

National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)

19 K.m Stone, Gurgaon-Faridabad Road, Gwal Phari, Gurgaon (Haryana)-122003

File No: 336/2016-17 /CSC/NISE) 187

Dated: 07-06-17

To,
M/s. KISAN SOLARA/2, Atulya Bhavan, Next to C.E.R.C. S.G. Highway,
Thaltej, Ahmedabad - 54**Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')**

Dear Sir,


Please refer to your letter No./Order Form No. 07 Dated 25-01-17. In this connection, I am directed to enclose herewith the Test Report No : 336/2016-17/CSC/N/ISE Dated 06-06-17. In respect of your submitted samples in original, for ready reference and record.

2. Discrepancies, if any observed, in respect of any of the entries contained in the above report should be brought to the notice of this office within 30 days from the date of issue of this letter, failing which it will be presumed that the entries therein are in order and no further correspondence will be entertained thereafter on this particular report.
3. We would like to solicit your views and therefore enclosing a Feedback Form with a request to be filled up by you and then send as soon as possible. Your suggestions are valuable for us to make our further improvements and take corrective action in improving our quality of service.
4. Further, You are also requested to collect your samples at your cost within 60 days, from the date of issue of this letter falling which NISE will dispose of the sample in best possible manner and NISE will not be responsible in any manner for this sample.

Kindly acknowledge the receipt of this letter along with original test report and original Invoice.



Yours faithfully


7/6/2017(In-charge, Customer Service Cell)
(National Institute of Solar Energy)

Encl:

1. Test Report-Total Page 07
2. Feedback Form

Copy forwarded for Information to:

1. PA to Director General-NISE
2. Guard File
3. Office Copy

National Institute of Solar Energy

(An autonomous Institute of Ministry of New & Renewable Energy)

Gurgaon-Faridabad Road, Gwalpahari, Gurgaon-122003

Ph. 0124-2579251 (CSC), Fax: 0124-2579207

Email id: csc.nise.mnre@gmail.com

TEST REPORT

1.	Service Request No.	30/2716
2.	Requested By (Name & Address of the organization)	M/S KISAN SOLAR A/2, ATULYA BHAVAN, NEXT TO C.E.R.C. S.G. HIGHWAY, THALTEJ, AHMEDABAD-54
3.	Details of the test item	
	a) Nomenclature	Solar Pump Controller
	b) Capacity	5 kW
	c) Manufactured By	M/S KISAN SOLAR
	d) Model / Type No.	IACQUA_400_6
	e) Serial No.	0616-4050-000479
	f) Testing procedure	Prototype submitted by client as per user specification
4.	Date of Submission of Samples	25/01/2017
5.	Condition of samples on receipt	Good
6.	Date of Completion of Tests	26/05/2017

MAJOR EQUIPMENTS USED

S.No.	Equipment Used	Model	Calibration Agency / Report Reference	Last calibration date
1	Solar array simulator	ETS600*25D-PVE	Calibrated from ERTL(N)	22/11/2016
2	Power Analyzer	WT 1800	Calibrated from ERTL(N)	25/10/2016
3	Digital Oscilloscope, Tektronix TDS210	DPO	Calibrated from ERTL(N)	28/10/2016
4.	Motor Pump setup	KSB 5 hp Model No, UQD 182/6+UMAIso1 150/5, Sr. No. 11140802001	NA	NA

Tested By

Date.....

Authorized Signatory

Date.....

Issued By

Date.....



Rajesh Kumar
6/6/17

9/6/17
7/6/2017



S.No.	Test Performed as per NMRE Specifications		Claims of Manufacture	NISE's Observations			Remarks
1.	Input voltage	Inverter Minimum rated Voltage	280-380 V	280			
		Inverter Normal Voltage		340			
		90% of Inverter's maximum Input voltage		380			
2.	Insulation Resistance test			22.1 G Ω @ 500V applied for 1 minutes			Observed at 30°C & 33 % RH
3.	Output Voltage (Sine wave)		Three Phase 380-480 V AC	Three phase 28-362 V AC sine wave			
4.	Inductive load			Tested with KSB motor & pump 5 H.P pump			AC induction motor
5.	Low irradiation mode protection		Provided	Observed			satisfactory
6.	Dry run protection		Provided	Observed			satisfactory
7.	Reverse polarity protection		Provided	Observed			satisfactory
8.	Short Ckt protection		Provided	Observed			satisfactory
9.	Open Ckt protection		Provided	Observed			satisfactory
10.	Remote Monitoring		Provided	MPP Power, frequency LPM, status, total energy, total flow.			Annexure -II
11.	Efficiency Tests of the Controller at Voltage (400 V)		To be Measured	Efficiency (%)	MPPT Efficiency (%)	Overall System Efficiency (%)	Annexure -II
	At 10% of input power			79.6	99.3	79.0	
	At 25% of input power			88.6	99.9	88.5	
	At 50% of input power			93.6	99.8	93.4	
	At 75% of input power			94.3	99.9	94.2	
	At 100% of input power			94.5	99.6	94.1	

NOTE:

1. This test report refers only to the particular items submitted for testing as per specifications/requirements stipulated by the customer.
2. The results reported in the Test Report are valid at the time of and under the stipulated conditions of measurements.
3. The test report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, National Institute of Solar Energy.
4. The client is requested to collect the tested sample back within 30 days from the date of issue of the report.

Kamlesh

Tested By

Mishra

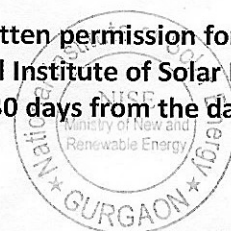
Date.....

Lisha

Rajesh Kumar
6/6/12

Authorized Signatory

Date.....



Issued By

Shweta
7/6/2012

Date.....

Annexure-I

Table.1: Conversion efficiency at minimum voltage (tested at Voltage at 280 V)

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	273.6	224.7	266.9	247.3	249.2	255.2
2	DC CURRENT 1(I)	0.8	1.8	3.9	8.5	12.5	16.3
3	TOTAL INPUT DC POWER (W)	209.8	409.6	1051.0	2101.2	3104.3	4156.2
4	AC VOLTAGE 1 (V)	79.8	142.3	223.4	304.6	348.7	376.3
5	AC CURRENT 1 (I)	3.0	3.7	4.3	5.2	6.1	7.2
6	AC VOLTAGE 2 (V)	80.3	143.1	224.2	305.3	350.1	377.7
7	AC CURRENT 2 (I)	3.0	3.6	4.2	5.2	6.1	7.2
8	ACTIVE POWER (P)	166.1	325.0	945.5	1962.5	2914.5	3910.1
9	REACTIVE POWER (Q)	363.5	828.6	1325.4	1896.6	2221.2	2507.8
10	APPARENT POWER (S)	399.6	890.0	1628.0	2729.1	3664.4	4645.1
11	FREQUENCY (Hz)	12.5	16.7	31.4	39.3	42.8	46.9
12	EFFICIENCY (%)	79.1	79.3	90	93.4	93.9	94.1
13	MPPT EFFICIENCY (%)	99.0	98.4	99.0	99.7	99.9	99.8
14	OVERALL SYSTEM EFFICIENCY (%)	78.3	78.0	89.1	93.4	93.8	93.9

Table.1: Conversion efficiency at rated voltage (tested at Voltage at 340 V)

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	335.5	273.7	285.2	288.1	292.7	296.2
2	DC CURRENT 1(I)	0.6	1.5	3.7	7.2	10.6	14.0
3	TOTAL INPUT DC POWER (W)	210.5	418.4	1042.5	2070.2	3104.7	4135.7
4	AC VOLTAGE 1 (V)	77.8	149.4	255.6	311.3	352.0	380.5
5	AC CURRENT 1 (I)	3.3	3.8	4.3	5.2	6.1	7.1
6	AC VOLTAGE 2 (V)	78.3	150.2	256.7	312.1	353.5	381.9
7	AC CURRENT 2 (I)	3.2	3.6	4.1	5.1	6.1	7.1
8	ACTIVE POWER (P)	161.4	332.8	923.8	1937.8	2926.3	3908.5
9	REACTIVE POWER (Q)	407.4	885.7	1575.7	1948.7	2243.6	2541.8
10	APPARENT POWER (S)	438.2	946.2	1826.6	2748.1	3687.5	4662.3
11	FREQUENCY (Hz)	12.6	16.8	31.2	39.2	42.8	46.9
12	EFFICIENCY (%)	76.6	79.6	88.6	93.6	94.3	94.5
13	MPPT EFFICIENCY (%)	99.5	99.3	99.9	99.8	99.9	99.6
14	OVERALL SYSTEM EFFICIENCY (%)	76.3	79.0	88.5	93.4	94.2	94.1

Kamlesh

Tested By

Mishra

Date.....

Lika

Rishikumar
6/6/12

Authorized Signatory

Date.....



Issued By

Rishikumar
7/6/2012

Date.....

Table.1: Conversion efficiency at maximum voltage (tested at Voltage at 380 V)

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	363.2	282.2	300.6	315.6	318.1	321.8
2	DC CURRENT 1(I)	0.6	1.5	3.5	6.6	9.8	12.9
3	TOTAL INPUT DC POWER (W)	209.5	411.2	1040.3	2085.8	3103.8	4136.2
4	AC VOLTAGE 1 (V)	26.3	144.4	235.4	297.5	346.0	379.9
5	AC CURRENT 1 (I)	4.0	3.4	4.3	5.3	6.2	7.1
6	AC VOLTAGE 2 (V)	27.2	143.1	236.2	299.5	344.5	381.9
7	AC CURRENT 2 (I)	3.9	3.3	4.1	5.2	6.2	7.1
8	ACTIVE POWER (P)	99.8	377.8	881.5	1508.2	2112.4	2678.8
9	REACTIVE POWER (Q)	31.1	307.6	481.0	426.6	336.2	257.6
10	APPARENT POWER (S)	104.5	487.2	1004.2	1567.3	2139.0	2691.1
11	FREQUENCY (Hz)	12.5	16.8	31.2	39.2	42.8	46.9
12	EFFICIENCY (%)	81.8	80.1	90.3	94.0	94.8	95.1
13	MPPT EFFICIENCY (%)	99.0	99.0	98.3	99.8	99.9	99.9
14	OVERALL SYSTEM EFFICIENCY (%)	81.0	79.3	88.8	93.8	94.7	95.0

Tested By

Date.....

Authorized Signatory

Date.....

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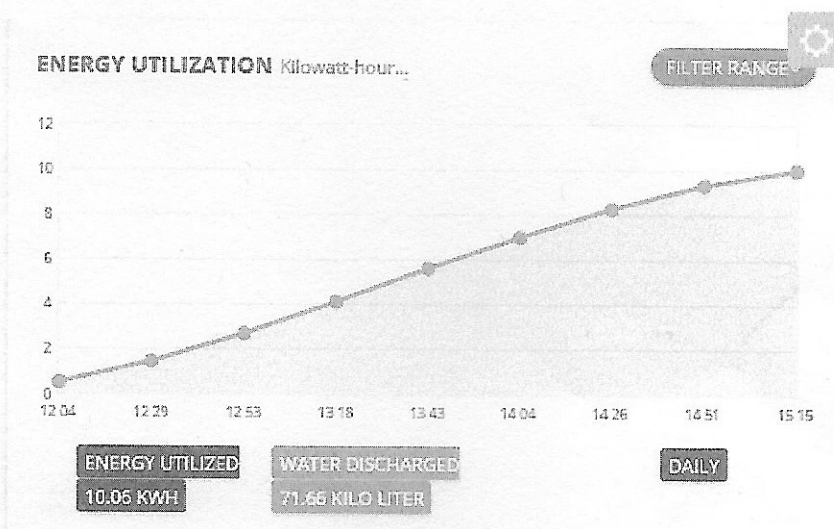
Date.....



Annexure- II


Remote monitoring:

(A) Following discharge result observed using actual measurement and using remote monitoring

NISE Observation	Remote monitored discharge data	Remarks
70650 Ltr	<p>71660 Ltr</p> 	1.43% error observed in estimated method of discharge measurement using remote monitoring

(B) Status of system and location of motor-pump controller is observed in remote monitoring as follows:

Map and Directions



PROJECT DETAILS click on tab for more info

Installation SPV Panels Pumpset Controller

SPCM

Manufacturer: Kisan Solar

Certifications: NISE(MNRE), IP54, Remote Monitoring

Serial Number: ks_0616_4050_000479

Status: System is Shut Down at ks_0616_4050_000479 in Gurgaon

Tested By

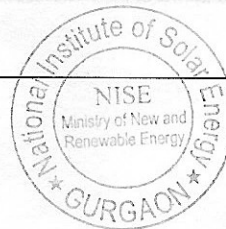
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Authorized Signatory

Date.....

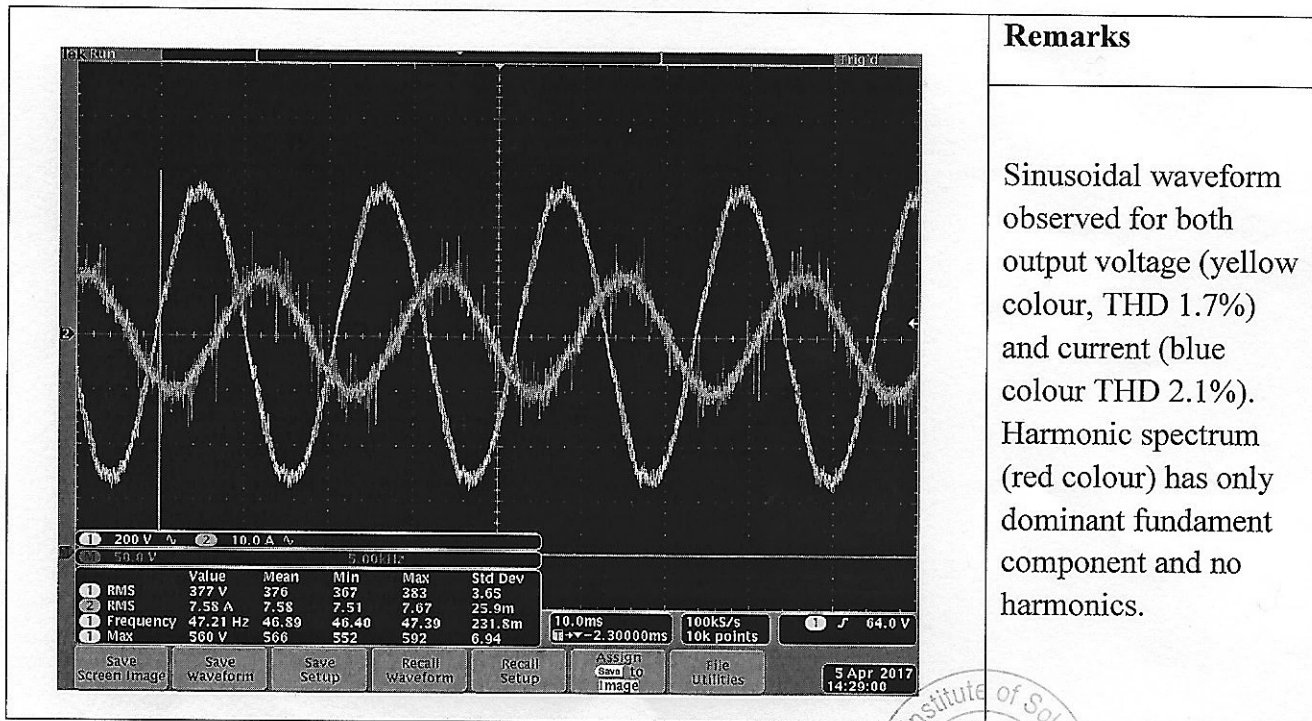
Issued By

Date.....



Id #	Date	Time	MPPT Power (W)	Frequency (Hz)	Flow Rate (LPM)	Condition	Status
	From					All... ▼	All... ▼
	To						
212	2017-04-06	15:08:30	1430	35.61	0	System OK	ON
211	2017-04-06	15:07:28	1461	36.01	0	System OK	ON
210	2017-04-06	15:06:26	1512	36.50	0	System OK	ON
209	2017-04-06	15:05:24	1546	36.73	0	System OK	ON
208	2017-04-06	15:04:22	1585	37.13	82	System OK	ON
207	2017-04-06	15:03:20	1618	37.01	69	System OK	ON
206	2017-04-06	15:02:18	1664	37.17	77	System OK	ON
205	2017-04-06	15:01:15	1729	37.59	106	System OK	ON
204	2017-04-06	15:00:13	1782	37.87	123	System OK	ON

(C) Power quality:



Remarks

Sinusoidal waveform observed for both output voltage (yellow colour, THD 1.7%) and current (blue colour THD 2.1%). Harmonic spectrum (red colour) has only dominant fundamental component and no harmonics.

Kamlesh
 Tested By

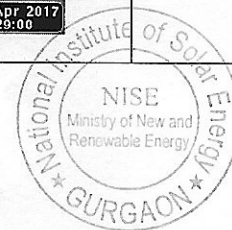
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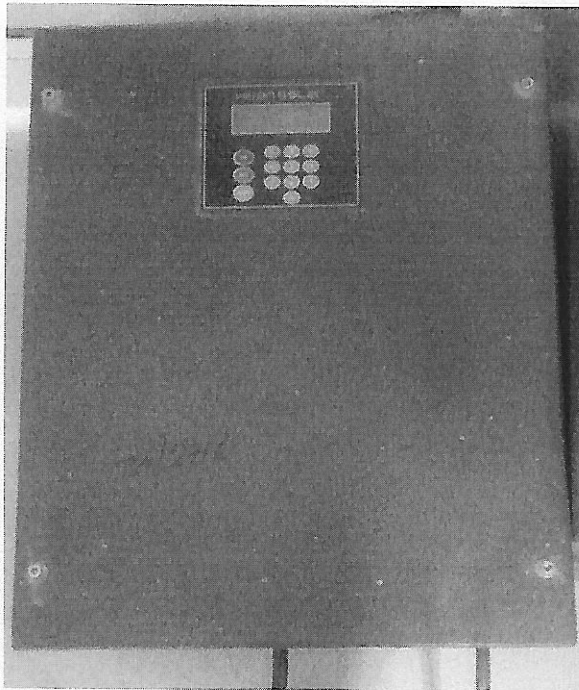
 9/6/2017
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Annexure-III

Visual inspection of product

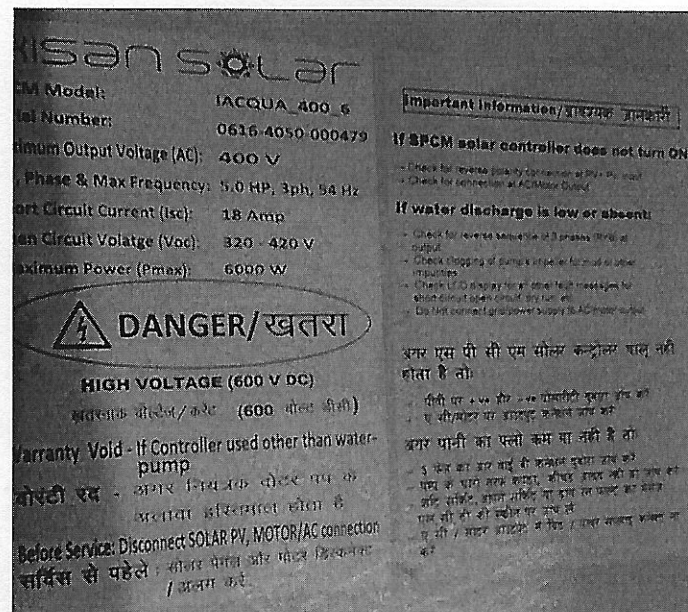
a. Top View (photograph)



b. Side View (photograph)



c. Marking Label (photograph)



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National Institute of Solar Energy

(An Autonomous Institution of MNRE, GOI)

16 K.m Stone, Gurgaon-Faridabad Road, Gwal Phari, Gurgaon (Haryana) - 122003

Customer Service Cell

Feed Back

Company Name:

Company Address:

Name of Person giving Feedback:

Designation & Location:

Sr. No.	Particulars	Feedback Ratings			
		Excellent*	Good	Average	Poor*
1.	Content of Report				
2.	Sample Handling				
3.	Time Taken				
4.	Test Report Format				
5.	Courtesy				

*Please give comments:

Remarks: _____

Signature & Date of Client

(Name of Authorised Person)

For Official Use

Acknowledged by _____ Date _____ Mode: By Post/Hand/E-mail

T.A.T.M.E: