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KARANDIKAR LABORATORIES PVT. LTD. BOISAR Format: F#07 b.1 Rev 07

TYPE TEST REPORT

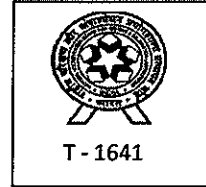
IS/IEC 60529:2001

Degrees of Protection Provided by Enclosures (IP Code)

Report No. : KLPL/BTG/17/02-55

Date of issue : 18.03.2017

No. of pages : 06 PAGES



Compiled by (+ signature)..... : Rupesh Mukane

Approved by (+ signature)..... : Javed Shaikh

Item Received On : 04.02.2017 in Good Condition

Test Completion Date : 02.03.2017

Client

Name : **M/s. Kisan Solar.**

A/2, Atulya Bhavan, Nr. CERC,
S.G. Highway, Thaltej,
Ahmedabad-380054.

Test Specification

Standard : **IS/IEC 60529:2001**

Specified IP-Code : **IP54**

Equipment Under Test

Type of Test Object : **SPCM Solar Inverter**

Model No. : **iACQUA_400_6**

Sr. No..... : **0616-4050-000495**

Manufacturer : **M/s. Kisan Solar.**

Annexure :

Drawing No..... : -----



NOTE : 1) This refers only to the particular item(s) submitted for testing.
2) If necessary, this report shall be reproduced **ONLY** in full.

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Laboratory: Gat#142, Betegaon, Boisar Chilhar Road, Opp. Union Park, Boisar (E) Tal-Palghar, Dist-Palghar. 401501 INDIA

Phone (02525) 284881/931

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Possible test case verdicts:

Test case does not apply to the test object : N (Not Applicable)

Test object does meet the requirement..... : P (Pass)

Test item does not meet the requirement : F (Fail)

Test case has not been checked : _____

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 point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This test report shall not be reproduced except in full without the written approval of the testing Laboratory.

Note: - MAJOR EQUIPMENTS USED

Tests	Required Instruments	Id. No.	Cal Due Date	Used Y/N
1X	Accessibility probe 50 mm Dia.	K&A 405/1A	02.11.2017	N
2X	Accessibility Probe 12.5 mm Dia.	K&A 405 / 3B	02.11.2017	N
3X	Accessibility Probe 2.5mm Dia.	K&A 405 / 5A	02.11.2017	N
4X	Accessibility Probe 1mm Dia.	K&A 405 / 6B	02.11.2017	N
5X / 6X	Manometer	K&A 047/4	01.05.2017	Y
	Rotameter 1.2 LPM	K&A 425	02.01.2018	Y
	DTC with sensor	K&A 047/1	10.01.2018	Y
	Timer	K&A 047/2	10.01.2018	Y
X1 /X2	Rotameter	K&A 419/2	02.01.2018	N
	Stop Watch	K&A 433	24.04.2017	N
X3	Rotameter	K&A 419/2	02.01.2018	N
	Pressure Gauge	K&A 383/1	13.02.2017	N
X4	Rotameter	K&A 419/1	02.01.2018	Y
	Pressure Gauge	K&A 384/1	08.02.2018	Y
	Stop Watch	K&A 433	24.04.2017	Y
X5	Nozzle 6.3 mm dia.	K&A 381-16	15.04.2017	N
	Rotameter	K&A 419/2	02.01.2018	N
	Stop Watch	K&A 824-16	30.03.2017	N
X6	Nozzle 12.5 mm dia.	K&A 382	02.11.2017	N
	Rotameter	K&A 469-15	17.10.2017	N
	Stop Watch	K&A 433	24.04.2017	N
X7 /X8	Scale	K&A 107	One time calibration	N
	Stop watch	K&A 433	24.04.2017	N



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IS/IEC 60529:2001			
Clause	Requirement - Test	Result- Remark	Verdict
10	Marking.		N
11	General requirement for tests.		
11.1	Tests should be carried out under the standard atmospheric conditions described in IEC 60068-1		P
11.2	Test samples shall be in a clean and new condition.		P
	The relevant product standard shall specify details such as: The number of samples to be tested;		N
	-conditions for mounting, assembling and positioning of the samples;		P
	-the pre-conditioning, if any, which is to be used;		N
	-whether to be tested energized or not;		N
11.5	Empty enclosures		
	If the enclosure is tested without equipment inside, the manufacturer shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of Protection of the final product.		N

12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral.			
First, characteristic Numeral.	Test means (Access probes)	Test force	Test Conditions Refer IS/IEC 60529:2001	
0	No test required	-	-	N
1	The access probe, sphere of 50 mm ϕ shall not fully penetrate and adequate clearance shall be kept.	50N \pm 10%	Cls.12.2	N
2	The jointed test finger may penetrate up to 80 mm length but adequate clearance shall be kept.	30N \pm 10%	Cls.12.2	N
3	The access probe, sphere of 2.5 mm ϕ shall not penetrate and adequate clearance shall be kept.	3N \pm 10%	Cls.12.2	N
4	The access probe of 1,0 mm ϕ shall not penetrate and adequate clearance shall be kept.	1N \pm 10%	Cls.12.2	N
5	Test conditions for IP 5X: Same As Above	1N \pm 10%	Cls.12.2	N
6	Test conditions for IP 6X: Same As Above	1N \pm 10%	Cls.12.2	N



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Clause	Requirement – Test	Result-Remark	Verdict

13	Tests for protection against solid foreign objects indicated by the First characteristic numeral.			
First, characteristic Numeral.	Test means (object probes and dust chamber)	Test force	Test Conditions Refer IS/IEC 60529:2001	
0	No test required	-	-	N
1	Rigid sphere without handle or guard 50 mm diameter.	50N ±10%	Cls.13.2	N
2	Rigid sphere without or guard 12, 5 mm diameter.	30N ±10%	Cls.13.2	N
3	Rigid steel rod 2,5mm diameter with edges free from burrs	3N± 10%	Cls.13.2	N
4	Rigid steel wire 1, mm diameter with edges free from burrs.	1N± 10%	Cls.13.2	N
5	Dust chamber, with under pressure	NA	Cls.13.4+13.5	For 8 hrs. As extraction rate is less than 40 Volumes per hour and max depression of 20mbar. P
6	Dust chamber, The enclosure is maintained below the Surrounding atmospheric pressure by a vacuum pump.	NA	Cls.13.4+13.6	N
13.5.2	Acceptance conditions for the first characteristic numeral 5X. The protection is satisfactory if, talcum powder has not accumulated in a quantity or location such that, as with any other kinds of dust, it could interfere with the correct operation of the equipment or impair safety.		No ingress of powder found inside the Control Panel.	P



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Clause	Requirement – Test	Result-Remark	Verdict
14	Tests for protection against water indicated by the second characteristic numeral.		
Second, characteristic Numeral.	Test means	Test Conditions Refer IS/IEC 60529:2001	N
0	No test required	Cls.14.2.0	N
1	Drip box, Enclosure on turntable	Cls.14.2.1	N
2	Drip box, Enclosure in 4 fixed positions of 15 ° tilt	Cls.14.2.2	N
3	oscillating tube or spray nozzle, 60° from vertical	Cls.14.2.3	N
4	oscillating tube or spray nozzle, 180° from vertical	Cls.14.2.4	Water flow rate = 10 lit/min, water Spray = 360° from all practicable direction, Distance Max. 300mm to 500mm, 5 min test duration. P
5	6.3-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 12.5 l/min	Cls.14.2.5	N
6	12.5-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 100 l/min	Cls.14.2.6	N
7	Immersion tank, Temporary immersion in water in service position,	Cls.14.2.7	N
8	Immersion tank, Continuous immersion subject to agreement,	Cls.14.2.8	N
-	Acceptance conditions for IPX4: The protection is satisfactory if no water has accumulated near the insulation, cable end or entered cables or interferes with the correct operation of the equipment.	Cls.14.3	No ingress of water observed inside the Control Panel. P
-	Tests for protection against access to hazardous parts indicated by the additional letter.	Cls.15	N

SUMMARY OF INGRESS PROTECTION TESTS ACCORDING TO IS/IEC 60529:2001

Conclusion of the IP54 test: PASS.

The results of the tests were in compliance with the requirements in the standard IS/IEC 60529:2001

UUT=Unit Under Test

Test was witness by: Mr. Rajendra Rathod



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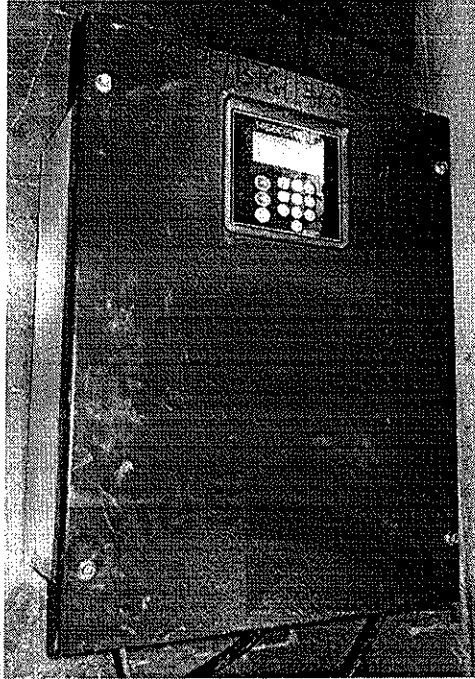


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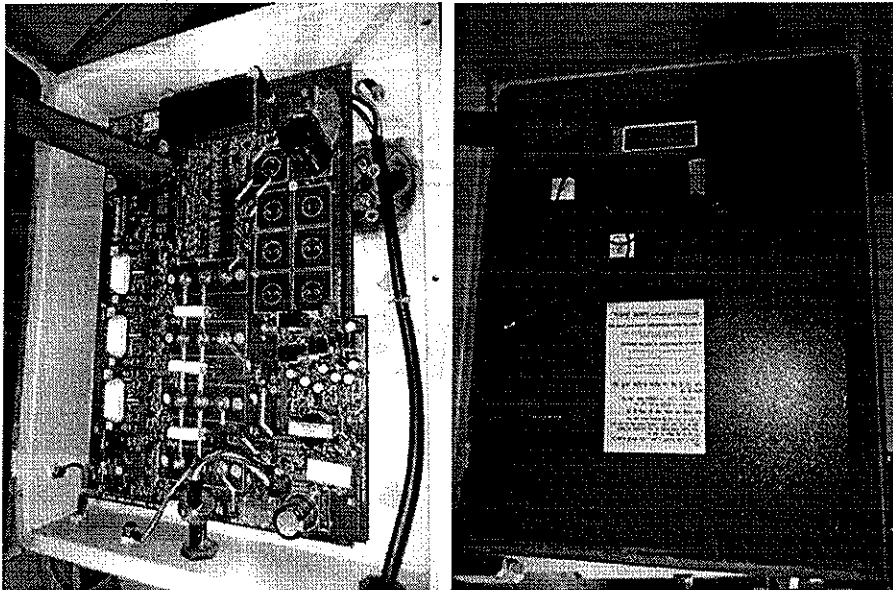
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Picture1 : SPCM Solar Inverter



Picture2 : No ingress of powder & water observed

Gasket is use between cover & body – Material: Neoprene, Size: 20 X 8 mm Thick



END OF REPORT

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