TECHNICAL REPORT

IEC 61010-3-051

First edition
1999-02

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

Part 3-051: Conformity verification report for IEC 61010-2-051, Particular requirements for laboratory equipment for mixing and stirring

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire –

Partie 3-051:
Rapport de vérification de la conformité de la CEI 61010-2-051, Prescriptions particulières pour appareils de laboratoire utilisés pour mixer et agiter

Reference number
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- **Catalogue of IEC publications**
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  (On-line catalogue)*
- **IEC Bulletin**
  Available both at the IEC web site* and as a printed periodical

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For graphical symbols, and letter symbols and signs approved by the IEC for general use, readers are referred to publications IEC 60 027: *Letter symbols to be used in electrical technology*, IEC 60 417: *Graphical symbols for use on equipment. Index, survey and compilation of the single sheets* and IEC 60 617: *Graphical symbols for diagrams.*

* See web site address on title page.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE –

Part 3-051: Conformity verification report for IEC 61010-2-051, Particular requirements for laboratory equipment for mixing and stirring

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 61010-3-051, which is a technical report, has been prepared by IEC technical committee 66: Safety of measuring, control, and laboratory equipment.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
66/183/CDV	66/208/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

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This report is a Technical Report and is of a purely informative nature and is therefore by itself not to be regarded as an international Standard. It is for use by testhouses and other users to assist them with determining and recording verification of conformity of the equipment under test with the requirements of:

IEC 61010-2-051:1995

and

IEC 61010-1:1990 + amendment 1:1992,

or

IEC 61010-1:1990 + amendment 1:1992 + amendment 2:1995

The protocol for completion of this report is contained in publication IEC 61010-3:1997.

Requirements which apply only to amendment 2 to IEC 61010-1 are indicated by "(AM 2)" in the first column. Requirements deleted by amendment 2 to IEC 61010-1 are indicated by "(AM 1 only)" in the second column.

The IEC sells read-only PDF files as a general rule. In the present instance, and quite exceptionally, to enable the user to fill in the forms, a revisable file is included in a pocket affixed to the back cover of this publication.

This publication can be downloaded from the Web as a PDF file. There is, however, at the end of the document, a revisable file containing the forms. Please use the zip/unzip function.

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Conformity Verification Report
IEC 61010-2-051:
Safety requirements for electrical equipment
for measurement, control, and laboratory use –
Part 2-051:1995, Particular requirements for laboratory equipment for mixing and stirring

Report reference No .....:	
Compiled by (+ signature).....:	
Approved by (+ signature) .....:	
Date of issue.....:	
Testing organization .....:	
Address.....:	
Testing location .....:	
Applicant.....:	
Address.....:	
Standard .....:	IEC 61010-1:1990 + amendment 1:1992 + amendment 2:1995 IEC 61010-2-051:1995
Copyright blank test report .....:	This report has been prepared by IEC TC 66, which retains responsibility for any changes or corrections required.
Test procedure .....:	
Procedure deviation .....:	
Non-standard test method .....:	
Type of item tested .....:	Laboratory
Trade mark.....:	
Model/type reference .....:	
Manufacturer .....:	
Rating .....:	
Copy of rating plate:	

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Description of equipment function .....:

INSTALLATION/OVERVOLTAGE CATEGORY .....:

POLLUTION DEGREE:

Environmental rating: Standard Other (specify):

Equipment mobility:	Portable Built in	Hand-held Benchmounted	Floorstanding Other (specify):	Fixed
Connection to mains supply:	Permanent	Detachable	Non detachable	None
Operating conditions:	Continuous	Short-time	Intermittent	

Overall size of the equipment (length × width × height):

Mass of the equipment (kg):

Marked degree of protection to IEC 60529: IP___ ___

Accessories and detachable parts included in the evaluation:

Options:

NOTE – "(see Form A.X)" refers to a Form appended to the report.

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Table 1 – Documents attached to this report

Document No.	Document description	Number of pages

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Table 2 – Test equipment list

Item	Type	Equipment No.	Calibration date		Comments
			Last[1)]	Due	

1) Or interval between calibrations.

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Table 3 – List of components relied on for safety

Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer and part number (note 1)	RATING (note 2)	Licence number, file number or other documentary evidence of acceptance

NOTE 1 – List all manufacturers concerned.

NOTE 2 – Electrical, mechanical, flammability, etc.

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Clause Subclause	Requirement	Result	Comments
5	**Marking and documentation**		
5.1.1	**General**		
	Required equipment markings are:		
	a) visible:		
	– from the exterior		
	or		
	– after removing a cover		
	or		
	– opening a door		
	or		
	– after removal from a rack or panel		
	b) not put on parts which can be removed by an OPERATOR		
	c) Letter symbols (IEC 60027) used		
	d) Graphic symbols (IEC 61010-1:table 1) used		
5.1.2	**Identification**		
	Equipment is identified by:		
	– manufacturer's name or registered trade mark		
	– model number, name or other means		
	– the degree of protection, if any, according to IEC 60529		
5.1.3	**Mains supply**		
	Equipment is marked as follows:		
	a) nature of supply:		
	– a.c. RATED mains frequency or range of frequencies		
	– d.c. with symbol 1		
	b) RATED supply voltage(s) or range		
	c) – maximum RATED power (W or VA) or input current		
(AM 2)	If more than one voltage range:		
	– separate values marked		
	or		
F	– values differ by less than 20 % (see Form A.3)		

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Clause Subclause	Requirement	Result	Comments
	d) OPERATOR – set for different RATED supply voltages:		
	– indicates the equipment set voltage		
	– PORTABLE EQUIPMENT indication is visible from the exterior		
	– changing the setting changes the indication		
	e) Accessory mains socket-outlets accepting standard mains plugs are marked:		
	– with the voltage if it is different from the mains supply voltage		
	– for use only with specific equipment		
	If not marked for specific equipment it is marked with:		
	– the maximum RATED current or power, and maximum permitted leakage current		
	or		
	– symbol 14 with full details in the documentation		
F	The measured value not more than 110 % (see Form A.3)		
5.1.4	**Fuses**		
	OPERATOR replaceable fuse marking (see also 5.4.5)		
5.1.5	**Measuring circuit TERMINALS**		
(AM 2)	RATED maximum working voltage or current marked		
	Unless clear indication that below limits:		
	– maximum RATED voltage to earth is marked		
	or		
	– for specific connection only, and means for identifying provided		
	– is adjacent to TERMINALS		
	or		
	– if insufficient space:		
	– on the RATING plate or scale plate		
	or		
	– if the TERMINAL is marked with symbol 14		

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Clause Subclause	Requirement	Result	Comments
(AM 2)	INSTALLATION CATEGORY marked		
(AM 2)	TERMINALS permanently connected and not ACCESSIBLE		
5.1.6	**TERMINALS and operating devices**		
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators		
(AM 2)	Mains supply TERMINALS identified		
(AM 2)	Power supply switch on or off position marked if used as disconnecting device		
	TERMINAL marking:		
	a) FUNCTIONAL EARTH TERMINALS		
	b) PROTECTIVE CONDUCTOR TERMINALS:		
	– symbol 6 is placed close to or on the TERMINAL or – part of appliance inlet		
	c) TERMINALS of measuring and control circuits		
	d) TERMINALS supplied from the interior		
	e) ACCESSIBLE FUNCTIONAL EARTH TERMINALS		
	f) Position on or off of power supply switch (**AM 1 only)**		
5.1.7	**Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION**		
	Protected throughout (symbol 11 used)		
	Only partially protected (symbol 11 not used)		
5.1.8	**Battery charging**		
	Equipment with means to charge rechargeable batteries is marked:		
	– to warn against the charging of non-rechargeable batteries		
	– to indicate the type of rechargeable battery used		

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Clause Subclause	Requirement	Result	Comments
5.2	**Warning markings**		
	– visible when ready for NORMAL USE		
	– if necessary marked with symbol 14		
	– are near or on applicable parts		
(AM 2)	– statement to isolate or disconnect		
	– advice how to avoid contact with ACCESSIBLE HAZARDOUS LIVE parts		
	– TERMINAL voltage exceeding 1 kV (symbol 12)		
	– easily touched high temperature parts (symbol 13)		
	– warning for more than 2 s **(AM 1 only)**		
5.3	**Durability of markings**		
F	The required markings remain clear and legible in NORMAL USE (see Form A.4)		
5.4	**Documentation**		
5.4.1	**General**		
	Equipment is accompanied by documentation which includes:		
	– technical specification		
	– instructions for use		
	– name and address of manufacturer or supplier		
(AM 2)	Definition of INSTALLATION CATEGORY		
	Warning statements and a clear explanation of warning symbols:		
	– provided in the documentation or – information is marked on the equipment		
5.4.2	**Equipment RATINGS**		
	Documentation includes**:**		
	– supply voltage or voltage range		
	– frequency or frequency range		

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Clause Subclause	Requirement	Result	Comments
	– power or current RATING		
	– a description of all input and output connections		
	– RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE		
	– statement of the range of environmental conditions		
5.4.3	**Equipment installation**		
	Documentation includes instructions for:		
	– assembly, location and mounting		
	– protective earthing		
	– connections to supply		
	– ventilation requirements		
	– special services		
(AM 2)	– maximum sound power level		
(AM 2)	– instructions about sound pressure		
	Additional for permanently connected equipment:		
	– supply wiring		
	– any external switch or circuit-breaker (including location)		
	– any external overcurrent protection		
5.4.4	**Equipment operation**		
	Instructions for use include**:**		
	– identification of operating controls		
(AM 2)	– positioning for disconnection		
	– interconnection		
	– specification of intermittent operation limits		
	– explanation of symbols used		
	– replacement of consumable materials		

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Clause Subclause	Requirement	Result	Comments
	– cleaning and decontamination (see 11.2)		
	– fixing of the stirring vessel		
	– warning against use in hazardous atmosphere, or with hazardous material		
	– information that protection of equipment is impaired when used with accessories not provided by the manufacturer or if used in a manner not specified by the mannufacturer		
5.4.5	**Equipment maintenance**		
	Instructions include:		
	– sufficient preventive maintenance and inspection information		
(AM 2)	– replacement of hoses, etc.		
	– specific battery type		
	– any manufacturer specified parts		
	– RATING and characteristics of fuses		
6	**Protection against electric shock**		
F	(see Form A.5)		
6.1	**General**		
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.12		
6.1.1	**Exceptions**		
F	Capacitance test (see Forms A.6 and A.7)		
6.2	**Determination of ACCESSIBLE parts**		
F	(see Form A.6)		
6.3	**Permissible limits for ACCESSIBLE parts**		
6.3.1	**Values in NORMAL CONDITION**		
F	(see Form A.7)		
6.3.2	**Values in SINGLE FAULT CONDITION**		
F	(see Form A.8)		
6.4	**Protection in NORMAL CONDITION** (see 6.8 and 8.1)		

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Clause Subclause	Requirement	Result	Comments
6.5	**Protection in SINGLE FAULT CONDITION** Additional protection is provided by: – one or more of 6.5.1 to 6.5.3 or – automatic disconnection of the supply		
6.5.1	**Protective earthing** ACCESSIBLE conductive parts**:** – bonded to the protective conductor terminal or – separated by screen or BARRIER from parts which are HAZARDOUS LIVE (For indirect bonding of measurement and test equipment see 6.5.1.4)		
6.5.1.1	**PROTECTIVE BONDING** **PROTECTIVE BONDING** consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		
6.5.1.2 F	Bonding impedance of plug-connected equipment (see Form A.9)		
6.5.1.3 F	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT (see Form A.9)		
6.5.1.4 F	Indirect bonding for measuring and test equipment (see Form A.9)		
6.5.2	**DOUBLE INSULATION and REINFORCED INSULATION** (see 6.7, 6.8 and 6.9.2)		
6.5.3 F	**PROTECTIVE IMPEDANCE** (see Form A.10) Components wires and connections are RATED as required		
6.5.4 or (AM 2)	**Built-in equipment (AM 1 only)** **Built-in panel meters** If after building-in the requirements of 6.5.1 to 6.5.3 are not met: – equipment (**AM 1 only)**: or **(AM 2)** – panel meter:		

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Clause Subclause	Requirement	Result	Comments
	– has no ACCESSIBLE conductive parts		
	– has BASIC INSULATION of ACCESSIBLE surfaces		
	– has DOUBLE/REINFORCED INSULATION of ACCESSIBLE surface of parts intended to be grasped		
6.6	**External circuits**		
6.6.1	**Separation of internal circuits**		
F	(see list in Forms A.1 and A.5)		
	If the other internal circuit exceeds the values of 6.3.2 in NORMAL CONDITION and only BASIC INSULATION:		
	a) short circuit could not make external circuit HAZARDOUS LIVE		
	b) manufacturer's instructions include:		
	– a statement that the TERMINAL for external circuits is for use only with equipment which has no live parts which are ACCESSIBLE		
	– the RATING of the insulation required for external circuits		
	– the connection to be used at the remote end of external circuits		
	– the type of equipment which may be connected to the TERMINAL		
6.6.2	**TERMINALS for external circuits**		
	ACCESSIBLE TERMINALS are not HAZARDOUS LIVE except as permitted by 6.1.1		
	The following TERMINALS are not HAZARDOUS LIVE:		
	– PROTECTIVE CONDUCTOR TERMINALS		
	– FUNCTIONAL EARTH TERMINALS		
	– headphone TERMINALS		
F	TERMINALS which receive a charge from an internal capacitor (see Form A.7)		

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Clause Subclause	Requirement	Result	Comments
	High-voltage TERMINALS energized from the interior are:		
	– not accessible		
	or		
(AM 2)	– marked		
6.6.3	**Circuits with TERMINALS which are HAZARDOUS LIVE**		
	These circuits:		
	– are not connected to ACCESSIBLE conductive parts		
	or		
	– are connected to ACCESSIBLE conductive parts, but are not mains circuits and have one TERMINAL contact at earth potential		
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		
6.7	**CLEARANCES and CREEPAGE DISTANCES**		
F	(See annex D of IEC 61010-1 and Form A.11)		
6.8	**Dielectric strength tests**		
F	(see annex E of IEC 61010-1 and Form A.12)		
	Protection against the spread of fire (see 9.1)		
6.9	**Constructional requirements for protection against electric shock**		
6.9.1	**General**		
	In circuits exceeding the values of 6.3.2:		
	– security of wiring connections		
	– screws securing removable covers		
	– accidental loosening		
6.9.2	**ENCLOSURES of equipment with DOUBLE INSULATION or REINFORCED INSULATION**		
	ENCLOSURE surrounds all metal parts except for small metal parts which are separated		
	ENCLOSURES or parts made of insulating material		

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Clause Subclause	Requirement	Result	Comments
	Protection for metal ENCLOSURES or parts by:		
	– PROTECTIVE IMPEDANCE		
	or		
	– an insulating coating or BARRIER on the inside		
	or		
	– CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires		
6.9.3	**Equipment using PROTECTIVE BONDING**		
	a) OPERATOR removable parts		
	b) Movable conductive connections		
	c) Exterior metal braids of cables		
	d) Mains passed through the equipment		
	e) Protective earthing conductors green/yellow		
	Exceptions:		
	– earthing braids		
	– internal protective conductors		
	f) Equipment using PROTECTIVE BONDING		
6.9.4 (AM 2)	**Over-range indication**		
	Unambiguous		
6.10	**Connection to mains supply source (AM 1 only)**		
or			
(AM 2)	**Connection to mains supply source and connections between parts of equipment**		
6.10.1	**Mains supply cords**		
	RATED for maximum equipment current (see 5.1.3c)		
	Cable complies with IEC 60227 or IEC 60245 or is a certified cord		
(AM 2)	Heat resistant if likely to contact hot parts		
(AM 2)	Temperature RATING (cord and inlet)		
	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		

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Clause Subclause	Requirement	Result	Comments
	Combination of conductors (**AM 1 only):**		
	– all have same degree of insulation or – no hazard from short circuits		
	Detachable cords with IEC 60320 mains connectors:		
	– comply with IEC 60799 or – have the current RATING of the mains connector		
6.10.2	**Fitting of non-detachable mains supply cords**		
6.10.2.1	**Cord entry**		
	Non-detachable cord protection:		
	– inlet smoothly rounded with radius ≥1,5 D or – insulated cord guard protruding ≥5 D		
6.10.2.2	**Cord anchorage**		
	The protective earth conductor is the last to take the strain		
	Cord anchorages:		
	– the cord is not clamped by direct pressure from a screw		
	– knots are not used		
	– cannot push the cord into the equipment to cause a hazard		
	– no failure of cord insulation in anchorage with metal parts		
	– compression bushing:		
	a) clamps all types and sizes of mains cords and b) is suitable:		
	i) for connection to TERMINALS provided or ii) it is designed for screened mains cord		

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Clause Subclause	Requirement	Result	Comments
	– cord replacement does not cause a hazard and method of strain relief is clear		
F	Push-pull test (see Form A.13)		
6.10.3	**Plugs and connectors**		
	a) Mains supply plugs, connectors etc., conform with relevant specifications		
	b) If equipment supplied at voltages below 6.3.2.1:		
	– plugs of mains supply cords do not fit mains sockets above RATED supply voltage		
	– mains type plugs used only for connection to mains supply		
F	c) Plug pins which receive a charge from an internal capacitor (see Form A.7)		
	d) Accessory mains socket outlets:		
	– if a standard mains plug is accepted, there is a marking (see 5.1.3e)		
	– input has a protective earth conductor if outlet has earth TERMINAL contact		
6.11	**TERMINALS**		
6.11.1	**ACCESSIBLE TERMINALS**		
	a) No risk of accidental contact (see also 5.1.6c)		
	b) Will not work loose		
6.11.2	**PROTECTIVE CONDUCTOR TERMINAL**		
	a) Appliance inlet (no requirement)		
	b) For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to mains supply TERMINALS		
	c) If no mains supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		
	– is near TERMINALS of circuit for which protective earthing is necessary		
	– external if other TERMINALS external		

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Clause Subclause	Requirement	Result	Comments
	d) Equivalent current-carrying capacity to mains supply TERMINALS		
	e) – Soldered connections:		
	i) independently secured		
	ii) not used for other purposes		
	– Screw connections are secured		
	f) Contact surfaces are metal		
	g) If plug-in, makes first and breaks last		
(AM 2)	h) Protective conductor of measuring circuit:		
	– current RATING		
	– PROTECTIVE BONDING:		
	i) not interrupted or ii) indirect bonding		
6.11.3	**FUNCTIONAL EARTH TERMINALS**		
	Independent connection		
6.12	**Disconnection from supply source**		
6.12.1	**General**		
	Disconnection device provided		
6.12.1.1	**Exception to 6.12.1**		
	Short circuit or overload cannot cause a hazard		
6.12.2	**Requirements according to type of equipment**		
6.12.2.1	**PERMANENTLY CONNECTED EQUIPMENT**		
	– switch or circuit-breaker is part of the equipment or – documentation specifies switch location and marking		
6.12.2.2	**Single-phase cord-connected equipment**		
	– switch or circuit-breakers or – appliance coupler (disconnectable without TOOL)		

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Clause Subclause	Requirement	Result	Comments
	or – separable plug (without locking device)		
6.12.2.3	**Hazards arising from function**		
	Emergency switch		
	Emergency switch ≤1 m from the moving part		
6.12.3	**Disconnecting devices**		
	Electrically close to the supply		
6.12.3.1	**Switches and circuit-breakers**		
	When used as disconnection device:		
	– meet IEC 60947-1 and IEC 60947-3		
	– contact separation		
	– contact position evident in off position		
	– marked to indication function		
	– not incorporated in mains cord		
	– does not interrupt protection earth conductor		
	– if it has other contacts, meets separation requirements of 6.6 and 6.7		
6.12.3.2	**Appliance couplers and plugs**		
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.12.2.2):		
	– readily identifiable and easily reached by the OPERATOR		
	– single-phase PORTABLE EQUIPMENT cord length ≤3 m		
	Protective earth conductor connected first and disconnected last		
7	**Protection against mechanical hazards**		
7.1	**General**		
	Conformity is checked by 7.2 to 7.5		

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Clause Subclause	Requirement	Result	Comments
7.2	**Moving parts**		
	Moving parts not able to crush, etc. (see also 6.12.2.3)		
(AM 2)	If **OPERATOR** access permitted:		
	a) access requires TOOL		
	b) statement about training		
	c) warning markings or symbol 14		
7.2.101	**Speed controls**		
	– interrupt power if failure of speed control could cause a hazard		
7.2.102	**Movement during operation**		
	– not move by more than 5 mm		
7.2.103	**Restarting after interruption**		
	– information in the instruction, by re-starting or by not re-starting		
7.2.104	**Hazards related to application**		
	Where hazards may occur when equipment is used to mix flammable material or transfer of mechanical energy could break glass, instructions warn against:		
	– use flammable materials		
	or		
	– equipment have safety devices which:		
	– prevent hazard in SFC		
	– is independent from control		
7.3	**Stability**		
	Marking of non-automatic means		
	Conformity tests:		
	– 10° tilt test		
	– multi-directional force test		
	– downward force test		

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Clause Subclause	Requirement	Result	Comments
7.4	**Provisions for lifting and carrying**		
	Handles or grips withstand four times mass		
	Equipment ≥18 kg:		
	– has means for lifting or carrying or – directions in documentation		
7.5	**Expelled parts**		
	Equipment contains or limits the energy		
	Protection not removable without the aid of a TOOL		
8	**Mechanical resistance to shock, vibration and impact (AM 1 only)**		
or			
(AM 2)	**Mechanical resistance to shock and impact**		
	After the tests of 8.1 to 8.4		
F	(see Form A.11):		
F	– voltage tests (see Form A.12)		
	– inspection, equipment meets the following requirements:		
	a) HAZARDOUS LIVE parts not ACCESSIBLE		
	b) ENCLOSURE shows no cracks (hazard)		
F	c) CLEARANCES not less than their permitted values (see Form A.11)		
	– BARRIERS not damaged or loosened		
	– no moving parts exposed, except as permitted by 7.2		
	– no damage which could cause spread of fire		
9	**Equipment temperature limits and protection against the spread of fire**		
9.1	**General**		
	Conformity is checked by:		
F	– 9.2 and fault tests of 4.4 (see Forms A.1, A.2 and A.18)		

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Clause Subclause		Requirement	Result	Comments
		or		
	F	– measurement of CREEPAGE DISTANCE and CLEARANCE and the voltage tests of annex G (see Form A.14)		
		or		
	F	– method of annex F (see Forms A.15, A.16 and A.17)		
9.2		**Temperature tests**		
9.3		**Guards**		
	F	Surfaces liable to exceed 100 °C (see Form A.18):		
		– protected by guards		
		or		
		– marked		
		or		
		– intended to be hot (see **9.1**)		
		Guards not removable without TOOL		
9.4		**Field-wiring TERMINAL boxes**		
		Temperature RATING of the cable is:		
	F	– marked (see Form A.18)		
		and		
		– adjacent to field-wiring TERMINALS		
		or		
		– visible during and after installation		
9.5		**Overtemperature protection devices**		
	F	– fitted, to operate in SINGLE FAULT CONDITION (see Form A.1)		
		– meets 14.3		
		– does not operate in NORMAL USE (see **3.5.6**)		
		– if self-resetting, can only be set to operate in SINGLE FAULT CONDITION		
9.6		**Overcurrent protection**		
9.6.1		**PERMANENTLY CONNECTED EQUIPMENT**		
		Device:		
		– fitted within the equipment		
		or		
		– specified in manufacturer's instructions		

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Clause Subclause	Requirement	Result	Comments
9.6.2	**Other equipment**		
	Protection within the equipment		
	Devices not in the protective conductor		
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		
10	**Resistance to heat**		
10.1 **F**	**Integrity of CLEARANCE and CREEPAGE DISTANCES** (see Form A.11)		
10.2 **F**	**Resistance to heat of non-metallic ENCLOSURE** (see Form A.19)		
10.3	**Resistance to heat of insulation material**		
	Parts supporting:		
	– parts connected to mains supply		
	– TERMINALS carrying >0,5 A		
11	**Resistance to moisture and liquids (AM 1 only)**		
or **(AM 2)**	**Protection against hazards from fluids**		
11.1	**General**		
11.2 **F**	**Cleaning** (see Form A.20)		
11.3 **F**	**Spillage** (see Form A.20)		
11.4 **F**	**Overflow** (see Form A.20)		
11.5	**Liquid leakage (AM 1 only)**		
11.5.1 **F**	**Equipment containing liquid (AM 1 only)** (see Form A.20)		
11.5.2 or 11.5 (AM 2)	**Battery electrolyte (AM 1 only)** **Battery electrolyte**		
	Battery electrolyte leakage presents no hazard		
11.6 **F**	**Specially protected equipment** (see Form A.20)		
11.7 (AM 2)	**Fluid pressure and leakage**		

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Clause Subclause	Requirement	Result	Comments
11.7.1 (AM 2)	Maximum pressure not exceeded		
11.7.2 (AM 2) F	Leakage and rupture at high pressure (see Form A.21)		
	Test to IEC 60335 (refrigeration only)		
11.7.3 (AM 2) F	Leakage from low-pressure parts (see Form A.21)		
11.7.4 (AM 2)	**Overpressure safety device**		
	– shall not operate in NORMAL USE and – shall comply with the following:		
	– positioned close to parts intended to be protected		
	– access for inspection, maintenance and repair		
	– adjustment only with TOOL		
	– no discharge to person		
	– no hazard from discharge		
	– sufficient discharge capacity		
	– no shut-off valve between protective device and protected parts		
11.101	**Connection for hoses and pipes**		
	– connectors are prevented from detaching		
	– pipes are adequately restrained		
12	**Protection against radiation, including laser sources, and against sonic and ultrasonic pressure**		
12.1	**General**		
12.2	**Equipment producing ionizing radiation**		
12.2.1 F	**Ionizing radiation (see Form A.22)**		
12.2.2	**Accelerated electrons**		
12.3	**Ultra-violet radiation**		(Conformity test under consideration)

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Clause Subclause	Requirement	Result	Comments
12.4	**Micro-wave radiation**		(Conformity test and limit of 10 W/m² are under consideration)
12.5	**Sonic and ultrasonic pressure**		
12.5.1	**Sound pressure level (AM 1 only)**		
F	(see Form A.23)		
or			
(AM 2)	**Sound level**		
F	(see Form A.23)		
12.5.2 **F**	**Ultrasonic pressure** (see Form A.23)		
12.6	**Laser sources** (IEC 60825)		
13	**Protection against liberated gases, explosion and implosion**		
13.1	**Poisonous and injurious gases**		
	Attach any data/test reports used to demonstrate conformity		
13.2	**Explosion and implosion**		
13.2.1	**Components**		
	Components liable to explode:		
	– pressure release device		
	or		
	– the apparatus incorporates OPERATOR protection (see also 7.5)		
	Pressure release device:		
	– discharge without danger		
	– not obstructable		
13.2.2	**Batteries**		
	Explosion or fire hazard:		
	– protection incorporated in the equipment		
	or		
	– instructions specify batteries		
	and		
	– single component cannot cause hazard (short circuit and open circuit)		
F	(see Form A.24, including circuit diagram)		
	– warning marking or symbol 14		

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Clause Subclause	Requirement	Result	Comments
	Battery compartment design		
	Polarity reversal test		
13.2.101	**Protection against explosion and explosives**		
	Complies with appropriate requirements of relevant IEC and ISO standards		
13.3	**Implosion of high-vacuum devices**		
	High vacuum devices:		
	– intrinsically protected and correctly mounted or		
	– ENCLOSURE provides protection:		
	i) screen not removable without TOOL		
	ii) if glass screen, not in contact		
14	**Components**		
14.1	**General**		
	Where safety is involved, components meet relevant requirements (see table 3 of this report and figure 5 of IEC 61010-1 – AM 2)		
14.2	**Motors**		
14.2.1	**Motor temperatures**		
F	(see Form A.25)		
14.2.2	**Series excitation motors**		
14.3	**Overtemperature protection devices**		
	Devices operating in a SINGLE FAULT CONDITION		
F	(see Form A.26)		
	and have/are:		
	– reliable function		
	– RATED to interrupt maximum voltage and current of circuit		
	– RATED for maximum surface temperature of 4.4.4.2		

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Clause Subclause	Requirement	Result	Comments
(AM 2)	– RATED for maximum temperature of 9.2 for parts in contact with flammable liquid		
(AM 2)	– not self-resetting unless protected part cannot function		
14.4	**Fuse holders**		
	No access to HAZARDOUS LIVE parts		
14.5	**Mains voltage selecting devices**		
	Accidental change not possible		
14.6	**HIGH INTEGRITY components**		
	Used in applicable positions (see able 3)		
	Conforms with IEC publications		
	Not a single electronic device		
14.7	**Mains transformers**		
14.7.1	**Short-circuit tests**		
F	Transformers meet 4.4.4.1 to 4.4.4.3. (see Form A.27)		
14.7.2	**Overload tests**		
	Transformer:		
	– has overtemperature protection meeting 14.3		
	or		
F	– meets 4.4.4.1 to 4.4.4.3 (see Form A.28)		
14.8 (AM 2)	**Overpressure safety devices**		
	Meets ISO 4126		
15	**Protection by interlocks**		
15.1	**General**		
	Interlocks are designed to remove a hazard before OPERATOR exposed		
	If exception for ≤2 s **(AM 1 only):**		
	– warning marking		
	and		
	– after 2 s:		

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Clause Subclause	Requirement	Result	Comments
	i) temperatures of easily touched parts meet table 3 of IEC 61010-1		
	ii) moving parts meet 7.2 of IEC 61010-1		
	Position of warning markings **(AM 1 only)**		
15.2	**Prevention of reactivation**		
15.3	**Reliability**		
16 (AM2)	**Measuring circuits**		
16.1 (AM 2) F	**Current measuring circuits** (see Form A.29)		
Annex K (AM 2)	**Routine tests**		
	Manufacturer's declaration		

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Form A.1

Summary of SINGLE FAULT CONDITIONS applied (4.4.2)
(see Form A.2 for details of tests)

Subclause	Title	Does not apply	Carried out	Comments
4.4.2.1	PROTECTIVE IMPEDANCE			
4.4.2.2	Protective conductor			
4.4.2.3	Equipment or parts for short-term or intermittent operation			
4.4.2.4	Motors			
4.4.2.5	Capacitors			
4.4.2.6	Mains transformers Attach drawing of mains Txs showing all protective devices (see Forms A.27 and A.28)			
4.4.2.7	Outputs			
4.4.2.8	Equipment for more than one supply			
4.4.2.9	Cooling – air holes closed – fans stopped – coolant stopped			
4.4.2.10	Heating devices – timer overridden – temperature controller overridden – loss of cooling liquid			
4.4.2.11	Insulation between circuits and parts			
4.4.2.12	Interlocks			
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.12				
1	Speed control failure			

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4.4 Testing in SINGLE FAULT CONDITION – Results

Test subclause	Fault No.	Fault description	Td 4.4.3 (note 1)	How was test terminated Comments	Meets 4.4.4

NOTE 1 – Td = Test duration in h:min:s
Record dielectric strength test on Form A.12 and temperature tests on Form A.18.
Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.3

5.1.3.c Mains supply

Marked RATING:_____ _____**Phase** _____**Hz** _____**A** _____**W** _____**VA**	NOTE – Measurements are only required for marked RATINGS

Test No.	Voltage V	Freq. Hz	Current I	Power in W	Power in VA	Comments
General comments:						

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.4

5.3 Durability of markings

Table A.4.1 – Marking method (note)
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.

Table A.4.2 – Agent
A (specify agent)
B (specify agent)
C Water
D Isopropyl alcohol

Marking location	**Marking method (see table A.4.1)**
Identification (5.1.2)	
Mains supply (5.1.3)	
Fuses (5.1.4)	
Measuring circuit TERMINALS (5.1.4)	
TERMINALS and operating devices (5.1.6)	
DOUBLE/REINFORCED equipment (5.1.7)	
Battery charging (5.1.8)	
Warning marking (5.2)	

Method (table A.4.1)	**Test agent (table A.4.2)**	**Remains legible Pass/Fail**	**Label loose Pass/Fail**	**Curled edges Pass/Fail**	**Comments**

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.5

Clause 6 – Protection against electric shock – Block diagram of system

POLLUTION DEGREE:_____**INSTALLATION CATEGORY (OVERVOLTAGE CATEGORY)**:_____

Location or description	Insulation type (note 1)	Maximum working voltage (note 2)	CREEPAGE DISTANCE (note 3)				CLEARANCE (note 3)	Test voltage (note 2)	Comments
			PWB mm	CTI	Other mm	CTI	mm	V	

NOTE 1 – Type of insulation:
BI = BASIC INSULATION RI = REINFORCED INSULATION
DI = DOUBLE INSULATION SI = SUPPLEMENTARY INSULATION
PI = PROTECTIVE IMPEDANCE

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

NOTE 3 – INSTALLATION CATEGORIES (OVERVOLTAGE CATEGORIES) or POLLUTION DEGREES which differ from these should be shown under "Comments".

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.6

6.1.1 Exceptions
6.2 Determination of ACCESSIBLE parts

List of accessible parts

Item	Description	Determination method (note 5)	Exception under 6.1.1 (note 4)

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see **6.2.1**)

NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see **6.2 AM 2**)

NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of **6.4**).

NOTE 4 – Capacitor test may be required (see Form **A.7).**

NOTE 5 **–** The determination methods are: visual; rigid test finger; jointed test finger; pin 3 mm diameter; pin 4 mm diameter.

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.7

6.1.1 Exceptions
6.3.1 Values in NORMAL CONDITION
6.6.2 TERMINALS for external circuit
6.10.3 Plugs and connections
11.2 Cleaning
11.3 Spillage
11.4 Overflow

Item (see Form A.6)	Voltage			Current				Capacitance		10 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	

NOTE – A 5 s test is specified in 6.10.3c).

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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6.3.2 Values in SINGLE FAULT CONDITION

Item (See Form A.6)	Subclause and fault No. (see Form A.2)	Voltage			Transient (see note)		Current				Capacitance µF (note)	Comments
		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.		
NOTE – Transient voltages must be below the limits given from figure 1 and the capacitance below the limits from figure 2 of IEC 61010-1.												

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.9

6.5.1.1 Cross-sectional area bonding conductors

Conductor location	Cross-sectional area mm^2	Result Pass/Fail

Tested by:_____Date:_____Test equipment No. (Table 2)_____

6.5.1.2 Bonding impedance of plug connected equipment

ACCESSIBLE part under test	Test current A	Voltage attained after 1 min V	Calculated resistance (maximum allowed 0,1 Ω)	Result Pass/Fail

Tested by:_____Date:_____Test equipment No. (Table 2)_____

6.5.1.3 Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT

ACCESSIBLE part under test	Test current A	Voltage attained after 1 min (maximum 10 V) V	Result Pass/Fail

Tested by:_____Date:_____Test equipment No. (Table 2)_____

6.5.1.4 Indirect bonding for measuring and test equipment

ACCESSIBLE part under test	Voltage attained	Time for voltage to drop to allowable levels	Result Pass/Fail
a) Voltage limiting device			
	Voltage applied V	**Time for device to trip**	
b) Voltage-sensitive tripping device			

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.10

6.5.3 PROTECTIVE IMPEDANCE

A HIGH INTEGRITY single component		
Component	**Location**	**Comments**

Tested by:_____Date:_____Test equipment No. (Table 2)_____

A combination of components		
Component	**Location**	**Comments**

Tested by:_____Date:_____Test equipment No. (Table 2)_____

A combination of BASIC INSULATION and a current or voltage limiting device		
Component	**Location**	**Comments**

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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6.7 CLEARANCES and CREEPAGE DISTANCES
8 Mechanical resistance to shock, vibration and impact (AM 1 only)
8 Mechanical resistance to shock and impact (AM 2 only)
10.1 Integrity of CLEARANCES and CREEPAGE DISTANCES

Location (see Form A.5)	Measured (initial – 6.7)		Result	Mechanical tests (note)					40 °C ambient test	Measured after test (if required)		Result	Comments
	CREEPAGE DISTANCE mm	CLEARANCE mm	Pass/ Fail	Applied force (6.7) N	Rigidity (8.1)	Impact hammer (8.2)	Drop 8.1.4 and 8.4.2		(10.1)	CREEPAGE DISTANCE mm	CLEARANCE mm	Pass/ Fail	
							Normal	Hand-held					
NOTE – Refer to Form A.12 for dielectric strength tests following the above tests.													

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.12

6.8 Dielectric strength tests

Location (see Form A.5 and/or fault Form A.2)	Working voltage V	Test voltage r.m.s./peak/d.c.	Result Pass/ Fail	Comments (note)

NOTE – Describe conditions prior to testing:

A = Humidity preconditioning (6.8.2 and 6.8.3)
B = ENCLOSURE tests (clause 8)
C = Resistance to heat of non-metallic ENCLOSURES (10.2)
D = After single faults (4.4)

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.13

6.10.2.2 Cord anchorage

Location	Mass kg	Pull N	Result Pass/Fail	Torque Nm	Result Pass/Fail	Comment

General comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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9.1 General
Annex G – Test details

Between parts or circuits		CREEPAGE DISTANCE mm	CLEARANCE mm	Working voltage V	Test voltage r.m.s./peak/d.c. V	Result Pass/ Fail	Comments

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.15

9.1 General
Annex F – Test details

F.2.1 Limited circuits

Circuit/ Location	Open circuit voltage r.m.s./d.c. V	Energy limitation					Comments
		Maximum current A	Maximum available power VA	Overload protection	Limited circuit Yes/No	Test to 4.4.3	

General comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

F.2.2 Unlimited circuit

Location/ Circuit	Operator controlled switch	Overcurrent protection	Overtemperature protection	Comments

General comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.16

9.1 General
Annex F – Test details (continued)

F.4.2 Constructional details
F.4.3 Enclosures

Clause	Requirement	Result Pass/Fail	Comments
F.4.2.1	Connectors comply with IEC standards		
F.4.2.2	Printing wiring boards are flame RATED FV 0 or FV 1		
F.4.2.3	ENCLOSURE surrounds unlimited circuits		
F.4.2.4	Wires comply with IEC standards		
F.4.3.1	High current devices: – door or – cover and – means to hold door or cover closed or – gap less than limits		
F.4.3.2	Bottom of ENCLOSURES: – no opening or – with table F.1 and figure F.1 or – components placement comply with figure F.2		
F.4.3.3	Baffle or flame BARRIER: – ENCLOSURE made of metal or – ENCLOSURE made of non-metallic material (FV 0 or FV 1)		

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.17

9.1 General
Annex F – Test details (continued)

F.4.3 ENCLOSURES (F.4.3.3 test to IEC 60707)

Material tested:_____ Generic name: _____	**Overall result** **Pass/Fail**
Material manufacturer:_____ _____	

Type:_____

Colour: _____

Conditioning details:_____

_____

_____

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

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.18

9.2 Temperature tests
9.3 Guards
9.4 Field wiring TERMINAL boxes

Operating conditions: Frequency: _____ Hz Duration: _____ h _____ min

Voltage: _____ V Test room ambient: _____ °C

Part	t_m °C	t_c °C	t_a °C	Result Pass/Fail	Comments

NOTE 1 – See also 14.1 with reference to component operating conditions.
NOTE 2 – t_m = measured temperature
t_c = corrected maximum temperature (t_m + 40 – test room ambient)
t_a = maximum permitted temperature.

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.19

10.2 Resistance to heat of non-metallic ENCLOSURES

Test method used: Non operative treatment [ ]
Empty ENCLOSURE [ ]
Operative treatment [ ]

Temperature during tests:_____ °C

ENCLOSURE samples tested were:

Description	Material	Result Pass/Fail	Comments

Dielectric strength test (6.8.4): _____ V _____ r.m.s./peak/d.c.

Comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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8 Mechanical resistance to shock, vibration and impact (AM 1 only)
8 Mechanical resistance to shock and impact (AM 2 only)
11 Resistance to moisture and liquids (AM 1 only)
11 Protection against hazards from fluids (AM 2 only)

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

Location (see Form A.5)	Clause 8 tests				Clause 11 tests					Working voltage (note 2) V	Test voltage (note 2) V	Result Pass/ Fail	Comments
	Rigidity (8.1)	Impact Hammer (8.2)	Drop 8.4.1 and 8.4.2		Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	Equipment plus liquid (11.5.1/note 1)	IEC 60529 (11.6)				
			Normal	Hand-held									

NOTE 1 – Not for amendment 2.
NOTE 2 – Use r.m.s., d.c. or peak to indicate the used test voltage.

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.21

11.7.2 Leakage and rupture at high pressure (AM 2)

Part	Maximum permissible working pressure MPa	Factor (fig. 4 of IEC 61010-1 AM 2)	Test pressure MPa	Leakage test Pass/Fail	Burst test Pass/Fail	Comments

Tested by:_____Date:_____Test equipment No. (Table 2)_____

11.7.3 Leakage from low-pressure parts (AM 2)

Part	Test pressure MPa	Leakage test Pass/Fail	Comments

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.22

12.2.1 Ionizing radiation

Locations tested	Measured values µSv/h	Result Pass/Fail	Comments

General comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.23

12.5.1 Sound pressure level (AM 1 only)
12.5.1 Sound level (AM 2 only)

Locations tested	Measured values dBA	Calculated maximum sound pressure level (AM 2)
1 m from the enclosure (**AM 1 only**)		
At OPERATOR'S normal position and at bystanders' positions (**AM 2**)		
a)		
b)		
c)		
d)		
e)		
Result Pass/Fail (**AM 1 only**)		
Comments:		

Tested by:_____Date:_____Test equipment No. (Table 2)_____

12.5.2 Ultrasonic pressure

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.			
Result Pass/Fail			
Comments:			

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.24

13.2.2 Batteries

Battery load and charging circuit diagram:

Battery type: _____

Battery manufacturer/model/catalogue No.: _____

Battery RATINGS:_____

Reverse polarity instalment test – Result (Pass/Fail):_____

Single component failures	**Result Pass/Fail**	
Component	**Open circuit**	**Short circuit**

Comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.25

4.4.2.4 SINGLE FAULT CONDITIONS, motors
14.2.1 Motor temperatures

Operating conditions:

Frequency:_____Hz:_____Duration:_____h_____min

Voltage:_____V Test room ambient:_____ °C

Motor No. and location	Insulation class (IEC 60085)	t_m °C	t_c °C	t_a °C	Result Pass/Fail	Comments

NOTE
t_m = Measured temperature
t_c = Corrected maximum temperature (t_m + 40 – test room ambient)
t_a = Maximum allowed temperature.

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.26

14.3 Overtemperature protection devices

Component	Type (note)	Result Pass/Fail	Comments

NOTE

SR = self-resetting (200 times)
NSR = non-self-resetting (10 times)
NR = non-resetting (1 time)

General comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.27

4.4.2.6 Mains transformer

14.7.1 Short-circuit tests (for mains transformers)

Type:_____ Manufacturer: _____

_____

Tested ☐ in equipment or ☐ on bench

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				
(note 2)	Secondary				
Tissue paper/cheesecloth OK? (Pass/Fail)					
Voltage tests (note 3) Primary to secondary _____V_____					
Primary to core _____V_____					
Secondary to secondary _____V_____					
Secondary to core _____V_____					
Result (Pass/Fail)					

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 under "Comments".

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.

Comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.28

4.4.2.6 Mains transformer

14.7.2 Overload tests (for mains transformers)

Type:_____ Manufacturer: _____

_____

Tested ☐ in equipment or ☐ on bench

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				
(note 2)	Secondary				
Tissue paper/cheesecloth OK? (Pass/Fail)					
Voltage tests (note 3) Primary to secondary _____V_____					
Primary to core _____V_____					
Secondary to secondary _____V_____					
Secondary to core _____V_____					
Result (Pass/Fail)					

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 under "Comments".

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.

Comments:

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Form A.29

16.1 Current measuring circuits (AM 2 only)

The test is performed with all types and models of current transformers without internal protection, and which are specified by the manufacturer for use with the equipment.

a) Current transformers

Type/Model	RATED current A	Test current A	Interrupt Yes/No	Result Pass/Fail	Comments

Tested by:_____Date:_____Test equipment No. (Table 2)_____

b) Range changing switches

Type/Model	Maximum RATED current of switch	Cycling test Pass/Fail	Comments

Tested by:_____Date:_____Test equipment No. (Table 2)_____

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Q1 Please report on **ONE STANDARD** and **ONE STANDARD ONLY**. Enter the exact number of the standard: *(e.g. 60601-1-1)*

.....

Q2 Please tell us in what capacity(ies) you bought the standard *(tick all that apply).* I am the/a:

purchasing agent ❑
librarian ❑
researcher ❑
design engineer ❑
safety engineer ❑
testing engineer ❑
marketing specialist ❑
other.....

Q3 I work for/in/as a: *(tick all that apply)*

manufacturing ❑
consultant ❑
government ❑
test/certification facility ❑
public utility ❑
education ❑
military ❑
other.....

Q4 This standard will be used for: *(tick all that apply)*

general reference ❑
product research ❑
product design/development ❑
specifications ❑
tenders ❑
quality assessment ❑
certification ❑
technical documentation ❑
thesis ❑
manufacturing ❑
other.....

Q5 This standard meets my needs: *(tick one)*

not at all ❑
nearly ❑
fairly well ❑
exactly ❑

Q6 If you ticked NOT AT ALL in Question 5 the reason is: *(tick all that apply)*

standard is out of date ❑
standard is incomplete ❑
standard is too academic ❑
standard is too superficial ❑
title is misleading ❑
I made the wrong choice ❑
other .....

Q7 Please assess the standard in the following categories, using the numbers:
(1) unacceptable,
(2) below average,
(3) average,
(4) above average,
(5) exceptional,
(6) not applicable

timeliness.....
quality of writing.....
technical contents.....
logic of arrangement of contents .....
tables, charts, graphs, figures.....
other .....

Q8 I read/use the: *(tick one)*

French text only ❑
English text only ❑
both English and French texts ❑

Q9 Please share any comment on any aspect of the IEC that you would like us to know:

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