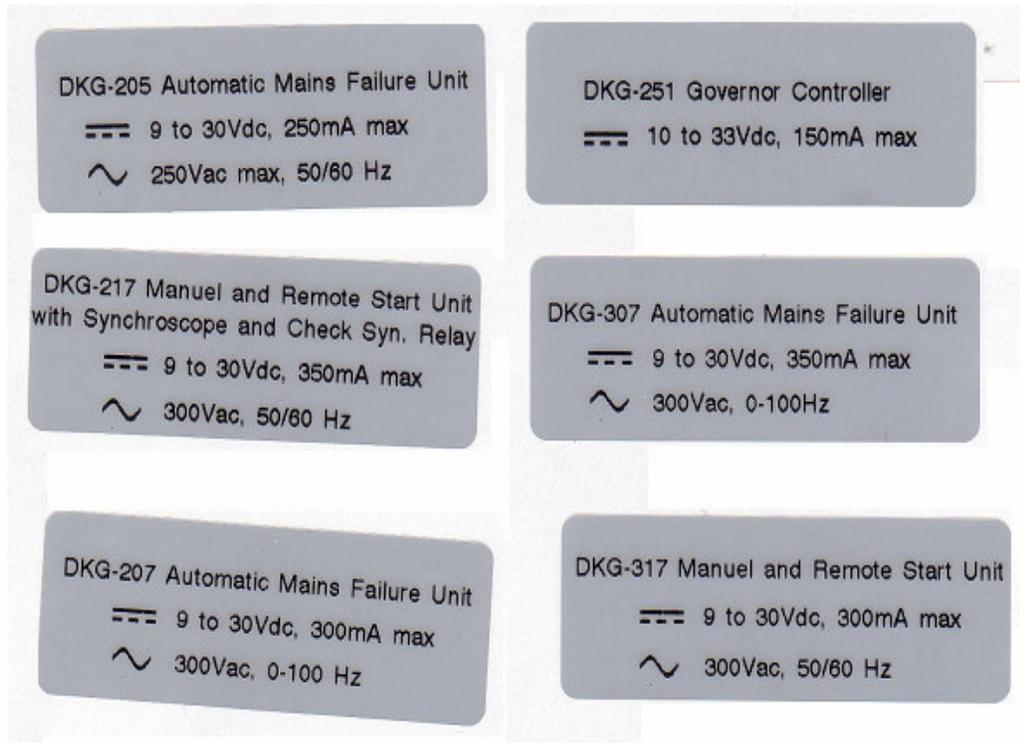


<b>TEST REPORT</b> <b>IEC 61010-1/ EN 61010-1</b> <b>Safety requirements for electrical equipment for measurement, control, and laboratory use</b> <b>Part 1: General requirements</b>	
<b>Report Reference No.</b> .....	2109518.56-QUA/PEP
Tested by (name and signature) .....	E. Urulu 
Approved by (name and signature) .....	H.A. van Nielen 
Date of issue .....	February 6, 2008
Contents .....	70 pages
<b>Testing Laboratory</b> .....	KEMA Quality B.V.
Address .....	Utrechtseweg 310, 6812 AR Arnhem, The Netherlands
Testing location/procedure .....	DATAKOM ELECTRONIC ENGINEERING LTD
Address .....	Yukari Dudullu Mah., Kutup Sokak, No:28 34775 UMRANIYE / ISTANBUL - TURKEY
<b>Applicant's name</b> .....	DATAKOM ELECTRONIC ENGINEERING LTD
Address .....	Yukari Dudullu Mah., Kutup Sokak, No:28 34775 UMRANIYE / ISTANBUL - TURKEY
<b>Test specification:</b>	
Standard .....	IEC 61010 – 1 : 2001 (2 <sup>nd</sup> Edition); EN 61010 – 1 : 2001 (2 <sup>nd</sup> Edition)
Test procedure .....	CB / CCA
Non-standard test method .....	—
<b>Test Report Form No.</b> .....	IEC61010_C
TRF Originator .....	VDE
Master TRF .....	Dated 01-07-27
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<b>Test item description</b> .....	Automatic Mains Failure Unit, Manual and Remote Start Unit, Automatic Transfer Switch, Governor Controller, Synchroscope
Trademark .....	Datakom
Model/Type reference .....	DKG 205, DKG 207, DKG 217, DKG 251, DKG 307, DKG 317,
Rating(s) .....	DKG-207, DKG-317 : 300 Vac, 50/60 Hz, 9 to 30 Vdc, 300 mA max, DKG-217, DKG-307 : 300 Vac, 50/60 Hz, 9 to 30 Vdc, 350 mA max, DKG-205 : 300 Vac, 50/60 Hz, 9 to 30 Vdc, 250 mA max DKG-251 : 10 to 33Vdc, 150 mA max

<b>Test item particulars</b> ..... :	
Type of item tested .....	measurement and controlling equipment
Description of equipment function .....	Mains Failure Unit DKG 205, DKG 207, DKG 307 Manual and Remote Start Unit DKG 217, DKG 317 Governor Controller DKG 251
Installation/overvoltage category .....	II
Pollution degree.....	2
Environmental rating.....	-20 deg C – +50 deg C
Equipment mobility .....	Build in (rack panel mounting)
Connection to mains supply.....	Permanent
Operating conditions.....	continuous
Overall size of the equipment (L x W x H).....	Model DKG-205 :72x144x70 mm DKG-207, DKG-217 :120x90x39 mm DKG-251 :130x110x27 mm DKG-307, DKG-317 : 155x115x48 mm
Mass of the equipment (kg) .....	< 1 kg
Marked degree of protection to IEC 60529 .....	IP 65 from front panel, IP30 from the rear
Accessories and detachable parts included in the evaluation .....	none
Options .....	refer to relevant clauses and list of critical components
<b>Test case verdicts:</b>	
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)
<b>Testing</b> ..... :	
Date of receipt of test item.....	August 2007
Date (s) of performance of tests .....	August 2007
<b>General remarks:</b>	
Unit is for building in, only front shall be accessible	
<b>This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IEC 61010-2.</b>	
This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.	
The test results presented in this report relate only to the item(s) tested.	
"(see remark #)" refers to a remark appended to the report.	
"(see Annex #)" refers to an annex appended to the report.	
"(see Form A.#)" refers to a table appended to the report.	
Throughout this report a comma is used as the decimal separator	

COPY OF ALL MARKING PLATES



Summary of test results (information/comments):

EUT does comply with the relevant clauses of this standard



TABLE: 2 - Test equipment list						
No.	Test Equipment	Mark	Model/Type	Serial No.	Calibration Date	Calibration Due Date
EL1-7	Hybrid Recorder	Yokogowa	DR230		2007/07	2008/07
EL1-8	Digital Powermeter	Yokogawa WT110	25340IC20	2534GA461E	2006/06	2007/06
EL1-31	Etüv Heating Chamber	Nüve	FN 400	2213-01	2007/07	2008/07
EL1-32	Etüv Heating Chamber	Nüve	FN 400	2213-01	2005/12	2007/12
EL1-34	Portable Multimeter	Goldstar	DM-332	S70104054	2005/06	2007/06
EL1-35	Portable Multimeter	Goldstar	DM-341	S60400058	2007/06	2008/06
EL1-43	Tracking Test Equipment	Kema			2005/12	2007/12
EL1-65	Climats	Climats	540H55/1.5	3829	2006/08	2007/08
EL1-66	Climats	Climats	540H55/1.5	3828	2007/07	2009/07
EL1-95	CE Test Multimeter	Metrel			2005/12	2007/12
EL1-102	Glow Wire Test Device	EMS	GW-2003		2006/02	2008/02
EL2-21	Digital Thermometer	Fluke 4 Digit	F-51	6871100	2007/06	2008/06
EL2-25	AC/DC Current Clamp	Fluke	i1010	66508999	2007/06	2009/06
EL2-45	Vernier Caliper	Mitutoyo		7288030		
EL1-103	Thermometer	TT T-ECHNI-C	303C Digital	07T0167	2007/01	2009/01
EL2-40	Spring Impact Hammer Test	PTL	F 22-50 F22-80	9807287-1	2005/12	2007/12
EL2-74	AC Digital Powermeter	GW INSTEK	GPM-8212	CE150979	2005/05	2007/05
EL2-9	Scopemeter	Fluke	96B Series II		2007/06	2009/06
EL1-104	Temperature Recorder	Agilent	34970A		2007/02	2008/08



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Clause	Requirement + Test	Result – Remark	Verdict

<b>TABLE: 3 - List of components and circuits relied on for safety</b>					
Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer (NOTE 1)	Part number	RATING (NOTE 2)	Evidence of acceptance (NOTE 3)
<b>Model DKG-205,</b>					
PCB-DKG 205	Printed Circuit Board	Canovate	M-J84F02	UL94V-0, FR4	UL File Number:E142927
Relay1	Relay	HKE	M-R-12V16A	120 V, 16 A	UL File Number:E164730
VAR1	<b>Varistor</b>	<b>Uppermost Electronic</b>	<b>M-VAR20V14</b>	<b>20V-AC 14mm</b>	UL File Number:E105157
<b>D5</b>	<b>Diode</b>		<b>S-1N4007</b>	1000V / 1A [5K]	UL File Number:E59481
C10	Capacitor		C-E477-50	100uF / 25V EL DIA=6 RAS=2.5 [1K5	
R100 to R135	Protective impedance	<b>Several</b>	-	<b>2,2 MOhm</b>	Tested as part of equipment
<b>Model DKG-207, DKG-217</b>					
PCB-DKG 207	Printed Circuit Board	Canovate	M-J11F02	UL94V-0, FR4	UL File Number:E142927
PCB-DKG 217	Printed Circuit Board	Baskı Devre	M-J18F02	UL94V-0, FR4	UL File Number:E201793
Relay1	Relay	HKE	M-R-12V16A	120 V, 16 A	UL File Number:E164730



IEC 61010-1			
Clause	Requirement + Test	Result – Remark	Verdict

TABLE: 3 - List of components and circuits relied on for safety					
Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer (NOTE 1)	Part number	RATING (NOTE 2)	Evidence of acceptance (NOTE 3)
VAR1	<b>Varistor</b>	<b>Uppermost Electronic</b>	<b>M-VAR20V14</b>	<b>20V-AC 14mm</b>	UL File Number:E105157
<b>D5</b>	<b>Diode</b>		<b>S-1N4007</b>	1000V / 1A [5K]	UL File Number:E59481
R1 to R3, R5 to R7, R8 to R10, R12 to R14, R27 to R29, R34 to R36	Protective impedance	<b>Several</b>	-	<b>330 kOhm</b>	Tested as part of equipment
Model DKG-251					
PCB-DKG 251	Printed Circuit Board	Odak Baskı	M-J19F02	UL94V-0, FR4	UL File Number:E301197
VAR1	<b>Varistor</b>	<b>Uppermost Electronic</b>	<b>M-VAR20V14</b>	<b>20V-AC 14mm</b>	UL File Number:E105157
C10	Capacitor		C-E477-50	100uF / 25V EL DIA=6 RAS=2.5 [1K5]	
Model DKG-307, DKG-317					
PCB-DKG 307/317	Printed Circuit Board	Canovate	M-J10F05	UL94V-0, FR4	UL File Number:E142927
Relay1	Relay	HKE	M-R-12V16A	120 V, 16 A	UL File Number:E164730
VAR1	<b>Varistor</b>	<b>Uppermost Electronic</b>	<b>M-VAR20V14</b>	<b>20V-AC 14mm</b>	UL File Number:E105157



IEC 61010-1			
Clause	Requirement + Test	Result – Remark	Verdict

TABLE: 3 - List of components and circuits relied on for safety					
Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer (NOTE 1)	Part number	RATING (NOTE 2)	Evidence of acceptance (NOTE 3)
C37	Capacitor		C-E108-50	1000uF / 50V EL DIA=16 RAS=7.5	
R1 to R3, R5 to R7, R8 to R10, R12 to R14, R23 to R25, R27 to R29, R30 to R32, R34 to R36	Protective impedance	<b>Several</b>	-	<b>330 kOhm</b>	Tested as part of equipment
All models					
Enclosure	Back and Front Cover	Akay Plastik	M-ABS	UL94V-0	UL File Number:E205321
Connector	Mains and Measurement terminal Female	Desgon Electronics		UL94V-0	UL File Number:E228872
Connector	Mains and Measurement terminal Male	Desgon Electronics		UL94V-0	UL File Number:E228872
NOTE 1 - List all manufacturers concerned. NOTE 2 - Electrical, mechanical, flammability, etc. NOTE 3 - Licence number, file number or other documentary evidence of acceptance					

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Clause	Requirement + Test	Result - Remark	Verdict
5	MARKING AND DOCUMENTATION		—
5.1.1	General		—
	Required equipment markings are:		-
	visible:		P
	From the exterior; or		P
	After removing a cover; or		N/A
	Opening a door		N/A
	After removal from a rack or panel		P
	Not put on parts which can be removed by an OPERATOR		P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (IEC 61010-1: Table 1) used		P
5.1.2	Identification		—
	Equipment is identified by:		—
5.1.2a)	Manufacturer's or supplier's name or trademark	Datatom	P
5.1.2b)	Model number, name or other means	DKG 205, DKG 207, DKG 217, DKG 251, DKG 307, DKG 317	P
	Manufacturing location identified	With telephone number	P
5.1.3	Mains supply		—
	Equipment is marked as follows:		—
5.1.3a)	Nature of supply:		—
	1) a.c. RATED mains frequency or range of frequencies..... :	50/60 Hz	P
	2) d.c. with symbol 1		P
5.1.3b)	RATED supply voltage(s) or range..... :	9-30 Vdc, 10-33 Vdc, 300 Vac	P
5.1.3c)	Max. RATED power (W or VA) or input current..... :	150 mA, 250 mA, 300 mA, 350 mA	P
	The measured value not more than 110 %		P
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
5.1.3d)	OPERATOR-set for different RATED supply voltages:		—
	Indicates the equipment set voltage	not relevant	N/A

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	PORTABLE EQUIPMENT indication is visible from the exterior	fixed	N/A
	Changing the setting changes the indication		N/A
5.1.3e)	Accessory mains socket-outlets accepting standard mains plugs are marked:		—
	With the voltage if it is different from the mains supply voltage .....	no such parts	N/A
	For use only with specific equipment		N
	If not marked for specific equipment it is marked with:		—
	The maximum RATED current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses		—
	OPERATOR replaceable fuse marking (see also 5.4.5) .....	No fuses provided	N/A
5.1.5	TERMINALS, connections and operating devices		—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked	as far as applicable	P
	If insufficient space, symbol 14 used		N/A
5.1.5.1	TERMINALS		P
	Mains supply TERMINALS identified		P
	Other TERMINAL marking .....	See marking plate	P
5.1.5.1a)	FUNCTIONAL EARTH TERMINALS (symbol 5 used)	no FE terminals	N/A
5.1.5.1b)	PROTECTIVE CONDUCTOR TERMINALS:		—
	Symbol 6 is placed close to or on the TERMINAL; OR	no PE terminals, Class II product	N/A
	Part of appliance inlet		N/A
5.1.5.1c)	TERMINALS of measuring and control circuits (symbol 7 used)		N/A
5.1.5.1d)	HAZARDOUS LIVE TERMINALS supplied from the interior		—
	Standard MAINS socket outlet; or	no such parts	N/A
	RATINGS marked; or		N/A
	Symbol 14 used		N/A
5.1.5.1e)	ACCESSIBLE FUNCTIONAL EARTH TERMINALS:		—
	Self-evident; or	no FE terminals	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Indication (symbol 8 acceptable)		N/A
5.1.5.2	Measuring circuit TERMINALS		—
	For TERMINALS other than those permanently connected and not ACCESSIBLE:	Measurement terminals permanently connected and not accessible.	—
	RATED voltage or current marked	not regarded as accessible	N/A
	Unless clear indication that below limits:		—
	Maximum RATED voltage to earth is marked; or		N/A
	For specific connection to other equipment TERMINALS only, and means for identifying provided	Only terminals for measurement	N/A
	Appropriate measurement category marked (CAT II, CAT III or CAT IV); or	Units marked with CAT III	P
	No measurement category marked (CAT I)		N/A
	Required markings are adjacent to TERMINALS; OR		N/A
	If insufficient space:		—
	On the RATING plate or scale plate; or		N/A
	TERMINAL is marked with symbol 14		N/A
5.1.6	Switches and circuit breakers		—
	If disconnecting device, on or off position marked		P
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		—
	Protected throughout (symbol 11 used)	Double square symbol used	P
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes	No field wiring box	—
	If TERMINAL or ENCLOSURE exceeds 60 °C:		—
	Cable temperature RATING marked		N/A
	Marking visible or beside TERMINAL		N/A
5.2	Warning markings		—
	Visible when ready for NORMAL USE		P
	Are near or on applicable parts		P
	Symbols and text correct dimensions and colour		P
	If necessary marked with symbol 14		P
	Statement to isolate or disconnect		N/A
5.3	Durability of markings		—

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Clause	Requirement + Test	Result - Remark	Verdict
	The required markings remain clear and legible in NORMAL USE	(see Form A.4)	P
5.4	Documentation		—
5.4.1	General		—
	Equipment is accompanied by documentation which includes:		—
5.4.1a)	Intended use		P
5.4.1b)	Technical specification		P
5.4.1c)	Instructions for use		P
5.4.1d)	Name and address of manufacturer or supplier		P
5.4.1e)	Information specified in 5.4.2 to 5.4.5		—
5.4.1f)	If marking of TERMINALS required, definition of measurement category	Permanently connected and not accessible,	N/A
5.4.1g)	If CAT 1:		—
	Warning	Not for CAT I	N/A
	RATINGS		N/A
	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or		N/A
	Information is marked on the equipment		N/A
5.4.2	Equipment RATINGS		—
	Documentation includes:		—
5.4.2a)	Supply voltage or voltage range	9-33 Vdc, 10-33 Vdc	P
	Frequency or frequency range		P
	Power or current RATING	350 mA max	P
5.4.2b)	Description of all input and output connections		P
5.4.2c)	RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE		P
5.4.2d)	Statement of the range of environmental conditions	-20°C – +50°C	P
5.4.2e)	Degree of protection (IEC 60529)	IP 65 from front panel, IP30 from the rear	P
5.4.3	Equipment installation		—
	Documentation includes instructions for:		—
5.4.3a)	Assembly, location and mounting		P
5.4.3b)	Protective earthing		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
5.4.3c)	Connections to supply		P
5.4.3d)	PERMANENTLY CONNECTED EQUIPMENT:		—
	1) Supply wiring requirements		P
	2) If external switch or circuit-breaker, requirements and location recommendation		P
5.4.3e)	Ventilation requirements		P
5.4.3f)	Special services (e. g. air, cooling liquid)		N/A
5.4.3g)	Maximum sound power level	No sound	N/A
5.4.3h)	Instructions about sound pressure		N/A
5.4.3i)	Permanently connected measuring TERMINALS:		—
	Measurement category	CAT III	P
	RATED maximum WORKING VOLTAGE or current		P
5.4.4	Equipment operation		—
	Instructions for use include:		—
5.4.4a)	Identification of operating controls		P
5.4.4b)	Positioning for disconnection		P
5.4.4c)	Interconnection		P
5.4.4d)	Specification of intermittent operation limits		N/A
5.4.4e)	Explanation of symbols used		P
5.4.4f)	Replacement of consumable materials	No such materials	N/A
5.4.4g)	Cleaning and decontamination (see 11.2)		P
5.4.4h)	Listing of any poisonous or injurious gases and quantities		N/A
5.4.4i)	Risk-reduction procedures relating to flammable liquids	No flammable liquids	N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer		N/A
5.4.5	Equipment maintenance		—
	Instructions include:		—
	Sufficient preventive maintenance and inspection information		P
	Replacement of hoses, etc.	No such part	N/A
	Specific battery type		N/A
	Any manufacturer specified parts		N/A
	RATING and characteristics of fuses	No internal fuse	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6	PROTECTION AGAINST ELECTRIC SHOCK	(see Form A.5)	—
6.1	General		—
6.1.1	Requirements		—
	ACCESSIBLE parts not HAZARDOUS LIVE in NORMAL CONDITION and SINGLE FAULT CONDITION		P
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		—
6.1.2	Exceptions		—
	Capacitance test	(see Forms A.6 and A.7)	N/A
	Parts not HAZARDOUS LIVE 10 s after interruption of supply		N/A
6.2	Determination of ACCESSIBLE parts		—
6.2.1	General examination	(see Form A.6)	P
6.2.2	Openings above parts that are HAZARDOUS LIVE	No such openings	N/A
6.2.3	Openings for pre-set controls	No such openings	N/A
6.3	Permissible limits for ACCESSIBLE parts		—
6.3.1	Values in NORMAL CONDITION	(see form A 7)	P
6.3.2	Values in SINGLE FAULT CONDITION	(see form A 8)	P
6.4	Protection in NORMAL CONDITION (see 6.2, 6.3.1, 6.7, 6.8 and 8.1)		P
6.5	Protection in SINGLE FAULT CONDITION		—
	Additional protection is provided by:		—
	One or more of 6.5.1 to 6.5.3; or		P
	Automatic disconnection of the supply (6.5.4)		N/A
6.5.1	Protective BONDING	No earthed parts	—
	ACCESSIBLE conductive parts:		—
	Separated by DOUBLE INSULATION or REINFORCED INSULATION; or		P
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or		N/A
	Separated by screen or BARRIER bonded to PROTECTIVE CONDUCTOR TERMINAL from parts which are HAZARDOUS LIVE		N/A
6.5.1.1	Integrity of PROTECTIVE BONDING		—
6.5.1.1a)	PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.1.1b)	Soldered connections:		—
	Independently secured		N/A
	Not used for other purposes		N/A
	Screw connections are secured		N/A
6.5.1.1c)	PROTECTIVE BONDING not interrupted	No PE terminals	N/A
6.5.1.1d)	Any moveable connection specifically designed, and meets 6.5.1.3	No such connections	N/A
6.5.1.1e)	No external metal braid of cables used		N/A
6.5.1.1f)	If MAINS supply passes through:		—
	Means provided for passing protective conductor;	No PE terminals	N/A
	Impedance meets 6.5.1.3.		N/A
6.5.1.1g)	Protective conductors bare or insulated, if insulated, green/yellow	No PE terminals	N/A
	Exceptions:		—
	1) earthing braids;	No PE terminals	N/A
	2) internal protective conductors etc.;	No PE terminals	N/A
	Green/yellow not used for other purposes		N/A
6.5.1.1h)	TERMINAL suitable, and meets 6.5.1.2		N/A
6.5.1.2	PROTECTIVE CONDUCTOR TERMINAL		—
6.5.1.2a)	Contact surfaces are metal		N/A
6.5.1.2b)	Appliance inlet used		N/A
6.5.1.2c)	For rewirable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS		N/A
6.5.1.2d)	If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:		—
	Is near TERMINALS of circuit for which protective earthing is necessary		N/A
	External if other TERMINALS external		N/A
6.5.1.2e)	Equivalent current-carrying capacity to MAINS supply TERMINALS		N/A
6.5.1.2f)	If plug-in, makes first and breaks last		N/A
6.5.1.2g)	If also used for other bonding purposes, protective conductor:		—
	Applied first;		N/A
	Secured independently;		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Unlikely to be removed by servicing; or		N/A
	Warning marking requires replacement of protective conductor		N/A
6.5.1.2h)	Protective conductor of measuring circuit:		N/A
	1) Current RATING;		N/A
	2) PROTECTIVE BONDING:		—
	Not interrupted; or		N/A
	Indirect bonding used (see 6.5.1.5)		N/A
6.5.1.2i)	FUNCTIONAL EARTH TERMINALS allow independent connection		N/A
6.5.1.2j)	If a binding screw:		—
	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
	Contact pressure not capable of reduction by deformation of materials		N/A
	Passes tightening torque test		N/A
6.5.1.3	Impedance of PROTECTIVE BONDING of plug-connected equipment	No PE terminals	N/A
6.5.1.4	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N/A
6.5.1.5	Indirect bonding for measuring and test equipment	No PE terminals	N/A
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION (see 6.7, 6.8 and 6.9.2)		—
6.5.3	PROTECTIVE IMPEDANCE	(see Form A.12)	P
6.5.3a)	HIGH-INTEGRITY single component used (s. 14.6); or		N/A
6.5.3b)	A combination of components used; or		N/A
6.5.3c)	A combination of BASIC INSULATION and current- or voltage-limiting device used		P
	Components, wires and connections are RATED as required		P
6.5.4	Automatic disconnection of the supply	Not applicable	N/A
	If used, it meets :		—
6.5.4a)	Supplied with the equipment; or		N/A
	Specified by installation instruction		N/A
6.5.4b)	RATED disconnecting time within limit specified		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.4c)	RATED for maximum RATED LOAD		N/A
6.6	Connections to external circuits		—
6.6.1	General		—
	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		—
6.6.1a)	The external circuits		P
6.6.1b)	The equipment		P
	Separation of circuits provided; or		P
	Short circuit of separation does not cause a Hazard		N/A
	Instructions or markings include:		—
	1) RATED conditions for TERMINAL		P
	2) Required RATING of external circuit insulation		N/A
6.6.2	TERMINALS for external circuits		—
	TERMINALS which receive a charge from an internal capacitor are not HAZARDOUS LIVE	(see Form A.7)	N/A
	High voltage TERMINALS energized from the interior are:		—
	Not ACCESSIBLE if connected; or		N/A
	Unmated HAZARDOUS LIVE TERMINALS not ACCESSIBLE ; or		N/A
	marked with symbol 12		N/A
6.6.3	Circuits with TERMINALS which are HAZARDOUS LIVE		—
	These circuits are:		—
	Not connected to ACCESSIBLE conductive parts; or		P
	Connected to ACCESSIBLE conductive parts, but are not MAINS CIRCUITS and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE	All terminals are regarded as not accessible	P
6.6.4	ACCESSIBLE TERMINALS for stranded conductors		—
6.6.4a)	No risk of accidental contact because:		—
	Located or shielded	Located at rear side and the unit is located in a rack panel which is closed, so no live parts are accessible	P
	Self-evident or marked whether connected to ACCESSIBLE conductive parts		P
6.6.4b)	ACCESSIBLE TERMINALS will not work loose		P

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Clause	Requirement + Test	Result - Remark	Verdict
6.7	CLEARANCES and CREEPAGE DISTANCES	(See Form A.5 and A.13)	P
6.8	Procedure for dielectric strength tests	(See Form A.5 and A.14)	P
6.9	Constructional requirements for protection against electric shock		—
6.9.1	General		—
	If a failure could cause a HAZARD:		—
6.9.1a)	Security of wiring connections	Terminals only	N/A
6.9.1b)	Screws securing removable covers		P
6.9.1c)	Accidental loosening		P
	Easily damaged materials not used		P
	Non-impregnated hygroscopic materials not used		P
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		P
	ENCLOSURES or parts made of insulating material	Total enclosure is made of insulation material	P
	Protection for metal ENCLOSURES or parts by:		—
6.9.2a)	An insulating coating or BARRIER on the inside; or		N/A
6.9.2b)	CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires		P
6.9.3	Over-range indication		—
	Unambiguous	Display show true value	P
6.10	Connection to MAINS supply source and connections between parts of equipment		—
6.10.1	MAINS supply cords	No mains supply cord	—
6.10.1a)	RATED for maximum equipment current (see 5.1.3c)		N/A
	Cable complies with IEC 60227 or IEC 60245		N/A
6.10.1b)	Heat-resistant if likely to contact hot parts		N/A
6.10.1c)	Temperature RATING (cord and inlet)		N/A
6.10.1d)	Green/yellow used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N/A
	Detachable cords with IEC 60320 MAINS connectors:		—
	Conform to IEC 60799; or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Have the current RATING of the MAINS connector		N/A
6.10.2	Fitting of non-detachable MAINS supply cords		—
	Non-detachable cord protection:		—
6.10.2a)	Inlet or bushing smoothly rounded; or		N/A
6.10.2b)	Insulated cord guard protruding $\geq 5D$		N/A
	The protective earth conductor is the last to take the strain		N/A
6.10.2	Cord anchorages:		—
6.10.2a)	Cord is not clamped by direct pressure from a screw		N/A
6.10.2b)	Knots are not used		N/A
6.10.2c)	Cannot push the cord into the equipment to cause a hazard		N/A
6.10.2d)	No failure of cord insulation in anchorage with metal parts		N/A
6.10.2e)	compression bushing:		—
	1) Clamps all types and sizes of MAINS cords; and		N/A
	2) Is suitable:		—
	For connection to TERMINALS provided; or		N/A
	It is designed for screened MAINS cord		N/A
6.10.2f)	Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull test	(see Form A.15)	N/A
6.10.3	Plugs and connectors		—
6.10.3a)	MAINS supply plugs, connectors etc., conform with relevant specifications		P
6.10.3b)	If equipment supplied at voltages below 6.3.2.a) or from a sole source:		—
	Plugs of supply cords do not fit MAINS sockets above RATED supply voltage		P
	MAINS-type plugs used only for connection to MAINS supply		P
6.10.3c)	Plug pins which receive a charge from an internal capacitor	(See Form A.7)	N/A
6.10.3d)	Accessory MAINS socket outlets:		—
	1) Marking if accepts a standard MAINS plug (see 5.1.3e)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	2) Input has a protective earth conductor if outlet has earth TERMINAL contact		N/A
6.11	Disconnection from supply source	To be checked in end use	—
6.11.1	General		—
	Disconnects all current carrying conductors		N/A
6.11.1.1	Exceptions		—
6.11.1.1a)	Equipment supplied by low energy source; or		N/A
6.11.1.1b)	Equipment connected to impedance protected supply; or		N/A
6.11.1.1c)	Equipment constitutes an impedance protected load		N/A
6.11.2	Requirements according to type of equipment		—
6.11.2.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment		—
	Employs switch or circuit-breaker		P
	If switch or circuit-breaker is not part of the equipment, documentation specifies:		—
6.11.2.1a)	Switch or circuit-breaker to be included in building installation		P
6.11.2.1b)	Location		P
6.11.2.1c)	Marking		P
6.11.2.2	Single-phase cord-connected equipment	Permanently connected	—
	Equipment is provided with:		—
6.11.2.2a)	Switch or circuit-breaker; or		N/A
6.11.2.2b)	Appliance coupler (disconnectable without TOOL); or		N/A
6.11.2.2c)	Separable plug (without locking device)		N/A
6.11.2.3	HAZARDS arising from function		—
	Emergency switch	Not required for this unit	N/A
	Emergency switch $\leq 1$ m from the moving part		N/A
6.11.3	Disconnecting devices	No part of equipment	—
	Electrically close to the supply		N/A
6.11.3.1	Switches and circuit-breakers	No part of the equipment	—
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function		N/A
	Not incorporated in MAINS cord		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Does not interrupt protective earth conductor	No PE terminals	N/A
	If has other contacts meets separation requirements of 6.6 and 6.7		N/A
6.11.3.2	Appliance couplers and plugs		—
	Where an appliance coupler or seperable plug is used as the disconnecting device (see 6.11.2.2):	Not used as such	—
	Readily identifiable and easily reached by the OPERATOR		N/A
	Single-phase PORTABLE EQUIPMENT cord length $\leq 3$ m		N/A
	Protective earth conductor connected first and disconnected last		N/A
7	PROTECTION AGAINST MECHANICAL HAZARDS		—
7.1	General		—
	Conformity is checked by 7.2 to 7.6		
7.2	Moving parts	No moving parts	—
	Moving parts not able to crush, etc. (see also 6.11.2.3)		N/A
	If OPERATOR access permitted:	Not relevant	—
7.2a)	Access requires TOOL	No user access	N/A
7.2b)	Statement about training		N/A
7.2c)	Warning markings or symbol 14		N/A
7.3	Stability	Fixed in rack panel	—
	Marking of non-automatic means		N/A
	Conformity tests:	No tests performed	—
7.3a)	10° tilt test	Not relevant for this unit	N/A
7.3b)	multi-directional force test	< 1m, < 25 kg	N/A
7.3c)	downward force test	Rack panel mounting	N/A
7.4	Provisions for lifting and carrying	Not relevant for this unit	—
	Handles or grips withstand four times weight		N/A
	Equipment >18 kg :	<< 18 kg	—
	Has means for lifting or carrying; or		N/A
	Directions in documentation		N/A
7.5	Wall mounting	Rack panel mounting	—
	Mounting brackets withstand four times weight		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.6	Expelled parts	No such parts	—
	Equipment contains or limits the energy		N/A
	Protection not removable without the aid of a TOOL		N/A
8	MECHANICAL RESISTANCE TO SHOCK AND IMPACT		—
	After the tests of 8.1 to 8.2:		—
	Voltage tests	(see Form A.14)	P
	Inspections:		—
8a)	HAZARDOUS LIVE parts not accessible		P
8b)	ENCLOSURE shows no cracks (hazard)		P
8c)	CLEARANCES not less than their permitted values	(see Form A.13)	P
8d)	BARRIERS not damaged or loosened		N/A
8e)	No moving parts exposed, except permitted by 7.2		N/A
8f)	No damage which could cause spread of fire		N/A
9	PROTECTION AGAINST THE SPREAD OF FIRE		—
	Conformity for each source of HAZARD or area of the equipment is checked by one of the following:	(See Form A.16)	—
9a)	Fault test of 4.4; or		P
9b)	Application of 9.1 (eliminating or reducing the sources of ignition); or		P
9c)	Application of 9.2 (containment of fire within the equipment)		P
9.1	Eliminating or reducing the sources of ignition within the equipment		—
9.1a)	1) Limited-energy circuit (see 9.3); or		P
	2) Insulation meets the requirements for BASIC INSULATION; OR	(see Form A.5 and A.14)	P
	Bridging the insulation does not cause ignition		N/A
9.1b)	Surface temperature of liquids and parts (see 9.4.a)		N/A
9.1c)	No ignition in circuits designed to produce heat	(see Form A.2)	P
9.2	Containment of the fire within the equipment, should it occur		—
9.2a)	Energizing of the equipment is controlled by an OPERATOR held switch		N/A
9.2b)	Enclosure is conform with constructional requirements of 9.2.1; and		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Requirements of 9.4b) or c) are met		N/A
9.2.1	Constructional requirements		—
9.2.1a)	Insulated wires have flammability classification FV1 or better		N/A
	Connectors and insulating material have flammability classification FV2 or better		P
9.2.1b)	The enclosure is constructed as follows :		—
	1) Bottom constructed with:		—
	No openings; or		P
	Extent as specified in figure 7; or		N/A
	Baffles as specified in figure 6; or		N/A
	Perforated as specified in Table 12; or		N/A
	Metal screen with a mesh		N/A
	2) Sides have no openings as specified in figure 7		P
	3) Material of ENCLOSURE and any baffle or flame barrier is made of:		—
	Metal (except magnesium); or		N/A
	Non metallic materials have flammability classification FV1 or better	(see Table 3 or Form A.17)	P
	4) ENCLOSURE and any baffle or flame barrier have adequate rigidity		P
9.3	Limited-energy circuit		—
9.3a)	Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc See form A16		P
9.3b)	Current limited by one of following means:		—
	1) Inherently or by impedance; or	By protective impedance on measurement terminals	P
	2) Overcurrent protective device; or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION		N/A
9.3c)	Is separated by at least BASIC INSULATION		P
	If overcurrent protective device used:		—
	Fuse or a non adjustable electromechanical device	Fuse in mains wiring	N/A
9.4	Requirements for equipment containing or using flammable liquids	No such liquids	N/A
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Risk is reduced to a tolerable level :	(see Form A.19)	—
9.4a)	The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point	No such liquids	N/A
9.4b)	The quantity of liquid is limited		N/A
9.4c)	Flames are contained within the equipment		N/A
	Detailed instructions for risk-reduction provided		N/A
9.5	Over current protection	No over current protection inside equipment	N/A
	Devices not in the protective conductor		N/A
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		N/A
9.5.1	PERMANENTLY CONNECTED EQUIPMENT		P
	Over current device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		P
9.5.2	Other equipment		N/A
	Protection within the equipment		N/A
10	EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT		—
10.1	Surface temperature limits for protection against burns		—
	Easily touched surfaces within the limits	(see Form A.20A)	P
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	Are recognizable as such by appearance or function; or		N/A
	Are marked with symbol 13		N/A
	Guards are not removable without TOOL		N/A
10.2	Temperatures of windings		N/A
	Limits not exceeded in:		—
	NORMAL CONDITION		P
	SINGLE FAULT CONDITION		N/A
10.3	Other temperature measurements	(see Form A.20A)	P
	Following measurements conducted if applicable:		—
10.3a)	Value of 60 °C of field-wiring TERMINAL box not exceeded	No field-wiring terminal box	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
10.3b)	Surface of flammable liquids and parts in contact with this liquids	No such liquids	N/A
10.3c)	Surface of non-metallic ENCLOSURES	No increase of temperature	P
10.3d)	Parts made of insulating material supporting parts connected to MAINS supply	Approved mains terminals	P
10.3e)	TERMINALS carrying a current more than 0.5 A		P
10.4	Conduct of temperature test	(see Form A20)	P
10.5	Resistance to heat	Equipment produce no heat	P
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES	(See Form A.13)	N/A
10.5.2	Non-metallic ENCLOSURES	(See Forms A.21	P
	After treatment:		P
	No HAZARDOUS LIVE parts ACCESSIBLE;		P
	Tests of 8.1 and 8.2	(See Form A.13)	P
	In case of doubt, tests of 6.8 (without humidity preconditioning)		N/A
10.5.3	Insulating material		N/A
10.5.3a)	Parts supporting parts connected to MAINS supply	No such supporting parts	N/A
10.5.3b)	TERMINALS carrying a current more than 0.5 A		N/A
	Examination of material data; or		P
	in case of doubt::		—
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		—
11.1	General		N/A
11.2	Cleaning	Cleaning with a dry cloth	N/A
11.3	Spillage	No liquid used	N/A
11.4	Overflow	No liquid used	N/A
11.5	Battery electrolyte	No battery	—
	Battery electrolyte leakage presents no hazard		N/A
11.6	Specially protected equipment	No protected equipment	N/A
11.7	Fluid pressure and leakage	No liquids	—
11.7.1	Maximum pressure	No pressure	—

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Clause	Requirement + Test	Result - Remark	Verdict
	Maximum pressure of any part does not exceed $P_{RATED}$		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Test to IEC 60335 (refrigeration only)		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device	No pressure	—
	Does not operate in NORMAL USE		N/A
	Meets ISO 4126-1; and		N/A
	It is conform with:		—
11.7.4a)	Connected as close as possible to parts intended to be protected		N/A
11.7.4b)	Easy access for inspection, maintenance and repair		N/A
11.7.4c)	Adjustment only with TOOL		N/A
11.7.4d)	No discharge towards person		N/A
11.7.4e)	No HAZARD from deposit of discharged material		N/A
11.7.4f)	Adequate discharge capacity		N/A
11.7.4g)	No shut-off valve between overpressure safety device and protected parts		N/A
12	PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE	No radiation or the like	—
12.1	General		—
	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation		N/A
12.2.2	Accelerated electrons		N/A
12.3	Ultra-violet (UV) radiation	(Conformity test under consideration)	—
	No unintentional and HAZARDOUS escape of UV radiation	No UV radiation	N/A
12.4	Micro-wave radiation	No micro-wave radiation	—
	Power density does not exceed 10 W/m <sup>2</sup> .....		N/A
12.5	Sonic and ultrasonic pressure		—
12.5.1	Sound level	No sound	N/A
12.5.2	Ultrasonic pressure	No ultrasonic pressure	N/A
12.6	Laser sources (IEC 60825-1)	No laser	N/A

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

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Clause	Requirement + Test	Result - Remark	Verdict
	If glass screen, not in contact with surface of tube		N/A
13.2.4	Equipment RATED for high pressure (See 11.7)		N/A
14	COMPONENTS		P
14.1	General		P
	Where safety is involved, components meet relevant requirements		P
14.2	Motors	No motors	—
14.2.1	Motor temperatures		—
	Does not present a HAZARD when stopped or prevented from starting; or		N/A
	Protected by over temperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors	No motors	—
	Connected direct to device, if over speeding causes a HAZARD		N/A
14.3	Over temperature protection devices		N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
14.3a)	Reliable function is ensured		N/A
14.3b)	RATED to interrupt maximum current and voltage		N/A
14.3c)	Does not operate in NORMAL USE		N/A
14.4	Fuse holders	No fuses	N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	Mains voltage selecting devices	No such devices	N/A
	Accidental change not possible		N/A
14.6	HIGH INTEGRITY components	No high integrity components	N/A
	Used in applicable positions (see Table 3)		N/A
	Conforms with IEC publications		N/A
	Single electronic device not used		N/A
14.7	Mains transformers tested outside equipment	Tested in equipment. See Forms A.29 and A.30	N/A
14.8	Printed circuit boards		P
	Data shows conformity with FV-1 of IEC 60707 or better; or	Refer to relevant table	P
	Test shows conformity with FV-1 of IEC 60707 or better; or		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Thin film flexible PCB with limited-energy circuit used	No such PCB used	N/A
14.9	Circuits or components used as transient overvoltage limiting devices	No such components	—
	After test, no sign of overload or degradation		N/A
15	PROTECTION BY INTERLOCKS	No interlocks	—
15.1	General		—
	Interlocks are designed to remove a hazard before OPERATOR exposed		N/A
15.2	Prevention of reactivation		N/A
15.3	Reliability		—
	Single fault unlikely to occur; or		N/A
	Cannot cause a HAZARD		N/A
16	TEST AND MEASUREMENT EQUIPMENT		P
16.1	Current measuring circuits	(see Form A.31)	P
16.2	Multifunction meters and similar equipment	No such equipment	N/A
	No HAZARD from:		—
	RATED input voltage combinations		N/A
	Settings of functions		N/A
	Settings of range controls		N/A
ANNEX F	ROUTINE TESTS	Equipment has no accessible conductive parts.	N/A
	Manufacturer's declaration		

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Clause	Requirement + Test	Result - Remark	Verdict

4.4.2	TABLE: Summary of SINGLE FAULT CONDITIONS			Form A.1	—
Subclause	Title	Does not apply	Carried out	Comments	
4.4.2.1	PROTECTIVE IMPEDANCE		P		
4.4.2.2	Protective conductor	N/A			
4.4.2.3	Equipment or parts for short-term or intermittent operation	N/A			
4.4.2.4	Motors	N/A			
4.4.2.5	Capacitors	N/A			
4.4.2.6	Mains transformers Attach drawing of MAINS TxS showing all protective devices (see Forms A.29 and A.30)	N/A			
4.4.2.7	Outputs	N/A			
4.4.2.8	Equipment for more than one supply	N/A			
4.4.2.9	Cooling – air holes closed – fans stopped – coolant stopped	N/A N/A N/A N/A			
4.4.2.10	Heating devices – timer overridden – temperature controller overridden – loss of cooling liquid – overfilled or empty or both	N/A N/A N/A N/A			
4.4.2.11	Insulation between circuits and parts	-			
4.4.2.12	Interlocks	N/A			
Supplementary information:					



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Clause	Requirement + Test	Result – Remark	Verdict
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4.4 TABLE: Testing in single FAULT CONDITION – Results				Form A.2	P
Test subclause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
4.4.2.1	1	Short circuit resistor of protective impedance circuit	0:01	Voltage level 11 V/ 3 mA, no hazard	

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Clause	Requirement + Test	Result - Remark	Verdict

5.1.3c)	TABLE: Mains supply	Form A.3	P
	Marked rating .....	9-33 VDC, 10-33 VDC and 300 VAC	—
	Phase .....	3	—
	Frequency .....	50/60 Hz	—
	Current .....	350 mA	—
	Power .....	- W	—
	Power .....	VA	—

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

Note: Measurements are only required for marked ratings.

Supplementary information:

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Clause	Requirement + Test	Result – Remark	Verdict

5.3	TABLE: Durability of markings		Form A.4	P	
Marking method (see NOTE)		Agent			
1) Printed sticker		A Water			
2) Screened on enclosure		B Isopropyl alcohol			
3)		C			
4)		D			
5)		E			
NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.					
Marking location		Marking method (see above)			
Identification (5.1.2)		1,2			
Mains supply (5.1.3)		1,2			
Fuses (5.1.4)		N/A			
TERMINALS and operating devices (5.1.5.1)		1,2			
Measuring circuit TERMINALS (5.1.5.2)		1,2			
Switches and circuit breakers (5.1.6)		N/A			
DOUBLE/REINFORCED equipment (5.1.7)		N/A			
Field wiring TERMINAL boxes (5.1.8)		N/A			
Warning marking (5.2)		P			
Battery charging (13.2.2)		N/A			
Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
1	A,B	P	P	P	
2	A,B	P	N/A	N/A	

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Clause	Requirement + Test	Result – Remark	Verdict

6	TABLE: Protection against electric shock - Block diagram of system Form A.5	P							
Pollution degree ..... : 2		Installation category (overvoltage category) ..... : II							
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		
Model DKG 205, DKG 207, DKG 217, DKG 307, DKG 317,									
A	RI	250 Vrms	1,5	>100	3	>100	3	2224 Vrms	
B Note 4	BI	100 Vrms	1,5	>100	3	>100	1,5	1390 Vrms	
C Note 5	RI	300 Vrms	3,2	>100	6,4	>100	5,9	5632 Vrms	Measurement CAT III
NOTE 1 – Type of insulation: BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION			NOTE 2 - Types of voltage Peak impulse test voltage (pulse) r.m.s. d.c. peak			NOTE 3 - INSTALLATION CATEGORIES (OVERVOLTAGE CATEGORIES) or POLLUTION DEGREES which differ from these should be shown under "Comments".			

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Clause	Requirement + Test	Result – Remark	Verdict

6	TABLE: Protection against electric shock - Block diagram of system Form A.5	P
Supplementary Information: Note 4: Protective impedance; measuring input voltage 300 Vrms, no voltages > 33 Vrms on electronics part are measured during normal condition and single fault conditions. Note 5: MT input > 33-300 Vrms.		





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Clause	Requirement + Test	Result – Remark	Verdict

6	TABLE: Values in NORMAL CONDITION							Form A.7			P			
6.1.1	Exceptions							11.2 Cleaning and decontamination			—			
6.3.1	Values in NORMAL CONDITION (see NOTE 1)							11.3 Spillage			—			
6.6.2	Terminals for external circuit							11.4 Overflow			—			
6.10.3	Plugs and connections										—			
Item (see Form A.6)	Voltage			Current				Capacitance		10 s test (NOTE 2)			Comments	
	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	µC	mJ	V	µC	mJ		
1	All the measured voltage are << 33 Vr.m.s., 46,7 V peak or 70 Vd.c. See also safety diagram. Touch current << 70 mA													
2														
3														



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Clause	Requirement + Test							Result – Remark					Verdict
<b>6</b>	<b>TABLE: Values in NORMAL CONDITION</b>							<b>Form A.7</b>					<b>P</b>
6.1.1	Exceptions							11.2 Cleaning and decontamination					—
6.3.1	Values in NORMAL CONDITION (see NOTE 1)							11.3 Spillage					—
6.6.2	Terminals for external circuit							11.4 Overflow					—
6.10.3	Plugs and connections												—
Item (see Form A.6)	Voltage			Current				Capacitance		10 s test (NOTE 2)			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 1 – The requirements of 6.3.1 include drying out (if specified). For permanently connected equipment, the current values are 1,5 times the specified values. NOTE 2 – A 5 s test is specified in 6.10.3c).													



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Clause	Requirement + Test	Result – Remark	Verdict
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6.3.2		TABLE: Values in SINGLE FAULT CONDITION										Form A.8	P								
Item  (See Form A.6)	Subclause and fault No. (see FormA.2)	Voltage			Transient (see NOTE)		Current			Capacitance	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.		μF (NOTE)									
1	1-5	During (the bridging of one of the protective impedance resistors) the single fault conditions all voltages are << 55 Vr.m.s., 78 V peak and 140 Vd.c. See also safety diagram																			
2	1-5																				
3	1-5																				



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Clause	Requirement + Test	Result – Remark	Verdict

6.3.2		TABLE: Values in SINGLE FAULT CONDITION										Form A.8	P
Item  (See Form A.6)	Subclause and fault No. (see FormA.2)	Voltage			Transient (see NOTE)		Current			Capacitance	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.		μF (NOTE)	

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.







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Clause	Requirement + Test	Result – Remark	Verdict

6.5.1.5	TABLE: Indirect bonding for measuring and test equipment		Form A.11	N/A
ACCESSIBLE part under test	Voltage attained s	Time for voltage to drop to allowable levels s	Verdict	
a) Voltage limiting device	—	—	—	
Supplementary Information: No PE terminals				

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Clause	Requirement + Test	Result – Remark	Verdict

6.5.3	TABLE: PROTECTIVE IMPEDANCE	Form A.12	P
A high INTEGRITY single component			
	Component	Location	Comments
			No such parts
A combination of components			
	Component	Location	Comments
	DKG-205 :36x resistor 2,2 Mohm in series	R100 to R135	
	DKG-207/217 :18x resistor 330 kohm in series	R1 to R3, R5 to R7, R8 to R10, R12 to R14, R27 to R29, R34 to R36	
	DKG-307/317 : 24x resistor 330 kohm in series	R1 to R3, R5 to R7, R8 to R10, R12 to R14, R23 to R25, R27 to R29, R30 to R32, R34 to R36	
A combination of BASIC INSULATION and a current or voltage limiting device			
	Component	Location	Comments
			No such parts
Supplementary information:			



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Clause	Requirement + Test	Result – Remark	Verdict
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6.7	TABLE: CLEARANCES and CREEPAGE DISTANCES										Form A.13	P				
8	Mechanical resistance to shock and impact											P				
10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES											N/A				
Location (see Form A.5)	Measured (initial – 6.7)		Verdict	Mechanical tests (note)					Test at max. RATED ambient (10.5.1)	Measured after test (if required)		Verdict	Comments			
	CREEPAGE DISTANCE mm	CLEARANCE mm		Applied force (6.7) N	Rigidity (8.1)		Drop (8.2)			CREEPAGE DISTANCE mm	CLEARANCE mm					
					Static	Dynamic	Normal	Hand-held/ Plug-in								
A	4,5	4	P	After a temperature treatment of 70 °C, a 30 N force on the enclosure of the appliance does no change any creepage or clearance, no hazardous live parts are accessible. No further tests were performed.							P	DKG 205, DKG 207, DKG 217, DKG 251, DKG 307, DKG 317,				
B	3,4	3,4	P													P
C	7,8	7,8	P													P

NOTE – Refer to Form A.12 for dielectric strength tests following the above tests.

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Clause	Requirement + Test	Result – Remark	Verdict

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

<sup>1</sup> Record the fault, test or treatment applied before the dielectric strength test

	Test site altitude ..... :	Sea level	—
	Test voltage correction factor (see Table 10) ... :	-	—

Location or references from Forms A.2 and A.5	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s/peak/d.c V	Comments	Verdict
A	-	Yes	250	2224		P
B	-	Yes	100	1390		P

Supplementary information:





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Clause	Requirement + Test	Result – Remark	Verdict
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9	TABLE: Protection against the spread of fire			Form A.16	P
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9a, 9b or 9c)	Protection details	Verdict	
1	Measurement input	9 c)	Voltage input protected by protective impedance, current input protected by external current transformer. (for applicable models)	P	
2	-	9 c)	Total enclosure flammability classification V0	P	

Supplementary information:

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Clause	Requirement + Test	Result – Remark	Verdict

9.2.1	TABLE: Constructional requirements			Form A.17	P
14.8	Printed circuit boards				P
Material tested..... : -					
Generic name..... : -					
Material manufacturer ..... : -					
Type..... : -					
Colour ..... : -					
Conditioning details..... : -					
		Sample 1	Sample 2	Sample 3	
Thickness of specimen	mm				
Duration of flaming after first Application	s				
Duration of flaming plus glowing After second application	s				
Specimen burns to holding clamp	Yes/No				
Cotton ignited	Yes/No				
Sample result	Pass/Fail				
Supplementary information: Enclosure and front material flammability classification UL94-V0					



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Clause	Requirement + Test	Result – Remark	Verdict
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<b>9.3</b>	<b>TABLE: Limited-energy circuit</b>					<b>Form A.18</b>	<b>P</b>
Item	9.3 a)	9.3 b) Current and power limitation			9.3 c)	Decision	
or Location (see Form A.16)	Maximum potential in circuit voltage r.m.s./d.c. V	Maximum available current A	Maximum available power VA	Overload protection after 120 s A	Circuit separation	Yes/No	Comments
Protective impedance	< 30 Vr.m.s.	0,192	5,76	-	BI	Yes	
Supplementary information:							



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Clause	Requirement + Test	Result – Remark	Verdict
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<b>9.4</b>	<b>TABLE: Requirements for equipment containing or using flammable liquids</b>		<b>Form A.19</b>	<b>N/A</b>
	Type of liquid	9.4 Flammable liquids		Verdict
		b) quantity	c) Containment	
Supplementary information: No flammable liquids				

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Clause	Requirement + Test	Result – Remark	Verdict

10.	TABLE : Temperature Measurements				Form A.20A	P
10.1	Surface temperature limits - NORMAL CONDITION and / or SIGNLE FAULT CONDITION					P
10.2	Temperature of windings- NORMAL CONDITION and / or SIGNLE FAULT CONDITION					N/A
10.3	Other temperature measurements					P
Operating conditions:						
Frequency.....	50	Hz	Test room ambient temperature ( $t_a$ ) .....		25	°C
Voltage .....	240	9-33	Test duration.....		Steady state	
	VAC	VDC				
Part / Location	$t_m$	$t_c$	$t_{max}$	Verdict	Comments	
	°C	°C	°C			
model DKG 527 (covering all DKG model )		40°C	50°C			
HKE Relay 12 Vdc	39	54	64	130	P	
Q5 Transistor	122	137	147	150	P	
Q4-Q5 Transistor Cooling	100	115	125	150	P	
RS3B Resistor	46	61	71	200	P	
NTC	50	65	75	120	P	
VDR V14	60	75	85	115	P	
HKE Relay 120 Vac	54	69	79	130	P	
Capacitor 2200 uF, 35 V	57	72	82	105	P	
DC Supply terminal	38	53	63	105	P	
AC Supply terminal	38	53	63	105	P	
Enclosure	54	69	79	104	P	
NOTE 1 - $t_m$ = measured temperature $t_c$ = $t_m$ corrected ( $t_m - t_a + 40$ °C or max. RATED ambient) $t_{max}$ = maximum permitted temperature NOTE 2 - See also 14.1 with reference to component operating conditions NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary NOTE 4 - See Form A.20B for details of winding temperature measurements						
Supplementary information:						
The heatingtest is performed with the complete enclosure covered with defined materials, mounted in the defined black wall						

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Clause	Requirement + Test	Result – Remark	Verdict

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

Operating conditions:								
Frequency .....	Hz	Test room ambient temperature ( $t_{a1}/t_{a2}$ )....				/ °C (initial / final)		
Voltage .....	V	Test duration .....				h min		
Part / Designation	$R_{cold}$ Ω	$R_{warm}$ Ω	Current A	$t_r$ K	$t_c$ °C	$t_{max}$ °C	Verdict	Comments

NOTE 1-  $R_{cold}$  = initial resistance  
 $t_r$  = temperature rise  
 $t_{max}$  = maximum permitted temperature  
 $R_{warm}$  = final resistance  
 $t_c = t_r$  corrected ( $t_c = t_r - \{ t_{a2} - t_{a1} \} + [40 \text{ °C or max RATED ambient}]$ )

NOTE 2 - Indicate insulation class (IEC 85) under comments (optional)

NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary

Supplementary information: Approved transformer. Transformer tested in normal conditions and in single fault conditions, measured with thermocouples.



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Clause	Requirement + Test	Result – Remark	Verdict
<b>10.5.3</b>	<b>TABLE: Insulating Materials</b>	<b>Form A.22</b>	<b>N/A</b>
10.5.3a)	Ballpressure test		N/A
	Max. allowed impression diameter .....	2 mm	—
Part	Test temperature °C	Impression Diameter (mm)	Verdict
Supplementary information: No such insulating parts			
10.5.3b)	Vicat softening test (ISO 306)		N/A
Part	Vicat softening temperature °C	Thickness of sample (mm)	Verdict
Supplementary information:			



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Clause	Requirement + Test	Result – Remark	Verdict
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<b>8</b>	<b>TABLE: Mechanical resistance to shock and impact</b>	<b>Form A.23</b>	<b>P</b>
<b>11</b>	<b>Protection against hazards from fluids</b>	Acceptation based on client specification	<b>N/A</b>

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

Location (see form A.5)	Clause 8 tests				Clause 11 tests				Working voltage V	Test voltage V	Verdict	Comments
	Static	Dynamic	Normal	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)				
2	P	N	P	N	N	N	N	P	9-33 Vdc 300 Vac	2224	P	
3	P	N	p	N	N	N	N	P	9-33 Vdc, 300 Vac	2224	P	

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

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Clause	Requirement + Test	Result – Remark	Verdict

<b>11.7.2</b>	<b>TABLE: Leakage and rupture at high pressure</b>				<b>Form A.24</b>	<b>N/A</b>
Part	Maximum permissible working pressure MPa	Test pressure MPa	Leakage YES / NO	Burst YES / NO	Comments	
Supplementary information: No pressure						
<b>11.7.3</b>	<b>Leakage from low-pressure parts</b>					<b>N/A</b>
Part	Test pressure MPa	Leakage YES / NO	Comments			
Supplementary information: No pressure						



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Clause	Requirement + Test	Result – Remark	Verdict

12.5.1	TABLE: Sound level		Form A.26	N/A
Locations tested	Measured values dBA		Calculated maximum sound pressure level	
At operator's normal position and at bystanders' positions				
a)				
b)				
c)				
d)				
e)				
Supplementary information: No sound				

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

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Clause	Requirement + Test	Result – Remark	Verdict

<b>13.2.2</b>	<b>TABLE: Batteries</b>	<b>Form A.27</b>	<b>N/A</b>
	Battery load and charging circuit diagram:		
	Battery type..... :		—
	Battery manufacturer/model/catalogue No. .... :		—
	Battery ratings..... :		—
	Reverse polarity instalment test		
Single component failures		Verdict	
Component		Open circuit	Short circuit
Supplementary information: No batteries			



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Clause	Requirement + Test	Result – Remark	Verdict

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

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Clause	Requirement + Test	Result – Remark	Verdict

<b>4.4.2.6</b>	<b>TABLE: Mains transformer</b>	<b>Form A.30</b>	<b>N/A</b>
14.7.2	Overload tests (for mains transformers)		
Type .....			
Manufacturer .....			
Test in equipment			
Test on bench			
Test repeated inside equipment (see 14.7)			
Optional – Insulation class (IEC 60085) of the lowest RATED winding .....			—
Winding identification			
Type of Protector for winding (Note 1)			
Elapsed time			
Current, A	secondary		
Winding temperature, °C primary			
(see Note 2)			
Tissue paper / cheesecloth OK ?			
(Pass / Fail)			
Voltage tests (see Note 3)			
primary to secondary			
primary to core			
secondary to secondary			
secondary to core			
Verdict			
Note 1:	Primary fuse	- PF / ( ) A	
	Secondary fuse	- SF / ( ) A	
	Overtemperature protection	- OP / ( ) °C	
	Impedance protection	- Z	
Note 2:	Indicate method of measurement	TC = with thermocouple R = resistance method	
	If resistance method is used, record resistance in cold and warm condition in FormA.20B!		
Note 3:	Record the voltage applied and the type of voltage (r.m.s. / d.c. / peak) and for results use NB = no breakdown or B = breakdown		
Supplementary information: <b>See Form A.29</b>			

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Clause	Requirement + Test	Result – Remark	Verdict

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

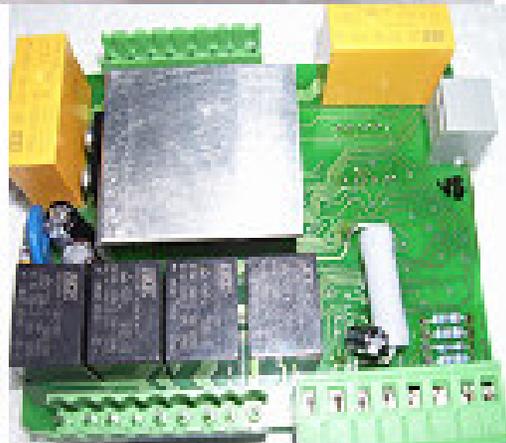
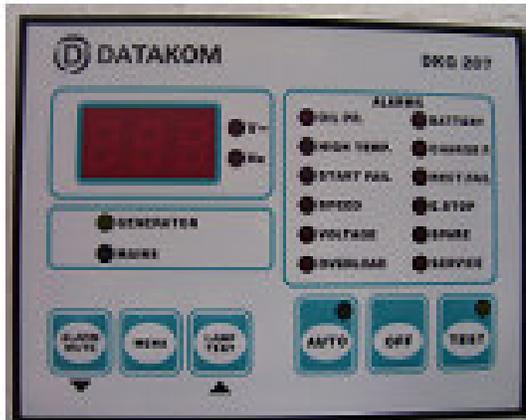


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Clause	Requirement + Test	Result – Remark	Verdict



DKG-205

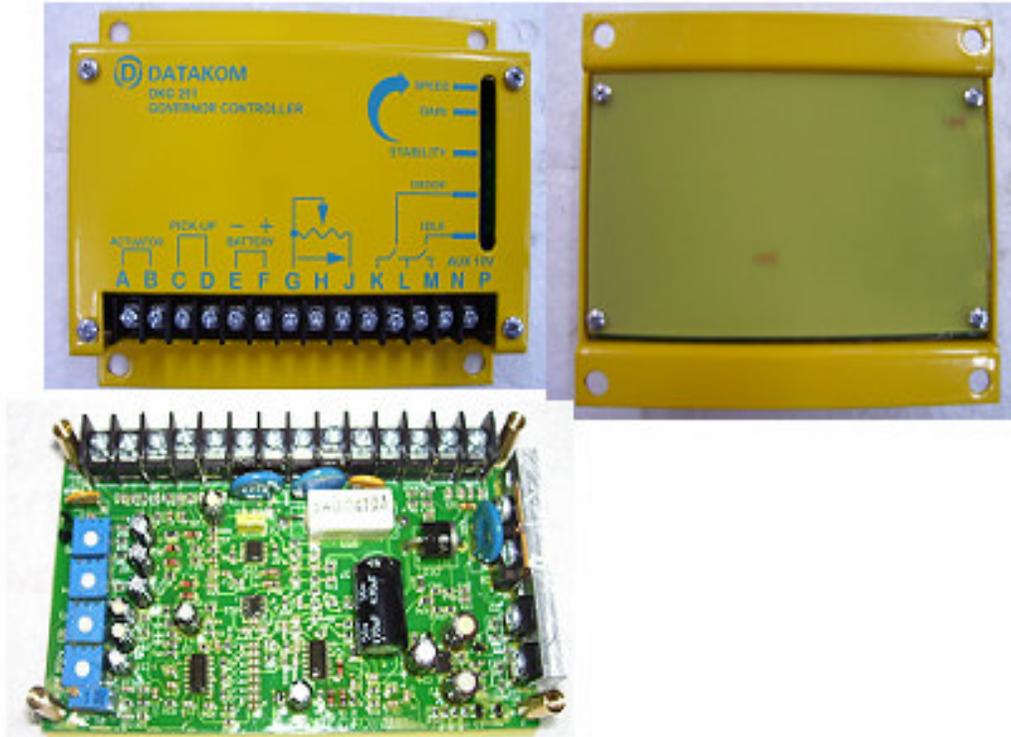
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Clause	Requirement + Test	Result – Remark	Verdict



DKG-207

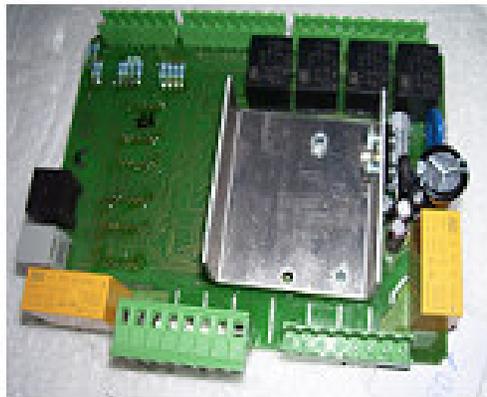
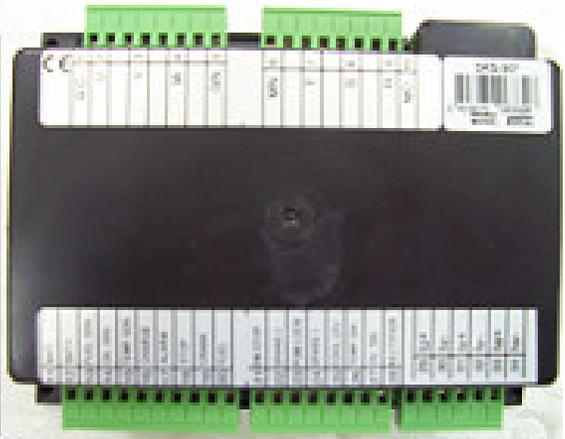
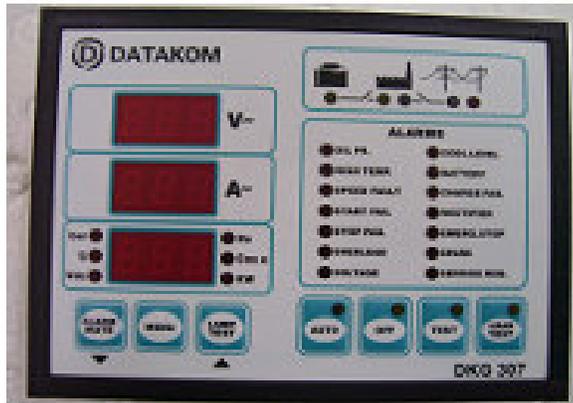


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Clause	Requirement + Test	Result – Remark	Verdict



DKG-251

IEC 61010-1			
Clause	Requirement + Test	Result – Remark	Verdict



DKG-307

IEC 61010-1			
Clause	Requirement + Test	Result – Remark	Verdict



DKG-317