SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION Co., Ltd.

Test Verification of Conformity

Certificate No.: CTS18050187 **R/C:** 23450

Issued Date: May 24, 2018

In accordance with the following Applicable Directives:

Directive 2014/35/EU

Low Voltage Directive

The equipment, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

EN 61010-1:2010
EN 61010-2-030:2010

The test results are traceable to the international or national standards.

Applicant: **SHANGHAI PINYAN M&C TECHNOLOGY CO., LTD**

Unit 55,No.2155, Lianhua south Road, Minhang District, Shanghai, China

Manufacturer: **SHANGHAI PINYAN M&C TECHNOLOGY CO., LTD**

Unit 55,No.2155, Lianhua south Road, Minhang District, Shanghai, China

EUT Name: **Power meter**

Model number: **ME347**

Listed Model(s): **ME631、ME232、ME531、ME432**

Laboratory: **Shenzhen Huatongwei International Inspection Co., Ltd.**
Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, Guangdong, China
Tel: 86-755-26748078 Fax: 86-755-26748089
Http: //www.szhtw.com.cn E-mail: cs@szhtw.com.cn

CE

Note:

The certification is only valid for the equipment and configuration described, in conjunction with the test data detailed above.
The CE mark as shown beside can be used, under the responsibility of the manufacturer, after completion of an EC Directive of Conformity and compliance with all relevant EC Directive.

For and on behalf of
Shenzhen Huatongwei International Inspection Co., Ltd.

Authorized by: Caroline Li

SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO., LTD. HTW

CIC

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TEST REPORT
IEC/EN 61010-1
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

Report Number..... :	TRS18050187	R/C: 23450
Tested by (name + signature) .....:	Tank Lan	Tank. Lan
Supervised by (name + signature) .....:	Terry Wen	Terry Wen
Approved by (name + signature) .....:	Caroline Li	Caroline Li
Date of issue.....:	2018-05-24	

Testing Laboratory .....:	**Shenzhen HuaTongWei International Inspection Co., Ltd.**
Testing location/ address.....:	Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, Guangdong, China
Applicant's name ..... :	**SHANGHAI PINYAN M&C TECHNOLOGY CO., LTD**
Address.....:	Unit 55,No.2155, Lianhua south Road, Minhang District, Shanghai, China
Manufacturer's name ..... :	**Same as applicant**
Address.....:	Same as applicant

Test specification:

Standard .....:	☐ IEC 61010-1:2010 (Third Edition)
	☒ EN 61010-1:2010
Test procedure .....:	Test report
Non-standard test method .....:	N/A

Test Report Form No. ..... :	IEC61010_1J
Test Report Form(s) Originator .....:	VDE Testing and Certification Institute
Master TRF.....:	2013-11

Test item description ..... :	Power meter
Trade Mark .....:	MEATROL ELECTRICAL
Model/Type reference.....:	Test model: ME347 Cover model: ME631、ME232、ME531、ME432
Ratings.....:	Power: 85-240V~, 50/60Hz, 3.5W Voltage Measuring: 80-400V~ , 50/60Hz, CAT IV Current Measuring: 0.5-6300A

Summary of testing:

Tests performed:	**Testing location:**
The sample(s) tested complies with the requirements of the standard(s). The EUTs (equipments under test) passed all relevant tests.	**Shenzhen Huatongwei International Inspection Co., Ltd.** Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, Guangdong, China

Summary of compliance with National Differences:

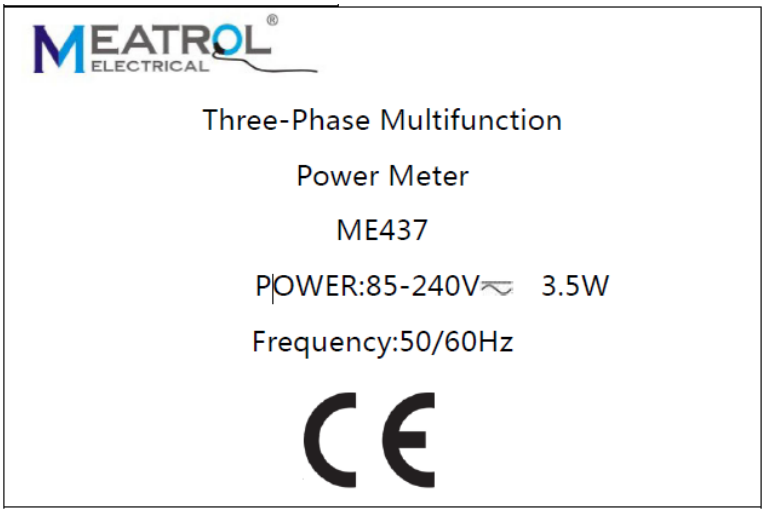
N/A

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

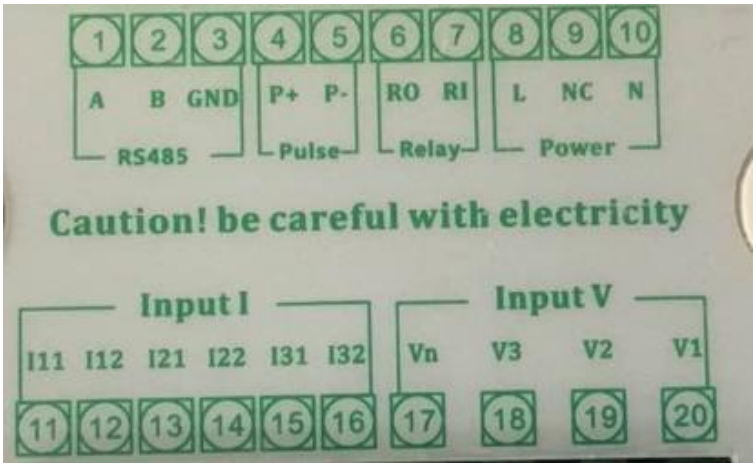
Attachment 1: EN 61010-2-030:2010 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-030: Particular requirements for testing and measurement circuits

Attachment 2: Photograph

Copy of marking plate:



Sample marking



Warning marking

Test item particulars:

Type of item ..... :	Measurement / Control
Description of equipment function ..... :	Power meter for detecting electric current
Connection to MAINS supply ..... :	Directly connected to mains.
Overvoltage category ..... :	N/A
POLLUTION DEGREE ..... :	2
Means of protection ..... :	Class II (isolated)
Environmental conditions ..... :	Extended (specify): -25°C to 55°C; RH: 5% to 95%, altitude below 3000 meters
For use in wet locations ..... :	No
Equipment mobility ..... :	Portable
Operating conditions ..... :	Continuous
Overall size of equipment (L x W x H) ..... :	96 mm × 96mm × 99 mm
Mass of equipment (kg) ..... :	0.30 kg
Marked degree of protection to IEC 60529 ..... :	IPX0
Altitude during operation (m) ..... :	Up to 3000
Altitude of test laboratory (m) ..... :	Less than 500

Possible test case verdicts:

- Test case does not apply to the test object ..... :	N/A (Not Applicable)
- Test object does meet the requirement ..... :	P (Pass)
- Test object does not meet the requirement ..... :	F (Fail)

Testing:

Date of receipt of test item ..... :	2018-05-10
Date (s) of performance of tests ..... :	2018-05-11 to 2018-08-21

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.
"(see ENCLOSURE #)" refers to additional information appended to the report.
"(see Form A.xx)" refers to a table appended to the report.
Bottom lines for measurement tables Form A.xx are optional if used as record.

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

General product information:

1. The unit is a power meter, which is a measurement equipment to measure the AC current and frequency.

2. All the models ME347、ME631、ME232、ME531、ME432， are identical to each other except for detected range.

3. The Power meter is provided with assemblies, which are tested according to EN 61010-030:2010.

4. The operation temperature is evaluated up to 40°C.

Abbreviations used in the report:

- normal conditions	**N.C**.	- single fault conditions	**S.F.C**
- functional insulation	**OP**	- basic insulation	**BI**
- double insulation	**DI**	- supplementary insulation	**SI**
- between parts of opposite polarity	**BOP**	- reinforced insulation	**RI**

Indicate used abbreviations (if any)

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
4	**TESTS**		**P**
4.4	Testing in SINGLE FAULT CONDITIONS		P
4.4.1	Fault tests	(see Form A.1)	P
4.4.2	Application of SINGLE FAULT CONDITIONS		P
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.2 to 4.4.2.14	(see Form A.1)	—
4.4.2.2	PROTECTIVE IMPEDANCE		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 motors used.	—
	– stopped while fully energized		N/A
	– prevented from starting		N/A
	– one phase interrupted (multi-phase)		N/A
4.4.2.6	Capacitors	No such capacitors.	N/A
4.4.2.7	MAINS transformers		N/A
4.4.2.7.2	Short circuit	(see Form A.39)	N/A
4.4.2.7.3	Overload	(see Form A.26B and A.40)	N/A
4.4.2.8	Outputs	No outputs.	N/A
4.4.2.9	Equipment for more than one supply		N/A
4.4.2.10	Cooling	(see Form A.26A)	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 such devices.	N/A
	– timer overridden		N/A
	– temperature controller overridden		N/A
4.4.2.12	Insulation between circuits and parts	(see Form A.1)	P
4.4.2.13	Interlocks		N/A
4.4.2.14	Voltage selectors	No such devices.	N/A
4.4.3	Duration of tests	(see Form A.1)	—
4.4.4	Conformity after application of fault conditions	(see Form A.1; A.6, A.18)	P
5	**MARKING AND DOCUMENTATION**		**P**
5.1.1	Required equipment markings	As below.	—
	– visible from the exterior; or	Rating label is marked on the enclosure.	P
	– visible after removing cover or opening door		N/A

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	– visible after removal from a rack or panel		N/A
	Not put on parts which can be removed by an operator		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (IEC 61010-1: Table 1) used		P
5.1.2	Identification		P
	Equipment is identified by:		—
	a) Manufacturer's or supplier's name or trademark	See marking plate.	P
	b) Model number, name or other means	See marking plate.	P
	Manufacturing location identified		N/A
5.1.3	MAINS supply		P
	Equipment is marked as follows:		—
	a) Nature of supply:		—
	1) a.c. RATED MAINS frequency or range of frequencies.....	50/60Hz	—
	2) d.c. with symbol 1		—
	b) RATED supply voltage(s) or range.....	85-240V	—
	c) Max. RATED power (W or VA) or input current	3.5W	—
	The marked value not less than 90 % of the maximum value		P
	If more than one voltage range:		—
	Separate values marked; or		P
	Values differ by less than 20 %		N/A
	d) OPERATOR-set for different RATED supply voltages:	No operator-set device.	—
	Indicates the equipment set voltage		N/A
	Portable equipment indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
	e) Accessory MAINS socket-outlets accepting standard MAINS plugs are marked:	No accessory mains socket-outlets.	—
	With the voltage if it is different from the MAINS su		—
	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		N/A
	Operator replaceable fuse marking (see also 5.4.5)		—

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
5.1.5	TERMINALS, connections and operating devices		P
5.1.5.1	General		—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		P
	If insufficient space, symbol 14 used		N/A
	Push-buttons and actuators of emergency stop devices and indicators:		—
	– used only to indicate a warning of danger; or		N/A
	– the need for urgent action		N/A
	– coloured red		N/A
	– coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		—
	– to safety of persons; or		N/A
	– safety of the environment		N/A
5.1.5.2	TERMINALS		—
	MAINS supply TERMINAL identified	No such terminals.	N/A
	Other TERMINAL marking:		—
	a) FUNCTIONAL EARTH TERMINALS (symbol 5 used)		N/A
	b) PROTECTIVE CONDUCTOR TERMINALS:		—
	Symbol 6 is placed close to or on the TERMINAL; or		N/A
	Part of appliance inlet		N/A
	c) TERMINALS of control circuits (symbol 7 used)		N/A
	d) HAZARDOUS LIVE TERMINALS supplied from the interior	No such terminals.	N/A
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.6	Switches and circuit breakers	No such switches and circuit breakers used.	N/A
	If disconnecting device, off position clearly marked		N/A
	If push-button used as power supply switch:		—
	– symbol 9 and 15 used for on-position		N/A
	– symbol 10 and 16 used for off-position		N/A
	– pair of symbols 9, 15 and 10, 16 close together		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION	Double insulation.	P
	Protected throughout (symbol 11 used)		P
	Only partially protected (symbol 11 not used)		N/A

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
5.1.8	Field-wiring TERMINAL boxes	No field-wiring terminal.	N/A
	If TERMINAL or ENCLOSURE exceeds 60 °C:	(see Form A.26A)	—
	Cable temperature RATING marked.....		—
	Marking visible before and during connection or beside TERMINAL		N/A
5.2	Warning markings	As below.	P
	Visible when ready for NORMAL USE	Marked on product surface as shown on copy of marking plates.	P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour:		—
	a) symbols min 2,75 mm and text 1,5 mm high and contrasting in colour with background		P
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and		N/A
	0,5 mm depth or raised if not contrasting in colour		N/A
	If necessary marked with symbol 14		N/A
	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	(see Form A.3)	P
5.4	Documentation		P
5.4.1	General		P
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY		P
	Safety documentation for service personnel authorized by the manufacturer		P
	Documentation necessary for safe operation is provided in printed media or		P
	in electronic media if available at any time		P
	Documentation includes:	Refer to the user manual.	—
	a) intended use		P
	b) technical specification		P
	c) name and address of manufacturer or supplier		P
	d) information specified in 5.4.2 to 5.4.6		P
	e) information to mitigate residual RISK (see also subclause 17)		N/A
	f) accessories for safe operation of the equipment specified		P

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	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		P
	Warning statements and a clear explanation of warning symbols:		—
	– provided in the documentation; or		P
	– information is marked on the equipment		N/A
5.4.2	Equipment ratings		P
	Documentation includes:	As below.	—
	a) Supply voltage or voltage range.....		—
	Frequency or frequency range		—
	Power or current rating.....		—
	b) Description of all input and output connections in accordance to 6.6.1 a)		P
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)	CAT III 1000V CAT IV 600V	P
	d) Statement of the range of environmental conditions (see 1.4)		P
	e) Degree of protection (IEC 60529)	IP20	P
	f) If impact rating less than 5 J:		—
	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	Refer to the user manual.	P
	Documentation includes instructions for:		—
	a) assembly, location and mounting requirements		P
	b) protective earthing	No protective earthing used.	N/A
	c) connections to supply		P
	d) PERMANENTLY CONNECTED EQUIPMENT:	Not permanently connected equipment.	—
	1) Supply wiring requirements		N/A
	2) If external switch or circuit-breaker, requirements and location recommendation		N/A
	e) ventilation requirements		P
	f) special services (e. g. air, cooling liquid)		P
	g) instructions relating to sound level		N/A
5.4.4	Equipment operation	Refer to the user manual.	P
	Instructions for use include:		—

IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict
	a) identification and description of operating controls		P
	b) positioning for disconnection		N/A
	c) instructions for interconnection		P
	d) specification of intermittent operation limits		N/A
	e) explanation of symbols used		P
	f) replacement of consumable materials	No consumable materials used.	N/A
	g) cleaning and decontamination		P
	h) listing of any poisonous or injurious gases and quantities	No any poisonous or injurious gases used.	N/A
	i) RISK reduction procedures relating to flammable liquids (see 9.5)	No flammable liquids used in equipment.	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	Refer to the user manual.	P
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:		—
	Instruction against the use of detachable MAINS supply cord with inadequate rating		P
	Specific battery type of user replaceable batteries		P
	Any manufacturer specified parts		P
	Rating and characteristics of fuses		N/A
	Instructions include following subjects permitting safe servicing and continued safety:		—
	a) product specific RISKS may affect service personnel		P
	b) protective measures for these RISKS		P
	c) verification of the safe state after repair		P
5.4.6	Integration into systems or effects resulting from special conditions		N/A
	Aspects described in documentation		N/A

6	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
6.1	General	(see Form A.14 and A.15)	P
6.1.1	Requirements		P

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Clause	Requirement — Test	Result — Remark	Verdict
	Protection against electric shock maintained in NORMAL CONDITION and SINGLE FAULT CONDITION		P
	ACCESSIBLE parts not HAZARDOUS LIVE		P
	Voltage, current, charge or energy below the limits in NORMAL CONDITION and in SINGLE FAULT CONDITION between:		—
	ACCESSIBLE parts and earth		P
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		N/A
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11	Complied.	P
6.1.2	Exceptions		P
	Following HAZARDOUS LIVE parts may be ACCESSIBLE to an OPERATOR:		—
	a) parts of lamps and lamp sockets after lamp removal	No such parts.	N/A
	b) parts to be replaced by OPERATOR only by the use of tool and warning marking		N/A
	Those parts not HAZARDOUS LIVE 10 s after interruption of supply		N/A
	Capacitance test if charge is received from internal capacitor		N/A
6.2	Determination of ACCESSIBLE parts	(see Form A.5)	P
6.2.1	General	As below.	P
	Unless obviously determination of ACCESSIBLE parts as specified in 6.2.2 to 6.2.4		P
6.2.2	Examination		P
	– with jointed test finger (as specified B.2)		P
	– with rigid test finger (as specified B.1) and a force of 10 N		P
6.2.3	Openings above parts that are HAZARDOUS LIVE	No openings	N/A
	– test pin with length of 100 mm and 4 mm in diameter applied		N/A
6.2.4	Openings for pre-set controls	No pre-set controls used.	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		—
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.	(see Form A.5)	P
	for WET LOCATIONS voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	b) Current less than 0,5 mA r.m.s. for sinusoidal, 0,7 mA peak non-sinusoidal or mixed frequencies or 2 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		N/A
	for WET LOCATIONS measuring circuit A.4 used		N/A
	70 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	or		—
	c) Levels of capacitive charge or energy less:		—
	1) 45 µC for voltages up to 15 kV peak or d.c. or line A of Figure 3		N/A
	2) 350 mJ stored energy for voltages above 15 kV peak or d.c.		N/A
6.3.2	Levels in SINGLE FAULT CONDITION		—
	a) Voltage limits less than 55 V r.m.s. and 78 V peak or 140 V d.c.	(see Form A.6)	P
	for WET LOCATIONS voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c.		N/A
	Voltages are not HAZARDOUS LIVE the levels of:		—
	b) Current less than 3,5 mA r.m.s. for sinusoidal, 5 mA peak non-sinusoidal or mixed frequencies or 15 mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz		P
	for WET LOCATIONS measuring circuit A.4 used		N/A
	500 mA r.m.s. when measured with circuit A.3 for higher frequencies		N/A
	or		—
	c) Levels of capacitive charge or energy less line B of Figure 3		N/A
6.4	Primary means of protection		P
6.4.1	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		—
	a) ENCLOSURES or PROTECTIVE BARRIERS (see 6.4.2)	Reinforced insulation.	P
	b) BASIC INSULATION (see 6.4.3)		N/A
	c) Impedance (see 6.4.4)		N/A
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS	(see Form A.15 and A.16)	—
	– meet rigidity requirements of 8.1		P
	– meet requirements for BASIC INSULATION, if protection is provided by insulation		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	– meet requirements of 6.7 for CREEPAGE and – CLEARANCES between ACCESSIBLE parts and – HAZARDOUS live parts, if protection is provided by – limited access		P
6.4.3	BASIC INSULATION		—
	– meet CLEARANCE, CREEPAGE DISTANCE and solid – insulation requirements of 6.7		N/A
6.4.4	Impedance		—
	Impedance used as primary means of protection meets all of following requirements:		—
	a) limits current or voltage to level of 6.3.2		N/A
	b) RATED for maximum WORKING VOLTAGE and the amount of power it will dissipate		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of BASIC INSULATION of 6.7		N/A
6.5	Additional means of protection in case of SINGLE FAULT CONDITION		P
6.5.1	ACCESSIBLE parts are prevented from becoming HAZARDOUS live by the primary means of protection and supplemented by one of:	As below.	—
	a) PROTECTIVE BONDING (see 6.5.2)		N/A
	b) SUPPLEMENTARY INSULATION (see 6.5.3)		N/A
	c) automatic disconnection of the supply (see 6.5.5)		N/A
	d) current- or voltage-limiting device (see 6.5.6)		N/A
	Alternatively one of the single means of protection is used:		—
	e) REINFORCED INSULATION (see 6.5.3)		P
	f) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.5.2	PROTECTIVE BONDING	(see Form A.7, A.8, A.9, A.10 or A.11)	N/A
6.5.2.1	ACCESSIBLE conductive parts, may become HAZARDOUS LIVE in SINGLE FAULT CONDITION:	Not Class I equipment.	—
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or		N/A
	Separated by conductive screen or barrier bonded to PROTECTIVE CONDUCTOR TERMINAL		N/A
6.5.2.2	Integrity of PROTECTIVE BONDING		—
	a) PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A
	b) Soldered connections:		—
	Independently secured against loosening		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	Not used for other purposes		N/A
	c) Screw connections are secured		N/A
	d) PROTECTIVE BONDING not interrupted; or		P
	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:		—
	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		P
	Exceptions:		—
	1) earthing braids;		N/A
	2) internal protective conductors etc.;		N/A
	Green/yellow not used for other purposes		N/A
	TERMINAL suitable for connection of a PROTECTIVE CONDUCTOR, and meets 6.5.2.3		N/A
6.5.2.3	PROTECTIVE CONDUCTOR TERMINAL		—
	a) Contact surfaces are metal		N/A
	b) Appliance inlet used		N/A
	c) For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS		N/A
	d) If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		—
	Is near terminals of circuit for which protective earthing is necessary		N/A
	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to MAINS supply TERMINALS	(see Form A.7)	N/A
	f) If plug-in, makes first and breaks last		N/A
	g) If also used for other bonding purposes, PROTECTIVE CONDUCTOR:		—
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A
	h) PROTECTIVE CONDUCTOR of measuring circuit:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	1) Current RATING equivalent to measuring circuit TERMINAL;		N/A
	2) PROTECTIVE BONDING: not interrupted by any switch or interrupting device		N/A
	i) FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
	j) If a binding screw used for PROTECTIVE CONDUCTOR TERMINAL:		—
	Suitable size for bond wire		N/A
	Not smaller than M 4		N/A
	At least 3 turns of screw engaged		N/A
	Passes tightening torque test	(see Form A.8)	N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of PROTECTIVE BONDING of plug-connected equipment	(see Form A.9)	—
	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	(see Form A.10)	—
6.5.2.6	Transformer PROTECTIVE BONDING screen	(see Form A.11)	—
	Transformer provided with screen for PROTECTIVE BONDING:		—
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N/A
	screen bonding with soldered connection (see 6.5.2.2 b) is:		N/A
	– Independently secured against loosening		N/A
	– Not used for other purposes		N/A
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION		N/A
	Meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7		N/A
6.5.4	PROTECTIVE IMPEDANCE	(see Form A.12)	N/A
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION		N/A
	CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of DOUBLE or REINFORCED INSULATION of 6.7	(see Form A.15)	N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	The PROTECTIVE IMPEDANCE consists of one or more of the following:	(see TABLE 1 and Form A.12)	—
	a) appropriate single component suitable for safety and reliability for protection, it is:		—
	1) RATED twice the maximum WORKING VOLTAGE		N/A
	2) resistor RATED for twice the power dissipation for maximum WORKING VOLTAGE		N/A
	b) combination of components		N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE		N/A
6.5.5	Automatic disconnection of the supply		N/A
	a) RATED to disconnect the load within time specified in Figure 2		N/A
	b) RATED for the maximum load conditions of the equipment		N/A
6.5.6	Current- or voltage-limiting devices	(see Form A.12)	N/A
	Device complies with all of:		—
	a) RATED to limit the current or voltage to the level of 6.3.2	(see Form A.6)	N/A
	b) RATED for the maximum WORKING VOLTAGE; and		N/A
	RATED for the maximum operational current if applicable		N/A
	c) CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of SUPPLEMENTARY INSULATION of 6.7	(see Form A.14, A.15)	N/A
6.6	Connections to external circuits		P
6.6.1	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		—
	– the external circuits		P
	– the equipment		P
	Protection achieved by separation of circuits; or		P
	short circuit of separation does not cause a HAZARD		P
	Instructions or markings for each terminal include:		—
	a) RATED conditions for TERMINAL	CAT III 1000V CAT IV 600V	P
	b) Required RATING of external circuit insulation		N/A
6.6.2	TERMINALS for external circuits		N/A
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection	(see Form A.5)	N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE		P
	These circuits are:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	Not connected to ACCESSIBLE conductive parts; or		P
	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:		—
	– 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
6.7	Insulation requirements	(see Form A.14 and A.15)	P
6.7.1	The nature of insulation	Considered in annex K.	—
6.7.1.1	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD		P
6.7.1.2	CLEARANCES		—
	Required CLEARANCES reflecting factors of 6.7.1.1	(see Form A.14 and A.15)	P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied	Up to 2000m used.	N/A
6.7.1.3	CREEPAGE DISTANCES		—
	Required CREEPAGE DISTANCES reflecting factors of 6.7.1.1 a) to d)	(see Form A.14 and A.15)	P
	CTI material group reflected by requirements		P
	CTI test performed		N/A
6.7.1.4	Solid insulation		—
	Required solid insulation reflecting factors of 6.7.1.1 a) to d)	(see Form A.14 and A.15)	P
6.7.1.5	Requirements for insulation according to type of circuit	Considered in annex K.	—
	a) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V		N/A
	b) 6.7.3 secondary circuits separated from circuits defined in a) by transformer		N/A
	c) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V		N/A
	d) K.2 secondary circuits separated from circuits defined in c) by transformer		N/A
	e) K.3 circuits having one or more of:		—
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	5) WORKING VOLTAGE with a frequency above 30 kHz		N/A
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V	No such equipment.	N/A
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES	(see Form A.14 and A.15)	—
	Values for MAINS CIRCUITS of Table 4 are met		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.2.2	Solid insulation		—
6.7.2.2.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of 6.8.3 with values of Table 5	(see Form A.18)	N/A
	Complies as applicable:		—
	a) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	b) moulded and potted parts requirements of 6.7.2.2.2		N/A
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N/A
	d) thin-film insulation requirements of 6.7.2.2.4		N/A
6.7.2.2.2	Moulded and potted parts		—
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N/A
6.7.2.2.3	Inner insulating layers of printed wiring boards		—
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness of insulation is at least 0,4 mm		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for REINFORCED INSULATION		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
6.7.2.2.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.2.1		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness through the insulation at least 0,4 mm		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests of 6.8.3 with values of Table 5 for REINFORCED INSULATION	(see Form A.18)	N/A
6.7.3	Insulation for secondary circuits derived from MAINS CIRCUITS of OVERVOLTAGE CATEGORY II up to 300 V	No such equipment.	N/A
6.7.3.1	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		—
	– REINFORCED INSULATION		N/A
	– DOUBLE INSULATION		N/A
	– screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		—
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of Table 6 for REINFORCED INSULATION		N/A
	or		—
	b) pass the voltage tests of 6.8 with values of Table 6;	(see Form A.18)	—
	with following adjustments:		—
	1) values for reinforced insulation are 1,6 times the values for basic insulation		N/A
	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
	3) minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 mm for POLLUTION DEGREE 3		N/A
6.7.3.3	CREEPAGE DISTANCES		—
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION		N/A
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE 1 comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation		—

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Clause	Requirement — Test	Result — Remark	Verdict
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		—
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with VALUES of Table 6 for BASIC and SUPPLEMENTARY INSULATION	(see Form A.18)	N/A
	values for REINFORCED INSULATION are 1,6 times the values of BASIC INSULATION		N/A
	b) if WORKING VOLTAGE exceeds 300 V, equipment passed voltage test of 6.8.3.1 for 1 min with a test voltage of 1,5 times working voltage for BASIC or SUPPLEMENTARY INSULATION	(see Form A.18)	N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		—
	1) ENCLOSURE or PROTECTIVE BARRIER of Clause 8		N/A
	2) moulded and potted parts requirements of 6.7.3.4.2		N/A
	3) inner layers of printed wiring boards requirements of 6.7.3.4.3		N/A
	4) thin-film insulation requirements of 6.7.3.4.4		N/A
6.7.3.4.2	Moulded and potted parts		—
	Conductors between same two layers are separated by applicable distances of Table 8		N/A
6.7.3.4.3	Inner insulation layers of printed wiring boards		—
	Separated by at least by applicable distances of Table 8 between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min two separate layers, where the combination is RATED for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation		—
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCE of 6.7.3.2 and 6.7.3.3		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		—
	a) thickness at least applicable distance of Table 8		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	b) insulation is assembled of min. two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min. three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:	(see Form A.18)	—
	a.c. test of 6.8.3.1; or		N/A
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N/A
6.8	Procedure for dielectric strength tests	(see Form A.14 and A.18)	P
6.9	Constructional requirements for protection against electric shock		P
6.9.1	If a failure could cause a HAZARD:		—
	a) security of wiring connections		P
	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:		—
	a) easily damaged materials not used		P
	b) non-impregnated hygroscopic materials not used		P
6.9.3	Colour coding	No such colour coding used.	N/A
	Green-and-yellow insulation shall not be used except:		—
	a) protective earth conductors;		N/A
	b) PROTECTIVE BONDING conductors;		N/A
	c) potential equalization conductors;		N/A
	d) functional earth conductors		N/A
6.10	Connection to MAINS supply source and connections between parts of equipment	No such equipment.	N/A
6.10.1	MAINS supply cords		—
	RATED for maximum equipment current (see 5.1.3 c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
	Heat-resistant if likely to contact hot parts		N/A
	Temperature RATING (cord and inlet).....		—
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N/A
	Detachable cords with IEC 60320 MAINS connectors:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	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		—
6.10.2.1	Cord entry		—
	a) inlet or bushing with a smoothly rounded opening; or		N/A
	b) insulated cord guard protruding >5 D (diameter)		N/A
6.10.2.2	Cord anchorage		—
	Protective earth conductor is the last to take the strain		N/A
	a) cord is not clamped by direct pressure from a screw		N/A
	b) knots are not used		N/A
	c) cannot push the cord into the equipment to cause a HAZARD		N/A
	d) no failure of cord insulation in anchorage with metal parts		N/A
	e) not to be loosened without a tool		N/A
	f) cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test	(see Form A.19)	N/A
6.10.3	Plugs and connectors		P
	MAINS supply plugs, connectors etc., conform with relevant specifications		P
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage		N/A
	MAINS type plugs used only for connection to MAINS supply		N/A
	Plug pins which receive a charge from an internal capacitor	(see Form A.5)	N/A
	Accessory MAINS socket outlets:		—
	a) marking if accepts a standard MAINS supply plug (see 5.1.3e)		N/A
	b) input has a protective earth conductor if outlet has EARTH TERMINAL CONTACT		N/A
6.11	Disconnection from supply source		P
6.11.1	Disconnects all current-carrying conductors		P
6.11.2	Exceptions		N/A
6.11.3	Requirements according to type of equipment		—
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		—
	a) switch or circuit-breaker to be included in building installation		N/A
	b) suitable location easily reached		N/A
	c) marking as disconnecting for the equipment		N/A
6.11.3.2	Single-phase cord-connected equipment		N/A
	Equipment is provided with one of the following:		—
	a) switch or circuit-breaker		N/A
	b) appliance coupler (disconnectable without tool)		N/A
	c) separable plug (without locking device)		N/A
6.11.4	Disconnecting devices	No such devices.	N/A
6.11.4.1	Disconnecting device part of equipment		N/A
	Electrically close to the SUPPLY		N/A
	Power-consuming components not electrically located between the supply source and the disconnecting device		N/A
	Except electromagnetic interference suppression circuits permitted to be located on the supply side of the disconnecting device		N/A
6.11.4.2	Switches and circuit-breakers	No such devices.	N/A
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function.....		—
	Not incorporated in MAINS cord		N/A
	Does not interrupt PROTECTIVE EARTH CONDUCTOR		N/A
6.11.4.3	Appliance couplers and plugs	No such devices.	N/A
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		—
	Readily identifiable and easily reached by the operator		N/A
	Single-phase portable equipment cord length not more than 3 m		N/A
	PROTECTIVE EARTH CONDUCTOR connected first and disconnected last		N/A

7	**PROTECTION AGAINST MECHANICAL HAZARDS**		**P**
7.1	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION	Considered.	P
	Conformity is checked by 7.2 to 7.7		P

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Clause	Requirement — Test	Result — Remark	Verdict
7.2	Sharp edges	No sharp edges.	P
	Easily touched parts are smooth and rounded		P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts	No moving parts used.	N/A
7.3.1	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5		N/A
	RISK assessment in accordance with 7.3.3 carried out		N/A
7.3.2	Exceptions		N/A
	Access to HAZARDOUS moving parts permitted under following circumstances:		—
	a) obviously intended to operate on parts or materials external of the equipment		N/A
	inadvertent touching of moving parts minimized by equipment design (e .g. guards or handles)		N/A
	b) If OPERATOR access is unavoidable outside NORMAL USE following precautions have been taken:		—
	1) access requires TOOL		N/A
	2) statement about training in the instructions		N/A
	3) warning markings on covers prohibiting access by untrained OPERATORS		N/A
	or symbol 14 with full details in documentation		N/A
7.3.3	RISK assessment for mechanical HAZARDS to body parts		N/A
	RISK is reduced to a tolerable level by protective measures as specified in table 12		N/A
	Minimum protective measures:		—
	A. Low level measures		N/A
	B. Moderate measures		N/A
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure	(see Form A.20)	N/A
	Following levels are met in NORMAL and SINGLE FAULT CONDITION:		—
	Continuous contact pressure below 50 N / cm² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts	(see Form A.20)	N/A
7.3.5.1	Access normally allowed		—

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Clause	Requirement — Test	Result — Remark	Verdict
	If levels of 7.3.4 exceeded and body part may be inserted minimum gap as specified in table 13 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.3.5.2	Access normally prevented		—
	Maximum gap as specified in table 14 assured in NORMAL and in SINGLE FAULT CONDITION		N/A
7.4	Stability		P
	Equipment not secured to building structure is physical stable		N/A
	Stability maintained after opening of drawers etc. by automatic means, or		N/A
	warning marking requires the application of means		N/A
	Compliance checked by following tests as applicable:		—
	a) 10° tilt test for other than handheld equipment		P
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg	1m	P
	c) downward force test for floor-standing equipment		N/A
	d) overload test with 4 times maximum load for castor or support that supports greatest load		N/A
	e) castor or support that supports greatest load removed from equipment		N/A
7.5	Provisions for lifting and carrying		N/A
7.5.1	Equipment more than 18 kg :		—
	Has means for lifting or carrying; or		N/A
	Directions in documentation		N/A
7.5.2	Handles and grips		—
	Handles or grips withstand four times weight		N/A
7.5.3	Lifting devices and supporting parts		—
	RATED for maximum load; or		N/A
	tested with four times maximum static load		N/A
7.6	Wall mounting	No such equipment.	N/A
	Mounting brackets withstand four times weight		N/A
7.7	Expelled parts		N/A
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a tool		N/A

8	**RESISTANCE TO MECHANICAL STRESSES**		**P**
8.1	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		P

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Clause	Requirement — Test	Result — Remark	Verdict
	Normal protection level is 5 J		P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:		—
	a) lower level justified by RISK assessment of manufacturer		N/A
	b) equipment installed in its intended application is not easily touched		N/A
	c) only occasional access during NORMAL USE		N/A
	d) IK code in accordance to IEC 62262 marked or symbol 14 used with full information in the documentation		N/A
	for non-metallic ENCLOSURES rated below 2 °C ambient temperature value chosen for minimum RATED temperature		N/A
	impact energies between IK values, the IK code marked for nearest lower value		N/A
	Conformity is checked by performing following tests:		—
	1) static test of 8.2.1	(see Form A.21A)	P
	2) impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT		N/A
	if impact energy not selected to 5 J alternate method of IEC 62262 used		N/A
	3) drop test of 8.3.1 or 8.3.2 except for FIXED EQUIPMENT and equipment with mass over 100 kg	(see Form A.21B)	P
	Equipment RATED with an impact rating of IK 08 that obviously meets the criteria		N/A
	After the tests inspection with following results:		—
	– HAZARDOUS LIVE parts above the limits of 6.3.2 not ACCESSIBLE		P
	– insulation pass the voltage tests of 6.8	(see Form A.30)	P
	i) no leaks of corrosive and harmful substances		P
	ii) ENCLOSURE shows no cracks resulting in a HAZARD		P
	iii) CLEARANCES not less than their permitted values		P
	iv) insulation of internal wiring remains undamaged		P
	v) PROTECTIVE BARRIERS not damaged or loosened	No such parts.	N/A
	vi) No moving parts exposed, except permitted by 7.3	No such parts.	N/A
	vii) no damage which could cause spread of fire		P
8.2	ENCLOSURE rigidity test		P
8.2.1	Static test	(see Form A.21A)	P
	– 30 N with 12 mm rod to each part of ENCLOSURE		P

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Clause	Requirement — Test	Result — Remark	Verdict
	– in case of doubt test conducted at maximum RATED ambient temperature		P
8.2.2	Impact test	Hand-held equipment.	N/A
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged		N/A
	Impact energy level and corresponding IK code.....		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		N/A
8.3	Drop test	(see Form A.21B)	P
8.3.1	Other than HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		N/A
	Tests conducted with a drop height or angle of	1m	—
8.3.2	HAND-HELD and DIRECT-PLUG-IN EQUIPMENT		—
	Non-metallic ENCLOSURES cooled to minimum RATED ambient temperature if below 2 °C		N/A
	Drop test conducted with an height of 1 m		P
9	**PROTECTION AGAINST THE SPREAD OF FIRE**		**P**
9.1	No spread of fire in NORMAL and SINGLE FAULT CONDITION		P
	MAINS supplied equipment meets requirements of 9.6 additionally	No such equipment.	N/A
	Conformity is checked by minimum one or a combination of the following (see Figure 11):	(see Form A.22)	—
	a) SINGLE FAULT test of 4.4; or	(see Form A.1)	P
	b) Application of 9.2 (eliminating or reducing the sources of ignition); or		N/A
	c) Application of 9.3 (containment of fire within the equipment)		P
9.2	Eliminating or reducing the sources of ignition within the equipment	No such parts.	N/A
	a) 1) Limited-energy circuit (see 9.4); or		N/A
	b) 2) BASIC INSULATION provided for parts of different potential; or	(see Form A.14 and A.18)	N/A
	Bridging the insulation does not cause ignition	(see Form A.1)	N/A
	c) Surface temperature of liquids and parts (see 9.5)		N/A
	d) No ignition in circuits designed to produce heat	(see Form A.1)	N/A
9.3	Containment of the fire within the equipment, should it occur		P
9.3.1	Spread of fire outside equipment reduced to a tolerable level if:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	a) Energizing of the equipment is controlled by an OPERATOR held switch		N/A
	b) ENCLOSURE is conform with constructional requirements of 9.3.2; and		P
	Requirements of 9.5 are met	No flammable liquids used in equipment.	N/A
9.3.2	Constructional requirements		—
	a) Connectors and insulating material have flammability classification V-2 or better	(see TABLE 1 or Form A.23)	P
	b) Insulated wires and cables are flame retardant (VW-1 or equivalent)	(see TABLE 1 or Form A.23)	P
	c) ENCLOSURE meets following requirements:	(see Form A.22)	—
	1) Bottom and sides in arc of 5 ° (see Figure 13) to non-limited circuits (9.4) meets:	No such bottom or side openings.	—
	i) no openings; or	No openings on side and bottom equipment.	P
	ii) perforated as specified in table 16; or		N/A
	iii) metal screen with a mesh; or		N/A
	iv) baffles as specified in Figure 12		N/A
	2) Material of ENCLOSURE and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N/A
	Non-metallic materials have flammability classification V-1 or better	(see TABLE 1 or Form A.22)	P
	3) ENCLOSURE and any baffle or flame barrier have adequate rigidity		N/A
9.4	Limited-energy circuit	(see Form A.24)	N/A
	a) Potential not more than 30 r.m.s. and 42,4 V peak, or 60 V dc	Fire enclosure used.	N/A
	b) Current limited by one of following means:		—
	1) Inherently or by impedance (see table 17); or		N/A
	2) Overcurrent protective device (see table 18); or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION (see table 17)		N/A
	c) Is separated by at least BASIC INSULATION		N/A
	Fuse or a nonadjustable electromechanical device is used		N/A
9.5	Requirements for equipment containing or using flammable liquids	No flammable liquids used.	N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire	(see Form A.25)	N/A
	RISK is reduced to a tolerable level:		—

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Clause	Requirement — Test	Result — Remark	Verdict
	a) The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N/A
	b) The quantity of liquid is limited		N/A
	c) Flames are contained within the equipment		N/A
	Detailed instructions for RISK-reduction provided		N/A
9.6	Overcurrent protection	No such parts.	N/A
9.6.1	MAINS supplied equipment protected		N/A
	BASIC INSULATION between MAINS parts of opposite polarity provided	(see Form A.14 and A.15)	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	Not permanently connected equipment.	N/A
	Overcurrent protection device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		N/A
9.6.3	Other equipment		—
	Protection within the equipment		P
10	**EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT**		**P**
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION:	(see Form A.26A)	—
	– at an specified ambient temperature of 40 °C		P
	– for equipment rated above 40 °C ambient temperature limits not exceeded raised by the difference to 40 °C	Max operating temperature 40°C.	P
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	– Are recognizable as such by appearance or function; or		N/A
	– Are marked with symbol 13		N/A
	– Guards are not removable without tool		N/A
10.2	Temperatures of windings		N/A
	Limits not exceeded in:	(see Form A.26B)	—
	NORMAL CONDITION		N/A
	SINGLE FAULT CONDITION		N/A
10.3	Other temperature measurements		P
	Following measurements conducted if applicable:	(see Form A.26A)	—

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Clause	Requirement — Test	Result — Remark	Verdict
	a) Value of 60 °C of field-wiring terminal box not exceeded	No such parts.	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 tests		P
10.4.1	Tests conducted under reference test conditions and manufacturer's instructions	(see Form A.26A)	P
10.4.2	Temperature measurement of heating equipment	No such equipment used.	N/A
	Tests conducted in test corner	(see Form A.26A)	N/A
10.4.3	Equipment intended for installation in a cabinet or wall		N/A
	Equipment built in as specified in installation instructions	(see Form A.26A)	N/A
10.5	Resistance to heat		P
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES	(see Form A.16)	P
10.5.2	Non-metallic ENCLOSURES	(see Form A.27)	P
	Within 10 min after treatment:		—
	Equipment subjected to suitable stresses of 8.2 and 8.3 complying with criteria of 8.1		P
10.5.3	Insulating material		P
	a) Parts supporting parts connected to MAINS supply		P
	b) TERMINALS carrying a current more than 0,5 A		N/A
	Examination of material data; or		N/A
	in case of doubt:		P
	1) Ball pressure test; or	(see Form A.28)	N/A
	2) Vicat softening test of ISO 306	(see Form A.29)	N/A

11	**PROTECTION AGAINST HAZARDS FROM FLUIDS**		**N/A**
11.1	Protection to OPERATORS and surrounding area provided by EQUIPMENT	No such equipment used.	N/A
	All fluids specified by manufacturer considered		N/A
11.2	Cleaning	(see Form A.30)	N/A
11.3	Spillage	(see Form A.30)	N/A
11.4	Overflow	(see Form A.30)	N/A
11.5	Battery electrolyte	Not such battery used.	N/A
	Battery electrolyte leakage presents no HAZARD		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
11.6	Specially protected equipment	(see Form A.30)	N/A
11.7	Fluid pressure and leakage		N/A
11.7.1	Maximum pressure.....	(see Form A.31)	—
	Maximum pressure of any part does not exceed P_{RATED}		N/A
11.7.2	Leakage and rupture at high pressure		—
	Fluid-containing parts subjected to hydraulic test if	(see Form A.31)	—
	a) product of pressure and volume > 200 kPal; and		N/A
	b) pressure > 50 kPa		N/A
	Parts of refrigerating systems meets pressure-related requirements of IEC 60335-24 or IEC 60335-2-89		N/A
11.7.3	Leakage from low-pressure parts	(see Form A.32)	N/A
11.7.4	Overpressure safety device		N/A
	Does not operate in NORMAL USE		N/A
	a) Connected as close as possible to parts intended to be protected		N/A
	b) Easy access for inspection, maintenance and repair		N/A
	c) Adjustment only with TOOL		N/A
	d) No discharge towards person		N/A
	e) No HAZARD from deposit of discharged material		N/A
	f) Adequate discharge capacity		N/A
	No shut-off valve between overpressure safety device and protected parts		N/A
12	**PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE**		**N/A**
12.1	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation	(see Form A.33)	N/A
12.2.1.1	Equipment meets the following requirements:		—
	a) if intended to emit radiation meets requirements of 12.2.1.2; or		N/A
	tested, classified and marked in accordance to IEC 60405		N/A
	b) if only emits stray radiation meets requirements of 12.2.1.3		N/A
12.2.1.2	Equipment intended to emit radiation		—
	Effective dose rate of radiation measured		—

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Clause	Requirement — Test	Result — Remark	Verdict
	If dose rate exceeds 5 µSv/h marked with the following:		—
	a) symbol 17 (ISO 361)		N/A
	b) abbreviations of the radionuclides		—
	c) with maximum dose at 1 m; or.....		—
	with dose rate value between 1 µSv/h and 5 µSv/h in m		—
12.2.1.3	Equipment not intended to emit radiation	(see Form A.34)	—
	Limit for unintended stray radiation of 1 µSv/h at any easily reached point kept		—
12.2.2	Accelerated electrons		—
	Compartments opened only by the use of a TOOL		N/A
12.3	Ultraviolet (UV) radiation		N/A
	No unintentional HAZARDOUS escape of UV radiation:		—
	– checked by inspection; and		N/A
	– evaluation of RISK assessment documentation		N/A
12.4	Microwave radiation		N/A
	Power density does not exceed 10 W/m^2.....		N/A
12.5	Sonic and ultrasonic pressure		N/A
12.5.1	Sound level	(see Form A.35)	—
	No HAZARDOUS sound emission		N/A
	Maximum sound pressure level measured and calculated for maximum sound power level as specified in ISO 3746 or ISO 9614-1		N/A
	Instruction describes measures for protection		N/A
12.5.2	Ultrasonic pressure	(see Form A.36)	N/A
	Equipment not intended to emit ultrasound does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	Equipment intended to emit ultrasound:		N/A
	Outside useful beam does not exceed limit of 110 dB between 20 kHz and 100 kHz		N/A
	If inside useful beam above values exceeded:		—
	Marked with Symbol 14 of table 1		N/A
	and following information in the documentation:		—
	a) dimensions of useful beam		N/A
	b) area where ultrasonic pressure exceed 110 dB		N/A
	c) maximum sound pressure inside beam area		N/A
12.6	Laser sources		N/A
	Equipment meets requirements of IEC 60825-1		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
13	**PROTECTION AGAINST LIBERATED GASES AND SUBSTANCES, EXPLOSION AND IMPLOSION**		**P**
13.1	Poisonous and injurious gases and substances	No such gases or substances.	N/A
	No poisonous or injurious gases or substances liberated in NORMAL CONDITION		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 7.7)		N/A
	Pressure release device:		—
	Discharge without danger		N/A
	Cannot be obstructed		N/A
13.2.2	Batteries and battery charging	(see Form A.37)	—
	If explosion or fire HAZARD could occur:		—
	Protection incorporated in the equipment; or		P
	Instructions specify batteries with built-in protection		P
	In case of wrong type of battery used:		—
	No HAZARD; or		P
	Warning by marking and within instructions		P
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		P
	Type of rechargeable battery indicated; or		N/A
	Symbol 14 used		N/A
	Battery compartment design		N/A
	Single component failure		N/A
	Polarity reversal test		N/A
13.2.3	Implosion of cathode ray tubes	No such ray tubes used.	N/A
	If maximum face dimensions > 160 mm.....		—
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
14	**COMPONENTS AND SUBASSEMBLIES**		**P**
14.1	Where safety is involved, components and subassemblies meet relevant requirements	(see TABLE 1)	P
14.2	Motors	No such motors used.	N/A
14.2.1	Motor temperatures		N/A
	Does not present a HAZARD when stopped or prevented from starting; or	(see Form A.1; A.26B)	N/A
	Protected by over-temperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		N/A
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices	No such protection devices used.	N/A
	Devices operating in a SINGLE FAULT CONDITION	(see Form A.38)	N/A
	a) Reliable function is ensured		N/A
	b) RATED to interrupt maximum current and voltage		N/A
	c) Does not operate in NORMAL USE		N/A
	If self-resetting device used to prevent a HAZARD, protected part requires intervention before restarting		N/A
14.4	Fuse holders		N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	MAINS voltage selecting devices	No such devices.	N/A
	Accidental change not possible		N/A
14.6	MAINS transformers tested outside equipment	(see Form A.39 and A.40)	N/A
14.7	Printed circuit boards		P
	Data shows conformity with V-1 of IEC 60695-11-10 or better; or	PCB has UL approved with V-0.	P
	Test shows conformity with V-1 of IEC 60695-11-10 or better	(see Form A.23)	N/A
	Not applicable for printed wiring boards with limited-energy circuits (9.4)		N/A
14.8	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices		N/A
	Test conducted between each pair of MAINS SUPPLY TERMINALS	(see Form A.41)	N/A
	No HAZARD resulting from rupture or overheating of the component:		—
	– no bridging of safety relevant insulation		N/A
	– no heat to other parts above the self-ignition points		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
15	**PROTECTION BY INTERLOCKS**		**N/A**
15.1	Interlocks are designed to remove a HAZARD before OPERATOR exposed	No interlocks used.	N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		N/A
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A
16	**HAZARDS RESULTING FROM APPLICATION**		**P**
16.1	REASONABLY FORESEEABLE MISUSE		P
	No HAZARDS arising from settings not intended and not described in the instructions		P
	Other cases of REASONABLY FORESEEABLE MISUSE addressed by RISK assessment		N/A
16.2	Ergonomic aspects		N/A
	Factors giving rise to a HAZARD the RISK assessment is reflecting those aspects:		—
	a) limitation of body dimensions		N/A
	b) displays and indicators		N/A
	c) accessibility and conventions of controls		N/A
	d) arrangement of TERMINALS		N/A
17	**RISK ASSESSMENT**		**N/A**
	RISK assessment conducted, if HAZARD might arise and not covered by Clauses 6 to 16		N/A
	TOLERABLE RISK achieved by iterative documented process covering the following:		—
	a) RISK analysis		N/A
	Identifies HAZARDS and estimates RISK		N/A
	b) RISK evaluation		N/A
	Plan to judge acceptability of resulting RISK level based on the estimated severity and likelihood of a RISK		N/A
	c) RISK reduction		N/A
	Initial RISK reduced by counter measures;		N/A
	Repeated RISK evaluation without new RISKS introduced		N/A
	RISKS remaining after RISK assessment addressed in instructions to RESPONSIBLE BODY:		—
	Information contained how to mitigate these RISKS		N/A

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Clause	Requirement — Test	Result — Remark	Verdict
	Following principles in methods of RISK reduction applied by manufacturer in given order:		—
	1) RISKS eliminated or reduced as far as possible		N/A
	2) Protective measures taken for RISKS that cannot be eliminated		N/A
	3) User information about residual RISK due to any defect of the protective measures		N/A
	Indication of particular training is required		N/A
	Specification of the need for personal protective equipment		N/A
	Conformity checked by evaluation of the RISK assessment documentation		N/A

ANNEX F	**ROUTINE TESTS**		**N/A**
	Manufacturer ´s declaration		N/A

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

ANNEX K	**INSULATION REQUIREMENTS NOT COVERED BY CLAUSE 6.7**	**(see Form A.15 and A.18)**	**P**

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Clause	Requirement — Test	Result — Remark	Verdict

4.4	**TABLE: Testing in SINGLE FAULT CONDITION – Results**			**Form A.1**	**P**
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
4.4.2.12	1	Have the meter to measure Current of 100A, then short U2 (3-4) s-c	30min	Unit normally operated. No hazard.	P

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

Supplementary information:
1) s-c = short circuit.

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Clause	Requirement — Test	Result — Remark	Verdict

5.1.3c)	**TABLE: MAINS supply**		**Form A.2**	**N/A**
	Marked rating..... :	85-240	Va.c.	—
	Phase..... :	One phase		—
	Frequency ..... :	50/60	Hz	—
	Current ..... :	--	A	—
	Power ..... :	3.5	W	—
	Power ..... :	--	VA	—

Test No.	Voltage [V]	Frequency [Hz]	Current [A]	Power [W]	Power [VA]	Comments
1	77Va.c.	50	0.0357	1.45	--	--
2	85Va.c	50	0.0338	1.46	--	--
3	240Va.c.	50	0.0169	1.55	--	--
4	264Va.c	50	0.0158	1.57	--	--
5	77Va.c.	60	0.0364	1.47	--	--
6	85Va.c	60	0.0336	1.46	--	--
7	240Va.c.	60	0.0170	1.55	--	--
8	264Va.c	60	0.0160	1.56	--	--
9	77Vd.c.	--	0.0186	1.43	--	--
10	85Vd.c	--	0.0169	1.44	--	--
11	240Vd.c.	--	0.0060	1.44	--	--
12	264Vd.c	--	0.0055	1.45	--	--

NOTE – Measurements are only required for marked ratings.

Supplementary information: The equipment is not directly connected to the mains.

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Clause	Requirement — Test	Result — Remark	Verdict

5.3	**TABLE: Durability of markings**	**Form A.3**	**P**

Marking method (see NOTE)	Agent
1) Adhesive label	A Water
2) Ink printed	B Isopropyl alcohol 70%
3) Laser marked	C (specify agent)
4) Film-coated (plastic foil control panel)	D (specify agent)
5) Imprinted on plastic (moulded in)	E (specify agent)

NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.

Marking location	Marking method (see above)
Identification (5.1.2)	1). 2)
MAINS supply (5.1.3)	N/A
Fuses (5.1.4)	N/A
Terminals and operating devices (5.1.5.2)	1). 2)
Switches and circuit breakers (5.1.6)	N/A
Double/reinforced equipment (5.1.7)	N/A
Field wiring Terminal boxes (5.1.8)	N/A
Warning marking (5.2)	2)
Battery charging (13.2.2)	N/A

Method	Test agent	Remains legible	Label loose	Curled edges	Comments
		Verdict	Verdict	Verdict	
2)	A	Legible	No loose	Edges not curled	Pass
2)	B	Legible	No loose	Edges not curled	Pass
5)	A	Legible	No loose	Edges not curled	Pass
5)	B	Legible	No loose	Edges not curled	Pass

Supplementary information: /

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Clause	Requirement — Test	Result — Remark	Verdict

6.2	**TABLE: List of ACCESSIBLE parts**		**Form A.4**	**P**
6.1.2	Exceptions			—
6.2	Determination of ACCESSIBLE parts			—
Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)	
1	Enclosure	V	--	
2	LCD cover	V, R, J	--	

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.2)
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)
NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see 6.4).
NOTE 4 – Capacitor test may be required (see Form A.5).
NOTE 5 – The determination methods are:
V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.

Supplementary information: /

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Clause	Requirement — Test	Result — Remark	Verdict

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

Item (see Form A.4)	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments
	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC	mJ	
1	--	0.52	--	--	--	--	--	--	--	--	--	--	Limit: 0.7mA.pk, 0.5mA rms, Measured when the meter was measuring 600Va.c.
2	--	0.83	--	--	--	--	--	--	--	--	--	--	

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

Supplementary information:
* : Voltage levels do not exceed 33Vrms, 46.7 Vpk, or 70Vdc
**: Current levels less than limited current 0.5mA rms, 0.7mA peak, or 2mA dc.

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Clause	Requirement — Test	Result — Remark	Verdict

6.3.2	**TABLE: Values in SINGLE FAULT CONDITION**											**Form A.6**	**P**
Item	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	Comments	
(see Form A.4)	fault No. (see Form A.1)	V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/ A3	mA r.m.s.	mA peak	mA d.c.	µF (see NOTE)	Comments	
1	1	--	1.25	--	--	--	--	--	--	--	--	-	
2		--	2.04	--	--	--	--	--	--	--	--		
NOTE – Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of EN 61010-1.													
Supplementary information: * : Current levels less than limited current 3.5mA r.m.s **: Voltage levels do not exceed 55Vrms, 78 Vpk, or 140Vdc													

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

6.5.2.2	**TABLE: Cross-sectional area of bonding conductors**	**Form A.7**	**N/A**

Conductor location	CROSS-SECTIONAL AREA [mm²]	Verdict

Supplementary information: /

6.5.2.3	**TABLE: Tightening torque test**	**Form A.8**	**N/A**

Conductor location	Size of screw	Tightening torque [Nm]	Verdict

Supplementary information: /

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

6.5.2.4	TABLE: Bonding impedance of plug connected equipment			Form A.9	N/A
ACCESSIBLE part under test	Test current [A]	Voltage attained after 1 min [V]	Calculated resistance (Maximum 0,1 or 0,2 Ω) [Ω] (NOTE 1)		Verdict
NOTE 1 – For none-detachable power cord the impedance between protective conductor plug pin of MAINS cord and each ACCESSIBLE part shall not exceed 0,2 Ohm.					
Supplementary information: /					

6.5.2.5	TABLE: Bonding impedance of permanently connected equipment		Form A.10	N/A
ACCESSIBLE part under test	Test current [A]	Voltage attained after 1 min (maximum 10 V) [V]		Verdict
Supplementary information: /				

6.5.2.6	TABLE: Transformer PROTECIVE BONDING screen			Form A.11	N/A
ACCESSIBLE part under test	Test current (see NOTE) [A]	Voltage attained after 1 min (maximum 10 V) [V]	Calculated resistance (maximum 0,1 Ω) [Ω]		Verdict
NOTE – Test current must be twice the value of the overcurrent protection means of the winding. Test is specified in 6.5.2.6 a) or b).					
Supplementary information: /					

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

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

A combination of components		
Component	Location	Comments

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

Supplementary information: /

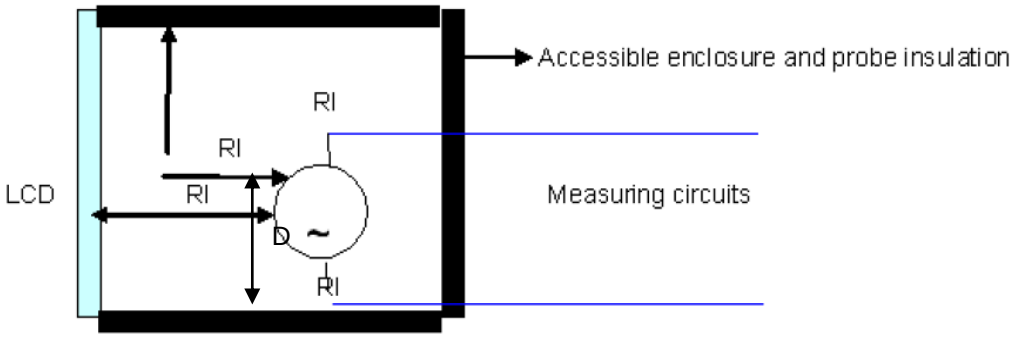
IEC/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

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

Supplementary information: /

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

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



Pollution degree..... : II	Overvoltage category ..... : N/A
	Measurement category ..... : III / 1000V IV / 600V

Area	Location	Insulation type	WORKING VOLTAGE			Test voltage*	Comments (NOTE 3)
		(NOTE 1)	RMS [V]	Peak [V]	Frequency [kHz]	(NOTE 2) [V]	
A	Outer surface of flexible coil – Enclosure	RI	600V	--	--	7400	CAT III 1000V CAT IV 600V
B	Outer surface of flexible coil – metal pin	RI	600V	--	--	7400	CAT III 1000V CAT IV 600V
C	metal pin – RS485 or pulse	BI	600V	--	--	4260V r.m.s	CAT III 1000V CAT IV 600V

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:

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

6.7	**TABLE: Insulation requirements- Clearances and Creepages**		**Form A.15**	**P**
6.2.2	Examination	6.5.4	Protective impedance	—
6.4.2	ENCLOSURES and protective barriers	6.5.6	Current- or voltage-limiting device	—
6.4.4	Impedance	9.6.1	BASIC INSULATION between opposite polarity	—

Area	Location (See Form A.14)	Insulation type (NOTE 1)	WORKING VOLTAGE (NOTE 2) RMS [V]	Peak [V]	Frequency [kHz]	Clearance Required [mm]	Clearance Measured [mm]	Creepage Required [mm]	Creepage Measured [mm]	CTI	Verdict	Comments
A	Outer surface of flexible coil – Enclosure	RI	240	--	--	14.3	>18.6	14.3	>18.6	<400	P	--
B	Outer surface of flexible coil – metal pin	RI	240	--	--	14.3	>18.6	14.3	>18.6	<400	P	--
C	metal pin – RS485 or pulse	RI	240	--	--	14.3	>18.6	14.3	>18.6	<400	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…….:	240	V	50	Hz

Supplementary information:

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

6.7	**TABLE: Insulation requirements- Clearances and Creepages**			**Form A.16**	**P**
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS	9.6.1	Overcurrent protection basic insulation between MAINS parts		—
8	Mechanical resistance to shock and impact	10.5.1	Integrity of CLEARANCES and CREEPAGE distances		—

Area	Location (See Form A.14)	Insulation type	Mechanical tests (NOTE)					Test at max.	Measured after test (if required)		Verdict	Comments
			Applied force	Rigidity (8.2)		Drop (8.3)		RATED ambient	Clearance	Creepage distance		
			N	Static (8.2.1)	Impact (8.2.2)	Normal (8.3.1)	Hand-held/ Plug-in	(10.5.1)	mm	mm		
A	Outer surface of flexible coil – Enclosure	RI	10N	30N	IK08	--	1m	40°C	>16	>16	P	
B	Outer surface of flexible coil –metal pin	RI	10N	30N	IK08	--	1m	40°C	>16	>16	P	--
C	metal pin – RS485 or pulse	BI	10N	30N	IK08	--	1m	40°C	>16	>16	P	--

NOTE – Refer to Form A.18 for dielectric strength tests following the above tests.

Supplementary information:

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

6.7.2.2.2	**TABLE: Reliability of potted components**	**Form A.17 (optional)**	**N/A**
14.1 b)	**Components and subassemblies**		

Temperature Cycling Test	
Manufacturer.....:	
Type.....:	
Construction.....:	
Potting compound.....:	
CREEPAGE distances measured.....:	
CLEARANCES measured .....:	
Thickness through insulation .....:	
Adhesive test Pass/Fail .....:	
Test temperature T °C.....:	

Cycles at U= AC 500 V				Leakage current (500 V) mA			
Number of cycles	Date			68 h / 125 °C	1 h / 25 °C	2 h / 0 °C	1 h / 25 °C
1. Cycle from		to					
2. Cycle from		to					
3. Cycle from		to					
4. Cycle from		to					
5. Cycle from		to					
6. Cycle from		to					
7. Cycle from		to					
8. Cycle from		to					
9. Cycle from		to					
10. Cycle from		to					

After Cycling Test :		
Humidity conditioning	48 h	
Requirements for dielectric strength (s. insulation diagram)	Test voltage V r.m.s	Verdict
Basic insulation _____ V r.m.s.		
Supplementary insulation _____ V r.m.s.		
Reinforced insulation _____ V r.m.s.		

NOTE - to be used for evaluation of components containing insulation through solid insulation, when the component standard require thermal cycling test. Ref Clause 14.1 and Figure 15, option b)

Supplementary information: /

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

6.8	**TABLE: Dielectric strength tests**		**Form A.18**	**P**
4.4.4.1 b)	Conformity after application of SINGLE FAULT CONDITIONS[1]			P
6.4	Primary means of protection[2]			P
6.6	Connections to external circuits			P
6.7.	Insulation requirements[2] (see Annex K)			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			P
9.4 c)	Limited-energy circuit			N/A
9.6.1	Overcurrent protection basic insulation between MAINS - parts			N/A
	Test site altitude .....:		--	—
	Test voltage correction factor (see table 10).....:		--	—

Location or references from Forms A.1 and A.14	Clause or sub-clause	Humidity	Working voltage	Test voltage	Comments (NOTE)	Verdict
		Yes/No	V	r.m.s./peak/ d.c.		
B/C	4.4.4.1 b)	Yes	600V	7400Vr.m.s.	No hazard.	P
C	6.6	No	600V	7400Vr.m.s.	No hazard.	P
A	9.6.1	No	600V	7400Vr.m.s.	No hazard.	P

[1] Record the fault, test or treatment applied before the dielectric strength test. [2] Humidity preconditioning required.
NOTE: Test duration may be recorded.

Supplementary information:

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

6.10.2	TABLE: Cord anchorage					Form A.19	N/A
Location	Mass [kg]	Pull [N]	Verdict	Torque [Nm]	Verdict	Comment	
Dielectric strength test for 1 min. (6.8.3.1)............. :			V r.m.s.				
Supplementary information: /							

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

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

Part / Location	Clause 7.3.4		Clause 7.3.5.1								Clause 7.3.5.2			Verdict	Comments
	Continuous	Temporary	Minimum gaps [mm]								Maximum gaps [mm]				
	Contact pressure max. 50 N /cm² @ max. 150 N	max. 250 N / 3 cm² @ max. 0,75 s	Torso 500	Head 300	Leg 180	Foot 120	Toes 50	Arm 120	Hand 100	Finger 25	Head 120	Foot 35	Finger 4		
Supplementary information: /															

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

8.2	**ENCLOSURE rigidity test**		**Form A.21A**	**P**
8.2.1	Static test			P
	Material of enclosure .....:	~~Metal /~~ non-metallic		—
	Preparation for the test:	30N		—
	Operated at ambient temperature .....:	40 ° C	1 h	—
Location		Comments		Verdict
1) Top		No hazard		P
2) Side left / right		No hazard		P
3) Bottom		No hazard		P
Supplementary information: /				
8.2.2	**Dynamic test**			**N/A**
	Material of enclosure .....:	Metal / non-metallic		—
	Corresponding IK-code.....:			—
	Preparation for the test:			—
	Cooled to (temperature) .....:	-- ° C		—
Location		Comments		Verdict
1) Top				N/A
2) Side left / right				N/A
3) Bottom				N/A
Supplementary information: /				

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

8.3	**Drop test**		**Form A.21B**	**P**
8.3.1	Other equipment			N/A
Location	Raised up to		Comments	—
	[mm]	30 °		—
1) Front side	100	--	No hazard	N/A
2) Rear side	100	--	No hazard	N/A
3) Left side	100	--	No hazard	N/A
4) Right side	100	--	No hazard	N/A

Supplementary information: /

8.3.2	Hand-held EQUIPMENT and direct plug-in equipment		N/A
	Material of enclosure .....:	Metal /-non-metallic	—
	Preparation for the test:		—
	Cooled to (temperature) .....:	0 ° C	—
Location		Comments	Verdict
1) Side		No hazards	P
2) Edge		No hazards	P
3) Corner		No hazards	P

Supplementary information: /

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

9	**TABLE: Protection against the spread of fire**		**Form A.22**	**P**
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9.1 a, b or c)	Protection details	Verdict
1	Measuring circuit	9.1 a)	Tested in the single fault conditions, comply with clause 4.4.4.3.	P
2	Enclosure, PCB, Battery compartment	9.1 c)	Enclosure of V-0, PCB of V-0, Battery compartment material of V-0.	P
Supplementary information: /				

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

9.3.2	**TABLE: Constructional requirements**	**Form A.23**	**P**
14.7	Printed circuit boards		P

Material tested ..... :		—
Generic name ..... :		—
Material manufacturer..... :		—
Type..... :		—
Colour ..... :		—
Conditioning details ..... :		—

		Sample					
		1	2	3	4	5	6
Thickness of specimen	mm						
Duration of flaming after first Application	s						
Duration of flaming plus glowing After second application	s						
Specimen burns to holding clamp	Yes/No						
Cotton ignited	Yes/No						
Sample result	Pass/Fail						

Supplementary information: PCB rated V-0, see component list Table 1.

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Clause	Requirement — Test	Result — Remark	Verdict

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

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

Supplementary information: /.

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

9.5	**TABLE: Requirements for equipment containing or using flammable liquids**		**N/A**
Type of liquid	9.5 Flammable liquids		Verdict
	b) Quantity	c) Containment	
Supplementary information: /			

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

10.	**TABLE : Temperature Measurements** **Form A.26A**	**P**
10.1	Surface temperature limits – NORMAL CONDITION and / or SINGLE FAULT CONDITION	P
10.2	Temperature of windings – NORMAL CONDITION and / or SINGLE FAULT CONDITION	P
10.3	Other temperature measurements	P

Operating conditions:	Have the current measuring terminal to measure 3000A continuously		
Frequency ..... :	50 Hz	Test room ambient temperature (ta)... :	25.2 °C
Voltage ..... :	77/264 V	Test duration ..... :	1 h 40 min

Part / Location	t_m [°C]	t_c [°C]	t_{max} [°C]	Verdict	Comments
Used 77Va.c.					
1. Input terminal	29.7	44.3	80	P	--
2. Wire	27.9	42.5	80	P	--
3. Switch	31.8	46.4	70	P	--
4. PCB of main board	37.7	52.3	130	P	--
5. PCB of display board	32.2	46.8	130	P	--
6. Enclosure	31.0	45.6	80	P	--
7. Display panel	31.5	46.1	80	P	--
8. Ambient	25.4	40.0	Ref.	P	--
Used 264Va.c.					
9. Input terminal	29.6	44.4	80	P	--
10. Wire	27.7	42.5	80	P	--
11. Switch	31.7	46.5	70	P	--
12. PCB of main board	37.7	52.5	130	P	--
13. PCB of display board	32.0	46.8	130	P	--
14. Enclosure	31.5	46.3	80	P	--
15. Display panel	31.3	46.1	80	P	--
16. Ambient	25.2	40.0	Ref.	-	--

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.26B for details of winding temperature measurements

Supplementary information: /

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

10.2	**TABLE: Temperature of windings** **Resistance method Temperature Measurements**	**Form A.26B**	**N/A**
4.4.2.7	MAINS transformers		N/A
14.2.1	Motor temperatures		N/A

Operating conditions..:			
Frequency.....:	Hz	Test room ambient temperature (ta1/ta2)..:	/ °C (initial / final)
Voltage.....:	V	Test duration.....:	h min

Part / Designation	Rcold [Ω]	Rwarm [Ω]	Current [A]	t_r [K]	t_c [°C]	t_{max} [°C]	Verdict	Comments

NOTE 1- R_{cold} = initial resistance R_{warm} = final resistance
t_r = temperature rise t_c = t_r corrected (t_c= t_r - { t_{a2} - t_{a1}} + [40 °C or max RATED ambient])
t_{max} = maximum permitted temperature
NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional)
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary

Supplementary information: /

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

10.5.2	**TABLE: Resistance to heat of non-metallic ENCLOSURES**				**Form A.27**	**P**
	Test method used:					—
	Non-operative treatment ..... :	[√] Tested for 7h.				P
	Empty ENCLOSURE ..... :	[ ] Whole equipment				N/A
	Operative treatment ..... :	[ ]				N/A
	Temperature during tests ..... :	70°C				—

Description	Material	Comments	Verdict
Enclosure	ABS	No hazard.	P

Dielectric strength test (6.8) ..... :	7400	V	r.m.s./~~peak/d.c~~.	P

NOTE – Within 10 minutes of the end of treatment suitable tests in acc. to 8.2 and 8.3 must be conducted and pass criteria of 8.1.

Supplementary information: See component list Table 1.

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

10.5.3	**TABLE: Insulating Materials**		**Form A.28**	**N/A**
10.5.3 1)	Ball-pressure test			
	Max. allowed impression diameter ..... :	2 mm		—

Part	Test temperature [°C]	Impression diameter [mm]	Verdict

Supplementary information: /

10.5.3 2)	**Vicat softening test (ISO 306)**		**Form A.29**	**N/A**

Part	Vicat softening temperature [°C]	Thickness of sample [mm]	Verdict

Supplementary information: /

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

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

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

Location (see Form A.14)	Clause 8 tests				Clause 11 tests				Working voltage [V]	Test voltage [V]	Verdict	Comments
	Static (8.2.1) 30 N	Impact (8.2.2)	Normal (8.3.1)	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				
Enclosure	30N	IK08	--	1m	--	--	--	--	600V	7400V r.m.s.	P	--

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

Supplementary information: /

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

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

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

Supplementary information: /

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

Supplementary information: /

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

12.2.1	**TABLE: Ionizing radiation**	**Form A.33**	**N/A**
12.2.1.2	Equipment intended to emit radiation		

Locations tested	Measured values [µSv/h]	Verdict	Comments

Supplementary information: /

12.2.1.3	Equipment not intended to emit radiation	**Form A.34**	**N/A**
	Max. allowed effective dose rate at 100 mm……:	1 µSv/h	—

Locations tested	Measured values [µSv/h]	Verdict	Comments

Supplementary information: /

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

12.5.1	**TABLE: Sound level**		**Form A.35**	**N/A**
Locations tested		Measured maximum sound pressure level dB(A)	Calculated maximum sound power level	
At operator's normal position and at bystanders' positions				
a)				
b)				
c)				
d)				
e)				
f)				
Supplementary information: /				

12.5.2	Ultrasonic pressure		**Form A.36**	**N/A**
Locations tested	Measured values		Comments	
	[dB]	[kHz]		
At operator's normal position				
At 1 m from the ENCLOSURE				
a)				
b)				
c)				
d)				
e)				
NOTE – No limit is specified at present, but a limit of 110 dB above the reference pressure value of 20 μPa is under consideration for applicable frequencies between 20 kHz and 100 kHz.				
Supplementary information: /				

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

13.2.2	**TABLE: Batteries**	**Form A.37**	**N/A**
	Battery load and charging circuit diagram:		
	Battery type ..... :		—
	Battery manufacturer/model/catalogue No. ..... :		—
	Battery ratings ..... :		—
	Reverse polarity instalment test		

Single component failures	Verdict	
Component	Open circuit	Short circuit

Supplementary information: /

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

14.3	**TABLE: Overtemperature protection devices**	**Form A.38**	**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/EN 61010-1			
Clause	Requirement — Test	Result — Remark	Verdict

4.4.2.7	**TABLE: MAINS transformer**				**Form A.39**	**N/A**
4.4.2.7.2	Short circuit					
14.6	MAINS transformers tested outside equipment					
Type..... :						—
Manufacturer..... :						—
Test in equipment						--
Test on bench						--
Test repeated inside equipment (see 14.6)						--
Optional – Insulation class (IEC 60085) of the lowest rated winding..... :						—
Winding identification		--	--	--	--	
Type of Protector for winding (NOTE 1)		--	--	--	--	
Elapsed time		--	--	--	--	
Current, A primary		--	--	--	--	
secondary		--	--	--	--	
Winding temperature, °C primary		--	--	--	--	
(see NOTE 2) secondary		--	--	--	--	
Tissue paper / cheesecloth OK ? (Pass / Fail)		--	--	--	--	
Voltage tests (see NOTE 3)						
Primary to secondary	_____ V ____	--	--	--	--	
Primary to core	_____ V ____	--	--	--	--	
Secondary to secondary	_____ V ____	--	--	--	--	
Secondary to 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.26B.

NOTE 3: Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown

Supplementary information: /

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

4.4.2.7	**TABLE: MAINS transformer**				**Form A.40**	**N/A**
4.4.2.7.3	Overload tests (for MAINS transformers)					--
14.6	MAINS transformers tested outside equipment					--
Type .....:						—
Manufacturer .....:						—
Test in equipment						--
Test on bench						--
Test repeated inside equipment (see 14.6)						--
Optional – Insulation class (IEC 60085) of the lowest rated winding .....:						—
Winding identification		--	--	--	--	
Type of Protector for winding (NOTE 1)		--	--	--	--	
Elapsed time		--	--	--	--	
Current, A primary		--	--	--	--	
secondary		--	--	--	--	
Winding temperature, °C primary		--	--	--	--	
(see NOTE 2) secondary		--	--	--	--	
Tissue paper / cheesecloth OK ? (Pass / Fail)		--	--	--	--	
Voltage tests (see NOTE 3)						
Primary to secondary	_____ V ____	--	--	--	--	
Primary to core	_____ V ____	--	--	--	--	
Secondary to secondary	_____ V ____	--	--	--	--	
Secondary to 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.26B.

NOTE 3: Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown

Supplementary information: /

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

14.8	**TABLE: Transient overvoltage limiting devices**	**Form A.41**	**N/A**

Component / Designation	Overvoltage Category	MAINS voltage [V rms]	Test voltage [V]	t_m [°C]	t_c [°C]	t_{max} [°C]	Rupture Yes / No	Circuit breaker tripped	Verdict	Comments

Test room ambient temperature ….:		°C

NOTE - t_m = measured temperature
t_c = t_m corrected (t_m–t_a+ **40 °C**
t_{max} = maximum permitted
Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand

Supplementary information: /

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

Annex H	**TABLE: Qualification of conformal coating for protection against pollution**	**Form A.42**	**N/A**

Technical properties		
Manufacturer		—
Type		—
Meet requirements of ANSI / UL 746E	[yes / no]	
Manufacturer declaration of coating material	[yes / no]	
Operating temperature of coating	[ ] °C	
Comparative tracking index (CTI)	[ ]	
Insulation resistance	[ ] Ω	
Dielectric strength	[ ] V	
UV resistance (if required)	[yes / no]	
Flammability rating		
Preparation of the test specimens conducted	[yes / no]	

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

NOTE Td = Test duration time

Supplementary information: /

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

	TABLE: Additional or special tests conducted	**Form A.43**	**N/A**
Clause and name of test	Test type and condition	Observed results	—
Supplementary information: /			

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

	Table 1: - List of components and circuits relied on for safety					**P**
Unique component reference or location	Application/ function	Manufacturer / trademark (NOTE 1)	Type / model	Technical data (NOTE 2)	Standard	Mark(s) of conformity evidence of acceptance (NOTE 3 and 4)
Plastic Enclosure	Enclosure	Ningbo Keyao enclosure Co., Ltd.	ABS	-40~100℃	-	Test with appliance
LCD panel	Display	SHENZHEN MINGRUI LIGHT&ELECTRIC CO., LTD	MT200TLCD	-20~70℃	-	Test with appliance
PCB	Printed wiring board	Printed wiring board	J&C CO.,LTD	V-0, 130°C	-	Test with appliance
Switch	Switch	MORNSUN Guangzhou Science & Technology Co., Ltd.	LD03-10B05R2	250V, 5A	-	Test with appliance
NOTE → 1 List all different manufacturers of the above components → 2 May include electrical, mechanical values → 3 List licence no or method of acceptance → 4 asterisk indicates mark assuring agreed level of surveillance						

TEST REPORT
IEC/EN 61010-2-030
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 2-030: Particular requirements for testing and measurement circuits

Testing Laboratory	**See page 1**
Testing location/ address.....	**See page 1**
Applicant's name ..... :	**See page 1**
Address .....:	**See page 1**.
Manufacturer's name ..... :	**See page 1**
Address 1.....:	**See page 1**
Test specification:	
Standard .....:	☐ IEC 61010-2-030: 2010 (First Edition) used in conjunction with IEC 61010-1: 2010 (Third Edition) ☒ EN 61010-2-030: 2010 used in conjunction with EN 61010-1: 2010
Test procedure .....:	Test report
Non-standard test method .....:	N/A
Test Report Form No. ..... :	IEC61010_2_030A
Test Report Form(s) Originator .....:	Underwriters Laboratories Inc.
Master TRF.....:	Dated 2011-12

Test item description	: Power meter
Trade Mark	MEATROL ELECTRICAL
Manufacturer.....	: See page 1
Address	: See page 1
Model/Type reference.....	: Test model: ME347 Cover model: ME631、ME232、ME531、ME432
Ratings.....	: Power: 85-240V~, 50/60Hz, 3.5W Voltage Measuring: 80-400V~ , 50/60Hz, CAT IV Current Measuring: 0.5-6300A

Test item particulars ..... :	
Type of item tested ..... :	Measurement / Control
Description of equipment function ..... :	See next page
Installation/overvoltage category ..... :	III
Measurement category ..... :	III
Protection class ..... :	Class II
Pollution degree ..... :	2
Environmental rating ..... :	Extended (Specify): -25℃-55℃; RH: 5%-95%
Equipment mobility ..... :	Portable
Connection to mains supply ..... :	Directly connected to mains.
Operating conditions ..... :	Continuous
Overall size of the equipment L x W x H) ..... :	96mm × 96mm × 99mm
Mass of the equipment (kg) ..... :	0.30kg
Marked degree of protection to IEC 60529 ..... :	IPX0
Accessories and detachable parts included in the evaluation ..... :	N/A
Options ..... :	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 ..... :	2018-05-10
Date (s) of performance of tests ..... :	2018-05-11 to 2018-05-21

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 appended table)" refers to a table appended to the report.
Throughout this report a comma (point) is used as the decimal separator.

This Test Report Form is intended for the investigation of testing and measurement circuits in accordance with IEC/EN 61010-1:2010. It can only be used together with the Part 1 TRF for the appropriate edition of IEC/EN 61010-1.

General product information:

The ME347 is a three-phase multifunction power meter.,

The ME347 provides multifunction measurements which include 3-phase AC Voltage, Current, Frequency, Voltage and Current

Unless specified, the results of all tests conducted on the Model: ME347, are applicable to other models.

The declared Measurement Category by the manufacturer are CAT III 1000V and CAT IV 600V.

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

5.	**MARKING AND DOCUMENTATION**		**P**
5.1.5	TERMINALS, connections and operating devices		P
5.1.5.101	Measuring circuit TERMINALS		P
5.1.5.101.1	General		P
	a) The RATED voltage to earth of measuring circuit TERMINALS is marked		P
	b) the RATED voltage or the RATED current, as applicable, for each pair or set of measuring circuit TERMINALS that are intended to be used together are marked		P
	c) the pertinent MEASUREMENT CATEGORY for each pair or set of measuring circuit TERMINALS or symbol 14 of Table 1 of Part 1 are marked		N/A
	Symbol 14 of Table 1 is marked if current measuring TERMINALS are not intended for connection to current transformers without internal protection (see 101.2).		N/A
	Markings are placed adjacent to the TERMINALS, however, if there is insufficient space, the marking may be on the RATING plate or scale plate, or the TERMINAL may be marked with symbol 14 of Table 1.	Adjacent to the terminals	P
5.1.5.101.2	The relevant MEASUREMENT CATEGORY is marked for measuring circuit TERMINALS. The CATEGORY markings are “CAT II”, “CAT III” or “CAT IV” as applicable.	CAT IV	P
5.1.5.101.3	Measuring circuit TERMINALS RATED for connection to voltages above the level of 6.3.1 are marked with Symbol 14 of Table 1, if not RATED for measurements within MEASUREMENT CATEGORIES II, III or IV		N/A
5.1.5.101.4	Low voltage, permanently connected, or dedicated measuring circuit TERMINALS do not need to be marked if a), b), c) below apply	As below	P
	a) they are intended to be permanently connected and not ACCESSIBLE (see 5.4.3 aa) and bb), or		N/A
	b) they are dedicated only for connection to specific TERMINALS of other equipment, or		P
	c) It is obvious from other indications that the RATED voltage is below the levels of 6.3.1.		N/A
5.4.1	General		P
	aa) information about each relevant MEASUREMENT CATEGORY if the measuring circuit has a RATING for MEASUREMENT CATEGORY II, III or IV (see 5.1.5.101.2).	CAT IV	P

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	bb) for measuring circuits that do not have a RATING for MEASUREMENT CATEGORY II, III or IV, but could be misused by connection to such circuits, a warning not to use the equipment for measurements on MAINS CIRCUITS, and a detailed RATING including TRANSIENT OVERVOLTAGES (see AA.2.4)		N/A
5.4.3	Equipment installation		P
	aa) for permanently connected measuring circuit TERMINALS RATED for MEASUREMENT CATEGORIES II, III or IV, information regarding the MEASUREMENT CATEGORY, RATED max WORKING VOLTAGE, and RATED max current, as applicable (see 5.1.5.101);	See rating label	P
	bb) for permanently connected measuring circuit TERMINALS that are not RATED for MEASUREMENT CATEGORIES II, III or IV, information regarding the RATED max WORKING VOLTAGE, RATED max current, and RATED max TRANSIENT OVERVOLTAGES as applicable (see 5.1.5.101).		N/A
6	**PROTECTION AGAINST ELECTRIC SHOCK**		**P**
6.1.2	Exceptions: aa) locking or screw-held type measuring TERMINALS, including TERMINALS which do not require the use of a TOOL.		N/A
6.5.2.3	Protective conductor terminal		N/A
	h) 2) the PROTECTIVE BONDING is not be interrupted by any switching or interrupting device. Devices used for indirect bonding in test and measurement circuits (see 6.5.2.101) are permitted to be part of the PROTECTIVE BONDING.		N/A
6.5.2.101	Indirect bonding for testing and measuring circuits		N/A
	Indirect bonding establishes a connection between the PROTECTIVE CONDUCTOR TERMINAL and ACCESSIBLE conductive parts if these become HAZARDUS LIVE as a result of fault. Devices to establish indirect bonding are:		N/A
	a) voltage limiting devices which become conductive when the voltage across them exceeds the relevant levels of 6.3.2 a), with overcurrent protection to prevent breakdown of the device		N/A
	The voltage between the ACCESSIBLE conductive parts and the PROTECTIVE CONDUCTOR TERMINAL did not exceed the relevant levels of 6.3.2 a) for more than 0,2 s .....:	(See appended Table 6.5.2.101)	N/A
	b) voltage-sensitive tripping devices which interrupt all poles of the MAINS supply, and connect the ACCESSIBLE conductive parts to the PROTECTIVE CONDUCTOR TERMINAL whenever the voltage across them reaches the relevant levels of 6.3.2 a).		N/A

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	The tripping action took place within 0,2 s.....:	(See appended Table 6.5.2.101)	N/A
6.6	Connections to external circuits		P
6.6.101	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 are separated by at least the CLEARANCE and CREEPAGE DISTANCE of Table 101	See appended Table 6.6.101	N/A
6.6.102	Components, sensors, and devices intended to be connected to specialized measuring circuit TERMINALS are not both ACCESSIBLE and HAZARDOUS LIVE, in either NORMAL CONDITION or SINGLE-FAULT CONDITION, even when the maximum RATED voltage is applied to any other measuring circuit TERMINAL	Ordinary measuring equipment.	N/A
	Accessible parts did not exceed the levels of 6.3.1 and 6.3.2…….:	(See appended Table 6.6.102)	N/A
6.9	Constructional requirements for protection against electric shock		N/A
6.9.101	If a HAZARD could arise from an OPERATOR'S reliance on the value (for example, voltage) displayed by the equipment, the display gives an unambiguous indication whenever the value is above the maximum positive value or below the minimum negative value of the range to which the equipment is set.		P

14	**COMPONENTS AND SUBASSEMBLIES**		**N/A**
14.101	Circuits or components used as TRANSIENT OVERVOLTAGE limiting devices in measuring circuits are used to measure MAINS		N/A
	If control of TRANSIENT OVERVOLTAGE is employed in a measuring circuit used to measure MAINS, any overvoltage limiting component or circuit has adequate strength to limit TRANSIENT OVERVOLTAGES	(See appended Table 14.101)	N/A

101	**MEASURING CIRCUITS**		**P**
101.1	The equipment provides protection of HAZARD resulting from NORMAL USE and REASONABLY FORSEEABLE MISUSE of measuring circuits as specified below:		P
	a) If a HAZARD could result, a current measuring circuit does not interrupt the circuit being measured during range changing, or during the use of current transformers without internal protection (see 101.2)		P

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	b) An electrical quantity that is within specification for any TERMINAL does 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 (see 101.3)		P
	c) Any interconnection between the equipment and other devices or accessories does not cause a HAZARD even if the documentation or markings prohibit the interconnection while the equipment is used for measurement purposes (see 6.6).		P
	d) For measuring circuits that include one or more FUNCTIONAL EARTH TERMINALS, a RISK assessment (see Clauses 16 and 17) addresses the HAZARDS that may result if the equipment is operated with a disconnected PROTECTIVE CONDUCTOR TERMINAL and if the operator unintentionally connects a FUNCTIONAL EARTH TERMINAL to any RATED voltage for any other TERMINAL.		N/A
	e) Other HAZARDS that could result from REASONABLY FORESEEABLE MISUSE is addressed by RISK assessment (see Clauses 16 and 17).		P
101.2	Current measuring circuits		P
	Current measuring circuits are so designed that, when range changing takes place, there is no interruption which could cause a HAZARD.	Checked by inspection	P
	Current measuring circuits intended for connection to current transformers without internal protection are adequately protected to prevent a HAZARD arising from interruption of these circuits during operation.	(See appended Table 101.2)	N/A
101.3	Protection against mismatches of inputs and ranges		P
101.3.1	In NORMAL CONDITION and in cases of REASONABLY FORESEEABLE MISUSE, no HAZARD arises 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		P
	The equipment provides protection against these HAZARDS; one of the following techniques is used.		P
	a) Use of a certified overcurrent protection device to interrupt short-circuit currents before a HAZARD arises; requirements of Clause 101.3.2 apply, or		P
	b) Use an uncertified current limitation device, an impedance, or a combination of both to prevent the HAZARD from arising; requirements of 101.3.3 apply		N/A
101.3.2	Protection by a certified overcurrent protection device		N/A

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	Overcurrent protection device certified by an independent laboratory meet all of the specified requirements		N/A
	a) The a.c. and d.c. RATED voltages of the overcurrent protection device is at least as high as, respectively, the highest a.c. and d.c. RATED voltages of any measuring TERMINAL on the equipment.		N/A
	b) The RATED time-current characteristic (speed) of the overcurrent protection device is such that no HAZARD will result from any possible combination of RATED input voltages, TERMINALS, and range selection		N/A
	c) The a.c. and d.c. RATED breaking capacities of the overcurrent protection device exceeds the possible a.c. and d.c. short-circuit currents.		N/A
	Additionally, spacings surrounding the overcurrent protection device in the equipment and following the protection device in the measuring circuit is sufficiently large to prevent arcing after the protection device opens.		N/A
101.3.3	Protection by uncertified current limitation devices or by impedances	(See appended Table 101.3.3)	N/A
	Devices used for current limitation are capable of safely withstanding, dissipating, or interrupting the energy that will be applied as a result of short-circuit current in the case of REASONABLY FORESEEABLE MISUSE.		N/A
	An impedance used for limitation of current is one or more of the following:		N/A
	a) An appropriate single component which is constructed, selected, and tested so that safety and reliability for protection against relevant HAZARDS is assured.		N/A
	1) the component RATED for the max voltage that may be present during the REASONABLY FORESEEABLE MISUSE event;		N/A
	2) if a resistor, be RATED for twice the power dissipation that may result from the REASONABLY FORESEEABLE MISUSE event;		N/A
	3) meets the applicable CLEARANCE requirements of Annex K for REINFORCED INSULATION between its terminations of the combination of components.		N/A
	b) A combination of components		N/A
	1) which can withstand the maximum voltage that may be present during the REASONABLY FORESEEABLE MISUSE event,		N/A
	2) be able to dissipate the power that may result from the REASONABLY FORESEEABLE MISUSE event,		N/A

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	3) meet the applicable CLEARANCE requirements of Annex K for REINFORCED INSULATION between the terminations of each component.		N/A
101.3.4	Test leads for the tests of 101.3.2 and 101.3.3		P
	a) length = 1 m;		P
	b) cross section of the conductor = 1,5 mm², stranded copper wire;		P
	c) equipment connector compatible with the measuring circuit TERMINALS;		P
	d) connection to the test voltage source via bare wire into suitable screw TERMINALS or thimble connectors (twist-on wire connectors) or equivalent means of providing a low impedance connection;		P
	e) arranged as straight as possible.		P
	If the manufacturer-supplied test leads are permanently connected to the equipment, then the attached test leads supplied by the manufacturer were used without modification		N/A
Annex K.3	**Insulation in circuits not addressed in 6.7, K.1 or K.2, and in measuring circuits where MEASUREMENTS CATEGORIES do not apply**		**P**
K.101	**Insulation requirements for measuring circuits of MEASUREMENT CATEGORIES II, III, IV**		P
K.101.1	General		P
K.101.2	CLEARANCES	See appended tale of part 1	P
	For equipment intended to be powered from the circuit being measured, CLEARANCES of the MAINS CIRCUIT are designed according to the requirements of the RATED MEASUREMENT CATEGORIES		P
	Overvoltage limiting devices may be used to reduce the transients to a level consistent with a lower MEASUREMENT CATEGORIES (see K.102)		N/A
	Additional marking requirements in 5.1.5.2 and 5.1.5.101		P
	CLEARANCES for MEASUREMENT CATEGORIES II, III, IV meet Table K.101	CAT IV	P
	Equipment rated to operate at an altitude greater than 2000 m, correction factor of Table K.1 of 61010-1 applied		N/A
	Voltage tests of 6.8.3.1 or 6.8.3.3 of 61010-1		P
K.101.3	CREEPAGE DISTANCES	See appended tale of part 1	P
	The requirements of K.2.3 of 61010-1 applied		P
K.101.4	Solid insulation		P
K.101.4.1	General		P

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	Solid insulation withstands the electrical and mechanical stresses that may occur in NORMAL USE in all RATED environmental conditions (see 1.4) during the intended life of the equipment		P
	Solid insulation also meets the following requirements as applicable		P
	a) solid insulation used as an ENCLOSURE or PROTECTIVE BARRIER, the requirements of Clause 8		P
	b) moulded parts, the requirements of K.101.4.2		N/A
	c) inner layers of printed wiring boards, the requirements of K.101.4.3		N/A
	d) thin-film insulations, the requirements of K.101.4.4		N/A
K.101.4.2	Moulded and potted parts		N/A
	Conductors located between same two layers moulded together are separated by at least the value of Table K.9 of 61010-1		N/A
K.101.4.3	Inner insulating layers of printed wiring boards		N/A
	Conductors located between same two layers are separated by at least the applicable minimum distances of Table K.9 of 61010-1		N/A
	REINFORCED INSULATION have adequate electric strength; one of the following methods are used:		N/A
	a) thickness at least the value of Table K.9 of 61010-1		N/A
	b) insulation is assembled from at least two separate layers, each RATED for test voltage of Table K.102 to K.104 for BASIC INSULATION		N/A
	c) insulation is assembled from at least two separate layers, where the combination is RATED for test voltage of Table K.102 to K.104 for REINFORCED INSULATION		N/A
K.101.4.4	Thin-film insulation		N/A
	Conductors between same layers are separated by at least the applicable CLEARANCES and CREEPAGE DISTANCE of K.101.2 and K.101.3		N/A
	REINFORECD INSULATION have adequate electric strength; one of the following methods are used:		N/A
	a) thickness at least the value of Table K.9 of 61010-1		N/A
	b) insulation consists of at least two separate layers, each RATED for test voltage of Table K.102 to Table K.104 for BASIC INSULATION		N/A

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict
	c) insulation consists of at least three separate layers, where the combination of two layers passed voltage tests of Table K.102 to K.104 for REINFORCED INSULATION		N/A
	Voltage tests of 6.8.3.1 of 61010-1		N/A
K.102	**Reduction of MEASUREMENT CATEGORIES by the use of overvoltage limiting devices**		**N/A**
	If the overvoltage limiting device or circuit is intended to reduce TRANSIENT OVERVOLTAGES, a RISK ASSESSMENT (see Clause 17) is performed taking into account both of the followings		N/A
	a) the circuit reduces TRANSIENT OVERVOLTAGES to the lower MEASUREMENT CATEGORY under SINGLE FAULT CONDITIONS		N/A
	b) the circuit operates as intended even after withstanding repeated TRANSIENT OVERVOLTAGES		N/A

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.5.2.101	**TABLE: Indirect bonding for test and measuring circuits**		**N/A**
a) Voltage limiting device			
ACCESSIBLE part under test	Voltage attained (V)	Time for voltage to drop to allowable levels (s)	ACCESSIBLE part under test
b) Voltage-sensitive tripping device			
ACCESSIBLE part under test	Voltage applied (V)	Time for device to trip (s)	ACCESSIBLE part under test
Supplementary Information:			

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.6.101	**TABLE: CLEARANCES and CREEPAGE distances for measuring circuit terminals with HAZADUS LIVE conductive parts**				N/A
Location/ Terminal/Rated Voltage (ac or dc)	Required		Measured		Location/ Terminal CLEARANCE mm
	CREEPAGE DISTANCE	CLEARANCE	CREEPAGE DISTANCE	CREEPAGE DISTANCE	
	mm	mm	mm	mm	
Supplementary information:					

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.6.102 (6.3.1)	**TABLE: Values in NORMAL CONDITION**				**N/A**
Accessible parts	Voltage r.m.s./peak/d.c. (V)	Current (mA)		Capacitance	Comments
		Test circuit A1/A2/A3	r.m.s. or peak or d.c.	μC or mJ	
Supplementary information:					

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.6.102 (6.3.2)	**TABLE: Values in SINGLE FAULT CONDITION**							**N/A**
Accessible parts	Subclause/ Fault No.	Voltage r.m.s./ peak/d.c (V).	Transient		Current; (mA)		Capacitance (μF)	Comments
			(V)	(s)	Test circuit A1/A2/A3	r.m.s. or peak or d.c.		
NOTE - Required values are determined by calculation for Reinforce Insulation. Transients are not taken into account.								
Supplementary information: Transient voltages must be below the limits given from Figure 2 and the capacitance below the limits from figure 3 of IEC 61010-1.								

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

6.9.101	**TABLE: Over range indication test**			**P**
Measuring Terminal	Applied Voltage (V)	Contents of Display	Verdict	Comments
Voltage measuring terminal	240	240.1V displayed. Background of display was twinkling.	P	
Supplementary information:				

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

14.101	**TABLE: Transient overvoltage limiting devices**	**N/A**

Component / Designation	Overvoltage Category	MAINS voltage V rms	Test voltage V	t_m °C	t_c °C	t_{max} °C	Rupture Yes / No	Circuit breaker tripped	Comments

Test room ambient temperature ….:		°C

NOTE - t_m = measured temperature

t_c = t_m corrected (t_m–t_a+ 40 **°C** or max.

t_{max} = maximum permitted temperature

Conformity is checked by applying 5 positive and 5 negative impulses with the applicable impulse withstand voltage, spaced up to 1 min

Supplementary information:

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

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

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

101.2	**TABLE: Current measuring circuits - Range changing switches**		**N/A**
Type / Model	Switch maximum rated current (A)	Cycling test Result	Comments
Supplementary information:			

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

101.3.2	**TABLE: Certified overcurrent protection device test**					**N/A**
Type / Model / Terminal	Max. rated Voltage (V)	Test Voltage (V)	Test leads		Verdict	Comments
			Mfr.	Std.		
NOTE 1: Test voltage = 2 times max. rated Voltage for 1 min. NOTE 2: Mfr – Manufacturer supplied leads Std. – Leads as described in 101.3.4						
Supplementary information:						

Attachment 1: IEC/EN 61010-030			
Clause	Requirement — Test	Result — Remark	Verdict

101.3.3	**TABLE: Uncertified overcurrent protection device test**						**N/A**
Type / Mfr. / Model / Terminal	Max. rated Voltage (V)	Test Voltage (V)	Test current (A peak)	Test leads		Verdict	Comments
				Mfr.	Std.		

NOTE 1 - Test was conducted 3 times.
NOTE 2 - Any damage to a device used for current limitation was ignored when other parts of the equipment were not affected during the test.
NOTE 3 - Mfr – Manufacturer supplied leads
Std. – Leads as described in 101.3.4
NOTE 4 - Note current limit devices manufacture, type and ratings.

Supplementary information:

Attachment 2: Photos of Product

Photo 1

General View

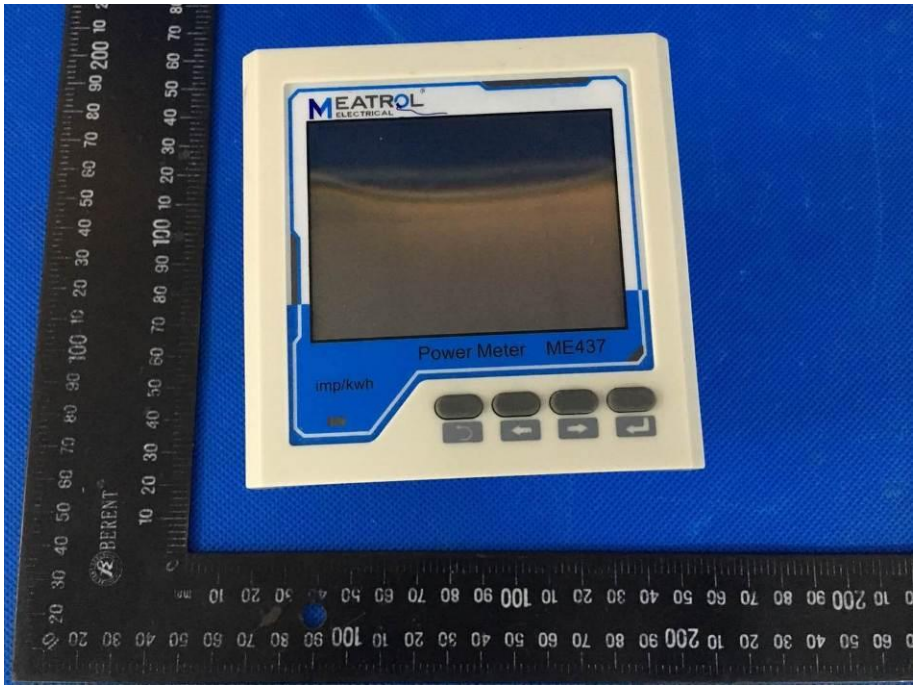
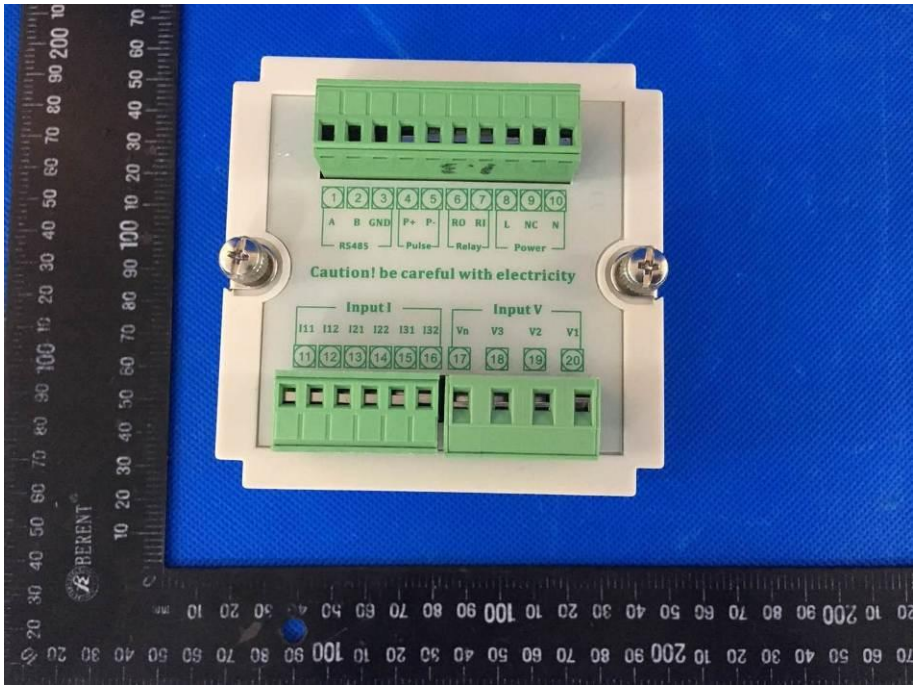


Photo 2

Rear View



Attachment 2: Photos of Product

Photo 3

Internal View

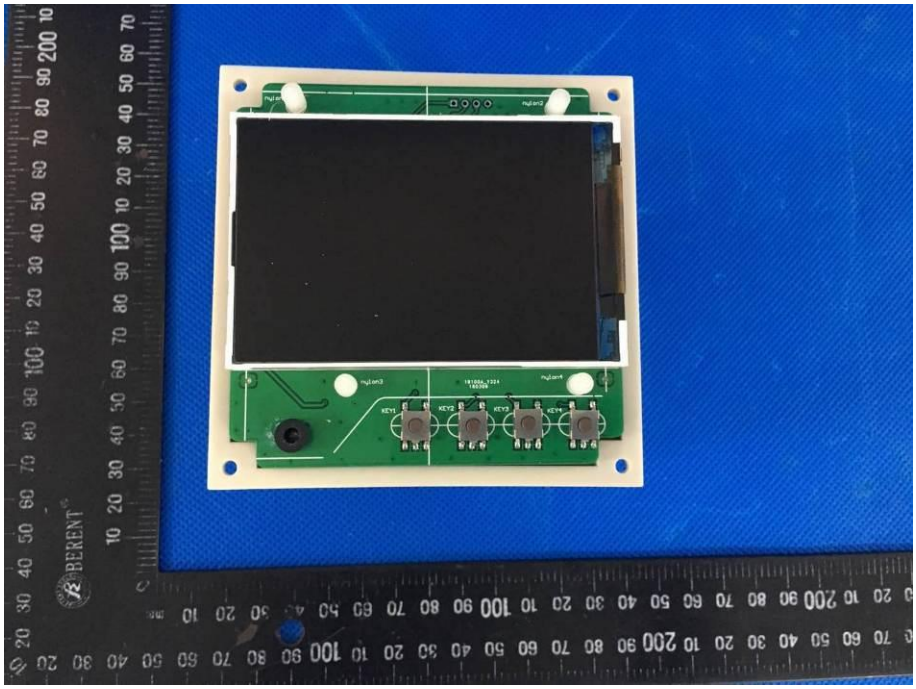
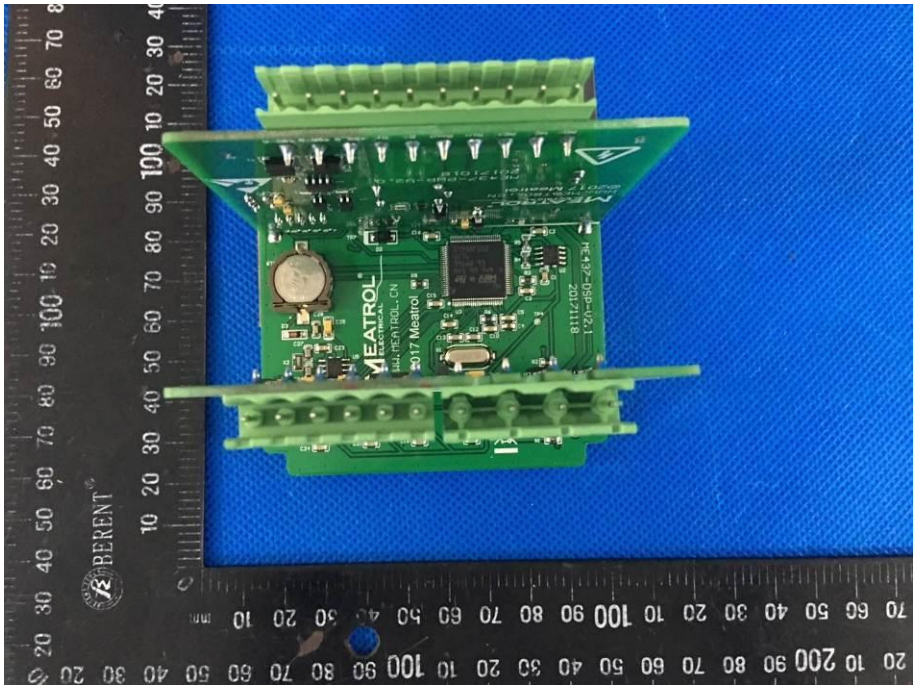


Photo 4

Internal View



Attachment 2: Photos of Product

Photo 5

Top View of PCB

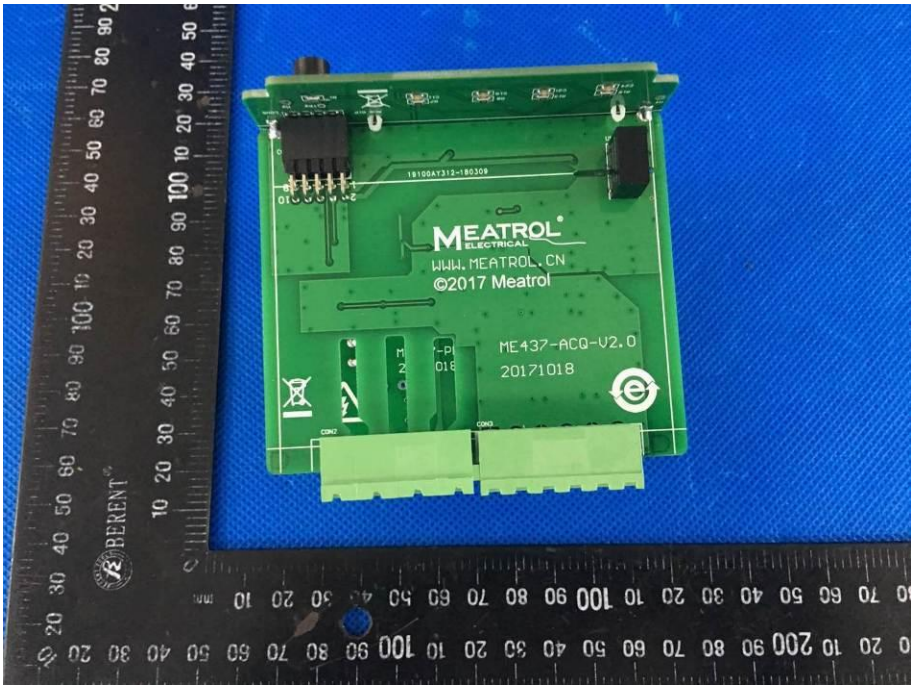
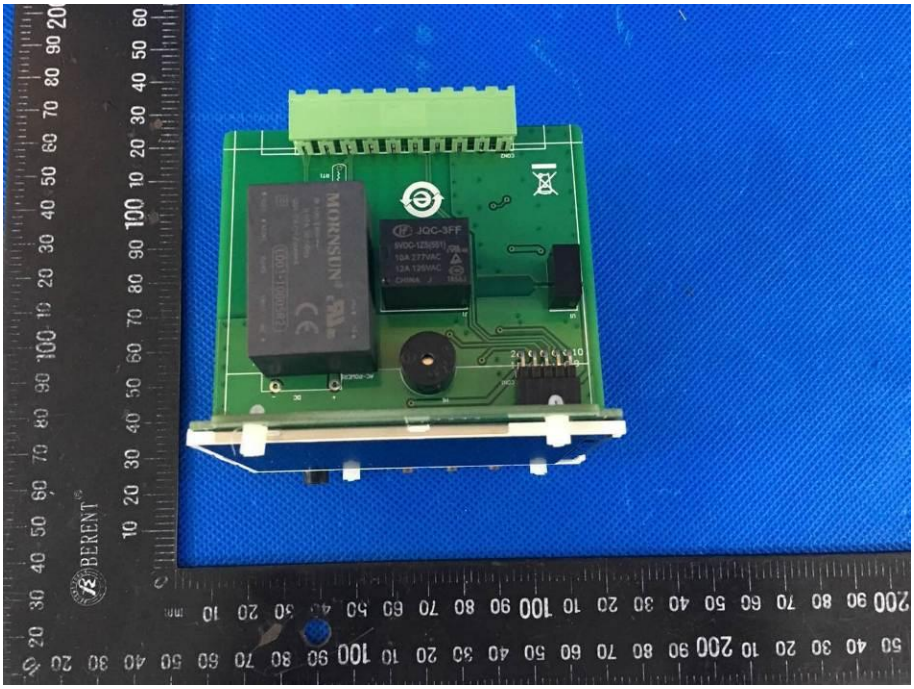


Photo 6

Bottom View of PCB



--- End of Report ---