

Low Voltage Directive Report
2014/35/EU – EN 61010-1: 2010

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Project No. GC00221-1



Issue 2



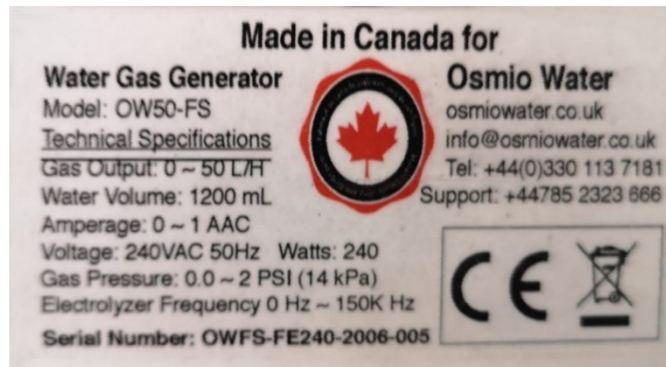
TEST REPORT

EN 61010-1: 2010

Safety requirements for electrical equipment for measurement, control, and laboratory use

Product	Water Gas Generator	
Name and address of the Client	Osmiowater Unit 2B Beechcroft Farm Industrial Estate Chapel Wood Road, Ash Kent. TN15 7HX	
Name and address of the manufacturer	As above	
Name and address of the factory	As above	
Trade mark		
Rating and principal characteristics	240V, 50-60Hz, 240W Gas Output 0-50L / hour	
Model/types	Infinity. OW50-A	
Serial no	OW-FE240-1910-006	
Assessed according to	EN 61010-1: 2010 / IEC 61010-1: 2010 + A1 :2019 Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1. General requirements	
Name and address of the testing laboratory	Import Export Services 1 Portview Road Avonmouth Bristol BS11 9LS	Telephone +44 (0)117 938 0600 Fax +44 (0)117 938 0900
Assessed in period	19-03-20 to 20-03-20 and 26-02-21	
Assessed by		
	Signature Name in block letters T.HAWORTH	Date:  26-02-21

Test item particulars :	
Type of item tested	Measurement / Control / Laboratory
Description of equipment function	An Electrolyser for the controlled supply of a mixture of oxygen and hydrogen.
Installation/overvoltage category	II
Pollution degree	2
Environmental rating	standard / extended (specify):
Equipment mobility	portable / hand-held / floorstanding / fixed / built in
Connection to mains supply	Plug connected by detachable cord with IEC 320 type C13/14 appliance connector
Operating conditions	Continuous / Short-time / Intermittent
Overall size of the equipment (W x D x H)	215mm x 320mm x 270mm
Mass of the equipment (kg)	6 kg approx.
Marked degree of protection to IEC 60529	Not marked
Accessories and detachable parts included in the evaluation	None
Options	None
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	18/03/20
Date (s) of performance of tests	19/03/20 – 20/03/20
<p>General Description:</p> <p>The Osmio Infinity is an electrolyser (also called a Water Gas Generator) which uses water to create a mixture of hydrogen and oxygen. HydrOxy gas can be inhaled through a nasal cannula or used for localised body ailments. Gas can also be bubbled in a foot bath or a bathtub for full body immersion.</p> <p>The Osmio user manual contains a Medical Disclaimer that the equipment is not designated as a medical device. The equipment is used to control the quantity and ratio of HydrOxy gas which may then be administered via a device such as a nasal cannula or a syringe. These patient connection devices are not being evaluated in this report.</p> <p>The equipment is plug connected to a single phase 220-240V mains supply and requires a protective earth connection.</p>	

Copy of rating plate:**Summary of test results** (information/comments):

The following issues with the safety standard were resolved or corrected during the assessment:

- The maximum rated power is now included on the equipment label.
- The name and address of manufacturer or supplier is now present in the user instructions.
- The fuse protection is now present in the live conductor of the mains input.
- The power supply now has third-party safety certification and a CE mark.
- The printed circuit boards (including the power supply) now have flammability rating marks or data.
- The supply frequency range and power drawn is now present in the instructions.
- A statement of the range of environmental conditions is now present in the user instructions
- An explanation of the warning symbols used is now present in the user instructions

Conformity Statement

The equipment now fulfils the requirements of the 2014/35/EC - the Low Voltage Directive and EN61010-1: 2010.

4.4	Testing in SINGLE FAULT CONDITIONS		—
4.4.1	Fault tests	Applied	P
4.4.2	Application of SINGLE FAULT CONDITIONS		—
4.4.2.1	SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.14	None required	N/A
4.4.2.2	PROTECTIVE IMPEDANCE	Not used	N/A
4.4.2.3	PROTECTIVE CONDUCTOR	0.97mA leakage current	P
4.4.2.4	Equipment or parts for short-term or intermittent operation	None present	N/A
4.4.2.5	Motors	None present	N/A
4.4.2.6	Capacitors	Certified components	P
4.4.2.7	MAINS transformers	None present	N/A
4.4.2.7.2	Short circuit		N/A
4.4.2.7.3	Overload		N/A
4.4.2.8	Outputs		N/A
4.4.2.9	Equipment for more than one supply	Single supply	N/A
4.4.2.10	Cooling	Fan stall test carried out	P
4.4.2.11	Heating devices	Timer override test carried out	P
4.4.2.12	Insulation between circuits and parts	Power cable and internal wiring satisfactory	P
4.4.2.13	Interlocks	None present	N/A
4.4.2.14	Voltage selectors	None present	N/A
4.4.3	Duration of tests	1h	P
4.4.4	Conformity after application of fault conditions	The unit is undamaged	P

5	MARKING AND DOCUMENTATION		—
5.1.1	General		—
	Required equipment markings are:		—
	visible:		P
	From the exterior; or	Present	P
	After removing a cover; or		N/A
	Opening a door		N/A
	After removal from a rack or panel		N/A
	Not put on parts which can be removed by an operator		N/A
	Letter symbols (IEC 60027) used		N/A
	Graphic symbols (IEC 61010-1: Table 1) used	Various symbols present. (See photos)	P

5.1.2	Identification		—
	Equipment is identified by:		—
	a) Manufacturer's or supplier's name or trademark	Present	P
	b) Model number, name or other means	Present	P
	Manufacturing location identified	Canada present	P
5.1.3	MAINS supply		—
	Equipment is marked as follows:		—
	a) Nature of supply:		P
	1) a.c. RATED MAINS frequency or range of frequencies	50-60Hz	P
	2) d.c. with symbol 1		N/A
	b) RATED supply voltage(s) or range.....	220 – 240V	P
	c) Max. RATED power (W or VA) or input current....	Present	P
	The marked value not less than 90 % of the maximum value	Complies	P
	If more than one voltage range:	Single range	N/A
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
	d) OPERATOR-set for different RATED supply voltages:	Single rating	N/A
	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:	None present	N/A
	With the voltage if it is different from the MAINS supply voltage.....		N/A
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		N/A
	The maximum rated current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses		—
	Operator replaceable fuse marking (see also 5.4.5)	No operator replaceable fuses	N/A
5.1.5	TERMINALS, connections and operating devices		—
5.1.5.1	General		—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked	Present	P
	If insufficient space, symbol 14 used		N/A

	Push-buttons and actuators of emergency stop devices and indicators:		N/A
	used only to indicate a warning of danger or the need for urgent action		N/A
	coloured red		N/A
	coded as specified in IEC 60073		N/A
	Supplementary means of coding provided, if meaning of colour relates (see IEC 60073):		N/A
	to safety of persons; or		N/A
	safety of the environment		N/A
5.1.5.2	TERMINALS		—
	MAINS supply TERMINAL identified	Connectors only	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		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		—
	If disconnecting device, off position clearly marked	The switch is marked	P
	If push-button used as power supply switch:		—
	Symbol 9 and 15 used for on-position	Present on switch	P
	Symbol 10 and 16 used for off-position	As above	P
	Pair of symbols 9, 15 and 10, 16 close together		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		—
	Protected throughout (symbol 11 used)	The power supply is class I	N/A
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes		—
	If TERMINAL or ENCLOSURE exceeds 60 °C:		N/A
	Cable temperature RATING marked		N/A
	Marking visible before and during connection or beside TERMINAL		N/A
5.1.5.101.1	Measuring circuit terminals are marked with: (a) the rated voltage to earth (b) the rated voltage and current for each pair (c) the measurement category according to the type of mains circuit they are to be attached to	No terminals present	N/A

5.1.5.101.2	Measuring circuit terminals for categories II, III and IV are marked as applicable		N/A
5.1.5.101.3	Symbol 14 of table I is used for terminals exceeding the voltage of section 6.3.1	No terminals present	N/A
5.1.5.101.4	Low voltage, permanently connected or dedicated measuring circuit terminals do not need to be marked if they meet specific criteria listed in (a), (b) or (c)		N/A
5.2	Warning markings		—
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts	Present on the top surface	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	Complies	P
	b) symbols and text moulded, stamped or engraved in material min. 2,0 mm high and 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		—
	The required markings remain clear and legible in NORMAL USE	All markings are permanent and durable	P
5.4	Documentation		—
5.4.1	General		—
	Equipment is accompanied by documentation for safety purposes for OPERATOR or RESPONSIBLE BODY	User instructions Ver. 0.4 reviewed	P
	Safety documentation for service personnel authorized by the manufacturer	Instruction to return to Osmiowater	P
	Documentation necessary for safe operation is provided in printed media or in electronic media if available at any time	Provided in hard copy	P
	Documentation includes:		—
	a) intended use	Present	P
	b) technical specification	Present	P
	c) name and address of manufacturer or supplier	Present	P
	d) Information specified in 5.4.2 to 5.4.6	Present	P
	e) information to mitigate residual RISK (see also subclause 101.1)	Present	P
	f) accessories for safe operation of the equipment specified	No accessories	N/A
	g) guidance provided to check correct function of the equipment, if incorrect reading may cause a HAZARD from harmful or corrosive substances of HAZARDOUS live parts	Present	P
	h) instructions for lifting and carrying	Present	P

	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or	Present in the instructions. Training provided	P
	Information is marked on the equipment		—
	(aa) measurement categories II, III and IV	No terminals present	N/A
	(bb) ratings for terminals not in the above categories		N/A
5.4.2	Equipment ratings		—
	Documentation includes:		P
	a) Supply voltage or voltage range	220 – 240V	P
	Frequency or frequency range	Present	P
	Power or current rating	Present	P
	b) Description of all input and output connections in accordance to 6.6.1 a)	Present	P
	c) RATING of insulation of external circuits in accordance to 6.6.1 b)		N/A
	d) Statement of the range of environmental conditions	Present	P
	e) Degree of protection (IEC 60529)	Not required	N/A
	f) if impact rating less than 5 J:	5J compliant	N/A
	IK code in accordance to IEC 62262 marked or symbol 14 of table 1 marked, with RATED energy level and test method stated		N/A
5.4.3	Equipment installation		—
	Documentation includes instructions for:		—
	a) assembly, location and mounting requirements	Present	P
	b) protective earthing	Plug connected	P
	c) connections to supply	Plug connected	P
	d) 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		N/A
	f) special services (e. g. air, cooling liquid)		N/A
	g) Instructions relating to sound level		N/A
5.4.4	Equipment operation		—
	Instructions for use include:		—
	a) identification and description of operating controls	Present	P
	b) positioning for disconnection	Plug disconnected	P
	c) instructions for interconnection	Present	P
	d) specification of intermittent operation limits		N/A
	e) explanation of symbols used	Present	P
	f) replacement of consumable materials	Present	P

	g) cleaning and decontamination	Present	P
	h) Listing of any poisonous or injurious gases and quantities	Present	P
	i) RISK reduction procedures relating to flammable liquids (see 9.5)		N/A
	j) RISK reduction procedures relating burn from surfaces permitted to exceed limits of 10.1		N/A
	Additional precautions for IEC 60950 conforming equipment in regard to moistures and liquids	None required	N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer	Warning present	P
	(aa) measurement categories II, III and IV	No measuring terminals	N/A
	(bb) ratings for terminals not in the above categories	As above	N/A
5.4.5	Equipment maintenance		—
	Instructions for RESPONSIBLE BODY include:		—
	Instructions sufficient in detail permitting safe maintenance and inspection and continued safety:	Present	P
	Instruction against the use of detachable MAINS supply cord with inadequate rating	Not required	N/A
	Specific battery type of user replaceable batteries	None present	N/A
	Any manufacturer specified parts		N/A
	Rating and characteristics of fuses	None present	N/A
	Instructions include following subjects permitting safe servicing and continued safety:	Instruction to return the equipment to Osmiowater	P
	a) product specific RISKS may affect service personnel		N/A
	b) protective measures for these RISKS		N/A
	c) verification of the safe state after repair		N/A
5.4.6	Integration into systems or effects resulting from special conditions		N/A
	Aspects described in documentation		N/A
6	PROTECTION AGAINST ELECTRIC SHOCK		—
6.1	General		P
6.1.1	Requirements		—
	Protection against electric shock maintained in NORMAL CONDITION and SINGLE FAULT CONDITION	Present in the live conductor	P
	ACCESSIBLE parts not HAZARDOUS LIVE	Complies	P
	Voltage, current, charge or energy below the limits in NORMAL CONDITION and in SINGLE FAULT CONDITION between:		—
	ACCESSIBLE parts and earth	As above	P
	two ACCESSIBLE parts on same piece of the equipment within a distance of 1,8 m		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11	As above	P

6.1.2	Exceptions		—
	Following HAZARDOUS LIVE parts may be accessible to an OPERATOR:	Exceptions not required	N/A
	a) parts of lamps and lamp sockets after lamp removal		N/A
	b) parts to be replaced by operator only by the use of tool and warning marking		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
	(aa) locking or screw type terminals		N/A
6.2	Determination of accessible parts		—
6.2.1	General		—
	Unless obviously determination of accessible parts as specified in 6.2.2 to 6.2.4	No hazardous voltages accessible	P
6.2.2	Examination		—
	- with jointed test finger (as specified B.2)	As above	P
	- with rigid test finger (as specified B.1) and a force of 10 N		P
6.2.4	Openings above parts that are HAZARDOUS LIVE		—
	- test pin with length of 100 mm and 4 mm in diameter applied	As above	P
6.2.4	Openings for pre-set controls		—
	- test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.3	Limit values for ACCESSIBLE parts		—
6.3.1	Levels in NORMAL CONDITION		N/A
	a) Voltage limits less than 33 V r.m.s. and 46,7 V peak or 70 V d.c. For wet locations voltage limits less than 16 V r.m.s. and 22,6 V peak or 35 V d.c. Voltages are not HAZARDOUS LIVE	No accessible hazardous parts	N/A
	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. For wet locations measuring circuit A.4 used - or		N/A
	c) Levels of capacitive charge or energy less:		N/A
	1) 45 μ C 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 33 V r.m.s. and 46,7 V peak or 70 V d.c.	Earth leakage current is within the safety limit. See (b)	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:		N/A
	b) Current less than 3,5 mA r.m.s. for sinusoidal, 5 mA peak non sinusoidal or mixed frequencies or 15mA d.c. when measured with measuring circuit A.1 or A.2 if less than 100 Hz for wet locations measuring circuit A.4 used, or	Earth leakage current measured – 0.97mA	P
	c) Levels of capacitive charge or energy less:		N/A
	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
6.4	Primary means of protection		—
6.4.1	ACCESSIBLE parts prevented from being HAZARDOUS LIVE by one or more of following means:		P
	a) ENCLOSURES or PROTECTIVE BARRIERS (see 6.4.2)	Present	P
	b) BASIC INSULATION (see 6.4.3)	Present	P
	c) Impedance (see 6.4.4)	Not used	N/A
6.4.2	ENCLOSURES or PROTECTIVE BARRIERS		—
	- meet rigidity requirements of 8.1	Complies	P
	- meet requirements for BASIC INSULATION, if protection is provided by insulation	Enclosure is metal	N/A
	- meet requirements of 6.7 for CREEPAGE and CLEARANCES between ACCESSIBLE parts and HAZARDOUS live parts, if protection is provided by limited access	Not provided by limited access	N/A
6.4.3	BASIC INSULATION		—
	- meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7	Complies	P
6.4.4	Impedance		—
	Impedance used as primary means of protection meets all of following requirements:	Impedance method not used	N/A
	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		—
6.5.1	ACCESSIBLE parts are prevented from becoming HAZARDOUS live by the primary means of protection and supplemented by one of:		—
	a) PROTECTIVE BONDING (see 6.5.2)	Present	P
	b) SUPPLEMENTARY INSULATION (see 6.5.3)		N/A
	c) automatic disconnection of the supply (see 6.5.5)	Present	P
	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)		N/A
	f) PROTECTIVE IMPEDANCE (see 6.5.4)		N/A
6.5.2	PROTECTIVE BONDING		—
6.5.2.1	ACCESSIBLE conductive parts, may become HAZARDOUS LIVE in SINGLE FAULT CONDITION:	Protective bonding is present	P
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or	As above	P
	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	Complies	P
	b) Soldered connections:		N/A
	Independently secured against loosening		N/A
	Not used for other purposes		N/A
	c) Screw connections are secured	Complies	P
	d) PROTECTIVE BONDING not interrupted; or	Complies	P
	exempted as removable part carries MAINS SUPPLY INPUT connection		N/A
	e) Any moveable PROTECTIVE BONDING connection specifically designed, and meets 6.5.2.4		N/A
	f) No external metal braid of cables used (not regarded as PROTECTIVE BONDING)		N/A
	g) IF MAINS SUPPLY PASSES THROUGH:		N/A
	Means provided for passing protective conductor;		N/A
	Impedance meets 6.5.2.4		N/A
	h) Protective conductors bare or insulated, if insulated, green/yellow	Complies	P
	Exceptions: earthing braids and internal protective conductors such as ribbon cable, flexible pcb 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	Complies	P
	b) Appliance inlet used	IEC320 type C13/C14	P
	c) For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS		N/A
	d) If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		N/A
	Is near terminals of circuit for which protective earthing is necessary		N/A

	External if other terminals external		N/A
	e) Equivalent current-carrying capacity to MAINS supply TERMINALS		N/A
	f) If plug-in, makes first and breaks last	Complies	P
	g) If also used for other bonding purposes, protective conductor:		N/A
	Applied first;		N/A
	Secured independently;		N/A
	Unlikely to be removed by servicing		N/A
	h) PROTECTIVE CONDUCTOR of measuring circuit:		N/A
	1) Current RATING equivalent to measuring circuit TERMINAL;		N/A
	2) PROTECTIVE BONDING:		N/A
	Not interrupted; or ref 6.5.2.101		N/A
	i) FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
	j) If a binding screw used for PROTECTIVE CONDUCTOR TERMINAL:		N/A
	Suitable size for bond wire		N/A
	Not smaller than M 4 (No. 6)		N/A
	At least 3 turns of screw engaged		N/A
	Passes tightening torque test		N/A
	k) Contact pressure not capable being reduced by deformation of materials		N/A
6.5.2.4	Impedance of PROTECTIVE BONDING of plug-connected equipment		—
	Impedance between PROTECTIVE CONDUCTOR TERMINAL and each ACCESSIBLE part where PROTECTIVE BONDING is specified, is:	The enclosure construction is adequate	P
	less than 0,1 Ohm; or	>0.1 Ohm	P
	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	Plug connected	N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen		N/A
	Transformer provided with screen for protective bonding:	None present	N/A
	screen bonding consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses (see 6.5.2.2 a)		N/A
	screen bonding with soldered connection (see 6.5.2.2 b) is:		N/A
	- Independently secured against loosening		N/A
	- Not used for other purposes		N/A

6.5.2.101	Indirect bonding for test and measurement circuits		N/A
6.5.3	SUPPLEMENTARY and REINFORCED INSULATION		—
	- meet CLEARANCE, CREEPAGE DISTANCE and solid insulation requirements of 6.7	Not used	N/A
6.5.4	PROTECTIVE IMPEDANCE		—
	Limits current or voltage to level of 6.3.1 in NORMAL and to level of 6.3.2 in SINGLE FAULT CONDITION	Impedence method not used	N/A
	CLEARANCE, CREEPAGE DISTANCE between terminations of the impedance meet requirements of DOUBLE or REINFORCED INSULATION of 6.7		N/A
	The protective impedance consists of one or more of the following:		N/A
	a) appropriate single component suitable for safety and reliability for protection, it is:		N/A
	1) RATED twice the maximum WORKING VOLTAGE		N/A
	2) resistor RATED for twice the power dissipation for maximum WORKING VOLTAGE		N/A
	b) combination of components		N/A
	Single electronic device not used as PROTECTIVE IMPEDANCE		N/A
6.5.5	Automatic disconnection of the supply		—
	a) RATED to disconnect the load within time specified in Figure 2	Basic insulation + protective earth used	N/A
	b) RATED for the maximum load conditions of the equipment		N/A
6.5.6	Current - or voltage limiting devices		—
	Device complies with all of:		—
	a) RATED to limit the current or voltage to the level of 6.3.2	As above	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		N/A
6.6	Connections to external circuits		—
6.6.1	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:	No external circuits	N/A
	- the external circuits		N/A
	- the equipment		N/A
	Protection achieved by separation of circuits; or		N/A
	short circuit of separation does not cause a HAZARD		N/A
	Instructions or markings for each terminal include:		N/A
	a) RATED conditions for TERMINAL		N/A

	b) Required RATING of external circuit INSULATION		N/A
6.6.2	TERMINALS for external circuits	No external circuits	N/A
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE after 10 s of interrupting supply connection		N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE		N/A
	These circuits are:		N/A
	Not connected to ACCESSIBLE conductive parts; or		N/A
	Connected to ACCESSIBLE conductive parts, but are not MAINS circuits and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		N/A
6.6.4	ACCESSIBLE terminals for stranded conductors		N/A
	No RISK of accidental contact because:		N/A
	Located or shielded		N/A
	Self-evident or marked whether or not connected to ACCESSIBLE conductive parts		N/A
	ACCESSIBLE TERMINALS will not work loose		N/A
6.6.101	Measuring circuit terminals	As above	N/A
6.6.102	Specialised measuring circuit terminals	As above	N/A
6.7	Insulation requirements		—
6.7.1	The nature of insulation		—
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	Basic insulation + protective earth used	P
6.7.1.2	CLEARANCES		—
	Required CLEARANCES reflecting factors of 6.7.1.1	Complies	P
	Equipment rated for operating altitude greater than 2000 m correction factor of Table 3 of 61010-1 applied	<2000m	P
6.7.1.3	CREEPAGE DISTANCES		—
	Required CLEARANCES reflecting factors of 6.7.1.1	Complies	P
	CTI material group reflected by requirements	Group IIIb tables applied	P
	CTI test performed	Not required	N/A
6.7.1.4	Solid insulation		—
	Required CLEARANCES reflecting factors of 6.7.1.1	Not used	N/A
6.7.1.5	Requirements for insulation according to type of circuit		—
	a) 6.7.2 MAINS circuits of OVERVOLTAGE CATEGORY II up to nominal supply voltage of 300 V	Basic insulation satisfactory	P
	b) 6.7.3 Secondary circuits separated from circuits defined in a) by transformer	None present	N/A
	c) K.1 MAINS circuits of OVERVOLTAGE CATEGORY III and IV or OVERVOLTAGE CATEGORY II over 300 V	None present	N/A

	d) K.2 Secondary circuits separated from circuits defined in a) by transformer	None present	N/A
	e) K.3 Circuits having one or more of:	Not required	N/A
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A
	2) maximum TRANSIENT OVERVOLTAGE above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		N/A
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		N/A
	5) WORKING VOLTAGE with a frequency above 30 kHz		N/A
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300 V	Basic insulation satisfactory	P
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES		P
	Values for MAINS CIRCUITS of table 4 are met	Complies	P
	Coatings to achieve reduction to POLLUTION DEGREE I comply with requirements of Annex H		N/A
6.7.2.2	Solid insulation		N/A
6.7.2.2.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	Equipment passed voltage tests of 6.8.3 with values of Table 5		N/A
	Complies as applicable:		N/A
	a) ENCLOSURE or PROTECTIVE BARRIER Clause 8		N/A
	b) moulded and potted parts requirements of 6.7.2.2.2		N/A
	c) inner layers of printed wiring boards requirements of 6.7.2.2.3		N/A
	d) thin-film insulation requirements of 6.7.2.2.4		N/A
6.7.2.2.2	Moulded and potted parts		N/A
	Conductors between same two layers are separated by at least 0,4 mm after moulding is completed		N/A
6.7.2.2.3	Inner insulation layers of printed wiring boards		N/A
	Separated by at least 0,4 mm between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least 0,4 mm		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 5 for BASIC INSULATION		N/A
	c) insulation is assembled of minimum two separate layers, where the combination is rated for test voltage of Table 5 for REINFORCED INSULATION		N/A
6.7.2.2.4	Thin-film insulation		N/A

	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCES		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness 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		N/A
6.7.3	Insulation for secondary circuits derived from MAINS of OVERVOLTAGE CATEGORY II up to 300 V	Basic insulation satisfactory	P
6.7.3.1	Secondary circuits where separation from MAINS CIRCUITS is achieved by a transformer providing:		N/A
	- REINFORCED INSULATION		N/A
	- DOUBLE INSULATION		N/A
	- screen connected to the PROTECTIVE CONDUCTOR TERMINAL		N/A
6.7.3.2	CLEARANCES		P
	a) meet the values of Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or twice the values of Table 6 for REINFORCED INSULATION - or	Complies	P
	b) pass the voltage tests of 6.8 with values of Table 6; with following adjustments:		N/A
	1) values for REINFORCED INSULATION are 1,6 times the values for BASIC INSULATION		N/A
	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
	3) minimum CLEARANCE is 0,2 mm for POLLUTION DEGREE 2 and 0,8 mm for POLLUTION DEGREE 3		N/A
6.7.3.3	CREEPAGE DISTANCES		P
	Based on WORKING VOLTAGE meets the values of Table 7 for BASIC and SUPPLEMENTARY INSULATION	Complies	P
	Values for REINFORCED INSULATION are twice the values of BASIC INSULATION		N/A
	Coatings to achieve reduction to POLLUTION DEGREE I comply with requirements of Annex H		N/A
6.7.3.4	Solid insulation	Not used	N/A
6.7.3.4.1	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of 1.4		N/A
	a) Equipment passed voltage test of 6.8.3.1 for 5 s with VALUES of Table 6 for BASIC and SUPPLEMENTARY INSULATION 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		N/A
	value for REINFORCED INSULATION are twice the WORKING VOLTAGE		N/A
	Complies as applicable:		N/A
	1) ENCLOSURE or protective barrier 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	Not used	N/A
	Conductors between same two layers are separated by applicable distances of Table 8		N/A
6.7.3.4.3	Inner insulation layers of printed wiring boards	Not used	N/A
	Separated by at least by applicable distances of Table 8 between same two layers		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of minimum two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min two separate layers, where the combination is rated for 1,6 times the test voltage of Table 6		N/A
6.7.3.4.4	Thin-film insulation	Not used	N/A
	Conductors between same two layers are separated by applicable CLEARANCES and CREEPAGE DISTANCES		N/A
	REINFORCED INSULATION have adequate electric strength; one of following methods used:		N/A
	a) thickness at least applicable distance of Table 8		N/A
	b) insulation is assembled of min two separate layers, each RATED for test voltage of Table 6 for BASIC INSULATION		N/A
	c) insulation is assembled of min three separate layers, where the combination of two layers passed voltage tests with 1,6 time values of Table 6:		N/A
	a.c. test of 6.8.3.1; or		N/A
	d.c. test of 6.8.3.2 for circuits stressed only by d.c. voltages		N/A
6.8	Procedure for dielectric strength tests	No breakdown occurred. Carried out between Live parts and accessible conductive parts	P

6.9	Constructional requirements for protection against electric shock	Basic insulation + protective earth used	P
6.9.1	If a failure could cause a HAZARD:		—
	a) Security of wiring connections	Complies	P
	b) Screws securing removable covers	Complies	P
	c) Accidental loosening	Complies	P
	d) CREEPAGE and CLEARANCES not reduced below the values of basic insulation by loosening	Complies	P
6.9.2	Material not to be used for safety relevant insulation:		—
	Easily damaged materials not used		P
	Non-impregnated hydroscopic materials not used		P
6.9.3	Colour coding		—
	Green-and-yellow insulation shall not be used except:		—
	a) protective earth conductors;	Complies	P
	b) protective bonding conductors;	Complies	P
	c) potential equilization conductors;		N/A
	d) functional earth conductors		N/A
6.9.101	Over-range indications for operators	None required	N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		—
6.10.1	MAINS supply cords	Complies	P
	RATED for maximum equipment current (see 5.1.3c)		P
	Cable complies with IEC 60227 or IEC 60245		P
	Heat-resistant if likely to contact hot parts	No hot parts	N/A
	Temperature RATING (cord and inlet) :		N/A
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS	Complies	P
	Detachable cords with IEC 60320 MAINS connectors:		—
	Conform to IEC 60799; or		N/A
	Have the current RATING of the MAINS connector		P
6.10.2	Fitting of non-detachable MAINS supply cords	A detachable cord used	N/A
6.10.2.1	Cord entry		N/A
	Inlet or bushing smoothly rounded; or		N/A
	Insulated cord guard protruding >5D		N/A
6.10.2.2	Cord anchorage		N/A
	Protective earth conductor is the last to take the strain		N/A
	a) Cord is not clamped by direct pressure from a screw		N/A
	b) Knots are not used		N/A
	c) Cannot push the cord into the equipment to cause a HAZARD		N/A

	d) No failure of cord insulation in anchorage with metal parts		N/A
	e) Not to be loosened without a tool		N/A
	f) Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull and or torque test		N/A
6.10.3	Plugs and connectors		—
	MAINS supply plugs, connectors etc., conform with relevant specifications	Complies	P
	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		N/A
	Plugs of supply cords do not fit MAINS sockets above rated SUPPLY voltage	Complies	P
	MAINS type plugs used only for connection to MAINS supply		P
	Plug pins which receive a charge from an internal capacitor	None present	N/A
	Accessory MAINS socket outlets:	None present	N/A
	a) Marking if accepts a standard MAINS 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		—
6.11.1	Disconnects all current carrying conductors	Plug complies	P
6.11.2	Exceptions	None required	N/A
6.11.3	Requirements according to type of equipment		N/A
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment:	Plug connected	N/A
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation requires:		N/A
	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		—
	Equipment is provided with one of the following:		—
	a) Switch or circuit-breaker		N/A
	b) Appliance coupler (disconnectable without tool)	Present	P
	c) Separable plug (without locking device)	Present	P
6.11.4	Disconnecting devices		—
	Electrically close to the SUPPLY	Plug complies	P
6.11.4.1	Switches and circuit-breakers		—

	When used as disconnection device:	Present, but not the sole means to disconnect	N/A
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function :		N/A
	Not incorporated in MAINS cord		N/A
	Does not interrupt PROTECTIVE EARTH CONDUCTOR		N/A
6.11.4.2	Appliance couplers and plugs		—
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.3.2):		P
	Readily identifiable and easily reached by the operator	Complies	P
	Single-phase portable equipment cord length not more than 3 m	Complies	P
	PROTECTIVE EARTH CONDUCTOR connected first and disconnected last	Complies	P
7	PROTECTION AGAINST MECHANICAL HAZARDS		—
7.1	Equipment does not cause a mechanical HAZARD in NORMAL nor in SINGLE FAULT CONDITION	Complies	P
	Conformity is checked by 7.2 to 7.7		P
7.2	Sharp edges		—
	Easily touched parts are smooth and rounded	Complies	P
	Do not cause injury during NORMAL USE and		P
	Do not cause injury during SINGLE FAULT CONDITION		P
7.3	Moving parts		—
7.3.1	HAZARDS from moving parts limited to a tolerable level with the conditions specified in 7.3.2 and 7.3.5	Only moving part is the dc fan and is adequately guarded	P
	RISK assessment in accordance with 7.3.3 carried out		N/A
7.3.2	Exceptions		—
	Access to HAZARDOUS moving parts permitted under following circumstances:		N/A
	a) obviously intended to operate on parts or materials outside 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:		N/A
	1) Access requires TOOL		N/A
	2) Statement about training in the instructions		N/A
	3) Warning markings on covers prohibiting access by untrained operators		N/A
	or symbol 14 with full details in documentation		N/A
7.3.3	Risk assessment for mechanical HAZARDS to body parts		—
	Risk is reduced to a tolerable level by protective measures as specified in Table 12	Only moving part is the dc fan and is adequately guarded	P

	Minimum protective measures:	As above	N/A
	A. Low level measures		N/A
	B. Moderate measures		N/A
	C. Stringent measures		N/A
7.3.4	Limitation of force and pressure		—
	Following levels are met in normal and single fault condition:	Only moving part is the dc fan and is adequately guarded	P
	Continuous contact pressure below 50 N / cm ² with force below 150 N		N/A
	Temporary force below 250 N for an area at least of 3 cm ² for a maximum duration of 0,75 s		N/A
7.3.5	Gap limitations between moving parts		—
7.3.5.1	Access normally allowed		—
	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	As above	N/A
7.3.5.2	Access normally prevented		—
	Maximum gap as specified in Table 14 assured in NORMAL and in SINGLE FAULT CONDITION	As above	N/A
7.4	Stability		P
	Equipment not secured to building structure is physical stable	Complies	P
	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:		N/A
	a) 10° tilt test for other than handheld equipment	Does not topple	P
	b) multi-directional force test for equipment exceeds height of 1 m and mass of 25 kg		N/A
	c) downward force test for floor-standing equipment		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		—
7.5.1	Equipment more than 18 kg :	<18 Kg	N/A
	Has means for lifting or carrying; or		N/A
	Directions in documentation	Not required	N/A
7.5.2	Handles or grips		—
	Handles or grips withstand four times weight	Complies	P

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		—
	Mounting brackets withstand four times weight	Not wall mounted	N/A
7.7	Expelled parts		—
	Equipment contains or limits the energy	No parts requiring protection	N/A
	Protection not removable without the aid of a tool		N/A
8	RESISTANCE TO MECHANICAL STRESSES		—
8.1	Equipment does not cause a HAZARD when subjected to mechanical stresses in NORMAL USE		—
	Normal protection level is 5 J	Withstands 5J	P
	Levels below 5 J but not less than 1 J are acceptable if all of following criteria are met:	Not required	N/A
	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	Metallic enclosure	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	Complies	P
	2) impact test of 8.2.2 with 5 J except for HAND-HELD EQUIPMENT	Complies	P
	if impact energy not selected to 5 J alternate method of IEC 62262 used		N/A
	3) drop test of 8.3.1 or 8.3.2 except for FIXED and EQUIPMENT with mass over 100 kg	100mm test applied	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	Complies	P
	- insulation pass the voltage tests of 6.8		—
	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		P
	vi) NO MOVING PARTS EXPOSED, EXCEPT PERMITTED BY 7.3		N/A
	vii) NO DAMAGE WHICH COULD CAUSE SPREAD OF FIRE		P
8.2	ENCLOSURE RIGIDITY TEST		—
8.2.1	STATIC TEST		—
	- 30 N WITH 12 MM ROD TO EACH PART OF ENCLOSURE	Complies	P
	- IN CASE OF DOUBT TEST CONDUCTED AT MAXIMUM RATED AMBIENT TEMPERATURE		N/A
8.2.2	IMPACT TEST		—
	IMPACT APPLIED TO ANY PART OF ENCLOSURE CAUSING A HAZARD IF DAMAGED	5J withstood	P
	IMPACT ENERGY LEVEL AND CORRESPONDING IK CODE :		N/A
	NON-METALLIC ENCLOSURES COOLED TO MINIMUM RATED AMBIENT TEMPERATURE IF BELOW 2 °C		N/A
8.3	DROP TEST		—
8.3.1	OTHER THAN HAND-HELD AND DIRECT-PLUG-IN EQUIPMENT		P
	TESTS CONDUCTED WITH A DROP HEIGHT OR ANGLE OF :	100mm test applied	P
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		N/A
9	PROTECTION AGAINST THE SPREAD OF FIRE		—
9.1	NO SPREAD OF FIRE IN NORMAL AND SINGLE FAULT CONDITION		—
	MAINS SUPPLIED EQUIPMENT MEETS REQUIREMENTS OF 9.6 ADDITIONALLY	Basic insulation + earth fault protection	P
	CONFORMITY IS CHECKED BY MINIMUM ONE OR A COMBINATION OF THE FOLLOWING (SEE FIGURE 11):		—
	a) FAULT TEST OF 4.4; OR	As above	P
	b) APPLICATION OF 9.2 (ELIMINATING OR REDUCING THE SOURCES OF IGNITION); OR		N/A
	c) APPLICATION OF 9.2 (CONTAINMENT OF FIRE WITHIN THE EQUIPMENT)	Metallic enclosure	P
9.2	ELIMINATING OR REDUCING THE SOURCES OF IGNITION WITHIN THE EQUIPMENT		—
	a) 1) LIMITED-ENERGY CIRCUIT (SEE 9.4); OR	Not required	N/A
	2) BASIC INSULATION PROVIDED FOR PARTS OF DIFFERENT POTENTIAL; OR		N/A
	BRIDGING THE INSULATION DOES NOT CAUSE IGNITION		N/A
	b) SURFACE TEMPERATURE OF LIQUIDS AND PARTS (SEE 9.5)		N/A

	c) NO IGNITION IN CIRCUITS DESIGNED TO PRODUCE HEAT		N/A
9.3	CONTAINMENT OF THE FIRE WITHIN THE EQUIPMENT, SHOULD IT OCCUR		—
	a) ENERGIZING OF THE EQUIPMENT IS CONTROLLED BY AN OPERATOR HELD SWITCH	Method not used	N/A
	b) ENCLOSURE IS CONFORM WITH CONSTRUCTIONAL REQUIREMENTS OF 9.3.1; AND	Fire retardant insulating materials and PCB used	P
	REQUIREMENTS OF 9.5 ARE MET		N/A
9.3.1	CONSTRUCTIONAL REQUIREMENTS		—
	a) CONNECTORS AND INSULATING MATERIAL HAVE FLAMMABILITY CLASSIFICATION V-2 OR BETTER	Complies	P
	b) INSULATED WIRES AND CABLES ARE FLAME RETARDANT (VW-1 OR EQUIVALENT)	Complies	P
	c) ENCLOSURE MEETS FOLLOWING REQUIREMENTS:		—
	1) BOTTOM AND SIDES IN ARC OF 5 ° (SEE FIGURE 13) TO NON-LIMITED CIRCUITS (9.4) MEETS:		—
	i) NO OPENINGS; OR	No openings	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	Metal used	P
	NON-METALLIC MATERIALS HAVE FLAMMABILITY CLASSIFICATION V-1 OR BETTER		N/A
	3) ENCLOSURE AND ANY BAFFLE OR FLAME BARRIER HAVE ADEQUATE RIGIDITY		N/A
9.4	LIMITED-ENERGY CIRCUIT		—
	a) POTENTIAL NOT MORE THAN 30 R.M.S. AND 42.4 V PEAK, OR 60 V DC	Method not used	N/A
	b) CURRENT LIMITED BY ONE OF FOLLOWING MEANS:		N/A
	1) INHERENTLY OR BY IMPEDANCE (SEE TABLE 17); OR		N/A
	2) OVER CURRENT 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		—
	FLAMMABLE LIQUIDS CONTAINED IN OR SPECIFIED FOR USE WITH EQUIPMENT DO NOT CAUSE SPREAD OF FIRE	No flammable liquids present	N/A
	RISK IS REDUCED TO A TOLERABLE LEVEL :		N/A
	a) THE TEMPERATURE OF SURFACE OR PARTS IN CONTACT WITH FLAMMABLE LIQUIDS IS 25 °C BELOW FIRE POINT		N/A
	b) THE QUANTITY OF LIQUID IS LIMITED		N/A
	c) FLAMES ARE CONTAINED WITHIN THE EQUIPMENT		N/A
	DETAILED INSTRUCTIONS FOR RISK-REDUCTION PROVIDED		N/A
9.6	OVERCURRENT PROTECTION		—
9.6.1	MAINS SUPPLIED EQUIPMENT PROTECTED	Certified power supply with internal fuse present	P
	BASIC INSULATION BETWEEN MAINS PARTS OF OPPOSITE POLARITY PROVIDED		P
	DEVICES NOT IN THE PROTECTIVE CONDUCTOR		P
	FUSES OR SINGLE-POLE CIRCUIT-BREAKERS NOT FITTED IN NEUTRAL (MULTI-PHASE)		P
9.6.2	PERMANENTLY CONNECTED EQUIPMENT	Plug connected	N/A
	OVERCURRENT DEVICE:		N/A
	FITTED WITHIN THE EQUIPMENT; OR		N/A
	SPECIFIED IN MANUFACTURER'S INSTRUCTIONS		N/A
9.6.3	OTHER EQUIPMENT		P
	PROTECTION WITHIN THE EQUIPMENT	Certified power supply with internal fuse present	P
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		—
10.1	SURFACE TEMPERATURE LIMITS FOR PROTECTION AGAINST BURNS		—
	EASILY TOUCHED SURFACES WITHIN THE LIMITS IN NORMAL AND IN SINGLE FAULT CONDITION:	Complies	P
	- 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	Not rated above 40°C	N/A
	HEATED SURFACES NECESSARY FOR FUNCTIONAL REASONS EXCEEDING SPECIFIED VALUES:		N/A
	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	No windings present	N/A
	LIMITS NOT EXCEEDED IN:		N/A
	NORMAL CONDITION		N/A

	SINGLE FAULT CONDITION		N/A
10.3	OTHER TEMPERATURE MEASUREMENTS		P
	FOLLOWING MEASUREMENTS CONDUCTED IF APPLICABLE:		N/A
	a) VALUE OF 60 °C OF FIELD-WIRING TERMINAL BOX NOT EXCEEDED	None present	N/A
	b) SURFACE OF FLAMMABLE LIQUIDS AND PARTS IN CONTACT WITH THIS LIQUIDS	None present	N/A
	c) SURFACE OF NON-METALLIC ENCLOSURES	None present	P
	d) PARTS MADE OF INSULATING MATERIAL SUPPORTING PARTS CONNECTED TO MAINS SUPPLY	IEC320 mains input connector complies	P
	e) TERMINALS CARRYING A CURRENT MORE THAN 0,5 A	None present	N/A
10.4	CONDUCT OF TEMPERATURE TEST		—
10.4.1	TESTS CONDUCTED UNDER REFERENCE TEST CONDITIONS AND MANUFACTURER'S INSTRUCTIONS	Considered	P
10.4.2	TEMPERATURE MEASUREMENT OF HEATING EQUIPMENT		N/A
	TESTS CONDUCTED IN TEST CORNER		N/A
10.4.3	EQUIPMENT INTENDED FOR INSTALLATION IN A CABINET OR WALL		N/A
	EQUIPMENT BUILT IN AS SPECIFIED IN INSTALLATION INSTRUCTIONS		N/A
10.5	RESISTANCE TO HEAT		—
10.5.1	INTEGRITY OF CLEARANCE AND CREEPAGE DISTANCES	All measured values on surfaces and components were satisfactory	P
10.5.2	NON-METALLIC ENCLOSURES		—
	WITHIN 10 MIN AFTER TREATMENT:	None present	N/A
	EQUIPMENT SUBJECTED TO SUITABLE STRESSES OF 8.2 AND 8.3 COMPLYING WITH CRITERIA OF 8.1		N/A
10.5.3	INSULATING MATERIAL		P
	a) PARTS SUPPORTING PARTS CONNECTED TO MAINS SUPPLY	IEC320 connector complies	P
	b) TERMINALS CARRYING A CURRENT MORE THAN 0.5 A	As above	P
	EXAMINATION OF MATERIAL DATA; OR IN CASE OF DOUBT:		N/A
	1) BALL PRESSURE TEST; OR		N/A
	2) VICAT SOFTENING TEST OF ISO 306		N/A
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		P
11.1	PROTECTION TO OPERATORS AND SURROUNDING AREA PROVIDED BY EQUIPMENT		N/A
	ALL FLUIDS SPECIFIED BY MANUFACTURER CONSIDERED		N/A
11.2	CLEANING	Wiping with water only	P
11.3	SPILLAGE	Spillage of small quantities is not likely to cause a hazard	P

11.4	OVERFLOW	Containers are hand filled, and there an overfill detector present. 15° tilt test applied	P
11.5	BATTERY ELECTROLYTE		—
	BATTERY ELECTROLYTE LEAKAGE PRESENTS NO HAZARD	No battery present	N/A
11.6	SPECIALLY PROTECTED EQUIPMENT	Not IP rated	N/A
11.7	FLUID PRESSURE AND LEAKAGE		—
11.7.1	MAXIMUM PRESSURE :	2 bar	P
	MAXIMUM PRESSURE OF ANY PART DOES NOT EXCEED PRATED	Complies	P
11.7.2	LEAKAGE AND RUPTURE AT HIGH PRESSURE	Low pressure only	N/A
	FLUID CONTAINING PARTS SUBJECTED TO HYDRAULIC TEST IF:		N/A
	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 60335-24		N/A
11.7.3	LEAKAGE FROM LOW-PRESSURE PARTS		—
11.7.4	OVERPRESSURE SAFETY DEVICE	Electrical shut off plus a mechanical gas pressure release as backup	P
	DOES NOT OPERATE IN NORMAL USE	Complies	P
	a) CONNECTED AS CLOSE AS POSSIBLE TO PARTS INTENDED TO BE PROTECTED		P
	b) EASY ACCESS FOR INSPECTION, MAINTENANCE AND REPAIR		P
	c) ADJUSTMENT ONLY WITH TOOL		P
	d) NO DISCHARGE TOWARDS PERSON		P
	e) NO HAZARD FROM DEPOSIT OF DISCHARGED MATERIAL		P
	f) ADEQUATE DISCHARGE CAPACITY		P
	NO SHUT-OFF VALVE BETWEEN OVERPRESSURE SAFETY DEVICE AND PROTECTED PARTS		P
12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE	No protection required	N/A
12.1	EQUIPMENT PROVIDES PROTECTION		N/A
12.2	EQUIPMENT PRODUCING IONIZING RADIATION	No sources present	N/A
12.2.1	IONIZING RADIATION	No sources present	N/A
12.2.1.1	EQUIPMENT MEETS THE FOLLOWING REQUIREMENTS:		N/A
	a) IF INTENDED TO EMIT RADIATION MEETS REQUIREMENTS OF 12.2.1.2; OR		N/A
	TESTED, CLASSIFIED AND MARKED IN ACCORDANCE TO IEC 60405		N/A
	b) IF ONLY EMITS STRAY RADIATION MEETS REQUIREMENTS OF 12.2.1.3		N/A

12.2.1.2	EQUIPMENT INTENDED TO EMIT RADIATION	No sources present	N/A
	EFFECTIVE DOSE RATE OF RADIATION MEASURED :		N/A
	IF DOSE RATE EXCEEDS 5 μ Sv/h MARKED WITH THE FOLLOWING:		N/A
	a) SYMBOL 17 (ISO 361)		N/A
	b) ABBREVIATIONS OF THE RADIONUCLIDES..... :		N/A
	c) WITH MAXIMUM DOSE AT 1 m; OR :		N/A
	WITH DOSE RATE VALUE BETWEEN 1 μ Sv/h AND 5 μ Sv/h IN M :		N/A
12.2.1.3	EQUIPMENT NOT INTENDED TO EMIT RADIATION		N/A
	LIMIT FOR UNINTENDED STRAY RADIATION OF 1 μ Sv/h AT ANY EASILY REACHED POINT KEPT :	No sources present	N/A
12.2.2	ACCELERATED ELECTRONS		N/A
	COMPARTMENTS OPENED ONLY BY THE USE OF A TOOL	No sources present	N/A
12.3	ULTRAVIOLET (UV) RADIATION		N/A
	NO UNINTENTIONAL HAZARDOUS ESCAPE OF UV RADIATION:	No sources present	N/A
	- CHECKED BY INSPECTION; AND		N/A
	- EVALUATION OF RISK ASSESSMENT DOCUMENTATION		N/A
12.4	MICRO-WAVE RADIATION		N/A
	POWER DENSITY DOES NOT EXCEED 10 W/m ² :	No sources present	N/A
12.5	SONIC AND ULTRASONIC PRESSURE		N/A
12.5.1	SOUND LEVEL	No sources present	N/A
	NO HAZARDOUS SOUND EMISSION		N/A
	MAXIMUM SOUND PRESSURE LEVEL MEASURED AND CALCULATED FOR MAXIMUM SOUND POWER LEVEL AS SPECIFIED IN ISO 3746 OR ISO 9614-1		N/A
	INSTRUCTION DESCRIBES MEASURES FOR PROTECTION		N/A
12.5.2	ULTRASONIC PRESSURE		N/A
	EQUIPMENT NOT INTENDED TO EMIT ULTRASOUND DOES NOT EXCEED LIMIT OF 110 dB BETWEEN 20 kHz AND 100 kHz	No sources present	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:		N/A
	MARKED WITH SYMBOL 14 OF TABLE 1		N/A
	AND FOLLOWING INFORMATION IN THE DOCUMENTATION:		N/A
	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	No sources present	N/A

13	PROTECTION AGAINST LIBERATED GASES, EXPLOSION AND IMPLOSION		P
13.1	POISONOUS AND INJURIOUS GASES	Maximum hydrogen concentration <4%	P
	NO POISONOUS OR INJURIOUS GASES OR SUBSTANCES LIBERATED IN NORMAL CONDITION		P
	ATTACHED DATA/TEST REPORTS DEMONSTRATE CONFORMITY	Declared by manufacturer. Cannot be tested at IES	—
13.2	EXPLOSION AND IMPLOSION		N/A
13.2.1	COMPONENTS	No parts at risk	N/A
	COMPONENTS LIABLE TO EXPLODE:	Maximum hydrogen concentration <4%	N/A
	PRESSURE RELEASE DEVICE PROVIDED; OR		N/A
	APPARATUS INCORPORATES OPERATOR PROTECTION (SEE ALSO 7.7)		N/A
	PRESSURE RELEASE DEVICE:		N/A
	DISCHARGE WITHOUT DANGER		N/A
	CANNOT BE OBSTRUCTED		N/A
13.2.2	BATTERIES AND BATTERY CHARGING		N/A
	IF EXPLOSION OR FIRE HAZARD COULD OCCUR:		N/A
	PROTECTION INCORPORATED IN THE EQUIPMENT; OR	No battery present	N/A
	INSTRUCTIONS SPECIFY BATTERIES WITH BUILT-IN PROTECTION		N/A
	IN CASE OF WRONG TYPE OF BATTERY USED:		N/A
	NO HAZARD; OR		N/A
	WARNING BY MARKING AND WITHIN INSTRUCTIONS		N/A
	EQUIPMENT WITH MEANS TO CHARGE RECHARGEABLE BATTERIES:		N/A
	WARNING AGAINST THE CHARGING OF NON-RECHARGEABLE BATTERIES; AND TYPE OF RECHARGEABLE BATTERY INDICATED; OR 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 CRT present	N/A
	IF MAXIMUM FACE DIMENSIONS > 160 MM :		N/A
	INTRINSICALLY PROTECTED AND CORRECTLY MOUNTED; OR		N/A
	ENCLOSURE PROVIDES PROTECTION:		N/A
	IF NON-INTRINSICALLY PROTECTED:		N/A
	SCREEN NOT REMOVABLE WITHOUT TOOL		N/A
	IF GLASS SCREEN, NOT IN CONTACT WITH SURFACE OF TUBE		N/A

14	COMPONENTS AND SUBASSEMBLIES		P
14.1	WHERE SAFETY IS INVOLVED, COMPONENTS AND SUBASSEMBLIES MEET RELEVANT REQUIREMENTS	Complies	P
14.2	MOTORS		P
14.2.1	MOTOR TEMPERATURES		P
	DOES NOT PRESENT A HAZARD WHEN STOPPED OR PREVENTED FROM STARTING; OR	Small dc fan only. Stall test carried out	P
	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 OVER-SPEEDING CAUSES A HAZARD		N/A
14.3	OVER TEMPERATURE PROTECTION DEVICES		—
	DEVICES OPERATING IN A SINGLE FAULT CONDITION	None present	N/A
	a) RELIABLE FUNCTION IS ENSURED		N/A
	b) RATED TO INTERRUPT MAXIMUM CURRENT AND VOLTAGE		N/A
	c) DOES NOT OPERATE IN NORMAL USE		N/A
	IF SELF-RESETTING DEVICE USED TO PREVENT A HAZARD, PROTECTED PART REQUIRES INTERVENTION BEFORE RESTARTING		N/A
14.4	FUSE HOLDERS		—
	NO ACCESS TO HAZARDOUS LIVE PARTS	None present	N/A
14.5	MAINS VOLTAGE SELECTING DEVICES		—
	ACCIDENTAL CHANGE NOT POSSIBLE	None present	N/A
14.6	MAINS TRANSFORMERS TESTED OUTSIDE EQUIPMENT		N/A
14.7	PRINTED CIRCUIT BOARDS		—
	DATA SHOWS CONFORMITY WITH V-1 OF IEC 60695-11-10 OR BETTER; OR	Present	P
	TEST SHOWS CONFORMITY WITH V-1 OF IEC 60695-11-10 OR BETTER		N/A
	NOT APPLICABLE FOR PRINTED WIRING BOARDS WITH LIMITED-ENERGY CIRCUITS (9.4)		N/A
14.8	CIRCUITS OR COMPONENTS USED AS TRANSIENT OVERVOLTAGE LIMITING DEVICES		—
	TEST CONDUCTED BETWEEN EACH PAIR OF MAINS SUPPLY TERMINALS	None present	N/A
	NO HAZARD RESULTING FROM RUPTURE OR OVERHEATING		N/A
	- NO BRIDGING OF SAFETY RELEVANT INSULATION		N/A
	- NO HEAT TO OTHER PARTS ABOVE THE SELF-IGNITION POINTS		N/A
14.101	CIRCUITS OR COMPONENTS USED AS TRANSIENT OVERVOLTAGE LIMITING DEVICES HAVE ADEQUATE STRENGTH	None present	N/A

15	PROTECTION BY INTERLOCKS		N/A
15.1	INTERLOCKS ARE DESIGNED TO REMOVE A HAZARD BEFORE OPERATOR EXPOSED	No interlocks required	N/A
15.2	PREVENTION OF REACTIVATION		N/A
15.3	RELIABILITY		N/A
	SINGLE FAULT UNLIKELY TO OCCUR; OR		N/A
	CANNOT CAUSE A HAZARD		N/A
16	HAZARDS RESULTING FROM APPLICATION		P
16.1	REASONABLY FORESEEABLE MISUSE		P
	NO HAZARDS ARISING FROM SETTINGS NOT INTENDED AND NOT DESCRIBED IN THE INSTRUCTIONS	All hazards identified, and a training course is provided before the equipment is sold	P
	OTHER CASES OF REASONABLY FORESEEABLE MISUSE ADDRESSED BY RISK ASSESSMENT	None identified	P
16.2	ERGONOMIC ASPECTS		P
	FACTORS GIVING RISE TO A HAZARD THE RISK ASSESSMENT IS REFLECTING THOSE ASPECTS:		P
	a) LIMITATION OF BODY DIMENSIONS	None identified	P
	b) DISPLAYS AND INDICATORS	None identified	P
	c) ACCESSIBILITY AND CONVENTIONS OF CONTROLS	None identified	P
	d) ARRANGEMENT OF TERMINALS	None identified	P
17	RISK ASSESSMENT		—
	RISK ASSESSMENT CONDUCTED, IF HAZARD MIGHT ARISE AND NOT COVERED BY CLAUSES 6 TO 16	Hazards present are adequately address by clauses 6 to16	N/A
	TOLERABLE RISK ACHIEVED BY ITERATIVE DOCUMENTED PROCESS COVERING THE FOLLOWING:		N/A
	a) RISK ANALYSIS		N/A
	IDENTIFIES HAZARDS AND ESTIMATES RISK		N/A
	b) RISK EVALUATION		N/A
	PLAN TO JUDGE ACCEPTABILITY OF RESULTING RISK LEVEL BASED ON THE ESTIMATED SEVERITY AND LIKELIHOOD OF A RISK		N/A
	c) RISK REDUCTION		N/A
	INITIAL RISK REDUCED BY COUNTER MEASURES;		N/A
	REPEATED RISK EVALUATION WITHOUT NEW RISKS INTRODUCED		N/A
	RISKS REMAINING AFTER RISK ASSESSMENT ADDRESSED IN INSTRUCTIONS TO RESPONSIBLE BODY:		N/A
	INFORMATION CONTAINED HOW TO MITIGATE THESE RISKS		N/A

	FOLLOWING PRINCIPLES IN METHODS OF RISK REDUCTION APPLIED BY MANUFACTURER IN GIVEN ORDER:		N/A
	1) RISKS ELIMINATED OR REDUCED AS FAR AS POSSIBLE		N/A
	2) PROTECTIVE MEASURES TAKEN FOR RISKS THAT CANNOT BE ELIMINATED		N/A
	3) USER INFORMATION ABOUT RESIDUAL RISK DUE TO ANY DEFECT OF THE PROTECTIVE MEASURES		N/A
	INDICATION OF PARTICULAR TRAINING IS REQUIRED		N/A
	SPECIFICATION OF THE NEED FOR PERSONAL PROTECTIVE EQUIPMENT		N/A
	CONFORMITY CHECKED BY EVALUATION OF THE RISK ASSESSMENT DOCUMENTATION		N/A

PHOTOGRAPHS

Front view



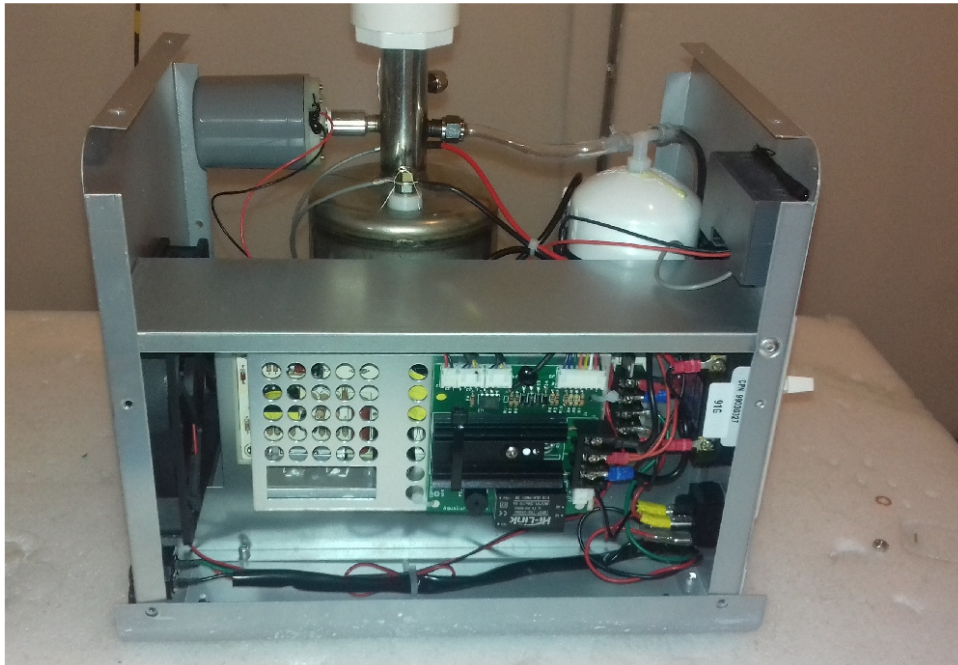
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Rear view



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Internal views



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Warning labels



Recommended PPE

