
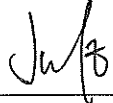




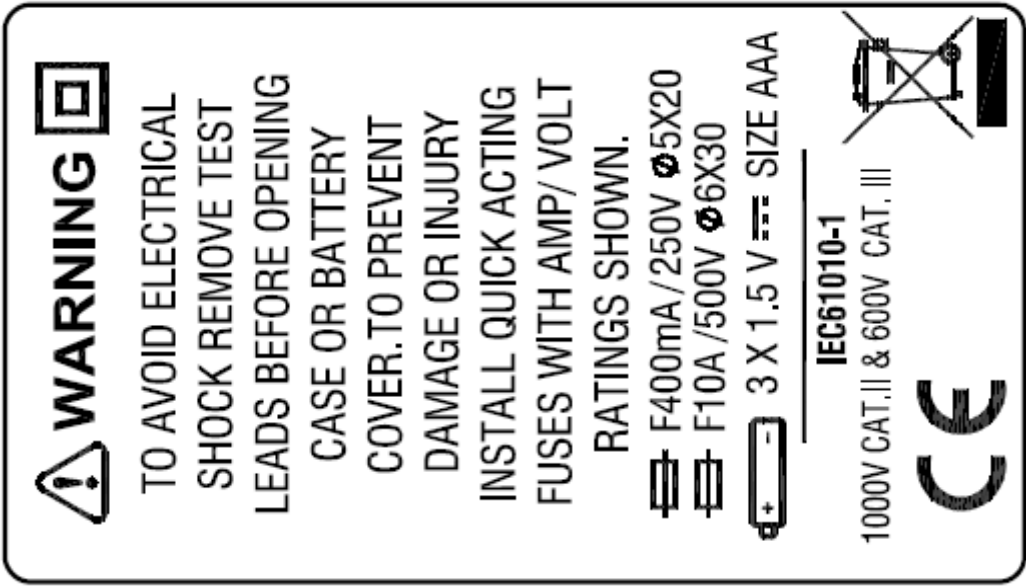








Test Report issued under the responsibility of:



<p>TEST REPORT IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use Part 1: General requirements</p>	
Report Reference No.	GZ11030525-1
Date of issue	26 April 2011
Total number of pages	65 pages
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	Precision Mastech Enterprises(Hong Kong) Limited
Address	Room 1708-1709, Hewlett Centre, 54 Hoi Yuen Road, Kwun Tong, Kowloon, Hong Kong.
Test specification:	--
Standard	EN 61010-1:2001 (2 nd Edition)
Test procedure	LVD
Non-standard test method	N/A
Test Report Form No.	IEC61010_1E
TRF Originator	VDE Testing and Certification Institute
Master TRF	Dated 2008-06
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<p>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.</p>	
Test item description	Digital Multimeter
Trade Mark	MASTECH®
Manufacturer	Same as applicant
Model/Type reference	MS8229
Ratings	1,5 V x 3 AAA battery operated
	Measure category: CAT III 600 V, CAT II 1000V, 10A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> 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, P. R. China 510663
<input type="checkbox"/> Associated CB Laboratory:	N/A
Testing location/ address	N/A
Tested by (name + signature)..... :	Paul Liu 
Approved by (name + signature). :	Justin He 
<input type="checkbox"/> Testing procedure: TMP	N/A
Tested by (name + signature)..... :	N/A
Approved by (name + signature).. :	N/A
Testing location/ address	N/A

Summary of testing:	
Tests performed (name of test and test clause):	Testing location:
All applicable clause are applied The unit comply with this standard	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, P. R. China 510663
Summary of compliance with National Differences:	
No Group difference of CENELEC	
Copy of marking plate:	
(1) Trade mark, model number, measure category, and warning symbol are silk-screen outer surface of top case	
<p>MASTECH® MS8229 Multimeter</p> <p> 1000V CAT II 600V CAT III</p> <p> </p>	
(2) Below warning statement and symbol were molded on rear cover	
 <p>WARNING </p> <p>TO AVOID ELECTRICAL SHOCK REMOVE TEST LEADS BEFORE OPENING CASE OR BATTERY COVER. TO PREVENT DAMAGE OR INJURY INSTALL QUICK ACTING FUSES WITH AMP/ VOLT RATINGS SHOWN.</p> <p> F400mA/250V 5X20  F10A/500V 6X30  3 X 1.5 V  SIZE AAA</p> <p>IEC61010-1 1000V CAT. II & 600V CAT. III</p> <p></p>	

Test item particulars:	
Type of item tested	Measurement
Description of equipment function	The meter can perform measurements of AC/DC voltage and current, resistance, frequency, duty, capacitance, temperature, humidity, sound level, luminance, as well as continuity and diode test.
Measurement (installation) category	III
Pollution degree	2
Protection class.....	II
Environmental rating	Extended (0 °C to +40 °C)
Equipment mobility.....	hand-held or portable
Connection to mains supply.....	Connect to AC mains
Operating conditions	Continuous
Overall size of the equipment (W x D x H).....	195×92×55mm
Mass of the equipment (kg).....	0.4
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.....	: 11 March 2011
Date (s) of performance of tests.....	: 11 March 2011 – 26 April 2011

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 appended table)" refers to a table appended to the report. Throughout this report a comma 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.

General product information:


This meter is a portable professional measuring instrument. The meter can perform measurements of AC/DC voltage and current, resistance, frequency, duty, capacitance, temperature, humidity, sound level, luminance, as well as continuity and diode test.

IEC 61010-1						
Clause	Requirement — Test		Result — Remark			Verdict
	TABLE: 3 - 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)	Mark(s) of conformity evidence of acceptance (NOTE 3 and 4)	
Plastic enclosure, translucent enclosure and white enclosure		Chi Mei Corporation	PA-765A(+)	V-0, 85 °C, ABS, CTI 1(400V)	UL E56070 and tested with appliance	
PCB		MEIZHOU KEJIE INTEGRATED CIRCUIT CO LTD	KJ-2	94V-0, 130 °C	UL ZPMV2,E255694	
Current Fuse(for mA terminal)		Hollyland Company Limited	50CF	400mA 250V Ø5*20mm	VDE 40020380	
Current Fuse(for 10A terminal)		Hollyland Company Limited	6FF	10A 500V Ø6*30mm	TUV 50139804	
Note → 1 List all different manufacturers of the above components → 2 May include electrical, mechanical values → 3 List licence no, standard or method of acceptance 4 → asterisk indicates mark assuring agreed level of surveillance						

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
4.4	TESTING IN SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests	(see Form A.1 and A.2)	P
4.4.2	SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.12	(see Form A.1 and A.2)	P
	Specific faults:R25 short		P
4.4.2.1	PROTECTIVE IMPEDANCE		N/A
4.4.2.2	Protective conductor		N/A
4.4.2.3	Equipment or parts for short-term or intermittent operation		N/A
4.4.2.4	Motors		N/A
4.4.2.5	Capacitors		N/A
4.4.2.6	Mains transformers		N/A
4.4.2.7	Outputs		N/A
4.4.2.8	Equipment for more than one supply		N/A
4.4.2.9	Cooling		N/A
4.4.2.10	Heating devices		N/A
4.4.2.11	Insulation between circuits and parts		N/A
4.4.2.12	Interlocks		N/A
5	MARKING AND DOCUMENTATION		P
5.1.1	General	See marking plate	P
	Required equipment markings are:		—
	visible:		P
	From the exterior; or		P
	After removing a cover; or	No removable cover without tools	N/A
	Opening a door	No door	N/A
	After removal from a rack or panel		N/A
	Not put on parts which can be removed by an OPERATOR		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (IEC 61010-1: Table 1) used		P
5.1.2	Identification	See marking plate	P
	Equipment is identified by:		—
	a) Manufacturer's or supplier's name or trademark	Trademark	P
	b) Model number, name or other means	Model number and name	P
	Manufacturing location identified		N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
5.1.3	Mains supply	Built-in battery operated, No mains supply	N/A
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. RATED mains frequency or range of frequencies.....:		N/A
	2) d.c. with symbol 1		N/A
	b) RATED supply voltage(s) or range		N/A
	c) Max. RATED power (W or VA)or input current.....:		N/A
	The measured value not more than 110 %	(see Form A.3)	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 volt-ages:		—
	Indicates the equipment set voltage		N/A
	PORTABLE EQUIPMENT indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory mains socket-outlets accepting standard mains plugs are marked:		—
	With the voltage if it is different from the mains supply voltage.....:		N/A
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		—
	The maximum RATED current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses	See marking plate	P
	OPERATOR replaceable fuse marking (see also 5.4.5).....:		P
5.1.5	TERMINALS, connections and operating devices	See marking plate	P
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		P
5.1.5.1	TERMINALS	See marking plate	P
	Mains supply TERMINALS identified		N/A
	Other TERMINAL marking.....:		P

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:	No 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 measuring and 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
	e) ACCESSIBLE FUNCTIONAL EARTH TERMINALS:		N/A
	Self-evident; or		N/A
	Indication (symbol 8 acceptable)		N/A
5.1.5.2	Measuring circuit TERMINALS		P
	Unless clear indication that below the limits of 50 V a.c. or 120 V d.c. to earth:		N/A
	Required markings are adjacent to TERMINALS; OR	Adjacent to terminals	P
	If insufficient space:		—
	On the RATING plate or scale plate; or		N/A
	TERMINAL is marked with symbol 14		N/A
	a) For CAT I measurement circuits:		—
	RATED voltage		N/A
	Current marked if applicable		N/A
	Symbol 14 marked		N/A
	b) For CAT II, CAT III or CAT IV measurement circuits:		—
	RATED voltage	CAT II 1000 V CAT III 600 V	P
	Current marked if applicable		P
	Appropriate measurement category marked (CAT II, CAT III or CAT IV); or		P
	No marking required for:		N/A
	TERMINALS other than those permanently connected and not ACCESSIBLE with appropriate information in installation manual (see 5.4.3)	No such terminal	N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	For specific connection to other equipment TERMINALS only, and means for identifying provided		N/A
5.1.6	Switches and circuit breakers		N/A
	If disconnecting device, on or off position marked		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		P
	Protected throughout (symbol 11 used)		P
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes	No such terminal box	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	See marking plate	P
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour		P
	If necessary marked with symbol 14		P
	Statement to isolate or disconnect	Molded on enclosure	P
5.3	Durability of markings		P
	The required markings remain clear and legible in NORMAL USE		P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation which includes:		—
	a) Intended use	See “2 Description” of the user manual	P
	b) Technical specification	See “3 Specification” of the user manual	P
	c) Instructions for use	See “4 Operation instruction” of the user manual	P
	d) Name and address of manufacturer or supplier	See the cover page of the user manual	P
	e) Information specified in 5.4.2 to 5.4.5		P
	f) If marking of TERMINALS required, definition of measurement category	See “1.3 symbols” of the user manual	P
	g) If CAT 1:		N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	Warning not to be used in CAT II, CAT III or CAT IV measurement circuits		N/A
	RATINGS including RATED transient overvoltages		N/A
	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or		N/A
	Information is marked on the equipment		N/A
5.4.2	Equipment RATINGS		P
	Documentation includes:		—
	a) Supply voltage or voltage range.....:	The unit operated by built-in battery	N/A
	Frequency or frequency range		N/A
	Power or current RATING.....:		N/A
	b) Description of all input and output connections		P
	RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE		N/A
	c) Statement of the range of environmental conditions	0°C– 40 °C	P
	d) Degree of protection (IEC 60529)	Not announced	N/A
5.4.3	Equipment installation	Hand-held and portable product, no need to installed by user	N/A
	Documentation includes instructions for:		—
	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) Maximum sound power level		N/A
	h) Instructions about sound pressure		N/A
	i) Permanently connected measuring TERMINALS:		N/A
	Measurement category		N/A
	RATED maximum WORKING VOLTAGE or current		N/A
5.4.4	Equipment operation		P

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	Instructions for use include:		—
	a) Identification of operating controls		P
	b) Positioning for disconnection		N/A
	c) Interconnection		N/A
	d) Specification of intermittent operation limits	Continuous operating	N/A
	e) Explanation of symbols used	See “1.3 symbols” of the user manual	P
	f) Replacement of consumable materials	Battery, Fuse	P
	g) Cleaning and decontamination (see 11.2)	See “1.4 Maintenance” of the user manual	P
	h) Listing of any poisonous or injurious gases and quantities		N/A
	i) Risk-reduction procedures relating to flammable liquids		N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer	See “1 Safety information” of the user manual	P
5.4.5	Equipment maintenance	See “1.4 Maintenance” of the user manual	P
	Instructions for RESPONSIBLE BODY include:		—
	Sufficient preventive maintenance and inspection information		P
	Replacement of hoses or parts containing liquids, etc.		N/A
	Specific battery type of user replaceable batteries		P
	Any manufacturer specified parts	Test leads, thermocouple	P
	RATING and characteristics of fuses	See “5.2 Replacing fuse” of the user manual	P

6	PROTECTION AGAINST ELECTRIC SHOCK	(see Form A.5)	P
6.1	General		P
6.1.1	Requirements		—
	ACCESSIBLE parts not HAZARDOUS LIVE in NORMAL CONDITION and SINGLE FAULT CONDITION		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		P
6.1.2	Exceptions		N/A
	Capacitance test		N/A
	Parts not HAZARDOUS LIVE 10 s after interruption of supply		N/A
6.2	Determination of ACCESSIBLE parts		P

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
6.2.1	General examination		P
6.2.2	Openings above parts that are HAZARDOUS LIVE	No such openings	N/A
6.2.3	Openings for pre-set controls		N/A
6.3	Permissible limits for ACCESSIBLE parts		P
6.3.1	Values in NORMAL CONDITION	(see Form A.7)	P
6.3.2	Values in SINGLE FAULT CONDITION	(see Form A.8)	P
6.4	Protection in NORMAL CONDITION (see 6.2, 6.3.1, 6.7, 6.8 and 8.1)		P
	a) BASIC INSULATION (see annex D)		N/A
	b) ENCLOSURES and BARRIERS		P
	c) Impedance		N/A
6.5	Protection in SINGLE FAULT CONDITION		P
	Additional protection is provided by:		—
	One or more of 6.5.1 to 6.5.3; or	6.5.2	P
	Automatic disconnection of the supply (6.5.4)		N/A
6.5.1	Protective BONDING		N/A
	ACCESSIBLE conductive parts:		—
	Separated by DOUBLE INSULATION or REINFORCED INSULATION; or		N/A
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or		N/A
	Separated by screen or BARRIER bonded to PROTECTIVE CONDUCTOR TERMINAL from parts which are HAZARDOUS LIVE		N/A
6.5.1.1	Integrity of PROTECTIVE BONDING		N/A
	a) PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A
	b) Soldered connections:		N/A
	Independently secured against loosening		N/A
	Not used for other purposes		N/A
	Screw connections are secured		N/A
	c) PROTECTIVE BONDING not interrupted		N/A
	d) Any moveable connection specifically designed, and meets 6.5.1.3		N/A
	e) No external metal braid of cables used		N/A
	f) If MAINS supply passes through:		N/A
	Means provided for passing protective conductor;		N/A
	Impedance meets 6.5.1.3.		N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	g) Protective conductors bare or insulated, if insulated, green/yellow		N/A
	Exceptions:		—
	1) earthing braids;		N/A
	2) internal protective conductors etc.;		N/A
	Green/yellow not used for other purposes		N/A
	h) TERMINAL suitable, and meets 6.5.1.2		N/A
6.5.1.2	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
	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; or		N/A
	Warning marking requires replacement of protective conductor		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
	Indirect bonding used (see 6.5.1.5)		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 (No. 6)		N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	At least 3 turns of screw engaged		N/A
	Contact pressure not capable of reduction by deformation of materials		N/A
	Passes tightening torque test		N/A
6.5.1.3	Impedance of PROTECTIVE BONDING of plug-connected equipment		N/A
6.5.1.4	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N/A
6.5.1.5	Indirect bonding for measuring and test equipment		N/A
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION	(see 6.7, 6.8 and 6.9.2)	P
6.5.3	PROTECTIVE IMPEDANCE		N/A
	a) HIGH-INTEGRITY single component used (s. 14.6); or		N/A
	b) A combination of components used; or		N/A
	c) A combination of BASIC INSULATION and current- or voltage-limiting device used		N/A
	Components, wires and connections are RATED as required		N/A
6.5.4	Automatic disconnection of the supply		N/A
	If used, it meets :		—
	a) Supplied with the equipment; or		N/A
	Specified by installation instruction		N/A
	b) RATED disconnecting time within limit specified		N/A
	c) RATED for maximum RATED LOAD		N/A
6.6	Connections to external circuits		P
6.6.1	General		P
	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		—
	a) The external circuits		P
	b) The equipment		P
	Separation of circuits provided; or		P
	Short circuit of separation does not cause a Hazard		P
	Instructions or markings include:		—
	1) RATED conditions for TERMINAL		P
	2) Required RATING of external circuit insulation		N/A
6.6.2	TERMINALS for external circuits	No such terminal	N/A

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE		N/A
	High voltage TERMINALS energized from the interior are:		—
	Not ACCESSIBLE if connected; or		N/A
	When unmated HAZARDOUS LIVE TERMINALS not ACCESSIBLE ; or		N/A
	marked with symbol 12		N/A
6.6.3	Circuits with TERMINALS which are HAZARDOUS LIVE	No such terminals	N/A
	These circuits are:		—
	Not connected to ACCESSIBLE conductive parts; or		N/A
	Connected to ACCESSIBLE conductive parts, but are not MAINS CIRCUITS and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		N/A
6.6.4	ACCESSIBLE TERMINALS for stranded conductors	No such conductors	N/A
	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
	b) ACCESSIBLE TERMINALS will not work loose		N/A
6.7	CLEARANCES and CREEPAGE DISTANCES	(See Form A.5 and A.13)	P
6.7.1.2	CTI requirements	(See Form A.5)	P
	CTI tests performed		N/A
6.8	Procedure for dielectric strength tests	(See Form A.5 and A.14)	P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	General		P
	If a failure could cause a HAZARD:		—
	a) Security of wiring connections		N/A
	b) Screws securing removable covers		N/A
	c) Accidental loosening		N/A
	Material not to be used for safety relevant insulation:		—
	1) Easily damaged materials not used		P
	2) Non-impregnated hydroscopic materials not used		P
6.9.2	ENCLOSURES of equipment with DOUBLE INSULATION or REINFORCED INSULATION		P

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	ENCLOSURE surrounds all metal parts except for small metal parts which are separated		P
	ENCLOSURES or parts made of insulating material		P
	Protection for metal ENCLOSURES or parts by:		—
	a) An insulating coating or BARRIER on the inside; or		N/A
	b) CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires		N/A
6.9.3	Over-range indication		P
	Unambiguous	Displayed “OL” or “-OL”	P
6.10	Connection to MAINS supply source and connections between parts of equipment		N/A
6.10.1	MAINS supply cords	No cords	N/A
	a) RATED for maximum equipment current (see 5.1.3c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	b) Heat-resistant if likely to contact hot parts		N/A
	c) Temperature RATING (cord and inlet)		N/A
	d) 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
	Non-detachable cord protection:		—
	a) Inlet or bushing smoothly rounded; or		N/A
	b) Insulated cord guard protruding >5D		N/A
	Protective earth conductor is the last to take the strain		N/A
	Cord anchorages:		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) Compression bushing:		N/A
	1) Clamps all types and sizes of MAINS cords; and		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	2) Is suitable:		—
	For connection to TERMINALS provided; or		N/A
	It is designed for screened MAINS cord		N/A
	f) Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull test		N/A
6.10.3	Plugs and connectors		N/A
	a) MAINS supply plugs, connectors etc., conform with relevant specifications		N/A
	b) If equipment supplied at voltages below 6.3.2.a) or from a sole source:		N/A
	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
	c) Plug pins which receive a charge from an internal capacitor		N/A
	d) Accessory MAINS socket outlets:		N/A
	1) Marking if accepts a standard MAINS plug (see 5.1.3e)		N/A
	2) 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	General		N/A
	Disconnects all current carrying conductors		N/A
6.11.1.1	Exceptions		N/A
	a) Equipment supplied by low energy source; or		P
	b) Equipment connected to impedance protected supply; or		N/A
	c) Equipment constitutes an impedance protected load		N/A
6.11.2	Requirements according to type of equipment	No supply power cord	N/A
6.11.2.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment:		N/A
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation specifies:		—
	a) Switch or circuit-breaker to be included in building installation		N/A
	b) Location		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	c) Marking		N/A
6.11.2.2	Single-phase cord-connected equipment		N/A
	Equipment is provided with:		—
	a) Switch or circuit-breaker; or		N/A
	b) Appliance coupler (disconnectable without TOOL); or		N/A
	c) Separable plug (without locking device)		N/A
6.11.2.3	HAZARDS arising from function		N/A
	Emergency switch		N/A
	Emergency switch \leq 1 m from the moving part		N/A
6.11.3	Disconnecting devices		N/A
	Electrically close to the supply		N/A
6.11.3.1	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
	If has other contacts meets separation requirements of 6.6 and 6.7		N/A
6.11.3.2	Appliance couplers and plugs		N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.2.2):		—
	Readily identifiable and easily reached by the OPERATOR		N/A
	Single-phase PORTABLE EQUIPMENT cord length not more than 3 m		N/A
	Protective earth conductor connected first and disconnected last		N/A

7	PROTECTION AGAINST MECHANICAL HAZARDS		N/A
7.1	General		N/A
	Conformity is checked by 7.2 to 7.6		N/A
7.2	Moving parts	No moving parts	N/A
	Moving parts not able to crush, etc. (see also 6.11.2.3)		N/A
	If OPERATOR access permitted:		—
	a) Access requires TOOL		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	b) Statement about training		N/A
	c) Warning markings or symbol 14		N/A
7.3	Stability	Hand held or portable equipment	N/A
	Marking of non-automatic means		N/A
	Conformity tests:		—
	a) 10° tilt test		N/A
	b) multi-directional force test		N/A
	c) downward force test		N/A
7.4	Provisions for lifting and carrying		N/A
	Handles or grips withstand four times weight		N/A
	Equipment more than 18 kg :		—
	Has means for lifting or carrying; or		N/A
	Directions in documentation		N/A
7.5	Wall mounting		N/A
	Mounting brackets withstand four times weight		N/A
7.6	Expelled parts		N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a TOOL		N/A

8	MECHANICAL RESISTANCE TO SHOCK AND IMPACT		P
8.1	ENCLOSURE rigidity test		P
8.2	Drop test		P
	After the tests of 8.1 to 8.2:		—
	Voltage tests	(see Form A.14)	P
	Inspections:		—
	a) HAZARDOUS LIVE parts not accessible		P
	b) ENCLOSURE shows no cracks (hazard)		P
	c) CLEARANCES not less than their permitted values	(see Form A.13)	P
	d) BARRIERS not damaged or loosened	No barriers	N/A
	e) No moving parts exposed, except permitted by 7.2		N/A
	f) No damage which could cause spread of fire		P

9	PROTECTION AGAINST THE SPREAD OF FIRE		P
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Clause	Requirement — Test	Result — Remark	Verdict
	Conformity for each source of HAZARD or area of the equipment is checked by one of the following:	(See Form A.16)	—
	a) Fault test of 4.4; or	(See Forms A.1 and A.2)	P
	b) Application of 9.1 (eliminating or reducing the sources of ignition); or		N/A
	c) Application of 9.2 (containment of fire within the equipment)		P
9.1	Eliminating or reducing the sources of ignition within the equipment		N/A
	a) 1) Limited-energy circuit (see 9.3); or		N/A
	2) BASIC INSULATION provided for parts of different potential; OR		N/A
	Bridging the insulation does not cause ignition		N/A
	b) Surface temperature of liquids and parts (see 9.4.a)		N/A
	c) No ignition in circuits designed to produce heat		N/A
9.2	Containment of the fire within the equipment, should it occur		P
	a) Energizing of the equipment is controlled by an OPERATOR held switch		N/A
	b) Enclosure is conform with constructional requirements of 9.2.1; and	V-0 enclosure used	P
	Requirements of 9.4b) or c) are met		P
9.2.1	Constructional requirements		P
	a) Insulated wires have flammability classification FV1 or better		N/A
	Connectors and insulating material have flammability classification FV2 or better		N/A
	b) The enclosure is constructed as follows :		P
	1) Bottom constructed with:		—
	No openings; or		P
	Extent as specified in figure 7; or		N/A
	Baffles as specified in figure 6; or		N/A
	Perforated as specified in Table 12; or		N/A
	Metal screen with a mesh		N/A
	2) Sides have no openings as specified in figure 7		P
	3) Material of ENCLOSURE and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N/A
	Non metallic materials have flammability classification FV1 or better	(see Table: 3)	P

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Clause	Requirement — Test	Result — Remark	Verdict
	4) ENCLOSURE and any baffle or flame barrier have adequate rigidity		N/A
9.3	Limited-energy circuit		N/A
	a) Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc		N/A
	b) Current limited by one of following means:		N/A
	1) Inherently or by impedance; or		N/A
	2) Overcurrent protective device; or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION		N/A
	c) Is separated by at least BASIC INSULATION		N/A
	If overcurrent protective device used:		—
	Fuse or a non adjustable electromechanical device		N/A
9.4	Requirements for equipment containing or using flammable liquids		N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N/A
	Risk is reduced to a tolerable level :		—
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N/A
	b) The quantity of liquid is limited		N/A
	c) Flames are contained within the equipment		N/A
	Detailed instructions for risk-reduction provided		N/A
9.5	Overcurrent protection		P
	Devices not in the protective conductor		P
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		P
9.5.1	PERMANENTLY CONNECTED EQUIPMENT		N/A
	Overcurrent device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		N/A
9.5.2	Other equipment		P
	Protection within the equipment		P
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits	(see Form A.20A)	P
	Heated surfaces necessary for functional reasons exceeding specified values:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	Are recognizable as such by appearance or function; or		N/A
	Are marked with symbol 13		N/A
	Guards are not removable without TOOL		N/A
10.2	Temperatures of windings		N/A
	Limits not exceeded in:		—
	NORMAL CONDITION		N/A
	SINGLE FAULT CONDITION		N/A
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.20A)	—
	a) Value of 60 °C of field-wiring TERMINAL box not exceeded		N/A
	b) Surface of flammable liquids and parts in contact with this liquids		N/A
	c) Surface of non-metallic ENCLOSURES		P
	d) Parts made of insulating material supporting parts connected to MAINS supply		N/A
	e) TERMINALS carrying a current more than 0.5 A		N/A
10.4	Conduct of temperature test		N/A
10.5	Resistance to heat		N/A
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES		P
10.5.2	Non-metallic ENCLOSURES	(See Forms A.21)	P
	After treatment:		—
	No HAZARDOUS LIVE parts ACCESSIBLE;		P
	Tests of 8.1 and 8.2	(See Form A.13)	P
	In case of doubt, tests of 6.8 (without humidity preconditioning)	(See Form A.14)	N/A
10.5.3	Insulating material		N/A
	a) Parts supporting parts connected to MAINS supply		N/A
	b) TERMINALS carrying a current more than 0.5 A		N/A
	Examination of material data; or		N/A
	in case of doubt:		—
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	General		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
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
11.7.1	Maximum pressure.....:		N/A
	Maximum pressure of any part does not exceed P_{RATED}		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Test to IEC 60335 (refrigeration only)		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	Meets ISO 4126-1; and		N/A
	It is conform with:		—
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A
	f) Adequate discharge capacity		N/A
	g) No shut-off valve between overpressure safety device and protected parts		N/A

12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE		N/A
12.1	General		N/A
	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation		N/A
12.2.2	Accelerated electrons		N/A
12.3	Ultra-violet (UV) radiation	(Conformity test under consideration)	
	No unintentional and HAZARDOUS escape of UV radiation		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
12.4	Micro-wave radiation		N/A
	Power density does not exceed 10 W/m ²		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.5.1	Sound level		N/A
12.5.2	Ultrasonic pressure		N/A
12.6	Laser sources (IEC 60825-1)		N/A

13	PROTECTION AGAINST LIBERATED GASES, EXPLOSION AND IMPLOSION		N/A
13.1	Poisonous and injurious gases		N/A
	Attached data/test reports demonstrate conformity		N/A
13.2	Explosion and implosion		N/A
13.2.1	Components		N/A
	Components liable to explode:		—
	Pressure release device provided; or		N/A
	Apparatus incorporates OPERATOR protection (see also 7.6)		N/A
	Pressure release device:		—
	Discharge without danger		N/A
	Cannot be obstructed		N/A
13.2.2	Batteries and battery charging		P
	If explosion or fire hazard could occur:		—
	Protection incorporated in the equipment; or		N/A
	Instructions specify batteries with built-in protection		N/A
	In case of wrong type of battery used:		—
	No HAZARD; or		N/A
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		N/A
	Type of rechargeable battery indicated; or		N/A
	Symbol 14 used		N/A
	Battery compartment design		P
	Single component failure		N/A
	Polarity reversal test		P
13.2.3	Implosion of cathode ray tubes	No cathode ray tubes	N/A
	If maximum face dimensions > 160 mm		—

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Clause	Requirement — Test	Result — Remark	Verdict
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A
13.2.4	Equipment RATED for high pressure (See 11.7)		N/A

14	COMPONENTS		P
14.1	General		P
	Where safety is involved, components meet relevant requirements	(see Table: 3)	P
14.2	Motors		N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented from starting; or	(See Form A.20)	N/A
	Protected by overtemperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		N/A
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices		N/A
	Devices operating in a SINGLE FAULT CONDITION	(See Form A.28)	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
14.4	Fuse holders		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	HIGH INTEGRITY components		N/A
	Used in applicable positions (see Table 3)		N/A
	Conforms with IEC publications		N/A
	Single electronic device not used		N/A
14.7	Mains transformers tested outside equipment		N/A
14.8	Printed circuit boards		P
	Data shows conformity with FV-1 of IEC 60707 or better; or		P

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Clause	Requirement — Test	Result — Remark	Verdict
	Test shows conformity with FV-1 of IEC 60707 or better; or		N/A
	Thin film flexible PCB with limited-energy circuit used		N/A
14.9	Circuits or components used as transient overvoltage limiting devices		N/A
	After test, no sign of overload or degradation		N/A

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

16	TEST AND MEASUREMENT EQUIPMENT		P
16.1	Current measuring circuits		N/A
16.2	Multifunction meters and similar equipment		P
	No HAZARD from:		—
	RATED input voltage combinations		P
	Settings of functions		P
	Settings of range controls		P

ANNEX F	ROUTINE TESTS	Not check	N/A
	Manufacturer's declaration	Not check	N/A

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Clause	Requirement — Test	Result — Remark	Verdict

4.4.2	TABLE: Summary of SINGLE FAULT CONDITIONS			Form A.1	P
Subclause	Title	Does not apply	Carried out	Comments	
4.4.2.1	PROTECTIVE IMPEDANCE	Yes			
4.4.2.2	Protective conductor	Yes			
4.4.2.3	Equipment or parts for short-term or intermittent operation	Yes			
4.4.2.4	Motors	Yes			
4.4.2.5	Capacitors	Yes			
4.4.2.6	Mains transformers Attach drawing of MAINS TxS showing all protective devices (see Forms A.29 and A.30)	Yes			
4.4.2.7	Outputs	Yes			
4.4.2.8	Equipment for more than one supply	Yes			
4.4.2.9	Cooling – air holes closed – fans stopped – coolant stopped	Yes Yes Yes Yes			
4.4.2.10	Heating devices – timer overridden – temperature controller overridden – loss of cooling liquid – overfilled or empty or both	Yes			
4.4.2.11	Insulation between circuits and parts	Yes			
4.4.2.12	Interlocks	Yes			
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.12:					
4.4.2	Components single fault test		Yes		
Supplementary information: (see Form 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			Form A.2	P
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
4.4.4	1	R25 short, normally measured CAT III 600 Vac voltage	10 minutes	Display digitals. No damage, no hazard.	Yes

NOTE Td = Test duration in h:min:s
 Record dielectric strength test on Form A.14 and temperature tests on Form A.20.
 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

5.1.3c)	TABLE: Mains supply	Form A.3	N/A
	Marked rating	V	—
	Phase		—
	Frequency	Hz	—
	Current	A	—
	Power	W	—
	Power	VA	—

Test	Voltage	Frequency	Current	Power in	Power in	Comments
No.	V	Hz	A	W	VA	

Note: Measurements are only required for marked ratings.

Supplementary information:

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Clause	Requirement — Test	Result — Remark	Verdict

5.3	TABLE: Durability of markings	Form A.4	P
Marking method (see NOTE)		Agent	
1)	Silk screen print	A Water	
2)	Mold	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.

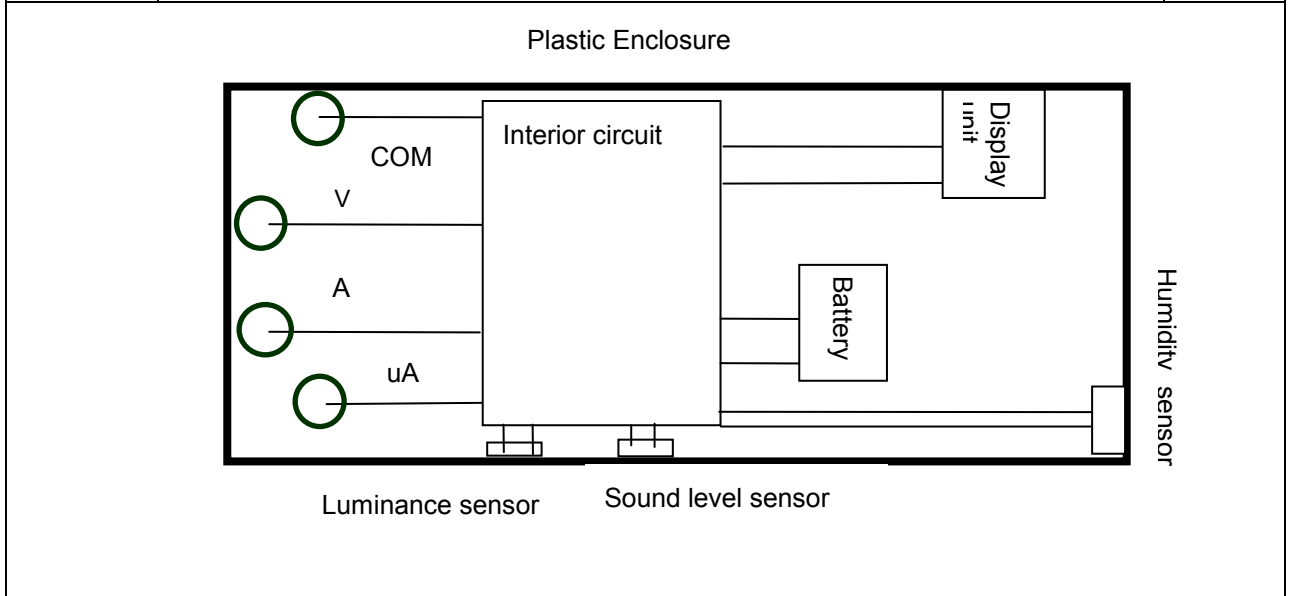
Marking location	Marking method (see above)
Identification (5.1.2)	1)
Mains supply (5.1.3)	--
Fuses (5.1.4)	1), 2)
TERMINALS and operating devices (5.1.5.1)	--
Measuring circuit TERMINALS (5.1.5.2)	1)
Switches and circuit breakers (5.1.6)	--
DOUBLE/REINFORCED equipment (5.1.7)	1), 2)
Field wiring TERMINAL boxes (5.1.8)	--
Warning marking (5.2)	1), 2)
Battery charging (13.2.2)	--

Method	Test agent	Remains legible	Label loose	Curled edges	Comments
		Verdict	Verdict	Verdict	
1)	B	P	P	P	Remain visible

Supplementary information:

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

6	TABLE: Protection against electric shock - Block diagram of system Form A.5		P
----------	--	--	----------



Pollution degree: 2			Measurement category (overvoltage category)....: III						
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Location or description	Insulation type	Maximum working	CREEPAGE DISTANCE (NOTE 3)				CLEARANCE (NOTE 3)	Test voltage	Comments
	(NOTE 1)	voltage (NOTE 2)	PWB mm	CTI	Other mm	CTI	mm	(NOTE 2) V	
Live parts in battery compartment to accessible surface	RI	1000 Vr.m.s	--	--	22,0	≥400	22,0	5312 Vr.m.s	
Live parts on PCB side to accessible part	RI	1000 Vr.m.s	--	--	15,6	≥400	15,6	5312 Vr.m.s	Capacitor CD12, CD11
Sound level sensor to accessible part	RI	1000 Vr.m.s	--	--	18,5	≥400	10,5	5312 Vr.m.s	
Humidity sensor to accessible part	RI	1000 Vr.m.s	--	--	19,5	≥400	10,5	5312 Vr.m.s	
Live parts on PCB to luminance cover surface	RI	1000 Vr.m.s	--	--	15,6	≥400	15,6	5312 Vr.m.s	

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Clause	Requirement — Test					Result — Remark			Verdict
6	TABLE: Protection against electric shock - Block diagram of system Form A.5								P
Conductive adhesive to outer surface of transparent plastic screen	RI	1000 Vr.m.s	--	--	14,5	≥400	14,5	5312 Vr.m.s	
Live part to surface of push button	RI	1000 Vr.m.s	--	--	22,5	≥400	22,5	5312 Vr.m.s	
COM terminal to V terminal (before high resistor)	BI	1000 Vr.m.s	5,8	>175	--	--	5,8	3320 Vr.m.s	
NOTE 1 – Type of insulation: BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION			NOTE 2 - Types of voltage Peak impulse test voltage (pulse) r.m.s. d.c. peak			NOTE 3 - INSTALLATION CATEGORIES (OVERVOLTAGE CATEGORIES) or POLLUTION DEGREES which differ from these should be shown under "Comments".			
Supplementary Information: CAT III 600 V, CAT II 1000 V, Pollution degree II, altitude up to 2000 m Limits: Cl=5,5 mm (BI), Cl=10,5 mm (RI), Cr=7,1 mm (BI, plastic CTI>400) Cr=14,2 mm (RI, plastic CTI>400) On PCB, Cl=Cr=5,5 mm (BI)									

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Clause	Requirement — Test	Result — Remark	Verdict

6.2	TABLE: List of ACCESSIBLE parts	Form A.6	P
6.1.2	Exceptions		—
6.2	Determination of accessible parts		—

Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)
1	Enclosure	Test finger	--

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 (see Form A.7).
 NOTE 5 – The determination methods are:
 V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.

Supplementary information:

IEC 61010-1													
Clause	Requirement — Test							Result — Remark					Verdict
6	TABLE: Values in NORMAL CONDITION							Form A.7					P
6.1.1	Exceptions							11.2 Cleaning and decontamination					—
6.3.1	Values in NORMAL CONDITION (see NOTE 1)							11.3 Spillage					—
6.6.2	Terminals for external circuit							11.4 Overflow					—
6.10.3	Plugs and connections												—
Item	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments
(see Form A.6)	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	
1	350,8	496,0	--	A1	0,0186	0,0572	--	--	--	--	--	--	Sinusoidal
NOTE – A 10 s test is specified in 6.1.2 a) b). A 5 s test is specified in 6.10.3 c).													
Supplementary information:													

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Clause	Requirement — Test	Result — Remark	Verdict

6.3.2	TABLE: Values in SINGLE FAULT CONDITION											Form A.8	P
Item	Subclause and	Voltage			Transient (see NOTE)		Current			Capacitance			
(See Form A.6)	fault No. (see FormA.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)	Comments	
1	1	314,7	445.0	--	--	--	A1	0,0185	0,0536	--		Sinusoidal	

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

Supplementary information:
R25 shorted, normally measured CAT III 600 Vac voltage.

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

6.5.1.1	TABLE: Cross-sectional area of bonding conductors		Form A.9	N/A
Conductor location		Cross-sectional area mm ²	Verdict	

6.5.1.2	TABLE: Tighting torque test			N/A
Conductor location		Size of Screw	Tighting torque Nm	Verdict

Supplementary information:

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

6.5.1.3	TABLE: Bonding impedance of plug connected equipment Form A.10			N/A
ACCESSIBLE part under test	Test current A	Voltage attained after 1 min V	Calculated resistance (maximum allowed 0,1 Ω) Ω	Verdict

Supplementary information:

6.5.1.4	TABLE: Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT			N/A
ACCESSIBLE part under test	Test current A	Voltage attained after 1 min (maximum 10 V) V	Verdict	

Supplementary information:

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

6.5.1.5	TABLE: Indirect bonding for measuring and test equipment		Form A.11	N/A
ACCESSIBLE part under test	Voltage attained s	Time for voltage to drop to allowable levels s	Verdict	
a) Voltage limiting device	—	—	—	
Supplementary Information:				
ACCESSIBLE part under test	Voltage applied V	Time for device to trip s	Verdict	
b) Voltage-sensitive tripping device				
Supplementary Information:				

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

6.5.3	TABLE: PROTECTIVE IMPEDANCE	Form A.12	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:			

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

6.7	TABLE: CLEARANCES and CREEPAGE DISTANCES											Form A.13	P
8	Mechanical resistance to shock and impact												P
10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES												P
Location	Measured (initial – 6.7)		Verdict	Mechanical tests (note)					Test at max.	Measured after test (if required)		Verdict	
(see Form A.5)	CREEPAGE DISTANCE	CLEARANCE		Applied force	Rigidity (8.1)		Drop (8.2)		RATED ambient	CREEPAGE DISTANCE	CLEARANCE		Comments
	mm	mm		(6.7) N	Static	Dynamic	Normal	Hand-held/ Plug-in	(10.5.1)	mm	mm		
See form A.5	22,0	22,0	P	30N	P	N/A	N/A	P	40°C	22,0	22,0	P	RI
	15,6	15,6	P	30N	P	N/A	N/A	P	40°C	15,6	15,6	P	RI
	18,5	10,5	P	30N	P	N/A	N/A	P	40°C	15,5	10,5	P	RI
	19,5	10,5	P	30N	P	N/A	N/A	P	40°C	15,6	10,7	P	RI
	15,6	15,6	P	30N	P	N/A	N/A	P	40°C	15,3	11,1	P	RI
	14,5	14,5	P	30N	P	N/A	N/A	P	40°C	14,5	14,5	P	RI
	22,5	22,5	P	30N	P	N/A	N/A	P	40°C	22,5	22,5	P	RI
	5,8	5,8	P	30N	P	N/A	N/A	P	40°C	5,8	5,8	P	BI

NOTE – Refer to Form A.14 for dielectric strength tests following the above tests.

Supplementary information:

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

6.8	TABLE: Dielectric strength tests	Form A.14	P
4.4.4.1 b)	Conformity after application of fault conditions ¹		P
6.4	Protection in NORMAL CONDITION		P
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION		P
6.6.1	Connections to external circuits		P
6.7.3.1 c)	CLEARANCE values – General: reduced CLEARANCES for homogeneous construction		N/A
6.10.2.5	Fitting of non-detachable MAINS SUPPLY cords ¹		N/A
8	Mechanical resistance to shock and impact		P
9.1 a) 2)	Eliminating or reducing the sources of ignition within the equipment		N/A
9.3 c)	Limited-energy circuit		N/A
11.2	Cleaning ¹		N/A
11.3	Spillage ¹		N/A
11.4	Overflow ¹		N/A
11.6	Specially protected equipment ¹		N/A

¹ Record the fault, test or treatment applied before the dielectric strength test

	Test site altitude	Up to 100 m	—
	Test voltage correction factor (see Table 10).....	None	—

Location or references from Forms A.2 and A.5	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/d.c V	Comments	Verdict
Interior circuit to accessible parts	6.4	Yes	600 Vac	5312 Vr.m.s	RI	P
	6.5.2					
	6.6.1, 8	No	600 Vac	5312 Vr.m.s	RI	P
	4.4.4.1 b),	No	600 Vac	5312 Vr.m.s	RI	P
COM terminal to 10A terminal (10A fuse disconnected) and mA terminal (mA fuse disconnected)	6.4	Yes	600 Vac	3320 Vr.m.s	BI	P
	6.5.2					
	6.6.1, 8	No	600 Vac	3320 Vr.m.s	BI	P
	4.4.4.1 b),	No	600 Vac	3320 Vr.m.s	BI	P

Supplementary information:

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

6.10.2	TABLE: Cord anchorage					Form A.15	N/A
Location	Mass kg	Pull N	Verdict	Torque Nm	Verdict	Comment	
Supplementary information:							

IEC 61010-1				
Clause	Requirement — Test		Result — Remark	Verdict
9	TABLE: Protection against the spread of fire			Form A.16 P
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9a, 9b or 9c)	Protection details	Verdict
1	Plastic enclosure and PCB have flammability classification V – 0	9c	If a fire occurs it will be contained within the equipment.	Yes
2	Components single fault condition test	9a	Testing in the single fault conditions (see 4.4) that could cause the spread of fire outside the equipment	Yes
Supplementary information:				

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Clause	Requirement — Test	Result — Remark	Verdict

9.2.1	TABLE: Constructional requirements	Form A.17	N/A	
14.8	Printed circuit boards		N/A	
Material tested.....: —				
Generic name: —				
Material manufacturer: —				
Type: —				
Colour.....: —				
Conditioning details.....: —				
		Sample 1	Sample 2	Sample 3
Thickness of specimen	mm			
Duration of flaming after first Application	s			
Duration of flaming plus glowing After second application	s			
Specimen burns to holding clamp	Yes/No			
Cotton ignited	Yes/No			
Sample result	Pass/Fail			
Supplementary information:				

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

9.3	TABLE: Limited-energy circuit					Form A.18	N/A
Item	9.3 a)	9.3 b) Current and power limitation			9.3 c)	Decision	
or Location (see Form A.16)	Maximum potential in circuit voltage r.m.s./d.c. V	Maximum available cur- rent A	Maximum available power VA	Overload pro- tection after 120 s A	Circuit sepa- ration	Yes/No	Comments
Supplementary information:							

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

9.4	TABLE: Requirements for equipment containing or using flammable liquids		Form A.19	N/A
	Type of liquid	9.4 Flammable liquids		Verdict
		b) quantity	c) Containment	
Supplementary information:				

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

10.	TABLE : Temperature Measurements	Form A.20A	P
10.1	Surface temperature limits - NORMAL CONDITION		P
10.2	Temperature of windings- NORMAL CONDITION		N/A
10.3	Other temperature measurements		P

Operating conditions: Measure AC 10A current for 15 s with 1 min interval between two measurements

Frequency : --- Hz Test room ambient temperature (t_a).. : 20,5 °C

Voltage : --- V Test duration : 2 h 0 min

Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
10A terminal outer surface	28,4	47,9	80	P	
Enclosure top surface	26,1	45,6	80	P	
Battery cover surface	23,1	42,6	80	P	
PCB	47,5	67,0	For ref.	P	
Lead wire	21,7	41,2	80	P	
Interior surface of enclosure	33,3	52,8	For ref.	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.20B for details of winding temperature measurements

Supplementary information:

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

10.	TABLE : Temperature Measurements	Form A.20A	P
10.1	Surface temperature limits - SIGNLE FAULT CONDITION		P
10.2	Temperature of windings- SIGNLE FAULT CONDITION		N/A
10.3	Other temperature measurements		P

Operating conditions: Measure AC 10A current continuously

Frequency : Hz Test room ambient temperature (t_a) .. : 22,1 °C

Voltage : V Test duration : 1 12 min

Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
10A terminal outer surface	67,2	85,1	105	P	
Enclosure top surface	52,2	70,1	105	P	
Battery cover surface	32,9	50,8	105	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.20B for details of winding temperature measurements

Supplementary information:
 For fault condition clause 4.4.4 and clause 16.2 test, no power dissipation in the unit

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

10.2	TABLE: Temperature of windings Resistance method Temperature Measurements	Form A.20B	N/A
4.4.2.6	MAINS Transformers		N/A
14.2.1	Motor temperatures		N/A

Operating conditions:								
Frequency		Hz	Test room ambient temperature (t_{a1}/t_{a2})...				/ °C (initial / final)	
Voltage		V	Test duration				h min	
Part / Designation	R_{cold} Ω	R_{warm} Ω	Current A	t_r K	t_c °C	t_{max} °C	Verdict	Comments
NOTE 1- R_{cold} = initial resistance R_{warm} = final resistance t_r = temperature rise $t_c = t_r \text{ corrected } (t_c = t_r - \{ t_{a2} - t_{a1} \} + [40 \text{ } ^\circ\text{C or max RATED ambient]})$ t_{max} = maximum permitted temperature NOTE 2 - Indicate insulation class (IEC 85) under comments (optional) NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary								
Supplementary information:								

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

10.5.2	TABLE: Resistance to heat of non-metallic enclosures		Form A.21	P
	Test method used:			—
	Non operative treatment..... :	[√]		
	Empty ENCLOSURE :	[]		
	Operative treatment..... :	[]		
	Temperature during tests :	21,6 °C		—
	ENCLOSURE samples tested were :	70 °C		—
Description	Material	Comments	Verdict	
Enclosure	ABS, 60 °C, V-0	Material model: D-1000	P	
	Dielectric strength test (6.8) :	5312 V	r.m.s.	P
Supplementary information:				

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

10.5.3	TABLE: Insulating Materials		Form A.22	N/A
10.5.3a)	Ballpressure test			N/A
	Max. allowed impression diameter	2 mm		—
Part	Test temperature °C	Impression Diameter (mm)	Verdict	
Supplementary information:				
10.5.3b)	Vicat softening test (ISO 306)			N/A
Part	Vicat softening temperature °C	Thickness of sample (mm)	Verdict	
Supplementary information:				

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

8	TABLE: Mechanical resistance to shock and impact	Form A.23	P
11	Protection against hazards from fluids		N/A

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

Location (see form A.5)	Clause 8 tests				Clause 11 tests				Working voltage V	Test voltage V	Verdict	Comments
	Static	Dynamic	Normal	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				
See form A.5	√	√	--	√	--	--	--	--	600	5312 Vr.m.s	P	RI
	√	√	--	√	--	--	--	--	600	3320 Vr.m.s	P	BI

NOTE – Use r.m.s., d.c. or peak to indicate the used test voltage.

Supplementary information:

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

11.7.2	TABLE: Leakage and rupture at high pressure				Form A.24	N/A
Part	Maximum permissible working pressure MPa	Test pressure MPa	Leakage YES / NO	Burst YES / NO	Comments	

Supplementary information:

11.7.3	Leakage from low-pressure parts			N/A
Part	Test pressure MPa	Leakage YES / NO	Comments	

Supplementary information:

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

12.2.1	TABLE: Ionizing radiation	Form A 25	N/A
Locations tested	Measured values μSv/h	Verdict	Comments
Supplementary information:			

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

12.5.1	TABLE: Sound level		Form A.26	N/A
Locations tested	Measured values dBA		Calculated maximum sound pressure level	
At operator's normal position and at bystanders' positions				
a)				
b)				
c)				
d)				
e)				
f)				
Supplementary information:				
12.5.2	Ultrasonic pressure			N/A
Locations tested	Measured values		Comments	
	dB	kHz		
At OPERATOR'S normal position				
At 1 m from the ENCLOSURE				
a)				
b)				
c)				
d)				
e)				
NOTE – No limit is specified at present, but a limit of 110 dB above the reference pressure value of 20 µPa is under consideration for applicable frequencies between 20 kHz and 100 kHz.				
Supplementary information:				

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Clause	Requirement — Test	Result — Remark	Verdict
13.2.2	TABLE: Batteries	Form A.27	P
	Battery load and charging circuit diagram:		N/A
	Battery type..... :	3 AAA	—
	Battery manufacturer/model/catalogue No..... :	--	—
	Battery ratings :	1.5V	—
	Reverse polarity instalment test		P
Single component failures		Verdict	
Component		Open circuit	Short circuit
Battery	P	P	
Supplementary information:			

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

14.3	TABLE: Overtemperature protection devices		Form A.28	N/A
Reliability test				
Component	Type (note)	Verdict	Comments	
NOTE: NSR = non-self-resetting (10 times) NR = non-resetting(1 time) SR = self-resetting (200 times)				
Supplementary information:				

IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
4.4.2.6	TABLE: Mains transformer	Form A.29	N/A
4.4.2.6.1	Short circuit		N/A
14.7.1	MAINS transformers tested outside equipment		N/A
Type			—
Manufacturer.....			—
Test in equipment			
Test on bench			
Test repeated inside equipment (see 14.7)			
Optional – Insulation class (IEC 60085) of the lowest RATED winding			—
Winding identification			
Type of Protector for winding (Note 1)			
Elapsed time			
Current, A	primary		
	secondary		
Winding temperature, °C	primary		
(see Note 2)	secondary		
Tissue paper / cheesecloth OK? (Pass / Fail)			
Voltage tests (see Note 3)			
primary to secondary	_____ V _____		
primary to core	_____ V _____		
secondary to secondary	_____ V _____		
secondary to core	_____ V _____		
Verdict			
Note 1:	Primary fuse	- PF / ()	A
	Secondary fuse	- SF / ()	A
	Overtemperature protection	- OP / ()	°C
	Impedance protection	- Z	
Note 2:	Indicate method of measurement	TC = with thermocouple	
		R = resistance method	
	If resistance method is used, record resistance in cold and warm condition in FormA.20B!		
Note 3:	Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown		
Supplementary information:			

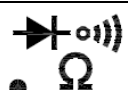


IEC 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
4.4.2.6	TABLE: Mains transformer	Form A.30	N/A
14.7.2	Overload tests (for mains transformers)		N/A
Type			—
Manufacturer.....			—
Test in equipment			
Test on bench			
Test repeated inside equipment (see 14.7)			
Optional – Insulation class (IEC 60085) of the lowest RATED winding			—
Winding identification			
Type of Protector for winding (Note 1)			
Elapsed time			
Current, A	primary		
	secondary		
Winding temperature, °C	primary		
	(see Note 2) secondary		
Tissue paper / cheesecloth OK ? (Pass / Fail)			
Voltage tests (see Note 3)			
primary to secondary	_____ V _____		
primary to core	_____ V _____		
secondary to secondary	_____ V _____		
secondary to core	_____ V _____		
Verdict			
Note 1:	Primary fuse	- PF / ()	A
	Secondary fuse	- SF / ()	A
	Overtemperature protection	- OP / ()	°C
	Impedance protection	- Z	
Note 2:	Indicate method of measurement	TC = with thermocouple	
		R = resistance method	
	If resistance method is used, record resistance in cold and warm condition in FormA.20B!		
Note 3:	Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown		
Supplementary information:			

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

16.1	TABLE: Current measuring circuits			Form A.31	N/A
These tests are performed with all types and models of current transformers without internal protection, and which are specified by the manufacturer for use with the equipment					
a) Current transformers					
Type/Model	RATED current A	Test current A	Interrupt Yes / No	Verdict	Comments
Supplementary information:					
b) Range changing switches					
Type / Model	Maximum rated current of switch A	Cycling test Verdict	Comments		
Supplementary information:					

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

16.2	TABLE: Multifunctional meters and similar equipment	Form A. 32	P
	Operating conditions..... :		—
	Maximum RATED voltage applied (V)..... :	600 V	—
	Measurement category..... :	CAT III	—
	Test source limit (KVA)..... :	30 KVA	—
Function		Range	Verdict
Supplementary information:			
See below test result			

Position of test probe	Setting of function	Input voltage	Result
COM --- dBLux VΩ→		CAT III 600 V	Display digitals, No damage, no hazard.
	• TEMP	CAT III 600 V	Display digitals, No damage, no hazard.
	• x10Lux	CAT III 600 V	Display digitals, No damage, no hazard.
	• dB	CAT III 600 V	Display digitals, No damage, no hazard.
COM --- TEMP μA/mA		CAT III 600 V	Display digitals, 400 mA fuse opened, No damage, no hazard.
COM --- 10A		CAT III 600 V	Display digitals, 10 A fuse opened, No damage, no hazard.

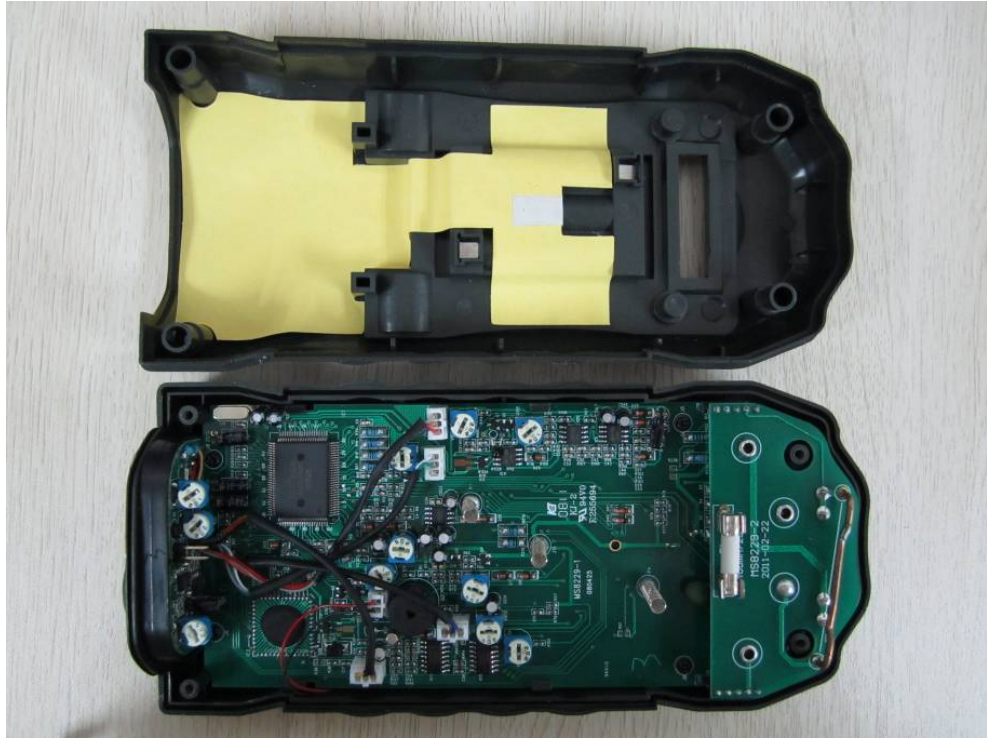
Appendix 1: Photos



Top view of the unit

Rear view of the unit

Appendix 1: Photos

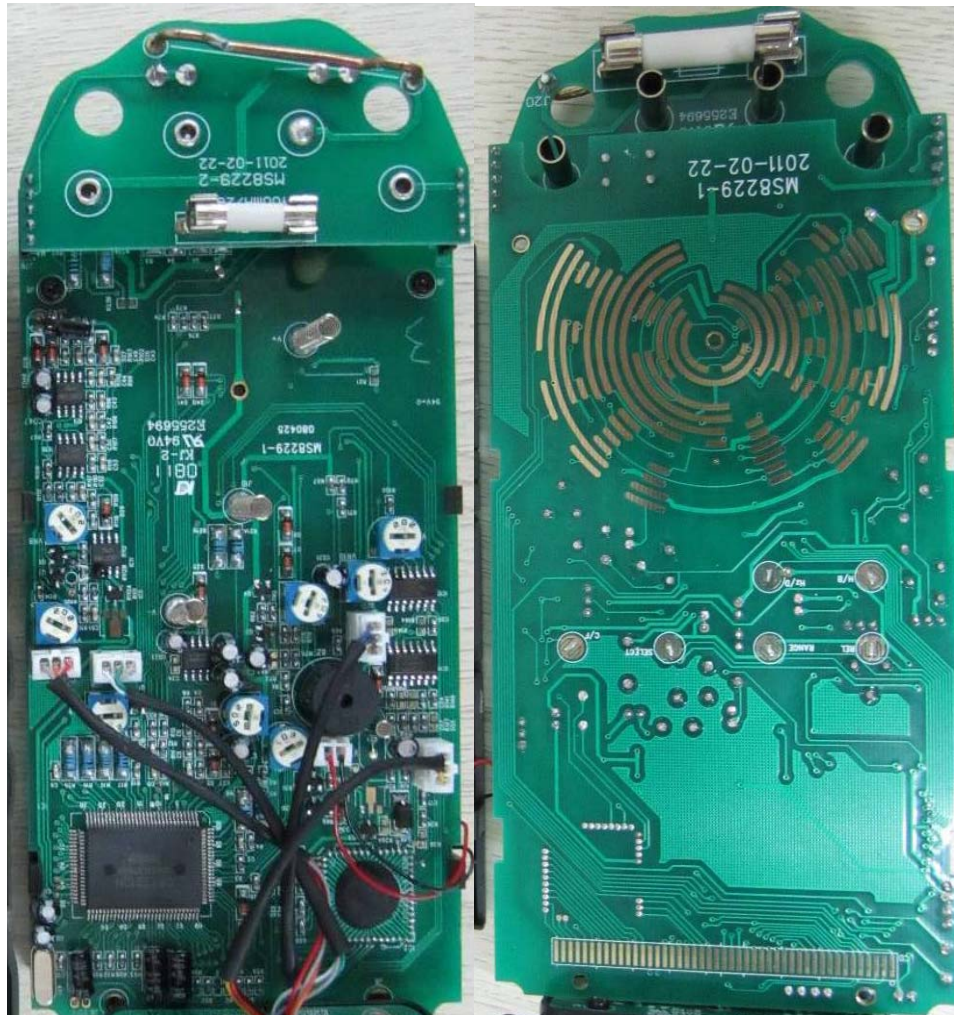


Interior view of the unit



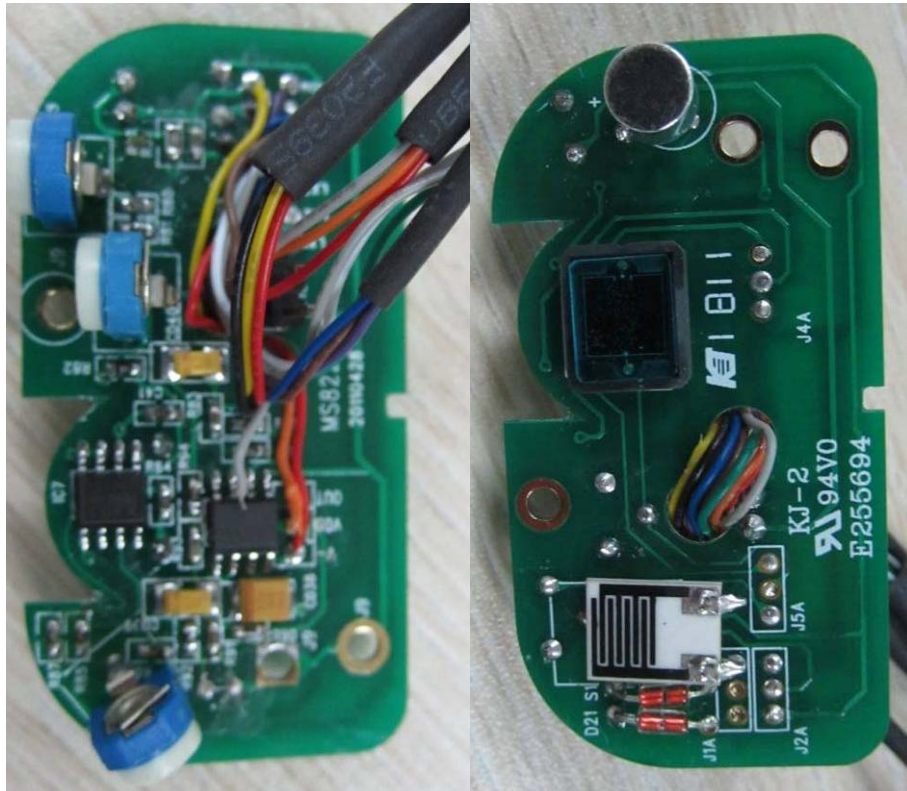
Interior view of the enclosure

Appendix 1: Photos

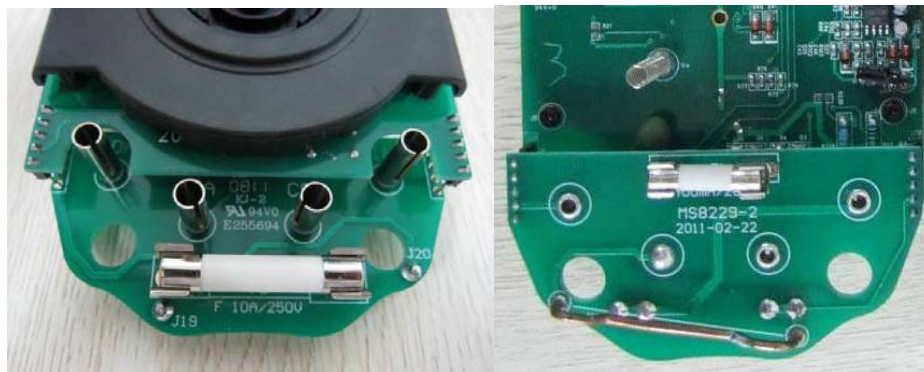


PCB-1 top and bottom view

Appendix 1: Photos



PCB-2 top and bottom view



PCB-3 top and bottom view