ACREL CO., LTD.

CE LVD REPORT

Prepared For :	ACREL CO., LTD. No.253, Yulv Road, Jiading District, Shanghai, China
Product Name:	DJSF SERIES ELECTRONIC DC MEASURING DEVICE
Main Test Model:	DJSF1352
Additional Model:	DJSF1352-RN, DJSF1352-RN/K, DJSF1352-RN/K-P1, DJSF1352-RN/D
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China
Test Date:	Jun. 10, 2019–Jun. 18, 2019
Date of Report :	Jun. 18, 2019
Report No.:	BST1906116974060SR

TEST REPORT

EN 61010-1

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

Part 1: General requirements

Testing Laboratory Name .....:	Shenzhen BST Technology Co.,Ltd..
Address .....:	Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China
Testing location .....:	Shenzhen BST Technology Co.,Ltd.
Applicant's Name .....:	ACREL CO., LTD.
Address .....:	No.253, Yulv Road, Jiading District, Shanghai, China
Manufacturer ……. ……:	JIANGSU ACREL ELECTRIC MFG. CO., LTD.
Address …… ……. :	No.5, Dongmeng Road, Nanzha Street, Jiangyin City, Jiangsu Province, China
Standard .....:	EN 61010-1:2010
Test Result ……:	Compliance with EN 61010-1:2010
Procedure deviation .....:	CE-LVD
Non-standard test method .....:	N/A
Type of test object ……:	See Page 1
Trade name…… :	See Page 1
Model/type reference ……..:	See Page 1
Rating ……:	220V~

Particulars: test item vs. test requirements

Equipment mobility.....	Movable equipment
Operating condition.....	Continues
Mains supply tolerance	±10%
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N.A.
Class of equipment	Class I
Protection against ingress of water	IP 20

Possible test case verdicts :		
Test case does not apply to the test object ……..	:	N(.A.)
Test object does meet the requirement ……	:	P(ass)
Test object does not meet the requirement …….	:	F(ail)

General remarks:	
"(See remark #)" refers to a remark appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a comma is used as the decimal separator. The test results presented in this report relate only to the object tested. This report shall not be reproduced except in full without the written approval of the testing laboratory.	Attached with: A. photo documentation

Artwork of Marking Label:

DJSF SERIES ELECTRONIC DC MEASURING DEVICE
Model: DJSF1352
Rating: 220V~

JIANGSU ACREL ELECTRIC MFG. CO., LTD.

Prepared by :	Jade Zhan	Engineer
Reviewer :	Jacky Zhang	Supervisor
Approved & Authorized Signer :	APPROVED	Manager

EN 61010-1			
Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
4.4	**Testing in SINGLE FAULT CONDITION (SFC)**		**---**
4.4.1	General		P
4.4.2	Application of fault conditions		P
4.4.2.1	protective impedance	Not protective impedance used	N
4.4.2.2	protective conductor		P
4.4.2.3	Equipment or parts for short-term or intermittent operations		N
4.4.2.4	Motors		P
4.4.2.5	Capacitors	No such capacitors	N
4.4.2.6	Mains transformers		P
4.4.2.6.1	Short circuit		P
4.4.2.6.2	Overload		P
4.4.2.7	Outputs		P
4.4.2.8	Equipment for more than one supply	Only one supply	N
4.4.2.9	Cooling	No cooling equipment	N
4.4.2.10	Heating devices		N
4.4.2.11	Insulation between circuits and parts		P
4.4.2.12	Interlocks	No interlocks	N
4.4.3	Duration of tests		N
4.4.3.1	The equipment shall be operated unit further change as a result of the applied fault is unlikely		N
4.4.3.2	A device interrupted or limited the current shall limit the temperature of parts easily touched		N
4.4.3.3	Fuse opened and not operate within approximately 1 s, and the current through the fuse shall be measured		N
4.4.4	Conformity after application of fault conditions		P
4.4.4.1	Protection against electric shock is checked after the application of single fault as follows:		P
	a), no accessible conductive parts become hazardous live		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
	b), performing a voltage test on double insulation or reinforced insulation		P
	c), measuring the temperature of transformer winding		P
4.4.4.2	Temperature of outer surface of enclosure and of parts that can be touched is checked	Comply with the standard	P
4.4.4.3	Protection against the spread of fire is checked	Comply with the standard	P
4.4.4.4	Protection against other hazard is checked	See clause 7 and 8 and 11 to 16	P
5	**MARKING AND DOCUMENTATION**		**----**
5.1.2	Identification; equipment is identified by:		P
	The equipment shall be marked with	See copy of marking plate	P
	a) manufacturer' or supplier's name or trade mark	Ditto.	P
	b) model number, name or other means to identify the equipment	Ditto.	P
5.1.3	Mains supply		---
5.1.3 a)	Nature of supply:		---
	- a.c. RATED mains frequency or range of frequencies		P
	- d.c. with symbol 1 of table 1	Only a.c. supply	N
5.1.3 b)	RATED supply voltage(s) or range	220V	P
5.1.3 c)	Maximum RATED power in W or VA, or		P
	-More than one voltage range: separate values shall be marked, unless the maximum and minimum values do not differ by less than 20%		N
5.1.3 d)	Equipment which the OPERATOR can set for different RATED supply voltages shall be provided with means for the indication of the voltage for which the equipment is set.		N
5.1.3 e)	Accessory mains socket-outlets accepting standard mains plugs shall be marked with voltage if it is different from the mains supply voltage.:	No socket-outlets	N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
5.1.4	Fuses		---
	There shall be a marking beside the fuseholder		P
5.1.5	Terminals, connections and operating devices		P
5.1.5.1	Terminals for connection to the mains supply shall be identifiable	Comply with the standard	P
	a)Function earth terminals		N
	b)Protect conduct terminals		P
	c)Terminals of measuring and control circuits		P
	d)Terminals supplied from the interior of the equipment and which are HAZARDOUS LIVE		P
	e)Accessible functional earth terminals connected to accessible conductive parts		P
5.1.5.2	Measuring circuit TERMINALS		P
5.1.6	Switch and circuit-breakers		P
	The on-position or the off-position shall be clearly marked		P
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		N
	Protected throughout (symbol 11)		N
	Only partially protected (symbol 11 not used)		N
5.1.8	Field-wiring Terminal boxes		P
5.2	Warning markings:		---
	- visible when ready for NORMAL USE		P
	- if necessary marked with symbol 14		P
	- are near or on applicable parts		P
	- advise how to avoid contact with HAZARDOUS live parts		P
	- TERMINAL voltage exceeding 1 kV (symbol 12)		N
	- easily touched high temperature parts (symbol 13)		N
5.3	Durability of markings; the required markings remain clear and legible (NORMAL USE)	Perfected	P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
5.4	Documentation		---
5.4.1	General; equipment is accompanied by documentation which includes:		P
	- technical specification		P
	- instructions for use		P
	- name and address of manufacturer or supplier		P
	- the information supplied in 5.4.2 to 5.4.5		P
	Definition of INSTALLATION CATEGORY		P
	A clear explanation of warning symbols is in the documentation, or		P
	... information is durable and legibly marked on the equipment (see also NOTE on instructions for handling hazardous substances)		P
5.4.2	Equipment RATINGS; documentation includes:		---
	- supply voltage or voltage range		P
	- the frequency or frequency range		P
	- the power or current RATING		P
	- a description of all input and output connections		N
	- the RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE	No external circuit	N
	- statement of the range of environmental conditions	Max. operating temperature: 40℃	P
5.4.3	Equipment installation; documentation includes instruction for: (Stated in instruction)		---
	- assembly, location and mounting		P
	- protective earthing		P
	- connections to the supply		P
	- requirements		P
	- special services		N
	- maximal sound power level		P
	- instructions about sound pressure		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
	Additional information for PERMANENTLY CONNECTED EQUIPMENT: *(Hand-held /Portable equipment)*		---
	- supply wiring		N
	- external switch or circuit-breaker and external overcurrent protection		N
	- recommendation on switch or circuit-breaker location		N
5.4.4	Equipment operation; instructions for use include:		----
	- identification of operating controls		P
	- equipment positioning		P
	- interconnection requirements		P
	- specification of intermittent operation limits		N
	- explanation of required symbols		P
	- replacement of consumables		N
	- cleaning and decontamination		P
	- a statement against use in a manner not specified by the manufacturer		P
5.4.5	Equipment maintenance; instructions include:		---
	- sufficient preventive maintenance and inspection information		P
	- specific battery		N
	- any manufacturer specified parts		P
	- RATING and characteristics of fuses		P
6	**PROTECTION AGAINST ELECTRIC SHOCK**		---
6.1.1	Requirements		P
6.1.2	Exceptions		N
6.2	Determination of ACCESSIBLE parts		P
6.2.1	Examination		---
6.2.2	Opening above parts that are hazardous live		N
6.2.3	Opening for pre-set controls		N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
6.3	Permissible limits for ACCESSIBLE parts:		---
6.3.1	- values in NORMAL CONDITION	Live parts to enclosure current < 0.5mA	P
6.3.2	- values in SINGLE FAULT CONDITION	Live parts to enclosure current < 3.5mA	P
6.4	Protection in NORMAL CONDITION (see 6.8 and 8.1)	Base inaulation (comply with Annex D)	P
6.5	Protection in SINGLE FAULT CONDITION; additional protection is provided as specified in 6.5.1 to 6.5.4, or		P
	... by automatic disconnection of the supply		N
6.5.1	Protective earthing; ACCESSIBLE conductive parts are bonded to the PROTECTIVE CONDUCTOR TERMINAL, or		P
	... are separated from parts which are HAZARDOUS LIVE (for indirect bonding of measurement and test equipment see 6.5.1.4)		N
6.5.1.1	PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both		N
6.5.1.2	Protective conductor terminal		P
6.5.1.3	Impedance of plug-connected equipment		N
6.5.1.4	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N
6.5.1.5	Indirect bonding for measurement and test equipment		N
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION (see 6.7, 6.8 and 6.9.2)		N
6.5.3	A PROTECTIVE IMPEDANCE is one or more of the following:		---
	- an appropriate HIGH INTEGRITY single component (see 14.6)		N
	- a combination of components		N
	- a combination of BASIC INSULATION and a current or voltage limiting device		N
	Components, wires and connections are RATED as required		N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
6.5.4	Automatic disconnection of the supply		---
	-supplied with the equipment		N
	- rated to disconnect the load		N
	- rated for the maximum rated load		N
6.6	Connections to external circuits		---
6.6.1	Connections to external circuits shall not		---
	- cause Accessible parts of the external circuits to become hazardous live in normal condition		N
	- Nor cause accessible parts of the equipments to become hazardous live in normal condition		N
6.6.2	TERMINALS for external circuits		N
	TERMINALS which receive a charge from an internal capacitor; measured voltage (V); charge ..:		N
6.6.3	Circuits with TERMINALS which are HAZARDOUS LIVE		---
	No mains circuits are connected to ACCESSIBLE conductive parts		N
	For other HAZARDOUS LIVE circuits with one TERMINAL contact at earth potential		N
	Circuits designed to be operated with one ACCESSIBLE TERMINAL contact floating		N
6.6.4	Accessible terminals for stranded conductors		N
6.7	CLEARANCES and CREEPAGE DISTANCES	(See attached table 6)	---
6.7.1	General requirements		P
6.7.1.1	Clearances		P
6.7.1.2	Creepage distance		P
6.7.2	Main circuits	(see appended table 6)	P
6.7.3	Circuits other than mains circuits		---
6.7.3.2	Clearance values where table 5 does not apply and for circuits in measurement		N
6.7.3.3	Creepage distance values		N
6.7.4	Measuring circuits		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
6.7.4.1	Clearance values		P
6.7.4.2	Creepage distance values		P
6.8	Procedure for dielectric strength tests		---
6.8.1	Reference test earth		N
6.8.2	Humidity preconditioning	40℃, 96%RH	P
6.8.3	Conduct of tests		P
6.8.4	Voltage tests		P
6.8.4.1	Altitude correction of test voltages for checking clearances in homogeneous construction		P
6.9	Constructional requirements for protection against electric shock		---
6.9.1	General;		---
	- security of wiring connections		P
	- screws securing removable covers		P
	- accidental loosening		P
6.9.2	ENCLOSURES of equipment with DOUBLE INSULATION or REINFORCED INSULATION		---
	ENCLOSURE surrounds all metal parts		N
6.9.3	Over-range indication		---
6.9.3 a)	Analogue meters with stops at the exact ends of the range		N
6.9.3 b)	Digital meters which show a low value when the true value is above the maximum		N
6.9.3 c)	Chart recorders which print a trace at the edge of the chart		N
6.10	Connection to mains supply source and connections between parts of equipment		---
6.10.1	Mains supply cords		N
6.10.1 a)	This cords shall be rated for the max current and meet the requirement IEC60 227 or IEC 60245 or certified or approved by a recognized testing authority		N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
6.10.1.b)	If a cord is likely to contact hot external parts ,it shall be made of suitably heat-resistant material		N
6.10.1c)	Required temperature RATING		N
6.10.1d)	Green/yellow covered conductors are used only for connection to PROTECTIVE CONDUCTOR TERMINALS		N
6.10.2	Fitting of non-detachable mains supply cords		---
	The cord enters the equipment:		---
	- inlet or bushing with a smoothly rounded opening		N
	- insulated cord guard with specified projection 5 D		N
	cord anchorage:		---
	- the cord shall not be clamped		N
	- knots in the cord are not be used		N
	- cannot push the cord into the equipment to an extent which could cause a hazard		N
	- failure of the cord insulation in a cord anchorage which has metal parts shall not cause accessible conductive parts to become hazardous live		N
	-Generally compression bushing shall not be used as a cord anchorage		N
	-the cord anchorage shall be designed so that cord replacement does not causes a hazard and it shall be clear how the relief from strain is provided		N
6.10.3	Plugs and connectors		---
6.10.3 a)	Plugs, connectors and appliance couplers, comply with the relevant specifications		N
6.10.3 b)	mains type plugs and sockets are not used incorrectly		N
6.10.3 c)	Plug pins of cord-connected equipment receive a charge from an internal capacitor; the pins shall be hazardous live 5s after disconnection of the supply	No such equipment	N
6.10.3 d)	Equipment with accessory mains socket-outlets:		---
	- if outlets can accepts a standard mains plug there is a marking according to 5.1.3 e)		N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
	- if the outlets with a PROTECTIVE EARTH TERMINAL the input mains supply shall include one		N
6.11	Disconnection from supply source		----
6.11.1	Equipment shall be provided with a means for disconnecting it from each operating energy supply sources		P
6.11.1.1a)	Intended for supply only from a low energy source such as a small battery		N
6.11.1.1 b)	Intended only for connection to an impedance protected supply		N
6.11.1.1 c)	Which constitutes an impedance protected load		N
6.11.2	Requirements according to type of equipment		---
6.11.2.1	Permanently connected equipment and multi-phase equipment		N
	Permanently connected equipment and multi-phase equipment shall employ a switch or circuit-break as the means for disconnection		N
	If a switch is not part of the equipment ,following shall be specified:		----
6.11.2.1 a)	A switch or circuit-breaker shall be included in the building installation		N
6.11.2.1 b)	It shall be in close proximity to the equipment and within easy reach of the OPERATOR		N
6.11.2.1 c)	It shall be marked as the disconnecting device for the equipment		N
6.11.2.2	Single-phase cord-connected equipment		N
6.11.2.3	Hazards arising from function		N
6.11.3	Disconnecting devices		P
6.11.3.1	Switches and circuit-breakers		P
6.11.3.2	Appliance couplers and plugs		N
7	**PROTECTION AGAINST MECHANICAL HAZARDS**		**----**
7.1	Operation shall not lead to a mechanical hazard in normal condition or single fault condition	Operation can not lead to a mechanical hazard	P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
7.2	Moving parts not able to crush, etc. (see also 6.12.32.3)		P
7.3	Stability	Secured before operation	---
	- titled in each direction to an angle of 10^{o} from its normal position		N
	-force test applied in all directions except upward		N
	-force test applied to downwards		N
7.4	Provisions for lifting and carrying.		**---**
	Handles or grips withstand 4 times the weight of the equipment		N
	Equipment 18 kg has means for lifting or carrying,		N
7.5	Wall mounting		---
	Mounting bracket withstand a force of four times the weight of the equipment		N
	No damage to the bracket or the mounting surface after the test		N
7.6	Expelled parts		---
	Equipment contains or limits the energy of parts which could cause a hazard if expelled in the event of a fault	No such parts	N
8	**MECHANICAL RESISTANCE TO SHOCK AND IMPACT**		**---**
	Equipment shall not cause a hazard when subjected to shock and impact likely to occur in normal use.		---
8.1	Enclosure rigidity test		P
8.1.1	Static test		---
	The equipment is held firmly against a rigid support and subjected to a force of 30N applied by the hemispherical end of a hard rod of 12 mm diameter		P
8.1.2	Dynamic test		---
	Bases,covers,etc.,intended to be removed and replaced by the operator have their fixing screws tightened using a torque likely to be applied in normal use		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
8.2	Drop test	< 20Kg, 100mm	P

9	**PROTECTION AGAINST THE SPREAD OF FIRE**		**---**
	There shall be no spread of fire outside the equipment in normal use or in single fault condition ,		P
9.1	Eliminating or reducing the sources of ignition within the equipment		---
9.1a)	The voltage ,current, power is limited as specified in 9.3 or Insulation between parts at different potentials did not cause ignition		P
9.1b)	Ignition hazard related to flammable liquids is reduced to a tolerance level as specified in 9.4		P
9.1c)	In circuits designed to produce heat, no ignition occurs when tested in any single fault condition which could cause ignition		P
9.2	Containment of fire within the equipment, should it occur		---
	The risk of the spread of fire outside the equipment is considered to be reduced to a tolerable level		P
9.2.1	Constructional requirements		---
9.2.1a)	Insulated wire shall have a flammability classification FV-1 or better		P
9.2.1b)	The enclosure shall meet the following requirement :	Metal enclosure	---
	-The bottom shall have no opening or, constructed with baffles or, be made of metal or, be a metal screen with a mesh		N
	-the sides shall have no openings within the area that is included within the inclined line C in figure 7		N
	-the enclosure ,and any baffle or flame barrier ,shall be made of metal of non-metallic materials having a flammability classification of FV-1 or better, of IEC 60707		N
	-the enclosure ,and any baffle or flame barrier ,shall have adequate rigidity		N
9.3	Limited-energy circuit		---
	Limits of maximum available current		P
9.4	Requirements for equipment containing or using flammable liquids		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
9.5	Overcurrent protection		---
	Equipment intended to be energized from, or connected to, a mains supply shall be protected by fuses ,circuit-breaker, thermal cut-outs, impedance limiting circuits or similar means	Fuses	P
9.5.1	PERMANENTLY CONNECTED EQUIPMENT		---
	Overcurrent protection device fitted with the equipment, or specified in manufacturer's instructions		P
9.5.2	Other equipment		N
10	**EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT**		**---**
10.1	Surface temperature limits for protection against burns, see table 15	(see appended table)	P
10.2	Temperatures of windings	(see appended table)	N
10.3	Other temperature measurements	(see appended table)	P
10.4	Conduct of temperature tests		P
10.4.1	Temperature measurement of heating equipment		P
10.5	Resistance to heat		P
10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES		P
10.5.2	Resistance to heat of non-metallic ENCLOSURES	Metallic ENCLOSURES	N
10.5.3	Resistance to heat of insulating material; supporting parts connected to:		---
	- mains supply	(see appended table)	N
	- supporting TERMINALS		N
11	**PROTECTION AGAINST HAZARDS FROM FLUIDS**		**---**
11.2	Cleaning		P
11.3	Spillage		P
11.4	Overflow		P
11.5	Battery electrolyte leakage presents no hazard		N
11.6	Specially protected equipment; test to IEC 529		P

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
11.7	Fluid pressure and leakage		---
11.7.1	Maximum pressure not exceeded		P
11.7.2	Leakage and rupture at high pressure		P
	Test to IEC 335 (refrigeration only)		N
11.7.3	Leakage from low-pressure parts		P
11.7.4	Overpressure safety device:		---
	- no operation in NORMAL USE		N
	- position		N
	- access		N
	- adjustment		N
	- no discharge towards person		N
	- no hazard from discharge		N
	- discharge capacity		N
	- no shut-off valve		N
12	**PROTECTION AGAINST RADIATION, INCLUDING LASER SOURCES, AND AGAINST SONIC AND ULTRASONIC PRESSURE**		**---**
12.1	Tests are carried out if the equipment is likely to cause ultraviolet ,ionizing, microwave etc. hazards		**---**
12.2	Equipment producing ionizing radiation		N
12.2.1	Ionizing radiation		N
12.2.2	Accelerated electrons		N
12.3	Ultra-violet radiation (under consideration)		N
12.4	Micro-wave radiation (under consideration)		N
12.5	Sonic and ultrasonic pressure		**---**
12.5.1	Sound level		N
12.5.2	Ultrasonic pressure		N
12.6	Laser sources (IEC 825)		N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
13	**PROTECTION AGAINST LIBERATED GASES, EXPLOSION AND IMPLOSION**		---
13.1	Poisonous and injurious gases		P
13.2	Explosion and implosion		P
13.2.1	Components liable to explode have pressure release devices, or		N
	... the apparatus incorporates OPERATOR protection (see also 7.5)		N
13.2.2	Batteries and battery charging		N
	Explosion/fire hazard		N
	Protection is incorporated in the equipment, or		N
	... instructions specify the batteries to be used		N
	Warning marking or symbol 14		N
	Battery compartment design		N
13.2.3	Implosion of cathode ray tubes	No such tubes	N
13.2.4	Equipment RATED for high pressure		N
14	**COMPONENTS**		**---**
14.1	Safety components comply with applicable safety requirements in relevant IEC standards	(see appended table 14.1)	P
14.2	Motors		---
14.2.1	Motor temperatures		P
14.2.2	Series excitation motors		N
14.3	Overtemperature protection devices; devices operating in a SINGLE FAULT CONDITION: *(no overtemperature protection devices)*		---
	- be constructed so that reliable function is ensured		N
	- be rated to interrupt the maximum voltage and current of the circuit in which they are employed		N
	- not operate in normal use		N
14.4	Fuse holders		P
14.5	Mains voltage selecting devices	No such devices	N

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**
14.6	HIGH INTEGRITY components	No such components	N
	In single fault condition ,if a short circuit or an open circuit of a component could cause a hazard ,high-integrity components shall be used	No such hazard generated	N
14.7	Mains transformers tested outside equipment		---
	Short-circuit tests;		P
	Overload test;		P
14.8	Printed circuit boards		P
14.9	Circuit or component used as transient overvoltage limiting devices	No such type equipment used	N
15	**PROTECTION BY INTERLOCKS** ***(No interlocks)***		**---**
15.1	General; interlocks are designed to remove a hazard before OPERATOR exposed		N
15.2	Prevention of reactivation		N
15.3	Reliability		N
16	**TESTS AND MEASUREMENT EQUIPMENT**		**---**
16.1	Current measuring circuits		N
16.2	Multifunction meters and similar equipment		N

Appendix

Tables of Testing Data

4.4	TABLE: fault condition tests		P
	ambient temperature (°C) .....:	--	—
	model/type of power supply .....:	--	—
	rated markings of power supply .....:	See making plate for details	—

No.	component No.	fault	test voltage (V)	test time	fuse No.	power (w)	result
1	Transformer	s-c	230	10 mins	--	--	Max. temperature: 137℃, limits: 175℃. No hazardous

Remark:

after each fault condition, a electric strength test is followed, the unit not breakdown.

s-c: short circuit;

5.1.3	TABLE: mains supply			N
Test No.	U (V)	P (W)	I (A)	condition/status
--	--	--	--	---

Remark: *the measured value not exceed the marked value by more than 10%*

5.3	TABLE: durability of markings		P
Location	Checked by	Time	Result
All markings in accordance with 5.1.2 to 5.2	Water	15s	Remain clear and legible.
All markings in accordance with 5.1.2 to 5.2	Petroleum spirit	15s	Remain clear and legible.

6	TABLE: protection against electric shock					P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Pri. winding to Sec. winding of transformer	246	241	3	> 3	3	> 3

6.8.2	TABLE: humidity test			P
Test condition:	Temperature	Relative Humidity	Duration	Become hazards (Yes/No)

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**

	40°C	95%RH	48 hours	No
Remark: *After humidity test, electric strength test specified in clause 5.2.2 Should be applied.*				

6.8.4	**TABLE: electric strength tests and impulse tests**		**P**
test voltage applied between:		test voltage (Vac)	Breakdown (Yes/No)
Live parts and Enclosure		1500	No
Remark:			

6.10	**TABLE: physical test on power cords**			**N**
Pull force	Duration	Times	Displaced (≦2mm)	

8.1.1	**TABLE: static test**		**P**
Test part	Pull force(N)	Result	
Enclosure	30	No distoration, No hazards	
Bottom	30	No distoration, No hazards	
Remark: *The equipment is disconnected from the supply source before the test is performed.*			

8.1.2	**TABLE: impact test**		**P**
Test part	Method	Result	
Enclosure	**0.5J striking force**	**No hazards**	

8.2	**TABLE: drop test**		**P**
Test part	Method	Result	
equipment	**Height: 100 cm**	**No hazards**	

10	**TABLE: temperature tests**		P
	Frequency (Hz) .....:	60Hz	
	Duration (h, min) .....:	3h	
	Voltage (V) .....:	240Vac	
	Ambient temperature Ta (°C) .....:	40	

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**

	Measurements: 1 - part; 2 - measured temperature Tm (°C); 3 - corrected maximum temperature Tm + 40 - Ta (°C); 4 - maximum allowed temperature (°C); 5 - result; 6 - comments					
1 - part;	2 - measured temperature Tm (°C)	3 - corrected maximum temperature	4 - maximum allowed temperature (°C)	5 - result;	6 - comments	
Enclosure, outside	40	55.8	70	P	---	
PCB	40	72.3	130	P	---	
Internal wire	40	74.5	105	P	---	
Pri. winding	40	81.7	110	P	---	
Sec. winding	40	80.6	110	P		

10.5.2	**TABLE: stress relief test**	**N**
Temperature (℃)	Duration	Result
		No dangerous moving parts become accessible

10.5.3	**TABLE: ball pressure test of thermoplastics**		**P**
	required impression diameter (mm) .....:	≤ 2 mm	----
part		test temperature (°C)	impression diameter (mm)
Bobbin		125	0.83
AC Insert		125	0.81

11	**TABLE: protection against hazards from fluids**							**N**
	Measurements: 1 - location; 2 - cleaning; 3 - spillage; 4 - overflow; 5 - equipment plus liquid; 6 - working voltage (V); 7 - test voltage (V); 8 - result; 9 - comments							
1	2	3	4	5	6	7	8	9

11.7.2	**TABLE: leakage and rupture at high pressure**	**N**
	Measurements: 1 - part; 2 - maximum permissible working pressure (Pa); 3 - factor; 4 - test pressure (Pa); 5 - leakage test; 6 - burst test; 7 - comments	

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Clause	**Requirement-Test**	**Result-Remark**	**Verdict**

1	2	3	4	5	6	7

11.7.3	**TABLE: leakage from low-pressure parts**			**N**
	Measurements: 1 - part; 2 - test pressure (Pa); 3 - result; 4 - comments			
1	2	3	4	

12.2.1	**TABLE: ionizing radiation**			**N**
	Measurements: 1 - location; 2 - radiation (Sv/h); 3 - result; 4 - comments			
1	2	3	4	

12.5.2	**TABLE: ultrasonic pressure measurements**			**N**
	Measurements: 1 - location; 2 - value (dB); 3 - frequency (kHz); 4 - result			
1	2	3	4	

14.1	**TABLE: components**				**N**
object/part No.	manufac-turer/trademark	type/model	technical data	standard	mark(s) of conformity

16.1	TABLE: current measuring circuits (current changing switches)		N
	Measurements: 1 - type/model; 2 - maximum RATED current of switch (A); 3 - result; 4 - comments		
1	2	3	4

ANNE I :

Photo-documentation


脉冲
报警
红 外
DJSF1352电子式直流电能表
JYZ19030790005
江苏安科瑞电器制造有限公司 2019年


DJSF1352-RN直流电能表
RUN


I1+ I1-
U1+ U1-
L(+) N(-)
Current In
Voltage In
Aux Power
4 5
11 12
1 2
6 7
13 14


A B
+12V G -12V EP+ COM TP+
RS485
Voltage Output
Impulse
21 22 23 51 52 53 17 18 19
34 35 36 37
24 25 28