

TEST REPORT	
EN 61010-1	
Safety requirements for electrical equipment for measurement, control, and laboratory use	
Part 1: General requirements	
EN 61010-2-030	
Safety requirements for electrical equipment for measurement, control, and laboratory use	
Part 2-030: Particular requirements for testing and measurement circuits	
EN 61010-031	
Safety requirements for electrical equipment for measurement, control, and laboratory use	
Part - 031: Safety requirements for hand-held probe assemblies for electrical measurement and test	
EN61010-2-033	
Safety requirements for electrical equipment for measurement, control, and laboratory use	
Part 2-033: Particular requirements for hand-held multimeters and other meters, for domestic and professional use, capable of measuring mains voltage	
Report Reference No.	: UK220609133S
Date of issue.....	: 2022-06-15
Total number of pages.....	: 140 pages
Testing Laboratory name	: U.K Standard Testing Co., Limited.
Address.....	: Building E, Nanpu Technology Innovation Center, Banshi, Changping,Dongguan, Guangdong, China.
Testing location.....	: Same as testing laboratory above
Applicant's name	: ZHANGZHOU WEIHUA ELECTRONIC CO.,LTD.
Address.....	: NO. 3 BEIDOU ROAD,BEIDOUIND. PARK, JINFENG IND. ZONE, ZHANGZHOU, FUJIAN, CHINA
Manufacturer's name	: ZHANGZHOU WEIHUA ELECTRONIC CO.,LTD.
Address.....	: NO. 3 BEIDOU ROAD, BEIDOU IND. PARK, JINFENG IND. ZONE, ZHANGZHOU, FUJIAN, CHINA
Test specification:	
Standard.....	: EN 61010-1:2010/A1:2019/AC:2019-04, EN IEC 61010-2-030:2021/A11:2021 EN 61010-031:2015/A1:2021/A11:2021 EN IEC 61010-2-033:2021/A11:2021
Test procedure.....	: Service of CE Marking in LVD
Procedure deviation.....	: N/A
Non-standard test method.....	: N/A
Test Object	
DESCRIPTION:	DIGITAL MULTIMETER
Trademark.....	: N/A
Model and/or type reference.....	: DT830B, DT831, DT832, DT830D, DT838, DT830E
Serial number.....	: N/A
Rating(s).....	: 3Vdc

U.K Standard Testing Co., Limited.

Building E, Nanpu Technology Innovation Center, Banshi, Changping,Dongguan, Guangdong, China.

Marking on front enclosure:



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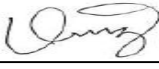
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Marking on rear enclosure:

Marking plate on test probe:



Test item particulars:	
Type of item	Measurement
Description of equipment function	Measured AC/DC current, AC/DC voltage, resistance, Diode, Transistor Hfe, Audible continuity test, Cable test operation.
Connection to MAINS supply	NA
Overvoltage category	I
POLLUTION DEGREE	2
Means of protection	Class II (isolated)
Environmental conditions	Normal
For use in wet locations	Standard (0C~40°C, <80%RH)
Equipment mobility	Portable / Hand-held
Operating conditions	Continuous Except for measuring current by induction at 10sec. each 15min.
Overall size of equipment (L x W x H)	125mm x 70mm x 24mm
Mass of equipment (kg)	Approx. 0.13kg
Marked degree of protection to IEC 60529	IP20 for normal operation
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	2022-06-05
Date (s) of performance of tests	2022-06-06 to 2022-06-15

Tested By : UlisMeng Signature: 	
Approved By : EddieMa Signature: 	
Summary of testing: The sample(s) tested comply with the requirements of : EN 61010-1:2010/A1:2019/AC:2019-04, EN IEC 61010-2-030:2021/A11:2021 EN 61010-031:2015/A1:2021/A11:2021, EN IEC 61010-2-033:2021/A11:2021	
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 Form A.xx are optional if used as record. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
General product information: All the models are identical except model no. The equipment covered by this report is Digital Multimeter, Measured DC current, AC/DC voltage, resistance, Diode, Transistor hFE, Cable test operation, battery voltage supply, it is a 3 1/2 digits, 1999 counts digital multimeter . GENERAL CHARACTERISTICS: Height above sea level: up to 2000m. Polarity Indication: "-" displayed automatically , Operation Temperature: 0°C to 40°C, less than 80%RH, Over-range Indication: "-" displayed, Low Battery Indication:  displayed, Range select: Manual Battery Type: 1pc of 9.0vdc with 1604E 6F22, Measuring category: CAT I, Measuring Rating: 500Va.c., 500V d.c.; 5A d.c. by probe at 10sec. each 15min.	

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
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)	—
4.4.2.2	PROTECTIVE IMPEDANCE	(see Form A.1)	N/A
4.4.2.3	PROTECTIVE CONDUCTOR		N/A
4.4.2.4	Equipment or parts for short-term or intermittent operation		N/A
4.4.2.5	Motors		N/A
	– stopped while fully energized		N/A
	– prevented from starting		N/A
	– one phase interrupted (multi-phase)		N/A
4.4.2.6	Capacitors	Such capacitors not used in motor.	N/A
4.4.2.7	MAINS transformers	No transformer used.	N/A
4.4.2.7.2	Short circuit		N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs	Battery output tested.	P
4.4.2.9	Equipment for more than one supply	Power supply by battery	N/A
4.4.2.10	Cooling	No cooling device used.	N/A
	– air holes closed		N/A
	– fans stopped		N/A
	– loss of cooling liquid		N/A
4.4.2.11	Heating devices	No heating device used.	N/A
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts	(see Form A.1)	P
4.4.2.13	Interlocks	No such interlocks used.	N/A
4.4.2.14	Voltage selectors	No such device used	N/A
4.4.3	Duration of tests		—
4.4.4	Conformity after application of fault conditions	(see Forms A.1; A.6, A.18)	P
5	MARKING AND DOCUMENTATION		P
5.1.1	Required equipment markings		P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	- Visible from the exterior; or	Marked on the outer surface of enclosure.	P
	- Visible after removing cover or opening door	After removing cover	P
	- Visible after removal from a rack or panel	Not a rack or panel mounted equipment.	N/A
	Not put on parts which can be removed by an operator	The battery polarity can be visible after removing the battery cover by an operator use of a screwdriver.	N/A
	Letter symbols (IEC 60027) used	Complied.	P
	Graphic symbols (IEC 61010-1: Table 1) used	(see “copy of marking plate”) Symbols 1, 2, 3,5, 11, 14 applied.	P
5.1.2	Identification		—
	Equipment is identified by:		P
	a) Manufacturer's or supplier's name or trademark	Manufacturer's trademark used :	P
	b) Model number, name or other means	Model: DT830B,DT831, DT832, D T830D, DT838, DT830E	P
	Manufacturing location identified	Only one factory.	N/A
5.1.3	MAINS supply	Powered by 9.0vdc with 1604E 6F22	N/A
	Equipment is marked as follows:		N/A
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies		N/A
	2) d.c. with symbol 1		N/A
	b) RATED supply voltage(s) or range		N/A
	c) Max. RATED power (W or VA) or input current		N/A
	The marked value not less than 90 % of the maximum value		N/A
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
	d) OPERATOR-set for different RATED supply voltages:	No operator set device used.	—
	Indicates the equipment set voltage		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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:		N/A
	With the voltage if it is different from the MAINS supply voltage		N/A
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		N/A
	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)	Fuse located inside unit	N/A
5.1.5	TERMINALS, connections and operating devices	Correct marking marked on individual connector, operation switches and buttons, also symbol 14 used	P
5.1.5.1	General		P
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked	Markings near probe connectors.	P
	If insufficient space, symbol 14 used		P
	Push-buttons and actuators of emergency stop devices and indicators:	No such devices used.	—
	used only to indicate a warning of danger or		P
	the need for urgent action		N/A
	coloured red		P
	coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		N/A
	to safety of persons; or		N/A
	safety of the environment		N/A
5.1.5.2	TERMINALS		P
	MAINS supply TERMINAL identified		N/A
	Other TERMINAL marking:		P
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	b) PROTECTIVE CONDUCTOR TERMINALS:		N/A
	Symbol 6 is placed close to or on the TERMINAL; or		N/A
	Part of appliance inlet		N/A
	c) TERMINALS of control circuits (symbol 7 used)		N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior	No such terminal used.	N/A
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.6	Switches and circuit breakers		P
	If disconnecting device, off position clearly marked		N/A
	If push-button used as power supply switch:	No push-button used as power supply.	N/A
	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	DOUBLE INSULATION	P
	Protected throughout (symbol 11 used)	Symbol 11 applied on product.	P
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes	No such devices used.	N/A
	If TERMINAL or ENCLOSURE exceeds 60 C:		N/A
	Cable temperature RATING marked :		N/A
	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings	Means of stamp or engrave used on rear enclosure.	P
	Visible when ready for NORMAL USE	Marked on product surface as shown on copy of marking plates.	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	Screen- silk with white color on front enclosure. Symbols: min. 2.5mm high Text: min. 1.5mm high.	P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and	Symbols and Text: min. 2.0mm high Means of stamp or engrave used.	P
	0,5 mm depth or raised if not contrasting in colour	Symbols and Text: min. 0,5 mm depth Means of stamp or engrave used.	P
	If necessary marked with symbol 14	Symbol 14 marked.	P
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted	Marked on battery cover.	P
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
	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	Name and address of manufacturer in the instruction.	P
	d) information specified in 5.4.2 to 5.4.6		P
	e) information to mitigate residual RISK (see also subclause 17)		P
	f) accessories for safe operation of the equipment specified	The test probes.	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		P
	h) instructions for lifting and carrying Weight less than 18Kg		N/A
	Warning statements and a clear explanation of warning symbols:		—

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Provided in the documentation; or		N/A
	Information is marked on the equipment		N/A
5.4.2	Equipment ratings		P
	Documentation includes:		—
	a) Supply voltage or voltage range	Powered by 9.0vdc with 1604E 6F22	P
	Frequency or frequency range.....	No such Frequency used.	N/A
	Power or current rating		N/A
	b) Description of all input and output connections in accordance to 6.6.1 a)		P
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)		P
	d) Statement of the range of environmental conditions (see 1.4)		P
	e) Degree of protection (IEC 60529) No rated IP degree		P
	f) if impact rating less than 5 J:		N/A
	IK code in accordance to IEC 62262 marked or		N/A
	symbol 14 of table 1 marked, with		N/A
	RATED energy level and test method stated		N/A
5.4.3	Equipment installation		P
	Documentation includes instructions for:		P
	a) assembly, location and mounting requirements	Interconnection of test probes.	P
	b) protective earthing		N/A
	c) connections to supply	Battery related instructions.	P
	d) PERMANENTLY CONNECTED EQUIPMENT:	No such equipment.	N/A
	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) special services (e. g. air, cooling liquid)		N/A
	g) instructions relating to sound level		N/A
5.4.4	Equipment operation		P
	Instructions for use include:		P
	a) identification and description of operating controls	Described in user manual	P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	b) positioning for disconnection		N/A
	c) instructions for interconnection	Operation and usage of test probes.	P
	d) specification of intermittent operation limits		N/A
	e) explanation of symbols used	Described in user manual	P
	f) replacement of consumable materials	Described in user manual	P
	g) cleaning and decontamination	Described in 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)		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	Described in user manual	P
5.4.5	Equipment maintenance and Service		P
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		P
	Instruction against the use of detachable MAINS supply cord with inadequate rating		N/A
	Specific battery type of user replaceable batteries	Powered by 9.0vdc with 1604E 6F22	P
	Any manufacturer specified parts	The test Probes	P
	Rating and characteristics of fuses	5A 500V for FUSE1, 500mA 500V for FUSE2	N/A
	Instructions include following subjects permitting safe servicing and continued safety:		P
	a) product specific RISKS may affect service personnel		P
	b) protective measures for these RISKS		P
	c) verification of the safe state after repair		P
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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.1	General		P
6.1.1	Requirements		—
	Protection against electric shock maintained in NORMAL CONDITION and SINGLE FAULT CONDITION	See clause 6.4 and 6.5.	P
	ACCESSIBLE parts not HAZARDOUS LIVE	See clause 6.2 and 6.3.	P
	Voltage, current, charge or energy below the limits in NORMAL CONDITION and in SINGLE FAULT CONDITION between:		—
	ACCESSIBLE parts and earth		P
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11	Complied	P
6.1.2	Exceptions		P
	Following HAZARDOUS LIVE parts may be ACCESSIBLE to an OPERATOR:		P
	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	The battery intended to be replaced by the skilled person, the battery compartment fixed by screws and the warning marking engraved in the battery cover (also see sub-clause 5.2).	N/A
	Those parts not HAZARDOUS LIVE 10 s after interruption of supply	(see Forms A.6)	N/A
	Capacitance test if charge is received from internal capacitor	(see Forms A.6 and A.7)	N/A
6.2	Determination of ACCESSIBLE parts	(see Form A.5)	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 opening used.	N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	- test pin with length of 100 mm and 4 mm in diameter applied		N/A
6.2.4	Openings for pre-set controls		N/A
	- test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.3	Limit values for ACCESSIBLE parts		P
6.3.1	Levels in NORMAL CONDITION		P
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 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
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz P		P
	for WET LOCATIONS measuring circuit A.4 used N/A		N/A
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies N/A		N/A
	or		N/A
	c) Levels of capacitive charge or energy less: N/A		N/A
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3 N/A		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.2	Levels in SINGLE FAULT CONDITION		P
	a) Voltage limits less than 55 V r.m.s. and 78 V peak or 140 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.		P
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 3,5 mA r.m.s. for sinusoidal, 5 mA peak non sinusoidal or mixed frequencies or 15 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz P for WET LOCATIONS measuring circuit A.4 used		N/A
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	or		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		P
	a) ENCLOSURES or PROTECTIVE BARRIERS(see 6.4.2)	Plastic enclosure with reinforced insulation.	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 Form A.15)	P
	- meet rigidity requirements of 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		N/A
	- meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		N/A
6.4.4	Impedance		N/A
	Impedance used as primary means of protection meets all of following requirements:		—
	a) limits current or voltage to level of 6.3.2		N/A
	b) RATED for maximum WORKING VOLTAGE and the amount of power it will dissipate		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of BASIC INSULATION of 6.7		N/A
6.5	Additional means of protection in case of SINGLE FAULT CONDITION		P
6.5.1	ACCESSIBLE parts are prevented from becoming HAZARDOUS live by the primary means of protection and supplemented by one of:		P
	a) PROTECTIVE BONDING (see 6.5.2)		N/A
	b) SUPPLEMENTARY INSULATION (see 6.5.3)		N/A
	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:		P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	e) REINFORCED INSULATION (see 6.5.3)		P
	f) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.5.2	PROTECTIVE BONDING		N/A
6.5.2.1	ACCESSIBLE conductive parts, may become HAZARDOUS LIVE in SINGLE FAULT CONDITION:		N/A
	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		N/A
	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:		N/A
	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
	exempted as removable part carries MAINS SUPPLY input connection		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:		N/A
	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:		N/A
	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		N/A
	a) Contact surfaces are metal N/A b) Appliance inlet used		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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:		N/A
	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:		N/A
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A
	h) PROTECTIVE CONDUCTOR of measuring circuit:		N/A
	1) Current RATING equivalent to measuring circuit TERMINAL;		N/A
	2) PROTECTIVE BONDING:		N/A
	Not interrupted; or		N/A
	i) FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
	j) If a binding screw used for PROTECTIVE CONDUCTOR TERMINAL:		N/A
	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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.5.2.5	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT	(see Form A.10)	N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen	(see Form A.11)	N/A
	Transformer provided with screen for PROTECTIVE BONDING:		N/A
	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:		N/A
	- Independently secured against loosening		N/A
	- Not used for other purposes		N/A
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION	Plastic enclosure used as 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 and Form A.12)	—
	a) appropriate single component suitable for safety and reliability for protection, it is:		N/A
	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.12)	N/A
	Device complies with all of:		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7	(see Form A.14, A.15)	N/A
6.6	Connections to external circuits		P
	6.6.1 Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		P
	- the external circuits		P
	- the equipment		P
	Protection achieved by separation of circuits; or	P	P
	short circuit of separation does not cause a HAZARD		P
	Instructions or markings for each terminal include:		P
	a) RATED conditions for	TERMINAL CAT I ,500V	P
	b) Required RATING of external circuit insulation		N/A
6.6.2	TERMINALS for external circuits		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		N/A
	These circuits are:		N/A
	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	ACCESSIBLE terminals for stranded conductors		N/A
	No RISK of accidental contact because:		N/A
	Located or shielded		N/A
	Self-evident or marked whether or not connected to ACCESSIBLE conductive parts		N/A
	ACCESSIBLE TERMINALS will not work loose		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.7	Insulation requirements	(see Form A.14)	P
6.7.1	The nature of insulation		P
6.7.1.1	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD P		P
6.7.1.2	CLEARANCES		P
	Required CLEARANCES reflecting factors of 6.7.1.1	(see Form A.14, A.15)	P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied	Up to 2000m only.	N/A
6.7.1.3	CREEPAGE DISTANCES		P
	Required CREEPAGE DISTANCES reflecting factors of 6.7.1.1 a) to d) (see Form A.14, 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 Form A.14, A.15)	P
6.7.1.5	Requirements for insulation according to type of circuit	(see Form A.14, A.15)	N/A
	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		N/A
	d) K.2 secondary circuits separated from circuits defined in c) by transformer		N/A
	e) K.3 circuits having one or more of:		N/A
	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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
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 Form A.14, A.15)	N/A
	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	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of with values of 6.8.3 Table 5	(see Form A.19)	
	Complies as applicable:		N/A
	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		N/A
	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		N/A
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	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		N/A
	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 following methods used:		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	a) thickness through the insulation at least 0,4 mm		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for REINFORCED INSULATION	(see Form A.19)	N/A
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V		N/A
6.7.3.1	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	- REINFORCED INSULATION		N/A
	- DOUBLE INSULATION		N/A
	- screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		N/A
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of Table 6 for REINFORCED INSULATION		N/A
	or		—
	b) pass the voltage tests of 6.8 with values of Table 6; with following adjustments: (see Form A.19)		N/A
	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		N/A
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION		N/A
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
6.7.3.4	Solid insulation		N/A
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	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.19)	N/A
	values for REINFORCED INSULATION are 1,6 times the values of BASIC INSULATION		
	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.19)	N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		N/A
	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		N/A
	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		N/A
	Separated by at least by applicable distances of Table 8 between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min two separate layers, where the combination is RATED for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:	(see Form A.19)	N/A
	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 dielectric strength tests		P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	If a failure could cause a HAZARD:		P
	a) Security of wiring connections	By connector for battery.	P
	b) Screws securing removable covers	The fixing screws length does not determine the clearance, creepage between hazardous live parts and accessible parts	P
	c) Accidental loosening		P
	d) CLEARANCES and CREEPAGE DISTANCES not reduced below the values of basic insulation by loosening of parts or wires		P
6.9.2	Insulating materials		P
	Material not to be used for safety relevant insulation:	See below.	P
	a) Easily damaged materials not used	Such materials not used.	P
	b) Non-impregnated hygroscopic materials not used	Such materials not used.	P
6.9.3	Colour coding	No such colour coding used	N/A
	Green-and-yellow insulation shall not be used except:		N/A
	a) protective earth conductors;		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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	Powered by 9.0vdc with 1604E 6F22	N/A
6.10.1	MAINS supply cords Powered by one 9V battery		P
	RATED for maximum equipment current (see 5.1.3 c)		P
	Cable complies with IEC 60227 or IEC 60245		P
	Heat-resistant if likely to contact hot parts		P
	Temperature RATING (cord and inlet):		P
	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		N/A
	a) Inlet or bushing with a smoothly rounded opening; or		N/A
	b) Insulated cord guard protruding >5 D		N/A
6.10.2.2	Cord anchorage		N/A
	Protective earth conductor is the last to take the strain		N/A
	a) Cord is not clamped by direct pressure from a screw		N/A
	b) Knots are not used		N/A
	c) Cannot push the cord into the equipment to cause a HAZARD		N/A
	d) No failure of cord insulation in anchorage with metal parts		N/A
	e) Not to be loosened without a tool		N/A
	f) Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test		N/A
6.10.3	Plugs and connectors	No such plug used.	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:		—

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor		N/A
	Accessory MAINS socket outlets:		—
	a) Marking if accepts a standard MAINS supply plug (see 5.1.3e)		N/A
	b) Input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source		P
6.11.1	Disconnects all current-carrying conductors		P
6.11.2	Exceptions		P
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	Powered by 9.0vdc with 1604E 6F22	N/A
	Equipment is provided with one of the following:		N/A
	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	No such disconnecting devices used.	N/A
6.11.4.1	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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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 component used	N/A
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function		N/A
	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 plug used.	N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		N/A
	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	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION	Considered.	P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges	No sharp edges.	P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts	No such moving parts used.	N/A
7.3.1	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N/A
	RISK assessment in accordance with 7.3.3 carried out		N/A
7.3.2	Exceptions		N/A
	Access to HAZARDOUS moving parts permitted under following circumstances:		N/A
	a) obviously intended to operate on parts or materials external of the equipment		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	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:		N/A
	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	No such mechanical hazards 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		N/A
	Following levels are met in NORMAL and SINGLE FAULT CONDITION:	Considered.	N/A
	Continuous contact pressure below 50 N / cm ² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm ² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts		N/A
7.3.5.1	Access normally allowed		N/A
	If levels of 7.3.4 exceeded and 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		N/A
	Maximum gap as specified in Table 14 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.4	Stability	Movable equipment.	N/A
	Equipment not secured to building structure is physical stable		N/A
	Stability maintained after opening of drawers etc. by automatic means, or		N/A
	warning marking requires the application of means		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Compliance checked by following tests as applicable:		—
	a) 10° tilt test for other than handheld equipment	Hand-held 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	Hand-held equipment.	N/A
	d) overload test with 4 times maximum load for castor or support that supports greatest load	No such device used.	N/A
	e) castor or support that supports greatest load removed from equipment		N/A
7.5	Provisions for lifting and carrying	No provision for lifting or carrying, movable appliance	N/A
7.5.1	Equipment more than 18 kg :	Less than 18Kg	—
	Has means for lifting or carrying; or		N/A
	Directions 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 No such devices used.		N/A
	RATED for maximum load; or		N/A
	tested with four times maximum static load		N/A
7.6	Wall mounting	Not for wall mounting purpose.	N/A
	Mounting brackets withstand four times weight		N/A
7.7	Expelled parts	No such parts.	N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a tool		N/A
8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		P
	Normal protection level is 5 J		P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:		N/A
	a) lower level justified by RISK assessment of manufacturer		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	b) equipment installed in its intended application is not easily touched		N/A
	c) only occasional access during NORMAL USE		N/A
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		N/A
	For non-metallic ENCLOSURES rated below 2 °C ambient temperature value chosen for minimum RATED temperature		N/A
	Impact energies between IK values, the IK code marked for nearest lower value		N/A
	Conformity is checked by performing following tests:		—
	1) static test of 8.2.1		P
	2) impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT	Portable equipment	P
	if impact energy not selected to 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 with mass over 100 kg		P
	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		P
	- insulation pass the voltage tests of 6.8		P
	i) no leaks of corrosive and harmful substances		P
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		P
	iii) CLEARANCES not less than their permitted values		P
	iv) insulation of internal wiring remains undamaged		N/A
	v) PROTECTIVE BARRIERS not damaged or loosened	No such barriers.	N/A
7.3	vi) No moving parts exposed, except permitted by	No moving parts.	N/A
	vii) no damage which could cause spread of fire		P
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test	(see Form A.21)	P
	- 30 N with 12 mm rod to each part of ENCLOSURE		P
	- in case of doubt test conducted at maximum RATED ambient temperature		P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
8.2.2	Impact test	Hand-held equipment.	N/A
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged		N/A
	Impact energy level and corresponding IK code	5J (IK08)	N/A
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C	Minimum declared as 0°C	P
8.3	Drop test	(see Form A.21)	P
8.3.1	Other than HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		P
	Tests conducted with a drop height or angle of		P
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	No spread of fire in NORMAL and SINGLE FAULT CONDITION		P
	MAINS supplied equipment meets requirements of 9.6 additionally	Powered by 9.0vdc with 1604E 6F22	N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):	(see Form A.22)	P
	a) SINGLE FAULT test of 4.4; or	(see Forms A.1)	P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		N/A
9.3	c) Application of (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	No such circuit.	N/A
	2) BASIC INSULATION provided for parts of different potential; or		N/A
	Bridging the insulation does not cause ignition		N/A
	b) Surface temperature of liquids and parts (see 9.5)		N/A
	c) No ignition in circuits designed to produce heat		N/A
9.3	Containment of the fire within the equipment,	should it occur Plastics enclosure has rated with V-0	P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
9.3.1	Spread of fire outside equipment reduced to a tolerable level if:		P
	a) Energizing of the equipment is controlled by an OPERATOR held switch		N/A
	b) ENCLOSURE is conform with constructional requirements of 9.3.1; and		P
	Requirements of 9.5 are met		N/A
9.3.2	Constructional requirements		P
	a) Connectors and insulating material have flammability classification V-2 or better	(see Table: 1 or Form A.23)	N/A
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)	(see Table: 1 or Form A.23)	N/A
	c) ENCLOSURE meets following requirements:	(see Form A.22)	N/A
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:	No such bottom or side openings.	N/A
	i) no openings; or		N/A
	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:		P
	Metal (except magnesium); or		N/A
	Non-metallic materials have flammability classification V-1 or better	(see Table: 1 or Form A.22)	P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity		P
9.4	Limited-energy circuit		N/A
	a) Potential not more than 30 r.m.s. and 42,4 V peak, or 60 V dc		N/A
	b) Current limited by one of following means:		N/A
	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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
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.26)	N/A
	RISK is reduced to a tolerable level :		N/A
	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 See 9.6.3 only.		P
9.6.1	MAINS supplied equipment protected	Powered by 9.0vdc with 1604E 6F22	N/A
	BASIC INSULATION between MAINS parts of opposite polarity provided		N/A
	Devices not in the protective conductor		N/A
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		N/A
9.6.2	PERMANENTLY CONNECTED EQUIPMENT	Hand-held equipment	N/A
	Overcurrent protection device:		N/A
	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)	P
	- at an specified ambient temperature of 40 °C	Max operating temperature 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:	No such function used.	N/A
	Are recognizable as such by appearance or function; or		N/A
	Are marked with symbol 13		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Guards are not removable without tool		N/A
10.2	Temperatures of windings		N/A
	Limits not exceeded in:	(see Form A.27B)	N/A
	NORMAL CONDITION		N/A
	SINGLE FAULT CONDITION		N/A
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.26A)	P
	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		P
10.4.1	Tests conducted under reference test conditions and manufacturer's instructions	(see Form A.26A)	P
10.4.2	Temperature measurement of heating equipment	No such 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	No such equipment.	N/A
	Equipment built in as specified in installation instructions		N/A
10.5	Resistance to heat	70°C for 7 hours in heating cabinet, no damage occurred	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		N/A
	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	UL approved, see yellow card for material data.	P

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	in case of doubt:		N/A
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		P
11.1	Protection to OPERATORS and surrounding area provided by EQUIPMENT		P
	All fluids specified by manufacturer considered		P
11.2	Cleaning		P
11.3	Spillage	No such hazards of fluid.	N/A
11.4	Overflow		N/A
11.5	Battery electrolyte	Non-Rechargeable type batteries used.	P
	Battery electrolyte leakage presents no HAZARD	No leakage of electrolyte happened after the single fault test	P
11.6	Specially protected equipment		N/A
11.7	Fluid pressure and leakage		N/A
11.7.1	Maximum pressure :		N/A
	Maximum pressure of any part does not exceed PRATED		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Fluid-containing parts subjected to hydraulic test if:		N/A
	a) product of pressure and volume > 200 kPa; and		N/A
	b) pressure > 50 kPa		N/A
	Parts of refrigerating systems meets pressure-related requirements of IEC 60335-24 or IEC 60335-2-89		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	f) Adequate discharge capacity		N/A
	No shut-off valve between overpressure safety device and protected parts		N/A
12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		N/A
12.1	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation		N/A
12.2.1.1	Equipment meets the following requirements:		N/A
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N/A
	tested, classified and marked in accordance to IEC 60405		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		N/A
	Effective dose rate of radiation measured		N/A
	If dose rate exceeds 5 µSv/h marked with the following:		N/A
	a) Symbol 17 (ISO 361)		N/A
	b) Abbreviations of the radionuclides		N/A
	c) With maximum dose at 1 m; or		N/A
	with dose rate value between 1 µSv/h and 5 µSv/h in m		N/A
12.2.1.3	Equipment not intended to emit radiation		N/A
	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	Ultraviolet (UV) radiation		N/A
	No unintentional HAZARDOUS escape of UV radiation:		—
	- checked by inspection; and		N/A
	- evaluation of RISK assessment documentation		N/A
12.4	Microwave radiation		N/A
	Power density does not exceed 10 W/m2		N/A
12.5	Sonic and ultrasonic pressure		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
12.5.1	Sound level		N/A
	No HAZARDOUS sound emission		N/A
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		N/A
	Instruction describes measures for protection		N/A
12.5.2	Ultrasonic pressure		N/A
14.3	Overtemperature protection devices	NO OVERTEMPERATURE PROTECTIVE DEVICES	N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
	a) Reliable function is ensured		N/A
	b) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A
	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders		N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices	No such device used.	N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	No such used.	N/A
14.7	Printed circuit boards	Approved PCB used. (see Table 1)	P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or	Rated V-0.	P
	Test shows conformity with V-1 of IEC 60695-11-10 or better		N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices No such components used.		N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS		N/A
	No HAZARD resulting from rupture or overheating of the component:		N/A
	- no bridging of safety relevant insulation		N/A
	- no heat to other parts above the self-ignition points		N/A

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
15	PROTECTION BY INTERLOCKS		N/A
15.1	Interlocks are designed to remove a HAZARD before OPERATOR exposed		N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A
16	HAZARDS RESULTING FROM APPLICATION		P
16.1	REASONABLY FORESEEABLE MISUSE		P
	No HAZARDS arising from settings not intended and not described in the instructions	All hazards are described and only use according to instruction is intended.	P
	Other cases of REASONABLY FORESEEABLE MISUSE addressed by RISK assessment	Foreseeable misuse was considered for applied faults.	N/A
16.2	Ergonomic aspects		N/A
	Factors giving rise to a HAZARD the RISK assessment is reflecting those aspects:		N/A
	a) limitation of body dimensions		N/A
	b) displays and indicators		N/A
	c) accessibility and conventions of controls		N/A
	d) arrangement of TERMINALS		N/A
17	RISK ASSESSMENT		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16	Not consider.	N/A
	TOLERABLE RISK achieved by iterative documented process covering the following:		N/A
	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

EN 61010-1			
Clause	Requirement – Test	Result - Remark	Verdict
	Repeated RISK evaluation without new RISKS introduced		N/A
	RISKS remaining after RISK assessment addressed in instructions to RESPONSIBLE BODY:		N/A
	Information contained how to mitigate these RISKS		N/A
	Following principles in methods of RISK reduction applied by manufacturer in given order:		N/A
	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
	Indication of particular training is required		N/A
	Specification of the need for personal protective equipment		N/A
	Conformity checked by evaluation of the RISK assessment documentation		N/A
	ANNEX F ROUTINE TESTS		N/A
	Manufacturer 's declaration		N/A

EN 61010-1					
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
Voltage measurement (measuring 250V)					
4.4.2.1	1	Short circuit Batteries + ~ -	30 min	Measure 500V ac CAT I, Unit shutdown, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	2	Short circuit C2	30 min	Measure 500V ac CAT I, Unit shutdown, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	3	Short circuit C6	30 min	Measure 500V ac CAT I, Unit shutdown, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	4	Short circuit D1	30 min	Measure 500V ac CAT I, Unit shutdown, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	5	Short circuit Q1 pin"E" to pin"C"	30 min	Measure 500V ac CAT I, Q1 damaged, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	6	Short circuit Q1 pin"E" to pin"B"	30 min	Measure 500V ac CAT I, Q1 damaged, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	7	Short circuit 1C1 pin2 to pin6	30 min	Measure 500V ac CAT I, Unit shutdown, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	8	Short circuit 1C1 pin1 to pin4	30 min	Measure 500V ac CAT I LCD indicate"error", No hazards, temperature rise not exceed the limit.	P
4.4.2.1	9	Short circuit IC1 pin3 to pin7	30 min	Measure 500V ac CAT I, IC1 damaged, No hazards, temperature rise not exceed the limit.	P
4.4.2.1	10	Short circuit IC1 pin6 to pin11	30 min	Measure 500V ac CAT I, IC1 damaged, No hazards, temperature rise not exceed the limit.	P

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4.4.2.1	11	Short circuit IC1 pin3 to pin9	30 min	Measure 500V ac CAT I, IC1 damaged, No hazards. temperature rise not exceed the limit.	P
4.4.2.1	12	Short circuit R15	30 min	Measure 500V ac CAT I, Normal operation. No hazards. temperature rise not exceed the limit.	P

EN 61010-1					
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
Current measurement 5A by '5A' – 'COM'					
4.4.2.1	10	Measuring 5A turn the range to 200uA	30 min	Measure 500V ac CAT I, LCD indicate"error", No hazards. temperature rise not exceed the limit.	P
4.4.2.1	11	Measuring 200uA turn the range to 5A	30 min	Measure 500V ac CAT I, LCD didn't indicate, No hazards. temperature rise not exceed the limit.	P
4.4.2.1	12	Short circuit R5	30 min	Measure 500V ac CAT I, Normal operation. No hazards. temperature rise not exceed the limit.	P
Current measurement mA by 'mA' – 'COM'					
4.4.2.1	13	Short circuit R6	30 min	Measure 500V ac CAT I, LCD didn't indicate, No hazards. temperature rise not exceed the limit.	P
250Va.c. measurment by "COM"and "5A" terminal, selected switch set current position					
4.4.2.1	14	500Vd.c. measurment by "COM"and "5A" terminal	30 min	Measure 500V ac CAT I, No hazards.temperature rise not exceed the limit.	P
NOTE Td = Test duration in hh:mm:ss Record dielectric strength test on Form A.19 and temperature tests on Form A.27A and or A.27.B. Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.					
Supplementary information:--					

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EN 61010-1						
Clause	Requirement + Test				Result - Remark	Verdict
5.1.3c)	TABLE: MAINS supply				Form A.2	N/A
	Marked rating	:	V		—	
	Phase	:	--		—	
	Frequency	:	Hz		—	
	Current	:	A		—	
	Power	:	W		—	
	Power	:	VA		—	
Test	Voltage	Frequency	Current	Power in	Power in	Comments
No.	V	Hz	A	W	V A	
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--
NOTE – Measurements are only required for marked ratings.						
Supplementary information:						

EN 61010-1					
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) Filmcoated (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)		
dentification (5.1.2)			5)		
MAINS supply (5.1.3)			N/A		
Fuses (5.1.4)			2)		
terminals and operating devices (5.1.5.2)			2), 1)		
Switches and circuit breakers (5.1.6)			N/A		
Double/reinforced equipment (5.1.7)			5)		
Field wiring Terminal boxes (5.1.8)			N/A		
Warning marking (5.2)			5)		
Battery charging (13.2.2)			N/A		
Method	Test agent	Remains legible	Label loose	Curled edges	Comments
		Verdict	Verdict	Verdict	
2)	B	Pass	Pass	Pass	Remain visible
5)	E	Pass	Pass	Pass	Remain visible
1)	A	Pass	Pass	Pass	Remain visible
Supplementary information:--					

EN 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.2	TABLE: List of ACCESSIBLE parts	Form A.4	P
6.1.2	Exceptions		
6.2	Determination of ACCESSIBLE parts		
Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)
1	Enclosure	V,R,J	N/A
2	LCD cover	V,R,J	N/A
3	Select function switch	V,R,J	N/A
4	Insulation part of measuring terminal	V,R,J	N/A
5	Probe handheld part	V,R,J	N/A
6	Probe cable	V,R,J	N/A
7	Battery (accessible part after open of the compartment with a screw driver)	V,R,J	Exception in 6.1.2 b) of EN 61010-1
8	Probe tip	V	Exception in 6.1.1 b) of EN 61010-031
9	Button	V,R,J	N/A
NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.2) 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 6.4). NOTE 4 – Capacitor test may be required (see Form A.5). NOTE 5 – The determination methods are: V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.			
Supplementary information: * see subclause 6.1.2 b).			

EN 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	Voltage				Current			Capacitance		10 s / 5 s test (NOTE)			Comments
(see Form A.4)	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	
Measuring 600Vac with voltage measurement mode													
Enclosure and switch edge	—	—	—	—	—	0.12	—	—	—	—	—	—	Limit: 0.7mA.pk
LCD Panel edge	—	—	—	—	—	0.13	—	—	—	—	—	—	Limit: 0.7mA.pk
Battery cover edge	—	—	—	—	—	0.15	—	—	—	—	—	—	Limit: 0.7mA.pk

Edge between Test probe surface and multimeter measuring terminal	—	—	—	—	—	0.13	—	—	—	—	—	—	Limit: 0.7mA.pk
Measuring 10A with current measurement mode													
Enclosure and switch edge	—	—	—	—	—	0.13	—	—	—	—	—	—	Limit: 0.7mA.pk
LCD Panel edge	—	—	—	—	—	0.15	—	—	—	—	—	—	Limit: 0.7mA.pk
Battery cover edge	—	—	—	—	—	0.15	—	—	—	—	—	—	Limit: 0.7mA.pk
Edge between Test probe surface and multimeter measuring terminal	—	—	—	—	—	0.16	—	—	—	—	—	—	Limit: 0.7mA.pk
Measuring mA with current measurement mode													
Enclosure and switch edge	—	—	—	—	—	0.13	—	—	—	—	—	—	Limit: 0.7mA.pk
LCD Panel edge	—	—	—	—	—	0.15	—	—	—	—	—	—	Limit: 0.7mA.pk

Battery cover edge	—	—	—	—	—	0.15	—	—	—	—	—	—	Limit: 0.7mA.pk
Edge between Test probe surface and multimeter measuring terminal	—	—	—	—	—	0.16	—	—	—	—	—	—	Limit: 0.7mA.pk
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:--													

EN 61010-1												
Clause	Requirement + Test				Result - Remark							Verdict
6.3.2	TABLE: Values in SINGLE FAULT CONDITION				Form A.6.							P
Item	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	
(see Form A.4)	fault No. (see Form A.1)	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)	
Measuring 250Vac with voltage measurement mode												
Enclosure and switch edge	1-9 (highest measured values recorded)	—	—	—	—	—	A1	—	0.16	—	—	Limit: 5mA.peak
LCD Panel edge		—	—	—	—	—	A1	—	0.13	—	—	Limit: 5mA.peak
Battery cover edge		—	—	—	—	—	A1	—	0.15	—	—	Limit: 5mA.peak
Edge between Test probe surface and multimeter socket		—	—	—	—	—	A1	—	0.15	—	—	Limit: 5mA.peak
Measuring 10A with current measurement mode												

EN 61010-1												
Clause	Requirement + Test				Result - Remark							Verdict
6.3.2	TABLE: Values in SINGLE FAULT CONDITION Form A.6.											P
Item	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	
(see Form A.4)	fault No. (see Form A.1)	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)	Comments
Measuring 250Vac with voltage measurement mode												
Enclosure and switch edge	1-9 (highest measured values recorded)	—	—	—	—	—	A1	—	0.15	—	—	Limit: 5mA.peak
LCD Panel edge		—	—	—	—	—	A1	—	0.14	—	—	Limit: 5mA.peak
Battery cover edge		—	—	—	—	—	A1	—	0.15	—	—	Limit: 5mA.peak
Edge between Test probe surface and multimeter socket		—	—	—	—	—	A1	—	0. 15	—	—	Limit: 5mA.peak
Measuring mA with current measurement mode												

Enclosure and switch edge	13 (highest measured values recorded)	—	—	—	—	—	A1	—	0.15	—	—	Limit: 5mA.peak
LCD Panel edge			—	—	—	—	—	—	0.15	—	—	—
Battery cover edge		—	—	—	—	—	A1	—	0.16	—	—	Limit: 5mA.peak
Edge between Test probe surface and multimeter socket		—	—	—	—	—	A1	—	0.17	—	—	Limit: 5mA.peak
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:--												

EN 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: Tighting torque test Form A.8			N/A
---------	---	--	--	-----

Conductor location	Size of screw	Tighting torque Nm	Verdict
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--
--	--	--	--

Supplementary information:

EN 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict

6.5.2.4	TABLE: Bonding impedance of permanently connected equipment Form A.9			N/A
---------	---	--	--	-----

ACCESSIBLE part under test	Test current A	Voltage attained after 1 min V	Calculated resistance (Maximum 0,1 or 0,2 Ω) Ω (NOTE 1)	Verdict
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--
--	--	--	--	--

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 plug connected equipment Form A.10			N/A
---------	---	--	--	-----

ACCESSIBLE part under test	Test current A	Voltage attained after 1 min (maximum 10 V) V	Verdict
--	--	--	--
--	--	--	--
--	--	--	--

Supplementary information:

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6.5.2.6	TABLE: Transformer PROTECTIVE BONDING screen Form A.11			N/A
---------	---	--	--	-----

ACCESSIBLE part under test	Test current (see NOTE) A	Voltage attained after 1 min (maximum 10 V) V	Calculated resistance (maximum 0,1 Ω) Ω	Verdict
---	--	--	--	--
---	--	--	--	--

NOTE – Test current must be twice the value of the over current protection means of the winding. Test is specified in 6.5.2.6 a) or b).

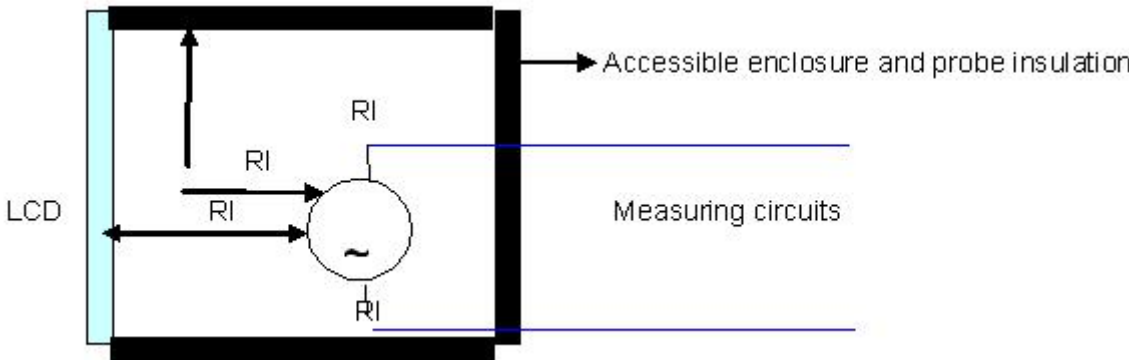
Supplementary information:

EN 61010-1								
Clause	Requirement + Test			Result - Remark				Verdict
6.5.4	TABLE: protective impedance Form A.12.							N/A
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:								

EN 61010-1							
Clause	Requirement + Test	Result - Remark				Verdict	
6.5.6	TABLE: Current- or voltage-limiting device					Form A.13	N/A
A single component							
Component	Location	Measured		Rated		Verdict	Comments
		Working voltage V	Current A	Working voltage V	Current A		
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
Supplementary information:							

EN 61010-1

Clause	Requirement + Test	Result - Remark	Verdict
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6.7	TABLE: Insulation requirements- Block diagram of system Form A.14					P	
							
Pollution degree : 2				Overvoltage category : CAT I 500V			
Area	Location	Insulation type	WORKING VOLTAGE			Test voltage*	Comments (NOTE 3)
		(NOTE 1)	RMS V	Peak V	Frequency kHz	(NOTE 2) V	
A	Hazardous live part to accessible part (through hold button)	DI or RI	250 r.m.s	--	--	3510 r.m.s.	Duration for 5s
						3000 r.m.s.	Duration for 1min
A	Hazardous live part to accessible part (through LCD display)	DI or RI	250 r.m.s	--	--	3510 r.m.s.	Duration for 5s
						3000 r.m.s.	Duration for 1min
A	Hazardous live part to accessible part (select switch)	DI or RI	250 r.m.s	--	--	3510 r.m.s.	Duration for 5s
						3000 r.m.s.	Duration for 1min
B	Internal wire to outside surface of enclosure	BI	250 r.m.s	--	--	2210 r.m.s.	Duration for 5s
						1500 r.m.s.	Duration for 1min
C	V-COM	BI	250 r.m.s	--	--	4000Vpeak	Impulse test with 10 times, waveform 1.2/50 μs
D	Two terminals of PTC (PTC)	BI	250 r.m.s	--	--	2210 r.m.s.	Duration for 5s
						1500 r.m.s.	Duration for 1min
Regular test lead							
--	Measuring circuit – Cable of probe assembly	DI or RI	250 r.m.s	--	--	3510 r.m.s	Duration for 5s
						4200 Vd.c.	Duration for 1min
--	Measuring circuit – Cable of probe assembly	DI or RI	250 r.m.s	--	--	3510 r.m.s	Duration for 5s
						4200 Vd.c.	Duration for 1min

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NOTE 1 – Type of insulation:
OVERVOLTAGE CATEGORIES
BI = BASIC INSULATION
which differ

NOTE 2 - Types of voltage
Peak impulse test voltage (pulse)

NOTE 3 -
or POLLUTION DEGREES

6.7	TABLE: Insulation requirements- Block diagram of system	P
DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION see also Form A.15 for further details		
Supplementary Information: * Refer to requirement of clause 6.6.102 in EN 61010-2-033, CAT I 500Vdc considered based on max. test voltage		

EN 61010-1													
Clause		Requirement + Test				Result - Remark						Verdict	
6.7		TABLE: Insulation requirements- Clearances and Creepage 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										—	
Area	Location		Insulation type	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Verdict	Comments
	(See Form A.14)		(NOTE 1)	RMS V	Peak V	--	Required mm*	Measured mm	Required mm	Measured mm			
A	Hazardous live part to accessible part (through hold button)		DI or RI	CAT I 600	--	--	5.9	7.6	5.9	7.6	100 <175	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
A	Hazardous live part to accessible part (through LCD display)		DI or RI	CAT I 600	--	--	5.9	7.9	5.9	7.9	100 <175	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
A	Hazardous live part to accessible part (select switch)		DI or RI	CAT I 600	--	--	5.9	8.3.	5.9	8.3.	100 <175	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
B	Internal wire to outside surface of enclosure		BI	CAT I 600	--	--	3.0	7.5	3.0	7.5	100 <175	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
A	Between metal screw fixing enclosure and live parts on PCB		DI or RI	CAT I 600	--	--	5.9	8.4	5.9	8.4	100 <175	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021

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EN 61010-1												
Clause		Requirement + Test				Result - Remark						Verdict
6.7		TABLE: Insulation requirements- Clearances and Creepage 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										—
Area	Location	Insulation type	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Verdict	Comments
	(See Form A.14)	(NOTE 1)	RMS V	Peak V	--	Required mm*	Measured mm	Required mm	Measured mm			
C	Between live part in un mated terminal and terminal enclosure	DI or RI	CAT I 500	--	--	2.6	9.7	2.6	9.7	--	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/A11:2021
C	V-COM	--	CAT I 500	--	--	2.6	8.5	2.6	8.5	--	P	According to the 6.6.101 of EN IEC 61010-2-033:2021/A11:2021
With standard test probe												
--	Between live part and accessible parts after test probe partially mated	BI	CAT II 500 CAT IV 500	--	--	14.3	16.8	14.3	16.8	--	P	Basic insulation required according to clause 6.4.2 b) of EN 61010-031:2015/A1:2021/A11:2021

EN 61010-1													
Clause		Requirement + Test				Result - Remark					Verdict		
6.7		TABLE: Insulation requirements- Clearances and Creepage 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										—	
Area	Location	Insulation type	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Verdict	Comments	
	(See Form A.14)	(NOTE 1)	RMS V	Peak V	--	Required mm*	Measured mm	Required mm	Measured mm				
--	Between live part and accessible parts after test probe fully mated	RI	CAT I 500	--	--	14.3	22.1	14.3	22.1	--	P	Basic insulation required according to clause 6.4.2 a) of EN 61010-031:2015 /A1:2021/A11:2021	
--	Between live part of unmated connector and surface accessed with test finger	--	CAT I 500	--	--	2.6	10.9	2.6	10.9	--	P	According to 6.4.2 c) of EN 61010-031:2015 /A1:2021/A11:2021	
NOTE 1 – refer to Form A.14 for type of insulation shown in the insulation diagram						NOTE 2 - to be used for definition of required insulation (see Form A.14)							
Input supply voltage.....:		V			Hz								
Supplementary information: * Refer to requirement of clause 6.7.1.5 in EN 61010-2-033,													

EN 61010-1													
Clause		Requirement + Test						Result - Remark			Verdict		
6.7		TABLE: Insulation requirements- Clearances and Creepages Form A.16										P	
8		Mechanical resistance to shock and impact				10.5.1		Integrity of CLEARANCES and CREEPAGE distances			—		
9.6.1		Overcurrent protection basic insulation between MAINS parts									—		
Area	Location	Insulation type	Mechanical tests (NOTE)					Test at max.	Measured after test (if required)		Verdict	Comments	
	(See Form A.14)		Applied force	Rigidity (8.2)		Drop (8.3)		RATED ambient	CREEPAGE DISTANCE	CLEAR ANCE			
			N	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in	(10.5.1)	mm	mm			
A	Hazardous live part to accessible part (through RJ ports)	DI or RI	10N	30N	--	--	1m	40°C	8.9	8.9	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021	
A	Hazardous live part to accessible part (through LCD display)	DI or RI	10N	30N	--	--	1m	40°C	9.1	9.1	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021	
A	Hazardous live part to accessible part (select switch)	DI or RI	10N	30N	--	--	1m	40°C	8.8	8.8	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021	
B	Internal wire to outside surface of enclosure	BI	10N	30N	--	--	1m	40°C	8.7	8.7	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021	

EN 61010-1													
Clause		Requirement + Test						Result - Remark			Verdict		
6.7		TABLE: Insulation requirements- Clearances and Creepages Form A.16										P	
8		Mechanical resistance to shock and impact				10.5.1		Integrity of CLEARANCES and CREEPAGE distances			—		
9.6.1		Overcurrent protection basic insulation between MAINS parts									—		
Area	Location		Insulation type	Mechanical tests (NOTE)				Test at max.	Measured after test (if required)		Verdict	Comments	
	(See Form A.14)			Applied force	Rigidity (8.2)		Drop (8.3)		RATED ambient	CREEPAGE DISTANCE			CLEAR ANCE
			N	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in	(10.5.1)	mm	mm			
A	Between metal screw fixing enclosure and live parts on PCB		DI or RI	10N	30N	--	--	1m	40°C	15.1	15.1	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
C	Between live part in unmated terminal and terminal enclosure		DI or RI	10N	30N	--	--	1m	40°C	11.4	11.4	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021

EN 61010-1													
Clause		Requirement + Test						Result - Remark			Verdict		
6.7		TABLE: Insulation requirements- Clearances and Creepages Form A.16										P	
8		Mechanical resistance to shock and impact				10.5.1		Integrity of CLEARANCES and CREEPAGE distances			—		
9.6.1		Overcurrent protection basic insulation between MAINS parts									—		
Area	Location		Insulation type	Mechanical tests (NOTE)				Test at max.	Measured after test (if required)		Verdict	Comments	
	(See Form A.14)		Applied force	Rigidity (8.2)		Drop (8.3)		RATED ambient	CREEPAGE DISTANCE	CLEAR ANCE			
			N	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in	(10.5.1)	mm	mm			
C	V-COM		--	10N	30N	--	--	1m	40°C	13.1	13.1	Pass	Limited value: Clearance: 8.0mm; Creepage distance: 8.0mm for reinforced insulation
With standard test probe													
--	Between live part and accessible parts after test probe partially mated		BI	10N	30N	--	--	1m	40°C	18.2	18.2	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
--	Between live part and accessible parts after test probe fully mated		RI	10N	30N	--	--	1m	40°C	29.5	29.5	Pass	According to the 6.6.101 of EN IEC 61010-2-033:2021/ A11:2021
--	Between live part of unmated connector and surface accessed with test finger		--	10N	30N	--	--	1m	40°C	13.4	13.4	Pass	According to the 6.6.101 ofEN IEC 61010-2-033:2021/ A11:2021

EN 61010-1						
Clause	Requirement + Test			Result - Remark		Verdict
6.7.2.2.2	TABLE: Reliability of potted components Form A.17					N/A
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 (500 V) mA		
Number of cycles	Date			68 h / 125 °C	1 h / 25 °C	2 h / 0 °C
1. Cycle from						
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				
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.						
Additional insulation _____ V r.m.s.						
Reinforced insulation _____ V r.m.s.						
Supplementary information:--						

EN 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 CONDITIONS1					P	
6.4	Primary means of protection2					P	
6.6	Connections to external circuits					P	
6.7	Insulation requirements2 (see Annnex K)					N/A	
6.10.2	Fitting of non-detachable MAINS supply cords1					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 Yes/No	Working voltage V	Test voltage r.m.s./peak/d.c.	Comments (NOTE)	Verdict
Hazardous live part to accessible part (through hold button)		K.101.4.1 in IEC 61010-2-03 3	Yes	CAT I 500V	3520 r.m.s.	Duration for 5s	P
					3000 r.m.s.	Test for 1min.	P
Hazardous live part to accessible part (through LCD display)		K.101.4.1 in IEC 61010-2-03 3	Yes	CAT I 500V	3520 r.m.s.	Duration for 5s	P
					3000 r.m.s.	Test for 1min.	P
Hazardous live part to accessible part (select switch)		K.101.4.1 in IEC 61010-2-03 3	Yes	CAT I 500V	3520 r.m.s.	Duration for 5s	P
					3000 r.m.s.	Test for 1min.	P
Internal wire to outside surface of enclosure		K.101.4.1 in IEC 61010-2-03 3	Yes	CAT I 500V	2210 r.m.s.	Duration for 5s	P
					1500 r.m.s.	Test for 1min.	P
V-COM		K.101.4.1 in IEC 61010-2-03 3	Yes	CAT I 500V	2210 r.m.s.	Duration for 5s	P
					1500 r.m.s.	Test for 1min.	P
Regular test lead							

EN 61010-1							
Clause	Requirement + Test			Result - Remark		Verdict	
6.8	TABLE: Dielectric strength tests Form A.18						P
Measuring circuit – Cable of probe assembly	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/ d.c.	Comments (NOTE)	Verdict	
Measuring circuit – Cable of probe assembly	6.5.1.2.4 in IEC 61010-031	Yes	CAT I 500	7400 r.m.s	Duration for 5s	P	
				6200 Vd. c.	Test for 1min.	P	
Hazardous live part to accessible part (through LCD display)	6.5.1.2.4 in IEC 61010-031	Yes	CAT I 500	7400 r.m.s	Duration for 5s	P	
				6200 Vd. c.	Test for 1min.	P	
1 Record the fault, test or treatment applied before the dielectric strength test. 2 Humidity preconditioning required. NOTE: Test duration may be recorded.							
Supplementary information:--							

EN 61010-1							
Clause	Requirement + Test			Result - Remark		Verdict	
6.10.2	TABLE: Cord anchorage 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:---							

EN 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 presure														—
7.3.5	Gap limitations between moving parts														—
	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2				
	Continuous	Temporary	Minimum gaps (mm)								Maximum gaps (mm)				
Part / Location	Contact presure max. 50 N /cm² @ max. 150 N	max. 250 N / 3 cm² @ 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	Verdict	Comments
Supplementary information:-															

EN 61010-1					
Clause	Requirement + Test		Result - Remark		Verdict
8.2	ENCLOSURE rigidity test			P	
8.2.1	Static test		Metal / non-metallic		P
	Material of enclosure :				—
	Preparation for the test:				—
	Operated at ambient temperature :		40 ° C	0.8 h	—
Location			Comments		Verdict
1) Enclosure, top			No damage		P
2) Enclosure, bottom and side			No damage		P
	Dynamic test		—		P
	Material of enclosure :		Metal / non-metallic		
	Corresponding IK-code :		IK 08		—
	Preparation for the test:				—
	Cooled to (temperature) :		2 ° C		—
Location			Comments		Verdict
1) Top			No damage		P
2) Side left / right			No damage		P
3) Bottom			No damage		P
8.3	Drop test				P
8.3.1	Other equipment				N/A
Location		Raised up to	Comments		—
		100mm			—
1) bottom edge, 1		100mm			N/A
2) bottom edge, 2		100mm			N/A
3) bottom edge, 3		100mm			N/A
4) bottom edge, 4		100mm			N/A
8.3.2	Hand-held EQUIPMENT and direct plug-in equipment			P	
	Material of enclosure :		Metal / non-metallic		—
	Preparation for the test:				—
	Cooled to (temperature) :		0 ° C		—
Location			Comments		Verdict
1) Side			No damage		P
2) Edge			No damage		P

Supplementary information:

EN 61010-1				
Clause	Requirement + Test		Result - Remark	Verdict
9	TABLE: Protection against the spread of fire Form A.22			P
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9a, 9b or 9c)	Protection details	Verdict
1	Measuring circuit	9c	Insulated wire of VW-1, PCB of V-0, Enclosure of V-0, insulation of probe assembly: V-0, Terminal insulation of V-1 minimum.	P
2	Battery	9c	Battery compartment material of V-0	P
3	Other circuit on PCB	9c	PCB of V-0, enclosure of V-0.	P
Supplementary information:--				

EN 61010-1								
Clause	Requirement + Test	Result - Remark						Verdict
9.3.2	TABLE: Constructional requirements						P	
14.7	Printed circuit boards							P
Material tested :								
Generic name :								
Material manufacturer :								
Type..... :								
Colour :								
Conditioning details :								
Thickness of specimen	mm	Sample						
Duration of flaming after first	s	1	2	3	4	5	6	
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: PCB rated V-0, also see component list.								

Supplementary information:

EN 61010-1

EN 61010-1					
Clause	Requirement + Test			Result - Remark	Verdict
10.	TABLE : Temperature Measurements				Form
10.1	Surface temperature limits - NORMAL CONDITION and / or SINGLE FAULT CONDITION				P
10.2	Temperature of windings- NORMAL CONDITION and / or SINGLE FAULT CONDITION				N/A
10.3	Other temperature measurements				P
Operating conditions:		Measuring circuit 250Vac., with test lead			
Frequency		60 Hz	Test room ambient temperature (ta) ... :		23.1 °C
Voltage		250 V	Test duration		1 h 40 min
Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
Enclosure (inside)	48.6	64	85	P	Limit for plastic.
Enclosure (outside)	43.2	58.6	70	P	Limit for handheld plastic.
Rotate switch (front)	39.8	55.2	70	P	Limit for handheld plastic.
Battery compartment (inside)	32.6	48	70	P	Limit for handheld plastic.
LCD panel (front)	29.6	45	70	P	Limit for handheld plastic.
Main board					
PCB near D1	30.8	46.2	105	P	Component limit
PCB near IC1	33.8	49.2	105	P	Component limit
PCB near R5	72.9	88.3	105	P	Component limit
PCB near Q1	44.8	60.2	105	P	Component limit
PCB near R25	42.8	58.2	105	P	Component limit
PCB near R15	56.3	71.7	105	P	Component limit
Regular test lead					
Plug of probe assembly	34.5	49.9	70	P	Limit for handheld plastic.
Cable of probe	37.6	53	125	P	Limit for probe cable.
Handheld part of probe	29.8	45.2	70	P	Limit for handheld plastic.
Ambient	24.6	40	--	--	--
NOTE 1 - t_m = measured temperature t_c = t_m corrected ($t_m - t_a + 40$ C or max. RATED ambient) t_{max} = maximum permitted temperature NOTE 2 - see also 14.1 with reference to component operating conditions NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary NOTE 4 - see Form A.21B for details of winding temperature measurements					
Supplementary information:--					

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EN 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:		Checked by non-operative treatment for 7h.		--
	Non operative treatment :		[X]		
	Empty ENCLOSURE :		[]		
	Operative treatment :		[]		
	Temperature during tests :		70 C		--
Description		Material	Comments		Verdict
7hours at temperature of 70°C.		Plastic Enclosure (side)	After treatment at 70°C for 7h, passed cl.8.1.1, 8.2 & 6.8		P
7hours at temperature of 70°C.		Plastic Enclosure (probe connector side)	After treatment at 70°C for 7h, passed cl. 6.8 and cl. 8.1, 8.2, 8.3 of EN 61010-031		P
	Dielectric strength test (6.8)		3536	V	r.m.s.
		P			
NOTE – Within 10 minutes of the end of treatment sutiable tests in acc. to 8.2 and 8.3 must be conducted and pass criteria of 8.1.					
Supplementary information:					

EN 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
10.5.3	TABLE: Form A.28	Insulating Materials	N/A
10.5.3 1)	Ballpressure test		—
	Max. allowed impression diameter..... :	2 mm	
Part	Test temperature °C	Impression Diameter (mm)	Verdict
Supplementary information:			
10.5.3 2)	Vicat softening test (ISO 306) Form A.29		
Part	Vicat softening temperature °C	Thickness of sample (mm)	Verdict

Supplementary information:

EN 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											
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)	Static (8.2.1) 30 N	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)	Working voltage V	Test voltage V	Verdict	Comments
Enclosure	30 N	-	-	1 m	-	-	-	-	CAT I 500V	3520V r.m.s.	Pass	Handheld equipment
Probe assembly	30 N	-	-	1 m	-	-	-	-	CAT I 500V	4970V d.c.	Pass	Tested according to EN 61010-031 cl. 8.1, 8.2, and 8.3
NOTE – Use r.m.s., d.c. or peak to indicate the used test voltage.												
Supplementary information:												

EN 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	Leakage from low-pressure parts Form A.32					N/A
Part	Test pressure Mpa	Leakage Yes / No	Comments			
Supplementary information:						

EN 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 $\mu\text{Sv/h}$	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 $\mu\text{Sv/h}$	--
Locations tested	Measured values $\mu\text{Sv/h}$	Verdict	Comments
Supplementary information:			

EN 61010-1				
Clause	Requirement + Test		Result - Remark	Verdict
12.5.1	TABLE: Sound level Form A.33			N/A
12.2.1.2	Equipment intended to emit radiation			
Locations tested		Measured maximum sound pressure level dBA	Comments	
At operator's normal position and at bystanders' positions				
a)				
b)				
c)				
d)				
e)				
Supplementary information:				
12.5.1	TABLE: Ultrasonic pressure Form A.36			N/A
12.2.1.2	Equipment intended to emit radiation			
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 Pa is under consideration for applicable frequencies between 20 kHz and 100 kHz.				
Supplementary information:				

EN 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
13.2.2	TABLE: Form A.37	Batteries	P
	Battery load and charging circuit diagram:		
	Battery type	IEC 6F22, NEDA 1604E	
	Battery manufacturer/model/catalogue No.	See table 1.	—
	Battery ratings	9.0Vdc x 1pcs	—
	Reverse polarity instalment test No leakage,	fire or explosion	P
Single component failures		Verdict	
Component	Open circuit	Short circuit	
Battery at battery connector	--	P (max. 0.05A measured when short-circuited)	
Supplementary information:			

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EN 61010-1					
Clause	Requirement + Test		Result - Remark		Verdict
4.4.2.7	TABLE: MAINS transformer				N/A
	Form A.39				
4.4.2.7.2	Short circuit				
14.6	MAINS transformers tested outside equipment				
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 cor e	_____ V _____				
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 FormA.27B! 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					

EN 61010-1											
Clause	Requirement + Test				Result - Remark					Verdict	
14.8	TABLE: Transient overvoltage limiting devices Form A.41										N/A
Component / Designation	Overvoltage Category	MAINS voltage V rms	Test voltage V	t_m °C	t_c °C	t_{max} °C	Rupture Yes / No	Circuit breaker tripped	Verdict	Comments	
--	--	--	--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	--	--	--	
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--	--	--	--	--	--	--	--	--	--	--	
--	--	--	--	--	--	--	--	--	--	--	
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:											

EN 61010-1											
Clause	Requirement + Test				Result - Remark					Verdict	
Annex H	TABLE: Qualification of conformal coating Form A.42 for protection against pollution									N/A	
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				[] Ω							
Dielectric strength				[] V							
UV resistance (if required)				[yes / no]							
Flammability rating											
Preparation of the test specimens conducted				[yes / no]							
Item	Test conditioning	Parameter	Td	Samples						Verdict	Comments
	Scratch resistance		h	1	2	3	4	5	6		
1	Visual inspection										
2	Cold		24								
3	alkaline heat		48								
4	Rapid temp. change										
5	Damp heat		24								
6	Adhesion of coating	5 N									
	Visual inspection										
7	Humidity		48								
8	Insulation resistance	>= 100 Ω									
	Visual inspection										
NOTE Td = Test duration time											
Supplementary information:											

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EN 61010-1						
Clause	Requirement + Test			Result - Remark		Verdict
	TABLE: 1 - List of components and circuits relied on for safety					P
Unique component reference or location	Application/function	Manufacturer / trademark (NOTE 1)	Type / model	Technical data (NOTE 2)	Standard	Mark(s) of conformity evidence of acceptance (NOTE 3 and 4)
Plastic Enclosure	Insulation	CHING YANG INDUSTRIAL CO LTD	PA-765A	thickness 2.0mm, V-0 or better, 85°C	UL94, UL746C	UL E171801
Fuse1	Component	Shanghai Fullness Electrical CO.,Ltd	SFC	500V,5A	UL248-1	UL E133774
Fuse2	Component	Shanghai Fullness Electrical CO.,Ltd	SFC	500V,0.5A	UL248-1	UL E133774
PCB	Component	Meizhou Kejie Integrated Circuit Co., Ltd	KJ-1	V-0, 130°C	UL 796 UL 94	UL E255694
(Alternate)	Component	Interchangeable	Interchangeable	V-0, 130°C	UL 796 UL 94	UL
Internal wire	For battery	Interchangeable	1007	26AWG, VW-1, 80°C, 300V	UL758	UL
Probe assemble Cable (Red/black)	Test probe assembly	LEO HUI ELECTRIC WIRE & CABLE CO LTD	1803	18AWG, VW-1, 80°C, 2000V	UL758	UL E199279
PTC	Component	Nantong double Ding Electronic Technology Co., Ltd.	MZ31	1.5-1.8KΩ, 75°C	EN 61010-1	Tested with appliance
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						

EN 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict
5	MARKING AND DOCUMENTATION		
5.1	Markings		P
5.1.1	Markings applicable for whole probe assembly not located on operator removable parts		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (Table 1) used; or		P
	if other symbol used; explained in accompanying documentation		P
	In case of less space for required markings:		P
	- symbol 7 of table 1 used		P
	- all necessary information included in documentation		P
5.1.2	Identification		P
5.1.2 a)	Name or registered trademark	Trade mark provided	P
5.1.2 b)	For type B and C, also model no. or similar	Type A	N/A
	If designed for use with specific model this is made clear and		N/A
	model identified by marking or in documentation		N/A
5.1.3	Fuses		P
	All details necessary for fuse replacement		P
	Includes rated voltage and current breaking capacity		P
	If selected according to particular application; marked with symbol 7 and information in documentation		P
5.1.4	Necessary identification for TERMINALS, connectors etc		P
5.1.5	Rating		P
	Maximum RATED voltage to earth	500V	P
	(CAT I) Symbol 7 used		N/A
	(CAT II-IV) Category marked	CATI	P
	Nature of voltage (ac, dc etc.)	Not marked for both ac and dc.	N/A
	Reference connector intended for connection to voltages exceeding the values of 6.3.2		P
	For type A and type D only, the maximum RATED current unless specified for high impedance inputs	5A by probe	P

5.2	Warning markings		
	Visible 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
	marked with symbol 7 and information in the instruction manual		P
	Easily touched heated parts, if not self-evident, marked with symbol 6		N/A
5.3	Durability of markings		P
	The required markings are clear and legible (NORMAL USE)	see Table 5.3 (A.3)	P
	Resist cleaning (clear, legible and not worked loose)		P
5.4	Documentation		P
5.4.1	General		P
5.4.1 a)	Technical specification		P
5.4.1 b)	Instructions for use		P
5.4.1 c)	Name and address of manufacturer or supplier		P
5.4.1 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	Ratings		P
	Maximum voltage RATING	500V	P
	Maximum current RATING	5A by probe	P
	Statement of the range of environmental conditions		P
5.4.3	Operation		P
5.4.3 a)	Identification of operating controls		P
5.4.3 b)	Use with specific model		N/A
5.4.3 c)	Explanation of required and used symbols		P
5.4.3 d)	Definition of measurement category (if marked with CAT)		P
5.4.3 e)	Specification of limits of intermittent operation		P
5.4.3 f)	Interconnection requirements		N/A

	Specification of accessories, materials etc		N/A
5.4.3 g)	Cleaning if necessary		P
5.4.3 h)	Replacement of consumable materials		N/A
5.4.3 i)	For probe assemblies without PROBE WIRE wear indicator, instructions to inspect PROBE WIRE		P
5.4.3 j)	For probe assemblies with PROBE WIRE wear indicator, a warning not to use if wear indicator becomes visible	No such indicator.	N/A
5.4.3 k)	for probe assemblies which do not have a RATING for MEASUREMENT CATEGORIES II, III, or IV, a warning not to use the probe assemblies for measurements on mains circuits		N/A
5.4.3 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 if it comes into contact with a HAZARDOUS LIVE part;	Type A	N/A
5.4.3 m)	a warning that the applicable MEASUREMENT CATEGORY of a combination of a probe assembly and an accessory is the lower of the MEASUREMENT CATEGORIES of the probe assembly and of the accessory.		P
	A statement against use in a manner not specified by the manufacturer		P
5.4.4	Maintenance		P
	Sufficient preventive maintenance and inspection for RESPONSIBLE BODY		P
	Parts to be supplied or examined by the manufacturer only		P
	RATING and characteristics of fuses (see 5.1.3)		P
	Instructions on the following subjects shall be provided for service personnel if the probe assembly is suitable to be serviced:		P
	- product-specific risks that may affect the service personnel;		P
	- protective measures for these risks;		P
	- verification of the safe state of the probe assembly after repair.		P
6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General	see Table 6 (A.4)	P
6.1.1	Exceptions		P
6.1.1 a)	Parts intended to be replaced by the operator (for example, fuses), but only if they have a warning marking according to 5.2	No such parts	P

6.1.1 b)	PROBE TIPS, provided that they meet the requirements of 6.4.3		P
6.1.1 c)	unmated CONNECTORS as specified in 6.4.2 C)		P
6.2	Determination of ACCESSIBLE parts		P
	According to figure 6	See Table 6.2 (A.5) No accessible part in between test probe tip and connector to equipment	P
6.3	Permissible limits for ACCESSIBLE parts		P
	Measurements performed according to figure 8		P
6.3.1	Values in NORMAL CONDITION	See Table 6.3.1 (A.6) No such parts except for cable and connector	P
6.3.2	Values in SINGLE FAULT CONDITION	See Table 6.3.2 (A.7)	N/A
6.3.4	Probe assemblies with floating outer conductors	No such connector	N/A
6.3.4.3	High frequency test probes		N/A
	-Touch Current measured in whole frequency range and maximum voltage, OR		N/A
	-Capacitance Measurement		N/A
6.4	Insulation requirements for protection against electric shock		P
6.4.2	Connectors		P
6.4.2 a)	Connectors in fully mated position:	Test with multimeter	P
	1) Connecting probe to measuring equipment insulated by at least basic insulation	See Table 6.5 (A.9)	N/A
	2) Intended to be HAND-HELD insulated by DOUBLE or REINFORCED INSULATION	See table 6.7 in standard EN 61010-1 part in this report.	P
6.4.2 b)	Connectors in partially mated position:	See table 6.7 in standard EN 61010-1 part in this report.	P
	insulated by at least BASIC INSULATION		P
	Voltage test with test finger (B.1)	See Table 6.6 (A.10)	P
6.4.2 c)	Connectors in unmated position:		P
	1). Locking or screw-held type connectors or limited current by PROTECTIVE IMPEDANCE permitted to be accessible		N/A
	2). Stackable connectors		N/A
	HAZARDOUS LIVE parts separated by BASIC INSULATION from ACCESSIBLE parts		N/A
	CLEARANCE and CREEPAGE meet the requirements for BASIC INSULATION		N/A

	Voltage test in acc. to 6.6	See Table 6.6 (A.10)	N/A
	1). Other unmated connectors:		P
	i) Up to 1 kV a.c. or 1.5 kV d.c., applicable SPACINGS of Table 2 from the closest approach of the test finger touching the external parts of the CONNECTOR in the least favorable position	12.2mm for conductive part to external part (limit: min. 2.6mm for 500Vrms.)	P
	ii) Above 1 kV a.c. or 1.5 kV d.c., the SPACINGS shall not be less than 2.8 mm and shall withstand the voltage test of 6.6. Test voltage equal to the RATED voltage of the CONNECTOR multiplied by 1.25.		N/A
6.4.3	PROBE TIPS		P
	General		P
	PROBE TIPS that can become HAZARDOUS LIVE during NORMAL USE shall meet the requirements of one of 6.4.3.2, 6.4.3.3, or 6.4.3.4 6.4.3.2 applied.		P
	PROBE TIPS that can be used as CONNECTORS shall also meet the requirements of 6.4.3.5.	Not used as connector.	N/A
	SPRING-LOADED CLIPS and similar probes that are intended to pierce the insulation of a wire to touch the conductor for measuring voltage purposes shall not have a voltage RATING above the levels of 6.3.2 a).		N/A
6.4.3.2	Protection by a PROTECTIVE FINGERGUARD		P
	For PROBE TIPS that are HAZARDOUS LIVE, a PROTECTIVE FINGERGUARD is fitted to reduce the risk of touching an exposed conductive part of the PROBE TIP and provides an indication of the limit beyond which it may be hazardous to touch the probe body during use		P
	SPACINGS between the HAZARDOUS LIVE part of the PROBE TIP and the hand-held side of the PROTECTIVE FINGERGUARD are REINFORCED INSULATION.	See table 6.	P
	The height of the PROTECTIVE FINGERGUARD from the side where the fingers are intended to be is at least 2 mm and the thickness is less than twice the height	Height of protective fingerguard: 2.62mm; Thickness: 3.12mm < 2x2.62mm	P
	The PROTECTIVE FINGERGUARD of probe assemblies with a voltage RATING above the levels of 6.3.2 a) extend across at least 80 % of the sides where the fingers are intended to be applied.	Extend 100% around the probe where the fingers are intended to be applied.	P
6.4.3.3	Spring-loaded squeeze PROBE ASSEMBLIES: (rated for WORKING VOLTAGE up to 1 kV)		N/A
6.4.3.3a)	Actuation prevents touching HAZARDOUS LIVE parts		N/A
6.4.3.3b)	Additional protective distance of 45 mm longer than for barrier		N/A

6.4.3.4	Crocodile clips and similar without barrier: (rated for CAT II)		N/A
	- have tactile indication		N/A
6.4.3.5	PROBE TIPS used as CONNECTORS N/A PROBE TIPS which can be used as CONNECTORS shall also meet the requirements for CONNECTORS in fully-mated position and partially-mated position (see also 6.4.2 a) and b)).		N/A
6.4.4	Impedance used as an additional means of protection in conjunction with BASIC INSULATION meets:		N/A
6.4.4a)	limits the current or voltage to not more than the applicable levels of 6.3.3		N/A
6.4.4b)	RATED for the WORKING VOLTAGE and for the amount of power that it will dissipate		N/A
6.4.4c)	SPACINGS between terminations of the impedance meet the applicable requirements of 6.5 for BASIC INSULATION		N/A
	Components, wires and connections are suitably RATED even for SINGLE FAULT CONDITION		N/A
6.4.5	PROTECTIVE IMPEDANCE		N/A
6.3.3	A PROTECTIVE IMPEDANCE limits the current or voltage to the levels of 6.3.2 in NORMAL CONDITION and in SINGLE FAULT CONDITION (see also 4.4.2.2)		N/A
	Insulation between the terminations of the PROTECTIVE IMPEDANCE meets Cl. 6.4.6 for DOUBLE INSULATION or REINFORCED INSULATION		N/A
	A PROTECTIVE IMPEDANCE is one or more of the following		N/A
6.4.5a)	an appropriate single component is constructed, selected and tested so that safety and reliability for protection against electric shock is assured. In particular, the component is:		N/A
	1) RATED for twice the WORKING VOLTAGE;		N/A
	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
6.4.5b)	When a combination of components is used, the SPACINGS take into account the WORKING VOLTAGE across each insulation.		N/A
	A PROTECTIVE IMPEDANCE is not a single electronic device that employs electron conduction in a vacuum, gas or semiconductor		N/A

6.4.6	BASIC INSULATION, SUPPLEMENTARY INSULATION, DOUBLE INSULATION and REINFORCED INSULATION See Table 6.4.6 (A.8)		P
	SPACINGS and solid insulation forming BASIC INSULATION, SUPPLEMENTARY INSULATION or REINFORCED INSULATION between ACCESSIBLE parts and HAZARDOUS LIVE parts meet the applicable requirements of 6.5.		P
	DOUBLE INSULATION is comprised of BASIC INSULATION and SUPPLEMENTARY INSULATION, each of which shall meet the applicable requirements of 6.5.		P
6.5	Insulation requirements		P
6.5.1	Nature of Insulation		P
6.5.1.1	General P CLEARANCES and CREEPAGE DISTANCES between circuits and parts	See Table 6 (A.4) & Table 6.5 (A.9)	P
	Insulation between circuits and ACCESSIBLE parts or between separate circuits consists of SPACINGS, solid insulation, or a combination of SPACINGS and solid insulation.		P
6.5.1.2.2	CLEARANCE	See Table 6 (A.4) & Table 6.5 (A.9)	P
6.5.1.2.3	CREEPAGE	See Table 6 (A.4) & Table 6.5 (A.9)	P
6.5.1.2.4	SOLID INSULATION		P
	Solid insulation shall withstand the electric and mechanical stresses that may occur in NORMAL USE, in all RATED environmental conditions		P
	The manufacturer should take the expected life of the probe assembly into account when selecting insulating materials.		P
	Voltage tests		P
	AC Test of 6.6.5.1 or DC Test of 6.6.5.2	See Table 6.6 (A.10)	P
	Complies as applicable:		P
	a) enclosure or protective barrier of Clause 8		P
	b) moulded and potted parts requirements of 6.5.1.2.4.2		P
	c) inner layers of printed wiring boards requirements of 6.5.1.2.4.3		N/A
	d) thin-film insulation requirements of 6.5.1.2.4.4		N/A
6.5.1.2.4.2	Moulded and potted parts		P
	Conductors between same two layers are separated by at least the applicable minimum distance of Table 5 after moulding is completed		P

6.5.1.2.4.3	Inner 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 have 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 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 4 for REINFORCED INSULATION		N/A
6.5.1.2.4.4	Thin-film insulation		N/A
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE		N/A
	REINFORCED INSULATION have 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 of min two separate layers, each RATED for test voltage of Table 4 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.6.5 with values of Table 4 for REINFORCED INSULATION		N/A
6.5.2	Insulation requirements for probe assemblies		P
6.5.2.2	CLEARANCES for probe assemblies of MEASUREMENT CATEGORIES II, III and IV		P
	Meet requirements in 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		P
	for probe assemblies stressed only by d.c., the 1 min d.c. voltage test of 6.6.5.2 or		P
	the impulse voltage test of 6.6.5.3, using the test voltage of Table 10 for the required clearance		P
6.5.2.3	CLEARANCES for probe assemblies which are not RATED for MEASUREMENT CATEGORIES II, III, or	CAT I	P
6.5.2.3.1	CLEARANCES for probe assemblies which are not RATED for MEASUREMENT CATEGORIES II, III, or IV are calculated according to 6.5.2.3.2		N/A

	If they have either of the following characteristics, CLEARANCES are also determined according to 6.5.2.3.3, and the larger of the two CLEARANCE values is the required clearance:		N/A
6.5.2.3.1 a)	the WORKING VOLTAGE includes a recurring peak voltage that may include a periodic nonsinusoidal waveform or a non-periodic waveform that occurs with some regularity		N/A
6.5.2.3.1 b)	the WORKING VOLTAGE has a frequency above 30 kHz.		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		N/A
	CLEARANCES for BASIC INSULATION and SUPPLEMENTARY INSULATION for probe assemblies subjected to recurring peak voltages with frequencies not exceeding 30 kHz meet the values of the second column of Table 8, using the recurring peak voltage as the index		N/A
	CLEARANCES for BASIC INSULATION and SUPPLEMENTARY INSULATION for probe assemblies that may be subjected to both recurring peak voltages and WORKING VOLTAGES with frequencies above 30 kHz shall meet the higher of these requirements.		N/A
	CLEARANCES for REINFORCED INSULATION are twice the values for BASIC INSULATION.		N/A
6.5.2.4	CREEPAGE DISTANCES		P
	CREEPAGE DISTANCES for BASIC INSULATION or SUPPLEMENTARY INSULATION for probe assemblies shall meet the applicable values of Table 9, based on the WORKING VOLTAGE which stresses the insulation. Values for REINFORCED INSULATION are twice the values for BASIC INSULATION		P
6.6	Procedure for voltage tests		P
	The reference point for the voltage tests is one or more of the following:		P
6.6 a)	Any ACCESSIBLE conductive part, except for any live parts permitted to be ACCESSIBLE because they do not exceed the values of 6.3.2 and any ACCESSIBLE conductive parts which are allowed to be HAZARDOUS LIVE by the exceptions of 6.1. N/A		
6.6 b)	Any ACCESSIBLE insulating part of the ENCLOSURE, covered with metal foil everywhere except around CONNECTORS.		P

6.6 c)	ACCESSIBLE parts of controls with parts made of insulating material being wrapped in metal foil or having soft conductive material pressed against them.		N/A
6.6.2	HUMIDITY CONDITIONING		P
	The probe assembly is subjected to humidity preconditioning before the voltage tests. The probe assembly is not operated during preconditioning.		P
6.6.4	TEST VOLTAGES		P
	Voltage tests for solid insulation - the values specified in Table 4.	See Table 6.6 (A.10)	P
	Voltage tests for CLEARANCES - the values specified in Table 10.	See Table 6.6 (A.10)	P
6.6.5	TEST PROCEDURES		P
6.6.5.1	The a.c. voltage test		P
6.6.5.2	The 1 min. d.c. voltage test		P
6.6.5.3	The impulse voltage test		N/A
6.7	Constructional requirements		P
6.7.1	General		P
6.7.1 a)	Security of soldered wiring connections		P
6.7.1 b)	Screws securing removable covers are captive if their length affects isolation distances No screw		N/A
6.7.1 c)	Accidental loosening No loosening		N/A
6.7.2	Insulating materials		P
	The following is not used for safety purposes:		P
	1) Materials which can be easily damaged (enamel etc)		P
	2) Non-impregnated hygroscopic materials		P
6.7.3	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION		P
	ENCLOSURE which surrounds all metal parts		P
	Small metal parts are separated from HAZARDOUS LIVE voltages by DOUBLE or REINFORCED INSULATION		P
	ENCLOSURES or parts made of insulating material fulfil requirements for DOUBLE or REINFORCED INSULATION.	See Table A.4 & Table 6.5 (A.9)	P
	Protection for metal ENCLOSURES or parts is provided by one of the following:		P
	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		P

6.7.4	Cable attachment		P
	Withstand forces likely to be encountered		P
6.7.4.1	General		P
6.7.4.1 a)	Probe wire not damaged		P
6.7.4.1 b)	the insulation of the PROBE WIRE not cut or torn, and not moved more than 2 mm in the bushing		P
6.7.4.1 c)	SPACINGS not less than 6.5		P
6.7.4.1 d)	the PROBE WIRE passes the a.c. voltage test or the d.c. voltage test of 6.6 using the applicable test voltage and duration of Table 4		P
6.7.4.2	Pull test	See Table 6.7.4 (A.11)	P
6.7.4.3	Flexing/pull test.....	See Table 6.7.4 (A.11)	P
6.7.4.4	Rotational flexing test	See Table 6.7.4 (A.11)	P
7	PROTECTION AGAINST MECHANICAL HAZARDS		P
	Handling during normal use shall not lead to hazard	Edges are smooth and rounded.	P
8	RESISTANCE TO MECHANICAL STRESSES		P
8.1	General		P
	Withstand mechanical stresses likely to occur in NORMAL USE		P
	the probe assembly passes the a.c. voltage test or the d.c. voltage test of 6.6 using the applicable test voltage and duration of Table 4	See Table 6.6 (A.10)	P
8.1 a)	parts which are HAZARDOUS LIVE are not ACCESSIBLE		P
8.1 b)	ENCLOSURES show no cracks which could cause a HAZARD		P
8.1 c)	SPACINGS are not less than their permitted values and the insulation of internal wiring remains undamaged		P
8.1 d)	PROTECTIVE FINGERGUARDS have not been damaged or loosened		P
8.1 e)	No damage which could cause spread of fire		P
8.2	Rigidity test		P
	20 N applied three times		P
8.3	Drop test		P
	Three samples dropped Dropped three time through 1m		P

8.4	Impact swing test		P
	Probe subjected to impact against a hardwood board		P
9	TEMPERATURE LIMITS AND PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	General		P
	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
	Easily touched surfaces not exceeding the following limits in NORMAL CONDITION :		P
	- metal less than 55 C No such parts. N/A - non-metallic less than 70 C		P
	- wires and cables less than 75 C P Temperatures in SINGLE FAULT CONDITION less than 105 °C		P
	Easily touched heated surfaces recognizable or marked with symbol 6 of table 1 (s. 5.2), if necessary for functional reasons No such parts.		N/A
	Circuits separated by at least by BASIC INSULATION, if protection depends on separation of circuits Protection against fire depends on separation of circuits.		N/A
9.2	Temperature tests	see Table 9 (A.12)	P
10	RESISTANCE TO HEAT		P
10.1	Integrity of CLEARANCES and CREEPAGE DISTANCES		P
	Requirements of 6.5 are met at an ambient temperature of 40 °C of maximum RATED ambient temperature (if higher)	see Table 6.5 (A.9)	P
10.2	Resistance to heat		P
	Probe assemblies with non-metallic ENCLOSURES are resistant to elevated temperatures:	See Table 10.2 (A.13)	P
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	General		N/A
	OPERATOR and surrounding area are protected against HAZARDS from fluids if PROBE ASSEMBLIES containing or intended to be used with fluids		N/A
11.2	Cleaning		N/A
	Cleaning procedure applied three times to the PROBE ASSEMBLY		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
	After the tests of 11.1 to 11.3:		N/A
	Accessible parts do not exceed the limits of 6.3.1 see Table 6.3.1 (A.6)		N/A
	Voltage tests in acc. to 6.6 see Table 6.6 (A.10)		N/A
12	COMPONENTS		P
12.1	General		P
	Safety components operated within their specified RATINGS	See Table 1 in EN 61010-1 standard.	P
	Components comply with one of the following		P
12.1 a)	- comply with all applicable safety requirements in relevant IEC standards,		N/A
	and subjected to the tests of this standard if necessary for application		N/A
12.1 b)	- comply with all relevant requirements of this standard,		P
	and subjected to the tests of relevant IEC component standard if necessary for application		N/A
12.1 c)	- comply with all relevant requirements of this standard only if there is no relevant IEC standard	Consider for the connector	P
12.1 d)	Applicable safety requirements of a non-IEC standard which are at least as high as those of the relevant IEC standard, approved to the non- IEC standard by a recognized testing authority.	Consider for the cable	P
12.2	Fuses		P
	Voltage RATING	Not used.	P
	Breaking capacity and current rating		P
12.3	PROBE WIRE		P
12.3.1	Suitable for use in NORMAL and SINGLE FAULT CONDITION		P
12.3.2	RATING of the PROBE WIRE		P
	PROBE WIRES rated for the maximum voltage and current of NORMAL USE	See Table 1 in EN 61010-1 standard.	P
	Withstand the voltage test for the highest RATED voltage to earth. Conductors separated from ACCESSIBLE surfaces by DOUBLE INSULATION or REINFORCED INSULATION, based on the following values:		P
12.3.2 a)	Type A probe assemblies, 125 V or the highest RATED voltage to earth of the probe assembly,	For use with 500V multimeter	P

12.3.2 b)	Type B probe assemblies, 500 V or the highest RATED voltage to earth of the probe assembly divided by the divider ratio;		N/A
12.3.2 c)	Type C probe assemblies, 125 V or the highest RATED voltage to earth of the probe assembly,		N/A
12.3.2 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 of PROBE WIRES which have a wear indicator, met the requirements for BASIC INSULATION when the wear indicator has become visible.	No wear indicator	N/A
	Conformity is checked by inspection, and by the a.c. voltage test of 6.6.5.1, or the d.c. voltage test of 6.6.5.2, with duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION. P If the insulation includes a wear indicator, then the voltage test is repeated with the test voltage value for BASIC INSULATION after sufficient insulation has been removed from the cable to make the wear indicator just visible		N/A
12.3.3	Pressure test at high temperature for insulations		P
	The indentation device is shown in Figure 22. The force is applied in a direction perpendicular to the axis of the sample; the blade is also perpendicular to the axis of the sample.		P
	Oven treatment		P
	Conformity is checked by the a.c. voltage test of 6.6.5.1, or the d.c. voltage test of 6.6.5.2, with a duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION.		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.		P
	Conformity is checked by inspection, and by the a.c. voltage test of 6.6.5.1, or the d.c. voltage test of 6.6.5.2, with a duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION.	No crack after test	P
12.3.5	Voltage test		P
	Oven treatment		P
	Dielectric strength test between conductor and metal mandrel		P

	Conformity is checked by inspection, and by the a.c. voltage test of 6.6.5.1, or the d.c. voltage test of 6.6.5.2, with a duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION.		P
	The test voltage is increased at a rate not exceeding 500 V/s until dielectric breakdown occurs. The average of the dielectric breakdown voltage values is calculated and recorded separately for unaged specimens and oven-aged specimens.		P
12.3.5 a)	unaged and oven-aged samples withstand the test voltage without breakdown for 1 min and		P
12.3.5 b)	the average dielectric breakdown value of oven-aged samples is not be less than 50 % of the average breakdown value of unaged samples.		P
12.3.6	Tensile test		P
12.3.6.1	General		P
	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.		P
	For the unaged samples, the median value of the tensile strengths is at least 7 N/mm ² and the samples exhibit a median value of elongation of at least 100 % before they break.		P
	For the aged samples, the median value of the tensile strengths is at least 70 % of the result for unaged samples, and the samples exhibit a median value of elongation of at least 45 % of the result of the unaged samples before they break.		P
12.3.6.2	The samples selected for the ageing treatment are from positions adjacent to the samples used for the test without ageing and the tensile tests on the aged and unaged test pieces are made in immediate succession.		P
	Any sample that shows signs of mechanical damage is not used for the test.		P
12.3.6.3	The centre 20 mm shall be marked immediately before the tensile test.		P
12.3.6.4	Determination of cross-sectional area		P
	$A = \pi \times (d - e) \times e$:		P
	For samples which are to be aged, the cross-sectional area is determined before ageing treatment.		P
12.3.6.5	Ageing treatment		P

	The maximum tensile force during the test is measured and recorded, and the distance between the two reference marks at the breaking point is measured and recorded.		P
13	Prevention of HAZARD from arc flash and short-circuits		P
13.1	General		P
	PROBE TIPS and crocodile clips are constructed to mitigate the risk of arc flash and short-circuits.		P
13.2	Exposed conductive parts		P
13.2. a)	For SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV:		N/A
13.2. a) 1)	In closed position, the exposed ACCESSIBLE conductive parts do not exceed 4 mm	N/A	
13.2. a) 2)	In open position		N/A
	i) the length of the exposed ACCESSIBLE conductive parts of SPRING-LOADED CLIPS with one hook does not exceed 10 mm		N/A
	ii) the outer surfaces of SPRING-LOADED CLIPS with more than one hook or jaw are not be conductive		N/A
13.2 b)	Except for SPRING-LOADED CLIPS RATED for MEASUREMENT CATEGORY III or IV:		P
	13.2 b) 1) for probe assemblies RATED for MEASUREMENT CATEGORY III or IV, the exposed conductive part of a PROBE TIP does not exceed 4 mm	Measured: 4.3mm	P
13.2 b) 2)	for probe assemblies not RATED for MEASUREMENT CATEGORY II, III or IV, and for use in special applications where the energy levels will not support arc flash or fire, the exposed conductive part of a PROBE TIP does not exceed 80 mm	CATEGORY I	N/A
13.2 b) 3)	for probe assemblies RATED for MEASUREMENT CATEGORY II, and for other probe assemblies not covered by items 1) and 2), above, the exposed conductive part of a PROBE TIP does not exceed 19 mm.		N/A
ANNEX D	ROUTINE SPARK TESTS ON PROBE WIRE		P
D. 1	The spark test is performed by the manufacturer as a ROUTINE TEST on 100 % of the PROBE WIRE in accordance with the following spark test procedure and routine spark test method for PROBE WIRE.	UL approved cable used. Routine test is performed during its approval.	P

EN 61010-031					
Clause	Requirement + Test		Result - Remark		Verdict
4.4.2	TABLE: Summary of SINGLE FAULT CONDITIONS Form A.1			P	
Subclause	Title	Does not apply	Carried out	Comments	
4.4.2.1	Equipment or parts for short-term or intermittent operation		√	Test with multimeter for measuring 10A , 10sec. max. every 15mins.	
4.4.2.2	Outputs of type B and type C PROBE ASSEMBLIES	√		Type A	
4.4.2.3	Insulation between circuits and parts	√		See EN 61010-1 test report	
4.4.2.4	Components of type B and type C PROBE ASSEMBLIES	√		Type A	
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.4:					
Supplementary information: (see Form A.2 for details of tests)					

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EN 61010-031						
Clause		Requirement + Test		Result - Remark		Verdict
5.3		TABLE: Durability of markings		Form A.3		P
Marking method (see NOTE)				Agent		
1)				A Water		
2)				B Isopropyl alcohol		
3)				C (specify agent)		
4)				D (specify agent)		
5)				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)			
Fuses (5.1.3)			P			
TERMINALS and operating devices (5.1.4)			5)			
DOUBLE/REINFORCED equipment (5.1.5)			N/A			
Rating (5.1.6)			5)			
Warning marking (5.2)			5)			
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments	
5)	--	N/A	N/A	N/A	Clearly legible	
Supplementary information:--						

6	TABLE: Protection against electric shock - Block diagram								P
Pollution degree: 2			Measurement category (overvoltage category) ... : CAT I 500V,						
Location or	Insulation	Maximum	CREEPAGE DISTANCE				CLEARANCE	Test	Comments
description	(NOTE 1)	working	(NOTE 3)				(NOTE 3)	voltage	
		voltage	PWB	CTI	Other	CTI	mm	(NOTE 2)	
		(NOTE 2)	mm		mm			V	
NOTE 1 – Type of insulation:		NOTE 2 - Types of voltage		NOTE 3 - MEASUREMENT CATEGORY (OVERVOLTAGE CATEGORIES)					
BI = BASIC INSULATION		Peak impulse test voltage (pulse)		or POLLUTION DEGREES which differ from					
DI = DOUBLE INSULATION		r.m.s		these should be shown under "Comments".					
PI = PROTECTIVE IMPEDANCE		d.c.							
RI = Reinforced INSULATION		peak							
SI = Supplementary INSULATION									
Supplementary Information:									
* Test with Multimeter – see standard EN 61010-1 part in this report. .									

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EN 61010-031													
Clause	Requirement + Test							Result - Remark					Verdict
6.3.1	TABLE: Values in NORMAL CONDITION (see NOTE 1) Form A.6												P
6.1.1	Exceptions							11.1 General					Meets 4.4.4
6.3.1	Values in NORMAL CONDITION							11.2 Cleaning					
								11.3 Specially protected PROBE ASSEMBLIES					
Item	Voltage			Current				Capacitance		10 s test			Comments
(see Form A.5)	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	
Probe body*													
Cable*													
Connector*													
NOTE 1 – The requirements of 6.3.1 include alkalineing out (if specified).													
Supplementary information: * Test with Multimeter – see standardEN 61010-1 part in this report.													

EN 61010-031												
Clause	Requirement + Test						Result - Remark				Verdict	
6.3.2	TABLE: Values in SINGLE FAULT CONDITION Form A.7											N/A
Item (See Form A.4)	Subclause and fault No. (see FormA.2)	Voltage			Transient (see NOTE)		Current				Capacitance μF (NOTE)	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.		
No faults considerable due to no additional components integrated into the EUT.												
NOTE – Transient voltages must be below the limits given from Figure 1 and the capacitance below the limits from figure 5 of IEC 61010-031.												
Supplementary information: --												

EN 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict
6.4.6	TABLE: Form A.8	PROTECTIVE IMPEDANCE	N/A
A high INTEGRITY single component			
Component	Location	Comments	
A combination of components			
Component	Location	Comments	
A combination of BASIC INSULATION and a current or voltage limiting device			
Component	Location	Comments	
Supplementary information:--			

EN 61010-031												
Clause	Requirement + Test							Result - Remark			Verdict	
6.5	TABLE: CLEARANCES and CREEPAGE DISTANCES Form A.9										P	
6.4	Insulation requirements for protection against electric shock											
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION											
8	Mechanical resistance to shock and impact											
10.1	Integrity of CLEARANCES and CREEPAGE DISTANCES											
Location (see Form A.4)	Measured (initial)		Verdict	Mechanical tests (note)				Test at max.	Measured after test (if required)		Verdict	
	CREEPAGE DISTANCE	CLEARANCE		Applied force	Rigidity	Drop	Impact swing	RATED ambient	CREEPAGE DISTANCE	CLEARANCE		
	mm	mm		N	(8.1)	(8.2)	(8.3)	(10.2)	mm	mm		
--*												
NOTE – Refer to Form A.10 for dielectric strength tests following the above tests.												
Supplementary information: * Test with Multimeter – see standardEN 61010-1 part in this report.												

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EN 61010-031							
Clause		Requirement + Test			Result - Remark		Verdict
9	TABLE : Temperature Measurements Form A.12					P	
9.1	Surface temperature limits - normal condition and / or single fault condition						
Operating conditions:							
Frequency :		Hz	Test room ambient temperature (ta) :			°C	
Voltage :		V	Test duration :			h min	
Part / Location		tm °C	tc °C	tmax °C	Verdict	Comments	
--*							
NOTE 1 - t_m = measured temperature t_c = t_m corrected ($t_m-t_a+ 40$ C or max. RATED ambient) 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 Form use additional form if necessary							
NOTE 4 - The tests of 6.7.4.1 to 6.7.4.3 are performed before temperature tests.							
Supplementary information:							
* Test with Multimeter – see standardEN 61010-1 part in this report.							

EN 61010-031							
Clause		Requirement + Test			Result - Remark		Verdict
10.2		TABLE: Resistance to heat of non-metallic enclosures Form A.13					P
		Test method used:					—
		Non operative treatment : []					
		Empty ENCLOSURE : []					
		Operative treatment : []					
		Temperature during tests :					—
		ENCLOSURE samples tested were :					—
Description		Material		Comments		Verdict	
	Dielectric strength test (6.6) :			V	r.m.s./peak/d..		
Supplementary information: Approved material used– see standardEN 61010-1 part in this report.							

EN 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	TESTS		P
4.4.2	Application of fault conditions See standard EN 61010-1 part in this report		P
4.4.2.1	Fault conditions include those specified in 4.4.2.2 to 4.4.2.14 and in 4.4.2.101.		P
4.4.2.101	Input voltages	See appended Table 4.4.2.101	P
	a) Up to 600 V a.c. r.m.s. Test voltage is the RATED voltage multiplied by 1.90 but not to exceed 920 V a.c. r.m.s.	Test voltage 950V a.c. r.m.s applied.	P
	b) Above 600 V a.c. r.m.s. and up to 1 000 V a.c. r.m.s. Test voltage is 1100 V a.c. r.m.s.		N/A
	c) Above 1 000 V a.c. r.m.s. Test voltage is the RATED voltage multiplied by 1.1.		N/A
	d) DC voltage. Test voltage is the RATED voltage multiplied by 1.1.	500Vd.c. x 1.1 = 550Vd.c.applied.	P
5.	MARKING AND DOCUMENTATION		P
5.1.5	TERMINALS, connections and operating devices	Symbols marked for terminals and relevant meaning explained in manual	P
5.1.5.1	If necessary for safety, indication of the purpose of TERMINALS, connectors, controls, and indicators are marked.	Symbol 14 provided near measuring circuit terminals	P
	Where insufficient space, symbol 14 is used.	No such terminals used	P
5.1.5.2	TERMINALS		P
	d) HAZARDOUS LIVE TERMINALS supplied from the interior of the equipment or from other TERMINALS are marked with the voltage, current, charge or energy value or range, or;		N/A
	- marked with symbol 12 of Table 1.		N/A
5.1.5.101	Measuring circuit TERMINALS		P
	Marked with RATED voltage to earth	See marking plate in EN61010-1 test report	P
	Each pair or set of measuring circuit TERMINALS are marked with RATED voltage or current.	See marking plate in EN61010-1 test report	P

	TERMINALS RATED for MAINS are marked "CAT III" or "CAT IV". See marking plate in EN61010-1 test report		P
	Alternate markings are used for measuring circuit TERMINALS that do not exceed the levels of 6.3.1.		N/A
	Markings are not used for dedicated measuring circuit TERMINALS, but a means for identification is provided.		P
	TERMINALS markings are visible with connectors and TERMINALS mated.		P
5.2	Warning markings		P
	Warning markings specified in 5.1.5.2 d), 6.1.2 b), 6.6.2, 7.3.2 b) 3), 7.4, 10.1, and 13.2.2 meet the following.		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:	See below	P
	a) Symbols min. 2,0 mm high		P
	0.5 mm depth or raised if not contrasting in colour		P
	2,75 mm and text 1,5 mm high and contrasting in colour with background		P
	b) Symbols or text moulded, stamped or engraved in material min. If necessary, marked with symbol 14		P
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted		P
	5.4.1 Equipment 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 METER has multiple MEASUREMENT CATEGORY RATINGS, the documentation clearly identifies MEASUREMENT CATEGORIES where the equipment may be used or must not be used	Explained in the manual	P
6	PROTECTION AGAINST ELECTRIC SHOCK		P
	General		P

6.5.1	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
	Or by one of the single means:		--
	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 which could become HAZARDOUS LIVE are separated from test finger by at least the applicable CLEARANCE AND CREEPAGE DISTANCE of Table 101 . :	See appended Table 6.6.101	P
	6.6.102 Specialized measuring circuit TERMINALS		N/A
	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		N/A
	Accessible parts did not exceed the levels of 6.3.1 and 6.3.2 :	See appended Table 6.6.102	P
6.7.1.5	Requirements for insulation according to type of circuit		P
	aa) in K.101 for measuring circuits of MEASUREMENT CATEGORY III and IV.		P
6.9	Constructional requirements for protection against electric shock		P
6.9.101	METER RATINGS		P
	Measuring circuit TERMINALS are RATED min. 300 V a.c. r.m.s. to earth, and;		N/A
	MEASUREMENT CATEGORY III or IV. III and IV		P
	The RATED voltage of measuring circuit TERMINALS is equal to or higher than the RATED voltage to earth of the TERMINALS		P
14	COMPONENTS AND SUBASSEMBLIES		P
14.101	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices in measuring circuits used to measure MAINS No such component used.		N/A
	Overvoltage limiting component or circuit has adequate strength to limit TRANSIENT OVERVOLTAGES in NORMAL USE :		N/A

14.102	Probe assemblies and accessories meet IEC 61010-031	Evaluated in attachment 2 EN 61010-031	P
16	HAZARDS RESULTING FROM APPLICATION		P
16.101	Over-range indication		P
	The display gives unambiguous indication of over-range value	See appended Table 16.101	P
101	MEASURING CIRCUITS		P
101.1	The equipment provides protection against HAZARDS resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE as specified below		P
	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)		N/A
101.2	Current measuring circuits		P
	When range changing takes place, there is no interruption which could cause a HAZARD		P
	Current transformers without internal protection are adequately protected from interruption		N/A
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
	The equipment provides one of the following protections against HAZARDS		P
	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		P
	Overcurrent protection device certified by an independent laboratory meet all of the following:		P
	a) RATED at least as high as the highest a.c. and d.c. voltages of any measuring TERMINAL		P

	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		P
	Additionally, spacings surrounding the overcurrent protection device are sufficiently large to prevent arcing		P
101.3.3	Protection by uncertified current limitation devices or by impedances	See appended Table 101.3.3	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 during the REASONABLY FORESEEABLE MISUSE event;		N/A
	2) if a resistor, it is RATED for twice the power dissipation that may result from the REASONABLY FORESEEABLE MISUSE event;		N/A
	3) meets the applicable CLEARANCE and CREEPAGE requirements of Annex K for REINFORCED INSULATION		N/A
	b) A combination of components		P
	1) withstands the max. voltage that may be present during the REASONABLY FORESEEABLE MISUSE event;		P
	2) is able to dissipate the power that may result from the REASONABLY FORESEEABLE MISUSE event;		P
	3) meets the applicable CLEARANCE and CREEPAGE requirements of Annex K for REINFORCED INSULATION		P
101.3.4	Test leads for the tests of 101.3.2 and 101.3.3		P
	a) length = 1 m;		P
	b) cross section of the conductor = 1,5 mm ² , stranded copper wire;		P
	c) equipment connector compatible with the measuring circuit TERMINALS;		P

	d) connection to the test voltage source 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;		P
	The test leads supplied by the manufacturer are used without modification		P
101.4	Functional integrity		P
	After the input voltage test of 4.4.2.101, the METER indicates the presence of HAZARDOUS LIVE voltages up to the maximum RATED voltage		P
Annex K.3	INSULATION FOR CIRCUITS NOT ADDRESSED IN 6.7, K.1, K.2 OR K.101		P
K.101	Insulation requirements for measuring circuits of MEASUREMENT CATEGORIES III and IV		P
K.101.1	General		P
K.101.2	CLEARANCES		P
	For equipment 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		P
	CLEARANCES for MEASUREMENT CATEGORIES III and IV meet Table K.101		N/A
	Equipment rated to operate at an altitude greater than 2000 m, correction factor of Table K.1 of 61010-1 applied	<2000m	N/A
	Minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 m for POLLUTION DEGREE 3		P
	Voltage tests of 6.8.3.1 or 6.8.3.3 of 61010-1	See EN 61010-1 part in this report.	P
K.101.3	CREEPAGE DISTANCES		P
	The requirements of K.2.3 of 61010-1 applied		P
K.101.4	Solid insulation		P
K.101.4.1	Solid insulation withstands the electrical and mechanical stresses that may occur in NORMAL USE in all RATED environmental conditions (see 1.4)	See appended Table 101.4	P
	Solid insulation also meets the following requirements as applicable		P
	a) solid insulation used as an ENCLOSURE or PROTECTIVE BARRIER, the requirements of Clause 8		P

	b) moulded parts, the requirements of K.101.4.2		N/A
	c) inner 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
K.101.4.2	Moulded and potted parts		P
	Conductors located between same two layers moulded together are separated by at least the value of Table K.9 of 61010-1	See Form A.15 in standard EN 61010-1 part in this report.	P
K.101.4.3	Inner insulating layers of printed wiring boards		N/A
	Conductors locatedst the applicable minimum distances of Table K. between same two layers are separated by at lea 9 of 61010-1		N/A
	REINFORCED INSULATION have adequate electric strength; one of the following methods are used:		N/A
	a) thickness at least the value of Table K.9 of 61010-1		N/A
	b) insulation is assembled from at least two separate layers, each RATED for test voltage of Table K.102 or 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 or 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 value of Table K.9 of 61010-1		N/A
	b) insulation consists of at least two separate layers, each RATED for test voltage of Table K.102 or Table K.103 for BASIC INSULATION		N/A
	c) insulation consists of at least three separate layers, where the combination of two layers passed voltage tests of Table K.102 or K.103 for REINFORCED INSULATION		N/A
	Voltage tests of 6.8.3.1 of 61010-1 :	See appended Table K.101.4	N/A

EN 61010-033					
Clause	Requirement + Test			Result - Remark	Verdict
4.4.2.101	TABLE: Testing in SINGLE FAULT CONDITION – Input Voltages Results				P
Test sub-clause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	4.4.4 Conformity
4.2.101	1.	500 Vac applied between terminals V and COM	5mins	Operated normally. Display: 500V. Dielectric – Pass, Permissible Measured touch current: Meter– 0.10mA, Probe body – 0.10mA	Pass
4.4.2.101	2.	275 Vdc applied between terminals V and COM	5mins	Operated normally. Display: 276V. Dielectric – Pass, Permissible Measured touch current: Meter – 0.10mA, Probe body – 0.10mA	Pass
4.4.2.101	3.	5A applied by probe	5mins	Operated not normally. Display: no any display . Dielectric – Pass, Permissible Measured touch current: Meter – 0.07mA, Probe body – 0.06mA	Pass
		.			
NOTE Td = Test duration in hh:mm:ss					
Record dielectric strength test.					
Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.					
Supplementary information:--					

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EN 61010-033						
Clause	Requirement + Test				Result - Remark	Verdict
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		
Supplementary information:						
* Test with Multimeter – see standard EN 61010-1 part in this report.						

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.		
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.								
* Test with Multimeter – see standardEN 61010-1 part in this report.								

EN 61010-1												
Clause	Requirement + Test				Result - Remark					Verdict		
14.101	TABLE: TRANSIENT OVERVOLTAGE limiting devices in measuring circuits used to measure MAINS										N/A	
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	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:												

EN 61010-033			
Clause	Requirement + Test	Result - Remark	Verdict
16.101	TABLE: Over-range indication		P
Measuring terminal	Applied Voltage	Contents of Display	Comment
V and COM with rotating switch in V position	>2000Vac	LCD shows the over range symbol "1"	Pass
V and COM with rotating switch in V position	>2000Vdc	LCD shows the over range symbol "1"	Pass
NOTE- Examples of ambiguous indications include the following, unless there is a separate unambiguous indication of an over-range value: a) analogue METERS with stops at the exact ends of the range; b) digital METERS which show a low value when the true value is above the range maximum (for example 1001,5V displayed as 001,5V			
Supplementary information:--			

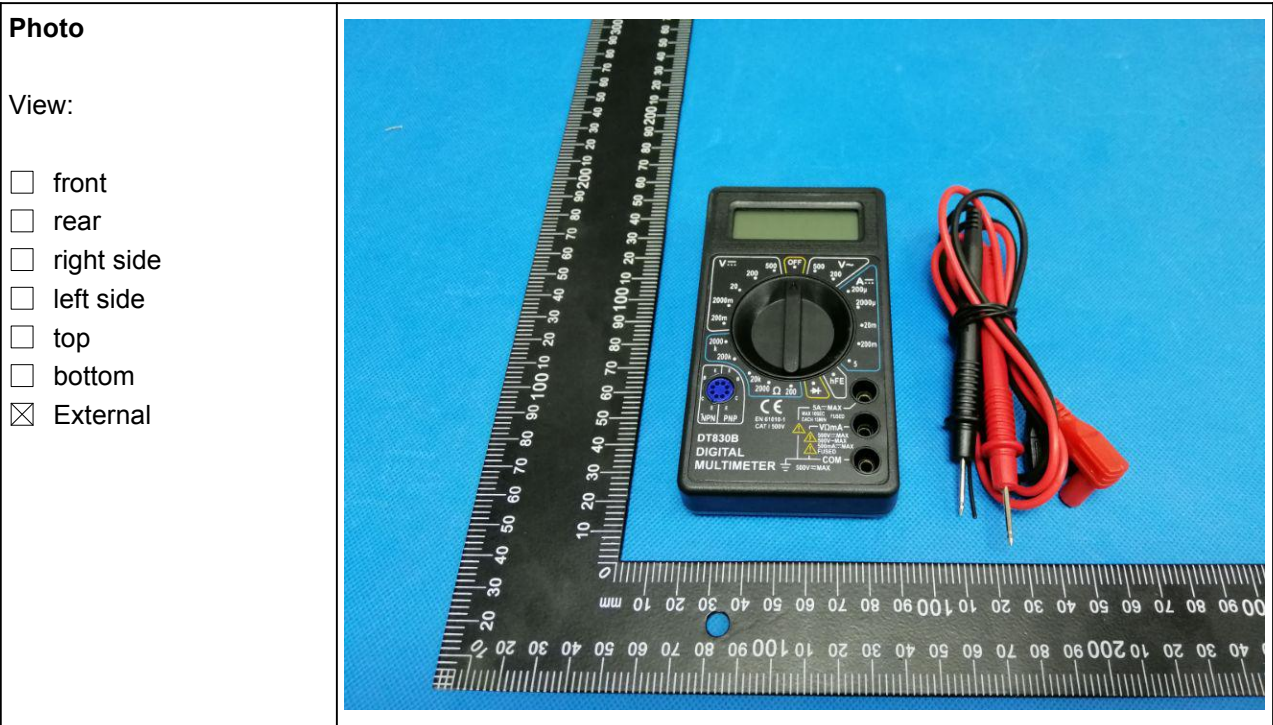
101.2	TABLE: Current measuring circuits - Current transformers				N/A
Type/Model	RATED current (A)	Test current (A)	Interrupt Yes / No	Result / Comments	
NOTE - These tests are performed with all types and models of current transformers without internal protection, and which are specified by the manufacturer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

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EN 61010-033								
Clause		Requirement + Test			Result - Remark		Verdict	
101.3.3		TABLE: Uncertified overcurrent protection device test						N/A
Type / Mfr. / Model / Terminal	Max. rated Voltage (V)	Test Voltage (V)	Test current (A peak)	Test leads		Verdict	Comments	
				--	--			
--	-	--	-	--	--	N/A	--*	
NOTE 1 - Test was conducted 3 times.								
NOTE 2 - Any damage to a device used for current limitation was ignored when other parts of the equipment were not affected during the test.								
NOTE 3 - Mfr – Manufacturer supplied leads Std. – Leads as described in 101.3.4								
NOTE 4 - Note current limit devices manufacture, type and ratings.								
Supplementary information:								
* measure 20A with test lead inserted to V and Com port 1min.								

101.4 (6.8)	TABLE: Solid insulation (Dielectric strength tests)					P
Location	Clause or sub-clause	Working voltage V	Test voltage r.m.s./peak/ d.c.	Test duration	Results / Comments	
--*						
Supplementary information:						
* Test with Multimeter – see standardEN 61010-1 part in this report.						

Attachment 1 Photos



Photo

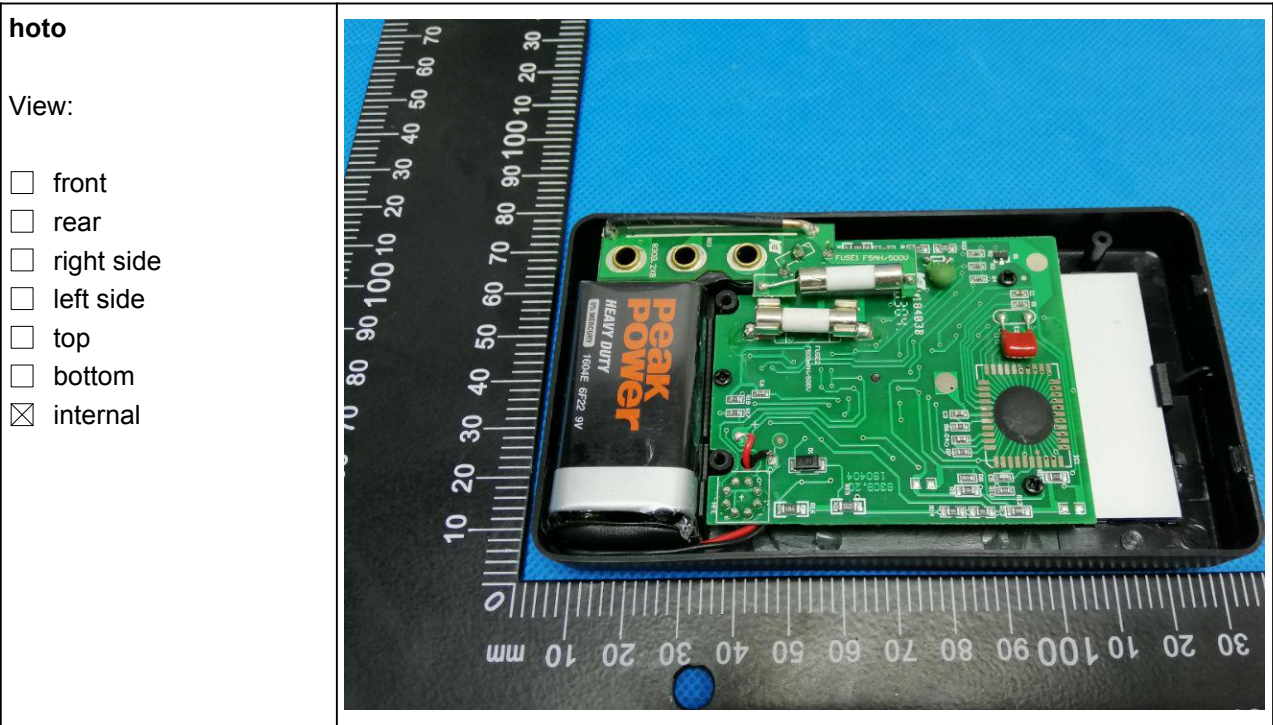
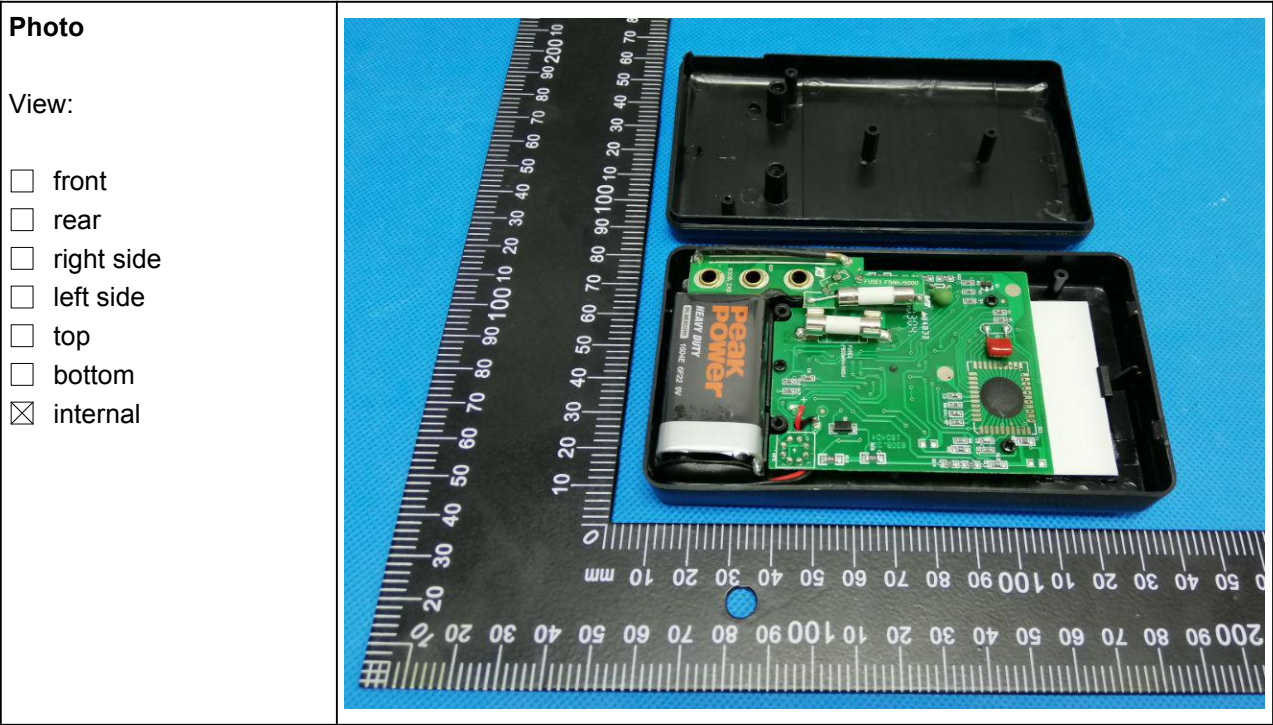
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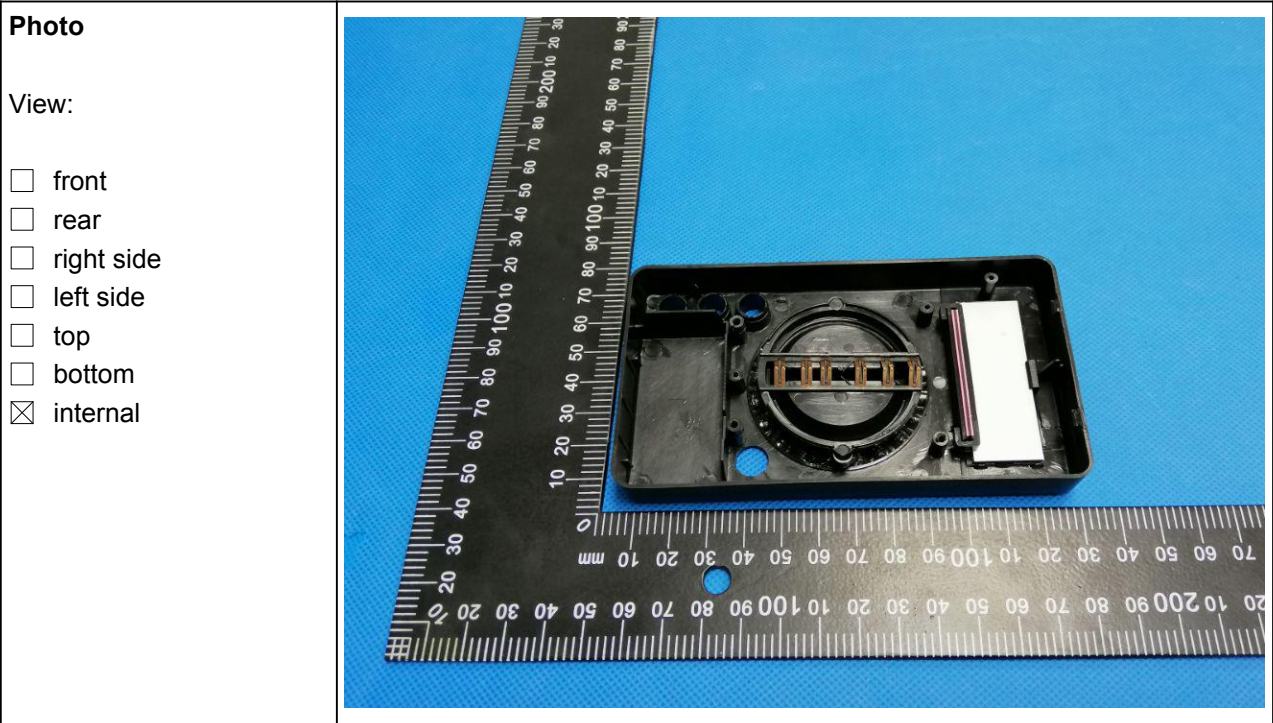
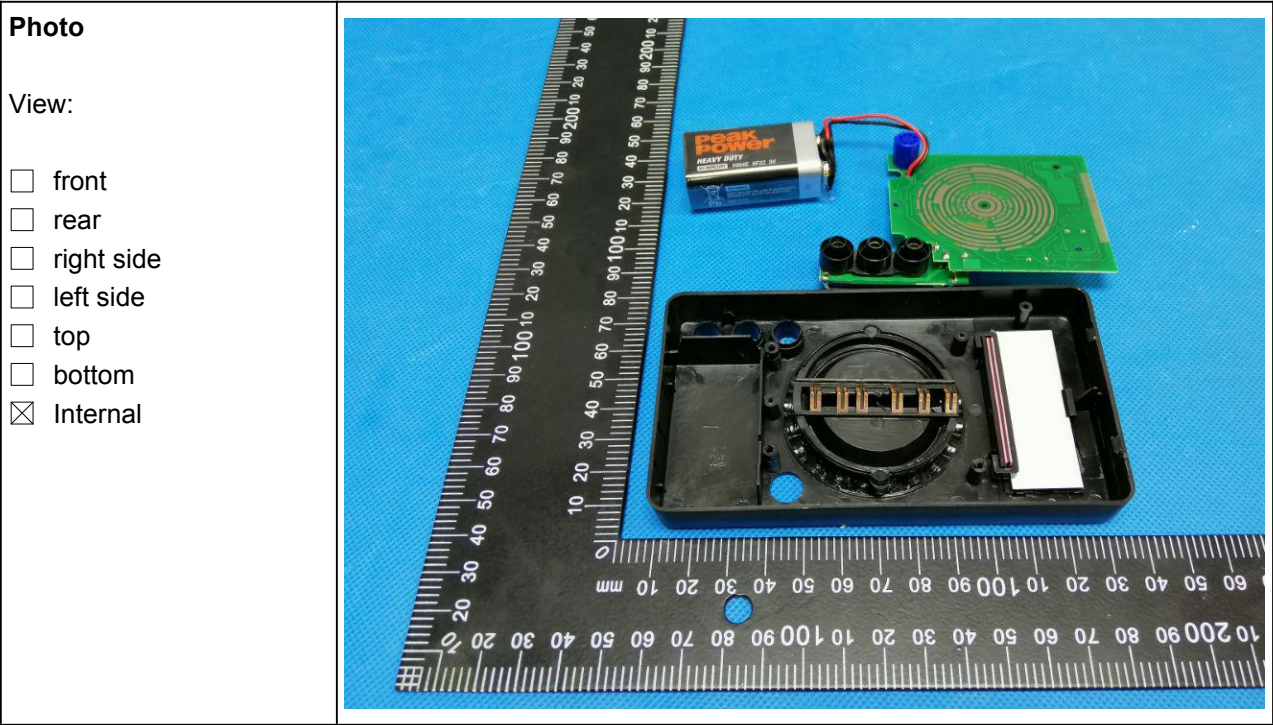
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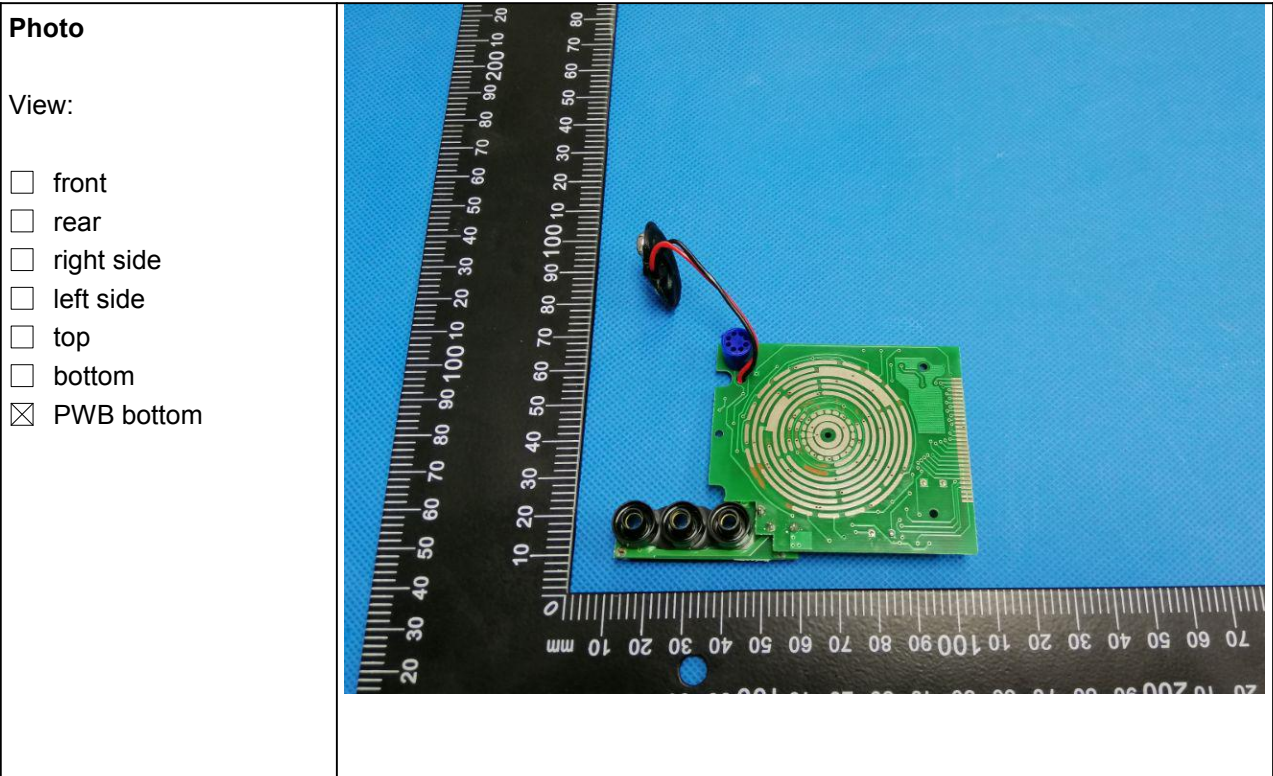
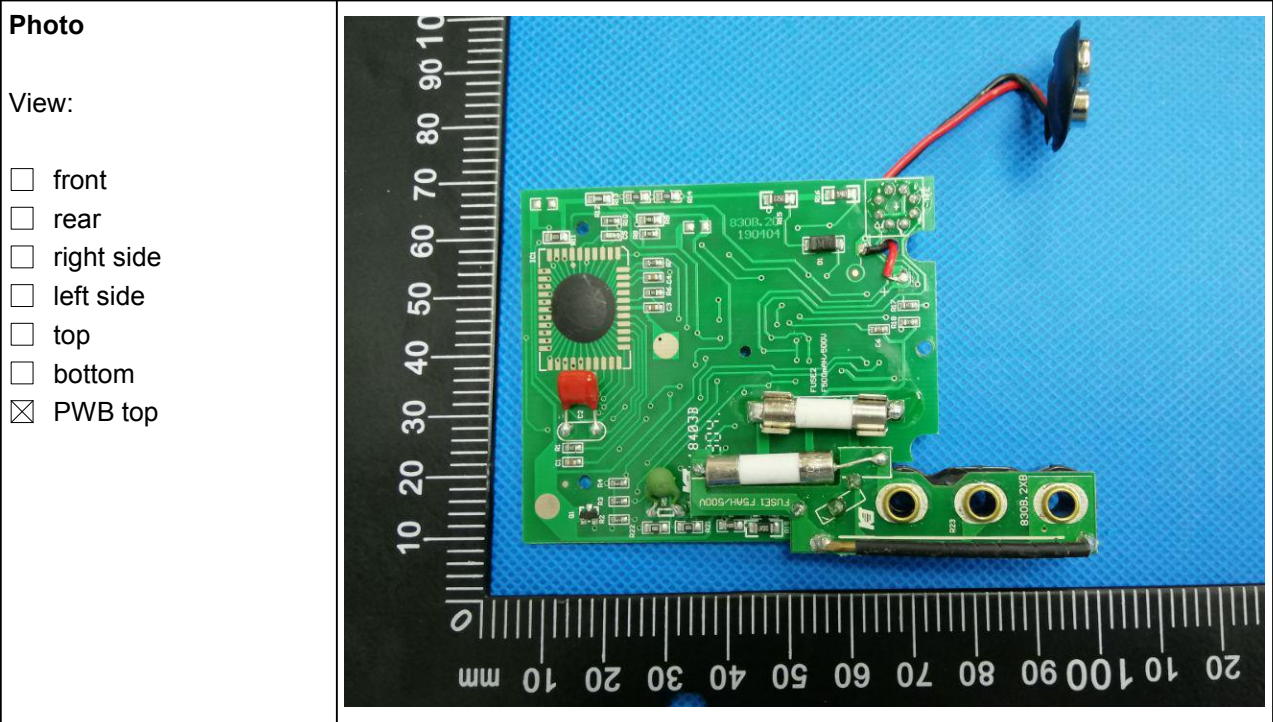
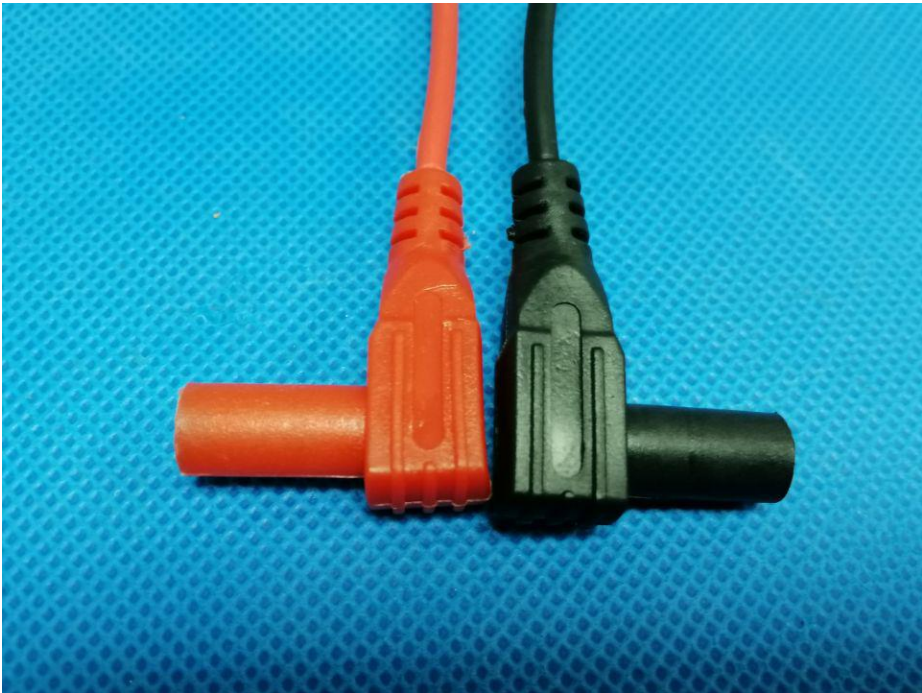


Photo View: ☐ front ☐ rear ☐ right side ☐ left side ☐ top ☐ bottom ☒ probe	
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Photo View: ☐ front ☐ rear ☐ right side ☐ left side ☐ top ☐ bottom ☒ probe	
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Photo View: ☐ front ☐ rear ☐ right side ☐ left side ☐ top ☐ bottom ☒ Probe	
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***** End of Report *****