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TEST REPORT
IEC 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

Report Reference No.....:	**170814023GZU-001**
Date of issue.....:	8 Sep 2017
Total number of pages.....:	43
CB Testing Laboratory.....:	**Intertek Testing Services Shenzhen Ltd. Guangzhou Branch**
Address.....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Applicant's name.....:	Uni-Trend Technology (China) Limited
Address.....:	No 6, Gong Ye Bei 1st Road Songshan Lake National High-Tech Industrial Development Zone, Dongguan City Guangdong Province, China
Test specification:	
Standard .....:	IEC61010-031: 2015 (Second Edition), EN 61010-031:2015
Test procedure .....:	LVD
Non-standard test method……..:	N/A
Test Report Form No.....:	IEC61010_031D
Test Report Form(s) Originator .....:	UL(US)
Master TRF.....:	2015-09

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

General disclaimer:

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

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Test item description ..... :	Voltage detector
Trade Mark ..... :	UNI-T
Manufacturer..... :	Uni-Trend Technology (China) Limited No 6, Gong Ye Bei 1st Road, Songshan Lake National High-Tech Industrial, Development Zone, Dongguan City, Guangdong Province, China
Model/Type reference ..... :	UT12A, UT12B, UT12C, UT12A-EU, UT12B-EU, UT12C-EU, UT12A-US, UT12B-US, UT12C-US
Ratings ..... :	Measurement category: CAT IV 1000V Battery operation: 1.5 VDC x 2 PCS, AAA battery

Testing procedure and testing location:

☒ **CB Testing Laboratory**:

Testing location/ address ..... : Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

☐ **Associated CB Test Laboratory:**

Testing location/ address ..... : N/A

Tested by (name + function+ signature) ..... : Jackie Chen/ Engineer

Approved by (name+ function+ signature) ..... : Justin He/ Manager

☐ Testing procedure: TMP

Tested by (name + signature) ..... : N/A

Approved by (+ signature)..... : N/A

Testing location/ address ..... : N/A

☐ Testing procedure: WMT

Tested by (name + signature) ..... : N/A

Witnessed by (+ signature) ..... : N/A

Approved by (+ signature)..... : N/A

Testing location/ address ..... : N/A

☐ Testing procedure: SMT

Tested by (name + signature)..... :	N/A
Approved by (+ signature) ..... :	N/A
Supervised by (+ signature)..... :	N/A
Testing location/ address..... :	N/A

☐ Testing procedure: RMT	
Tested by (name + signature)..... :	N/A
Approved by (+ signature) ..... :	N/A
Supervised by (+ signature)..... :	N/A
Testing location/ address..... :	N/A

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

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
clause name All applicable sub-clauses performed	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

Summary of compliance with National Differences (List of countries addressed):

No national differences are considered in this report.

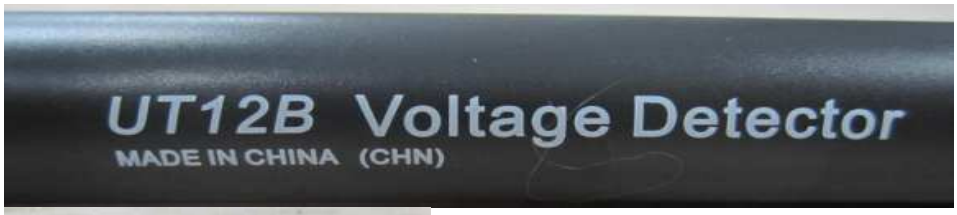
Copy of marking plate:

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

(representative)

1) Measurement category, warning mark and the range of measure voltage are silk-screen on the enclosure as below

2) Name of apparatus and trademark are silk-screen on the enclosure as below



Note: UT12A and UT12C has the same markings as UT12B as above except model number.

UT12A-EU, UT12B-EU, UT12C-EU, UT12A-US, UT12B-US, UT12C-US has the same markings as UT12B as above except model number.

Test item particulars..... :	
Type of item tested ..... :	Measurement
Description of equipment function..... :	Voltage detection
Classification..... :	Type C
Protection class..... :	Class II
Measurement category..... :	CAT IV
POLLUTION DEGREE ..... :	2
Environmental rating.....:	Altitude: 3000m max.
Operating conditions.....:	continuous
Overall size of the equipment (W x D x H) .....:	Diameter 19.9 x 140mm
Mass of the equipment (kg).....:	0.2 kg
Marked degree of protection to IEC 60529 .....:	NA
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 .....:	9 Jun 2015
Date (s) of performance of tests.....:	9 Jun 2015 – 17 Jun 2015

General remarks:

The test results presented in this report relate only to the object tested.
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"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.
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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid

This report is based and superseded previous report GZ12010394-1, dated on 21 Jan 2012, due to revision below.

- Name of address of applicant changed

Modification 1: This report is based on and superseded original report 150609085GZU-002, dated 18 June 2015, with below modified information:

1) Add a new model UT12C, which is based on model UT12B add the function of vibration indicator.
2) No test is required since the construction of UT12C is the same as original models.
3) Add relevant photos of UT12C.
4) Add new models UT12A-EU, UT12B-EU, UT12C-EU, UT12A-US, UT12B-US, UT12C-US.

UT12A-EU and UT12A-US are the same as model UT12A since these two models are sold to different places. UT12B-EU and UT12B-US are the same as model UT12B since these two models are sold to different places. UT12C-EU and UT12C-US are the same as model UT12C since these two models are sold to different places. No test is required.

This report is valid only when read in conjunction with test report 150609085GZ-001, dated on 18 Jun 2015.

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

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

Name and address of factory (ies) ..... :	Uni-Trend Technology (China) Limited No 6, Gong Ye Bei 1st Road, Songshan Lake National High-Tech Industrial, Development Zone, Dongguan City, Guangdong Province, China

General product information:

Model UT12A and UT12B are identical in detection circuit, except that the way of operation: for UT12A, the user shall push the button during detect the voltage; and UT12B can be on standby condition, the user need not push the button during detect the voltage.

Model UT12C is based on model UT12B add the function of vibration indicator.

UT12A-EU and UT12A-US are the same as model UT12A since these two models are sold to different places. UT12B-EU and UT12B-US are the same as model UT12B since these two models are sold to different places. UT12C-EU and UT12C-US are the same as model UT12C since these two models are sold to different places.

- The meter in this report is intended to be used altitude up to 3000 m.

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

5	**MARKING AND DOCUMENTATION**		P
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:		N/A
	- 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	UNI-T	P
5.1.2 b)	For type B and C, also model no. or similar	Type C, see copy of marking	P
	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	No fuse used	N/A
	All details necessary for fuse replacement		N/A
	Includes rated voltage and current breaking capacity		N/A
	If selected according to particular application; marked with symbol 7 and information in documentation		N/A
5.1.4	Necessary identification for TERMINALS, connectors etc		N/A
5.1.5	Rating		P
	Maximum RATED voltage to earth		P
	(CAT I) Symbol 7 used		N/A
	(CAT II-IV) Category marked	CAT IV 1000V~	P
	Nature of voltage (ac, dc etc.)	For AC	P
	Reference connector intended for connection to voltages exceeding the values of 6.3.2		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	For type A and type D only, the maximum RATED current unless specified for high impedance inputs		N/A
5.2	**Warning markings**		P
	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	Should be shown in the end-product manual	P
	Easily touched heated parts, if not self-evident, marked with symbol 6	No such part	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	Refer to the meter manual	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		P
	Maximum current RATING		N/A
	Statement of the range of environmental conditions		P
5.4.3	Operation		P
5.4.3 a)	Identification of operating controls		P

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Clause	Requirement + Test	Result – Remark	Verdict
5.4.3 b)	Use with specific model		N/A
5.4.3 c)	Explanation of required and used symbols		N/A
5.4.3 d)	Definition of measurement category (if marked with CAT)		N/A
5.4.3 e)	Specification of limits of intermittent operation	Type AAA battery	P
5.4.3 f)	Interconnection requirements		P
	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		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;		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.		N/A
	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		N/A
	RATING and characteristics of fuses (see 5.1.3)	No fuse used	N/A
	Instructions on the following subjects shall be provided for service personnel if the probe assembly is suitable to be serviced:		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	- product-specific risks that may affect the service personnel;		N/A
	- protective measures for these risks;		N/A
	- verification of the safe state of the probe assembly after repair.		N/A
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		N/A
6.1.1 b)	PROBE TIPS, provided that they meet the requirements of 6.4.3		N/A
6.1.1 c)	unmated CONNECTORS as specified in 6.4.2 c)		N/A
6.2	**Determination of ACCESSIBLE parts**		P
	According to figure 6	See Table 6.2 (A.5)	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)	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		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		N/A
6.4.2 a)	Connectors in fully mated position:		N/A
	1) Connecting probe to measuring equipment insulated by at least basic insulation		N/A
	2) Intended to be HAND-HELD insulated by DOUBLE or REINFORCED INSULATION		N/A
6.4.2 b)	Connectors in partially mated position:	Should be evaluated together with end-product	N/A
	insulated by at least BASIC INSULATION		N/A
	Voltage test with test finger (B.1)		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
6.4.2 c)	Connectors in unmated position:		N/A
	1). Locking or screw-held type connectors or limited current by PROTECTIVE IMPEDANCE permitted to be accessible		N/A
	2). Stackable connectors	Not 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		N/A
	3). Other unmated connectors:		N/A
	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		N/A
	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	The tip is insulated/Barrier is provided also	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		P
	PROBE TIPS that can be used as CONNECTORS shall also meet the requirements of 6.4.3.5.		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		N/A
	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		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	SPACINGS between the HAZARDOUS LIVE part of the PROBE TIP and the hand-held side of the PROTECTIVE FINGERGUARD are REINFORCED INSULATION.		N/A
	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		N/A
	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.		N/A
6.4.3.3	Spring-loaded squeeze PROBE ASSEMBLIES: (rated for WORKING VOLTAGE up to1 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
6.4.5	PROTECTIVE IMPEDANCE		N/A
	A PROTECTIVE IMPEDANCE limits the current or voltage to the levels of 6.3.2 in NORMAL CONDITION and 6.3.3 in SINGLE FAULT CONDITION (see also 4.4.2.2)		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	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

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Clause	Requirement + Test	Result – Remark	Verdict
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	>3 mm between conductors in moulded part.	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

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Clause	Requirement + Test	Result – Remark	Verdict
	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		N/A
	for probe assemblies stressed only by d.c., the 1 min d.c. voltage test of 6.6.5.2 or		N/A
	the impulse voltage test of 6.6.5.3, using the test voltage of Table 10 for the required clearance		N/A
6.5.2.3	CLEARANCES for probe assemblies which are not RATED for MEASUREMENT CATEGORIES II, III, or IV		N/A
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 non-sinusoidal 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

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Clause	Requirement + Test	Result – Remark	Verdict
	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.		P
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.		P
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.		P
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

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Clause	Requirement + Test	Result – Remark	Verdict
	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	No soldered wiring connections	N/A
6.7.1 b)	Screws securing removable covers are captive if their length affects isolation distances		N/A
6.7.1 c)	Accidental loosening		P
6.7.2	Insulating materials		P
	The following is not used for safety purposes:		P
	1) Materials which can be easily damaged (enamel etc)	Not used	P
	2) Non-impregnated hygroscopic materials	Not used	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		N/A
	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:	No such part	N/A
	a) provision of an insulating coating or BARRIER on the inside of the ENCLOSURE		N/A
	b) CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires		N/A
6.7.4	Cable attachment		N/A
	Withstand forces likely to be encountered		N/A
6.7.4.1	General		N/A
6.7.4.1 a)	Probe wire not damaged		N/A
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		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
6.7.4.1 c)	SPACINGS not less than 6.5		N/A
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		N/A
6.7.4.2	Pull test.....:		N/A
6.7.4.3	Flexing/pull test.....:		N/A
6.7.4.4	Rotational flexing test .....:		N/A
7	**PROTECTION AGAINST MECHANICAL HAZARDS**		P
	Handling during normal use shall not lead to hazard		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		N/A
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		P
8.4	**Impact swing test**		N/A
	Probe subjected to impact against a hardwood board		N/A
9	**TEMPERATURE LIMITS AND PROTECTION AGAINST THE SPREAD OF FIRE**		P

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Clause	Requirement + Test	Result – Remark	Verdict
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		N/A
	- non-metallic less than 70 °C		P
	- wires and cables less than 75 °C		N/A
	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		N/A
	Circuits separated by at least by BASIC INSULATION, if protection 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

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Clause	Requirement + Test	Result – Remark	Verdict
	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 12	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,		N/A
	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		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.		N/A
12.2	**Fuses**		N/A
	Voltage RATING	No fuse	N/A
	Breaking capacity and current rating.....:		N/A
12.3	**PROBE WIRE**		N/A
12.3.1	Suitable for use in NORMAL and SINGLE FAULT CONDITION		N/A
12.3.2	RATING of the PROBE WIRE		N/A
	PROBE WIRES rated for the maximum voltage and current of NORMAL USE		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	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:		N/A
12.3.2 a)	Type A probe assemblies, 125 V or the highest RATED voltage to earth of the probe assembly,		N/A
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,		P
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.		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.		N/A
	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		N/A
	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.		N/A
	Oven treatment		N/A
	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.		N/A
12.3.4	Tests for resistance of insulation to cracking		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
	After this conditioning, the samples show no cracks when examined, and meet the requirements for solid insulation.		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 a duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION.		N/A
12.3.5	Voltage test		N/A
	Oven treatment		N/A
	Dielectric strength test between conductor and metal mandrel		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 a duration of at least 1 min using the applicable test voltage of Table 4 for REINFORCED INSULATION.		N/A
	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.		N/A
12.3.5 a)	unaged and oven-aged samples withstand the test voltage without breakdown for 1 min and	No breakdown	N/A
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.		N/A
12.3.6	Tensile test		N/A
12.3.6.1	General		N/A
	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.		N/A
	For the unaged samples, the median value of the tensile strengths is at least 7 N/mm2 and the samples exhibit a median value of elongation of at least 100 % before they break.		N/A
	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.		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
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.		N/A
	Any sample that shows signs of mechanical damage is not used for the test.		N/A
12.3.6.3	The centre 20 mm shall be marked immediately before the tensile test.		N/A
12.3.6.4	Determination of cross-sectional area		N/A
	A = π × (d – e) × e……..:		N/A
	For samples which are to be aged, the cross-sectional area is determined before ageing treatment.		N/A
12.3.6.5	Ageing treatment		N/A
	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.		N/A
13	**PREVENTION OF HAZARD FROM ARC FLASH AND SHORT-CIRCUITS**		N/A
13.1	**General**		N/A
	PROBE TIPS and crocodile clips are constructed to mitigate the risk of arc flash and short-circuits.	NO PROBE TIPS and crocodile clips	N/A
13.2	**Exposed conductive parts**		N/A
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:		N/A
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		N/A

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Clause	Requirement + Test	Result – Remark	Verdict
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		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.		P

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Clause	Requirement + Test	Result – Remark	Verdict

4.4.2	**TABLE: Summary of SINGLE FAULT CONDITIONS**	**A.1**	N/A

Subclause	Title	Does not apply	Carried out	Comments
4.4.2.1	Equipment or parts for short-term or intermittent operation	YES	No	
4.4.2.2	Outputs of type B and type C PROBE ASSEMBLIES	YES	No	
4.4.2.3	Insulation between circuits and parts	YES	No	
4.4.2.4	Components of type B and type C PROBE ASSEMBLIES	YES	No	see Table 4.4 (A.2)
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.4:				

Supplementary information:

See Table 4.4 (A.2) for details of tests

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Clause	Requirement + Test	Result – Remark	Verdict

4.4	**TABLE: Testing in single FAULT CONDITION – Results**			**A.2**	**P**
Test sub clause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
13.2.2	1	Battery short circuit	30 min	Become steady, no hazard	
13.2.2	2	Battery reverse	30 min	Become steady, no hazard	

NOTE Td = Test duration in h:min:s
Record voltage test in Table 6.6 (A.10) and temperature tests on Table 9 (A.12)
Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Supplementary information:

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Clause	Requirement + Test	Result – Remark	Verdict

5.3	**TABLE: Durability of markings**	**(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)	1)
Fuses (5.1.3)	-
TERMINALS and operating devices (5.1.4)	-
DOUBLE/REINFORCED equipment (5.1.5)	1)
Rating (5.1.6)	1)
Warning marking (5.2)	1)

Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
1)	A, B	P	P	P	

Supplementary information:

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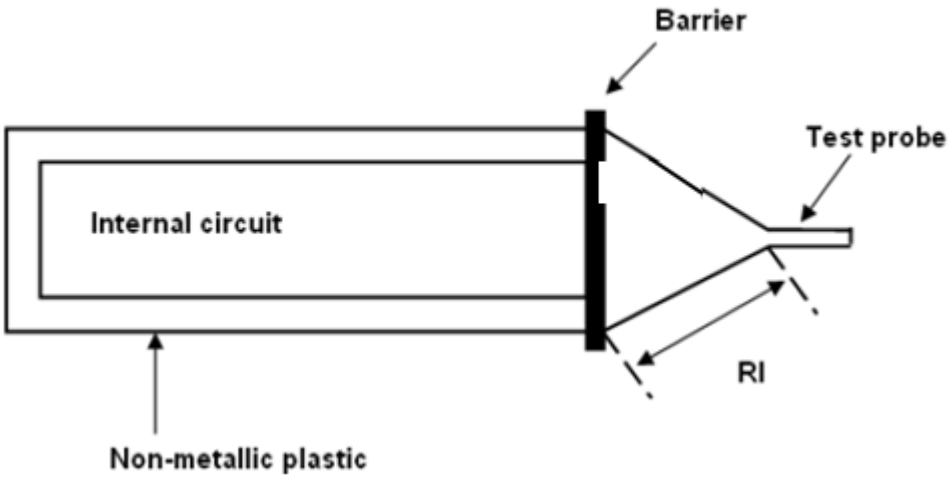
Clause	Requirement + Test	Result – Remark	Verdict

6	**TABLE: Protection against electric shock - Block diagram**	**(A.4)**	P



POLLUTION DEGREE... :	2	Measurement category (overvoltage category).. :	CAT III	600 V

Location or	Insulation type	Maximum working	CREEPAGE DISTANCE (NOTE 3)				CLEARANCE (NOTE 3)	Test voltage	Comments
description	(NOTE 1)	voltage (NOTE 2)	PWB mm	CTI	Other mm	CTI	mm	(NOTE 2) V	
Probe tip to accessible part, internal circuit	RI	1000 V r.m.s	--	--	32	> 100	32	13779Vrms (11294 x 1.22)	--

NOTE 1 – Type of insulation:	NOTE 2 - Types of voltage	NOTE 3 - MEASUREMENT CATEGORY (OVERVOLTAGE CATEGORIES)
BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION	Peak impulse test voltage (pulse) r.m.s. d.c. peak	or POLLUTION DEGREES which differ from these should be shown under "Comments".

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Clause	Requirement + Test	Result – Remark	Verdict

6	**TABLE: Protection against electric shock - Block diagram (A.4)**	P

Supplementary Information:

Rated operating altitude is of 3000 m, then the limit of clearance for CAT IV 1000V shall be 14x1.14=15.96 mm (for basic insulation), 24.3x1.14=27.70 mm (for reinforced insulation).

Creepage distance (RI) = 10,5mm, but limit of clearance applied to limit of creepage distance, so

Creepage distance (RI) = clearance (RI) =27,7mm Test voltage is calculated according to EN 61010-1:2010 and EN 61010-2-0-30:2010, as test voltage according to EN 61010-031is less than calculation according to EN 61010-1:2010 and EN 61010-2-0-30:2010

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Clause	Requirement + Test	Result – Remark	Verdict

6.2	**TABLE: List of ACCESSIBLE parts**	**(A.5)**	**P**
6.1.1	Exceptions		—
6.2	Determination of ACCESSIBLE parts		—

Item	Description	Determination method (NOTE 5)	Exception under 6.1.1 (NOTE 4)
1	Exterior enclosure	Test finger, test pin	--
2	Internal circuit	Test finger, test pin	--

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.1)
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)
NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of 6.4).
NOTE 4 – Capacitor test may be required
NOTE 5 – The determination methods are: visual; rigid test finger; jointed test finger; pin 3 mm diameter.

Supplementary information:

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Clause	Requirement + Test	Result – Remark	Verdict

6.3.1	**TABLE: Values in NORMAL CONDITION** (see NOTE 1)	**(A.6)**	**P**
6.1.1	Exceptions	11.1 General	P
6.3.1	Values in NORMAL CONDITION	11.2 Cleaning	N/A
		11.3 Specially protected PROBE ASSEMBLIES	N/A

Item	Voltage			Current				Capacitance		10 s test			Comments
(see Table 6.2 (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 tip surface - accessible part, internal circuit	10.6	15.0	--	--	--	--	--	--	--	--	--	--	While measuring 1000Vrms

NOTE 1 – The requirements of 6.3.1 include drying out (if specified).

Supplementary information:

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Clause	Requirement + Test	Result – Remark	Verdict

6.3.2	**TABLE: Values in SINGLE FAULT CONDITION**										**(A.7)**	**N/A**
Item	Sub clause, and	Voltage			Transient (see NOTE)		Current				Capacitance	Comments
(See Table 6 (A.4)	fault No. see Table 4 (A.2)	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 (NOTE)	
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:												

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Clause	Requirement + Test	Result – Remark	Verdict

6.4.6	**TABLE: PROTECTIVE IMPEDANCE**	**(A.8)**	**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:
No high integrity component used

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Clause	Requirement + Test	Result – Remark	Verdict

6.5	**TABLE: CLEARANCES and CREEPAGE DISTANCES**	**(A.9)**	**P**
6.4	Insulation requirements for protection against electric shock		P
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION		P
8	Mechanical resistance to shock and impact		P
10.1	Integrity of CLEARANCES and CREEPAGE DISTANCES		P

Location	Measured (initial)		Verdict	Mechanical tests (note)				Test at max.	Measured after test (if required)		Verdict	Comments
see Table 6 (A.4)	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		
Probe tip - accessible part, internal circuit	32	32	P	10	P	P	N/A	70℃	32	32	P	

NOTE – Refer to Table 6.6 (A.10) for voltage tests following the above tests.

Supplementary information:

CAT III 600V CTI III ; Limit: , Cl=Cr=12 mm(RI),

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Clause	Requirement + Test	Result - Remark	Verdict

6.6	**TABLE: Voltage tests**	**(A.10)**	**P**
4.4.4	Conformity after application of fault conditions[1]		N/A
6.4	Insulation requirements for protection against electric shock		P
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION		P
6.7.5	Insulation of a probe cable		P
8	Mechanical resistance to shock and impact		P
11	Protection against hazards from fluids		N/A
[1] Record the fault, test or treatment applied before the voltage test			
	Test site altitude .....:	Up to 500 m	—
	Test voltage correction factor (see Table 10).....:	None	—

Location or references from Table 4.4 (A.2) and 6 (A.4)	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/d.c V	Comments	Verdict
Probe tip surface to accessible part, internal circuit	6.4, 6.5.2	Yes	Max. 1000 V rms	9024V ① (7396 x 1.22)	Reinforced insulation, 1 min	P
	8	No	Max. 1000 V rms	13779V ① (11294 x 1.22)	Reinforced insulation, 1 min	P
	4.4.4.1 b)	No	Max. 1000 V rms	13779V ① (11294 x 1.22)	basic insulation, 1min	P

Supplementary information:

① Test voltage is calculated according to EN 61010-1:2010 and EN 61010-2-0-30:2010, as test voltage according to EN 61010-031is less than calculation according to EN 61010-1:2010 and EN 61010-2-0-30:2010

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Clause	Requirement + Test	Result - Remark	Verdict

6.7.4	TABLE: Cord anchorage of cable attachment				(A.11)		N/A
Location	Pull N	Verdict	Flexing/ pull	Verdict	Rotational flexing	Verdict	Comment
Supplementary information:							

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Clause	Requirement + Test	Result - Remark	Verdict

9.	**TABLE : Temperature Measurements**	**(A.12)**	**P**
9.1	Surface temperature limits - NORMAL CONDITION and / or SIGNLE FAULT CONDITION		P

Operating conditions:	Detecting voltage condition							
Frequency .....:	50	Hz	Test room ambient temperature (t_a) .....:	25 °C				
Voltage .....:		V	Test duration .....:	0	h	30	min	

Part / Location	*dT* K	t_c °C	t_{max} °C	Verdict	Comments
Enclosure (UT12A)	41	51	70	P	
Enclosure (UT12B)	41	51	70	P	

Supplementary information:

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Clause	Requirement + Test	Result - Remark	Verdict

10.2	**TABLE: Resistance to heat of non-metallic enclosures** **(A.13)**				**P**
	Test method used:				—
	Non operative treatment.....:	[V]			P
	Empty ENCLOSURE.....:	[ ]			P
	Operative treatment.....:	[ ]			N/A
	Temperature during tests .....:	70℃ for 7hours			—
	ENCLOSURE samples tested were .....:	No distortion and no hazard			—

Description	Material	Comments	Verdict
Whole apparatus	ABS (PA-766)	No damage	P
Alternative	ABS (AF-312)	No damage	P

	Voltage test (6.6) .....:	11840	V	r.m.s	P

Supplementary information:

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

12	TABLE: Critical components information				P
Object / part No.	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Plastic enclosure of accessible part	Chi Mei Corporation	PA-766	V-0, 60℃		Tested in appliance
Alt.	LG Chemical Ltd.	AF-312	V-0, 85℃		Tested in appliance
Plastic enclosure of detection part	Dongguan Silver Age Plastic Co., Ltd.	2320	V-0, 80℃		Tested in appliance
PCB	Xing Da Printed Circuit Board MFR	XD-102	130℃, V-0		UL certificate
Alt.	Kinwong Electronic (Shenzhen) Co., Ltd.	5	130℃, V-0		UL certificate
Alt.	Dongguan Shijie New Energy Electronic Factory	NE1000	130℃, V-0		UL certificate
Alt.	Shenzhen Sunshine Circuit Technology Co., Ltd.	SS-1	130℃, V-0		UL certificate
Alt.	T & S Industrial Co., Ltd.	TS-04	130℃, V-0		UL certificate
Alt.	Ren Chuang Yi Electronic Co., Ltd.	RCY-1	130℃, V-0		UL certificate
Alt.	Various	Various	130℃, V-0		UL certificate

NOTE 1 - List all manufacturers concerned.
NOTE 2 - Electrical, mechanical, flammability, etc.
NOTE 3 - Licence number, file number or other documentary evidence of acceptance

Supplementary information:

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

Product photos

Photo 1 - External view

Photo 2 - External view

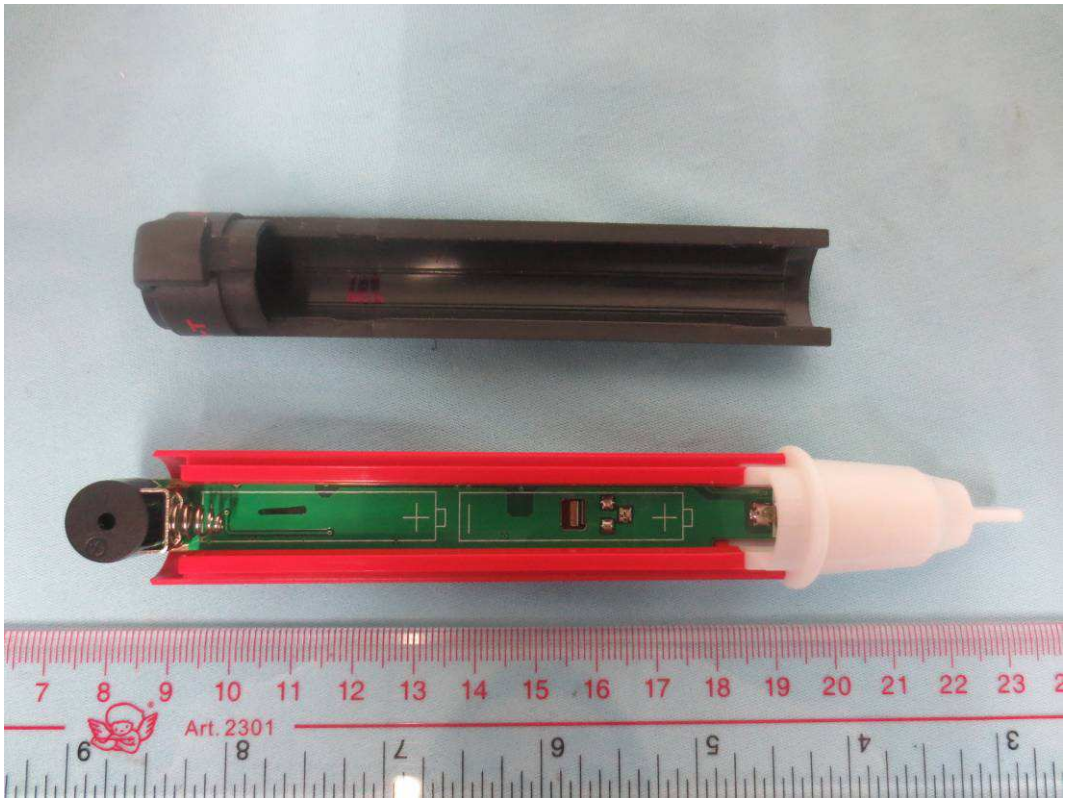

Photo 3 – internal view

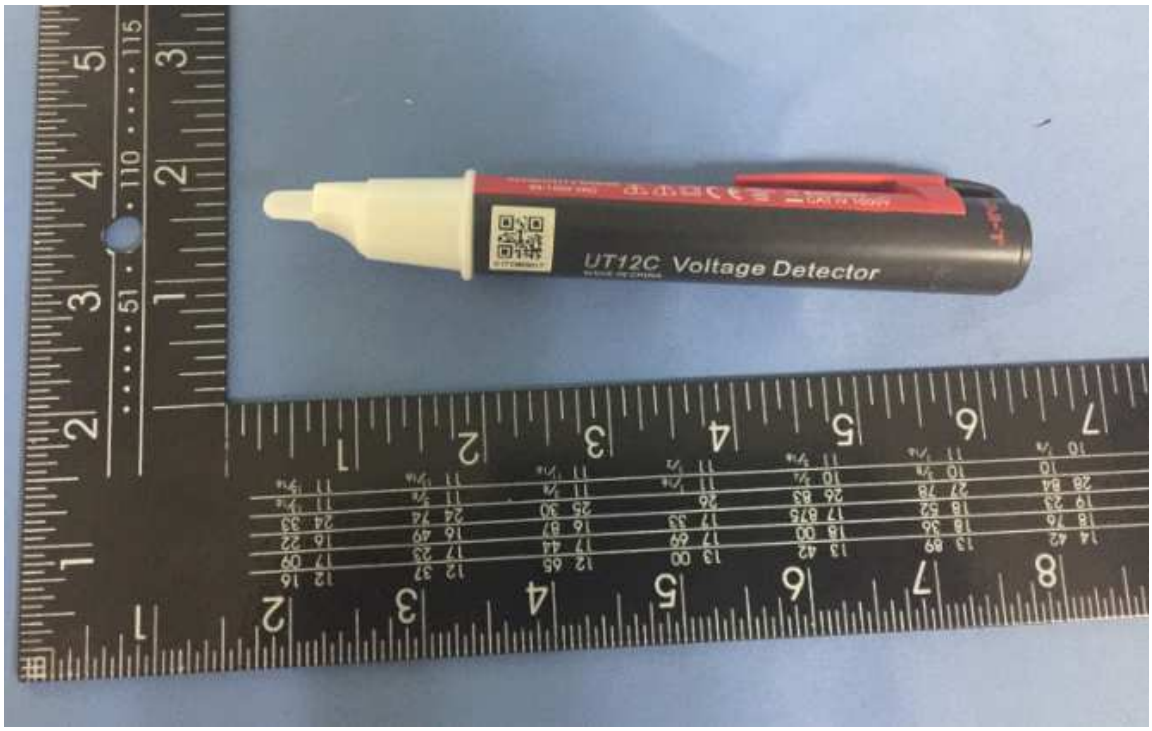

Photo 4- External view of UT12C

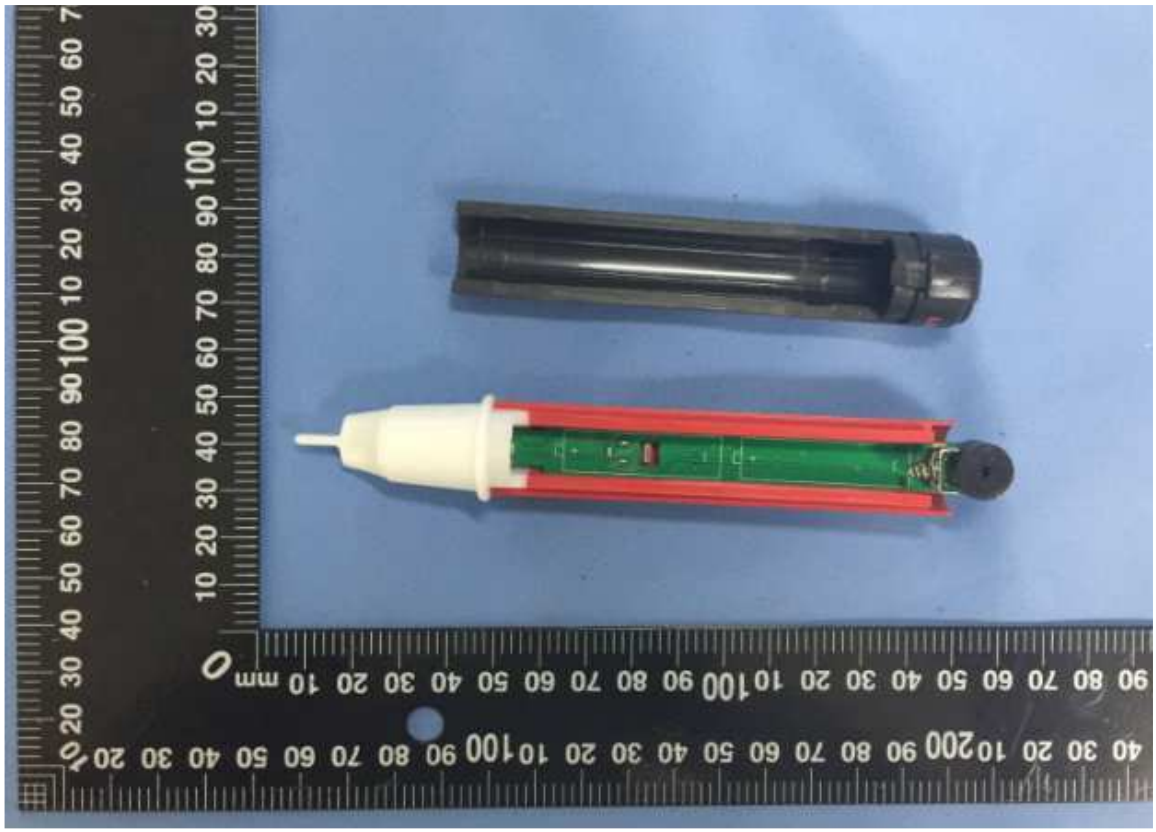

Photo 5 – internal view of UT12C

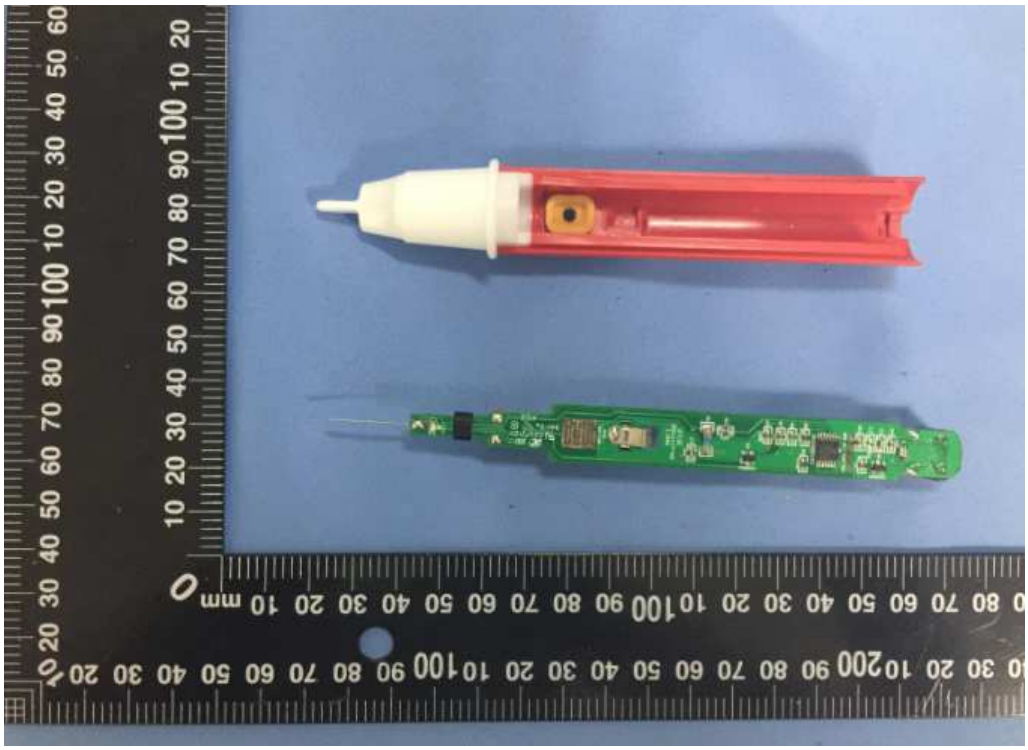

Photo 6 – internal view of UT12C