



**TEST REPORT
IEC 61010-1**

**Safety requirements for electrical equipment for measurement,
control, and laboratory use
Part 1: General requirements**

Report Number.....: EBSZ240403023S

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401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen

Applicant's name: Rishabh Instruments Ltd

Address: F-31, MIDC, Satpur, Nashik- 422007, Maharashtra, Nashik

Test specification:

Standard.....: IEC 61010-1:2010/AMD1:2016/COR1:2019
IEC 61010-2-033:2023
IEC 61010-031:2022

Test procedure: Test Report

Non-standard test method: N/A

TRF template used: IECEE OD-2020-F1:2020, Ed.1.3

Test Report Form No.: IEC61010_1P

Test Report Form(s) Originator: VDE Prüf- und Zertifizierungsinstitut GmbH

Master TRF.....: 2021-04-12

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General disclaimer:

The test results presented in this report relate only to the object tested.

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Test item description:	Multimeter	
Trade Mark:	Rishabh / V&A	
Manufacturer	Same as applicant	
Model/Type reference:	Rishabh 610 TRMS, VAR410, VAR610, VAR620, VAR630	
Ratings:	2x1.5V AA Measure category: CAT III 600V, CAT II 1000V; 10A	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	Europe Ber (Guangdong) Testing Co., Ltd.
	Testing location/ address	401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
	Tested by (name, function, signature) :	Erik Deng 
	Approved by (name, function, signature) .. :	Tommy Wei 
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
	Testing location/ address	
	Tested by (name, function, signature) :	
	Approved by (name, function, signature) .. :	
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
	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.
1	Test Report (IEC 61010-031)	Page 91-136
2	Test Report (IEC 61010-2-033)	Page 137-158
3	Photo Document	Page 159-161

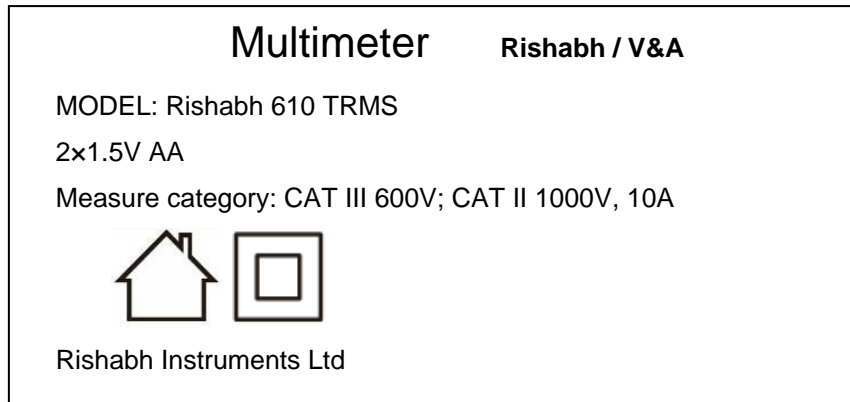
Documents referenced by this report (available on request):		
Document Name or No.	Documents description	Page No.

Summary of testing:

The product has been assessed as a unit in its own right to ensure it satisfies the requirements of 61010-1:2010/AMD1:2016/COR1:2019 used in conjunction with IEC 61010-2-033:2023, IEC 61010-031:2022 prior to installation into the end-user's application. The plastic enclosure provided a suitable fire enclosure.

Clause	Comment
Full tests (all clauses)	Pass

Test Report History: This report may consist of more than one report and is only valid with additional or previous issued reports:	
Report Ref. No.	Item
None	None
Tests performed (name of test and test clause): Full tests (all clauses).	Testing location: Europe Ber (Guangdong) Testing Co., Ltd. 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
Summary of compliance with National Differences (List of countries addressed): N/A <input checked="" type="checkbox"/> The product fulfils the requirements of - IEC 61010-1:2010/AMD1:2016/COR1:2019 - IEC 61010-031:2022 - IEC 61010-2-033:2023	
Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client) <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: Calculations leading to the reported values are on file with NCB and testing laboratory that conducted the testing. <input checked="" type="checkbox"/> Statement not required by the standard used for type testing (Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)	

Copy of marking plate:**The artwork below may be only a draft.**

- The above marking are the minimum requirements required by the safety standard. For the final production sample, the marking which do not give rise to misunderstanding may be add.

- Rating labels for all models are in the same design except for type designation. Above label for representing the other models.

Test item particulars:	
Type of item	Measurement
Description of equipment function.....	For electrical measurement and test
Connection to MAINS supply	Battery operated
Overvoltage category	CAT II 1000V / CAT III 600
POLLUTION DEGREE.....	2
Means of protection.....	Class II (isolated)
Environmental conditions	Extended (Specify): 0°C - 50°C
For use in wet locations.....	No
Equipment mobility.....	Portable or Hand-held
Operating conditions.....	Continuous
Overall size of equipment (W x D x H).....	86mm x 53mm x 188mm
Mass of equipment (kg).....	0.440 with batteries
Marked degree of protection to IEC 60529	IP50 for DMM and IP20 for Terminals
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.....	2024-03-25
Date (s) of performance of tests	2024-03-25 to 2024-04-10
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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the general product information section.	
Name and address of factory (ies)	Same as manufacturer

General product information and other remarks:

This Multimeter is designed for Electrical Equipment For Measurement, Control, and Laboratory Use. The product can perform measurements of AC/DC voltage and current, resistance, frequency, duty, capacitance, temperature, as well as continuity and diode test.

Description of model differences:

All models are identical, except for model number and appearance. Unless otherwise specified, the model Rishabh 610 TRMS was chosen as representative model to perform all the tests.


Description of special features:

None.

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	TESTS		P
4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests	(see Form A.1)	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	(see Form A.1)	P
4.4.2.2	PROTECTIVE IMPEDANCE		N/A
4.4.2.3	PROTECTIVE CONDUCTOR	(see Form A.6)	N/A
4.4.2.4	Equipment or parts for short-term or intermittent operation	Not such equipment	N/A
4.4.2.5	Motors	No motor.	—
	– 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 device.	N/A
4.4.2.7	MAINS transformers	No MAINS transformer	N/A
4.4.2.7.2	Short circuit	(see Form A.39)	N/A
4.4.2.7.3	Overload	(see Forms A.26B and A.40)	N/A
4.4.2.8	Outputs		N/A
4.4.2.9	Equipment for more than one supply	The equipment is designed to be operated from one type of supply.	N/A
4.4.2.10	Cooling	(see Form A.26A)	—
	– 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 device.	—
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts	No such part.	N/A
4.4.2.13	Interlocks	No such device.	N/A
4.4.2.14	Voltage selectors	No such device.	N/A
4.4.3	Duration of tests	(see Form A.1)	—
4.4.4	Conformity after application of fault conditions	(see Forms A.1, A.6 and A.18)	P
5	MARKING AND DOCUMENTATION		P
5.1	Marking		P
5.1.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Required equipment markings	See the following details.	—
	– Visible from the exterior; or	Markings are imprinted outside the enclosure.	P
	– Visible after removing cover or opening door		N/A
	– Visible after removal from a rack or panel		N/A
	Not put on parts which can be removed by an operator		P
	Letter symbols (IEC 60027) used	Letter symbols for quantities and units are as specified in IEC 60027.	P
	Graphic symbols of Table 1 used	Graphic symbols are in accordance with Table 1.	P
5.1.2	Identification	See the following details.	P
	Equipment is identified by:	See below.	—
	a) Manufacturer's or supplier's name or trademark	See copy of marking plate.	P
	b) Model number, name or other means	See copy of marking plate.	P
	Manufacturing location identified		N/A
5.1.3	MAINS supply	See the following details.	P
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies	N/A	—
	2) d.c. with symbol 1.....	See the following details.	—
	b) RATED supply voltage(s) or range	See the following details.	—
	c) Max. RATED power (W or VA) or input current	See the following details.	—
	The marked value not less than 90 % of the maximum value		P
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %	(see Form A.2)	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:	No such device.	—
	With the voltage if it is different from the MAINS supply voltage.....		—
	For use only with specific equipment		N/A

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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		P
	OPERATOR replaceable fuse marking (see also 5.4.5).....: 10A, 600V; 1A, 600V		—
5.1.5	TERMINALS, connections and operating devices	See copy of marking plate.	P
5.1.5.1	General	See below.	P
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		N/A
	Push-buttons and actuators of emergency stop devices and indicators:		—
	– 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		N/A
	Other TERMINAL marking:	600V CAT III 1000V CAT II	—
	a) FUNCTIONAL EARTH TERMINALS marked with symbol 5		N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:	No such terminal.	—
	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 terminal.	N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior	No such terminal.	N/A
	Standard MAINS socket outlet used; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.6	Switches and circuit-breakers	No such device.	N/A
	If disconnecting device, off position clearly marked		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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 such field-wiring TERMINAL boxes.	N/A
	If TERMINAL OR ENCLOSURE exceeds 60 °C:	(see Form A.26A)	—
	Cable temperature RATING marked		—
	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings	See the following details.	P
	Visible when ready for NORMAL USE	Warning markings are moulded on the enclosure, clearly visible.	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		P
	0,5 mm depth or raised if not contrasting in colour		N/A
	If necessary marked with symbol 14, or		N/A
	Additional symbols such as symbol 12, 13 or 17 used to indicate the nature of HAZARD		N/A
	Statement to place equipment in a safe state before access by using a tool to HAZARDOUS parts is permitted		N/A
5.3	Durability of markings		P
	The required markings remain clear and legible in NORMAL USE	(see Form A.3)	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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)		N/A
	f) Accessories for safe operation of the equipment specified		P
	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		N/A
	h) Instructions for lifting and carrying	Not such equipment.	N/A
	Warning statements and a clear explanation of warning symbols:		—
	– provided in the documentation; or		N/A
	– information is marked on the equipment		N/A
5.4.2	Equipment RATINGS		P
	Documentation includes:	The unit operated by built-in battery.	—
	a) Supply voltage or voltage range..... :		—
	Frequency or frequency range		—
	Power or current rating..... :		—
	b) Description of all input and output connections in accordance to 6.6.1 a)		N/A
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)		N/A
	d) Statement of the range of environmental conditions (refer to 1.4):		—
	1) indoor or outdoor use,	Indoor use.	P
	2) altitude,		N/A
	3) temperature,	0°C - 50°C	P
	4) relative humidity,	< 75%	P
	5) MAINS supply voltage fluctuations,		N/A
	6) OVERVOLTAGE CATEGORY,	CAT II, CAT III	P
	7) WET LOCATION, if applicable,		N/A
	8) POLLUTION DEGREE of the intended environment	2	P

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Clause	Requirement + Test	Result - Remark	Verdict
	e) Degree of ingress protection (IEC 60529)	IP50 for DMM and IP20 for terminals	P
	f) If impact rating less than 5 J:		—
	IK code in accordance to IEC 62262 marked; or		P
	symbol 14 of Table 1 marked, with		N/A
	RATED energy level and test method stated		N/A
5.4.3	Equipment installation		P
	Documentation includes instructions for:		—
	a) Assembly, location and mounting requirements		P
	b) Instructions for protective earthing		N/A
	c) Connections to supply		N/A
	d) PERMANENTLY CONNECTED EQUIPMENT:	Not such 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
	g) Instructions relating to sound level		N/A
5.4.4	Equipment operation	See the following details.	P
	Instructions for use include:	See below.	—
	a) Identification and description of operating controls	See the user manual.	P
	b) Positioning for disconnection		N/A
	c) Instructions for interconnection to accessories or other equipment		N/A
	d) Specification of intermittent operation limits	Continuous operating.	N/A
	e) Explanation of symbols used	See the user manual.	P
	f) Replacement of consumable materials	Battery, fuse	P
	g) Cleaning and decontamination	See the user manual.	P
	h) Listing of any poisonous or injurious gases and quantities		N/A
	i) RISK reduction procedures relating to flammable liquids (see 9.5 c)		N/A
	j) RISK reduction procedures relating burn from surfaces permitted to exceed limits of 10.1		N/A
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids		N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer	See the user manual.	P

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.5	Equipment maintenance and service	See the user manual.	P
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:	See below.	—
	Instruction against the use of detachable MAINS supply cord with inadequate RATING		N/A
	Specific battery type of user replaceable batteries	See the user manual.	P
	Any manufacturer specified parts	See the user manual.	P
	RATING and characteristics of fuses	See the user manual.	P
	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

6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General	(see Forms A.14 and A.15)	P
6.1.1	Requirements		P
	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		N/A
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		N/A
	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		N/A
	Following HAZARDOUS LIVE parts may be ACCESSIBLE to an OPERATOR:		—
	a) parts of lamps and lamp sockets after lamp removal		N/A
	b) parts to be replaced by OPERATOR only by the use of tool and warning marking		N/A
	Those parts not HAZARDOUS LIVE 10 s after interruption of supply	(see Form A.5)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Capacitance test if charge is received from internal capacitor	(see Forms A.4 and A.5)	N/A
6.2	Determination of ACCESSIBLE parts	(see Form A.4)	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 such 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 such openings.	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	(see Form A.5)	P
	a) Voltage limits less than 30 V r.m.s. and 42,4 V peak or 60 V d.c.	The unit operated by built-in battery.	P
	for WET LOCATIONS voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		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		N/A
	for WET LOCATIONS measuring circuit A.4 used		N/A
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	c) Levels of capacitive charge or energy less:		—
	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	(see Form A.6)	P
	a) Voltage limits less than 50 V r.m.s. and 70 V peak or 120 V d.c.	The unit operated by built-in battery.	P
	for WET LOCATIONS voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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		N/A
	for WET LOCATIONS measuring circuit A.4 used		N/A
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	c) Levels of capacitive charge or energy less line B of Figure 3		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:	The unit operated by built-in battery.	—
	a) ENCLOSURES OR PROTECTIVE BARRIERS (see 6.4.2)		P
	b) BASIC INSULATION (see 6.4.3)		N/A
	c) Impedance (see 6.4.4)		N/A
6.4.2	ENCLOSURES OR PROTECTIVE BARRIERS	(see Forms A.15 and A.16)	P
	– meet rigidity requirements of 8.1	See clause 8.1.	P
	– meet requirements for BASIC INSULATION, if protection is provided by insulation		N/A
	– meet requirements of 6.7 for CREEPAGE and CLEARANCES between ACCESSIBLE parts and HAZARDOUS live parts, if protection is provided by limited access		N/A
6.4.3	BASIC INSULATION	(see Forms A.15 and A.16)	N/A
	– meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		N/A
6.4.4	Impedance	(see Forms A.12 and A.15)	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	(see Form A.6)	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	(see Form A.15)	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)		N/A
	b) SUPPLEMENTARY INSULATION (see 6.5.3)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) automatic disconnection of the supply (see 6.5.5)		N/A
	d) current- or voltage-limiting device (see 6.5.6)		N/A
	Alternatively one of the single means of protection is used:		—
	e) REINFORCED INSULATION (see 6.5.3)	See 6.5.3	P
	f) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.5.2	PROTECTIVE BONDING	(see Forms A.7, A.8, A.9, A.10 or A.11)	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:		—
	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		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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	(see Form A.7)	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
	h) PROTECTIVE CONDUCTOR of measuring circuit:		—
	1) Current rating equivalent to measuring circuit terminal;		N/A
	2) protective bonding: not interrupted by any switch or interrupting device		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	(see Form A.8)	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	(see Form A.9)	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	(see Form A.10)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.2.6	Transformer PROTECTIVE BONDING screen	(see Form A.11)	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
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION		P
	Meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		P
6.5.4	PROTECTIVE IMPEDANCE	(see Form A.12)	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	(see Form A.15)	N/A
	The PROTECTIVE IMPEDANCE consists of one or more of the following:	(see TABLE 1.A and Form A.12)	—
	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		N/A
	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	(see Form A.13)	N/A
	Device complies with all of:		—
	a) RATED to limit the current or voltage to the level of 6.3.2	(see Form A.6)	N/A
	b) RATED for the maximum WORKING VOLTAGE; and		N/A
	RATED for the maximum operational current if applicable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7	(see Forms A.14 and A.15)	N/A
6.6	Connections to external circuits		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		N/A
6.6.2	TERMINALS for external circuits	No such terminal.	N/A
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection	(see Form A.5)	N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE	No such terminal.	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 terminal.	N/A
	No RISK of accidental contact because:		—
	– 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		N/A
6.7	Insulation requirements	(see Form A.14)	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

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Clause	Requirement + Test	Result - Remark	Verdict
6.7.1.2	CLEARANCES		P
	Required CLEARANCES reflecting factors of 6.7.1.1	(see Forms A.14 and A.15)	P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied		N/A
6.7.1.3	CREEPAGE DISTANCES		P
	Required CREEPAGE DISTANCES reflecting factors of 6.7.1.1 a) to d)	(see Forms A.14 and A.15)	P
	CTI material group reflected by requirements		P
	CTI test performed		N/A
6.7.1.4	Solid insulation		P
	Required solid insulation reflecting factors of 6.7.1.1 a) to d)	(see Forms A.14 and A.15)	P
6.7.1.5	Requirements for insulation according to type of circuit	(see Forms A.14 and A.15)	P
	a) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V		N/A
	b) 6.7.3 secondary circuits separated from circuits defined in a) by transformer		N/A
	c) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V		P
	d) K.2 secondary circuits separated from circuits defined in c) by transformer		N/A
	e) K.3 circuits having one or more of:		—
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A
	2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	5) WORKING VOLTAGE with a frequency above 30 kHz		N/A
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V		N/A
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES	(see Forms A.14 and A.15)	—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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	(see Form A.18)	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
	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	(see Form A.18)	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	(see Form A.18)	N/A
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V		P
6.7.3.1	General		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	– REINFORCED INSULATION		P
	– DOUBLE INSULATION		P
	– screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES	(see Forms A.14 and A.15)	P
	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		P
	b) pass the voltage tests of 6.8 with values of Table 6;	(see Form A.18)	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
6.7.3.3	CREEPAGE DISTANCES	(see Forms A.14 and A.15)	P
	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		P
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation		P
6.7.3.4.1	General		P
	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	(see Form A.18)	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	(see Form A.18)	N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		P
	Complies as applicable:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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	(see Form A.18)	N/A
	c) insulation is assembled of min. two separate layers, where the combination is RATED for 1,6 times the test voltage of Table 6	(see Form A.18)	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	(see Form A.18)	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:	(see Form A.18)	—
	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	(see Forms A.14 and A.18)	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		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	b) screws securing removable covers		N/A
	c) accidental loosening		N/A
	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;		N/A
	b) PROTECTIVE BONDING conductors;		N/A
	c) potential equalization conductors;		N/A
	d) functional earth conductors		N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		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)		—
	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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	(see Form A.19)	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	(see Form A.5)	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		N/A
6.11.1	Disconnects all current-carrying conductors		N/A
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

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Clause	Requirement + Test	Result - Remark	Verdict
	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	No such device.	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	No such device.	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
	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	All easily-touched parts of the equipment are smooth and rounded.	P
	Easily-touched parts are smooth and rounded	See above.	P
	Do not cause injury during NORMAL USE and	See above.	P
	Do not cause injury during SINGLE FAULT CONDITION	See above.	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure	(see Form A.20)	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	(see Form A.20)	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	Hand held or portable equipment.	N/A
	Equipment not secured to building structure is physical stable		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Stability maintained after opening of drawers etc. by automatic means, or		N/A
	warning marking requires the application of means		N/A
	Compliance checked by following tests as applicable:	(see Form A.20A)	—
	a) 10° tilt test for other than handheld equipment		N/A
	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	No such device and not such equipment.	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
	Tested with four times maximum static load		N/A
7.6	Wall mounting	Not such equipment.	N/A
	Mounting brackets withstand four times weight	(see Form A.20B)	N/A
	One fastener removed and test repeated with two times weight	(see Form A.20B)	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	Hand-hold or portable equipment.	N/A
	Levels below 5 J but not less than 1 J are acceptable if all of the following criteria are met:	See above.	—

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Clause	Requirement + Test	Result - Remark	Verdict
	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:	(see Form A.16)	—
	1) Static test of 8.2.1		N/A
	2) Impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT		N/A
	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		N/A
	Equipment RATED with an impact rating of IK 08 that obviously meets the criteria		N/A
	After the tests inspection with following results:		—
	– HAZARDOUS LIVE parts above the limits of 6.3.2 not ACCESSIBLE		N/A
	– insulation pass the voltage tests of 6.8	(see Form A.30)	N/A
	i) No leaks of corrosive and harmful substances		N/A
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		N/A
	iii) CLEARANCES not less than their permitted values		N/A
	iv) Insulation of internal wiring remains undamaged		N/A
	v) PROTECTIVE BARRIERS not damaged or loosened		N/A
	vi) No moving parts exposed, except permitted by 7.3		N/A
	vii) No damage which could cause spread of fire		N/A
8.2	ENCLOSURE rigidity test	Hand-hold or portable equipment.	N/A
8.2.1	Static test	(see Form A.21A)	N/A
	– 30 N with 12 mm rod applied to each part of ENCLOSURE		N/A
	– in case of doubt test conducted at maximum RATED ambient temperature		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
8.2.2	Impact test	(see Form A.21A)	N/A
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged		N/A
	Impact energy level and corresponding IK code.....:		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		N/A
8.3	Drop test	(see Form A.21B)	P
8.3.1	Other than HAND-HELD and DIRECT-PLUG-IN EQUIPMENT	Hand-hold or portable equipment.	N/A
	Tests conducted with a drop height or angle of		—
8.3.2	HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		P
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		P
	Drop test conducted with an height of 1 m		P

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	Built-in battery operated, no mains supply	N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):	(see Form A.22)	—
	a) SINGLE FAULT test of 4.4; or	(see Form A.1)	P
	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		N/A
	a) 1) Limited-energy circuit (see 9.4); or		N/A
	2) BASIC INSULATION provided for parts of different potential; or	(see Forms A.14 and A.18)	N/A
	Bridging the insulation does not cause ignition	(see Form A.1)	N/A
	b) Surface temperature of liquids and parts (see 9.5)		N/A
	c) No ignition in circuits designed to produce heat	(see Form A.1)	N/A
9.3	Containment of the fire within the equipment, should it occur		P
9.3.1	General	See the following details.	P
	Spread of fire outside equipment reduced to a tolerable level if:	See below.	—

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Energizing of the equipment is controlled by an OPERATOR held switch		N/A
	b) ENCLOSURE is conform with constructional requirements of 9.3.2; and	V-0 enclosure used.	P
	Requirements of 9.5 are met		P
9.3.2	Constructional requirements		P
	a) Connectors and insulating material have flammability classification V-2 or better	(see TABLE 1.A or Form A.23)	P
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)	(see TABLE 1.A or Form A.23)	N/A
	c) ENCLOSURE meets following requirements:	(see Form A.22)	—
	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	(see TABLE 1.A or Form A.22)	P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity		N/A
9.4	Limited-energy circuit	(see Form A.24)	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		N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire	(see Form A.25)	N/A
	RISK is reduced to a tolerable level:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
9.6.1	General		P
	MAINS supplied equipment protected	Built-in battery operated, no mains supply.	N/A
	BASIC INSULATION between MAINS parts of opposite polarity provided	(see Forms A.14 and A.15)	N/A
	Overcurrent protection devices not fitted in the protective conductor		P
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase equipment)		P
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		P
	Protection within the equipment		P

10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION:	(see Form A.26A)	—
	– at an specified ambient temperature of 40 °C		P
	– for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C		N/A
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	– 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		N/A
	Limits not exceeded in:	(see Form A.26B)	—
	NORMAL CONDITION		N/A
	SINGLE FAULT CONDITION		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.26A)	—
	a) Value of 60 °C of field-wiring terminal box not exceeded		N/A
	b) Surface of flammable liquids and parts in contact with this liquids		N/A
	c) Surface of non-metallic ENCLOSURES		P
	d) Parts made of insulating material supporting parts connected to MAINS supply		N/A
	e) Terminals carrying a current more than 0,5 A		P
10.4	Conduct of temperature tests		N/A
10.4.1	General		N/A
	Tests conducted under reference test conditions and manufacturer's instructions	(see Form A.26A)	N/A
	Tests alternatively conducted at the least favourable ambient temperature within the RATED ambient temperature		—
10.4.2	Temperature measurement of heating equipment		N/A
	Tests conducted in test corner	(see Form A.26A)	N/A
10.4.3	Equipment intended for installation in a cabinet or wall		N/A
	Equipment built in as specified in installation instructions	(see Form A.26A)	N/A
10.5	Resistance to heat		P
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES	(see Form A.16)	P
10.5.2	Non-metallic ENCLOSURES	(see Form A.27)	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		P
	a) Parts supporting parts connected to MAINS supply		N/A
	b) TERMINALS carrying a current more than 0,5 A		P
	Examination of material data; or		N/A
	in case of doubt:		N/A
	1) Ball pressure test; or	(see Form A.28)	P
	2) Vicat softening test of ISO 306	(see Form A.29)	N/A
11	PROTECTION AGAINST HAZARDS FROM FLUIDS AND SOLID FOREIGN OBJECTS		N/A
11.1	General	Not such equipment.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Protection to OPERATORS and surrounding area provided by EQUIPMENT		N/A
	All fluids specified by manufacturer considered		N/A
11.2	Cleaning	(see Form A.30)	N/A
11.3	Spillage	(see Form A.30)	N/A
11.4	Overflow	(see Form A.30)	N/A
11.5	Battery electrolyte		N/A
	Battery electrolyte leakage presents no HAZARD		N/A
11.6	Equipment RATED with a degree of ingress protection (IP code)	(see Form A.30)	N/A
11.6.1	General		N/A
	Equipment marked with IP code..... :		—
	Conditions specified in the documentation		N/A
11.6.2	Conditions for testing		N/A
	Equipment in clean and new condition, all parts in place and mounted as specified by manufacturer		N/A
	Complete equipment tested, or		N/A
	representative parts tested		N/A
	HAND-HELD EQUIPMENT and PORTABLE EQUIPMENT placed in least favourable position of NORMAL use		N/A
	Other equipment positioned or installed as specified		N/A
	TERMINALS provided with protective cap or cover, are installed as specified by manufacturer		N/A
	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		N/A
11.6.3	Protection against solid foreign objects (including dust)		N/A
	Applicable test of IEC 60529 for protection against solid foreign objects conducted		N/A
	Additionally inspection of equipment resulted:		—
	a) No deposit on insulation parts that could lead to a HAZARD		N/A
	b) No created accumulations that have the potential to cause spread of fire		N/A
11.6.4	Protection against water		N/A
	Applicable test of IEC 60529 for protection against water conducted		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	If any water has entered, safety is not impaired, inspection of equipment resulted:		—
	a) No deposit on insulation parts that could lead to a HAZARD		N/A
	b) Water has not reached hazardous live parts or windings which are not designed to operate when wet		N/A
	c) No accumulations near the end of cable nor enter the cable where it could cause a HAZARD		N/A
	d) No accumulations where it could lead to a HAZARD taking in consideration movement of the equipment		N/A
11.7	Fluid pressure and leakage		N/A
11.7.1	Maximum pressure	(see Form A.31)	—
	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:	(see Form A.31)	—
	a) product of pressure and volume > 200 kPa·l; and		N/A
	b) pressure > 50 kPa		N/A
	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	(see Form A.32)	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

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Clause	Requirement + Test	Result - Remark	Verdict
12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		N/A
12.1	General		N/A
	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation	(see Form A.33)	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		—
	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		—
	with dose rate value between 1 µSv/h and 5 µSv/h in m.....:		—
12.2.1.3	Equipment not intended to emit radiation	(see Form A.34)	—
	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		N/A
	No unintentional HAZARDOUS escape of optical radiation as ultraviolet, visible or infrared radiation, including light emitting diodes:		—
	– Checked by inspection; and		N/A
	– 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).		N/A
	– Lamp and lamp systems assessed to Risk Groups 1, 2, or 3 of IEC 62471 are labelled in acc. to IEC 62471-2		N/A
	– If labelling impractical, lamp or lamp systems marked with symbol 14		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	– 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		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	(see Form A.35)	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	(see Form A.36)	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:		—
	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		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 poisonous and injurious gases and substances produced.	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

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Clause	Requirement + Test	Result - Remark	Verdict
13.2	Explosion and implosion		P
13.2.1	Components	AA battery	P
	Components liable to explode:	See above	—
	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		N/A
13.2.2	Batteries and battery charging	(see Form A.37)	N/A
	If explosion or fire HAZARD could occur:		—
	Protection incorporated in the equipment; or		N/A
	Instructions specify batteries with built-in protection		N/A
	In case of wrong type of battery used:		—
	No HAZARD; or		N/A
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		N/A
	Type of rechargeable battery indicated; or		N/A
	Symbol 14 used		N/A
	Battery compartment design		N/A
	Single component failure		N/A
	Polarity reversal test		N/A
13.2.3	Implosion of cathode ray tubes	No cathode 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	(see TABLE 1.A)	P
14.2	Motors		N/A
14.2.1	Motor temperatures		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Does not present a HAZARD when stopped or prevented from starting; or	(see Forms A.1 and A.26B)	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		N/A
	Devices operating in a SINGLE FAULT CONDITION	(see Form A.38)	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	Inside the equipment.	P
	No access to HAZARDOUS LIVE parts	See above.	P
14.5	MAINS voltage selecting devices		N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	(see Forms A.39 and A.40)	N/A
14.7	Printed wiring boards		P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or	Approved V-0 class PCB provided.	P
	Test shows conformity with V-1 of IEC 60695-11-10 or better	(see Form A.23)	N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits used to limit TRANSIENT OVERVOLTAGES		N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS	(see Form A.41)	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

15	PROTECTION BY INTERLOCKS		N/A
15.1	General	No interlocks used.	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

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Clause	Requirement + Test	Result - Remark	Verdict
	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		P
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

17	RISK ASSESSMENT		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 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
	3) User information about residual RISK due to any defect of the protective measures		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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	See the RISK assessment documentation.	N/A

ANNEX F	ROUTINE TESTS		N/A
	Manufacturer's declaration		N/A

ANNEX H	QUALIFICATION OF CONFORMAL COATINGS FOR PROTECTION AGAINST POLLUTION		N/A
H.1	General		N/A
	Conformal coatings meet the requirements of Clause H.2 and H.3.		N/A
H.2	Technical properties		N/A
	Technical properties of conformal coatings are suitable for the intended application. In particular:		—
	a) Manufacturer indicate that it is a coating for PWBs;		N/A
	b) RATED operating temperature include the temperature range of the indicated application;		N/A
	c) CTI, insulation resistance and dielectric strength are suitable for the intended application;		N/A
	d) Coating have adequate UV resistance, if it is exposed to sunlight;		N/A
	e) Flammability RATING of the coating is at least the required flammability RATING of the applied PWB.		N/A
H.3	Qualification of coatings	(see Form A.42)	N/A
	Coating complies with the conformity requirements.		N/A

ANNEX K	INSULATION REQUIREMENTS NOT COVERED BY CLAUSE 6.7	(see Forms A.15 and A.18)	N/A
			N/A

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Clause	Requirement — Test	Result — Remark	Verdict

4.4	TABLE: Testing in SINGLE FAULT CONDITION – Results			Form A.1	P
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
	1	Reversed polarity of battery	5 min	The EUT not operated. No hazards. No temperature rise	P
	2	Short circuit D6	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P
	3	Short circuit U2	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P
	4	Short circuit R23	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P
	5	Open circuit R53	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P
	6	Short circuit Q1	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P
	7	Short circuit C21	5 min	Measure 600V ac CAT III, No hazards. No temperature rise	P

NOTE Td = Test duration in hh:mm:ss
 Record dielectric strength test on Form A.18 and temperature tests on Forms A.26A and / or A.26B.
 Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Supplementary information:

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Clause	Requirement — Test			Result — Remark	Verdict	
5.3	TABLE: Durability of markings				Form A.3	P
Marking method (see NOTE)			Agent			
1) Adhesive label			A Water			
2) Ink printed			B Isopropyl alcohol 70%			
3) Laser marked			C (specify agent)			
4) Film-coated (plastic foil control panel)			D (specify agent)			
5) Imprinted on plastic (moulded in)			E (specify agent)			
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.						
Marking location			Marking method (see above)			
Identification (5.1.2)			5)			
MAINS supply (5.1.3)			N/A			
Fuses (5.1.4)			N/A			
Terminals and operating devices (5.1.5.2)			2)			
Switches and circuit breakers (5.1.6)			2)			
Double/reinforced equipment (5.1.7)			5)			
Field wiring Terminal boxes (5.1.8)			N/A			
Warning marking (5.2)			2)			
Battery charging (13.2.2)			5)			
Method	Test agent	Remains legible	Label loose	Curled edges	Comments	
		Verdict	Verdict	Verdict		
2)	B	Pass	Pass	Pass	Remain visible	
5)	B	Pass	Pass	Pass	Remain visible	
Supplementary information:						

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6	TABLE: Values in NORMAL CONDITION	Form A.5	P
6.1.2	Exceptions	11.2 Cleaning and decontamination	—
6.3.1	Values in NORMAL CONDITION (see NOTE 1)	11.3 Spillage	—
6.6.2	Terminals for external circuit	11.4 Overflow	—
6.10.3	Plugs and connections		—

Item (see Form A.4)	Voltage			Current			Capacitance		10 s / 5 s test (NOTE)			Comments	
	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC		mJ
Enclosure to test reference earth	104.9	199.5	—	A1	0.013	0.048	—	—	—	—	—	—	Wrapped metal foil, 600V ac

NOTE – A 10 s test is specified in 6.1.2 a) b). A. 5 s test is specified in 6.10.3. The capacitance level versus voltage below the limits given from figure 3 of IEC 61010-1.
 Supplementary information:

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.3.2 TABLE: Values in SINGLE FAULT CONDITION												Form A.6	P
Item (see Form A.4)	Subclause and fault No. (see Form A.1)	Voltage			Transient (see NOTE)		Current			Capacitance	Comments		
		V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.		μF (see NOTE)	
Enclosure to test reference earth	Short circuit D6	142	190	—	—	—	A1	0.013	0.048	—	—	Wrapped metal foil, 600V ac	
See above	Short circuit U2	142	190	—	—	—	A1	0.013	0.048	—	—	Wrapped metal foil, 600V ac	
See above	Short circuit R23	142	190	—	—	—	A1	0.013	0.048	—	—	Wrapped metal foil, 600V ac	
See above	Open circuit R53	142	190	—	—	—	A1	0.013	0.048	—	—	Wrapped metal foil, 600V ac	
See above	Short circuit Q1	142	190	—	—	—	A1	0.013	0.048	—	—	Wrapped metal foil, 600V ac	

NOTE – Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of IEC 61010-1.

Supplementary information:

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
6.5.2.2	TABLE: Cross-sectional area of bonding conductors	Form A.7	N/A
Conductor location	CROSS-SECTIONAL AREA [mm ²]		Verdict
Supplementary information:			
6.5.2.3	TABLE: Tightening torque test	Form A.8	N/A
Conductor location	Size of screw	Tightening torque [Nm]	Verdict
Supplementary information:			

IEC 61010-1				
Clause	Requirement — Test		Result — Remark	Verdict
6.5.2.4	TABLE: BONDING impedance of plug-connected equipment			Form A.9
				N/A
	ACCESSIBLE part under test	Test current	Voltage attained after 1 min	Calculated resistance
		[A]	[V]	(Maximum 0,1 or 0,2 Ω)
				[Ω] (NOTE 1)
NOTE 1 – For none-detachable power cord the impedance between protective conductor plug pin of MAINS cord and each ACCESSIBLE part shall not exceed 0,2 Ohm.				
Supplementary information:				
6.5.2.5	TABLE: BONDING impedance of PERMANENTLY CONNECTED EQUIPMENT			Form A.10
				N/A
	ACCESSIBLE part under test	Test current	Voltage attained after 1 min	Verdict
		[A]	(maximum 10 V)	
			[V]	
Supplementary information:				
6.5.2.6	TABLE: Transformer PROTECTIVE BONDING screen			Form A.11
				N/A
	ACCESSIBLE part under test	Test current	Voltage attained after 1 min	Calculated resistance
		(see NOTE)	(maximum 10 V)	(maximum 0,1 Ω)
		[A]	[V]	[Ω]
NOTE – Test current must be twice the value of the overcurrent protection means of the winding. Test is specified in 6.5.2.6 a) or b).				
Supplementary information:				

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.4	TABLE: PROTECTIVE IMPEDANCE	Form A.12	N/A
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A single component								
Component	Location	Measured		Calculated	Rated		Verdict	Comments
		Working voltage [V]	Current [A]	Power dissipation [W]	Working voltage [V]	Power dissipation [W]		

A combination of components		
Component	Location	Comments

NOTE – A PROTECTIVE IMPEDANCE shall not be a single electronic device that employs electron conduction in a vacuum, gas or semiconductor.

Supplementary information:

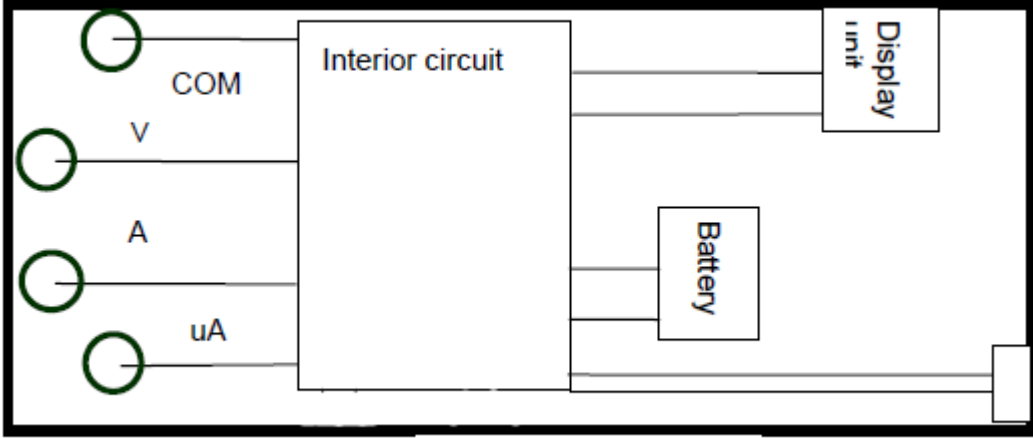


IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.6	TABLE: Current- or voltage-limiting device					Form A.13	N/A
Component	Location	Measured		Rated		Verdict	Comments
		Working voltage [V]	Current [A]	Working voltage [V]	Current [A]		

Supplementary information:

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

6.7	TABLE: Insulation requirements - Block diagram of system -	Form A.14	P
Plastic Enclosure			
			

Pollution degree..... : 2						Overvoltage category..... : III						
Area	Location	Insulation type (NOTE 1)	WORKING VOLTAGE			CLEARANCE (NOTE 3) [mm]	CREEPAGE DISTANCE (NOTE 3)				Test voltage (NOTE 2) [V]	Comments (NOTE 3)
			RMS [V]	Peak [V]	Freq. [kHz]		PWB [mm]	CTI	Other [mm]	CTI		
A	Hazardous live part to accessible part (through hold button)	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
B	Hazardous live part to accessible part (through LCD display)	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
C	Hazardous live component (alkaline battery) to outside surface of enclosure	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
D	Hazardous live part to accessible part (select	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V	Pass

IEC 61010-1												
Clause	Requirement — Test										Result — Remark	Verdict
6.7	TABLE: Insulation requirements - Block diagram of system -										Form A.14	P
	switch)										ac for 5s	
E	Internal wire to outside surface of enclosure	BI	600 r.m.s	--	--	--	--	--	--	--	2200V ac for 1min, 3300V ac for 5s	Pass
F	Probe tip to hand-held area of probe body	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
G	Internal bare part of tip to probe cable	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
H	Internal bare part of connector to probe cable	DI or RI	600 r.m.s	--	--	--	--	--	--	--	4400V ac for 1min, 6600V ac for 5s	Pass
I	V-COM	BI	600 r.m.s	--	--	--	--	--	--	--	2200V ac for 1min, 3300V ac for 5s	Pass
J	Two terminals of fused (F1)	BI	600 r.m.s	--	--	--	--	--	--	--	2200V ac for 1min, 3300V ac for 5s	Pass
K	Two terminals of fused (F2)	BI	600 r.m.s	--	--	--	--	--	--	--	2200V ac for 1min, 3300V ac for 5s	Pass
NOTE 1 – Type of insulation:		NOTE 2 - Types of voltage					NOTE 3 - OVERVOLTAGE CATEGORIES or POLLUTION DEGREES which differ should be shown under "Comments"					
BI = BASIC INSULATION		Peak impulse test voltage (pulse)										
DI = DOUBLE INSULATION		r.m.s.										
PI = PROTECTIVE IMPEDANCE		d.c.										
RI = Reinforced INSULATION		peak										
SI = Supplementary INSULATION												
see also Form A.15 for further details												

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
6.7	TABLE: Insulation requirements - Block diagram of system -	Form A.14	P
Supplementary Information: CAT III 600 V, CAT II 1000 V, Pollution degree 2, altitude up to 2000 m Limits: Cl=5,5 mm (BI), Cl=10,5 mm (RI), Cr=7,1 mm (BI, plastic CTI>400) Cr=14,2 mm (RI, plastic CTI>400) On PCB, Cl=Cr=5,5 mm (BI)			

IEC 61010-1												
Clause	Requirement — Test					Result — Remark					Verdict	
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	Hazardous live part to accessible part (through hold button)	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
B	Hazardous live part to accessible part (through LCD display)	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
C	Hazardous live component (alkaline battery) to outside surface of enclosure	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
D	Hazardous live part to accessible part (select switch)	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
E	Internal wire to outside surface of enclosure	BI	600 r.m.s	--	--	6.0	>6	6.0	>6	III	P	
F	Probe tip to hand-held area of probe body	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
G	Internal bare part of tip to probe cable	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
H	Internal bare part of connector to probe cable	DI or RI	600 r.m.s	--	--	12.0	>12	6.0	>12	III	P	
I	V-COM	BI	600 r.m.s	--	--	6.0	>6	6.0	>6	III	P	

IEC 61010-1												
Clause	Requirement — Test					Result — Remark					Verdict	
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]			
J	Two terminals of fused (F1)	BI	600 r.m.s	--	--	6.0	>6	6.0	>6	III	P	
K	Two terminals of fused (F2)	BI	600 r.m.s	--	--	6.0	>6	6.0	>6	III	P	
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.....:		600	V	60	Hz							
Supplementary information:												

IEC 61010-1												
Clause	Requirement — Test							Result — Remark			Verdict	
6.7	TABLE: Insulation requirements - CLEARANCES and CREEPAGES										Form A.16	P
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS							9.6.1	Overcurrent protection basic insulation between MAINS parts			—
8	Mechanical resistance to shock and impact							10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES			—
Area	Location (See Form A.14)	Insulation type	Mechanical tests (NOTE)					Test at max.	Measured after test (if required)		Verdict	Comments
			Applied force [N]	Rigidity (8.2)		Drop (8.3)		RATED ambient (10.5.1)	CLEARANCE [mm]	CREEPAGE DISTANCE [mm]		
				Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in					
A	Hazardous live part to accessible part (through hold button)	DI or RI	10N	30N	--	--	1m	50°C	>12	>6	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation.
B	Hazardous live part to accessible part (through LCD display)	DI or RI	10N	30N	--	--	1m	50°C	>12	>6	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
C	Hazardous live component (alkaline battery) to outside surface of enclosure	DI or RI	10N	30N	--	--	1m	50°C	>12	>6	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
D	Hazardous live part to accessible part (select switch)	DI or RI	10N	30N	--	--	1m	50°C	>12	>6	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
E	Internal wire to outside surface of enclosure	BI	10N	30N	--	--	1m	50°C	>6	>6	Pass	Limited value: Clearance: 6.0mm; Creepage distance: 6.0mm for basic insulation

IEC 61010-1												
Clause	Requirement — Test							Result — Remark			Verdict	
6.7	TABLE: Insulation requirements - CLEARANCES and CREEPAGES										Form A.16	P
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS							9.6.1	Overcurrent protection basic insulation between MAINS parts			—
8	Mechanical resistance to shock and impact							10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES			—
Area	Location (See Form A.14)	Insulation type	Mechanical tests (NOTE)					Test at max.	Measured after test (if required)		Verdict	Comments
			Applied force [N]	Rigidity (8.2)		Drop (8.3)		RATED ambient (10.5.1)	CLEARANCE [mm]	CREEPAGE DISTANCE [mm]		
				Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in					
F	Probe tip to hand-held area of probe body	DI or RI	10N	30N	--	--	1m	50°C	>12	>12	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
G	Internal bare part of tip to probe cable	DI or RI	10N	30N	--	--	1m	50°C	>12	>12	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
H	Internal bare part of connector to probe cable	DI or RI	10N	30N	--	--	1m	50°C	>12	>12	Pass	Limited value: Clearance: 12.0mm; Creepage distance: 12.0mm for reinforced insulation
I	V-COM	BI	10N	30N	--	--	1m	50°C	>6	>6	Pass	Limited value: Clearance: 6.0mm; Creepage distance: 6.0mm for basic insulation
J	Two terminals of fused (F1)	BI	10N	30N	--	--	1m	50°C	>6	>6	Pass	Limited value: Clearance: 6.0mm; Creepage distance: 6.0mm for basic insulation
K	Two terminals of fused (F2)	BI	10N	30N	--	--	1m	50°C	>6	>6	Pass	Limited value: Clearance: 6.0mm; Creepage distance: 6.0mm for basic insulation
NOTE – Refer to Form A.18 for dielectric strength tests following the above tests.												

IEC 61010-1												
Clause		Requirement — Test					Result — Remark				Verdict	
6.7	TABLE: Insulation requirements - CLEARANCES and CREEPAGES									Form A.16	P	
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS					9.6.1	Overcurrent protection basic insulation between MAINS parts				—	
8	Mechanical resistance to shock and impact					10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES				—	
Area	Location (See Form A.14)	Insulation type	Mechanical tests (NOTE)				Test at max.	Measured after test (if required)		Verdict	Comments	
			Applied force [N]	Rigidity (8.2)		Drop (8.3)		RATED ambient (10.5.1)	CLEARANCE [mm]			CREEPAGE DISTANCE [mm]
				Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in					
Supplementary information:												

IEC 61010-1							
Clause	Requirement – Test			Result — Remark		Verdict	
6.7.2.2.2	TABLE: Reliability of potted components			Form A.17 (optional)		N/A	
14.1 b)	Components and subassemblies					--	
Temperature Cycling Test							
Manufacturer							
Type.....							
Construction							
Potting compound							
CREEPAGE DISTANCES measured							
CLEARANCES measured							
Thickness through insulation.....							
Adhesive test Pass/Fail							
Test temperature T °C.....							
Cycles at U= AC 500 V				Leakage current (at AC 500 V) mA			
Number of cycles	Date			68 h /	1 h /	2 h /	1 h /
				125 °C	25 °C	0 °C	25 °C
1. Cycle from		to					
2. Cycle from		to					
3. Cycle from		to					
4. Cycle from		to					
5. Cycle from		to					
6. Cycle from		to					
7. Cycle from		to					
8. Cycle from		to					
9. Cycle from		to					
10. Cycle from		to					
After Cycling Test :							
Humidity conditioning				48 h			
Requirements for dielectric strength (s. insulation diagram)				Test voltage V r.m.s.		Verdict	
Basic insulation _____ V r.m.s.							
Supplementary insulation _____ V r.m.s.							
Reinforced insulation _____ V r.m.s.							
NOTE - to be used for evaluation of components containing insulation through solid insulation, when the component standard require thermal cycling test. Ref Clause 14.1 and Figure 15, option b)							
Supplementary information:							

IEC 61010-1						
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)					N/A
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			Up to 500m		—
	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.]		
Internal Live Parts and accessible part	4.4.4.1 b)	No	600V	4400Vac for 1min, 6600Vac for 5s	Metal foil wrapped around the enclosure	P
Internal Live Parts and accessible part	6.4	Yes	600V	4400Vac for 1min, 6600Vac for 5s	Metal foil wrapped around the enclosure	P
Internal Live Parts and accessible part	6.6	Yes	600V	4400Vac for 1min, 6600Vac for 5s	Metal foil wrapped around the enclosure	P
Internal Live Parts and accessible part	6.7	Yes	600V	4400Vac for 1min, 6600Vac for 5s	Metal foil wrapped around the enclosure	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 61010-1						
Clause	Requirement — Test	Result — Remark				Verdict
6.10.2	TABLE: Cord anchorage				Form A.19	P
Location	Mass [kg]	Pull [N]	Verdict	Torque [Nm]	Verdict	Comment
Probe cable	—	36	Pass	--	--	5000 times
Probe connector	—	36	Pass	--	--	5000 times
Dielectric strength test for 1 min. (6.8.3.1)..... :					V r.m.s.	
Supplementary information:						

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

7.	TABLE: Protection against mechanical HAZARDS	Form A.20	N/A
7.3.4	Limitation of force and pressure		—
7.3.5	Gap limitations between moving parts		—

Part / Location	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2			Verdict	Comments
	Continuous	Temporary	Minimum gaps [mm]								Maximum gaps [mm]				
	Contact pressure max. 50 N /cm ² @ max. 150 N	max. 250 N / 3 cm ² @ max. 0,75 s	Torso 500	Head 300	Leg 180	Foot 120	Toes 50	Arm 120	Hand 100	Finger 25	Head 120	Foot 35	Finger 4		

Supplementary information:

IEC 61010-1							
Clause	Requirement – Test				Result - Remark		Verdict
7.4	TABLE: Stability					Form A.20A	N/A
	Equipment height / mass				mm	kg	—
	Equipment (Containers) loaded.....				[yes / no]		—
	Castors at unfavourable position.....				[yes / no]		—
	Doors, drawers and movable arms closed.....				[yes / no]		—
	Doors and drawers at unfavourable position.....				[yes / no]		—
Location	Tilt angle	Applied force				Comments	Verdict
	10°	250 N	20% [N]	800 N	4 times load [N]		
Front side				—			
Left side				—			
Rear side				—			
Right side				—			
Top side	—						
Working surface	—	—	—				
Ledge	—	—	—				
Castor / support foot							
Castor / support foot removed							
Supplementary information:							
7.6	TABLE: Wall mounting					Form A.20B	N/A
	Equipment weight				kg		—
	Equipment mounted as specified by manufacturer ..				[yes / no]		—
	Equipment mounted at plasterboard (drywall)				[yes / no]		—
	More than one fastener used				[yes / no]		—
	Test maintained (after 5 s to 10 s to full load)				1 min		—
Location	Applied weight			Comments	Verdict		
	4 times weight [kg]	2 times weight [kg]					
Mounting brackets							
Supplementary information:							

IEC 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
8.2	TABLE: ENCLOSURE rigidity test	Form A.21A	N/A
8.2.1	Static test		N/A
	Material of enclosure	Metal / non-metallic	—
	Preparation for the test:		—
	Operated at ambient temperature	°C h	—
	Location	Comments	Verdict
	1)		
	2)		
	3)		
	4)		
Supplementary information:			
8.2.2	TABLE: Impact test		N/A
	Material of enclosure	Metal / non-metallic	—
	Corresponding IK-code		—
	Preparation for the test:		—
	Cooled to (temperature)	°C	—
	Location	Comments	Verdict
	1) Top		
	2) Side left / right		
	3) Bottom		
Supplementary information:			

IEC 61010-1				
Clause	Requirement – Test	Result - Remark		Verdict
8.3	TABLE: Drop test	Form A.21B		P
8.3.1	Other equipment			N/A
Location		Raised up to		Comments
		[mm]	30 °	
1)				
2)				
3)				
4)				
Supplementary information:				
8.3.2	HAND-HELD EQUIPMENT and DIRECT PLUG-IN EQUIPMENT			P
	Material of enclosure	Non-metallic		—
	Preparation for the test:	--		—
	Cooled to (temperature)	0 °C		—
Location		Comments		Verdict
1) Side		No damage, no hazard.		P
2) Edge		No damage, no hazard.		P
3) Corner		No damage, no hazard.		P
Supplementary information:				

IEC 61010-1									
Clause	Requirement — Test	Result — Remark				Verdict			
9.3.2	TABLE: Constructional requirements	Form A.23				N/A			
14.7	Printed wiring boards								
Material tested									
Generic name									
Material manufacturer.....									
Type									
Colour									
Conditioning details									
				Sample					
				1	2	3	4	5	6
Thickness of specimen	mm								
Duration of flaming after first Application	s								
Duration of flaming plus glowing After second application	s								
Specimen burns to holding clamp	Yes/No								
Cotton ignited	Yes/No								
Sample result	Pass/Fail								
Supplementary information:									

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

9.4	TABLE: Limited-energy circuit					Form A.24	N/A
Item or Location (see Form A.22)	9.4 a)	9.4 b) Current limitation (NOTE)		9.4 c)	Decision	Comments	
	Maximum potential in circuit voltage r.m.s./d.c. [V]	Maximum available current [A]	Overload protection after 120 s [A]	Circuit separation	Yes/No		

NOTE – Maximum values see Tables 17 and 18 of IEC 61010-1

Supplementary information:

IEC 61010-1					
Clause	Requirement — Test	Result — Remark	Verdict		
10.	TABLE: Temperature Measurements	Form A.26A	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				
Operating conditions:		Measuring circuit 100Vac			
Frequency..... :	Hz	Test room ambient temperature (ta) .. :	°C		
Voltage..... :	V	Test duration..... :	h	min	
Part / Location	t_m [°C]	t_c [°C]	t_{max} [°C]	Verdict	Comments
PCB near fuse	28.1	42.5	130	Pass	
PCB near battery	27.4	42.1	130	Pass	
Hand-held part of enclosure	27.0	40.6	85	Pass	
Select switch	26.8	40.1	70	Pass	
LCD display cover	26.2	40.0	70	Pass	
Lead of test probe	25.5	39.3	105	Pass	
NOTE 1 - t_m = measured temperature $t_c = t_m$ corrected ($t_m - t_a + 40 \text{ °C}$ 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.26B for details of winding temperature measurements Supplementary information:					

IEC 61010-1									
Clause	Requirement — Test	Result — Remark							Verdict
10.2	TABLE: Temperature of windings Resistance method Temperature Measurements						Form A.26B		N/A
4.4.2.7	MAINS transformers								N/A
14.2.1	Motor temperatures								N/A
Operating conditions...:									
Frequency.....:	Hz	Test room ambient temperature (ta1/ta2):				/	°C (initial / final)		
Voltage.....:	V	Test duration.....:				h	min		
Part / Designation	Rcold [Ω]	Rwarm [Ω]	Current [A]	t_r [K]	t_c [°C]	t_{max} [°C]	Verdict	Comments	
NOTE 1- R_{cold} = initial resistance t_r = temperature rise t_{max} = maximum permitted temperature R_{warm} = final resistance $t_c = t_r$ corrected ($t_c = t_r + [40\text{ °C or max RATED ambient}]$) NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional) NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary Supplementary information:									

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
10.5.2	TABLE: Resistance to heat of non-metallic ENCLOSURES	Form A.27	P
	Test method used:		—
	Non-operative treatment: []		
	Empty ENCLOSURE: []		
	Operative treatment: []		
	Temperature during tests.....:		—
Description	Material	Comments	Verdict
Plastic enclosure	ABS	No damage	Pass
Dielectric strength test (6.8).....:		4400 V	[r.m.s./peak/d.c.] P
NOTE – Within 10 minutes of the end of treatment suitable tests in acc. to 8.2 and 8.3 must be conducted and pass criteria of 8.1.			
Supplementary information:			

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
10.5.3	TABLE: Insulating material	Form A.28	P
10.5.3 1)	Ball-pressure test		P
	Max. allowed impression diameter	2 mm	—
Part	Test temperature [°C]	Impression diameter [mm]	Verdict
Support part of the 10A port	125	0.5	P
Supplementary information:			
10.5.3 2)	Vicat softening test (ISO 306)	Form A.29	N/A
Part	Vicat softening temperature [°C]	Thickness of sample [mm]	Verdict
Supplementary information:			

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

8	TABLE: Mechanical resistance to shock and impact	Form A.30	P
11	Protection against HAZARDS from fluids and solid foreign objects		N/A

Voltage tests can be carried out once after performing the tests of clause 8 and clause 11. However, if voltage tests are carried out separately after each set of tests, two forms can be used.

Location (see Form A.14)	Clause 8 tests				Clause 11 tests				Working voltage [r.m.s./d.c.]	Test voltage [r.m.s./peak/d.c.]	Verdict	Comments
	Static (8.2.1) 30 N	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in (8.3.2)	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				
Hazardous live part to accessible part (through hold button)	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Hazardous live part to accessible part (through LCD display)	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Hazardous live component (alkaline battery) to outside surface of enclosure	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Hazardous live part to accessible part (select switch)	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Internal wire to outside surface of enclosure	30 N	—	—	1 m	—	—	—	—	600	2200Vac for 1min, 3300Vac for 5s	Pass	

IEC 61010-1												
Clause	Requirement — Test				Result — Remark						Verdict	
8	TABLE: Mechanical resistance to shock and impact										Form A.30	P
11	Protection against HAZARDS from fluids and solid foreign objects											N/A
Voltage tests can be carried out once after performing the tests of clause 8 and clause 11. However, if voltage tests are carried out separately after each set of tests, two forms can be used.												
Location (see Form A.14)	Clause 8 tests				Clause 11 tests				Working voltage [r.m.s./d.c.]	Test voltage [r.m.s./peak/d.c.]	Verdict	Comments
	Static (8.2.1) 30 N	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in (8.3.2)	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				
Probe tip to hand-held area of probe body	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Internal bare part of tip to probe cable	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
Internal bare part of connector to probe cable	30 N	—	—	1 m	—	—	—	—	600	4400Vac for 1min, 6600Vac for 5s	Pass	
V-COM	30 N	—	—	1 m	—	—	—	—	600	2200Vac for 1min, 3300Vac for 5s	Pass	
Two terminals of fused (F1)	30 N	—	—	1 m	—	—	—	—	600	2200Vac for 1min, 3300Vac for 5s	Pass	
Two terminals of fused (F2)	30 N	—	—	1 m	—	—	—	—	600	2200Vac for 1min, 3300Vac for 5s	Pass	
NOTE – Use r.m.s., d.c. or peak to indicate the used test voltage.												
Supplementary information:												

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

11.7.2	TABLE: Leakage and rupture at high pressure					Form A.31	N/A
Part	Maximum permissible working pressure [MPa]	Test pressure [MPa]	Leakage Yes / No	Deformation Yes / No	Burst Yes / No	Comments	

NOTE – see also Annex G with requirements for USA and Canada.

Supplementary information:

11.7.3	TABLE: Leakage from low-pressure parts			Form A.32	N/A
Part	Test pressure [MPa]	Leakage Yes / No	Comments		

Supplementary information:

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
12.2.1	TABLE: Ionizing radiation	Form A.33	N/A
12.2.1.2	Equipment intended to emit radiation		
Locations tested	Measured values [μSv/h]	Verdict	Comments
Supplementary information:			
12.2.1.3	Equipment not intended to emit radiation	Form A.34	N/A
	Max. allowed effective dose rate at 100 mm.....:	1 μSv/h	—
Locations tested	Measured values [μSv/h]	Verdict	Comments
Supplementary information:			

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
12.5.1	TABLE: Sound level	Form A.35	N/A
Locations tested	Measured maximum sound pressure level dB(A)	Calculated maximum sound power level	
At operator's normal position and at bystanders' positions			
a)			
b)			
c)			
d)			
e)			
f)			
Supplementary information:			
12.5.2	TABLE: Ultrasonic pressure	Form A.36	N/A
Locations tested	Measured values		Comments
	[dB]	[kHz]	
At operator's normal position			
At 1 m from the ENCLOSURE			
a)			
b)			
c)			
d)			
e)			
NOTE – No limit is specified at present, but a limit of 110 dB above the reference pressure value of 20 μPa is under consideration for applicable frequencies between 20 kHz and 100 kHz.			
Supplementary information:			

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
13.2.2	TABLE: Batteries and battery charging	Form A.37	N/A
	Battery load and charging circuit diagram:		
	Battery type.....:		—
	Battery manufacturer/model/catalogue No.....:		—
	Battery ratings.....:		—
	Reverse polarity instalment test		N/A
Single component failures		Verdict	
Component	Open circuit	Short circuit	
Supplementary information:			

IEC 61010-1				
Clause	Requirement — Test		Result — Remark	Verdict
4.4.2.7	TABLE: MAINS transformer		Form A.39	N/A
4.4.2.7.2	Short circuit			N/A
14.6	MAINS transformers tested outside equipment			N/A
Type				—
Manufacturer.....				—
Test in equipment				
Test on bench				
Test repeated inside equipment (see 14.6)				
Optional – Insulation class (IEC 60085) of the lowest rated winding				—
Winding identification				
Type of Protector for winding (NOTE 1)				
Elapsed time				
Current, A primary				
secondary				
Winding temperature, °C primary				
(see NOTE 2) secondary				
Tissue paper / cheesecloth OK ? (Pass / Fail)				
Voltage tests (see NOTE 3)				
Primary to secondary	_____ V _____			
Primary to core	_____ V _____			
Secondary to secondary	_____ V _____			
Secondary to core	_____ V _____			
Verdict				
NOTE 1:	Primary fuse	- PF / ()	A	
	Secondary fuse	- SF / ()	A	
	Overtemperature protection	- OP / ()	°C	
	Impedance protection	- Z		
NOTE 2:	Indicate method of measurement	- TC = with thermocouple		
		- R = resistance method		
	If resistance method is used, record resistance in cold and warm condition in Form A.26B.			
NOTE 3:	Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown			
Supplementary information:				

IEC 61010-1				
Clause	Requirement — Test		Result — Remark	Verdict
4.4.2.7	TABLE: MAINS transformer		Form A.40	N/A
4.4.2.7.3	Overload tests (for MAINS transformers)			N/A
14.6	MAINS transformers tested outside equipment			N/A
Type				—
Manufacturer				—
Test in equipment				
Test on bench				
Test repeated inside equipment (see 14.6)				
Optional – Insulation class (IEC 60085) of the lowest rated winding				—
Winding identification				
Type of Protector for winding (NOTE 1)				
Elapsed time				
Current, A primary				
secondary				
Winding temperature, °C primary				
(see NOTE 2) secondary				
Tissue paper / cheesecloth OK ? (Pass / Fail)				
Voltage tests (see NOTE 3)				
Primary to secondary		_____ V _____		
Primary to core		_____ V _____		
Secondary to secondary		_____ V _____		
Secondary to core		_____ V _____		
Verdict				
NOTE 1:	Primary fuse	- PF / () A		
	Secondary fuse	- SF / () A		
	Overtemperature protection	- OP / () °C		
	Impedance protection	- Z		
NOTE 2:	Indicate method of measurement	TC = with thermocouple R = resistance method		
NOTE 3:	If resistance method is used, record resistance in cold and warm condition in Form A.26B. Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown			
Supplementary information:				



IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

14.8	TABLE: Circuits used to limit TRANSIENT OVERVOLTAGES										Form A.41	N/A
Circuit / Designation	Overvoltage Category	MAINS voltage [V r.m.s.]	Test voltage [V]	t_m [°C]	t_c [°C]	t_{max} [°C]	Ignited Yes / No	Safely suppressed Yes / No	Properly functional Yes / No	Verdict	Comments	
Test room ambient temperature:				°C								
NOTE - t_m = measured temperature												
t_c = t_m corrected ($t_m - t_a + 40$ °C or max. RATED ambient)												
t_{max} = maximum permitted temperature												
Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand voltage, spaced up to 1 min apart, from a hybrid impulse generator (see IEC 61180-1).												
Supplementary information:												

IEC 61010-1			
Clause	Requirement – Test	Result — Remark	Verdict

Annex H	TABLE: Qualification of conformal coating for protection against pollution	Form A.42	N/A
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Technical properties			
Manufacturer			—
Type			—
Meet requirements of ANSI / UL 746E	[yes / no]		
Manufacturer declaration of coating material	[yes / no]		
Operating temperature of coating	[] °C		
Comparative tracking index (CTI)	[]		
Insulation resistance	[] MΩ		
Dielectric strength	[] V		
UV resistance (if required)	[yes / no]		
Flammability rating			
Preparation of the test specimens conducted	[yes / no]		

Item	Test conditioning	Parameter	Td h	Samples						Verdict	Comments
				1	2	3	4	5	6		
1	Cold		24								
2	Dry heat		48								
3	Rapid temp. change										
4	Damp heat		24								
5	Adhesion of coating	5 N									
	Visual inspection										
6	Humidity		48								
7	Insulation resistance	≥ 100 MΩ									
	Visual inspection										

NOTE Td = Test duration time

Supplementary information:



IEC 61010-1			
Clause	Requirement – Test	Result — Remark	Verdict
TABLE: Additional or special tests conducted		Form A.43	N/A
Clause and name of test	Test type and condition	Observed results	—
Supplementary information:			

IEC 61010-1			
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)	
PCB	—	Interchangeable	Interchangeable	V-0, 130°C	UL 796	UL	
Plastic part of display LCD Cover	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	
Battery	—	Interchangeable	IEC R6/LR6	2×1.5V AA	—	—	
Battery cover	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	
Voltage Terminal inside the enclosure (Terminal Cover)	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	
Bottom Housing DMM	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	
DMM Knob	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	
Top Housing DMM	—	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329	

IEC 61010-1			
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)
Fuse	—	Hollyland Co., Ltd	6FF-1, 6FF(P)-1	600V, F1A	EN 60127-1, EN 60127-2	TUV/ J 50139804
Fuse	—	Hollyland Co., Ltd	6FF	600V, F10A	EN 60127-1, EN 60127-2	TUV/ J 50139804

NOTE → 1 List all different manufacturers of the above components → 2 May include electrical, mechanical values → 3 List licence no or method of acceptance → 4 asterisk indicates mark assuring agreed level of surveillance

**TEST REPORT
IEC 61010-031**

**Safety requirements for electrical equipment for
measurement, control and laboratory use – Part 031: Safety
requirements for hand-held and hand-manipulated probe
assemblies for electrical test and measurement**

Report Number.: See cover page

Date of issue: See cover page

Total number of pages: See cover page

Name of Testing Laboratory: See cover page
preparing the Report.....:

Applicant's name.....: See cover page

Address: See cover page

Test specification:

Standard: IEC 61010-031:2022

Test procedure.....: Test Report

Non-standard test method.....: N/A

Test Report Form No.....: IEC61010_031E

Test Report Form(s) Originator.....: UL (US)

Master TRF: 2020-06-11

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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description :	See page 2
Trade Mark(s)	See page 2
Manufacturer	See page 2
Model/Type reference :	See page 2
Ratings :	Voltage probe: 1000 V CAT III, 600V CAT IV, MAX.1 A
List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): Full tests (all clauses).	Testing location: Europe Ber (Guangdong) Testing Co., Ltd. 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
Summary of compliance with National Differences (List of countries addressed): N/A	
<input checked="" type="checkbox"/> The product fulfils the requirements of IEC 61010-031:2022.	
Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client) <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: Calculations leading to the reported values are on file with NCB and testing laboratory that conducted the testing. <input checked="" type="checkbox"/> Statement not required by the standard used for type testing <small>(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be deleted in both cases after selecting the applicable option)</small>	


Copy of marking plate:
The artwork below may be only a draft.



Test item particulars:	
Type of item tested.....	Measurement
Description of equipment function	The unit is only test probe for measurement
Classification	Type A
MEASUREMENT CATEGORY	III/ IV
POLLUTION DEGREE.....	2
Environmental conditions	Extended (-10°C to +50°C)
Operating conditions	Continuous/ short-time
Overall size of equipment (W x D x H).....	See page 7
Mass of equipment (kg)	See page 7
Marked degree of protection to IEC 60529	See page 7
Classification of installation and use	See page 7
Supply Connection.....	See page 7
.....	:
Possible test case verdicts:	
- test case does not apply to the test object.....	N/A
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing	:
Date of receipt of test item	See page 7
Date (s) of performance of tests.....	See page 7

General remarks:	
"(See ENCLOSURE #)" refers to additional information appended to the report. "(See appended Table)" refers to a Table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60060-2:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : See page 7	
General product information and other remarks:	
The apparatus is a component, it shall be used with relevant measure apparatus.	

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict
4	TESTS		P
4.4	Testing in SINGLE FAULT CONDITION		P
4.4.1	Fault tests		P
4.4.2	Application of FAULT CONDITIONS	(see Table A.1 and A.2)	P
4.4.2.1	SINGLE FAULT CONDITIONS covered by 4.4.2.2 to 4.4.2.5		P
4.4.2.2	PROTECTIVE IMPEDANCE		P
4.4.2.3	Probe assemblies or parts for short-term or intermittent operation		P
4.4.2.4	Outputs Type B and Type C probe assemblies		N/A
4.4.2.5	Insulation between circuits and parts		P
4.4.3	Duration of tests		P
4.4.4	Conformity after application of fault conditions	(see Table A.2)	P
4.4.4.1	Electric shock		P
4.4.4.2	Temperature		P
4.4.4.3	Spread of fire		P
4.4.4.4	Other HAZARDS		P
4.5	Test in REASONABLY FORESEEABLE MISUSE		N/A
4.5.1	Test needed to support risk assessment conducted as determined during risk assessment		N/A
4.5.2	Fuses	(see Table A.2A)	N/A
	Temperature test at current level near RATING of fuse performed		N/A
	Current load up to 5 times of fuse RATING through the probe assembly does not lead to a HAZARD		N/A

5	MARKING AND DOCUMENTATION		P
5.1	Marking		P
5.1.1	Markings applicable for whole PROBE assembly are not located on removable parts, which can be removed by OPERATOR without using a TOOL		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (Table 1) used; or	Symbol  used	P
	if other symbol used, explained in accompanying documentation		N/A
	In case of less space for required markings:		N/A
	- symbol 7 of Table 1 used		N/A
	- all necessary information included in documentation		N/A

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict
5.1.2	Identification		P
	a) Name or registered trademark of manufacturer or supplier	See page 2	P
	b) For type B and C, also model no. or name or similar	Type A	N/A
	If designed for use with specific model of equipment this is made clear and		N/A
	Specific model identified by marking on probe assembly or in documentation		N/A
5.1.3	Fuses	No fuse employed.	N/A
	All details necessary for fuse replacement if intended to be replaced by OPERATOR		N/A
	Includes RATED voltage and current breaking capacity		N/A
	If there is not sufficient room, probe assembly marked with symbol 7 and necessary information included in documentation		N/A
5.1.4	CONNECTORS and operating devices		N/A
	Necessary indication of the purpose of CONNECTORS, TERMINALS and controls, incl. sequence of OPERATION		N/A
5.1.5	RATING		P
	RATING of probe assemblies marked preferably on the probe body		P
	a) Probe assemblies that do not have a MEASUREMENT CATEGORY RATING marked with RATED voltage to earth and Symbol 7		N/A
	b) Probe assemblies for measurements within categories (CAT II, III or IV) marked with RATED voltage to earth (a.c., d.c. etc.)	1000 V CAT III, 600 V CAT IV	P
	Relevant MEASUREMENT CATEGORIES		P
	Reference CONNECTOR intended for connection to voltages exceeding the values of 6.3.2 marked with RATED voltage		N/A
	For type A and type D only, marked with RATED current and RATED voltage to earth, unless specified for high impedance inputs or limited-current outputs		P
5.2	Warning markings		P
	Legible when ready for NORMAL USE		P
	If necessary marked with symbol 7		P
	Near or on particular parts of the probe assembly		P
	Advise to disconnect or isolate during access to HAZARDOUS LIVE parts or		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	Marked with symbol 7 and information in the instruction manual		N/A
	Easily touched heated parts, if not self-evident, marked with symbol 6		N/A
5.3	Durability of markings		P
	Required markings are clear and legible under conditions of NORMAL USE	(see Table A.3)	P
	Resists cleaning (clear, legible and not worked loose)		P
5.4	Documentation		P
5.4.1	a) Technical specification		P
	b) Instructions for use		P
	c) Name and address of manufacturer or supplier		P
	d) The information specified in 5.4.2 to 5.4.4		P
	A clear explanation of warning symbols is in the documentation or		P
	Information is durably and legibly marked on the equipment		P
	Statement that symbol 7 means documentation needs to be consulted		P
5.4.2	Probe assembly RATING		P
	Voltage RATING	See copy of marking plate.	P
	Current RATING	See copy of marking plate.	P
	MEASUREMENT CATEGORY	See copy of marking plate.	P
	Statement of the range of environmental conditions		N/A
5.4.3	Probe assembly operation		N/A
	a) Identification of operating controls and modes		N/A
	b) Use with specific model		N/A
	c) Explanation of required and used symbols		N/A
	d) Definition of MEASUREMENT CATEGORY (if marked with CAT)		N/A
	e) Specification of limits of intermittent operation		N/A
	f) Interconnection requirements		N/A
	Specification of accessories, materials, etc.		N/A
	g) Cleaning if necessary		N/A
	h) Replacement of consumable materials		N/A
	i) For probe assemblies without PROBE WIRE wear indicator, instructions to inspect PROBE WIRE		N/A
	j) For probe assemblies with PROBE WIRE wear indicator, a warning not to use if wear indicator becomes visible		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	k) For probe assemblies which do not have a RATING for MEASUREMENT CATEGORY II, III, or IV, a warning not to use on mains circuits		N/A
	l) For Type B probe assemblies, if the RATED voltage of the PROBE WIRE is lower than the RATED voltage of the PROBE TIP, a warning that the PROBE WIRE may not provide adequate protection		N/A
	m) A warning that the applicable MEASUREMENT CATEGORY of a combination of a PROBE ASSEMBLY and an accessory is the lower of the MEASUREMENT CATEGORY		N/A
	A statement against use in a manner not specified by the manufacturer		N/A
5.4.4	Probe assembly maintenance and service		N/A
	Sufficient preventive maintenance and inspection for RESPONSIBLE BODY		N/A
	Parts to be supplied or examined by the manufacturer only		N/A
	RATING and characteristics of fuses (see 5.1.3)		N/A
	Instructions are provided for service personnel if the probe assembly is suitable to be serviced		N/A
	a) product-specific risks that may affect the service personnel;		N/A
	b) protective measures for these risks;		N/A
	c) verification of the safe state of the PROBE ASSEMBLY after repair.		N/A

6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	If it is not feasible for operating reasons parts are permitted to be ACCESSIBLE to the OPERATOR during NORMAL USE while they are HAZARDOUS LIVE		P
	a) Parts intended to be replaced by the OPERATOR, warning marking according to 5.2 used		P
	b) PROBE TIPS, provided that meet the requirements of 6.4.3		P
	c) unmated CONNECTORS as specified in 6.4.2 c)		N/A
6.2	Determination of ACCESSIBLE parts		N/A
6.2.1	Unless obvious, determination of ACCESSIBLE parts as specified in 6.2.2 to 6.2.3	Obvious to determine the accessible parts	N/A
6.2.2	Examination		N/A
	Jointed test finger (Fig. B.2) applied in every possible position and all outer surfaces without force according to figure 6a, 6b, 6c and 6d		N/A
6.2.3	Openings for pre-set controls		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	Metal test pin 3 mm in diameter with length of 100 mm applied	(see Table A.4)	N/A
6.3	Limit values for ACCESSIBLE parts		P
6.3.1	Except as permitted in 6.1, the voltage between an ACCESSIBLE part and earth, or between any two ACCESSIBLE parts on the same probe assembly, does not exceed the levels of 6.3.2 in NORMAL CONDITION or of 6.3.3 in SINGLE FAULT CONDITION.		P
6.3.2	Levels in NORMAL CONDITION	(see Table A.5)	P
	a) Voltage limits less than 30 V r.m.s. and 42,4 V peak or 60 V d.c.		P
	for WET LOCATIONS voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N/A
	b) Touch Current Levels		N/A
	1) 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		N/A
	for WET LOCATIONS measuring circuit A.4 used		N/A
	2) 70 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	c) Levels of capacitive charge or energy		N/A
	1) 45 μ C for voltages up to 15 kV peak or d.c. or line A of Figure 7		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.3	Levels in SINGLE FAULT CONDITION	(see Table A.6)	P
	a) Voltage limits less than 50 V r.m.s. and 70,7 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.		N/A
	b) Touch Current Levels		N/A
	1) 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		N/A
	for WET LOCATIONS measuring circuit A.4 used		N/A
	2) 500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	c) Levels of capacitance less line B of Figure 7		N/A
6.3.4	Measurement of voltage and touch current	(see Table A.5)	P
6.3.4.1	Measurement of ACCESSIBLE parts		P
6.3.4.2	Probe assemblies with floating outer conductors		P

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Clause	Requirement – Test	Result – Remark	Verdict
6.3.4.3	High frequency test probes		P
	- Touch Current measured in whole frequency range and maximum voltage, or		P
	- Capacitance measurement		P
6.4	Means of protection against electric shock		P
6.4.1	ACCESSIBLE parts prevented for becoming HAZARDOUS LIVE in NORMAL can SINGLE FAULT conditions		P
6.4.2	CONNECTORS	No such part.	N/A
	a) CONNECTORS in fully-mated position		N/A
	1) Connecting probe to measuring equipment insulated by at least BASIC INSULATION	(see Table A.8)	N/A
	2) Intended to be HAND-HELD insulated by DOUBLE or REINFORCED INSULATION	(see Table A.8)	N/A
	b) CONNECTORS in partially-mated position		N/A
	insulated by at least BASIC INSULATION		N/A
	Voltage test with test finger (B.1)	(see Table A.12)	N/A
	c) CONNECTORS in unmated position		N/A
	1) Locking or screw-held type CONNECTORS permitted to be ACCESSIBLE		N/A
	2) STACKABLE CONNECTORS provided with BASIC INSULATION		N/A
	3) OTHER unmated CONNECTORS provided with PROTECTIVE IMPEDANCE		N/A
	i) Up to 1 kV a.c. or 1.5 kV d.c., applicable SPACINGS of Table 2		N/A
	ii) Above 1 kV a.c. or 1.5 kV d.c., the SPACINGS are not be less than 2.8 mm and withstand the voltage test of 6.6.	(see Tables A.11 and A.12)	N/A
6.4.3	PROBE TIPS		P
6.4.3.1	PROBE TIPS that can become HAZARDOUS LIVE during NORMAL USE meet the requirements of one of 6.4.3.2, 6.4.3.3, or 6.4.3.4		P
	PROBE TIPS that can be used as CONNECTORS meet the requirements of 6.4.3.5.		N/A
	SPRING-LOADED CLIPS intended to pierce the insulation of a wire do not have a voltage RATING above the levels of 6.3.2 a).	(see Table A.5)	N/A
6.4.3.2	Protection by a PROTECTIVE FINGERGUARD		P
	For PROBE TIPS that are HAZARDOUS LIVE, a PROTECTIVE FINGERGUARD is provided		P
	SPACINGS between the HAZARDOUS LIVE and the hand-held side of the PROTECTIVE FINGERGUARD meet the requirements of REINFORCED INSULATION.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	The height of the PROTECTIVE FINGERGUARD is at least 2 mm	(see Table A.8)	N/A
	The PROTECTIVE FINGERGUARD of probe assemblies extends across at least 80 %	(see Table A.8)	N/A
6.4.3.3	Protection by distance		N/A
	SPRING-LOADED CLIPS RATED for WORKING VOLTAGE up to 1 kV are acceptable without PROTECTIVE FINGERGUARD provided		N/A
	a) Actuation prevents touching HAZARDOUS LIVE parts		N/A
	b) Additional protective distance of 45 mm longer than barrier	(see Table A.8)	N/A
6.4.3.4	Protection by tactile indicator		N/A
	SPRING-LOADED CLIPS RATED for CAT II or without MEASUREMENT CATEGORY for max. 300 V, require pressure at about 90° to the axis, acceptable without PROTECTIVE FINGERGUARD, provided with tactile indicator		N/A
6.4.3.5	PROBE TIPS used as CONNECTORS		N/A
	PROBE TIPS which can be used as CONNECTORS and the intended accessories, also meet the requirements for CONNECTORS in fully-mated position and partially-mated position		N/A
6.4.4	Impedance	(see Tables A.8 and A.9)	N/A
	Impedance used as an additional means of protection in conjunction with BASIC INSULATION meets:		N/A
	a) Limits the current or voltage to not more than the applicable levels of 6.3.3	(see Table A.6)	N/A
	b) RATED for the WORKING VOLTAGE and for the amount of power that it will dissipate	(see Table A.9)	N/A
	c) SPACINGS between terminations of the impedance meet the requirements of 6.5 for BASIC INSULATION	(see Table A.8)	N/A
6.4.5	PROTECTIVE IMPEDANCE		N/A
	Limits the current or voltage to the levels of 6.3.2 in NORMAL CONDITION and 6.3.3 in SINGLE FAULT CONDITION	(see Tables A.5 and A.6)	N/A
	Insulation between the terminations of the PROTECTIVE IMPEDANCE meets 6.4.6 for DOUBLE INSULATION or REINFORCED INSULATION	(see Table A.8)	N/A
	A PROTECTIVE IMPEDANCE is one or more of the following:	(see Table A.10)	—
	a) appropriate single component suitable for safety and reliability for protection and is:	(see Table A.10)	—
	1) RATED for twice the WORKING VOLTAGE;		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	2) if a resistor, RATED for twice the power dissipation for the WORKING VOLTAGE;		N/A
	3) if a capacitor, RATED for the maximum transient overvoltage;		N/A
	b) For combination of components, the SPACINGS across each insulation	(see Tables A.8 and A.10)	N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE that employs electron conduction in a vacuum, gas or semiconductor		N/A
6.4.6	BASIC INSULATION, SUPPLEMENTARY INSULATION, DOUBLE INSULATION and REINFORCED INSULATION		N/A
	SPACING and solid insulation meet the requirements of 6.5.	(see Table A.8)	N/A
	DOUBLE INSULATION comprised of BASIC INSULATION and SUPPLEMENTARY INSULATION meet the requirements of 6.5		N/A
6.5	Insulation requirements		P
6.5.1.1	CLEARANCES and CREEPAGE DISTANCES between circuits and parts	(see Tables A.8 and A.11)	P
	Insulation between circuits and ACCESSIBLE parts or between separate circuits consists of SPACINGS, solid insulation, or a combination of SPACINGS and solid insulation		N/A
6.5.1.2	SPACINGS		N/A
6.5.1.2.1	SPACINGS are a combination of CLEARANCES and CREEPAGE DISTANCES, which are specified in 6.5.1.2.2 and 6.5.1.2.3		N/A
6.5.1.2.2	CLEARANCES	(see Tables A.7, A.8, A.11, A.12 and A.13)	P
6.5.1.2.3	CREEPAGE DISTANCES	(see Tables A.7, A.8, A.11, A.12 and A.13)	P
6.5.1.3	SOLID INSULATION		P
6.5.2	Insulation requirements for probe assemblies		P
6.5.2.2	CLEARANCES for probe assemblies of MEASUREMENT CATEGORIES II, III and IV	(see Tables A.7, A.8, A.11, and A.13)	P
	Meet requirements of Table 6, or		P
	by the a.c. voltage test of 6.6.5.1 with a duration of at least 5 s or		P
	the impulse voltage test of 6.6.5.3 or		N/A
	for probe assemblies stressed only by d.c., the 1 min d.c. voltage test of 6.6.5.2 or		N/A
	The impulse voltage test of 6.6.5.3, using the test voltage of Table 10 for the required CLEARANCE		N/A
6.5.2.3	CLEARANCES for probe assemblies which are not RATED for MEASUREMENT CATEGORIES II, III, or IV	(see Tables A.7, A.8, A.11, and A.13)	N/A
6.5.2.3.1	CLEARANCES for probe assemblies which are not RATED for MEASUREMENT CATEGORIES II, III, or IV are calculated to 6.5.2.3.2		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	If they have either of the following characteristics, CLEARANCES determined according to 6.5.2.3.3, with the larger of the two CLEARANCES values used		N/A
	a) the WORKING VOLTAGE includes a recurring peak voltage that occurs with some regularity		N/A
	b) the WORKING VOLTAGE has a frequency above 30 kHz		N/A
6.5.2.3.2	CLEARANCE calculation		N/A
6.5.2.3.3	CLEARANCES for probe assemblies subjected to recurring peak voltages, or WORKING VOLTAGES with frequencies above 30 kHz, or both meet Table 8		N/A
6.5.2.4	CREEPAGE DISTANCES meet the values of Table 9.	(see Tables A.7, A.8, A.11, and A.13)	N/A
6.5.2.5	Solid insulation of probe assemblies RATED for MEASUREMENT CATEGORIES		P
6.5.2.5.1.1	Solid insulation		P
	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		P
	Withstands the voltage test or impulse voltage test	(see Table A.12)	P
6.5.2.5.1.3	Also complies as applicable		N/A
	1) ENCLOSURE OR PROTECTIVE FINGERGUARD of Clause 8		N/A
	2) Moulded and potted parts requirements of 6.5.2.5.2		N/A
	3) Inner layers of printed wiring boards requirements of 6.5.2.5.3		N/A
	4) Thin-film insulation requirements of 6.5.2.5.4		N/A
6.5.2.5.2	Moulded and potted parts		N/A
	Conductors between same two layers separated by minimum distance of Table 5 after moulding is completed		N/A
6.5.2.5.3	Insulating layers of printed wiring boards		N/A
	Separated by at least the applicable minimum distance of Table 5 between same two layers		N/A
	REINFORCED INSULATION has adequate electric strength; one of following methods used		N/A
	a) Thickness of insulation is at least the value of Table 5		N/A
	b) Insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 4 or Table 14 for BASIC INSULATION		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	c) Insulation is assembled of minimum two separate layers, where the combination is RATED for test voltage of Table 4 or Table 14 for REINFORCED INSULATION		N/A
6.5.2.5.4	Thin-film insulation		N/A
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE		N/A
	REINFORCED INSULATION has adequate electric strength; one of following methods used		N/A
	a) thickness through the insulation at least the value of Table 5		N/A
	b) insulation is assembled with a minimum of two separate layers, each RATED for test voltage of Table 4 for BASIC INSULATION		N/A
	c) insulation is assembled with a minimum of three separate layers, where the combination of two layers passed voltage tests of 6.6.5 with values of Table 4 for REINFORCED INSULATION		N/A
6.5.2.6	Solid insulation for probe assemblies which are not RATED for MEASUREMENT CATEGORIES		N/A
	Solid insulation withstands the electric and mechanical stresses that may occur in NORMAL USE, in all RATED environmental conditions		N/A
	a) a.c. Test of 6.6.5.1 or impulse test of 6.6.5.3 determined by the following:	(see Table A.12)	—
	i) CLEARANCE for BASIC INSULATION TO 6.5.2.3		N/A
	ii) REINFORCED INSULATION, CLEARANCE twice BASIC INSULATION		N/A
	iii) Calculated CLEARANCE from Table 10		N/A
	b) a.c. Test of 6.6.5.1 or d.c. Test of 6.6.5.2 determined by the following:	(see Table A.12)	—
	i) BASIC and SUPPLEMENTARY INSULATION test voltage 1,5 times		N/A
	ii) REINFORCED INSULATION twice value of BASIC		N/A
	Also complies as applicable		N/A
	1) ENCLOSURE OF PROTECTIVE FINGERGUARD of Clause 8		N/A
	2) Moulded and potted parts requirements of 6.5.2.5.2		N/A
	3) Inner layers of printed wiring boards requirements of 6.5.2.5.3 and test voltage of 6.5.2.6 a)		N/A
	4) Thin-film insulation requirements of 6.5.2.5.4 and test voltage of 6.5.2.6 a)		N/A
6.6	Procedure for voltage tests	(see Table A.12)	—

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Clause	Requirement – Test	Result – Remark	Verdict
6.7	Constructional requirements for protection against electric shock		P
6.7.1	If failure could cause a HAZARD		N/A
	a) Security of wiring connections does not depend on soldering		N/A
	b) Screws securing removable covers are captive if their length affects isolation distances		N/A
	c) Accidental loosening does not cause ACCESSIBLE parts to become HAZARDOUS LIVE		P
6.7.2	Insulating materials		P
	a) Materials which can be easily damaged enamel, etc.		N/A
	b) Non-impregnated hygroscopic materials		P
6.7.3	ENCLOSURES of probe assemblies with DOUBLE or REINFORCED INSULATION	(see Tables A.7, A.8, A.11, and A.13)	P
	ENCLOSURE which surrounds all metal parts		N/A
	Small metal parts are separated from HAZARDOUS LIVE voltages by DOUBLE or REINFORCED INSULATION		N/A
	ENCLOSURES or parts made of insulating material fulfill requirements for DOUBLE or REINFORCED INSULATION.		P
	Protection for metal ENCLOSURES or parts is provided by one of the following, except for parts where PROTECTIVE IMPEDANCE is used		N/A
	a) Provision of an insulating coating or BARRIER on the inside of the ENCLOSURE		N/A
	b) CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires	(see Tables A.7 and A.8)	N/A
6.7.4	PROBE WIRE attachment	(see Table A.13)	P
	Solder alone not used for strain relief		P
	Insulation mechanically secured to avoid retraction		N/A
	After test 6.7.4.2 to 6.7.4.4 of PROBE WIRE		N/A
	a) the insulation of the PROBE WIRE not cut or torn, and not moved more than 2 mm in the bushing		N/A
	b) SPACINGS not less than 6.5.2.2 or 6.5.2.3 and 6.5.2.4		N/A
	c) Passes the voltage test of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.12)	N/A
	d) no more than 75 % of the copper strands of the PROBE WIRE are broken		N/A
6.7.4.2	Pull test	(see Table A.13)	P
6.7.4.3	Flexing/pull test	(see Table A.13)	P
6.7.4.4	Rotational flexing test	(see Table A.13)	P

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Clause	Requirement – Test	Result – Remark	Verdict

7	PROTECTION AGAINST MECHANICAL HAZARDS		P
	Handling during NORMAL USE does not lead to HAZARD		P

8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	Probe assembly was not operating during the test of 8.2 to 8.4		P
	After mechanical testing, the probe assembly passes the voltage test of 6.5.2.5.1.1 b) or 6.5.2.6 b) and	(see Tables A.11, A.12 and A.14)	P
	a) Parts which are HAZARDOUS LIVE are not ACCESSIBLE		P
	b) ENCLOSURES show no cracks which could cause a HAZARD		P
	c) SPACINGS are not less than their permitted values and the insulation of internal wiring remains undamaged		P
	d) PROTECTIVE FINGERGUARDS have not been damaged or loosened		P
	e) No damage which could cause spread of fire		P
8.2	Rigidity test		P
	20 N applied three times	(see Tables A.11 and A.14)	P
8.3	Drop test		P
	Three samples dropped	(see Tables A.11 and A.14)	P
8.4	Impact swing test		P
	Probe subjected to impact against a hardwood board	(see Tables A.11 and A.14)	P

9	TEMPERATURE LIMITS AND PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	Any heating does not cause a HAZARD in NORMAL CONDITION nor in SINGLE FAULT CONDITION		P
	No spread of fire outside the probe assembly		P
	Temperature of easily touched surfaces in SINGLE FAULT CONDITION less than 105 °C at ambient temperature of 40 °C.		P
	Easily touched surfaces of probe assemblies RATED for a maximum ambient temperature above 40 °C exceed the values of below in NORMAL CONDITION, and 105 °C in SINGLE FAULT CONDITION, by not more than the amount by which the maximum RATED temperature exceeds 40 °C.		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	Easily touched heated surfaces recognizable or marked with symbol 6 of Table 1 (see 5.2), if necessary for functional reasons		N/A
	Circuits separated at least by BASIC INSULATION, if protection depends on separation of circuits		N/A
9.2	Temperature tests	(see Table A.15)	P

10	RESISTANCE TO HEAT		P
10.1	Integrity of SPACINGS		P
	Requirements of 6.5 are met at an ambient temperature of 40 °C or maximum RATED ambient temperature (if higher)	(see Tables A.11 and A.12)	P
10.2	Resistance to heat		P
	Probe assemblies with non-metallic ENCLOSURES are resistant to elevated temperatures	(see Table A.16)	P

11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	OPERATOR and surrounding area are protected against HAZARDS from fluids if probe assemblies containing or are intended to be used with fluids		N/A
11.2	Cleaning		N/A
	Cleaning procedure applied three times to the probe assembly	(see Table A.17)	N/A
	Cleaning procedure specified in documentation		N/A
	Decontamination method applied once		N/A
	ACCESSIBLE parts do not exceed the limits of 6.3.2	(see Table A.6)	N/A
	Withstands the voltage tests of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.17)	N/A
11.3	Specially protected probe assemblies		N/A
	Where the equipment is RATED or marked by the manufacturer the requirements of IEC 60529 are fulfilled		N/A
	ACCESSIBLE parts do not exceed the limits of 6.3.2	(see Table A.6)	N/A
	Withstands the voltage tests of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.17)	N/A

12	COMPONENTS		P
12.1	Safety components operated within their specified RATINGS	(see TABLE 1)	P
12.2	Fuses		N/A
	Voltage RATING of fuse		N/A

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Clause	Requirement – Test	Result – Remark	Verdict
	Breaking capacity and current RATING		N/A
12.3	PROBE WIRE		P
12.3.1	PROBE WIRE is suitable for use in NORMAL and SINGLE FAULT CONDITION		P
12.3.2	RATING of the PROBE WIRE	(see Table A.18)	P
	PROBE WIRE RATED for the maximum voltage and current of NORMAL USE.		P
	Withstand the voltage test for the highest RATED voltage to earth.		N/A
	Conductors separated by DOUBLE INSULATION or REINFORCED INSULATION, based on the following values		P
	a) Type A probe assemblies, 125 V or the highest RATED voltage to earth;		P
	b) Type B probe assemblies, 500 V or the highest RATED voltage to earth divided by the divider ratio;		N/A
	c) Type C probe assemblies, 125 V or the highest RATED voltage to earth;		N/A
	d) Type D probe assemblies, 125 V.		N/A
	For type B probe assemblies, Symbol 7 marked on the probe assembly and a warning provided in the documentation.		N/A
	Insulation which have a wear indicator meet BASIC INSULATION when the wear indicator has become visible.		N/A
	Withstands the voltage tests of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.18)	P
12.3.3	Pressure test at high temperature for insulations		P
	After conditioning withstands the voltage tests of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.19)	P
12.3.4	Tests for resistance of insulation to cracking		P
	After this conditioning, the samples show no cracks when examined, and meet the requirements for solid insulation.	(see Table A.20)	P
	After conditioning withstands the voltage tests of 6.5.2.5.1.1 b) or 6.5.2.6 b)	(see Table A.20)	P
12.3.5	Voltage test		P
	After conditioning withstands the voltage tests between conductors and mandrel of 6.5.2.5.1.1 b) or 6.5.2.6 b) for REINFORCED INSULATION. If breakdown does not occur, maximum test voltage of 6.5.2.5.1.2 or 6.5.2.6 b) or 10 kV.	(see Table A.21)	P
	a) unaged and oven-aged samples withstand the test voltage without breakdown for 1 min and		P

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Clause	Requirement – Test	Result – Remark	Verdict
	b) the average dielectric breakdown value of oven-aged samples is not less than 50 % of the average breakdown value of unaged samples.	(see Table A.21)	N/A
12.3.6	Tensile test		P
12.3.6.1	After the test conditioning and procedure of 12.3.6.2 to 12.3.6.6, conformity is checked by calculation of the tensile strength and the elongation at break respectively and determination of the median value of the result as follows:	(see Table A.22)	—
	For the unaged samples, the median value is at least 7 N/mm ² and a median value of elongation of at least 100 % before they break.		P
	For the aged samples, the median value is at least 70 % of the result for unaged samples, and a median value of elongation of at least 45 % of the result of the unaged samples before they break.		N/A

13	PREVENTION OF HAZARD FROM ARC FLASH AND SHORT-CIRCUITS		P
13.1	PROBE TIPS and SPRING-LOADED-CLIP are constructed to mitigate the risk of arc flash and short-circuits.		P
13.2	Exposed conductive parts	(see Table A.23)	P
	a) For SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV:		P
	1) In closed position, ACCESSIBLE conductive parts do not exceed 4 mm		P
	2) In open position		P
	i) the length of ACCESSIBLE conductive parts of SPRING-LOADED CLIPS with one hook does not exceed 10 mm		P
	ii) the outer surfaces of SPRING-LOADED CLIPS with more than one hook or jaw are not conductive		N/A
	b) Except for SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV the exposed conductive part of the PROBE TIP assembly.		N/A
	1) RATED for MEASUREMENT CATEGORY III or IV, the PROBE TIP does not exceed 4 mm		N/A
	2) Not RATED for MEASUREMENT CATEGORY and for use in special applications, PROBE TIP does not exceed 80 mm		N/A
	3) RATED for MEASUREMENT CATEGORY II, and for other probe assemblies not covered by items 1) and 2), above, PROBE TIP does not exceed 19 mm.		N/A

ANNEX D	ROUTINE SPARK TESTS ON PROBE WIRE	N/A
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IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict
D.1	The spark test is performed by the manufacturer as a ROUTINE TEST on 100 % of the PROBE WIRE. Manufacturer's declaration.		N/A

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

4.4.2	Summary of SINGLE FAULT CONDITIONS			Table A.1	N/A
Sub-clause	Title	Does not apply	Carried out	Comments	
4.4.2.2	PROTECTIVE IMPEDANCE				
4.4.2.3	Equipment or parts for short-term or intermittent operation				
4.4.2.4	Outputs of type B and type C probe assemblies				
4.4.2.5	Insulation between circuits and parts				
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.5:					
See From A.2 for details of tests.					
Supplementary information:					

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Clause	Requirement – Test	Result – Remark	Verdict

4.4	Testing in SINGLE FAULT CONDITION				Table A.2	N/A
Test sub-clause	Fault No.	Fault description	Td 4.4.3 (NOTE)	Comments	Meets 4.4.4	

NOTE Td = Test duration in hh:mm:ss
 Record voltage test in Table A.12 and temperature tests in Table A.15.
 Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.
 Conformity after application of single faults in acc. to 6.3.3 see Table A.6.

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

4.5	Tests in REASONABLY FORESEEABLE MISUSE	Table A.2A	N/A
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Designation of Probe assembly	Fuse		Applied current		Td 4.4.3 (NOTE)	Temperature (NOTE1)			Comments	Verdict
	Type	RATING [A]	RATED [A]	RATED 5X [A]		T _m [°C]	T _c [°C]	T _m [°C]		

NOTE Td = Test duration in hh:mm:ss
NOTE - t_m = measured temperature on hand-held parts
t_c = t_m corrected (t_m - t_a + 40 °C or max. RATED ambient)
t_{max} = maximum permitted temperature

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

5.3	Durability of markings			Table A.3	P
Marking method (see NOTE)			Agent		
1) Adhesive label			A Water		
2) Ink printed			B Isopropyl alcohol		
3) Laser marked			C (specify agent)		
4) Film-coated (plastic foil control panel)			D (specify agent)		
5) Imprinted on plastic (moulded in)			E (specify agent)		
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.					
Marking location			Marking method (see above)		
Identification (5.1.2)			Moulded		
Fuses (5.1.3)			N/A		
CONNECTORS and operating devices (5.1.4)			N/A		
RATING (5.1.5)			Moulded		
Warning marking (5.2)			Moulded		
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
Moulded	B	YES	NO	NO	
Supplementary information:					

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.2	Determination of ACCESSIBLE parts	Table A.4	P
6.2.2	Examination		—

Item	Description	Determination method (NOTE 4)	Exception under 6.1 (NOTE 5)
Probe body	--	Visual	--

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.1)

NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)

NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of 6.2.1).

NOTE 4 – The determination methods: V = visual; R = rigid test finger; J = jointed test finger (Fig. B.2); P3 = Test pin 3 mm diameter.

NOTE 5 – Capacitor test according to 6.3.2 and 6.3.3 may be required (see Tables A.5 and A.6).

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.3	Limit values for ACCESSIBLE parts	Table A.5	P
6.1	Exceptions	6.4.5 PROTECTIVE IMPEDANCE	—
6.3.2	Levels in NORMAL CONDITION	11.2 Cleaning	—
6.3.4	Measurement of voltage and touch current	11.3 Specially protected probe assemblies (IEC 60529)	—
6.4.3	PROBE TIPS		—

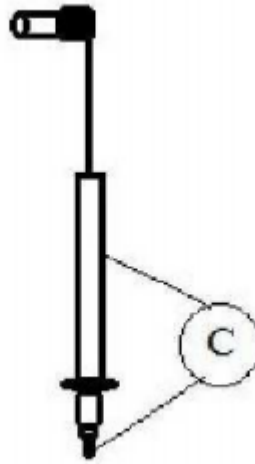
Item (see Table A.4)	Voltage			Test circuit A1/A2/A3/A4	Current			Capacitance		Comments
	a.c. [V]	peak [V]	d.c. [V]		a.c. [mA]	peak [mA]	d.c. [mA]	[μC]	[mJ]	
Probe body	117.3	162.5	--	A1	0.14	0.47	--	--	--	

Supplementary information:

IEC 61010-031										
Clause	Requirement – Test	Result – Remark							Verdict	
6.3.3	Levels in SINGLE FAULT CONDITION								Table A.6	N/A
6.4.4	Impedance									N/A
6.4.5	PROTECTIVE IMPEDANCE									N/A
Item (see Table A.4)	Sub-clause and fault No. (see Table A.2)	Voltage			Test circuit A1/A2/A3/A4	Current			Capacitance (NOTE) [μF]	Comments
		a.c. [V]	peak [V]	d.c. [V]		a.c. [mA]	peak [mA]	d.c. [mA]		
NOTE –The capacitance level must be below the limits from figure 7 of IEC 61010-031.										
Supplementary information:										

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.5	Insulation requirements - Block diagram of system -	Table A.7	P
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POLLUTION DEGREE.....: 2	MEASUREMENT CATEGORY: III / IV
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Area	Location	Insulation type (NOTE 1)	WORKING VOLTAGE			CLEARANCE (NOTE 3) [mm]	CREEPAGE DISTANCE (NOTE 3)		Test voltage (NOTE 2) [V]	Comments (NOTE 3)
			a.c. [V]	peak [V]	Freq. [kHz]		PWB [mm]	Other [mm]		
--	C, Probe tips to the probe plastic barrier	DI/RI	600V r.m.s (CAT IV)	--	--	32	--	40.0	6800Vac 9600Vdc	14.3 clearance required for DI/RI
--	C, Probe tips to the probe plastic barrier	DI/RI	1000 Vr.m.s (CAT III)	--	--	32	--	40.0	6800Vac 9600Vdc	14.3 clearance required for DI/RI

NOTE 1 – Type of insulation:
 BI = BASIC INSULATION
 DI = DOUBLE INSULATION
 PI = PROTECTIVE IMPEDANCE
 RI = REINFORCED INSULATION
 SI = SUPPLEMENTARY INSULATION
 see also Table A.8 for further details

NOTE 2 – Types of voltage
 Peak impulse test voltage (pulse)
 a.c. / r.m.s.
 d.c.
 peak

NOTE 3 – MEASUREMENT CATEGORIES or POLLUTION DEGREE which differ should be shown under "Comments"

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.5	Insulation requirements - CLEARANCES and CREEPAGES	Table A.8	P
6.2.2	Examination	6.4. Impedance 4	—
6.4.2	CONNECTORS	6.4. PROTECTIVE IMPEDANCE 5	—
6.4.3	PROBE TIPS	6.5. Insulation requirements for probe 2 assemblies	—
6.7.3	ENCLOSURE of probe assemblies with DOUBLE or REINFORCED INSULATION		

Area	Location (see Table A.7)	Insulation type (NOTE 1)	WORKING VOLTAGE (NOTE 2)			CLEARANCE		CREEPAGE DISTANCE		Comments	Verdict
			a.c. [V]	peak [V]	Frequen cy [kHz]	Require d [mm]	Measur ed [mm]	Require d [mm]	Measur ed [mm]		
--	Probe tip to barrier	RI	1000 V	--	--	20.4	>21.0	23.4	>24.0	--	P

NOTE 1 – refer to Table A.7 for type of insulation shown in the insulation block diagram
 NOTE 2 - to be used for definition of required insulation (see Table A.7)

Supplementary information:
 Limits: pollution degree 2, material group IIIa-b CAT II 1000 V
 Cr=20.0 mm(RI), CL=10.5 mm(RI)

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.4.4	Impedance					Table A.9	N/A	
A single component								
Component	Location	Measured		Calculated	RATED		Comments	Verdict
		Working voltage [V]	Current [A]	Power dissipation [W]	Working voltage [V]	Power dissipation [W]		
A combination of components								
Component		Location			Comments			
NOTE –Impedance must limit current or voltage to levels of 6.3.3 (see Table A.6).								
Supplementary information:								

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.4.5	PROTECTIVE IMPEDANCE	Table A.10	N/A					
A single component								
Component	Location	Measured		Calculated	RATED		Comments	Verdict
		Working voltage [V]	Current [A]	Power dissipation [W]	Working voltage [V]	Power dissipation [W]		
A combination of components								
Component	Location		Comments					
NOTE – A PROTECTIVE IMPEDANCE must not be a single electronic device that employs electron conduction in a vacuum, gas or semiconductor.								
NOTE – PROTECTIVE IMPEDANCE must limit current or voltage to levels of 6.3.2 in NORMAL CONDITION and 6.3.3 SINGLE FAULT CONDITION (see Tables A.5 and A.6).								
Supplementary information:								

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Clause	Requirement – Test	Result – Remark	Verdict

6.5	CLEARANCES and CREEPAGE DISTANCES	Table A.11	P
8	Mechanical resistance to shock and impact		P
10.1	Integrity of SPACINGS		P

Location (See Table A.7)	Measured (initial)		Verdict	Mechanical tests (note)				Test at max. RATED ambient (10.1)	Measured after test (if required)		Verdict	Comments
	CLEARANCE [mm]	CREEPAGE DISTANCE [mm]		Applied force [N]	Rigidity (8.2)	Drop (8.3)	Impact swing (8.4)		CLEARANCE [mm]	CREEPAGE DISTANCE [mm]		
Probe tip and barrier	23.4	20.4	P	30N	20N	1 m	0.37m	70	23.4	20.4	P	

NOTE – Refer to Table A.12 for voltage tests following the above tests.

Supplementary information:

IEC 61010-031						
Clause	Requirement – Test			Result – Remark		Verdict
6.6	Voltage tests			Table A.12		P
4.4.4	Conformity after application of fault conditions ¹					N/A
6.4.2	CONNECTORS ²					P
6.5	Insulation requirements for protection against electric shock ²					P
6.7.3	ENCLOSURES of probe assemblies with DOUBLE or REINFORCED INSULATION					P
6.7.4	PROBE WIRE attachment					P
8.	Resistance to mechanical stresses					P
9.2	Temperature tests					P
10.1	Integrity of SPACINGS					N/A
	Test site altitude..... :			<500 m		—
	Test voltage correction factor (see Table 11)			1.22		—
Location or references from Tables A.2 / A.7	Clause or sub-clause	Humidity Yes/No	Working Voltage [V]	Test voltage ac/d.c./peak [V]	Comments	Verdict
Probe tip to probe body	4.4.4 6.4.2, 6.5, 6.7.3, 6.7.4, 8, 9.2, 10.1	Yes	CAT III 1000 V CAT IV 600V	6800 Vac	--	P
Probe tip to probe body	4.4.4 6.4.2, 6.5, 6.7.3, 6.7.4, 8, 9.2, 10.1	Yes	CAT III 1000 V CAT IV 600V	6800 Vac	--	P
Probe tip to probe body	4.4.4 6.4.2, 6.5, 6.7.3, 6.7.4, 8, 9.2, 10.1	Yes	CAT III 1000 V CAT IV 600V	6800 Vac	--	P
¹ Record the fault, test or treatment applied before the dielectric strength test. ² Humidity preconditioning required.						
Supplementary information:						

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

6.7.4	PROBE WIRE attachment	Table A.13	P
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6.7.4.2	Pull test		P
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6.7.4.3	Flexing/pull test		P
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6.7.4.4	Rotational flexing test		P
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Sample designation	Location	Conductor area [mm ²]	Pull force ¹ [N]	RATED voltage a.c. / d.c. [V]	CAT II / III / IV	Insulation drift [mm]	CLEARANCE		CREEPAGE DISTANCE		Copper strands ² broken [%]	Comment	Verdict
							Required [mm]	Measured [mm]	Required [mm]	Measured [mm]			
--	Cable to probe body	--	36	1000 Vr.m.s	CAT III	--	--	--	--	--	--	--	P
--	Cable to probe body	--	36	600 Vr.m.s	CAT IV	--	--	--	--	--	--	--	P

¹ The PROBE WIRE is subjected for 1 min to a steady axial pull.

² No more than 75 % of the copper strands of the PROBE WIRE must be broken.

NOTE – Solder alone, without mechanical gripping, must not be used for strain relief.

NOTE – After completion of the tests, voltage tests in acc. to 6.5.2.5.1.1 b) or 6.5.2.6 b) must be performed (see Table A.12).

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict
8.2	Rigidity test	Table A.14	P
	Material of ENCLOSURE	Non-metallic	—
	Applied force.....	20 N	—
	Not operated at ambient temperature	-- °C -- h	—
Location		Comments	Verdict
1) The product		No damage, no hazard.	P
2)			
3)			
Supplementary information:			
8.3	Drop test		P
	Material of ENCLOSURE	Non-metallic	—
	RATED ambient temperature	40 °C	—
	Cooled to (temperature)	/ °C	—
Samples	Location	Comments	Verdict
#1	1) Top	No damage, no hazard.	P
	2) Side left / right	No damage, no hazard.	P
	3) Bottom	No damage, no hazard.	P
#2	1)		
	2)		
	3)		
#3	1)		
	2)		
	3)		
Supplementary information:			
8.4	Impact swing test		P
	Material of ENCLOSURE	Non-metallic	—
	PROBE WIRE length	42 m	—
	RATED ambient temperature	40 °C	—
	Cooled to (temperature)	-- °C	—
Probe designation	Location	Comments	Verdict
--	The whole product	No damage, no hazard.	P
--	--	--	--
NOTE – After completion of the tests of 8.2 to 8.4 voltage tests in acc. to 6.5.2.5.1.1 b) or 6.5.2.6 b) must be performed (see Table A.12).			
Supplementary information:			

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Clause	Requirement – Test			Result – Remark		Verdict
9.	Temperature Measurements			Table A.15		P
9.1	Surface temperature limits - NORMAL CONDITION and / or SINGLE FAULT CONDITION					P
9.2	Temperature tests					P
10.1	Integrity of SPACINGS					N/A
Operating conditions:						
Frequency..... :	Hz	Test room ambient temperature (t_a)..... :		23.1 °C		
Voltage..... :	V	Test duration..... :		2 h	30 min	
Part / Location	t_m [°C]	t_c [°C]	t_{max} [°C]	Verdict	Comments	
Probe body	31.7	48.6	70	P		
Cable	26.8	43.7	75	P		
Connector (To equipment)	26.9	43.9	70	P		
NOTE 1 - t_m = measured temperature t_c = t_m corrected ($t_m - t_a + 40$ °C or max. RATED ambient temperature) t_{max} = maximum permitted temperature						
NOTE 2 - See also 12.1 with reference to component operating conditions						
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this table						
NOTE 4 - The tests of 6.7.4.2 to 6.7.4.4 are performed before temperature tests.						
NOTE 5 - SPACINGS must fulfil the requirements of 6.5 (see Table A.11).						
NOTE 6 - Voltage test of 6.6 (without humidity preconditioning) has to be performed after temperature tests (see Table A.12).						
NOTE 7 - According to 4.4.4.3 for SINGLE FAULT CONDITION probe assembly must be covered by cheesecloth and placed on a white tissue-paper covering a softwood surface and covering the probe assembly with cheesecloth.						
Supplementary information:						

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

10.2	Resistance to heat of non-metallic ENCLOSURES		Table A.16	P
	Non operative treatment	Yes		—
	Empty ENCLOSURE	No		—
	Measured temperature of ENCLOSURE (see 10.1)	/ °C		—
	Storage temperature during tests	/ °C		—
	Description	Material	Comments	Verdict
	Probe assembly	Silicone		P

NOTE – Not energized probe assembly or empty ENCLOSURE must be stored for 7 h.

NOTE – SPACINGS must fulfil the requirements of 6.5 (see Tables A.8 and A.11).

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

12.3.4	Tests for resistance of insulation to cracking						Table A.20	N/A
	Pre-heated air oven temperature		°C		1 h		—	
	Cooled to (chamber temperature) ¹		°C		4 h		—	
	Test site altitude / Test voltage correction factor		m		/		—	
Samples	Wire outer diameter [mm]	Mandrel diameter [mm]	Cracks visible Yes / No	CAT II / III / IV	RATED voltage [V]	Test voltage ² a.c./d.c./peak [V]	Comments	Verdict
1) pre-heated								
2) pre-heated								
3) cooled off								
4) cooled off								

¹ After conditioning of two samples in a cold chamber, the windings must be completed within 30 s.
² After completion of the tests, the applicable voltage tests in acc. to 6.5.2.5.1.1 b) or 6.5.2.6 b) must be performed. For other than 2000 m test site altitudes, the correction factors of Table 11 must be applied.

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

12.3.5	Voltage test								Table A.21	N/A
	Pre-heated temperature in a circulating air oven						°C	1 h		—
	Cooled to room temperature duration time						h			—
	Test site altitude / Test voltage correction factor (see Table 11).....						m /			—
Samples	Wire outer diameter [mm]	Mandrel diameter [mm]	CAT II / III / IV	RATED voltage a.c. / d.c. [V]	Test voltage ¹ a.c. / d.c. [V]	Dielectric breakdown voltage [V]	Average of dielectric breakdown [V]	Oven-aged ² not less than 50 % Yes / No	Comments	Verdict
1) Unaged								—		
2) Unaged								—		
3) Unaged								—		
1) Oven-aged										
2) Oven-aged										
3) Oven-aged										
¹ The voltage tests in acc. to 6.5.2.5.1.1 b) or 6.5.2.6 b) must be applied. After 1 min at the specified test voltage, the test voltage is increased at a rate of max. 500 V/s until dielectric breakdown. For other than 2000 m test site altitudes, the correction factors of Table 11 must be applied.										
² The average dielectric breakdown value of oven-aged samples must not be less than 50 % of the average breakdown value of unaged samples.										
Supplementary information:										

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

12.3.6	Tensile Test					Table A.22	N/A	
12.3.6.4	Cross-sectional area of one sample with a round shape.....:				mm ²	—		
12.3.6.5	Temperature of preheated circulating air oven.....:				°C	—		
12.3.6.6	Test room ambient temperature (t _a).....:				°C	—		
	Rate of tensile velocity.....:				mm/min	—		
Samples ¹	Tensile force ² maximum value [N]	Elongation distance at breaking point [mm]	Tensile strength median value		Elongation median value		Comments	Verdict
			Calculated [N/mm ²]	Required [N/mm ²]	Calculated [mm]	Required [%]		
1) Unaged				≥ 7		≥ 100		
2) Unaged								
3) Unaged								
4) Unaged								
5) Unaged								
1) Oven-aged				≥ 70 % of median value of unaged samples		≥ 45 % of median value of unaged samples		
2) Oven-aged								
3) Oven-aged								
4) Oven-aged								
5) Oven-aged								

¹ One test result for the 5 aged and one test result from 5 unaged samples can be ignored.

² The centre 20 mm of the sample must be marked immediately before the tensile test.

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

13.2	Exposed conductive parts	Table A.23	P
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PROBE TIP ¹ designation	Location	Distances of SPRING-LOADED CLIPS				Distances except for SPRING-LOADED CLIPS						Comments	Verdict
		CAT III or IV				CAT III or IV		no CAT		CAT II / others			
		Closed [mm]	Required [mm]	Open [mm]	Required [mm]	Exposed [mm]	Required [mm]	Exposed [mm]	Required [mm]	Exposed [mm]	Required [mm]		
	Probe tip	--	≤ 4	--	≤ 10	--	≤ 4	--	≤ 80	--	≤ 19	--	P

¹ The outer surfaces of SPRING-LOADED CLIPS with more than one hook or jaw is not conductive.

NOTE 1 – Spring-loaded parts that cover the conductive part of a PROBE TIP must be retracted before the measurements are made.

NOTE 2 – Moving parts other than spring-loaded parts which change the RATING and the markings of the probe assembly must be evaluated in each position.

NOTE 3 – Removable parts which change the RATING and the markings of the probe assembly must be removed.

Supplementary information:

IEC 61010-031			
Clause	Requirement – Test	Result – Remark	Verdict

TABLE 1: List of critical components relied on for safety					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conTableity ¹⁾
Probe body	RISHABH	PP-704	V-0, 120°C	UL 94	UL 16708
--	--	--	--	--	--
- Description:					
¹⁾ Provided evidence ensures the agreed level of compliance. See OD-CB2039.					
Supplementary information:					



TEST REPORT IEC 61010-2-033 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use Part 2-033: Particular Requirements for Hand-Held Multimeters for Domestic and Professional Use, Capable of Measuring Mains Voltage	
Report Number.....:	See cover page
Date of issue.....:	See cover page
Total number of pages.....:	See cover page
Name of Testing Laboratory preparing the Report.....:	See cover page
Applicant's name.....:	See cover page
Address.....:	See cover page
Test specification:	
Standard.....:	IEC 61010-2-033:2023 used in conjunction with IEC 61010-1:2010/AMD1:2016/COR1:2019
Test procedure.....:	Test Report
Non-standard test method.....:	N/A
Test Report Form No.:	IEC61010_2_033B
Test Report Form(s) Originator:	UL(US)
Master TRF.....:	2020-03-20
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Test item description :	See page 2	
Trade Mark(s)	See page 2	
Manufacturer	See page 2	
Model/Type reference	See page 2	
Ratings	See page 2	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	See page 2
Testing location/ address :		See page 2
Tested by (name, function, signature) :		See page 2
Approved by (name, function, signature) ... :		See page 2
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	
Testing location/ address :		
Tested by (name, function, signature) :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	
Testing location/ address :		
Tested by (name + signature)		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): Full tests (all clauses).	Testing location: Europe Ber (Guangdong) Testing Co., Ltd. 401 and 402, Building A, Tangxi Zhigu, No.21 Xijing Road, Gushu Community, Xixiang Street, Baoan District, Shenzhen
Summary of compliance with National Differences (List of countries addressed): N/A <input checked="" type="checkbox"/> The product fulfils the requirements of IEC 61010-2-033:2023.	
Statement concerning the uncertainty of the measurement systems used for the tests (may be required by the product standard or client) <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: Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing. <input checked="" type="checkbox"/> Statement not required by the standard used for type testing (Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)	

Copy of marking plate:

The artwork below may be only a draft.

See page 6 copy of marking plate for the details.

Test item particulars:	
Classification of installation and use: Hand-held measurement equipment and indoor use	
Supply Connection: Battery operated	
.....:	
Possible test case verdicts:	
- test case does not apply to the test object..... : N/A	
- test object does meet the requirement..... : P (Pass)	
- test object does not meet the requirement..... : F (Fail)	
Testing:	
Date of receipt of test item : See page 7	
Date (s) of performance of tests : See page 7	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 61010-2-033B:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : See page 7	
General product information and other remarks:	
See page 7	

IEC 61010-2-033			
Clause	Requirement – Test	Result - Remark	Verdict

5	Marking and Documentation		—
5.1.2	Identification	See Part 1 for the details	P
5.1.5.1	General		P
	If necessary for safety, indication of the purpose of TERMINALS, connectors, controls, and indicators are marked		P
	Where insufficient space, symbol 14 is used.		P
5.1.5.2	TERMINALS		N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior of the hand-held multimeter are marked with the voltage, current, charge or energy value or range, or;		N/A
	- marked with symbol 12 of Table 1		N/A
	aa) TERMINALS supplied from other TERMINALS which could be HAZARDOUS LIVE, with symbol 12 or 14 of Table 1		N/A
5.1.5.101	Measuring circuit TERMINALS		P
	Marked with rated voltage to earth		P
	Each pair or set of measuring circuit TERMINALS are marked with RATED voltage or current or both		P
	TERMINALS RATED for MAINS are marked “CAT III and/or “CAT IV”	CAT III	P
	Alternate markings are used for measuring circuit TERMINALS that do not exceed the levels of 6.3.1		P
	Markings are not used for dedicated measuring circuit TERMINALS, but a means for identification is provided		N/A
	TERMINALS markings are visible with connectors and TERMINALS mated		P
5.2	Warning markings		P
	Warning markings are visible in NORMAL USE		P
	Warning marking is placed on or near the particular part		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	See the outside enclosure.	P
	b) Symbols or text moulded, stamped or engraved in material min. 2,0 mm high		N/A
	0.5 mm depth or raised if not contrasting in colour		N/A
	If necessary, marked with symbol 14		P
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
5.4.1	Hand-held multimeter is accompanied by documentation for safety purposes in an accepted language for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation in a selected language for service personnel authorized by the manufacturer		P
	aa) indication that probe assemblies are appropriately RATED for MEASUREMENT CATEGORY III or IV and have a suitable voltage RATING for the circuit to be measured		P
	bb) information about each relevant MEASUREMENT CATEGORY (see 5.1.5.101)		P
	If the hand-held multimeter has multiple MEASUREMENT CATEGORY RATINGS, the documentation clearly identifies MEASUREMENT CATEGORIES where the hand-held multimeter may be used or must not be used		N/A
6	PROTECTION AGAINST ELECTRIC SHOCK		—
6.5.1	General		P
	ACCESSIBLE parts are prevented from becoming HAZARDOUS LIVE by the primary means of protection and supplemented by one of: :		P
	a) SUPPLEMENTARY INSULATION (see 6.5.3)		N/A
	b) Current or voltage limiting device (see 6.5.6)		N/A
	c) REINFORCED INSULATION (see 6.5.3)		P
	d) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.6	Connections to external circuits		P
6.6.101	Measuring circuit TERMINALS		P
	Conductive parts of unmated measuring circuit TERMINAL are separated by at least :		—
	a) For TERMINALS with voltage RATING up to 1000Va.c. or 1500Vd.c. the applicable CLEARANCE AND CREEPAGE DISTANCE of Table 101		P
	b) For TERMINALS with voltage RATING exceeding 1000Va.c. or 1500Vd.c., 2.8mm for the CLEARANCE and CREEPAGE DISTANCE.		N/A
	These TERMINALS also withstand the voltage test of 6.8 with voltage equal to the RATED voltage of TERMINAL multiple by 1.25		P
6.6.102	Specialized measuring circuit TERMINALS		P
	Components, sensors, and devices for connecting to specialized measuring circuit TERMINALS are not both ACCESSIBLE and HAZARDOUS LIVE, in either NORMAL CONDITION or SINGLE-FAULT CONDITION		P
	Accessible parts did not exceed the levels of 6.3.1 and 6.3.2..... :	See appended Table 6.6.102	P
6.7.1.3	CREEPAGE DISTANCES		P

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Clause	Requirement – Test	Result - Remark	Verdict
	CREEPAGE DISTANCES according to material group I used		P
	CREEPAGE DISTANCES according to material group I used for the insulating materials of the TERMINALS connected only to a hand-held probe assembly complying with Part 031		P
6.7.1.5	Requirements for insulation according to type of circuit		P
	f) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V		P
	g) 6.7.3 secondary circuits separated from circuits defined in a) by transformer		P
	h) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V		P
	i) K.2 secondary circuits separated from circuits defined in c) by transformer		N/A
	j) K.3 circuits having one or more of:		—
	1) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	2) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	3) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	4) WORKING VOLTAGE with a frequency above 30 kHz		N/A
	5) MEASURING CATEGORY do not apply to MEASURING CIRCUIT		N/A
	k) K.101 for measuring circuits MEASUREMENT CATEGORY II AND IV		N/A
6.9.101	Hand Held multimeter RATINGS		P
	Measuring circuit TERMINALS are RATED min. 300 V a.c. r.m.s. to earth, and;		P
	MEASUREMENT CATEGORY III or IV.	III	P
	The RATED voltage of measuring circuit TERMINALS is equal to or higher than the RATED voltage to earth		P
14	Components and subassemblies		—
14.101	Probe assemblies and accessories		P
	Probe assemblies and accessories within the scope of IEC 61010-031, and current sensors within the scope of IEC61010-2-032.		P
	Probe assemblies and accessories meet IEC 61010-031..... :		P
101	Measuring circuits		—
101.1	General		P

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Clause	Requirement – Test	Result - Remark	Verdict
	The hand-held multimeter provides protection against HAZARDS resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE as specified below		—
	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)		P
	b) Electrical quantity for any TERMINAL does not cause a HAZARD when it is applied to compatible TERMINAL in any possible manner (see 101.3)		P
	c) Any interconnection does not cause a HAZARD even if the documentation or markings prohibit the interconnection (see 6.6)		P
	d) Other HAZARDS results from REASONABLY FORESEEABLE MISUSE are addressed by RISK assessment (see Clauses 16 and 17)		P
	e) A TEMPORARY OVERVOLTAGE or a TRANSIENT OVERVOLTAGE applied on the measuring circuit TERMINALS does not cause a HAZARD		P
101.2	Current measuring circuits		P
	When range changing takes place, there is no interruption which could cause a HAZARD	See appended Table 101.2	P
	Current transformers without internal protection are adequately protected from interruption.....	See appended Table 101.2	P
101.3	Protection against mismatches of inputs and ranges		P
101.3.1	No HAZARD arises when the highest RATED voltage or current is applied to any compatible TERMINAL		P
	TERMINALS that are not similar types or TERMINALS that can be accessed only by use of a tool do not need to meet 101.3.1		N/A
	The hand-held multimeter provides one of the following protections against HAZARDS.....		—
	a) Use of certified overcurrent protection device (see 101.3.2), or;		P
	b) Use of uncertified current limitation device, impedance, or combination of both (see 101.3.3)		N/A
101.3.2	Protection by a certified overcurrent protection device	See appended Table 101.3.2	P
	Overcurrent protection device certified by an independent laboratory and all of the following requirements are met		P
	a) RATED at least as high as the highest a.c. and d.c. voltages of any measuring TERMINAL	1000Va.c.	P

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Clause	Requirement – Test	Result - Remark	Verdict
	b) The RATED time-current characteristic (speed) is appropriate to prevent HAZARD from any possible combination of input voltages, TERMINALS, and range selection		P
	c) RATED breaking capacities exceed the possible a.c. and d.c. short-circuit currents	1A; 10A	P
	Additionally, spacings surrounding the overcurrent protection device are sufficiently large to prevent arcing		N/A
101.3.3	Protection by uncertified current limitation devices or by impedances	Approved fuse used.	N/A
	Devices are capable of safely withstanding, dissipating, or interrupting the energy in the case of REASONABLY FORESEEABLE MISUSE		N/A
	An impedance used for limitation of current meets one or more of the following		N/A
	a) Single component is constructed, selected, and tested for protection against relevant HAZARDS		N/A
	1) the component is 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, it is RATED for twice the power dissipation that may result in NORMAL CONDITION or from the REASONABLY FORESEEABLE MISUSE event;		N/A
	3) meets the applicable CLEARANCE and CREEPAGE requirements of Annex K for BASIC INSULATION		N/A
	b) A combination of components		N/A
	1) withstands the max. voltage that may be present in NORMAL CONDITION or during the REASONABLY FORESEEABLE MISUSE event;		N/A
	2) is able to dissipate the power that may result in NORMAL CONDITION or from the REASONABLY FORESEEABLE MISUSE event;		N/A
	3) meets the applicable CLEARANCE and CREEPAGE requirements of Annex K for BASIC INSULATION		N/A
101.3.4	Test leads for the tests of 101.3.2 and 101.3.3		P
	Test leads specified by the manufacturer are used		N/A
	If the manufacturer has not specified the test leads, tests performed with test leads that meet the following specifications		N/A
	a) length = 1 m;		N/A
	b) cross section of the conductor = 1,5 mm ² , stranded copper wire;		N/A
	c) hand-held multimeter connector compatible with the measuring circuit TERMINALS;		P

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Clause	Requirement – Test	Result - Remark	Verdict
	d) connection to the test voltage source via bare wire into suitable screw TERMINALS or thimble connectors (twist-on wire connectors) or equivalent means of providing a low impedance connection;		N/A
	e) arranged as straight as possible;		N/A
	Permanently connected test leads supplied by the manufacturer are used without modification		N/A
101.4	Protection against MAINS overvoltages		P
	Minimum CLEARANCE and CREEPAGE equivalent to BASIC INSULATION between MAINS -connected conductive parts of opposite polarity		P
	Measuring circuit TERMINALS of a voltage measuring circuit withstand the applicable TRANSIENT OVERVOLTAGE with the voltage measurement function selectors set for the proper function and range, without damage which could cause a HAZARD..... :	See appended Table 101.4	P
	Impulse voltage applied while circuit working under conditions of NORMAL USE in combination with the MAINS voltage		P
	No HAZARD arise. No flashover of CLEARANCE or breakdown of solid insulation occurs during the test.		P
	Partial discharge indicated by a step in the resulting wave occur earlier successive impulse.		P
102	Indicating devices		P
102.1	General		P
102.2	Battery Level		N/A
	A voltage value displayed by the hand-held multimeters is not affected by the expected variation of its battery voltage :	See appended Table 102.2	N/A
102.3	Over-range		N/A
	The display gives unambiguous indication of over-range value :	See appended Table 102.3	N/A
102.4	Permanent overvoltage		P
	The hand-held multimeter is able to withstand permanent overvoltages and continue to give an unambiguous indication of any HAZARD LIVE voltages up to the max. RATED voltage..... :	See appended Table 102.4	P
	The value of overvoltage applied to the TERMINALS is based on the TERMINALS' RATED voltage (V) :		—
	a) RATED voltage up to 1 000V a.c. r.m.s. the overvoltage value is RATED voltage multiplied by 1.9 without exceeding 1 100V a.c. r. m. s.;		P
	b) RATED voltage above 1 000 Va.c. r. m. s., the overvoltage value is the RATED voltage multiplied by 1.1;		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
	c) RATED voltage d.c., the overvoltage value is the RATED voltage multiplied by 1.1.		P
Annex K.3	INSULATION FOR CIRCUITS NOT ADDRESSED IN 6.7, K.1, K.2 OR K.101		—
K.101	Insulation requirements for measuring circuits of MEASUREMENT CATEGORIES III and IV		N/A
K.101.1	General		N/A
K.101.2	CLEARANCES		N/A
	For hand-held multimeter intended to be powered from the circuit being measured, CLEARANCES for MAINS CIRCUIT are designed according to the requirements of the RATED MEASUREMENT CATEGORY		N/A
	Additional marking requirements in 5.1.5.2 and 5.1.5.101		N/A
	CLEARANCES for measuring circuits of MEASUREMENT CATEGORIES II, III, IV meet Table K.101		N/A
	Hand-held multimeter rated to operate at an altitude greater than 2000 m, correction factor of Table K.1 of 61010-1 applied		N/A
	Voltage tests of 6.8.3.1 or 6.8.3.3 of 61010-1		N/A
K.101.3	CREEPAGE DISTANCES		N/A
	The requirements of K.2.3 of 61010-1 applied		N/A
K.101.4	Solid insulation		N/A
K.101.4.1	General		N/A
K.101.4.1.1	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 hand-held multimeter	See appended Table K.101.4	N/A
	The manufacturer should take the expected life of the hand-held multimeter into account when selecting insulating materials.		N/A
K.101.4.1.2	Test voltage values for testing the long-term stress of solid insulation are calculated	See appended Table K.101.4	N/A
K.101.4.1.3	Solid insulation also meets the following requirements as applicable		N/A
	a) solid insulation used as an ENCLOSURE or PROTECTIVE BARRIER, the requirements of Clause 8		N/A
	b) moulded and potted parts, the requirements of K.101.4.2		N/A
	c) insulating layers of printed wiring boards, the requirements of K.101.4.3		N/A
	d) thin-film insulations, the requirements of K.101.4.4		N/A

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Clause	Requirement – Test	Result - Remark	Verdict
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.105		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 is separated by at least the applicable minimum distance of Table K.105.		N/A
	REINFORCED INSULATION have adequate electric strength; one of the following methods are used:		N/A
	a) thickness at least the applicable value of Table K.105.		N/A
	b) insulation is assembled from at least two separate layers, each RATED for test voltage of Table K.102 to K.103 for BASIC INSULATION		N/A
	c) insulation is assembled from at least two separate layers, where the combination is RATED for test voltage of Table K.102 to K.103 for REINFORCED INSULATION		N/A
K.101.4.4	Thin-film insulation		N/A
	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
	REINFORCED INSULATION have adequate electric strength; one of the following methods are used:		N/A
	a) thickness at least the applicable value of Table K.105		N/A
	b) insulation consists of at least two separate layers, each RATED for test voltage of Table K.102 to Table K.10 for BASIC INSULATION		N/A
	c) insulation consists of at least three separate layers, where the combination of two layers passed adequate voltage tests		N/A
	a.c. Voltage tests of K.101.4.1.1		N/A

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Clause	Requirement – Test	Result - Remark	Verdict

6.6.101/K.101.2/ K.101.3	TABLE: CLEARANCES and CREEPAGE DISTANCES for measuring circuits and terminals with HAZARDOUS LIVE part				P
Location/ Terminal/Rated Voltage (ac or dc)	Required		Measured		Location/ Terminal mm
	CREEPAGE DISTANCE	CLEARANCE DISTANCE	CREEPAGE DISTANCE	CLEARANCE DISTANCE	
	mm	mm	mm	mm	
Between terminal and enclosure/ 1000Vac/ 1000Vdc	14.3	14.3	18.0	18.0	Between terminal and enclosure, 18mm
Supplementary information:					

6.6.102 (6.3.1)	TABLE: Values in NORMAL CONDITION				P
Accessible parts	Voltage r.m.s./peak/d.c. (V)	Current, (mA)		Capacitance	Comments
		Test circuit A1/A2/A3	r.m.s./ or peak/or d.c.	μC or mJ	
To test reference earth	199.0Vpeak	A1	0.042mApeak	--	Wrapped metal foil, 600Vac
Supplementary information:					

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Clause	Requirement – Test	Result - Remark	Verdict

6.6.102 (6.3.2)			TABLE: Values in SINGLE FAULT CONDITION					P
Accessible parts	Sub-clause/ Fault No.	Voltage r.m.s./ peak/d.c. (V)	Transient		Current; (mA)		Capacitance (µF)	Comments
			(V)	(s)	Test circuit A1/A2/A3	r.m.s. or peak or d.c.		
To test reference earth	Short circuit D6	190Vpeak	—	—	A1	0.048 mApeak	—	Wrapped metal foil, 600V ac
See above	Short circuit U2	190Vpeak	—	—	A1	0.048 mApeak	—	Wrapped metal foil, 600V ac
See above	Short circuit R23	190Vpeak	—	—	A1	0.048 mApeak	—	Wrapped metal foil, 600V ac
See above	Open circuit R53	190Vpeak	—	—	A1	0.048 mApeak	—	Wrapped metal foil, 600V ac
See above	Short circuit Q1	190Vpeak	—	—	A1	0.048 mApeak	—	Wrapped metal foil, 600V ac

NOTE - Required values are determined by calculation for Reinforce Insulation. Transients are not taken into account.

Supplementary information:

Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of IEC 61010-1.

6.9.101	TABLE: HAND-HELD MULTIMETER RATINGS				P
Measuring Terminal	Rated Voltage (V)		Measured Voltage		Comments
	AC	DC	AC	DC	
V-COM	1000	1000	999V	999V	Min. 1000V [X] Yes [] No Min. CAT II [X] Yes [] No

Supplementary information:

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Clause	Requirement – Test	Result - Remark	Verdict

101.2	TABLE: Current measuring circuits - Current transformers				N/A
Type/Model	RATED current (A)	Test current (A)	Interrupt Yes / No	Result / Comments	
NOTE - These tests are performed with all types and models of current transformers without internal protection, and which are specified by the manufacturer for use with the hand-held multimeter					
Supplementary information:					

101.3.2	TABLE: Certified overcurrent protection device test					P
Type / Model / Terminal	Max. rated Voltage (V)	Test Voltage (V)	Test leads		Verdict	Comments
			Mfr.	Std.		
V-COM	1000Va.c.	600Va.c.	--	--	Pass	
NOTE 1: Test voltage = 2 times max. rated Voltage for 1 min.						
NOTE 2: Mfr – Manufacturer supplied leads						
Std. – Leads as described in 101.3.4						
Supplementary Information:						

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Clause	Requirement — Test	Result — Remark	Verdict

101.4	TABLE: Protection against MAINS overvoltages									P
Component / Designation	Overvoltage Category	MAINS voltage V r.m.s.	Test voltage V	t_m °C	t_c °C	t_{max} °C	Rupture Yes / No	Circuit breaker tripped	Comments	
--	--	--	--	--	--	--	--	--	--	
Test room ambient temperature :		__23.5__ °C								
NOTE - t_m = measured temperature $t_c = t_m$ corrected ($t_m - t_a + 40$ °C or max. RATED) t_{max} = maximum permitted temperature Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand voltage, spaced up to 1 min apart, from a hybrid										
Supplementary information:										

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Clause	Requirement – Test	Result - Remark	Verdict
102.2	TABLE: Battery level indication		N/A
Measuring Terminal	Applied Voltage	Contents of Display	Comments
	60 Va.c. r.m.s		
	120 V d.c.		
Supplementary information:			

102.3	TABLE: Over-range indication			P
Measuring terminal	Applied Voltage/Frequency	Contents of Display	Comment	
V-COM	1005VAC, 50Hz	At 1005 the display indicated overload. OL	Pass	
V-COM	1005VDC	Display showed actual voltage value do not overload	Pass	
A-COM	10.1A DC	Display did not go into an overload condition	Pass	
<p>NOTE- Examples of ambiguous indications include the following, unless there is a separate unambiguous indication of an over-range value:</p> <p>a) analogue multimeters with stops at the exact ends of the range;</p> <p>b) digital multimeters which show a low value when the true value is above the range maximum (for example 1001,5V displayed as 001,5V)</p>				

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Clause	Requirement — Test	Result — Remark	Verdict

102.4	TABLE: Permanent overvoltage indication					N/A
Measuring terminal	Applied Voltage/Frequency	Contents of Display	AFTER OVERVOLTAGE HAS BEEN APPLIED, APPLIED BELOW VOLTAGE IN TURN	Contents of Display	Comment	
--	--	--	[]60Vac or []120Vdc Max Rated voltage: __V ac/dc	--	--	
			[]60Vac or []120Vdc Max Rated voltage: ____V ac/dc			
			[]60Vac or []120Vdc Max Rated voltage: ____V ac/dc			
			Max Rated voltage: ____V ac/dc			
			[]60Vac or []120Vdc			
Supplementary information:						

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Clause	Requirement – Test	Result - Remark	Verdict

K.101.4	TABLE: Solid insulation (Dielectric strength tests)					N/A
Location	Clause or sub-clause	Working voltage V	Test voltage r.m.s./peak/d.c.	Test duration	Results / Comments	
Supplementary information:						

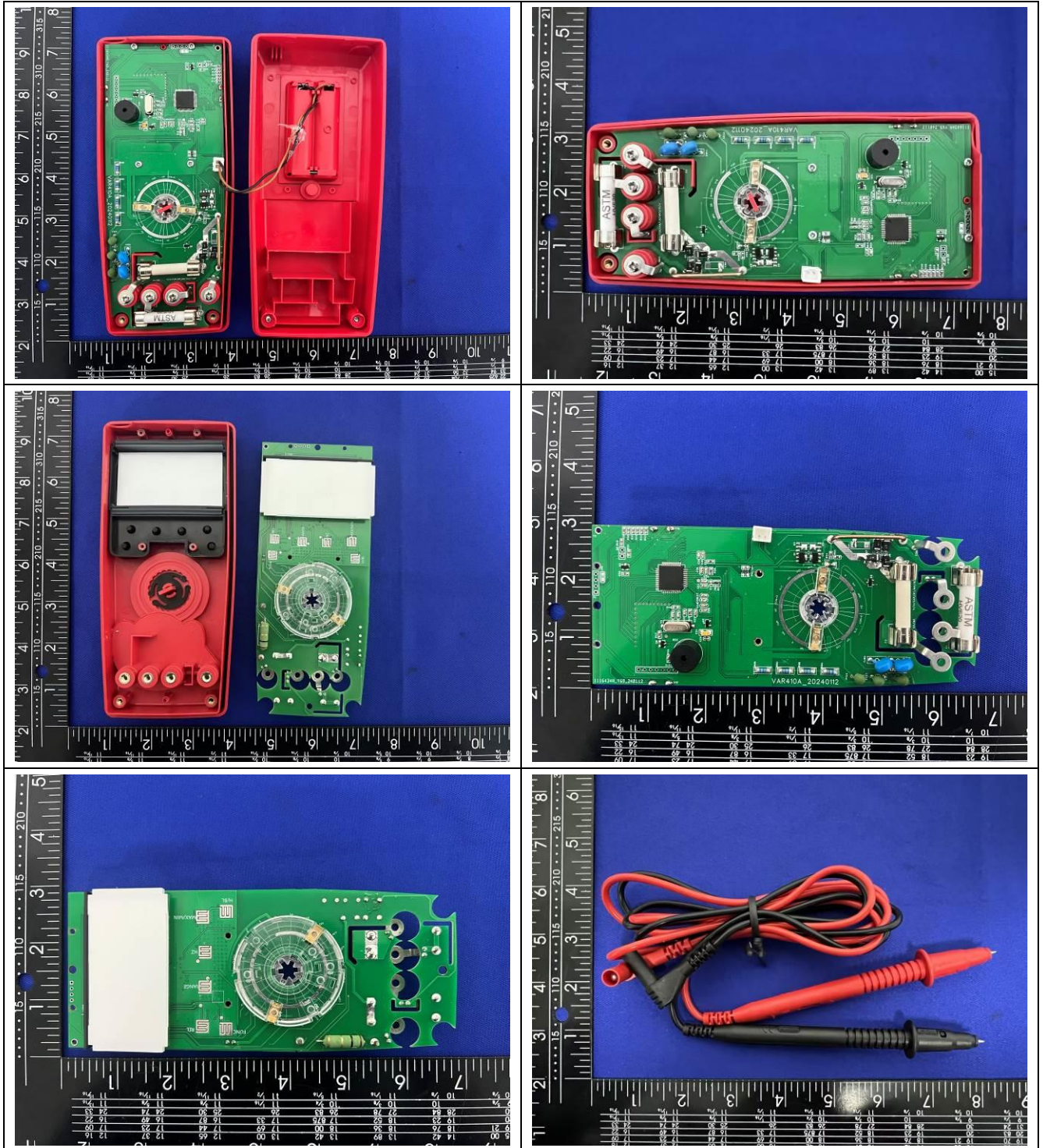
TABLE: Critical components information					P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾
PCB	Interchangeable	Interchangeable	V-0, 130°C	UL 796	UL
Plastic part of display LCD Cover	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329
Battery	Interchangeable	IEC R6/LR6	2×1.5V AA	—	—
Battery cover	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329
Voltage Terminal inside the enclosure (Terminal Cover)	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329

IEC 61010-2-033					
Clause	Requirement – Test			Result - Remark	Verdict
Bottom Housing DMM	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329
DMM Knob	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329
Top Housing DMM	SABIC INNOVATIVE PLASTICS B V	Cycoloy C2950HF	Flame Rated V-0, min. 1.5mm thickness, Refer Battery Cover Drawing for L×B×D	UL 94	UL E45329
Fuse	Hollyland Co., Ltd	6FF-1, 6FF(P)-1	600V, F1A	EN 60127-1, EN 60127-2	TUV/ J 50139804
Fuse	Advanced Surgetech Materials Ltd.	HV610	600V, 1A	EN 60127-1, EN 60127-2; UL 248-1, UL 248-14	TUV R 50428390 UL E355868
Fuse	Hollyland Co., Ltd	6FF	600V, F10A	EN 60127-1, EN 60127-2	TUV/ J 50139804
Fuse	Advanced Surgetech Materials Ltd.	HV610	600V, 10A	EN 60127-1, EN 60127-2; UL 248-1, UL 248-14	TUV R 50428390 UL E355868
- Description:					
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

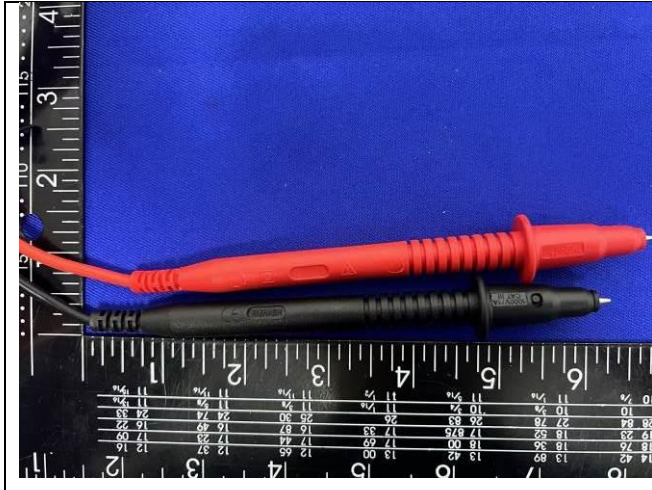
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Attachment: Photo Document



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None

---End of report---