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TEST REPORT
EN 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements
EN 61010-2-030
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 2-030: Particular requirements for testing and measuring circuitS

Report Number. ..... :	150609085GZU-001
Date of issue ..... :	18 Jun 2015 Modification 1: 1 Sep 2017
Total number of pages..... :	34
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..... :	EN 61010-1:2010, EN 61010-2-030:2010
Test procedure ..... :	LVD
Non-standard test method…….. :	N/A
Test Report Form No. ..... :	TTRF_EN61010_2_030A
Test Report Form(s) Originator .... :	Intertek
Master TRF..... :	2011-09
Test item description..... :	Voltage detector
Trade Mark..... :	UNI-T
Manufacturer ..... :	Same as applicant
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:		
☒ **Testing Laboratory:**	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch	
Testing location/ address .....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China	
☐ **Associated Laboratory:**	N/A	
Testing location/ address .....:		
Tested by (name + signature + function) .....:	Jackie Chen/Engineer	Jackie Chen
Approved by (name + signature + function) .....:	Justin He/Manager	
☐ **Testing procedure: TMP**	N/A	
Testing location/ address .....:		
Tested by (name + signature).....:		
Approved by (name + signature) ..:		
☐ **Testing procedure: WMT**	N/A	
Testing location/ address .....:		
Tested by (name + signature).....:		
Witnessed by (name + signature) .:		
Approved by (name + signature) ..:		

List of Attachments (including a total number of pages in each attachment - Table 1):		
Document No.	Documents included / attached to this report (description)	Page Numbers
Appendix 1	Product photos	3

Summary of testing:

The meter in this report complies with the requirements of EN 61010-1:2010 and EN 61010-2-030:2010.

Test Report History:
This report may consist of more than one report and is valid only with additional or previous issued reports:

Ref. No.	Item
None	

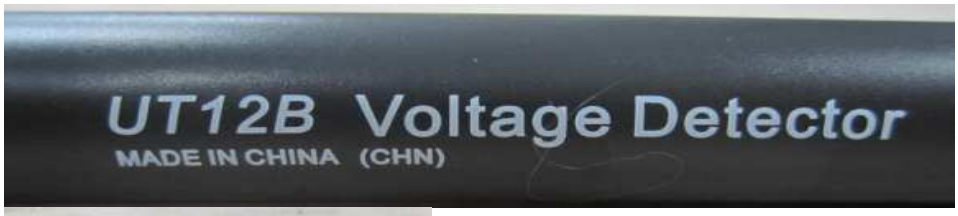
Tests performed (name of test and test clause):	Testing location:
All applicable clauses were performed	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

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.

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	:	Measurement
Description of equipment function	:	Voltage detection
Connection to MAINS supply	:	None
Measurement category	:	CAT IV
POLLUTION DEGREE	:	2
Means of protection	:	Class II (isolated)
Environmental conditions	:	Normal / Extended (Specify): 0-40℃
For use in wet locations	:	No
Equipment mobility	:	Hand-held
Operating conditions	:	Continuous
Overall size of equipment (W x D x H)	:	Diameter 19.9 x 140mm
Mass of equipment (kg)	:	0.2 kg
Marked degree of protection to IEC 60529	:	N/A
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.
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.

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.

Modification 1: This report is based on and superseded original report 150609085GZU-001, 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.

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.

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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests		P
4.4.2	Application of SINGLE FAULT CONDITIONS		P
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14		—
4.4.2.2	PROTECTIVE IMPEDANCE	Class II equipment	N/A
4.4.2.3	PROTECTIVE CONDUCTOR		N/A
4.4.2.4	Equipment or parts for short-term or intermittent operation	Continuous operation	N/A
4.4.2.5	Motors	No motor	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		N/A
4.4.2.7	MAINS transformers	No mains transformer	N/A
4.4.2.7.2	Short circuit		N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs		N/A
4.4.2.9	Equipment for more than one supply		N/A
4.4.2.10	Cooling	No cooling	N/A
	– air holes closed		N/A
	– fans stopped		N/A
	– coolant stopped		N/A
	– loss of cooling liquid		N/A
4.4.2.11	Heating devices	No heating device	N/A
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts		N/A
4.4.2.13	Interlocks		N/A
4.4.2.14	Voltage selectors		N/A
4.4.3	Duration of tests		—
4.4.4	Conformity after application of fault conditions		P
5	MARKING AND DOCUMENTATION		P
5.1.1	Required equipment markings		P
	- Visible from the exterior; or		P

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	- Visible after removing cover or opening door		N/A
	- Visible after removal from a rack or panel		N/A
	Not put on parts which can be removed by an operator		N/A
	Letter symbols (IEC 60027) used		N/A
	Graphic symbols (IEC 61010-1: Table 1) used		P
5.1.2	Identification		—
	Equipment is identified by:		P
	a) Manufacturer's or supplier's name or trademark	Trademark: UNI-T	P
	b) Model number, name or other means	See copy of marking	P
	Manufacturing location identified		N/A
5.1.3	MAINS supply	Internally battery operation	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:		—
	Indicates the equipment set voltage		N/A
	Portable equipment indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory MAINS socket-outlets accepting standard MAINS plugs are marked:		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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.4	Fuses		N/A
	Operator replaceable fuse marking (see also 5.4.5).....:	No fuse	N/A
5.1.5	TERMINALS, connections and operating devices		P
5.1.5.1	General		P
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		N/A
	Push-buttons and actuators of emergency stop devices and indicators:	No Push-buttons	—
	used only to indicate a warning of danger or		N/A
	the need for urgent action		N/A
	coloured red		N/A
	coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		N/A
	to safety of persons; or		N/A
	safety of the environment		N/A
5.1.5.2	TERMINALS		N/A
	MAINS supply TERMINAL identified	Internally battery operation	N/A
	Other TERMINAL marking:		N/A
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		N/A
	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		N/A
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.5.101	*Measuring circuit TERMINALS*		P
5.1.5.101.1	*a) mark the RATED voltage to earth*	Rated 90-1000VAC	P
	b) mark the RATED voltage or the RATED current, as applicable, of each pair or set	Marked rated voltage only	P

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	c) the pertinent MEASUREMENT CATEGORY for each pair or set of measuring circuit TERMINALS or symbol 14 of Table 1	CAT IV	P
	Symbol 14 of Table 1 shall be marked if current measuring TERMINALS are not intended for connection to current transformers without internal protection		N/A
	Markings shall be placed adjacent to the TERMINALS. or on the RATING plate or scale plate	Markings on the rating plate	P
5.1.5.101.2	*Measuring circuit TERMINALS RATED for MEASUREMENT CATEGORIES II, III or IV*	CAT IV	P
5.1.5.101.3	*Measuring circuit TERMINALS RATED for connection to voltages above the level of 6.3.1*		N/A
5.1.5.101.4	*Low voltage, permanently connected, or dedicated measuring circuit TERMINALS*		N/A
5.1.6	Switches and circuit breakers	Internally battery operation, no switch or circuit breaker	N/A
	If disconnecting device, off position clearly marked		N/A
	If push-button used as power supply switch:		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		P
	Protected throughout (symbol 11 used)	symbol 11 used on the outer surface of enclosure	P
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes		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		P
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts		N/A
	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	Warning statement and symbols are silk-screened on the outer surface of enclosure.	P
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	0,5 mm depth or raised if not contrasting in colour		N/A
	If necessary marked with symbol 14		P
	Statement to isolate or disconnect if access by using a tool to HAZARDOUS LIVE parts is permitted		N/A
5.3	Durability of markings		P
	The required markings remain clear and legible in NORMAL USE		P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation for service personnel authorized by the manufacturer		P
	Documentation necessary for safe operation is provided in printed media or	Hard copy provided	P
	in electronic media if available at any time		N/A
	Documentation includes:		—
	a) intended use		P
	b) technical specification		P
	c) name and address of manufacturer or supplier		P
	d) information specified in 5.4.2 to 5.4.6		P
	e) information to mitigate residual RISK (see also subclause 17)		N/A
	f) accessories for safe operation of the equipment specified	No specified any parts	N/A
	g) guidance provided to check correct function of the equipment, if incorrect reading may cause a HAZARD from harmful or corrosive substances of HAZARDOUS live parts		P
	h) instructions for lifting and carrying	Weight less than 18kg	N/A
	aa) information about each relevant MEASUREMENT CATEGORY		P
	bb) a warning not to use the equipment for measurements on MAINS CIRCUITS if not intend for any measurement category		N/A
	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or		P
	Information is marked on the equipment		P
5.4.2	Equipment ratings		P

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	Documentation includes:		—
	a) Supply voltage or voltage range ..... :	Internally battery operation	N/A
	Frequency or frequency range..... :		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)		N/A
	d) Statement of the range of environmental conditions (see 1.4)		P
	e) Degree of protection (IEC 60529)	No statement	N/A
	f) if impact rating less than 5 J:	Tested at 5J	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	A handheld meter	N/A
	Documentation includes instructions for:		N/A
	a) assembly, location and mounting requirements		N/A
	b) protective earthing		N/A
	c) connections to supply		N/A
	d) PERMANENTLY CONNECTED 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
	aa) for permanently connected measuring circuit TERMINALS RATED for MEASUREMENT CATEGORIES II, III or IV		N/A
	bb) for permanently connected measuring circuit TERMINALS that are not RATED for MEASUREMENT CATEGORIES II, III or IV		N/A
5.4.4	Equipment operation		P
	Instructions for use include:		P
	a) identification and description of operating controls		P
	b) positioning for disconnection		N/A
	c) instructions for interconnection		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	d) specification of intermittent operation limits	Continuous operation	N/A
	e) explanation of symbols used		P
	f) replacement of consumable materials	AAA battery	P
	g) cleaning and decontamination		N/A
	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		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	AAA battery	P
	Any manufacturer specified parts	No specified parts by manufacturer	N/A
	Rating and characteristics of fuses	No fuse	N/A
	Instructions include following subjects permitting safe servicing and continued safety:		N/A
	a) product specific RISKS may affect service personnel		N/A
	b) protective measures for these RISKS		N/A
	c) verification of the safe state after repair		N/A
5.4.6	Integration into systems or effects resulting from special conditions		N/A
	Aspects described in documentation		N/A
6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General		P
6.1.1	Requirements		—
6.1.2	Exceptions		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	aa) locking or screw-held type measuring TERMINALS, including TERMINALS which do not require the use of a TOOL		N/A
6.2	Determination of ACCESSIBLE parts		P
6.2.1	General		P
	Unless obviously determination of ACCESSIBLE parts as specified in 6.2.2 to 6.2.4		N/A
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 opening	N/A
	- test pin with length of 100 mm and 4 mm in diameter applied		N/A
6.2.4	Openings for pre-set controls		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
6.3.2	Levels in SINGLE FAULT CONDITION		N/A
6.4	Primary means of protection		P
	a) ENCLOSURES or PROTECTIVE BARRIERS (see 6.4.2)		P
	b) BASIC INSULATION (see 6.4.3)		P
	c) Impedance (see 6.4.4)		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)		P
	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
	e) REINFORCED INSULATION (see 6.5.3)		P
	f) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.5.2	PROTECTIVE BONDING	Class II equipment	N/A
6.5.2.1	ACCESSIBLE conductive parts, may become HAZARDOUS LIVE in SINGLE FAULT CONDITION:		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	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	Class II equipment	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
	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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to MAINS supply TERMINALS		N/A
	f) If plug-in, makes first and breaks last		N/A
	g) If also used for other bonding purposes, PROTECTIVE CONDUCTOR:		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		N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of PROTECTIVE BONDING of plug-connected equipment		N/A
	Impedance between PROTECTIVE CONDUCTOR TERMINAL and each ACCESSIBLE part where PROTECTIVE BONDING is specified, is:		—
	less than 0,1 Ohm; or		N/A
	less than 0,2 Ohm if equipment is provided with non detachable cord		N/A
6.5.2.5	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen		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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	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
6.5.2.101	*Indirect bonding for testing and measuring circuits*		N/A
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION		P
	Meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		P
6.5.4	PROTECTIVE IMPEDANCE	No protection impedance	N/A
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION		N/A
	CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of DOUBLE or REINFORCED INSULATION of 6.7		N/A
	The PROTECTIVE IMPEDANCE consists of one or more of the following:		—
	a) appropriate single component suitable for safety and reliability for protection, it is:		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
6.5.6	Current- or voltage-limiting devices		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
	short circuit of separation does not cause a HAZARD		N/A
	Instructions or markings for each terminal include:		P
	a) RATED conditions for TERMINAL		P
	b) Required RATING of external circuit insulation		N/A
6.6.2	TERMINALS for external circuits		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection		N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE		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
6.6.101	*Measuring circuit TERMINALS*		N/A
	Conductive parts of each unmated measuring circuit TERMINAL which could become HAZARDOUS LIVE when the maximum RATED voltage is applied to other measuring circuit TERMINALS on the equipment shall be separated by at least the CLEARANCE and CREEPAGE DISTANCE of Table 101 from the closest approach of the test finger touching the external parts of the TERMINAL in the least favourable position.	No unmated measuring circuit terminals	N/A
6.6.102	*Specialized measuring circuit TERMINALS*		N/A
6.7	Insulation requirements	See appended table	P
6.8	Procedure for dielectric strength tests	See appended table	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	No wiring inside the meter	N/A
	b) Screws securing removable covers		P
	c) Accidental loosening		P
	d) CLEARANCES and CREEPAGE DISTANCES not reduced below the values of basic insulation by loosening of parts or wires		P
6.9.2	Insulating materials		P
	Material not to be used for safety relevant insulation:		P
	a) Easily damaged materials not used		P

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	b) Non-impregnated hygroscopic materials not used		P
6.9.3	Colour coding	Class II equipment, no colour coding	N/A
	Green-and-yellow insulation shall not be used except:		N/A
	a) protective earth conductors;		N/A
	b) PROTECTIVE BONDING conductors;		N/A
	c) potential equalization conductors;		N/A
	d) functional earth conductors		N/A
6.9.101	*Over-range indication*	Only detect the voltage existence but not display value	N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		N/A
6.10.1	MAINS supply cords	Internally battery operation	N/A
	RATED for maximum equipment current (see 5.1.3 c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	Heat-resistant if likely to contact hot parts		N/A
	Temperature RATING (cord and inlet) .....:		N/A
	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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	Push-pull and or torque test		N/A
6.10.3	Plugs and connectors	Internally battery operation	N/A
	MAINS supply plugs, connectors etc., conform with relevant specifications		N/A
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor		N/A
	Accessory MAINS socket outlets:		—
	a) Marking if accepts a standard MAINS supply plug (see 5.1.3e)		N/A
	b) Input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source		N/A
6.11.1	Disconnects all current-carrying conductors		N/A
6.11.2	Exceptions		N/A
6.11.3	Requirements according to type of equipment		N/A
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment	Internally battery operation	N/A
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) Switch or circuit-breaker to be included in building installation		N/A
	b) Suitable location easily reached		N/A
	c) Marking as disconnecting for the equipment		N/A
6.11.3.2	Single-phase cord-connected equipment		N/A
	Equipment is provided with one of the following:		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		N/A
6.11.4.1	Disconnecting device part of equipment		N/A
	Electrically close to the SUPPLY		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	Power-consuming components not electrically located between the supply source and the disconnecting device		N/A
	Except electromagnetic interference suppression circuits permitted to be located on the supply side of the disconnecting device		N/A
6.11.4.2	Switches and circuit-breakers		N/A
	When used as disconnection device:		—
	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		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		P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges		P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts	No moving parts	N/A
7.4	Stability	A handheld meter	N/A
7.5	Provisions for lifting and carrying	Weight less than 18kg	N/A
7.6	Wall mounting		N/A
7.7	Expelled parts		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

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test		P
8.2.2	Impact test		P
8.3	Drop test	Sub-clause of 8.3.2 was conducted	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	Internally battery operation	N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):		P
	a) SINGLE FAULT test of 4.4; or		P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		N/A
	c) Application of 9.3 (containment of fire within the equipment)		P
9.2	Eliminating or reducing the sources of ignition within the equipment		N/A
9.3	Containment of the fire within the equipment, should it occur	Plastic enclosure has rated V-0	P
9.4	Limited-energy circuit		N/A
9.5	Requirements for equipment containing or using flammable liquids		N/A
9.6	Overcurrent protection	Internally battery operation	N/A
9.6.1	MAINS supplied equipment protected		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		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		N/A
	Protection within the equipment		N/A
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
10.1	Surface temperature limits for protection against burns		P
10.2	Temperatures of windings		N/A
10.3	Other temperature measurements		P
10.4	Conduct of temperature tests		P
10.5	Resistance to heat		P
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	Protection to OPERATORS and surrounding area provided by EQUIPMENT	No fluid	N/A
	All fluids specified by manufacturer considered		N/A
11.2	Cleaning		N/A
11.3	Spillage		N/A
11.4	Overflow		N/A
11.5	Battery electrolyte		N/A
	Battery electrolyte leakage presents no HAZARD		N/A
11.6	Specially protected equipment		N/A
11.7	Fluid pressure and leakage		N/A
12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		N/A
12.1	Equipment provides protection	No radiation sources	N/A
12.2	Equipment producing ionizing radiation		N/A
12.3	Ultraviolet (UV) radiation		N/A
12.4	Microwave radiation		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.6	Laser sources		N/A
13	PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION		N/A
13.1	Poisonous and injurious gases and substances	No Poisonous and injurious gases or substances	N/A
13.2	Explosion and implosion		N/A
13.2.1	Components		N/A
13.2.2	Batteries and battery charging		N/A
13.2.3	Implosion of cathode ray tubes		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
14	COMPONENTS AND SUBASSEMBLIES		P
14.1	Where safety is involved, components and subassemblies meet relevant requirements	See critical component table	P
14.2	Motors	No motor	N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented from starting; or		N/A
	Protected by over-temperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		N/A
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices		N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
	a) Reliable function is ensured		N/A
	b) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A
	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders	No fuse holder	N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices		N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment		N/A
14.7	Printed circuit boards		P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or		P
	Test shows conformity with V-1 of IEC 60695-11-10 or better		N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices		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

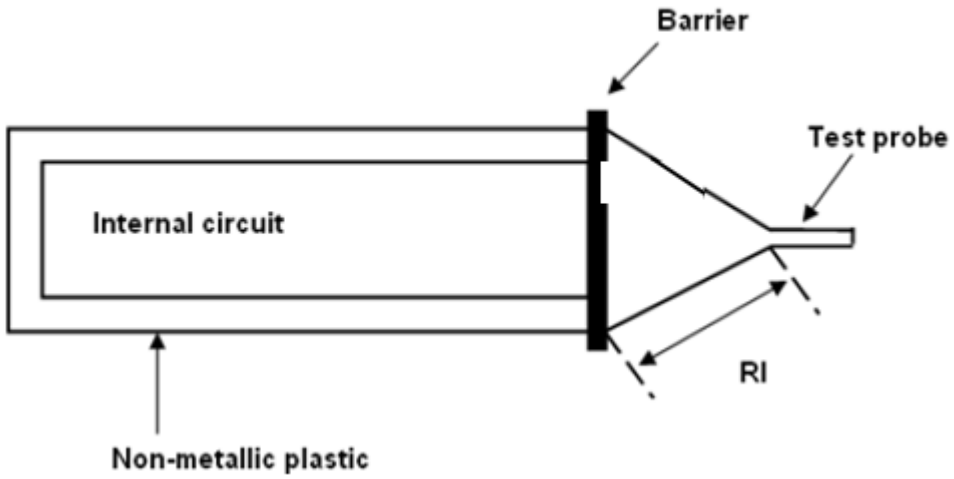
EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
14.101	*Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices in measuring circuits used to measure MAINS*		N/A
15	PROTECTION BY INTERLOCKS		N/A
15.1	Interlocks are designed to remove a HAZARD before OPERATOR exposed	No interlock	N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
16	HAZARDS RESULTING FROM APPLICATION		P
16.1	REASONABLY FORESEEABLE MISUSE		N/A
	No HAZARDS arising from settings not intended and not described in the instructions	Can't setting for the meter	N/A
	Other cases of REASONABLY FORESEEABLE MISUSE addressed by RISK assessment		N/A
16.2	Ergonomic aspects		P
17	RISK ASSESSMENT		N/A
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16	No additional hazard occurred during evaluations by Clauses 6 to 16	N/A
101	*Measuring circuits*		N/A
101.1	*The equipment shall provide protection against HAZARDS resulting from NORMAL USE and REASONABLY FORESEEABLE MISUSE of measuring circuits,*		N/A
	a) a current measuring circuit shall not interrupt the circuit being measured during range changing, or during the use of current transformers without internal protection		N/A
	b) An electrical quantity that is within specification for any TERMINAL shall not cause a HAZARD when it is applied to that TERMINAL or any other compatible TERMINAL, with the range and function settings set in any possible manner		N/A
	c) Any interconnection between the equipment and other devices or accessories shall not cause a HAZARD even if the documentation or markings prohibit the interconnection while the equipment is used for measurement purposes		N/A
	d) For measuring circuits that include one or more FUNCTIONAL EARTH TERMINALS		N/A

EN 61010-1 / EN 61010-2-030			
Clause	Requirement + Test	Result - Remark	Verdict
	e) Other HAZARDS that could result from REASONABLY FORESEEABLE MISUSE shall be addressed by RISK assessment		N/A
101.2	*Current measuring circuits*	No Current measuring circuits	N/A
	Current measuring circuits shall be so designed that, when range changing takes place, there shall be no interruption which could cause a HAZARD		N/A
	Current measuring circuits intended for connection to current transformers without internal protection shall be adequately protected to prevent a HAZARD arising from interruption of these circuits during operation		N/A
101.3	*Protection against mismatches of inputs and ranges*		N/A
103.1	*In NORMAL CONDITION and in cases of REASONABLY FORESEEABLE MISUSE, no HAZARD shall arise when the maximum RATED voltage or current of a measuring TERMINAL is applied to any other compatible TERMINAL, with any combination of function and range settings*	Can't change or setting input and range	N/A
101.3.2	*Protection by a certified overcurrent protection device*		N/A
101.3.3	*Protection by uncertified current limitation devices or by impedances*		N/A
101.3.4	*Test leads for the tests of 101.3.2 and 101.3.3*		N/A

ANNEX F	ROUTINE TESTS		N/A
	Manufacturer ´s declaration	Not checked	N/A

EN 61010-1/EN61010-2-030			
Clause	Requirement — Test	Result — Remark	Verdict

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



Pollution degree..... : 2	Overvoltage category.....: CAT IV 1000V

Area	Location	Insulation type	WORKING VOLTAGE			Test voltage	Comments (NOTE 3)
		(NOTE 1)	RMS V	Peak V	Frequency kHz	(NOTE 2) V	
A	Probe tip to accessible part, internal circuit	RI	1000	-	-	13779Vrms (11294 x 1.22)	

NOTE 1 – Type of insulation:
BI = BASIC INSULATION
DI = DOUBLE INSULATION
PI = PROTECTIVE IMPEDANCE
RI = Reinforced INSULATION
SI = Supplementary INSULATION
see also Form A.15 for further details

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

NOTE 3 - OVERVOLTAGE CATEGORIES or POLLUTION DEGREES which differ should be shown under "Comments"

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) =27,70mm

EN 61010-1/EN61010-2-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.7	**TABLE: Insulation requirements- Clearances and Creepages**		**Form A.15**	P
6.2.2	Examination	6.5.4	Protective impedance	—
6.4.2	ENCLOSURES and protective barriers	6.5.6	Current- or voltage-limiting device	—
6.4.4	Impedance			—

Area	Location	Insulation type	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Verdict	Comments
	(See Form A.14)	(NOTE 1)	RMS V	Peak V	Frequency kHz	Required mm	Measured mm	Required mm	Measured mm			
A	See Form A.14	RI	1000	-	-	27.70	32	27.70	32	II	P	

NOTE 1 – refer to Form A.14 for type of insulation shown in the insulation diagram NOTE 2 - to be used for definition of required insulation (see Form A.14)

Input supply voltage…….:	- V	- Hz

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

EN 61010-1/EN61010-2-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.8	**TABLE: Dielectric strength tests**	**Form A.19**	P
4.4.4.1 b)	Conformity after application of SINGLE FAULT CONDITIONS[1]		P
6.4	Primary means of protection[2]		P
6.6	Connections to external circuits		P
6.7.	Insulation requirements[2] (see Annnex K)		P
6.10.2	Fitting of non-detachable MAINS supply cords[1]		N/A
9.2 a) 2)	Eliminating or reducing the sources of ignition within the equipment		N/A
9.4 c)	Limited-energy circuit		N/A
9.6.1	Overcurrent protection basic insulation between MAINS - parts		N/A
	Test site altitude .....:	50 m	—
	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 r.m.s.	Test voltage r.m.s	Comments (NOTE)	Verdict
Between Probe tip to accessible part, internal circuit	4.4.4.1 b)	No	1000	9024V (7396 x 1.22)	Basic insulation, 1 min	P
	6.4	Yes	1000	13779V (11294 x 1.22)	Reinforced insulation, 1 min	P
	6.6; 67;	Yes	1000	13779V (11294 x 1.22)	Reinforced insulation, 1 min	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/EN61010-2-030			
Clause	Requirement — Test	Result — Remark	Verdict

10.	**TABLE : Temperature Measurements** **Form A.27A**	
10.1	Surface temperature limits - NORMAL CONDITION and / or SINGLE FAULT CONDITION	
10.2	Temperature of windings- NORMAL CONDITION and / or SINGLE FAULT CONDITION	
10.3	Other temperature measurements	

Operating conditions:			
Frequency ..... :	- Hz	Test room ambient temperature (ta) .. :	25 °C
Voltage ..... :	- V	Test duration ..... :	- h 30 min

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

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:

EN 61010-1/EN61010-2-030			
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 of accessible part	--	Chi Mei Corporation	PA-766	V-0, 60℃	EN 61010-1, UL 94	Tested in appliance
Alt.	--	LG Chemical Ltd.	AF-312	V-0, 85℃	EN 61010-1, UL 94	Tested in appliance
Plastic enclosure of detection part	--	Dongguan Silver Age Plastic Co., Ltd.	2320	V-0, 80℃	EN 61010-1, UL 94	Tested in appliance
PCB	--	Xing Da Printed Circuit Board MFR	XD-102	130℃, V-0	UL 94	UL certificate
Alt.	--	Kinwong Electronic (Shenzhen) Co., Ltd.	5	130℃, V-0	UL 94	UL certificate
Alt.	--	Dongguan Shijie New Energy Electronic Factory	NE1000	130℃, V-0	UL 94	UL certificate
Alt.	--	Shenzhen Sunshine Circuit Technology Co., Ltd.	SS-1	130℃, V-0	UL 94	UL certificate
Alt.	--	T & S Industrial Co., Ltd.	TS-04	130℃, V-0	UL 94	UL certificate
Alt.	--	Ren Chuang Yi Electronic Co., Ltd.	RCY-1	130℃, V-0	UL 94	UL certificate
Alt.	--	Various	Various	130℃, V-0	UL 94	UL certificate

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

Photo 1 - External view

Photo 2 - External view

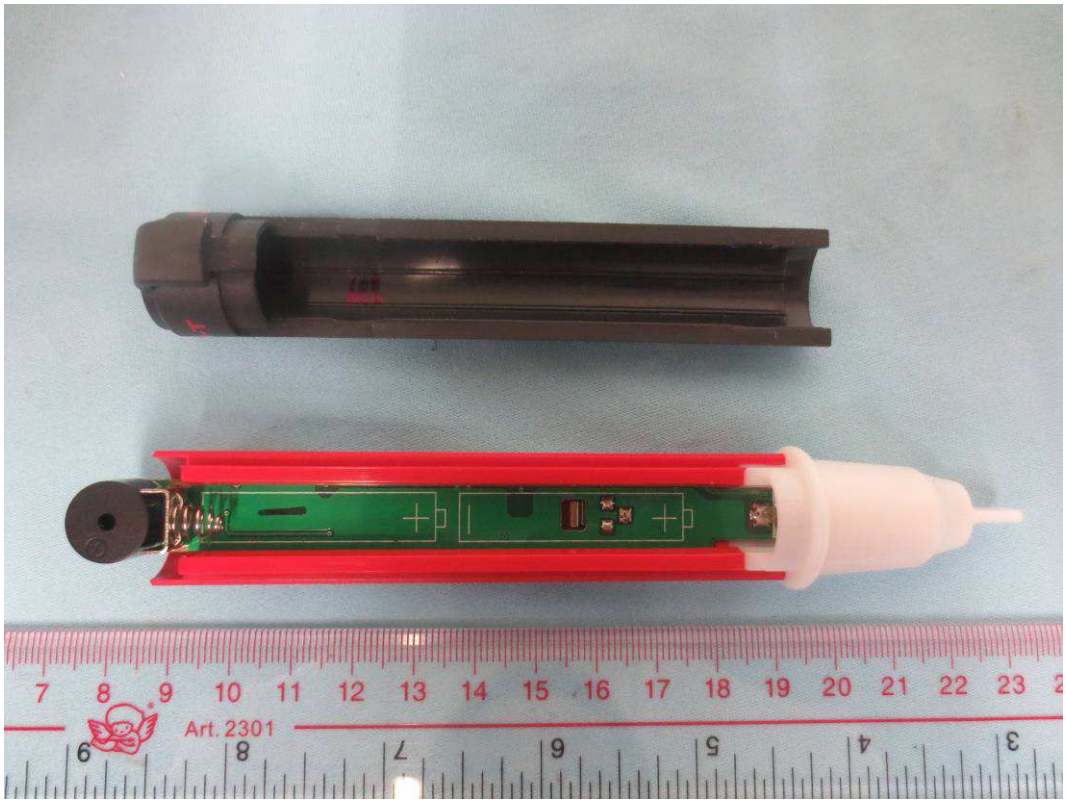


Photo 3 – internal view

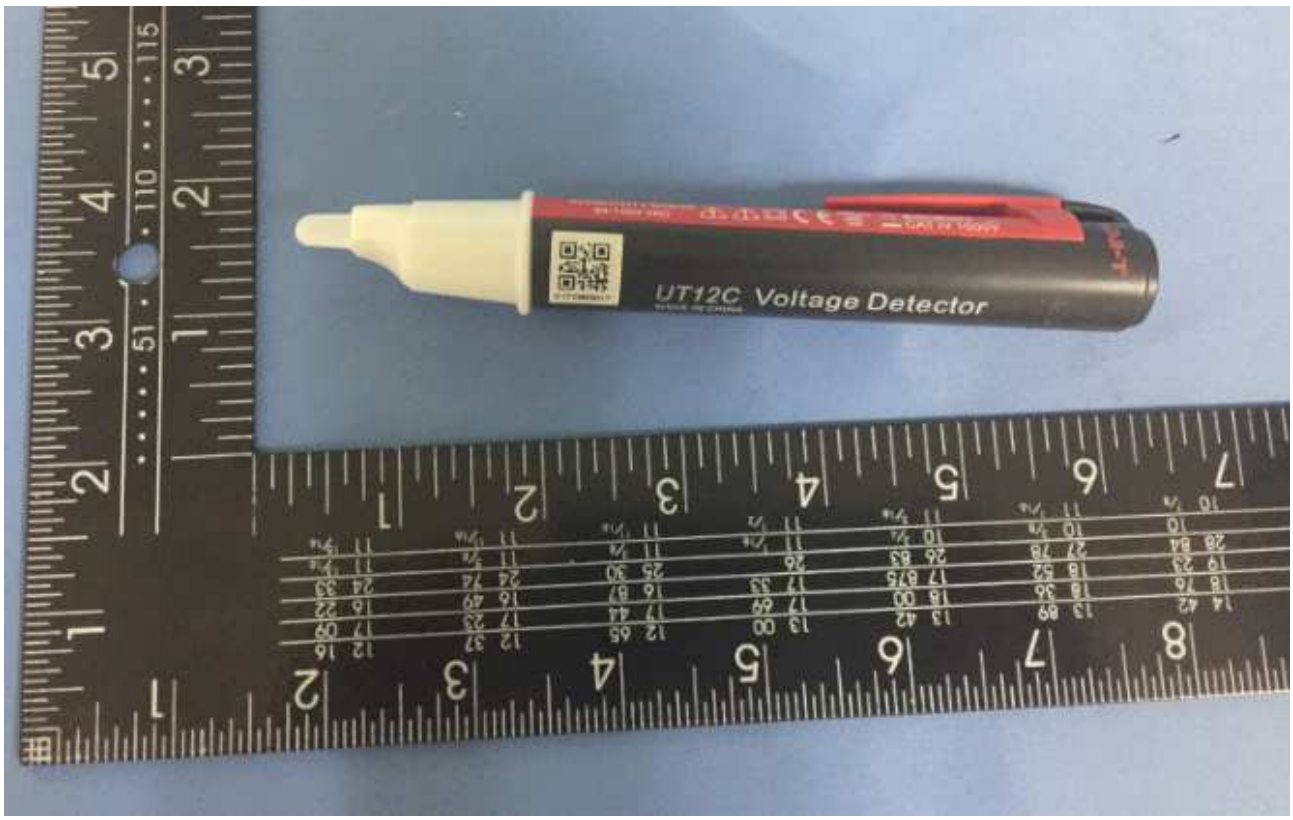


Photo 4- External view of UT12C

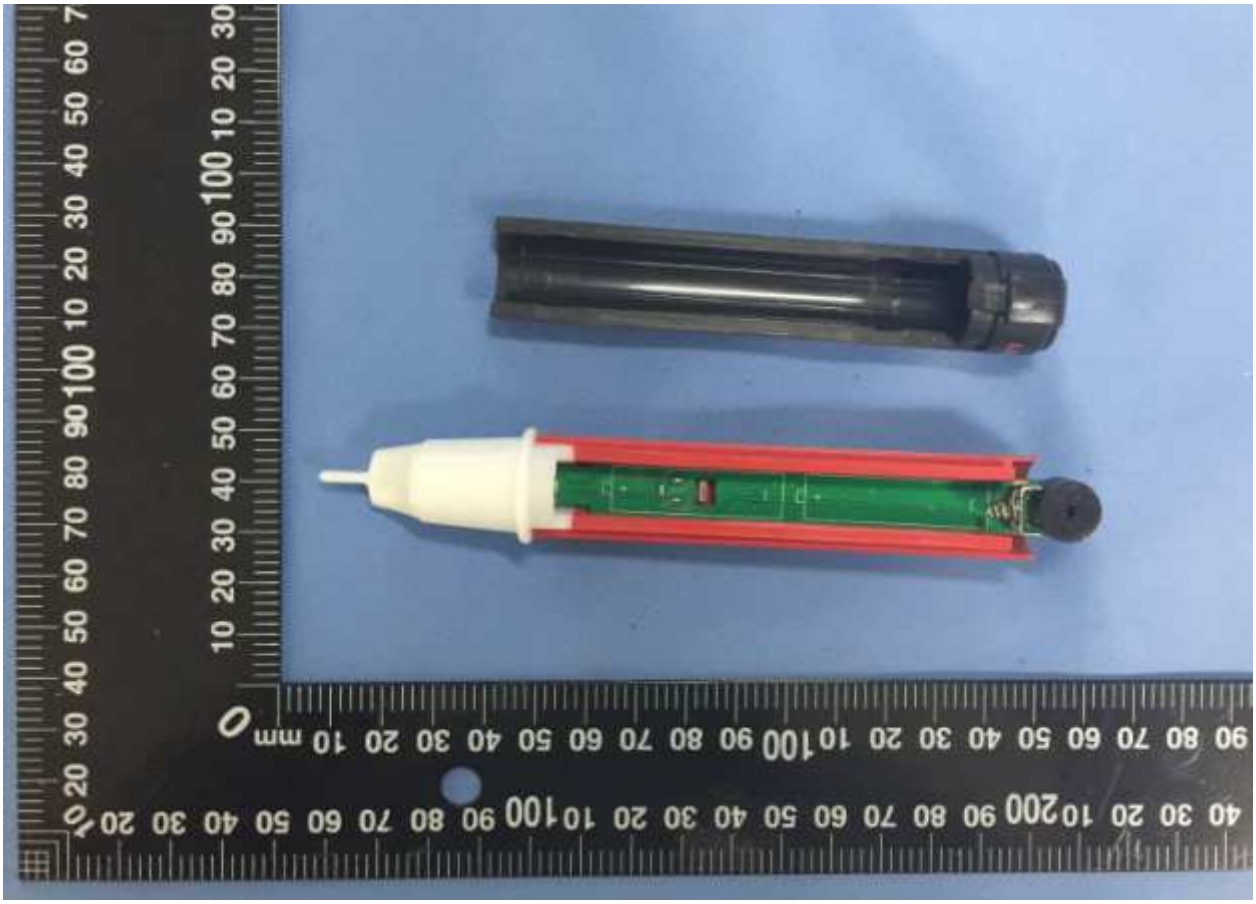


Photo 5 – internal view of UT12C

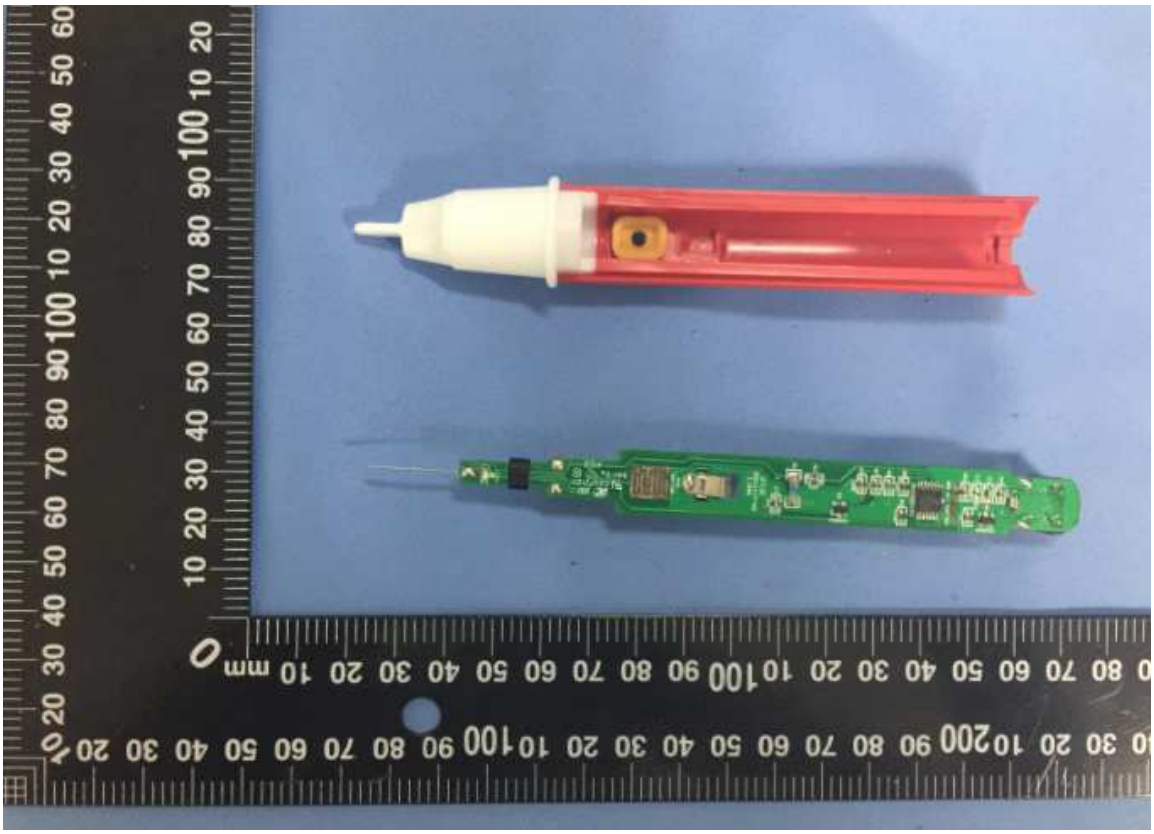


Photo 6 – internal view of UT12C