PRODUCT SAFETY ENGINEERING, INC.
9F-1, No. 80, Sec. 2 Guang Fu Rd., San Chung City, Taipei Hsien, Taiwan
TEL : +886-2-85123188 FAX : +886-2-29959169 E-MAIL: service@pse.com.tw

LVD Report

ICP DAS Co., Ltd.

PM-2133, PM-2134

PSE99-0798

PSE INC. TAIWAN
9F-1, No. 80, Sec. 2 Guang Fu Rd., San Chung City, Taipei Hsien, Taiwan
Tel:+886-2-85123188 Fax:+886-2-29959169

Certificate of Compliance

Low Voltage Directive 2006/95/EC

Certificate Number: PSE99-0798

Manufacturer: ICP DAS Co., Ltd.
No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County, Taiwan 30351, R.O.C.

Product : Compact Smart Meter

Model/Type : PM-2133, PM-2134

Electrical Rating: 1 Phase 88-300V, 50-60Hz, Max. 200A (PM-2134)
3 Phase 88-500V, 50-60Hz, Max. 200A (PM-2133)

Other Specification:

Standards applied: EN 61010-1 : 2001

The tested samples of the above products are in conformity with the technical provisions of the following European Directives -

- Low Voltage Directive 2006/95/EC -

Date Issued: 2010-09-10

Approve & Authorized Signer: _____

Jeff Chang

EU Declaration of Conformity

According to the Low Voltage Directive 2006/95/EC

For the following equipment:	
Product:	**Compact Smart Meter**
Type Designation/Trademark:	**PM-2133, PM-2134**
Manufacturer's Name:	**ICP DAS Co., Ltd.**
Manufacturer's Address:	**No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County, Taiwan 30351, R.O.C.**

is herewith confirmed to comply with the requirements set out in the Council Directive 2006/95/EC for electrical equipment used within certain voltage limits. For the evaluation of the compliance with this Directives, the following standards were applied:

EN 61010-1 : 2001

Responsible for making this declaration is the :

Manufacturer ☐ **Authorized representative established within the EU** ☐

Authorized representative established within the EU (if applicable) :

Company Name : _____

Company Address : _____

_____

Person responsible for making this declaration

Name, Surname : _____

Position/Title : _____

_____	_____	_____
(Place)	**(Date)**	**(Company stamp and legal signature)**

INDEX

Test Report

PSE99-0798

TEST REPORT

IEC 61010-1/ EN 61010-1

Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

Report Reference No.....:	PSE99-0798
Tested by (name and signature) .....:	Jacky Hsu
Approved by (name and signature)..:	Jeff Chang
Date of issue .....:	2010-09-10

Testing Laboratory.....:	Product Safety Engineering Inc. Taiwan
Address .....:	9F-1, No. 80, Sec. 2 Guang Fu Rd., San Chung City, Taipei Hsien, Taiwan
Testing location/procedure.....:	Product Safety Engineering Inc. Taiwan
Address .....:	9F-1, No. 80, Sec. 2 Guang Fu Rd., San Chung City, Taipei Hsien, Taiwan
Applicant's name.....:	ICP DAS Co., Ltd.
Address .....:	No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County, Taiwan 30351, R.O.C.
Test specification:	
Standard.....:	IEC 61010-1:2001 (2nd Edition); EN 61010-1:2001 (2nd Edition)
Test procedure .....:	LVD of CE
Non-standard test method.....:	—
Test Report Form No.....:	IEC61010_C
TRF Originator.....:	VDE
Master TRF.....:	Dated 01-07-27

Test item description .....:	Compact Smart Meter
Trademark .....:	
Model/Type reference .....:	PM-2133, PM-2134
Rating(s).....:	1) 1 Phase 88-300V, 50-60Hz, Max. 200A (PM-2134) 2) 3 Phase 88-500V, 50-60Hz, Max. 200A (PM-2133)

Test item particulars ..... :	
Type of item tested ..... :	Laboratory equipment
Description of equipment function ..... :	Compact Smart Meter
Installation/overvoltage category ..... :	Overvoltage category III
Pollution degree ..... :	Pollution degree II
Environmental rating ..... :	Indoor use, altitude up to 2000m, temperature 0°C to 40°C, humidity 20-80%, mains supply tolerance: ±15%
Equipment mobility ..... :	Building equipment
Connection to mains supply ..... :	Terminal block provided
Operating conditions ..... :	Continuous operation
Overall size of the equipment (L x W x H) ..... :	98 x 78 x 33mm.
Mass of the equipment (kg) ..... :	0.13
Marked degree of protection to IEC 60529 ..... :	IP20
Accessories and detachable parts included in the evaluation ..... :	No
Options :	See table 3.
Test case verdicts:	
Test case does not apply to the test object ..... :	N/A
Test object does meet the requirement ..... :	P(Pass)
Test object does not meet the requirement ..... :	F(Fail)
Testing ..... :	
Date of receipt of test item ..... :	April 17, 2007
Date (s) of performance of tests ..... :	April 2007 – May 2007

General remarks:

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 IECEE 02.

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 point is used as the decimal separator.

Comments

This report was copy from 97-0098 Arch PA33 PA34 and change as below:

1. Change Applicant, Manuferature and factory from Arch Meter Corporation to ICP DAS Co., Ltd.
2. Adding model No. PM2134 and PM2133, there are identical to model No. PA34 and PA33.

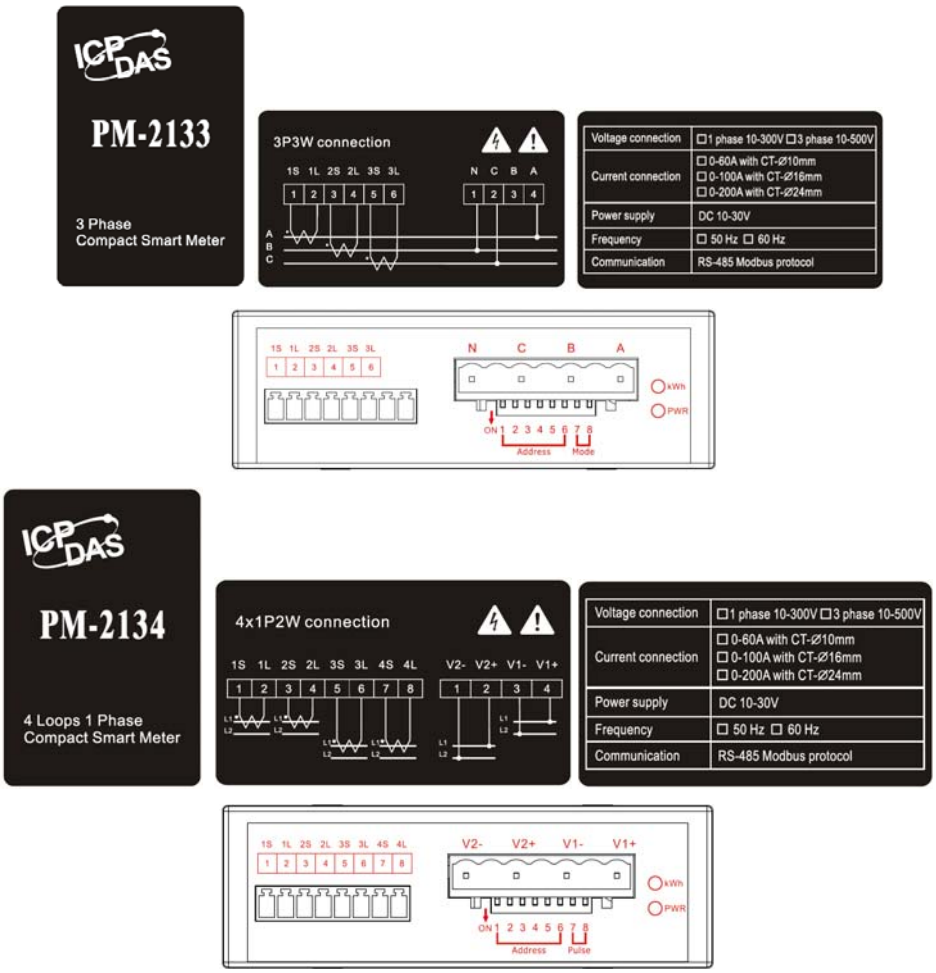
Comments

Factory: ICP DAS Co., Ltd.
No. 111, Guangfu N. Rd., Hukou Township, Hsinchu County, Taiwan 30351, R.O.C.

Brief description of the test sample:

The Model PM2133 and PM2134 are Compact Smart Meter for laboratory use, which are identical in design and sharing the same PCBs, the main difference is that model PM2133 is 3 phase and model PM2134 is 1 phase , that interface board is diffenence.

Copy of marking plate:



Summary of test results (information/comments):

SEE APPENDED TABLES.

	TABLE: 1 - Documents attached to this report	P
Document No.	Document description	Page Numbers
1.	Photos	1-28

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

	TABLE: 2 - Test equipment list				P
Item	Type	Equipment No.	Calibration date		Comments
			Last[1]	Due	
See separated test equipment list					
1) or interval between calibrations.					
2) See attachment.					

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

	TABLE: 3 - List of components and circuits relied on for safety				**P**
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)
Plastic Enclosure	Enclosure	--	--	V-1 or better, min. 2.0mm thickness	UL
All PCBs	PCB	--	--	min.105℃, min. V-1,	UL
Resistor R1, R2, R3, R4, R5, R6, R7, R8, R13, R14, R15, R16 (For model PM-2133)	Resistor	--	--	1MΩ / 1/2W,1206	Tested with the equipment
Resistor R1, R2, R3, R4, R5, R6, R7, R8 (For model PM-2134)	Resistor	--	--	330kΩ / 1/4W,1206	Tested with the equipment
Connector	Connector	--		Min. 500V, Min. 1A	VDE, UL
NOTE 1 - List all manufacturers concerned. NOTE 2 - Electrical, mechanical, flammability, etc. NOTE 3 - Licence number, file number or other documentary evidence of acceptance					

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
5	MARKING AND DOCUMENTATION		—
5.1.1	General	See below.	—
	Required equipment markings are:		**P**
	visible:		**P**
	From the exterior; or	Markings are visible from the exterior.	**P**
	After removing a cover; or	No removable parts incorporated.	**N/A**
	Opening a door	No doors incorporated.	**N/A**
	After removal from a rack or panel	Not for panel or rack mounted.	**N/A**
	Not put on parts which can be removed by an OPERATOR	No removable parts incorporated.	**N/A**
	Letter symbols (IEC 60027) used	In accordance with IEC 60027.	**P**
	Graphic symbols (IEC 61010-1: Table 1) used	Symbol 2, 4, 12, 14 used. In accordance with table 1 and explained in OPERATION AND SERVICE MANUAL.	**P**
5.1.2	Identification		—
	Equipment is identified by:		—
5.1.2a)	Manufacturer's or supplier's name or trademark	Archmeter	**P**
5.1.2b)	Model number, name or other means	PM-2133, PM-2134	**P**
	Manufacturing location identified	Only one factory location.	**N/A**
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.....:	Marked with 50-60Hz, symbol 2 of table 1 was used.	**P**
	2) d.c. with symbol 1	No d.c. supply.	**N/A**
5.1.3b)	RATED supply voltage(s) or range .....:	88-300V~ (PM-2134) 88-500V~(PM-2133)	**P**
5.1.3c)	Max. RATED power (W or VA)or input current.....:	200A MAX, see label drawing.	**P**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The measured value not more than 110 %	88-300V~ (PM-2134) 88-500V~(PM-2133) see also Form A.3.	**P**
	If more than one voltage range:		—
	Separate values marked; or	No such part.	**N**
	Values differ by less than 20 %	(See Form A.3)	**N/A**
5.1.3d)	OPERATOR-set for different RATED supply voltages:	No such part.	—
	Indicates the equipment set voltage	Ditto.	**N/A**
	PORTABLE EQUIPMENT indication is visible from the exterior	Ditto.	**N/A**
	Changing the setting changes the indication	Ditto.	**N/A**
5.1.3e)	Accessory mains socket-outlets accepting standard mains plugs are marked:	No such part.	—
	With the voltage if it is different from the mains supply voltage .....:	Ditto.	**N/A**
	For use only with specific equipment	Ditto.	**N/A**
	If not marked for specific equipment it is marked with:	Ditto.	—
	The maximum RATED current or power; or	Ditto.	**P**
	Symbol 14 with full details in the documentation	Documented	**P**
5.1.4	Fuses	No such part.	—
	OPERATOR replaceable fuse marking (see also 5.4.5).....:	Ditto.	**N/A**
5.1.5	TERMINALS, connections and operating devices	All indicators and connectors are marked.	—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		**P**
	If insufficient space, symbol 14 used		**N/A**
5.1.5.1	TERMINALS	See as below.	**P**
	Mains supply TERMINALS identified	Markings placed close to the terminal block on the rear of enclosure.	**P**
	Other TERMINAL marking ..... :		**P**
5.1.5.1a)	FUNCTIONAL EARTH TERMINALS (symbol 5 used)	No provided ground.	**N/A**
5.1.5.1b)	PROTECTIVE CONDUCTOR TERMINALS:	No provided ground.	—

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Symbol 6 is placed close to or on the TERMINAL; OR	Ditto.	**N/A**
	Part of appliance inlet	Ditto.	**N/A**
5.1.5.1c)	TERMINALS of measuring and control circuits (symbol 7 used)	No provided ground.	**N/A**
5.1.5.1d)	HAZARDOUS LIVE TERMINALS supplied from the interior	The terminal bock on the rear of enclosure is to be shielded by metal cover to prevent the access of operator. The other terminals cannot be accessible by user except for the protected cover being removed.	—
	Standard MAINS socket outlet; or	No such part.	**N/A**
	RATINGS marked; or	Ratings marked close to the terminal.	**P**
	Symbol 14 used	Symbol 14 used	**P**
5.1.5.1e)	ACCESSIBLE FUNCTIONAL EARTH TERMINALS:	No functional earth terminals.	—
	Self-evident; or		**N/A**
	Indication (symbol 8 acceptable)		**N/A**
5.1.5.2	Measuring circuit TERMINALS	No provision for measuring circuits.	—
	For TERMINALS other than those permanently connected and not ACCESSIBLE:		—
	RATED voltage or current marked		**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		**N/A**
	Appropriate measurement category marked (CAT II, CAT III or CAT IV); or		**N/A**
	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	No such part.	—
	If disconnecting device, on or off position marked	Ditto.	**N/A**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION	Basic insulation only.	—
	Protected throughout (symbol 11 used)		**N/A**
	Only partially protected (symbol 11 not used)		**N/A**
5.1.8	Field-wiring TERMINAL boxes	No field-wiring terminal boxes.	—
	If TERMINAL or ENCLOSURE exceeds 60 °C:	(See Form A.21A)	—
	Cable temperature RATING marked		**N/A**
	Marking visible or beside TERMINAL		**N/A**
5.2	Warning markings		—
	Visible when ready for NORMAL USE	Visible	**P**
	Are near or on applicable parts		**P**
	Symbols and text correct dimensions and colour		**P**
	If necessary marked with symbol 14	Symbol 14 required.	**P**
	Statement to isolate or disconnect	Not permitted to gain access to parts which in NORMAL USE may be HAZARDOUS LIVE.	**N/A**
5.3	Durability of markings		—
	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:	All required information in the documentation.	—
5.4.1a)	Intended use	Catalogue provided.	**P**
5.4.1b)	Technical specification	Provided.	**P**
5.4.1c)	Instructions for use	Operation manual provide.	**P**
5.4.1d)	Name and address of manufacturer or supplier	Provided.	**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		**N/A**
5.4.1g)	If CAT 1:	Category III.	—
	Warning		**N/A**
	RATINGS		**N/A**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Warning statements and a clear explanation of warning symbols:		—
	Provided in the documentation; or		**P**
	Information is marked on the equipment		**N/A**
5.4.2	Equipment RATINGS		—
	Documentation includes:		—
5.4.2a)	Supply voltage or voltage range	Provided.	**P**
	Frequency or frequency range	Provided.	**P**
	Power or current RATING	Provided.	**P**
5.4.2b)	Description of all input and output connections	Provided.	**P**
5.4.2c)	RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE	Not used	**N/A**
5.4.2d)	Statement of the range of environmental conditions	0-40°C 0-80% R.H.	**P**
5.4.2e)	Degree of protection (IEC 60529)	IP20, no marking required.	**P**
5.4.3	Equipment installation		—
	Documentation includes instructions for:		—
5.4.3a)	Assembly, location and mounting	Operation manual provided.	**P**
5.4.3b)	Protective earthing		**P**
5.4.3c)	Connections to supply		**P**
5.4.3d)	PERMANENTLY CONNECTED EQUIPMENT:	Permanently connected equipment.	—
	1) Supply wiring requirements		**P**
	2) If external switch or circuit-breaker, requirements and location recommendation		**N/A**
5.4.3e)	Ventilation requirements	Provided.	**P**
5.4.3f)	Special services (e. g. air, cooling liquid)	No special services.	**N/A**
5.4.3g)	Maximum sound power level	No sound is generated.	**N/A**
5.4.3h)	Instructions about sound pressure	No sound is generated.	**N/A**
5.4.3i)	Permanently connected measuring TERMINALS:	Provided.	—
	Measurement category	CAT III	**P**
	RATED maximum WORKING VOLTAGE or current	88-300V~ (PM-2134) 88-500V~(PM-2133)	**P**
5.4.4	Equipment operation		—

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Instructions for use include:		—
5.4.4a)	Identification of operating controls		**P**
5.4.4b)	Positioning for disconnection		**P**
5.4.4c)	Interconnection	Specified on operation manual.	**P**
5.4.4d)	Specification of intermittent operation limits	No intermittent operation.	**N/A**
5.4.4e)	Explanation of symbols used	Explained on operation manual.	**P**
5.4.4f)	Replacement of consumable materials	No consumable materials.	**N/A**
5.4.4g)	Cleaning and decontamination (see 11.2)	With a clean dry or slightly damp cloth.	**P**
5.4.4h)	Listing of any poisonous or injurious gases and quantities	No gases.	**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 liquids inside.	**N/A**
	Specific battery type	No battery.	**N/A**
	Any manufacturer specified parts	Service and maintenance detailed on operation manual	**P**
	RATING and characteristics of fuses	See 5.1.4.	**N/A**
6	PROTECTION AGAINST ELECTRIC SHOCK	(See Form A.5)	—
6.1	General		—
6.1.1	Requirements		—
	ACCESSIBLE parts not HAZADOUS 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		**N/A**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Parts not HAZARDOUS LIVE 10 s after interruption of supply	No lamps or any parts are intended to be replaced by operator and all accessible parts are earthed or separated by double insulation.	**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 openings on the top.	**N/A**
6.2.3	Openings for pre-set controls	No openings for pre-set.	**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)	The P.T. primary and secondary is separated by reinforced insulation.	**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	See 6.5.1 to 6.5.3.	**P**
	Automatic disconnection of the supply (6.5.4)	No automatic disconnection.	**N/A**
6.5.1	Protective BONDING		—
	ACCESSIBLE conductive parts:		—
	Separated by DOUBLE INSULATION or REINFORCED INSULATION; or	No provided ground.	**N/A**
	Bonded to the PROTECTIVE CONDUCTOR TERMINAL; or	Ditto.	**N/A**
	Separated by screen or BARRIER bonded to PROTECTIVE CONDUCTOR TERMINAL from parts which are HAZARDOUS LIVE	Ditto.	**N/A**
6.5.1.1	Integrity of PROTECTIVE BONDING	Ditto.	—
6.5.1.1a)	PROTECTIVE BONDING consists of directly connected structural parts or discrete conductors or both; and withstands thermal and dynamic stresses	Ditto.	**N/A**
6.5.1.1b)	Soldered connections:	Ditto.	—
	Independently secured	Ditto.	**N/A**
	Not used for other purposes	Ditto.	**N/A**
	Screw connections are secured	Ditto.	**N/A**
6.5.1.1c)	PROTECTIVE BONDING not interrupted	Ditto.	**N/A**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
6.5.1.1d)	Any moveable connection specifically designed, and meets 6.5.1.3	Ditto.	**N/A**
6.5.1.1e)	No external metal braid of cables used	Ditto.	**N/A**
6.5.1.1f)	If MAINS supply passes through:	Ditto.	—
	Means provided for passing protective conductor;	Ditto.	**N/A**
	Impedance meets 6.5.1.3.	Ditto.	**N/A**
6.5.1.1g)	Protective conductors bare or insulated, if insulated, green/yellow	Ditto.	**N/A**
	Exceptions:	Ditto.	—
	1) earthing braids;	Ditto.	**N/A**
	2) internal protective conductors etc.;	Ditto.	**N/A**
	Green/yellow not used for other purposes	Ditto.	**N/A**
6.5.1.1h)	TERMINAL suitable, and meets 6.5.1.2	Ditto.	**N/A**
6.5.1.2	PROTECTIVE CONDUCTOR TERMINAL	No provided ground.	—
6.5.1.2a)	Contact surfaces are metal	Ditto.	**N/A**
6.5.1.2b)	Appliance inlet used	Ditto.	**N/A**
6.5.1.2c)	For rewireable cords and PERMANENTLY CONNECTED EQUIPMENT, PROTECTIVE CONDUCTOR TERMINAL is close to MAINS supply TERMINALS	Ditto.	**N/A**
6.5.1.2d)	If no MAINS supply is required, any PROTECTIVE CONDUCTOR TERMINAL:	Ditto.	—
	Is near TERMINALS of circuit for which protective earthing is necessary	Ditto.	**N/A**
	External if other TERMINALS external	Ditto.	**N/A**
6.5.1.2e)	Equivalent current-carrying capacity to MAINS supply TERMINALS	Ditto.	**N/A**
6.5.1.2f)	If plug-in, makes first and breaks last	Ditto.	**N/A**
6.5.1.2g)	If also used for other bonding purposes, protective conductor:	Ditto.	—
	Applied first;	Ditto.	**N/A**
	Secured independently;	Ditto.	**N/A**
	Unlikely to be removed by servicing; or	Ditto.	**N/A**
	Warning marking requires replacement of protective conductor	Ditto.	**N/A**
6.5.1.2h)	Protective conductor of measuring circuit:	Ditto.	**N/A**
	1) Current RATING;	Ditto.	**N/A**

IEC 61010-1			
Clause	Requirement + Test	Result - Remark	Verdict
	2) PROTECTIVE BONDING:	Ditto.	—
	Not interrupted; or	Ditto.	**N/A**
	Indirect bonding used (see 6.5.1.5)	Ditto.	**N/A**
6.5.1.2i)	FUNCTIONAL EARTH TERMINALS allow independent connection	Ditto.	**N/A**
6.5.1.2j)	If a binding screw:	Ditto.	—
	Suitable size for bond wire	Ditto.	**N/A**
	Not smaller than M 4 (No. 6)	Ditto.	**N/A**
	At least 3 turns of screw engaged	Ditto.	**N/A**
	Contact pressure not capable of reduction by deformation of materials	Ditto.	**N/A**
	Passes tightening torque test	Ditto.	**N/A**
6.5.1.3	Impedance of PROTECTIVE BONDING of plug-connected equipment	No such part.	**N/A**
6.5.1.4	Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT	(See Form A.10)	**N/A**
6.5.1.5	Indirect bonding for measuring and test equipment		**N/A**
6.5.2	DOUBLE INSULATION and REINFORCED INSULATION (see 6.7, 6.8 and 6.9.2)	Compliance checked.	—
6.5.3	PROTECTIVE IMPEDANCE	(See Form A.12)	**P**
6.5.3a)	HIGH-INTEGRITY single component used (s. 14.6); or	No such part.	**N/A**
6.5.3b)	A combination of components used; or	Complained.	**P**
6.5.3c)	A combination of BASIC INSULATION and current- or voltage-limiting device used	No such part.	**N/A**
	Components, wires and connections are RATED as required	Ditto.	**N/A**
6.5.4	Automatic disconnection of the supply	No automatic disconnection device incorporated.	**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**
6.5.4c)	RATED for maximum RATED LOAD		**N/A**
6.6	Connections to external circuits		—
6.6.1	General		—

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Clause	Requirement + Test	Result - Remark	Verdict
	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:	All terminal block's live parts cannot be accessed by test finger and the terminal bock on the rear of enclosure is to be shielded by metal cover to prevent the access of operator.	—
6.6.1a)	The external circuits	RS485 remote connection considered as SELV, not HAZARDOUS LIVE.	**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		**N/A**
	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	No such part.	**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	Output terminals.	—
	These circuits are:		—
	Not connected to ACCESSIBLE conductive parts; or	All terminal block's live parts cannot be accessed by test finger and the terminal bock on the rear of enclosure is to be shielded by metal cover to prevent the access of operator.	**P**
	Connected to ACCESSIBLE conductive parts, but are not MAINS CIRCUITS and have one TERMINAL contact at earth potential		**N/A**
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		**N/A**
6.6.4	ACCESSIBLE TERMINALS for stranded conductors		—
6.6.4a)	No risk of accidental contact because:		—
	Located or shielded	See clause 6.6.3.	**P**

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Clause	Requirement + Test	Result - Remark	Verdict
	Self-evident or marked whether connected to ACCESSIBLE conductive parts		**P**
6.6.4b)	ACCESSIBLE TERMINALS will not work loose	The conductors shall be prepared by O-ring or likes before connecting to terminals.	**P**
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	The wiring connection are not subjected to mechanical stress, hence soldered connections are permissible.	**P**
6.9.1b)	Screws securing removable covers	No removable covers.	**N/A**
6.9.1c)	Accidental loosening	No accidental loosening likely.	**P**
	Easily damaged materials not used		**P**
	Non-impregnated hydroscopic 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		**N/A**
	ENCLOSURES or parts made of insulating material		**N/A**
	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		**N/A**
6.9.3	Over-range indication	No overflow indication required.	—
	Unambiguous		**N/A**
6.10	Connection to MAINS supply source and connections between parts of equipment		—
6.10.1	MAINS supply cords	No MAINS power cord provided.	—
6.10.1a)	RATED for maximum equipment current (see 5.1.3c)		**N/A**
	Cable complies with IEC 60227 or IEC 60245		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
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:	Terminal block provides the connection between MAINS and the equipment.	—
	Conform to IEC 60799; or		**N/A**
	Have the current RATING of the MAINS connector		**N/A**
6.10.2	Fitting of non-detachable MAINS supply cords	Terminal block provides the connection between MAINS and the equipment.	—
	Non-detachable cord protection:		—
6.10.2a)	Inlet or bushing smoothly rounded; or		**N/A**
6.10.2b)	Insulated cord guard protruding ≥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		**N/A**
6.10.3	Plugs and connectors	No power cord set provided.	—
6.10.3a)	MAINS supply plugs, connectors etc., conform with relevant specifications		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
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		**N/A**
	MAINS-type plugs used only for connection to MAINS supply		**N/A**
6.10.3c)	Plug pins which receive a charge from an internal capacitor	No plug incorporated.	**N/A**
6.10.3d)	Accessory MAINS socket outlets:		—
	1) Marking if accepts a standard MAINS plug (see 5.1.3e)		**N/A**
	2) Input has a protective earth conductor if outlet has earth TERMINAL contact		**N/A**
6.11	Disconnection from supply source	See 6.11.1.1b	—
6.11.1	General		—
	Disconnects all current carrying conductors	No such part.	**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	Provided resistor.	**P**
6.11.1.1c)	Equipment constitutes an impedance protected load		**N/A**
6.11.2	Requirements according to type of equipment	See as below.	—
6.11.2.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment	Permanently connected equipment.	—
	Employs switch or circuit-breaker		**N/A**
	If switch or circuit-breaker is not part of the equipment, documentation specifies:	Complied.	—
6.11.2.1a)	Switch or circuit-breaker to be included in building installation	Complied.	**P**
6.11.2.1b)	Location		**N/A**
6.11.2.1c)	Marking		**N/A**
6.11.2.2	Single-phase cord-connected equipment		—
	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**

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Clause	Requirement + Test	Result - Remark	Verdict
6.11.2.3	HAZARDS arising from function		—
	Emergency switch		**N/A**
	Emergency switch ≤ 1 m from the moving part		**N/A**
6.11.3	Disconnecting devices	No such part.	—
	Electrically close to the supply		**N/A**
6.11.3.1	Switches and circuit-breakers		—
	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**
	Does not interrupt protective earth conductor		**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):		—
	Readily identifiable and easily reached by the OPERATOR		**N/A**
	Single-phase PORTABLE EQUIPMENT cord length ≤ 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		**P**
7.2	Moving parts		—
	Moving parts not able to crush, etc. (see also 6.11.2.3)		**N/A**
	If OPERATOR access permitted:		—
7.2a)	Access requires TOOL		**N/A**
7.2b)	Statement about training		**N/A**
7.2c)	Warning markings or symbol 14		**N/A**
7.3	Stability	Module.	—
	Marking of non-automatic means		**N/A**
	Conformity tests:		—

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Clause	Requirement + Test	Result - Remark	Verdict
7.3a)	10° tilt test		**N/A**
7.3b)	multi-directional force test		**N/A**
7.3c)	downward force test		**N/A**
7.4	Provisions for lifting and carrying	No lifting or carrying handles.	—
	Handles or grips withstand four times weight		**N/A**
	Equipment >18 kg :		—
	Has means for lifting or carrying; or		**N/A**
	Directions in documentation		**N/A**
7.5	Wall mounting	Not wall mounting equipment.	—
	Mounting brackets withstand four times weight		**N/A**
7.6	Expelled parts	No expelled 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		**P**
8f)	No damage which could cause spread of fire		**P**
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	(See Forms A.1 and A.2)	**P**
9b)	Application of 9.1 (eliminating or reducing the sources of ignition); or		**N/A**
9c)	Application of 9.2 (containment of fire within the equipment)		**N/A**
9.1	Eliminating or reducing the sources of ignition within the equipment		—

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Clause	Requirement + Test	Result - Remark	Verdict
9.1a)	1) Limited-energy circuit (see 9.3); or		**N/A**
	2) Insulation meets the requirements for BASIC INSULATION; OR		**N/A**
	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		**N/A**
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		**N/A**
	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		**N/A**
9.2.1b)	The enclosure is constructed as follows :		—
	1) Bottom constructed with:		—
	No openings; or	No provided opening.	**P**
	Extent as specified in figure 7; or		**P**
	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	5 ° angle away from opening	**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		**N/A**
	4) ENCLOSURE and any baffle or flame barrier have adequate rigidity		**N/A**
9.3	Limited-energy circuit		—
9.3a)	Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
9.3b)	Current limited by one of following means:		—
	1) Inherently or by impedance; or		**N/A**
	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		**N/A**
	If overcurrent protective device used:		—
	Fuse or a non adjustable electromechanical device		**N/A**
9.4	Requirements for equipment containing or using flammable liquids		**N/A**
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		**N/A**
	Risk is reduced to a tolerable level :		—
9.4a)	The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		**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	Overcurrent protection	No such part.	**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		**N/A**
	Overcurrent device:		—
	Fitted within the equipment; or		**N/A**
	Specified in manufacturer's instructions		**N/A**
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:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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	(See Form A.20A)	**P**
	Limits not exceeded in:		—
	NORMAL CONDITION		**P**
	SINGLE FAULT CONDITION		**P**
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**
10.3b)	Surface of flammable liquids and parts in contact with this liquids		**N/A**
10.3c)	Surface of non-metallic ENCLOSURES		**P**
10.3d)	Parts made of insulating material supporting parts connected to MAINS supply		**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		**P**
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES	(See Form A.13)	**P**
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)	(See Form A.14)	**P**
10.5.3	Insulating material	(See Forms A.22)	**P**
10.5.3a)	Parts supporting parts connected to MAINS supply		**P**
10.5.3b)	TERMINALS carrying a current more than 0.5 A		**P**
	Examination of material data; or		**P**
	in case of doubt::		—
	1) Ball pressure test; or	(See Forms A.22)	**P**
	2) Vicat softening test of ISO 306		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		—
11.1	General		**N/A**
11.2	Cleaning		**N/A**
11.3	Spillage		**N/A**
11.4	Overflow		**N/A**
11.5	Battery electrolyte		—
	Battery electrolyte leakage presents no hazard		**N/A**
11.6	Specially protected equipment	IP20	**N/A**
11.7	Fluid pressure and leakage	No fluid pressure and leakage.	—
11.7.1	Maximum pressure	No pressure.	—
	Maximum pressure of any part does not exceed P_{RATED}		**N/A**
11.7.2	Leakage and rupture at high pressure	No pressure.	**N/A**
	Test to IEC 60335 (refrigeration only)		**N/A**
11.7.3	Leakage from low-pressure parts	No pressure.	**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 such parts	—
12.1	General		—
	Equipment provides protection		**N/A**
12.2	Equipment producing ionizing radiation		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
12.2.1	Ionizing radiation		**N/A**
12.2.2	Accelerated electrons		**N/A**
12.3	Ultra-violet (UV) radiation	No UV radiation.	—
	No unintentional and HAZARDOUS escape of UV radiation		**N/A**
12.4	Micro-wave radiation	No microwave radiation.	—
	Power density does not exceed 10 W/m^2 .....:		**N/A**
12.5	Sonic and ultrasonic pressure		—
12.5.1	Sound level		**N/A**
12.5.2	Ultrasonic pressure		**N/A**
12.6	Laser sources (IEC 60825-1)	No laser radiation.	**N/A**
13	PROTECTION AGAINST LIBERATED GASES, EXPLOSION AND IMPLOSION	No gases.	—
13.1	Poisonous and injurious gases		**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 battery incorporated.	—
	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:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	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		**—**
	If maximum face dimensions > 160 mm .....:		**—**
	Intrinsically protected and correctly mounted; or		**N/A**
	ENCLOSURE provides protection:		**N/A**
	If non-intrinsically protected:		**—**
	Screen not removable without TOOL		**N/A**
	If glass screen, not in contact with surface of tube		**N/A**
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	(See Table 3)	**P**
14.2	Motors		**—**
14.2.1	Motor temperatures		**—**
	Does not present a HAZARD when stopped or prevented form starting; or		**N/A**
	Protected by overtemperature or thermal protection device conform with 14.3		**N/A**
14.2.2	Series excitation motors		**—**
	Connected direct to device, if overspeeding causes a HAZARD		**N/A**
14.3	Overtemperature protection devices		**N/A**
	Devices operating in a SINGLE FAULT CONDITION	(See Form A.28)	**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		**N/A**

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Clause	Requirement + Test	Result - Remark	Verdict
	No access to HAZARDOUS LIVE parts		**N/A**
14.5	Mains voltage selecting devices		**N/A**
	Accidental change not possible		**N/A**
14.6	HIGH INTEGRITY components	No high integrity components used.	**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	See Forms A.29 and A.30	**N/A**
14.8	Printed circuit boards		**N/A**
	Data shows conformity with FV-1 of IEC 60707 or better; or	See Form A.17	**P**
	Test shows conformity with FV-1 of IEC 60707 or better; or		**N/A**
	Thin film flexible PCB with limited-energy circuit used		**N/A**
14.9	Circuits or components used as transient overvoltage limiting devices		—
	After test, no sign of overload or degradation		**N/A**
15	PROTECTION BY INTERLOCKS	No safety interlock.	—
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		**N/A**
16.1	Current measuring circuits		**N/A**
16.2	Multifunction meters and similar 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		**P**

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Clause	Requirement + Test	Result - Remark	Verdict
	Manufacturer’s declaration		**P**

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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	--	X	R1, R2, R3, R4, R5, R6, R7, R8, R13, R14, R15, R16 for PM-2133 R1, R2, R3, R4, R5, R6, R7, R8 for PM-2134
4.4.2.2	Protective conductor	X	--	Permanently connected equipment.
4.4.2.3	Equipment or parts for short-term or intermittent operation	X	--	Not possible.
4.4.2.4	Motors	X	--	
4.4.2.5	Capacitors	X	--	No capacitor in auxiliary winding circuit of motor.
4.4.2.6	Mains transformers Attach drawing of MAINS Txs showing all protective devices (see Forms A.29 and A.30)	X	--	
4.4.2.7	Outputs	X	--	
4.4.2.8	Equipment for more than one supply	X	--	Only one main supply.
4.4.2.9	Cooling – air holes closed – fans stopped – coolant stopped	 -- X X	 X -- --	
4.4.2.10	Heating devices – timer overridden – temperature controller overridden – loss of cooling liquid – overfilled or empty or both	 X X X X	 -- -- -- --	No heating devices.
4.4.2.11	Insulation between circuits and parts	X	--	Replaced by sub-clause 9.
4.4.2.12	Interlocks	X	--	No interlock is used.
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.12:				
4.4.2		--	X	See table 4.4 for details.

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

Supplementary information: (See Form A.2 for details of tests)

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

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
PM-2133					
4.4.2.6	1	Short-circuited of the R3	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	**P**
	2	Short-circuited of the R14	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	**P**
	3	Short-circuited of the R5	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	**P**
	4	Short-circuited of the R2	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	**P**
	12	Block opening.	1 hr	After 5 min. of the opening blocked, equipment, No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	**P**
PM-2134					
	1	Short-circuited of the R2	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	
	2	Short-circuited of the R3	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	
	3	Short-circuited of the R6	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	

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

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	Short-circuited of the R8	5 min	No danger. No spread of fire, the values of clause 6.3.2 are not exceeded.	
NOTE Td = Test duration in h:min:s Record dielectric strength test on Form A.14 and temperature tests on Form A.20. Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.					

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

5.1.3c)	**TABLE: Mains supply**		**Form A.3**	**P**
	Marked rating .....:	10-30Vdc		—
	Phase .....:	1 / 3		—
	Frequency .....:	--		—
	Current .....:	--		—
	Power .....:	--		—

Test No.	Voltage V	Frequency Hz	Current A	Power in KW	Power in KVA	Comments
PM-2133						
1	10	--	0.1	--	--	200A, 50Hz, 88V
2	30	--	0.13	--	--	200A, 50Hz, 500V
3	10	--	0.1	--	--	200A, 60Hz, 88V
4	30	--	0.13	--	--	200A, 60Hz, 500V
PM-2134						
1	10	--	0.1	--	--	200A, 50Hz, 88V
2	30	--	0.12	--	--	200A, 50Hz, 300V
3	10	--	0.1	--	--	200A, 60Hz, 88V
4	30	--	0.12	--	--	200A, 60Hz, 300V

Note: Measurements are only required for marked ratings.

Supplementary information:

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

5.3	TABLE: Durability of markings	Form A.4	P

Marking method (see NOTE)	Agent
1) Printed on metal enclosure	A Water
2) Printed on PCB	B Isopropyl alcohol
3) Printed on Components	C (specify agent)
4)	D (specify agent)
5)	E (specify agent)

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

Marking location	Marking method (see above)
Identification (5.1.2)	1
Mains supply (5.1.3)	1
Fuses (5.1.4)	--
TERMINALS and operating devices (5.1.5.1)	1
Measuring circuit TERMINALS (5.1.5.2)	--
Switches and cricuit breakers (5.1.6)	3
DOUBLE/REINFORCED equipment (5.1.7)	--
Field wiring TERMINAL boxes (5.1.8)	--
Warning marking (5.2)	1
Battery charging (13.2.2)	--

Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
1	A	Pass	Pass	Pass	
1	B	Pass	Pass	Pass	
1	B	Pass	Pass	Pass	
3	B	Pass	Pass	Pass	
1	B	Pass	Pass	Pass	

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

6	**TABLE: Protection against electric shock - Block diagram of system Form A.5**	**P**

Pollution degree.....: II			Installation category (overvoltage category).....: III						
Location or	Insulation type	Maximum working	CREEPAGE DISTANCE (NOTE 3)				CLEARANCE (NOTE 3)	Test voltage	Comments
description	(NOTE 1)	voltage (NOTE 2)	PWB mm	CTI	Other mm	CTI	mm	(NOTE 2) V	
Primary → Accessible part.	DI or RI	500Vrms	--	--	12.0	III	12.0	5000Vrms	P

NOTE 1 – Type of insulation:	NOTE 2 - Types of voltage	NOTE 3 - INSTALLATION CATEGORIES (OVERVOLTAGE CATEGORIES)
BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION	Peak impulse test voltage (pulse) r.m.s. d.c. peak	or POLLUTION DEGREES which differ from these should be shown under "Comments".

Supplementary Information:

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

6.2	**TABLE: List of ACCESSIBLE parts**		**Form A.6**	**P**
6.1.2	Exceptions			—
6.2	Determination of accessible parts			—

Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)
Enclosure	Metal	Test finger	N/A
Front panel	Plastic	Test finger	N/A
All other connectors and terminals	Plastic or metal	Test finger	N/A

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.1)
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)
NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of 6.4).
NOTE 4 – Capacitor test may be required (see Form A.7).
NOTE 5 – The determination methods are: visual; rigid test finger; jointed test finger; pin 3 mm diameter; pin 4 mm diameter.

Supplementary information

IEC 61010-1			
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	Voltage			Current				Capacitance		10 s test (NOTE 2)			Comments	
(see Form A.6)	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		
Enclosure	181 mV	--	--	A.2	--	--	--	--	--	--	--	--	Voltage levels in 6.3.1 are not exceeded.	
Signal connectors	27.5 mV	--	--	A.2	--	--	--	--	--	--	--	--	Voltage levels in 6.3.1 are not exceeded.	

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).

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

6.3.2	**TABLE: Values in SINGLE FAULT CONDITION**											**Form A.8**	**P**
Item	Subclause and	Voltage			Transient (see NOTE)		Current				Capacitance	Comments	
(See Form A.6)	fault No. (see FormA.2)	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)		
Enclosure	4.4.2.2 4.4.2.9	190.9 mV	--	--	--	--	A.2	--	--	--	--	Voltage levels in 6.3.2 are not exceeded	
Signal connectors	4.4.2.2 4.4.2.9	30 mV	--	--	--	--	A.2	--	--	--	--	Voltage levels in 6.3.2 are not exceeded	
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.													

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

6.5.1.1	TABLE: Cross-sectional area of bonding conductors	Form A.9	N/A
Conductor location	Cross-sectional area mm^2		Verdict

6.5.1.2	TABLE: Tighting torque test			N/A
Conductor location		Size of Screw	Tighting torque Nm	Verdict

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

6.5.1.3	TABLE: Bonding impedance of plug connected equipment Form A.10			N/A
ACCESSIBLE part under test	Test current A	Voltage attained after 1 min V	Calculated resistance (maximum allowed 0,1 Ω) Ω	Verdict
Supplementary information:				

6.5.1.4	TABLE: Bonding impedance of PERMANENTLY CONNECTED EQUIPMENT		N
ACCESSIBLE part under test	Test current A	Voltage attained after 1 min (maximum 10 V) V	Verdict
Supplementary information:			

IEC 61010-1			
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:				
ACCESSIBLE part under test		Voltage applied V	Time for device to trip s	Verdict
b) Voltage-sensitive tripping device		—	—	—
Supplementary Information:				

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

6.5.3	**TABLE: PROTECTIVE IMPEDANCE**	**Form A.12**	**P**

A high INTEGRITY single component		
Component	Location	Comments

A combination of components		
Component	Location	Comments
R1, R2, R3, R4, R5, R6, R7, R8, R13, R14, R15, R16	Between AC and measurement side.	

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

Supplementary information:

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

6.7	**TABLE: CLEARANCES and CREEPAGE DISTANCES**	**Form A.13**	**P**
8	Mechanical resistance to shock and impact		
10.5.1	Integrity of CLEARANCES and CREEPAGE DISTANCES		

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) Static	Rigidity (8.1) Dynamic	Drop (8.2) Normal	Drop (8.2) Hand-held/ Plug-in		CREEPAGE DISTANCE mm	CLEARANCE mm		
Primary → Accessible part.	13.4	16.4	P	30	Pass	Pass	Pass	N/A	40	13.4	16.4	P	

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

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

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

[1] Record the fault, test or treatment applied before the dielectric strength test

	Test site altitude .....:	<2000m	—
	Test voltage correction factor (see Table 10)....:	1	—

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
Primary → Accessible part.	After Cl. 6.8.2	Yes	500	5000 r.m.s	--	**P**

Supplementary information:

6.10.2	**TABLE: Cord anchorage**				**Form A.15**	**N/A**
Location	Mass kg	Pull N	Verdict	Torque Nm	Verdict	Comment

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

6.10.2	**TABLE: Cord anchorage**					**Form A.15**	**N/A**
Location	Mass kg	Pull N	Verdict	Torque Nm	Verdict	Comment	
Supplementary information:							

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

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	All equipment	9a	No molten metal, burning or flaming materials.	**P**
Supplementary information:				

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

9.2.1	**TABLE: Constructional requirements**	**Form A.17**	**N/A**
14.8	Printed circuit boards	Material 94V-1 (UL)	**N/A**
UL approved PCB with flammability class V-1 was used.			
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: the test equipment is incompliance with 9.1 a) 2), but condition. 9.1 c) is not considered as applicable because no circuit is designed to produce heat and signal fault test was has been evaluated, see table 4.4.

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

9.3	**TABLE: Limited-energy circuit**				**Form A.18**	**N/A**

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

Supplementary information:

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

9.4	TABLE: Requirements for equipment containing or using flammable liquids		Form A.19	N/A
Type of liquid	9.4 Flammable liquids			Verdict
	b) quantity	c) Containment		
Supplementary information:				

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

10.	**TABLE : Temperature Measurements**	**Form A.20A**	**P**
10.1	Surface temperature limits - NORMAL CONDITION		—
10.2	Temperature of windings- NORMAL CONDITION		—
10.3	Other temperature measurements		—

Operating conditions:	The unit was adjusted to 200A and operated continuously.		
Frequency ..... :	60/ 50 Hz	Test room ambient temperature (t_a)..... :	See below °C
Voltage ..... :	See below V	Test duration ..... :	Until when steady state having been reached.

Part / Location	t_m °C				t_c °C	t_{max} °C	Verdict	Comments
PM-2133								
Input voltage	**10V**	**30V**						
Terminal block	52.5	56.3					**P**	--
PCB near R13	59.7	61.3					**P**	--
Main IC body	63.2	63.1					**P**	--
U1 Body	75.2	74.9					**P**	--
Surface of unit.	48.6	49.6					**P**	--
Ambient Air	40.1	40.2					**P**	--
PM-2134								
Input voltage	**10V**	**30V**						
Terminal block	51.5	57.3					**P**	--
PCB near R4	60.4	66.2					**P**	--
Main IC body	68.6	61.7					**P**	--
U1 Body	72.6	73.8					**P**	--
Surface of unit.	47.6	50.2					**P**	--
Ambient Air	40.2	40.3					**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

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

10.	**TABLE : Temperature Measurements**	**Form A.20A**	**P**
10.1	Surface temperature limits - NORMAL CONDITION		—
10.2	Temperature of windings- NORMAL CONDITION		—
10.3	Other temperature measurements		—

Operating conditions:	The unit was adjusted to 200A and operated continuously.		
Frequency ..... :	60/ Hz 50	Test room ambient temperature (t_a)..... :	See below °C
Voltage ..... :	See V below	Test duration ..... :	Until when steady state having been reached.

Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
Supplementary information:					

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

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

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 °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:

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

10.5.2	**TABLE: Resistance to heat of non-metallic enclosures**				**Form A.21**	**P**
	Test method used:					—
	Non operative treatment..... :	[X]				X
	Empty ENCLOSURE ..... :	[X]				X
	Operative treatment..... :	[ ]				
	Temperature during tests ..... :	70°C, 7hr				—
	ENCLOSURE samples tested were..... :					—

Description	Material	Comments	Verdict
Enclosure	Chi Mei, PC-510, PC-540, UL 94 V-0	Duration 7 hours	Pass

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

Supplementary information:

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

10.5.3	**TABLE: Insulating Materials** **Form A.22**		**P**
10.5.3a)	Ballpressure test		X
	Max. allowed impression diameter.....:	2 mm	—

Part	Test temperature °C	Impression Diameter (mm)	Verdict
Terminal block (rear)	125	0.9	**P**

Supplementary information: All other critical parts for insulation material are approved components and no doubt in such materials.

10.5.3b)	Vicat softening test (ISO 306)		

Part	Vicat softening temperature °C	Thickness of sample (mm)	Verdict

Supplementary information:

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

8	**TABLE: Mechanical resistance to shock and impact**	**Form A.23**	**P**
11	**Protection against hazards from fluids**		**N/A**

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

	Clause 8 tests				Clause 11 tests							
Location (see form A.5)	Static	Dynamic	Normal	Handheld Plug-in	Cleaning (11.2)	Spillage (11.3)	Overflow (11.4)	IEC 60529 (11.6)	Working voltage V	Test voltage V	Verdict	Comments
Enclosure	Pass	Pass	Pass	--							P	

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

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

11.7.2	**TABLE: Leakage and rupture at high pressure**			**Form A.24**	**N/A**
Part	Maximum permissible working pressure MPa	Test pressure MPa	Leakage YES / NO	Burst YES / NO	Comments
Supplementary information:					

11.7.3	Leakage from low-pressure parts			**N/A**
Part	Test pressure MPa	Leakage YES / NO	Comments	
Supplementary information:				

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

12.2.1	**TABLE: Ionizing radiation**		**Form A 25**	**N/A**
Locations tested	Measured values µSv/h	Verdict	Comments	

Supplementary information:

IEC 61010-1			
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:				

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:				

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

13.2.2	**TABLE: Batteries**	**Form A.27**	**N/A**
	Battery load and charging circuit diagram:		
	Battery type ..... :		—
	Battery manufacturer/model/catalogue No..... :		—
	Battery ratings ..... :		—
	Reverse polarity instalment test		

Single component failures	Verdict	
Component	Open circuit	Short circuit

Supplementary information:

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

14.3	**TABLE: Overtemperature protection devices**	**Form A.28**	**N/A**

Reliability test

Component	Type (note)	Verdict	Comments

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

Supplementary information:

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

4.4.2.6	**TABLE: Mains transformer**				**Form A.29**	**N/A**
4.4.2.6.1	Short circuit					
14.7.1	MAINS transformers tested outside equipment					
Type .....:						—
Manufacturer.....:						—
Test in equipment						X
Test on bench						--
Test repeated inside equipment (see 14.7)						--
Optional – Insulation class (IEC 60085) of the lowest RATED winding .....:					Class A	—
Winding identification						
Type of Protector for winding (Note 1)						
Elapsed time						
Current, A primary secondary						
Winding temperature, °C primary (see Note 2) secondary						
Tissue paper / cheesecloth OK ? (Pass / Fail)						
Voltage tests (see Note 3)						
primary to secondary	-- V --					
primary to core	-- V --					
secondary to secondary	-- V --					
secondary to core	-- V --					
Verdict						

Note 1: Primary fuse - PF / (10) A
Secondary fuse - SF / ( ) A
Overtemperature protection - OP / (125/130) °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:

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

16.1	**TABLE: Current measuring circuits**	**Form A.31**	**N/A**

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:

b) Range changing switches

Type / Model	Maximum rated current of switch A	Cycling test Verdict	Comments

Supplementary information:

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

16.2	**TABLE: Multifunctional meters and similar equipment**		**Form A. 32**	**N/A**
	Operating conditions ..... :			—
	Maximum RATED voltage applied (V)..... :			—
	Measurement category..... :			—
	Test source limit (KVA)..... :			—

Function	Range	Verdict

Supplementary information:

Test Results and Calculations

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EQUIPMENT LIST

TABLE: EQUIPMENT LIST						P
No.	Manufacturer	Name	Model No.	Ser. No.	Calibration Date	Calibration Due Date
1	IDRC	Power Meter	CP-350	355920	2010-05-04	2011-05-04
2	CHROMA	Electronic Load	6312	63120271	2010-05-04	2011-05-04
3	MULTI	AC/DC Clamp Meter	230	96834	2010-07-30	2011-07-30
4	ED&D	Test Wire	TRP-02	20915	2010-09-03	2011-09-03
5	Vibration Source	Reactive type vibration test	VS-5060M Program 1.10 edition	2090	2009-10-14	2010-10-14
6	PTL	Socket-Outlet Torque tester	F37.16	5050003	2010-03-05	2011-03-05
7	ED&D	Impact Test Ball	ITB-01	PSE 7	2010-04-02	2011-04-02
8	EXTECH PSE ASIA	HIPOT, INSULATION Instrument for IEC 9050-1 IEC 60065 instrument for UL 1310	7451 PSE-DSTI HPA-UL	1310153 PSE 8 0702	2010-02-05	2011-02-05
9	PSE	Cord Torsion Tester	PSE-C01	PSE 9	2010-03-05	2011-03-05
10	YOKOGAWA	THERMQ RECORDER	UR1000	12V510639	2010-09-03	2011-09-03
11	FLUKE	Dual Display Meter	45	5865114	2009-10-09	2010-10-09
12	YOKOGAWA	THERMQ RECORDER ter	UR1000	12V510633	2010-09-03	2011-09-03
13	FRANCO	Pointer Clock	TW-2552	112387	2010-03-04	2011-03-04
14	FLUKE	DMM	77	53611260	2009-12-11	2010-12-11
15	SIMPSON	Leakage Current Meter	228	PSE 15	2009-11-06	2010-11-06
16	YOKOGAWA	THERMQ RECORDER	UR1000	12V510637	2010-09-03	2011-09-03
17	INTERTEK	Pink-Noise Generator	NG8280	104	2010-04-02	2011-04-02
18	ED&D	Test Hook	TH-01	20918	2009-12-11	2010-12-11
19	SHIBA	TV Generator	SOKU/216/1	M-76912	2010-03-05	2011-03-05
20	ASIA QTECH	Rod pressure	RP-UL	0701	2010-05-14	2011-05-14

21	YOKOGAWA	THERMQ RECORDER	UR1000	12V510638	2010-08-17	2011-08-17
22	ADVANTEST	Optical Power Meter	TQ8210	120301563	2009-12-21	2010-12-21
23	ED&D	Test Pin	HLP-01	20916	2009-12-11	2010-12-11
24	EXTECH	Leakage Current Meter	7611	1330416	2010-03-05	2011-03-05
25	TEKTRONIX	Oscilloscope	TDS 320	B020889	2010-08-17	2011-08-17
26	YOKOGAWA	THERMQ RECORDER	DR130	12W512516	2010-05-04	2011-05-04
27	ASIA QTECH	Test Finger	TFP-1	0707	2010-05-14	2011-05-14
28	RAY-RAN	Vicat softening Point System	RR HDV2	RR/HDV2/075	2010-04-02	2011-04-02
29	ED&D	Test Rod	TRP-01	20917	2009-12-11	2010-12-11
30	CHROMA	Electronic Load	6314	63141170	2010-05-14	2011-05-14
31	TOHNICHI	TORQUE DRIVER	RTD260CN	413344N	2010-06-10	2011-06-10
32	CHROMA	Electronic Load	6314	63146569	2010-04-02	2011-04-02
33	CHROMA	Electronic Load	6314	63146570	2010-04-02	2011-04-02
34	TESTING	Thermometer/Timer Needle Flame Burner Barrel	T3-53 T4-31 T4-33	10/05 30/05 30/05	2010-03-05	2011-03-05
35	CHROMA	Electronic Load	6314	63141173	2010-05-04	2011-05-04
36	C SUN	Chamber	GPO-125	MAK1007-007	2010-07-08	2011-07-08
37	CHROMA	Electronic Load	6314	63146571	2010-03-05	2011-03-05
38	GPTECH	Cord Anchorage Tester	7305-A	TC0402385	2010-04-02	2011-04-02
39	PTL	Impact-Test Apparatus	F 22.50	5021025	2010-02-05	2011-02-05
40	MITUTOYO	Caliper	CD-6"CSX	06057621	2010-02-05	2011-02-05
41	YOKOGAWA	THERMQ RECORDER	DR231-00-32-1D	12B823473	2010-09-03	2011-09-03
42	ED&D	Test Finger	ULP-01	20920	2010-09-03	2011-09-03
43	PSE	Pin With Different Diameters	PSE-D01	PSE 43	2010-03-05	2011-03-05
44	MITUTOYO	MICRO METER	293-821	65081055	2010-04-02	2011-04-02
45	SAMPO	Function Generator	FG 1627	50800067	2010-03-05	2011-03-05
46	HONGDI	Measuring Tape	26-5019	N339A061215 336396	2010-02-05	2011-02-05

47	TOHNICHI	TORQUE DRIVER	RTD60CN	433336Q	2010-06-10	2011-06-10
48	ED&D	Test Probe	TTP-01	20919	2009-12-14	2010-12-14
49	TOHNICHI	Torque Meter	15BTG-S	503304S	2010-06-25	2011-06-25
50	ASIA QTECH	Resistor	950-2K-2W	95011	2010-07-02	2011-07-02
51	IDRC	Power Meter	CP-350	355921	2010-05-04	2011-05-04
52	CHROMA	Electronic Load	6312	63120244	2010-05-04	2011-05-04
53	ATTREZZATURE	Glow-Wire Tester	02.06	002160/05	2010-02-05	2011-02-05
54	PSE	Steel Ball	PSE-BO1	PSE-54	2010-05-14	2011-05-14
55	CHROMA	Electronic Load	6312	63120268	2010-07-02	2011-07-02
56	CHUYI	IMPULSE	IEC-950	91005	2010-05-04	2011-05-04
57	PLT	SURGE	H 06e	5011395	2010-03-04	2011-03-04
58	ALGOL	Push Pull Gauge	HF-50	HF-104872	2010-06-02	2011-06-02
59	CHROMA	Electronic Load	6314	63141181	2010-05-04	2011-05-04
60	GIANT FORCE	Chamber	GTH-225-40-1P-U	MAA0406-19	2010-05-04	2011-05-04
61	TEKTRONIX	Oscilloscope	TDS-3032B	B015275	2009-11-11	2010-11-11
62	SIMPSON	Leakage Current Meter	229-2	PSE 62	2009-11-06	2010-11-06
63	CHROMA	Electronic Load	6312	63120269	2010-05-04	2011-05-04
64	YOKOGAWA	THERMQ RECORDER	DR130	47JE0095	2010-05-04	2011-05-04
65	LUTRON	Milliohm Meter	MO-2001	L093865	2010-03-04	2011-03-04
66	CHROMA	Electronic Load	6314	63141179	2010-05-04	2011-05-04
67	ASIA QTECH	Resistor	950-5K	0603	2010-01-19	2011-01-19
68	PSE	Ball-Pressure apparatus	PSE-B02	PSE 68	2010-08-17	2011-08-17
69	CHROMA	Electronic Load	6304	63042081	2010-05-04	2011-05-04
70	PSE	Test Pin	PSE-TP01	PSE 70	2010-05-14	2011-05-14
71	CHROMA	Electronic Load	6312	63120257	2010-05-04	2011-05-04
72	MITUTOYO	Caliper	CD-6"CSX	06057625	2010-02-05	2011-02-05
73	CHROMA	Electronic Load	6314	63141184	2010-05-04	2011-05-04
74	YOKOGAWA	THERMQ RECORDER	DR 130	7700GC390	2009-11-06	2010-11-06
75	YOKOGAWA	THERMQ RECORDER	DR 130	7700GC387	2009-11-06	2010-11-06

76	POLYCAST	Pitch Angle Calculator	PATENT 4125490	PSE 76	2009-12-11	2010-12-11
77	CHROMA	Electronic Load	6304	63042076	2010-05-04	2011-05-04
78	CHROMA	Electronic Load	6314	63146573	2010-04-02	2011-04-02
79	ED&D	SHARP EDGE TESTER	SET-50	PSE 79	2010-06-02	2011-06-02
80	WAVETEK	DMM	DM28XT	PSE 80	2010-05-14	2011-05-14
81	VOLTECH	POWER ANALYZER	PM 100	AX124/2750	2010-06-02	2011-06-02
82	YOKOGAWA	THERMQ RECORDER	DR 230	91G434573	2010-05-04	2011-05-04
83	PSE	GRADUATION	NO.1	PSE 83	2009-10-09	2010-10-09
84	Vibration Source	Mechanical Shock	SHOCK–2	0T97	2010-07-27	2011-07-27
85	Hipotronics	AC, DC HIPOT, INSULATION	HD140	029105009205	2010-07-02	2011-07-02
87	PINTEK	High Voltage Probe	HVP-40	20073092	2009-12-11	2010-12-11
88	GIANT FORCE	Chamber	GTH-150-40-CP-AR	MAA0406-19	2010-02-05	2011-02-05
89	ED&D	Test Probe	AG-3	PSE 89	2010-05-04	2011-05-04
90	ALL VICTORY	Wire & Plug Bending Tester (90°)	AVI-61010-FPT	T20090601	2010-07-15	2011-07-15
91	CASIO	Timekeeper	HS-5	1B02P291	2009-11-06	2010-11-06
92	YOKOGAWA	THERMQ RECORDER	DR 130	12W512515	2010-06-02	2011-06-02
93	PSE	Over Voltage Machine	CS90104	IJ-0354,IJ-0434	2010-03-05	2011-03-05
94	YOKOGAWA	THERMQ RECORDER	DR 130	27D518761	2010-06-02	2011-06-02
95	YOKOGAWA	THERMQ RECORDER	DR 130	27D236826	2010-06-02	2011-06-02
96	YOKOGAWA	THERMQ RECORDER	DR 130	27D236828	2010-06-02	2011-06-02
98	CHROMA	Electronic Load	6314	63146574	2010-04-02	2011-04-02
99	CHROMA	Electronic Load	6314	63146575	2010-04-02	2011-04-02
100	CHROMA	Electronic Load	6314	63146576	2010-04-02	2011-04-02
101	CHROMA	Electronic Load	6314	63146577	2010-04-02	2011-04-02
102	YOKOGAWA	THERMQ RECORDER	DR 230	27D631525	2010-06-02	2011-06-02
103	ASIA QTECH	Accessibility Probe	BEP-1	0702	2010-02-05	2011-02-05
104	ISUZU	Aneroid Barometer	B-125-ON	0115311-99	2009-10-07	2010-10-07
105	YOKOGAWA	THERMQ RECORDER	DR 230	91G434570	2010-05-04	2011-05-04
106	YOKOGAWA	THERMQ RECORDER	DR 230	91G434571	2010-05-04	2011-05-04

107	YOKOGAWA	THERMQ RECORDER	DR 230	91G434572	2010-05-04	2011-05-04
108	EBERLINE	Survey Meter	RO-2	5866	2010-05-21	2011-05-21
109	ED&D	Steel Ball	ITB-04	PSE0 109	2010-05-14	2011-05-14
110	C SUN	Chamber	HC-B6L	CS022913	2010-02-05	2011-02-05
111	ALL VICTORY	Wire & Plug Bending Tester (270°)	AVI-61010-RF	T20090601	2010-07-15	2011-07-15
112	ALL VICTORY	Vacuum Oven	AVI-62133-LP	L20090601	2009-12-11	2010-12-11
113	ALL VICTORY	Batery Pressure Tester	AVI-61010-CR	C20090601	2010-07-15	2011-07-15
114	JUSTICE	Tumbling Barrel	JIA-D20	11075	2010-05-04	2011-05-04
115	SHIMADZU	Electronic Balance	BL-2200H	D455201275	2010-06-02	2011-06-02
116	QTECHASIC	U1, U2	65-LEAK	65014	2009-09-23	2010-09-23
117	ED&D	Test Finger	UFP-01	0601	2009-09-25	2010-09-25
118	ASIA QTECH	Antenna Coaxial	CTP-1	0701	2010-02-05	2011-02-05
119	FUJI	Radius Gages	272MB	PSE 119	2010-09-03	2011-09-03
120	ASIA QTECH	Small Finger Probe ϕ 5.6	CTF-01	0601	2010-09-03	2011-09-03
121	ASIA QTECH	Small Finger Probe ϕ 8.6	CTF-02	0601	2010-09-03	2011-09-03
122	PSE	800N test tool	GY-E816	0601	2010-09-03	2011-09-03
124	YOKOGAWA	THERMQ RECORDER	DR 130	12W512517	2009-12-11	2010-12-11
125	ALL VICTORY	Tracking Index Tester	AVI-60112-TT	T20090601	2010-07-15	2011-07-15
126	IDRC	Power Meter	CP-350	357073	2009-11-06	2010-11-06
127	PSE	Resistor	50K	PSE 127	2010-07-07	2011-07-07
128	PSE	Current measuring circuit	61010 A.3	PSE 128	2010-07-21	2011-07-21
129	SATRUE	Electronic Balance	SA-H1000	09020010	2010-07-21	2011-07-21
130	TES	LUX meter	TES-1330A	080400959	2009-10-20	2010-10-20
131	SATO KEIRYOKI	Thermo hygrograph	SK-L200TH II α	019430	2010-04-12	2011-04-12
133	ATLANTIS	Hydraulic gage	DPG-V3.0-30-2P-D MG-15-W-9V MG-15-W-9V MG-15-W-9V	090519007 090519017 090519039 090519010	2010-08-27	2011-08-27

B1	PSE	Test Hardwood For Drop	surface Hardwood x 18 mm x 1 Bottom Plywood x 2 (Total 38 mm)	–	–	–
B2	ASIA QTECH	30 mm dia. test tool	ϕ 30 mm	–	–	–
B3	PSE	Steel Plate	With blades holes	–	–	–
B4	PSE	Two Maple Blocks	>0.5 in	–	–	–
B5	PSE	Vinyl Tile	3.2mm	–	–	–
B6	TYPE/TIPO QO	GFCI	240Vac / 15A	–	–	–
B7	UND	GFCI	120Vac / 20A	–	–	–
B8	PSE	Variable Resistor	1Ω / 1000W	–	–	–
B9	PSE	Variable Resistor	3Ω,4Ω, 5Ω,75Ω / 500W	–	–	–
B10	PSE	Variable Resistor	75Ω,100Ω / 300W	–	–	–
B11	Cotek	DC Power Source	12Vdc / 18Vdc / 24Vdc / 48Vdc / 2000W min	–	–	–
B12	ANMO	Digital Microscope	10x~50x, 200x	–	–	–
B13	PSE	Petroleum spirit	1 l = 0.68Kg	–	–	–
B14	C SUN	CHAMBER	SMO-2	CS 034843	–	–
B15	PSE	Concrete floor	–	–	–	–
B16	PSE	Test enclosure Annex D 61347-1	610x610x610mm	–	–	–
B17	PSE	Draught proof enclosure Annex F 61347-1	1800x1800x 2000 mm	–	–	–
B18	PSE	Hardwood	>700Kg/m^3	–	–	–
B19	ASIA QTECH	Antenna Coaxial	CTP-TW	–	–	–

User's Instruction and Photos

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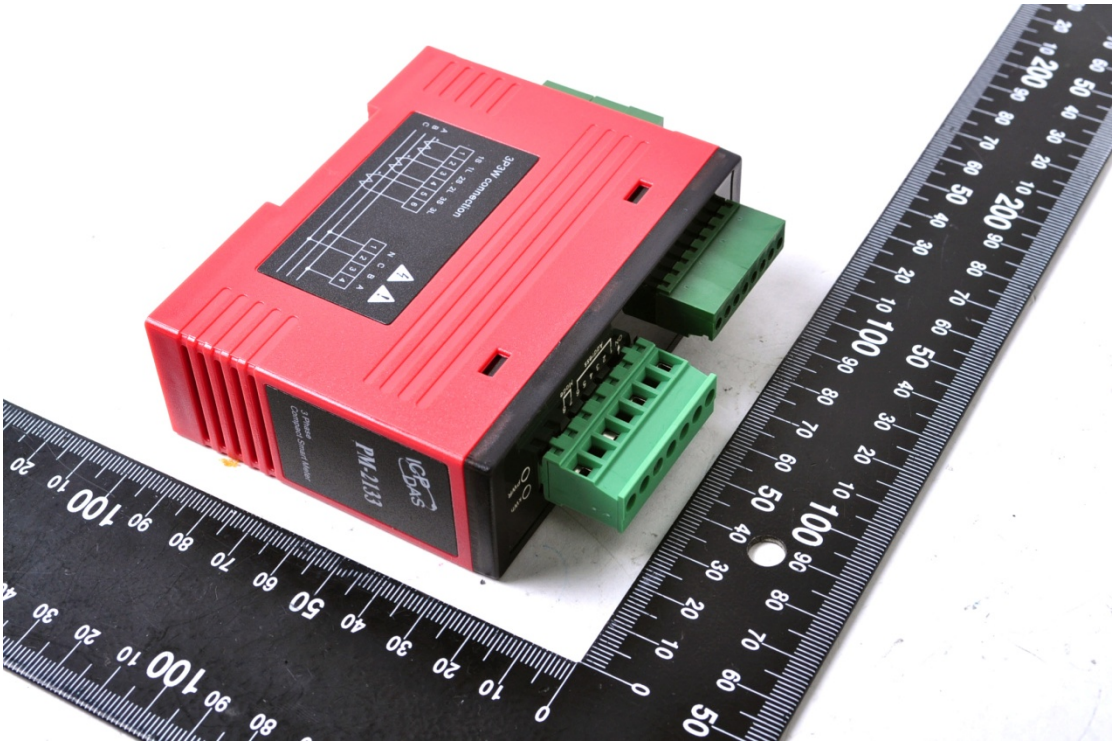
PM-2133

PM-2133



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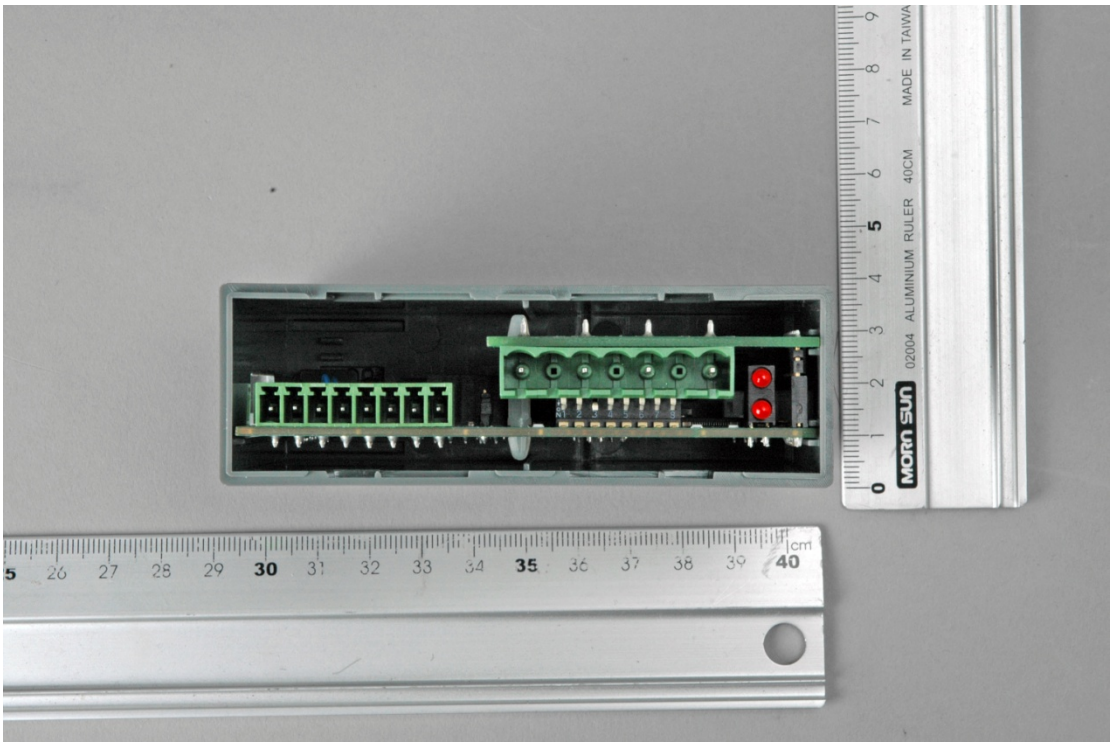

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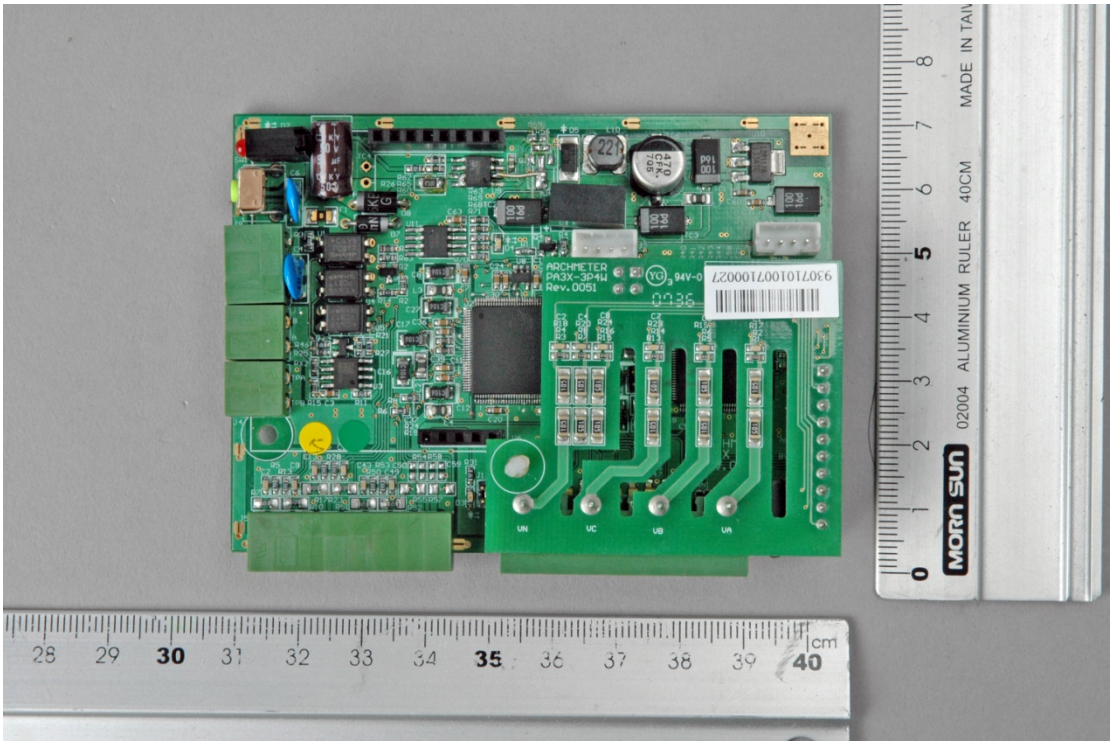

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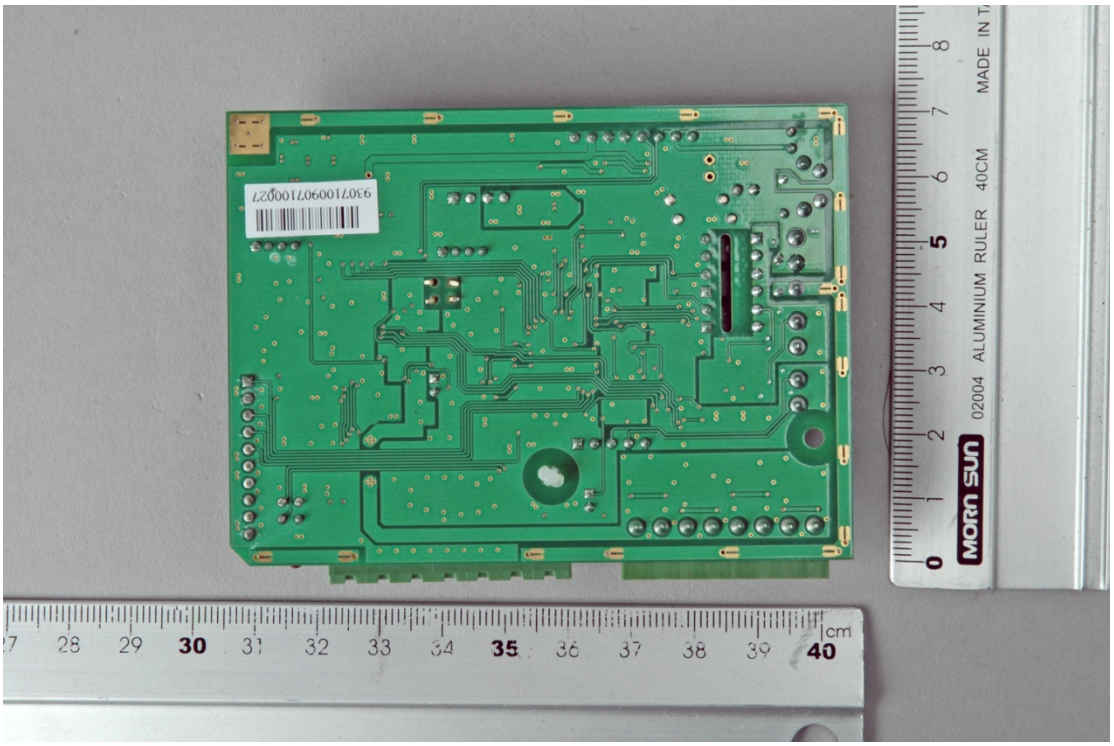

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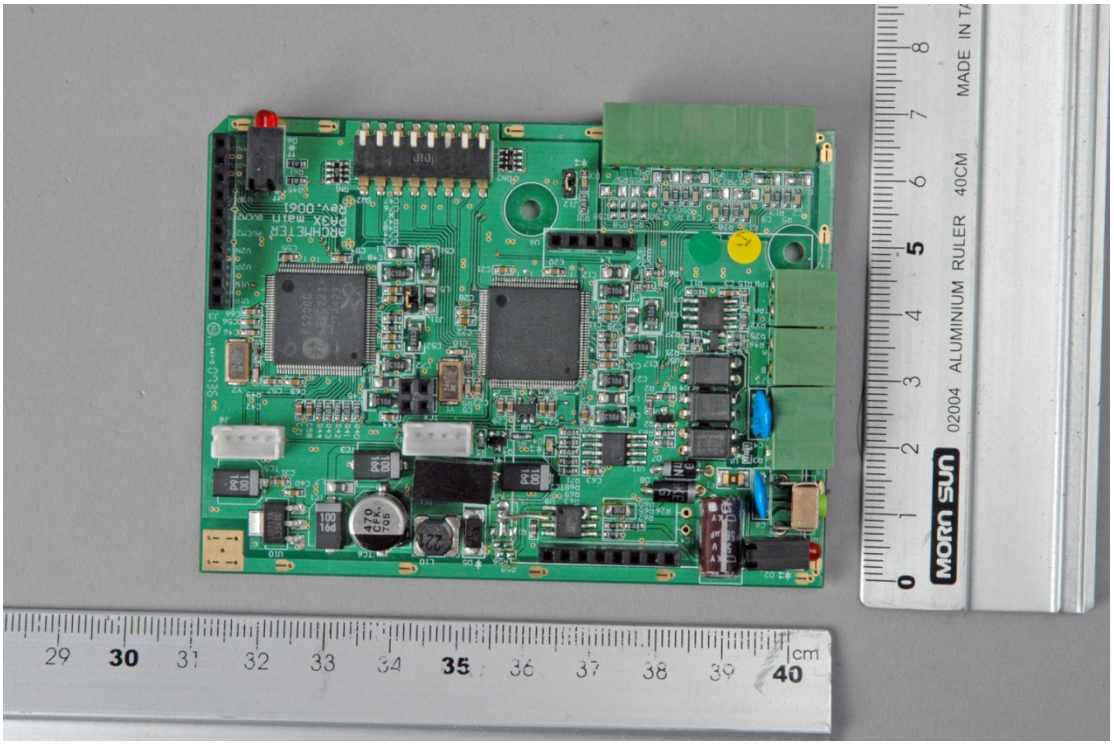

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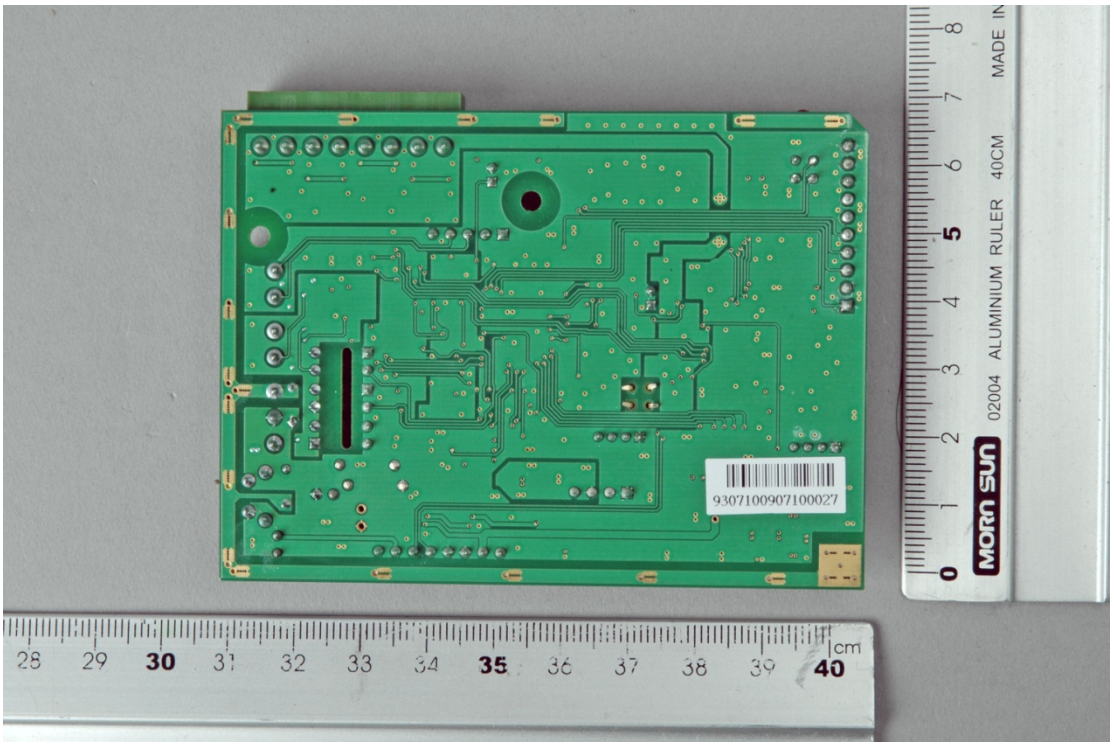

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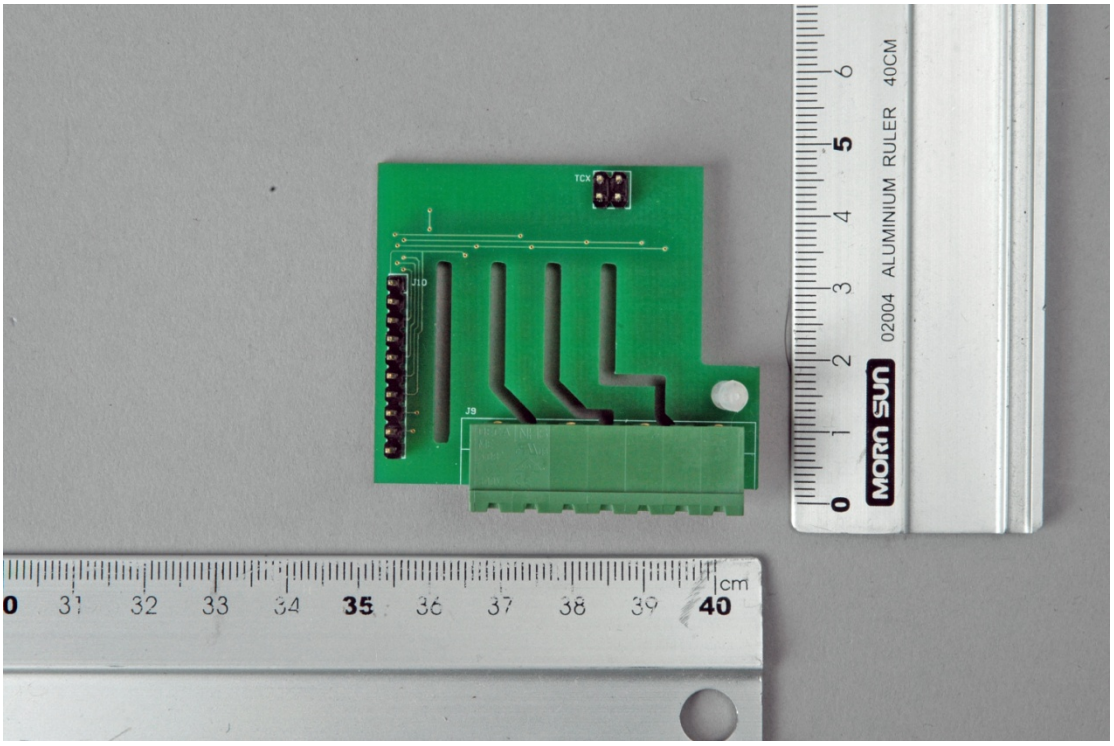

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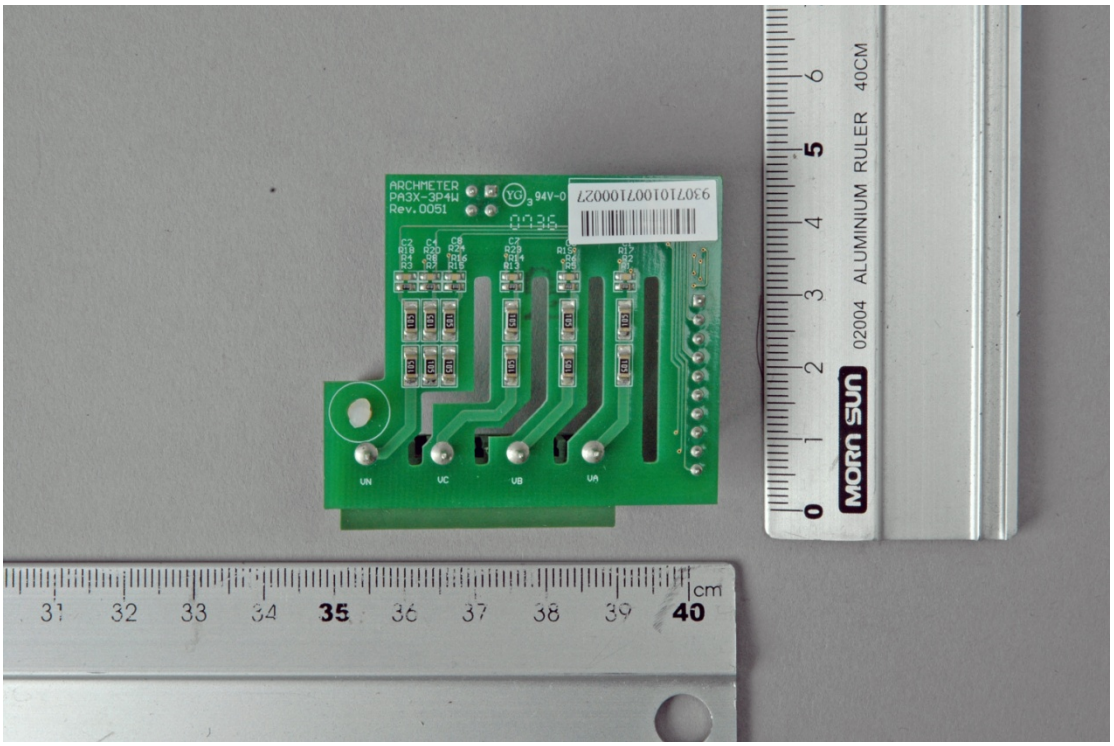

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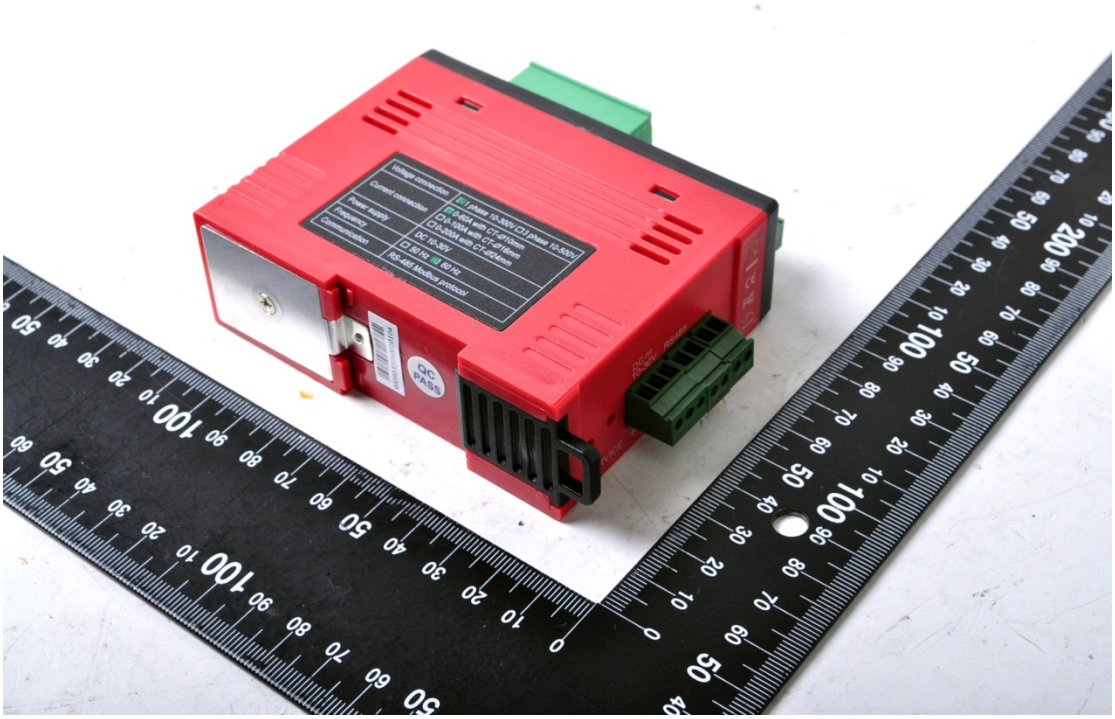

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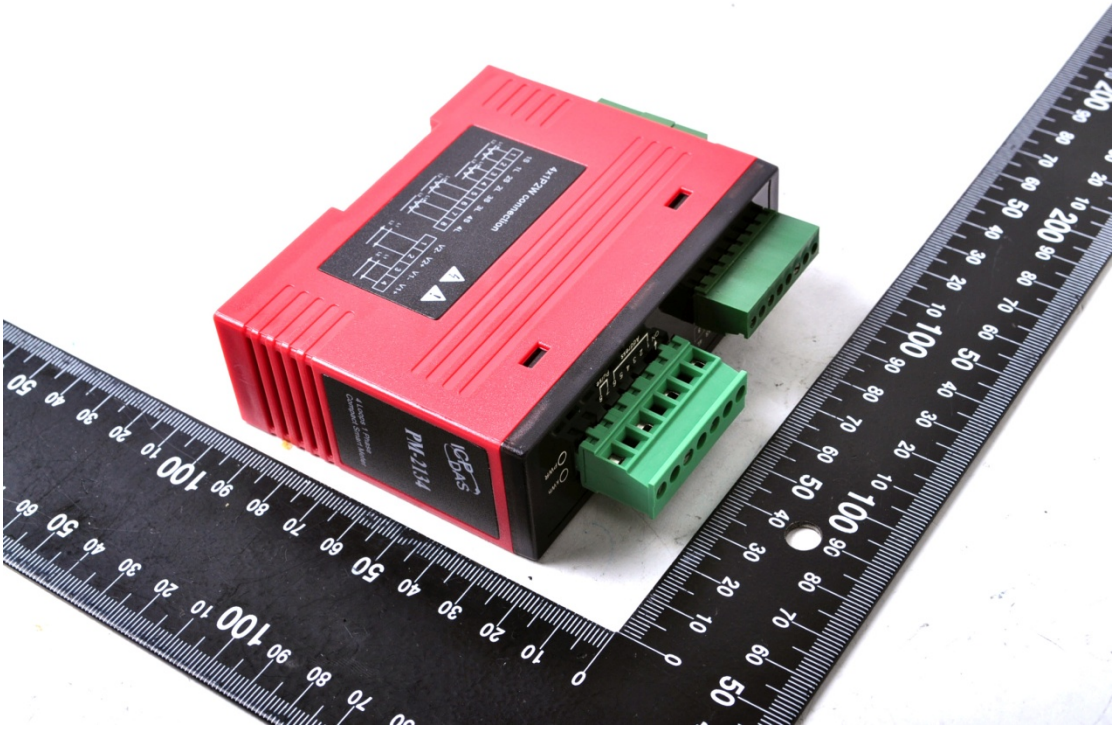

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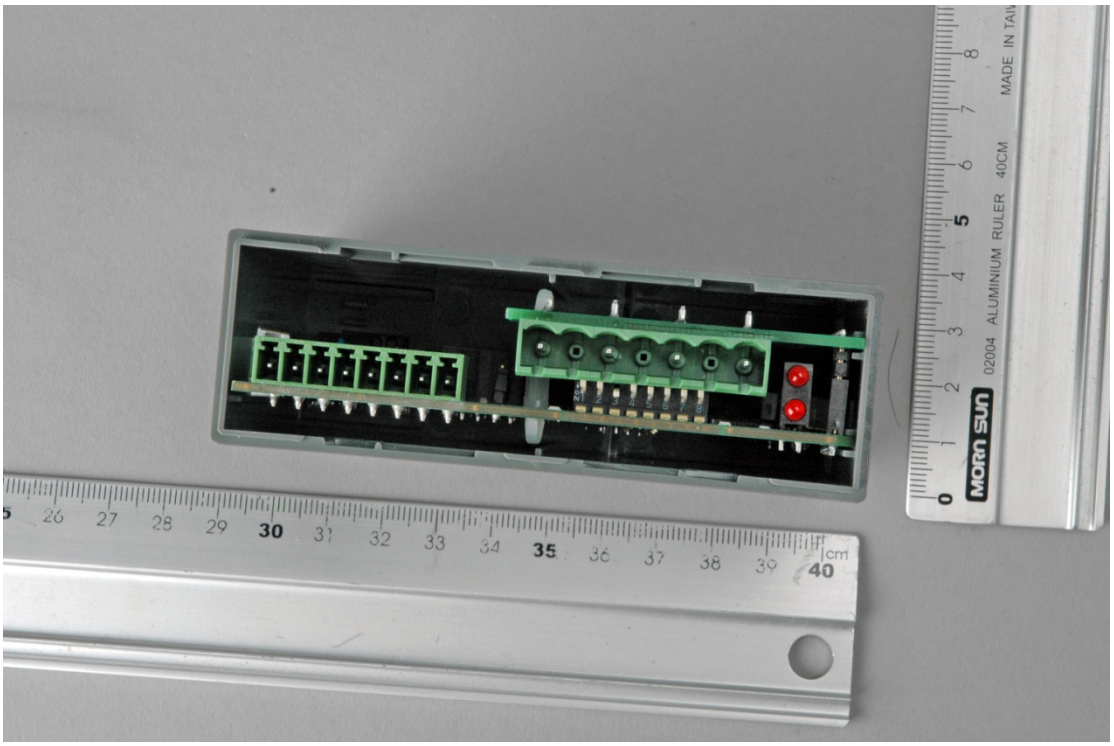

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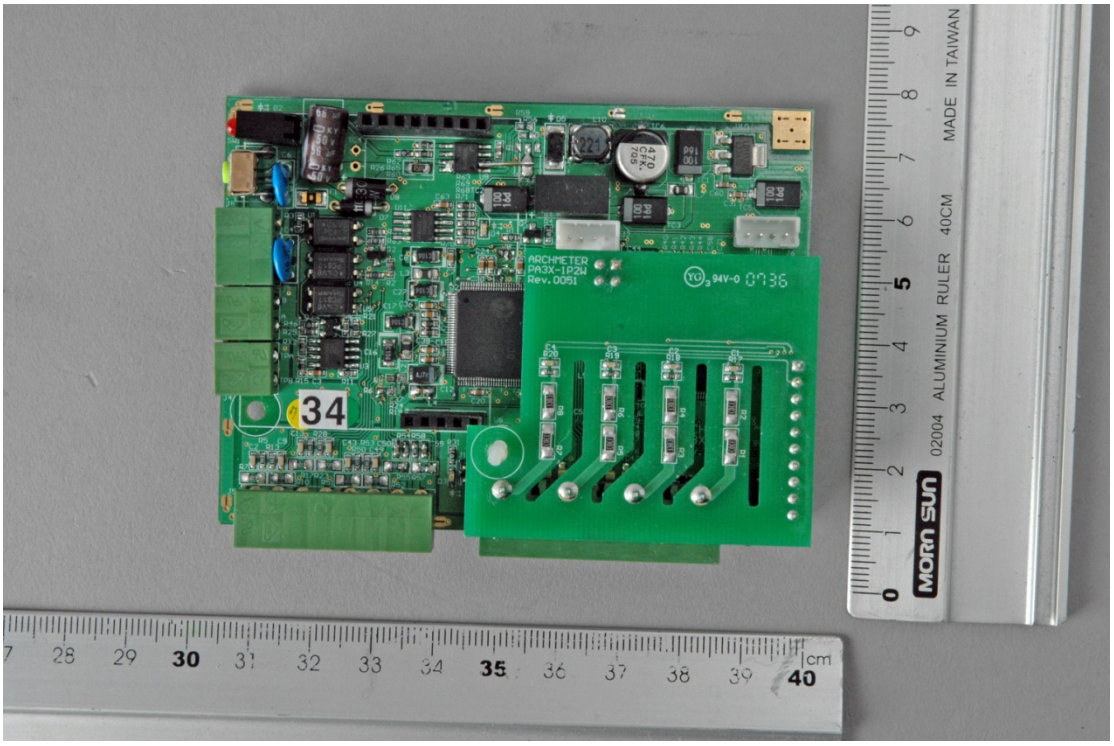

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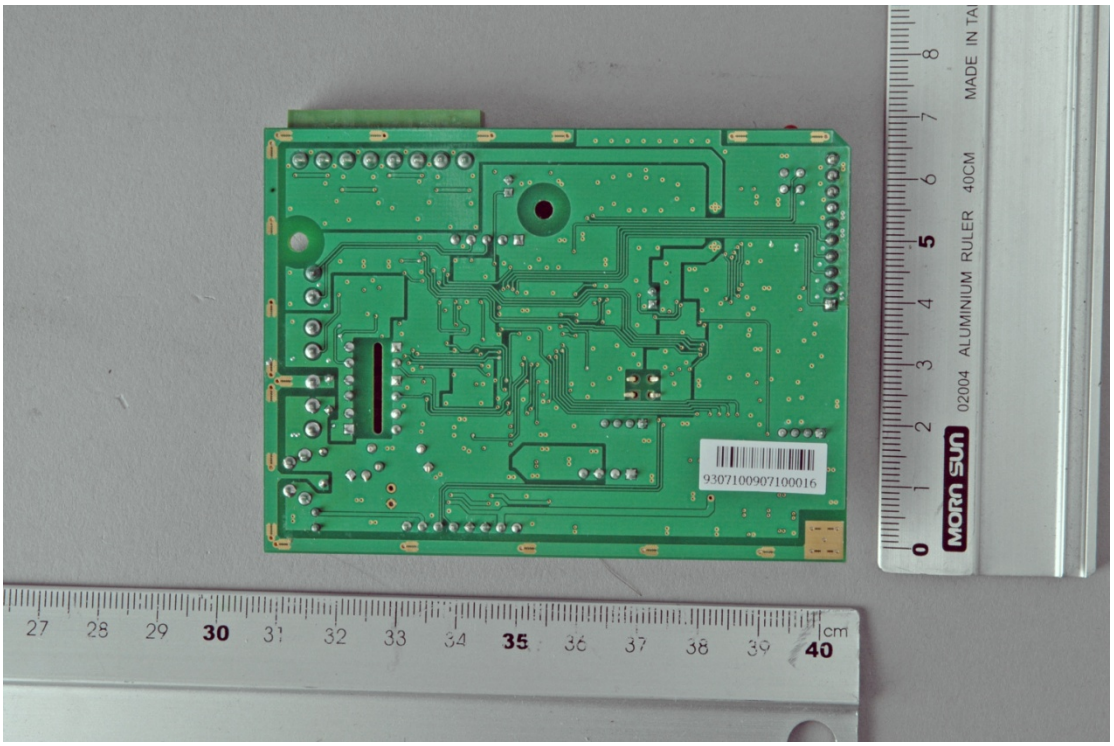

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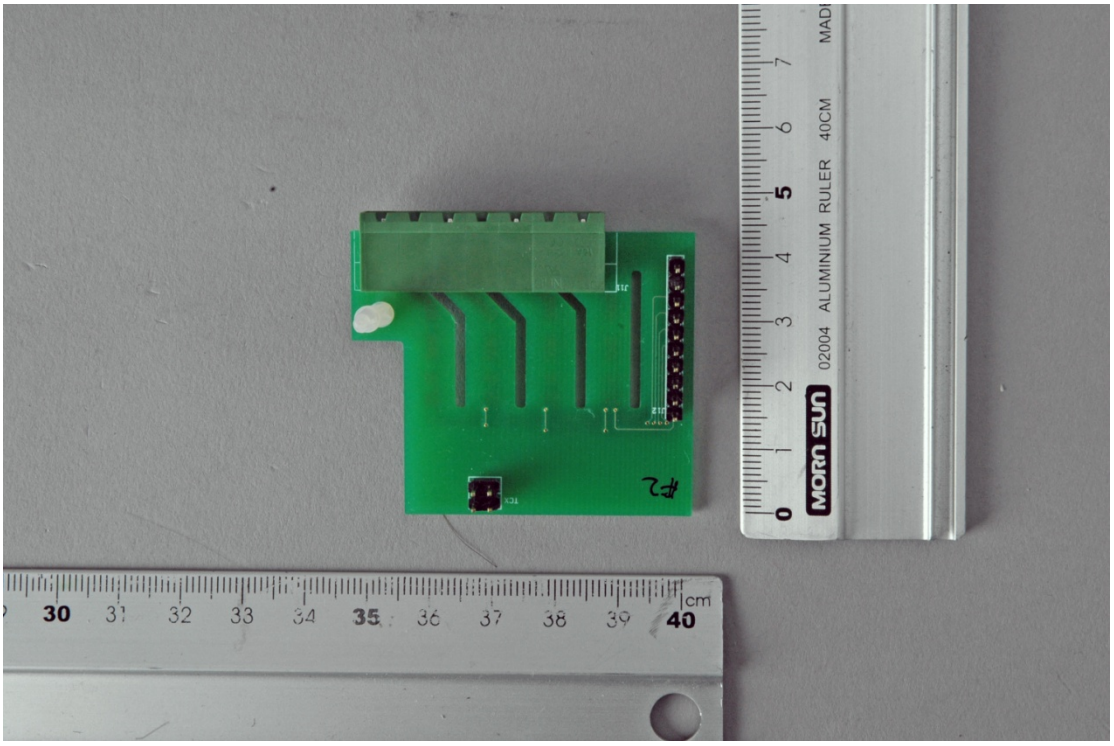

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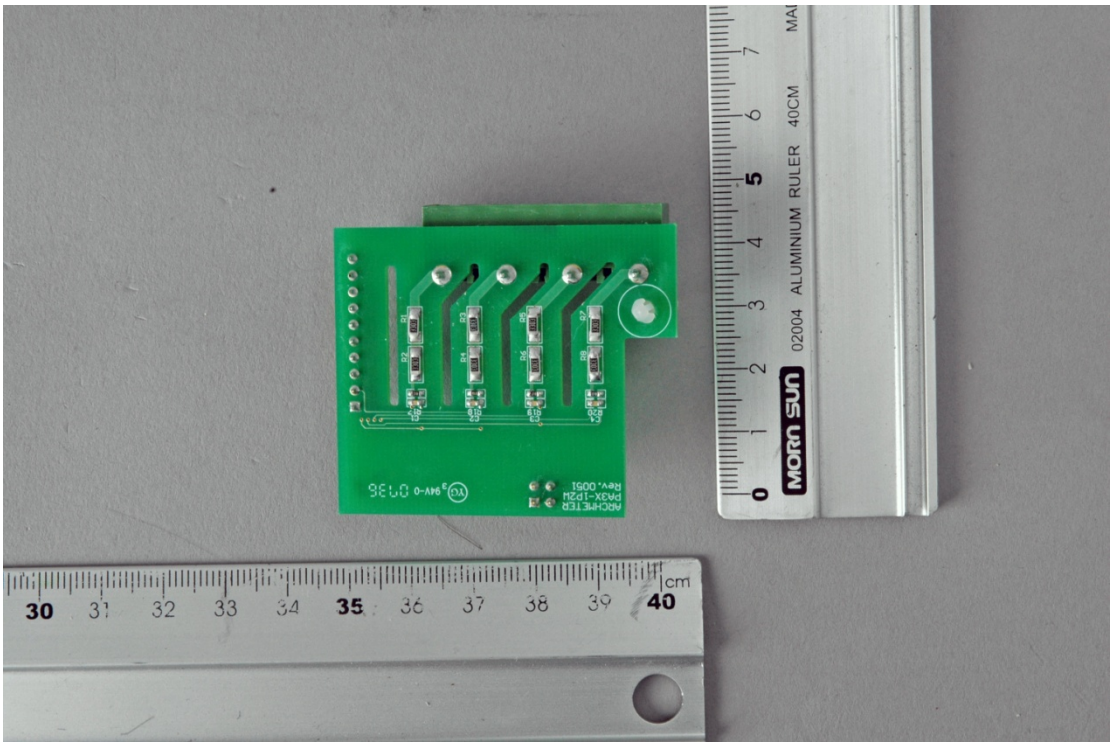

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Design and Technical Construction

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