flammable liquids	N/A
9.3.2	Constructional requirements		P
	a) Connectors and insulating material have flammability classification V-2 or better		P
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)		P
	c) ENCLOSURE meets following requirements:		—
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:		—
	i) no openings; or		P
	ii) perforated as specified in Table 16; or		N/A
	iii) metal screen with a mesh; or		N/A
	iv) baffles as specified in Figure 12		N/A
	2) Material of ENCLOSURE and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N/A
	Non-metallic materials have flammability classification V-1 or better		P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
9.4	Limited-energy circuit		N/A
	a) Potential not more than 30 r.m.s. and 42,4 V peak, or 60 V d.c.		N/A
	b) Current limited by one of following means:		—
	1) Inherently or by impedance (see Table 17); or		N/A
	2) Overcurrent protective device (see Table 18); or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION (see Table 17)		N/A
	c) Is separated by at least BASIC INSULATION		N/A
	Fuse or a nonadjustable electromechanical device is used		N/A
9.5	Requirements for equipment containing or using flammable liquids	No flammable liquids	N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N/A
	RISK is reduced to a tolerable level:		—
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N/A
	b) The quantity of liquid is limited		N/A
	c) Flames are contained within the equipment		N/A
	Detailed instructions for RISK-reduction provided		N/A
9.6	Overcurrent protection		N/A
9.6.1	General		N/A
	MAINS supplied equipment protected	Battery operated	N/A
	BASIC INSULATION between MAINS parts of opposite polarity provided		N/A
	Overcurrent protection devices not fitted in the protective conductor		N/A
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase equipment)		N/A
9.6.2	PERMANENTLY CONNECTED EQUIPMENT		N/A
	Overcurrent protection device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		N/A
9.6.3	Other equipment		N/A
	Protection within the equipment		N/A
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION:		—
	– at an specified ambient temperature of 40 °C		N/A
	– for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C	50°C	P
	Heated surfaces necessary for functional reasons exceeding specified values:	No such parts	—
	– Are recognizable as such by appearance or function; or		N/A
	– Are marked with symbol 13		N/A
	– Guards are not removable without tool		N/A
10.2	Temperatures of windings	No windings	N/A
	Limits not exceeded in:		—
	NORMAL CONDITION		N/A
	SINGLE FAULT CONDITION		N/A
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:		—
	a) Value of 60 °C of field-wiring terminal box not exceeded	No field-wiring terminal box not exceeded	N/A
	b) Surface of flammable liquids and parts in contact with this liquids	No flammable liquids	N/A
	c) Surface of non-metallic ENCLOSURES		P
	d) Parts made of insulating material supporting parts connected to MAINS supply	No such parts	N/A
	e) Terminals carrying a current more than 0,5 A	No such terminals	N/A
10.4	Conduct of temperature tests		P
10.4.1	General		P
	Tests conducted under reference test conditions and manufacturer's instructions		P
	Tests alternatively conducted at the least favourable ambient temperature within the RATED ambient temperature		—
10.4.2	Temperature measurement of heating equipment	Not a heating equipment	N/A
	Tests conducted in test corner		N/A
10.4.3	Equipment intended for installation in a cabinet or wall		N/A
	Equipment built in as specified in installation instructions		N/A
10.5	Resistance to heat		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES		P
10.5.2	Non-metallic ENCLOSURES		P
	Within 10 min after treatment:		—
	Equipment subjected to suitable stresses of 8.2 and 8.3 complying with criteria of 8.1		P
10.5.3	Insulating material		N/A
	a) Parts supporting parts connected to MAINS supply	No such parts	N/A
	b) TERMINALS carrying a current more than 0,5 A	No such TERMINALS	N/A
	Examination of material data; or		N/A
	in case of doubt:		N/A
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A

11	PROTECTION AGAINST HAZARDS FROM FLUIDS AND SOLID FOREIGN OBJECTS		P
11.1	General		P
	Protection to OPERATORS and surrounding area provided by EQUIPMENT		P
	All fluids specified by manufacturer considered	No specified fluids	N/A
11.2	Cleaning		P
11.3	Spillage		N/A
11.4	Overflow		N/A
11.5	Battery electrolyte		P
	Battery electrolyte leakage presents no HAZARD		P
11.6	Equipment RATED with a degree of ingress protection (IP code)		P
11.6.1	General		P
	Equipment marked with IP code : IP54		—
	Conditions specified in the documentation		P
11.6.2	Conditions for testing		P
	Equipment in clean and new condition, all parts in place and mounted as specified by manufacturer		P
	Complete equipment tested, or		P
	representative parts tested		N/A
	HAND-HELD EQUIPMENT and PORTABLE EQUIPMENT placed in least favourable position of NORMAL use	PORTABLE EQUIPMENT	P
	Other equipment positioned or installed as specified		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	TERMINALS provided with protective cap or cover, are installed as specified by manufacturer	Type C USB port with protective cap	P
	The equipment is operating (energized) during the treatment except:		—
	a) If manufacturer specifies degrees of protection for non-operating (de-energized) equipment, or		N/A
	b) Equipment is operating or non-operating during the treatment with does not affect the test results		P
11.6.3	Protection against solid foreign objects (including dust)		P
	Applicable test of IEC 60529 for protection against solid foreign objects conducted		P
	Additionally inspection of equipment resulted:		—
	a) No deposit on insulation parts that could lead to a HAZARD		P
	b) No created accumulations that have the potential to cause spread of fire		P
11.6.4	Protection against water		P
	Applicable test of IEC 60529 for protection against water conducted		P
	If any water has entered, safety is not impaired, inspection of equipment resulted:	No water entered	—
	a) No deposit on insulation parts that could lead to a HAZARD		P
	b) Water has not reached hazardous live parts or windings which are not designed to operate when wet		P
	c) No accumulations near the end of cable nor enter the cable where it could cause a HAZARD		P
	d) No accumulations where it could lead to a HAZARD taking in consideration movement of the equipment		P
11.7	Fluid pressure and leakage		N/A
11.7.1	Maximum pressure :		—
	Maximum pressure of any part does not exceed P _{RATED}		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Fluid-containing parts checked by inspection or if a HAZARD could arise subjected to hydraulic test, if:		—
	a) product of pressure and volume > 200 kPa·l; and		N/A
	b) pressure > 50 kPa		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Safety evidence established by calculation in acc. to national authorities (e.g. Pressure Equipment Directive 2014/68/EU)		N/A
	Parts of refrigerating systems meets pressure-related requirements of EN 378-2 or IEC 60335-2-89 as applicable		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A
	f) Adequate discharge capacity		N/A
	No shut-off valve between overpressure safety device and protected parts		N/A

12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		P
12.1	General		P
	Equipment provides protection		P
12.2	Equipment producing ionizing radiation	No ionizing radiation	N/A
12.2.1	Ionizing radiation		N/A
12.2.1.1	General		N/A
	Equipment meets the following requirements:		—
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N/A
	tested, classified and marked in accordance to IEC 62598		N/A
	b) if only emits stray radiation meets requirements of 12.2.1.3		N/A
12.2.1.2	Equipment intended to emit radiation	Not emit radiation	—
	Effective dose rate of radiation measured..... :		—
	If dose rate exceeds 5 µSv/h marked with the following:		—
	a) symbol 17 (ISO 361)		N/A
	b) abbreviations of the radionuclides..... :		—
	c) with maximum dose at 1 m; or :		—

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	with dose rate value between 1 µSv/h and 5 µSv/h in m..... :		—
12.2.1.3	Equipment not intended to emit radiation	Not emit radiation	—
	Limit for unintended stray radiation of 1 µSv/h at any easily reached point kept		N/A
12.2.2	Accelerated electrons		N/A
	Compartments opened only by the use of a TOOL		N/A
12.3	Optical radiation		P
	No unintentional HAZARDOUS escape of optical radiation as ultraviolet, visible or infrared radiation, including light emitting diodes:		—
	– Checked by inspection; and		P
	– Radiation sources assessed in acc. to the requirements of IEC 62471, except for sources considered to be safe (Table 22) or conditionally safe (Table 23).	LED indicator and LCD screen considered to be safe (table 22)	P
	– Lamp and lamp systems assessed to Risk Groups 1, 2, or 3 of IEC 62471 are labelled in acc. to IEC 62471-2	No Lamp and lamp systems	N/A
	– If labelling impractical, lamp or lamp systems marked with symbol 14		N/A
	– Protective measures, restrictions on use, and operating instructions that may be necessary are provided, including the applicable conditions of use of Table 23.		N/A
12.4	Microwave radiation	No microwave radiation	N/A
	Power density does not exceed 10 W/m ²		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.5.1	Sound level	No noise	N/A
	No HAZARDOUS sound emission		N/A
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		N/A
	Instruction describes measures for protection		N/A
12.5.2	Ultrasonic pressure		N/A
	Equipment not intended to emit ultrasound does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	Equipment intended to emit ultrasound:		N/A
	Outside useful beam does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	If inside useful beam above values exceeded:		—
	Marked with Symbol 14 of Table 1		N/A
	and following information in the documentation:		—

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	a) dimensions of useful beam		N/A
	b) area where ultrasonic pressure exceed 110 dB		N/A
	c) maximum sound pressure inside beam area		N/A
12.6	Laser sources	No laser source	N/A
	Equipment meets requirements of IEC 60825-1		N/A

13	PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION		P
13.1	Poisonous and injurious gases and substances	No such gases and substances	N/A
	No hazardous substances liberated in NORMAL CONDITION and in SINGLE FAULT CONDITION		N/A
	If potentially-hazardous substances are liberated:		—
	Operator is not directly exposed to a quantity of the substance that could cause harm		N/A
	Requirements to discharge of hazardous substances during NORMAL operation in accordance to manufacturer's instructions not considered as liberation		N/A
	Attached data/test reports demonstrate conformity		N/A
13.2	Explosion and implosion		N/A
13.2.1	Components		N/A
	Components liable to explode:		—
	Pressure release device provided; or		N/A
	Apparatus incorporates operator protection (see also 7.7)		N/A
	Pressure release device:		—
	Discharge without danger		N/A
	Cannot be obstructed		P
13.2.2	Batteries and battery charging		P
	If explosion or fire HAZARD could occur:		—
	Protection incorporated in the equipment; or		N/A
	Instructions specify batteries with built-in protection	LR6 AA battery	P
	In case of wrong type of battery used:		—
	No HAZARD; or		P
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:	No charging function	—
	Warning against the charging of non-rechargeable batteries; and		N/A
	Type of rechargeable battery indicated; or		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol 14 used		N/A
	Battery compartment design		P
	Single component failure		P
	Polarity reversal test		P
13.2.3	Implosion of cathode ray tubes	No ray tubes	N/A
	If maximum face dimensions > 160 mm..... :		—
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A

14	COMPONENTS AND SUBASSEMBLIES		P
14.1	General		P
	Where safety is involved, components and subassemblies meet relevant requirements		P
14.2	Motors	No motor	N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented from starting; or		N/A
	Protected by over-temperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		N/A
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices	No such devices	N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
	a) Reliable function is ensured		N/A
	b) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A
	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders	No fuse holder	N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices	No such devices	N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	No MAINS transformers	N/A
14.7	Printed wiring boards		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or		P
	Test shows conformity with V-1 of IEC 60695-11-10 or better		N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits used to limit TRANSIENT OVERVOLTAGES	No such circuits	N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS		N/A
	No ignition or overheating of other materials:		—
	– no ignition		N/A
	– no heat to other parts above the self-ignition points		N/A
	Safely suppressing and properly functional after applied tests		N/A
14.101	<i>Circuits used to limit TRANSIENT OVERVOLTAGE in measuring circuits are used to measure MAINS</i>		N/A
	<i>If control of TRANSIENT OVERVOLTAGE is employed in a measuring circuit used to measure MAINS, the overvoltage limiting component or circuit has adequate strength to limit TRANSIENT OVERVOLTAGES</i>		N/A
14.102	<i>Probe assemblies and accessories</i>		P
	<i>Probe assemblies and accessories within the scope of IEC 61010-031, and current sensors within the scope of IEC 61010-2-032 shall meet the requirements thereof.</i>		P

15	PROTECTION BY INTERLOCKS		N/A
15.1	General		N/A
	Interlocks are designed to remove a HAZARD before OPERATOR exposed		N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A

16	HAZARDS RESULTING FROM APPLICATION		P
16.1	REASONABLY FORESEEABLE MISUSE		P
	No HAZARDS arising from settings not intended and not described in the instructions		P
	Other cases of REASONABLY FORESEEABLE MISUSE addressed by RISK assessment		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
16.2	Ergonomic aspects		P
	Factors giving rise to a HAZARD the RISK assessment is reflecting those aspects:		—
	a) limitation of body dimensions		N/A
	b) displays and indicators		P
	c) accessibility and conventions of controls		P
	d) arrangement of TERMINALS		P
16.102	<i>The OPERATOR shall not be subjected to HAZARDS, when an extraneous a.c. or d.c. voltage is accidentally applied for a duration of 10 s to the output TERMINALS.</i>		P
	<i>The maximum value of the extraneous voltage is 110 % of the highest RATED voltage of the distribution system on which the equipment is intended to perform measurement or tests.</i>		P
	a) a.c. voltage test		P
	b) d.c. voltage test		P

17	RISK ASSESSMENT		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16	All risks covered by clause 6 to 16	N/A
	TOLERABLE RISK achieved by iterative documented process covering the following:		—
	a) RISK analysis		N/A
	Identifies HAZARDS and estimates RISK		N/A
	b) RISK evaluation		N/A
	Plan to judge acceptability of resulting RISK level based on the estimated severity and likelihood of a RISK		N/A
	c) RISK reduction		N/A
	Initial RISK reduced by counter measures;		N/A
	Repeated RISK evaluation without new RISKS introduced		N/A
	RISKS remaining after RISK assessment addressed in instructions to RESPONSIBLE BODY:		—
	Information contained how to mitigate these RISKS		N/A
	Following principles in methods of RISK reduction applied by manufacturer in given order:		—
	1) RISKS eliminated or reduced as far as possible		N/A
	2) Protective measures taken for RISKS that cannot be eliminated		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	3) User information about residual RISK due to any defect of the protective measures		N/A
	Indication of particular training is required		N/A
	Specification of the need for personal protective equipment		N/A
	Conformity checked by evaluation of the RISK assessment documentation		N/A

101	Measuring circuits		P
101.1	The equipment provides protection of HAZARD resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE of measuring circuits as specified below:		P
	a) If a HAZARD could result, a current measuring circuit does not interrupt the circuit being measured during range changing, or during the use of current transformers without internal protection (see 101.2)	No current measuring circuit	N/A
	b) An electrical quantity that is within specification for any TERMINAL does not cause a HAZARD when it is applied to that TERMINAL or any other compatible TERMINAL, with the range and function settings set in any possible manner (see 101.3)		P
	c) Any interconnection between the equipment and other devices or accessories intended to be used with the equipment shall not cause a HAZARD even if the documentation or markings prohibit the interconnection while the equipment is used for measurement purposes (see 6.6).		P
	d) For measuring circuits that include one or more FUNCTIONAL EARTH TERMINALS, a RISK assessment (see Clauses 16 and 17) addresses the HAZARDS that may result if the equipment is operated with a disconnected PROTECTIVE CONDUCTOR TERMINAL and if the operator unintentionally connects a FUNCTIONAL EARTH TERMINAL to any RATED voltage for any other TERMINAL.	No FUNCTIONAL EARTH TERMINALS	N/A
	e) A TEMPORARY OVERVOLTAGE or a TRANSIENT OVERVOLTAGE applied on the measuring circuits TERMINALS in voltage measurement function shall not cause a HAZARD		P
	f) Other HAZARDS that could result from REASONABLY FORESEEABLE MISUSE is addressed by RISK assessment (see Clauses 16 and 17).		N/A
101.2	Current measuring circuits	No current measuring circuit	N/A
	Current measuring circuits are so designed that, when range changing takes place, there is no interruption which could cause a HAZARD.		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Current measuring circuits intended for connection to current transformers without internal protection are adequately protected to prevent a HAZARD arising from interruption of these circuits during operation.		N/A
101.3	Protection against mismatches of inputs and ranges		P
101.3.1	In NORMAL CONDITION and in cases of REASONABLY FORESEEABLE MISUSE, no HAZARD arises when the highest RATED voltage or current of a measuring circuit TERMINAL is applied to that TERMINAL or any other compatible TERMINAL, with any combination of function and range settings		P
	The equipment provides protection against these HAZARDS; one of the following techniques is used.		P
	TERMINALS that are clearly not of similar types and that will not retain the connectors of the probe or accessory do not need to be tested. TERMINALS that can only be accessed by use of a TOOL do not need to be tested		P
	a)Use of a certified overcurrent protection device to interrupt short-circuit currents before a HAZARD arises; requirements of Clause 101.3.2 apply, or		N/A
	b)..Use an uncertified current limitation device, an impedance, or a combination of both to prevent the HAZARD from arising; requirements of 101.3.3 apply		P
101.3.2	Protection by a certified overcurrent protection device		N/A
	Overcurrent protection device certified by an independent laboratory meet all of the specified requirements		N/A
	The a.c. and d.c. RATED voltages of the overcurrent protection device is at least as high as, respectively, the highest a.c. and d.c. RATED voltages of any measuring circuit TERMINAL on the equipment.		N/A
	The RATED time-current characteristic (speed) of the overcurrent protection device is such that no HAZARD will result from any possible combination of RATED input voltages, TERMINALS, and range selection		N/A
	The a.c. and d.c. RATED breaking capacities of the overcurrent protection device exceeds the possible a.c. and d.c. short-circuit currents.		N/A
	The possible a.c. and d.c. short-circuit currents shall be calculated as the highest RATED voltages for any TERMINAL divided by the impedance of the overcurrent-protected measuring circuit, taking the impedance of the test leads specified in 101.3.4 into account.		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	For MEASUREMENT CATEGORIES II and III, the possible a.c. short-circuit current does not need to exceed the applicable value of Table AA.1.		N/A
	Additionally, spacings surrounding the overcurrent protection device in the equipment and following the protection device in the measuring circuit is sufficiently large to prevent arcing after the protection device opens.		N/A
101.3.3	Protection by uncertified current limitation devices or by impedances		P
	Devices used for current limitation are capable of safely withstanding, dissipating, or interrupting the energy that will result from the application of the maximum RATED voltage of any compatible TERMINAL in NORMAL CONDITION and in the case of REASONABLY FORESEEABLE MISUSE.		P
	An impedance used for limitation of current is one or more of the following:		P
	a) An appropriate single component which is constructed, selected, and tested so that safety and reliability for protection against relevant HAZARDS is assured.		N/A
	1)the component RATED for the max voltage that may be present in NORMAL CONDITION or during the REASONABLY FORESEEABLE MISUSE event;		N/A
	2) if a resistor, be RATED for twice the power or energy dissipation that may result in NORMAL CONDITION or from the REASONABLY FORESEEABLE MISUSE event;		N/A
	3)..meets the applicable CLEARANCE and CREEPAGE distance requirements of Annex K for BASIC INSULATION between its terminations of the combination of components.		N/A
	b) A combination of components		P
	1). which can withstand the maximum voltage that may be present in NORMAL CONDITION or during the REASONABLY FORESEEABLE MISUSE event,		P
	2)be able to dissipate the power or energy that may result in NORMAL CONDITION or from the REASONABLY FORESEEABLE MISUSE event,		P
	3)meet the applicable CLEARANCE and CREEPAGE distance requirements of Annex K for BASIC INSULATION between the terminations of each component.		P
101.3.4	Test leads for the tests of 101.3.2 and 101.3.3 shall		P
	be performed with all test leads that are included with or supplied by the manufacturer for use with the equipment,		P

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	and if the manufacturer hasn't specified the test leads, the tests shall be performed with test leads that meet the following specifications:		P
	a)length = 1 m;		P
	b)cross section of the conductor = 1,5 mm ² , stranded copper wire;		P
	c)equipment connector compatible with the measuring circuit TERMINALS;		P
	d)connection to the test voltage source into suitable screw TERMINALS or thimble connectors (twist-on wire connectors) or equivalent means of providing a low impedance connection;		P
	e)arranged as straight as possible.		P
	If the manufacturer-supplied test leads are permanently connected to the equipment, then the attached test leads supplied by the manufacturer were used without modification		N/A
101.4	Protection against MAINS overvoltages		P
	To ensure protection against arc flash or fire, measuring circuits RATED for measuring MAINS voltages shall have minimum CLEARANCE and CREEPAGE DISTANCE equivalent to BASIC INSULATION between MAINS-connected conductive parts of opposite polarity.		P
	The measuring circuit TERMINALS of a voltage measuring circuit that is RATED for MEASUREMENT CATEGORIES III or IV shall withstand the applicable TRANSIENT OVERVOLTAGE of Table K.106 with the voltage measurement function selectors set for the proper function and range, without damage which could cause a HAZARD.		P
101.5	Over-range indication		P
	If a HAZARD could arise from an OPERATOR'S reliance on the value (for example, voltage) displayed by the equipment, the display shall give an unambiguous indication whenever the value is above the maximum positive value or below the minimum negative value of the range to which the equipment is set.		P
Annex K.3	Insulation in circuits not addressed in 6.7, K.1 or K.2, and in measuring circuits where MEASUREMENTS CATEGORIES do not apply		N/A
K.3.1	General	Rated for CAT III 600V, CAT II 1000Vdc	N/A
	These circuits have one or more of the following characteristics:		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	a) the maximum possible TRANSIENT OVERVOLTAGE is limited by the supply source or within the equipment (see Clause K.4.) to a known level below the level assumed for the MAINS CIRCUIT;		N/A
	b) the maximum possible TRANSIENT OVERVOLTAGE is above the level assumed for the MAINS CIRCUIT;		N/A
	c) the WORKING VOLTAGE is the sum of voltages from more than one circuit, or is a mixed voltage;		N/A
	d) the WORKING VOLTAGE includes a recurring peak voltage that may include a periodic non-sinusoidal waveform or a non-periodic waveform that occurs with some regularity;		N/A
	e) the WORKING VOLTAGE has a frequency above 30 kHz;		N/A
	f) the circuit is a measuring circuit where MEASUREMENT CATEGORIES do not apply.		N/A
	In cases a) to c) and f), CLEARANCES for BASIC INSULATION and SUPPLEMENTARY INSULATION are determined according to K.3.2.		N/A
	In cases d) and e) CLEARANCES are determined according to K.3.3.		N/A
	In all cases K.3.4 addresses CREEPAGE DISTANCE and K.3.5 solid insulation.		N/A
K.101	Insulation requirements for measuring circuits of MEASUREMENT CATEGORIES II, III, IV		P
K.101.1	General		P
K.101.2	CLEARANCES		P
	For equipment intended to be powered from the circuit being measured, CLEARANCES of the MAINS CIRCUIT are designed according to the requirements of the RATED MEASUREMENT CATEGORIES	Rated for CAT III 600V, CAT III 1000Vdc	P
	Overvoltage limiting devices may be used to reduce the transient Overvoltages to a level consistent with a lower MEASUREMENT CATEGORIES (see K.102)	No such devices	N/A
	Additional marking requirements in 5.1.5.2 and 5.1.5.101		P
	CLEARANCES for measuring circuits of MEASUREMENT CATEGORIES II, III, IV meet Table K.101		P
	Equipment rated to operate at an altitude greater than 2000 m, correction factor of Table K.1 of 61010-1 applied	Up to 2000m	N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
	Voltage tests of 6.8.3.1 or 6.8.3.3 of 61010-1		P
K.101.3	CREEPAGE DISTANCES		P
	The requirements of K.2.3 of 61010-1 applied		P
K.101.4	Solid insulation		P
K.101.4.1	General		P
	Solid insulation withstands the electrical and mechanical stresses that may occur in NORMAL USE in all RATED environmental conditions (see 1.4) during the intended life of the equipment		P
	The manufacturer should take the expected life of the equipment into account when selecting insulating materials.		P
	Solid insulation also meets the following requirements as applicable		P
	solid insulation used as an ENCLOSURE or PROTECTIVE BARRIER, the requirements of Clause 8		P
	moulded and potted parts, the requirements of K.101.4.2	No such insulation	N/A
	insulating layers of printed wiring boards, the requirements of K.101.4.3	No such insulation	N/A
	thin-film insulations, the requirements of K.101.4.4	Transparent cover for type C USB circuit	P
K.101.4.2	Moulded and potted parts		N/A
	Conductors located between same two layers moulded together are separated by at least the applicable minimum distance of Table K.9 of 61010-1		N/A
K.101.4.3	Insulating layers of printed wiring boards		N/A
	For BASIC INSULATION, SUPPLEMENTARY INSULATION and REINFORCED INSULATION, conductors located between the same two layers shall be separated by at least the applicable minimum distance of Table K.9.		N/A
	REINFORCED INSULATION have adequate electric strength; one of the following methods are used:		N/A
	thickness at least the applicable value of Table K.9 of 61010-1		N/A
	insulation is assembled from at least two separate layers, each RATED for test voltage of Table K.102 to K.104 for BASIC INSULATION		N/A
	insulation is assembled from at least two separate layers, where the combination is RATED for test voltage of Table K.102 to K.104 for REINFORCED INSULATION		N/A

IEC/EN 61010-1 & IEC/EN IEC 61010-2-034			
Clause	Requirement + Test	Result - Remark	Verdict
K.101.4.4	Thin-film insulation		P
	Conductors between same layers are separated by at least the applicable CLEARANCES and CREEPAGE DISTANCE of K.101.2 and K.101.3		N/A
	REINFORECD INSULATION have adequate electric strength; one of the following methods are used:	Transparent cover for type C USB circuit	P
	thickness at least the applicable value of Table K.9 of 61010-1		P
	insulation consists of at least two separate layers, each RATED for test voltage of Table K.102 to Table K.104 for BASIC INSULATION		N/A
	insulation consists of at least three separate layers, where the combination of two layers passed voltage tests of Table K.102 to K.104 for REINFORCED INSULATION		N/A
	a.c. Voltage tests of 6.8.3.1 of 61010-1		N/A
K.102	Reduction of TRANSIEN OVERVOLTAGES by the use of overvoltage limiting devices		N/A
	If the overvoltage limiting device or circuit is intended to reduce TRANSIENT OVERVOLTAGES, a RISK ASSESSMENT (see Clause 17) is performed taking into account both of the followings	No such devices	N/A
	Even under SINGLE FAULT CONDITIONS, the circuit shall reduce TRANSIENT OVERVOLTAGES to a lower voltage value which depends on the design		N/A
	SINGLE FAULT CONDITION includes a short and open circuit of MOV (metal oxide varistor)		N/A
	the circuit operates as intended even after withstanding repeated TRANSIENT OVERVOLTAGES		N/A
ANNEX F	ROUTINE TESTS		N/A
	Manufacturer ´s declaration		N/A

IEC/EN 61010-1 & IEC/ENIEC 61010-2-034

Clause	Requirement – Test	Result – Remark	Verdict
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6.7	TABLE: Insulation requirements - CLEARANCES and CREEPAGES	Form A.15		P
6.2.2	Examination	6.5.4	Protective impedance	—
6.4.2	ENCLOSURES and protective barriers	6.5.6	Current- or voltage-limiting device	—
6.4.4	Impedance	9.6.1	BASIC INSULATION between opposite polarity	—

Area	Location (See Form A.14)	Insulation type (NOTE 1)	WORKING VOLTAGE (NOTE 2)			CLEARANCE		CREEPAGE DISTANCE		CTI	Verdict	Comments
			RMS [V]	Peak [V]	Frequency [kHz]	Required [mm]	Measured [mm]	Required [mm]	Measured [mm]			
A	Between terminal “+” and “-”	BI	1000	-	-	5.5	9.91	5.5	9.91	I	P	On PCB
B	Between live parts and accessible parts of battery cover	RI	1000	-	-	10.5	21.80	14.2	21.80	II	P	
	Between live parts and accessible parts of button	RI	1000	-	-	10.5	21.46	20.0	21.46	III	P	
	Between live parts and accessible parts LCD	RI	1000	-	-	10.5	17.21	14.2	17.21	II	P	
	Between live parts and accessible parts of side enclosure	RI	1000	-	-	10.5	21.84	14.2	21.84	II	P	
C	Between live parts and Type-C port	RI	1000	-	-	10.5	10.80	10.5	10.80	I	P	On PCB

NOTE 1 – refer to Form A.14 for type of insulation shown in the insulation diagram

NOTE 2 - to be used for definition of required insulation (see Form A.14)

Input supply voltage.: -	V	-	Hz
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Supplementary information:

IEC/EN 61010-1 & IEC/ENIEC 61010-2-034						
Clause	Requirement + Test			Result - Remark	Verdict	
6.8	TABLE: Dielectric strength tests				Form A.18	P
4.4.4.1 b)	Conformity after application of SINGLE FAULT CONDITIONS ¹				P	
6.4	Primary means of protection ²				P	
6.6	Connections to external circuits				P	
6.7	Insulation requirements ² (see Annex K)				P	
6.10.2	Fitting of non-detachable MAINS supply cords ¹				N/A	
9.2 a) 2)	Eliminating or reducing the sources of ignition within the equipment				N/A	
9.4 c)	Limited-energy circuit				N/A	
9.6.1	Overcurrent protection basic insulation between MAINS - parts				N/A	
	Test site altitude			0m	—	
	Test voltage correction factor (see table 10).....			1.22	—	
Location or references from Forms A.1 and A.14	Clause or sub-clause	Humidity	Working voltage	Test voltage	Comments (NOTE)	Verdict
		Yes/No	[r.m.s./d.c.]	[r.m.s./peak/d.c.]		
Between terminal "line" and "earth"	6.4, 6.7	Yes	1000Vdc	4039Vrms	Bl. Duration 1min	P
	4.4.4.1 b)	No	1000Vdc	4039Vrms	Bl. Duration 1min	P
Between live parts and accessible parts	6.4, 6.7	Yes	1000Vdc	6293Vrms	RI. Duration 1min	P
	4.4.4.1 b)	No	1000Vdc	6293Vrms	RI. Duration 1min	P
Between live parts and Type-C port	6.6	Yes	1000Vdc	6293Vrms	RI. Duration 1min	P
	4.4.4.1 b)	No	1000Vdc	6293Vrms	RI. Duration 1min	P
¹ Record the fault, test or treatment applied before the dielectric strength test. ² Humidity preconditioning required. NOTE: Test duration may be recorded.						
Supplementary information:						

IEC/EN 61010-1 & IEC/ENIEC 61010-2-034						
Clause	Requirement + Test			Result - Remark		Verdict
10.	TABLE : Temperature Measurements				Form A.27A	P
10.1	Surface temperature limits - NORMAL CONDITION and / or SINGLE FAULT CONDITION					P
10.2	Temperature of windings- NORMAL CONDITION and / or SINGLE FAULT CONDITION					N/A
10.3	Other temperature measurements					P
Operating conditions:		Normal operation, output 1000Vdc, load 1M Ω				
Frequency		- Hz	Test room ambient temperature (ta) .. :		23.9 °C	
Voltage		- Vdc	Test duration		1 h 12 min	
Part / Location		t_m °C	t_c °C	t_{max} °C	Verdict	Comments
PCB near Q16		42.3	68.4	130	P	
PCB near K1		31.3	57.4	130	P	
PCB near T1		43.8	69.9	130	P	
K1 surface		30.2	56.3	70	P	
T1 windings		41.8	67.9	105	P	
T1 bobbin		41.4	67.5	130	P	
Battery cover		27.6	53.7	70	P	
LCD surface		26.1	52.2	70	P	
Line terminal		26.0	52.1	70	P	
Button		26.4	52.5	70	P	
$t_c = t_m$ corrected ($t_m - t_a + 40$ °C or max. RATED ambient) t_{max} = maximum permitted temperature NOTE 2 - see also 14.1 with reference to component operating conditions NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary NOTE 4 - see Form A.21B for details of winding temperature measurements						
Supplementary information:						
Corrected to 50°C.						

IEC/EN 61010-1 & IEC/ENIEC 61010-2-034			
Clause	Requirement – Test	Result – Remark	Verdict

TABLE 1.A: List of components and circuits relied on for safety							P
Unique component reference or location	Application/function	Manufacturer / trademark (NOTE 1)	Type / model	Technical data (NOTE 2)	Standard	Mark(s) of conformity evidence of acceptance (NOTE 3 and 4)	
Plastic Enclosure	-	LG Chem Huizhou Petrochemical Co Ltd	AF312A	V-0, 85°C, ABS, Material Group I	UL 746	UL E476284	
Alternative	-	CHI MEI CORPORATION	PA-765A (+)	V-1, 85°C, ABS, Material Group II	UL 746	UL E56070	
Transparent Cover (LCD)	-	Covestro Deutschland AG [PC Resins]	2405 + (z)	V-2, 125°C, Material Group III	UL 746	UL E41613	
Alternative	-	SABIC INNOVATIVE PLASTICS US L L C	945 (GG)	V-0, 130°C, PC, Material Group III	UL 746	UL E121562	
Alternative	-	SABIC INNOVATIVE PLASTICS US L L C	940A	V-2, 130°C, PC, Material Group III	UL 746	UL E121562	
Transparent Cover	For type C USB circuit	SABIC INNOVATIVE PLASTICS US L L C	940A	V-2, 130°C, PC, Material Group III	UL 746	UL E121562	
PTC 1	-	SHENZHEN WEILIN HI-TECH CO LTD	WMZ12A-102X	1.0KΩ±20%, Breakdown Voltage 600V, Trip Current I _{sw} =25mA	UL1449	UL E232204	
Alternative	-	Wayon Electronics Co.,Ltd.	SCD102-501AVM	1.0KΩ±20%, Breakdown Voltage 500V, Trip Current I _{sw} =28mA	UL1449	UL E202125	
PTC 2	-	SHENZHEN WEILIN HI-TECH CO LTD	WMZ12A-152M003	1.5KΩ±20%, Breakdown Voltage 1000V, Trip Current I _t =25mA	UL1449	UL E232204	
Alternative	-	ShenZhen Ampron Sensitive Components CO.,Ltd	MZ11-05N152H550	1.5KΩ±20%, Breakdown Voltage 900V, Trip Current I _t =28mA	EN/IEC 60730-1	TUV R50187698	

IEC/EN 61010-1 & IEC/ENIEC 61010-2-034			
Clause	Requirement – Test	Result – Remark	Verdict

TABLE 1.A: List of components and circuits relied on for safety							P
Unique component reference or location	Application/function	Manufacturer / trademark (NOTE 1)	Type / model	Technical data (NOTE 2)	Standard	Mark(s) of conformity evidence of acceptance (NOTE 3 and 4)	
Relay	-	OMRON CORP	G6S-2-Y	Coil: 5VDC Contact: 125Vac, 0.5A, 30Vdc, 2A	UL 508	UL E41515	
PCB	-	Interchangeable	Interchangeable	V-0,130°C	UL 746	UL, VDE	
NOTE → 1 List all different manufacturers of the above components → 4 asterisk indicates mark assuring agreed level of surveillance → 2 May include electrical, mechanical values → 3 List licence no or method of acceptance							

Appendix 1 - Product photos



Photo 1 - Overall view



Photo 2 – Front view

Appendix 1 - Product photos



Photo 3 - Rear view



Photo 4 - Side view

Appendix 1 - Product photos



Photo 5 – Battery compartment

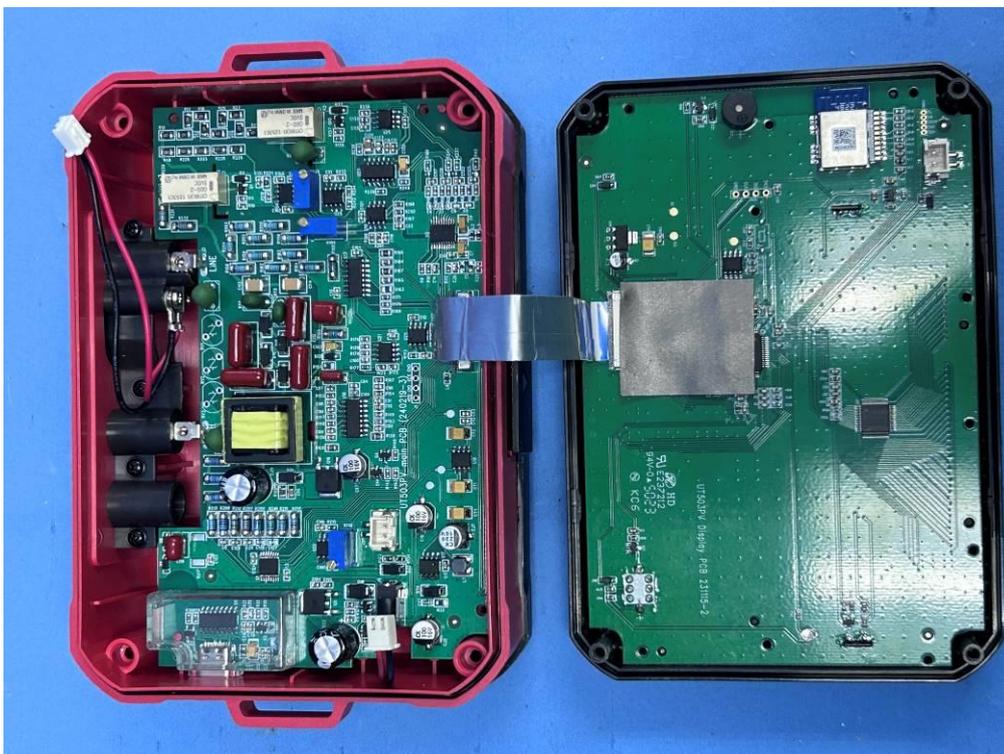


Photo 6 – Internal view

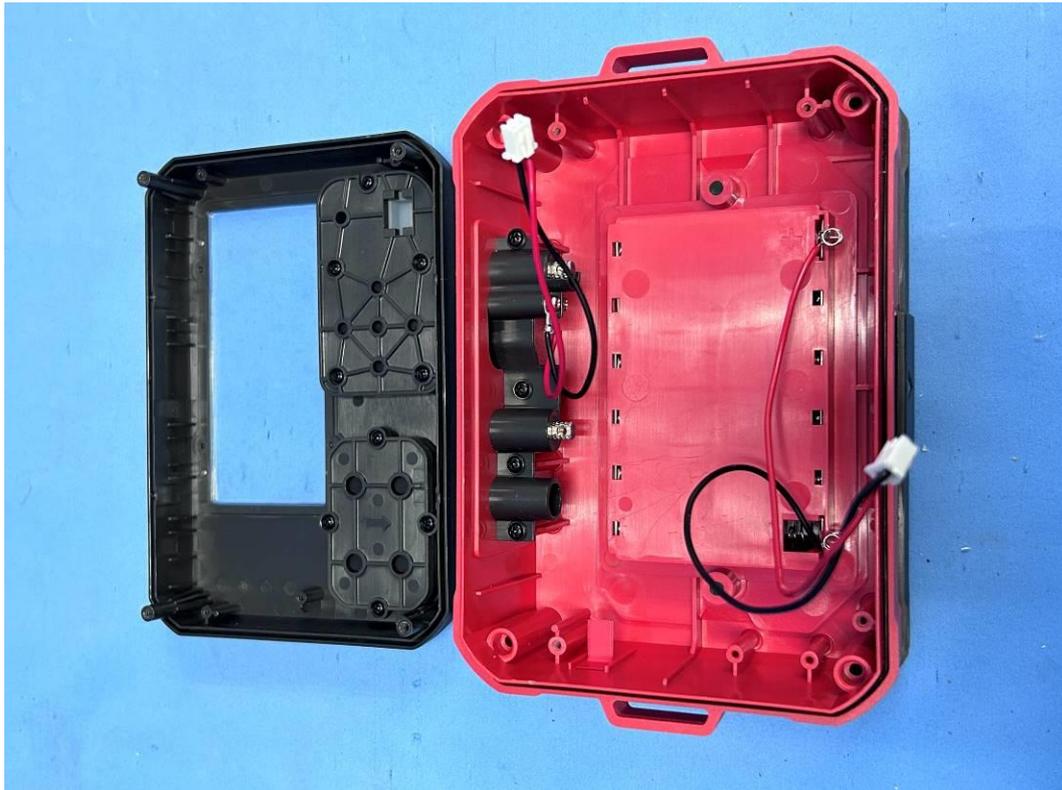


Photo 7 – Internal view

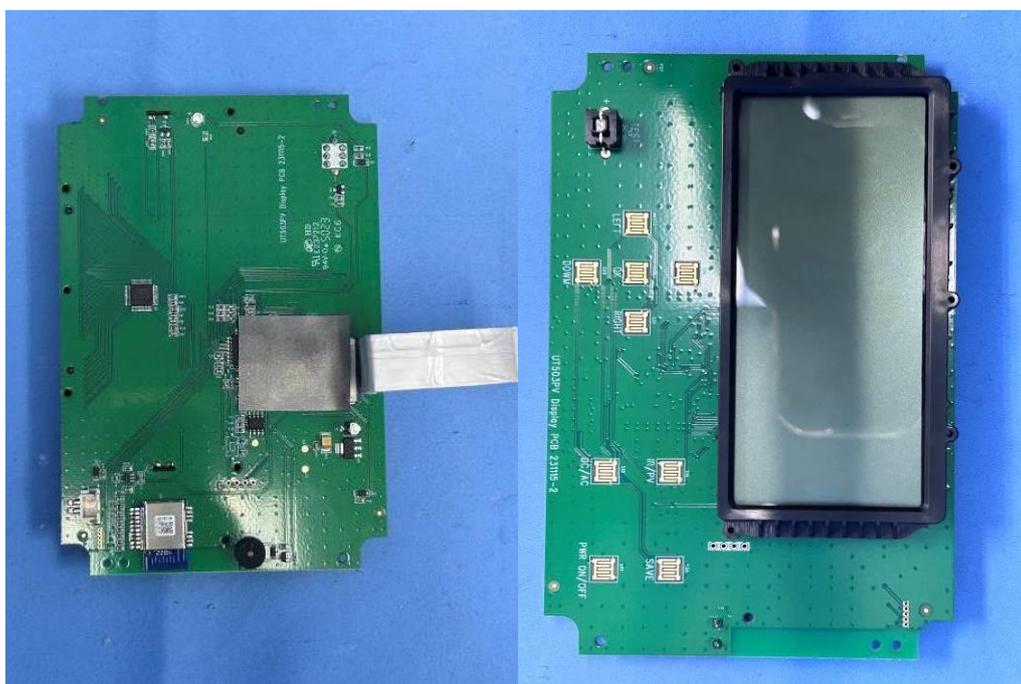


Photo 8 – PCB view (front)

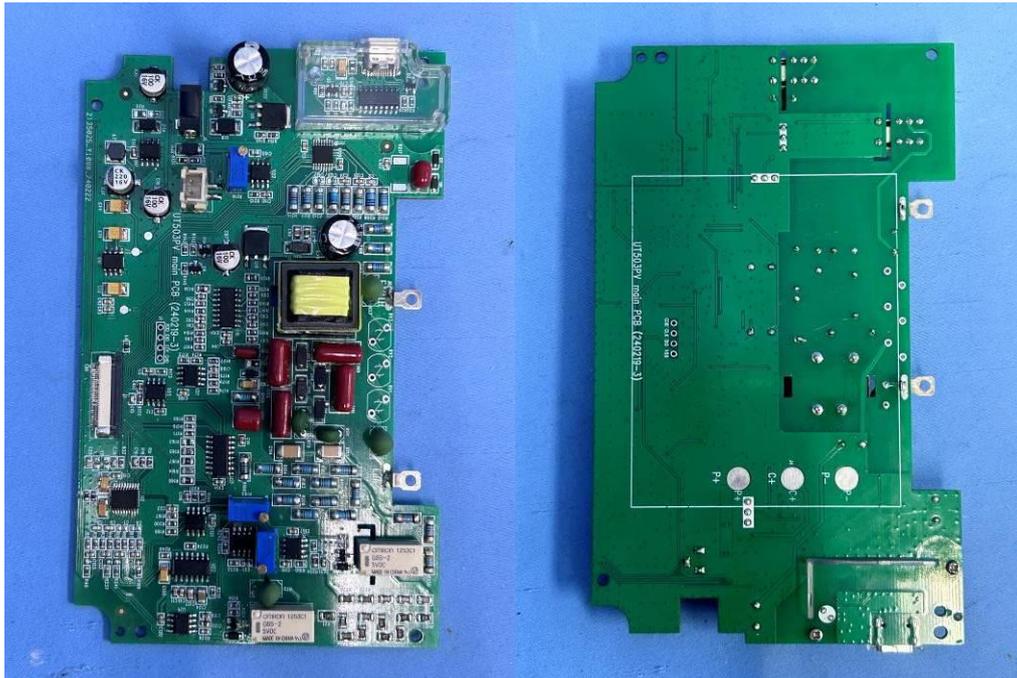


Photo 9 – PCB view (rear)

****END OF REPORT****