

## 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: 338/2016-17 /CSC/NISE /188

Dated: 07/06/17

To,  
Mrs. Kisan Solar  
A/2, Atulya Bhavan, Next to C.E.R.C.  
S.G. Highway, Thaltey, Ahmedabad-54

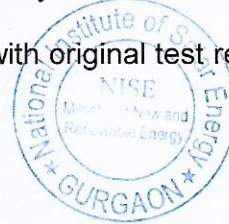
Subject: Issue of Test Report by National Institute of Solar Energy ('NISE')

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 : 338/2016-17/CSC/NISE 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,

*Shukh*  
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](mailto:csc.nise.mnre@gmail.com)

## TEST REPORT

1.	Service Request No.	32/2716
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	7.5 kW
	c) Manufactured By	M/S KISAN SOLAR
	d) Model / Type No.	iACQUA_400_75
	e) Serial No.	0616-0075-000482
	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	23/05/2017

## 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 7.5 hp Model No. UQD 182/10, Sr. No. 11392229004	NA	NA



*R. J. Kumar*  
6/6/17

*Kamlesh*  
Tested By  
*M. H. Singh*

Date.....

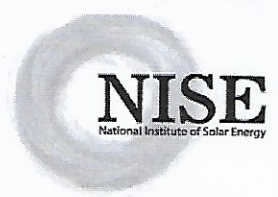
*L. J. Singh*

Authorized Signatory

Date.....

*S. R. Singh*  
Issued By  
7/6/2017

Date.....



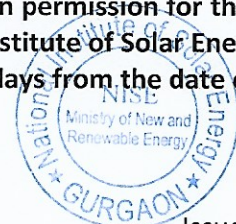
S.No.	Test Performed as per NMRE Specifications	Claims of Manufacture	NISE's Observations			Remarks
1.	Inverter Minimum rated Voltage	380-560 V	380			
	Inverter Normal Voltage		508			
	90% of Inverter's maximum Input voltage		560			
2.	Insulation Resistance test		22.2 G $\Omega$ @ 500V applied for 1 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 7.5 H.P pump			AC induction
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		83.1	99.6	82.7	
	At 25% of input power		91.6	99.3	91.5	
	At 50% of input power		95.5	99.8	95.3	
	At 75% of input power		95.7	99.9	95.6	
	At 100% of input power		95.8	98.3	94.2	

## 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.

Komlesh  
Tested By  
Mithal Singh  
Date.....

Rajendra Kumar  
6/6/2017  
Authorized Signatory



Shreshth  
7/6/2017  
Issued By

L. Chandra

Date.....

Date.....



Annexure-I

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

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	299.5	299.4	312.8	324.5	330.2	335.2
2	DC CURRENT 1(I)	0.9	1.9	4.6	8.8	12.9	17.0
3	TOTAL INPUT DC POWER (W)	281.0	568.2	1423.9	2851.1	4274.9	5683.9
4	AC VOLTAGE 1 (V)	79.1	132.1	214.7	286.7	334.1	369.0
5	AC CURRENT 1 (I)	3.0	4.6	5.6	7.3	8.8	10.1
6	AC VOLTAGE 2 (V)	79.7	133.1	215.9	287.8	334.8	369.7
7	AC CURRENT 2 (I)	3.1	4.6	5.6	7.2	8.7	10.0
8	ACTIVE POWER (P)	215.8	459.6	1279.3	2693.0	4072.8	5425.7
9	REACTIVE POWER (Q)	363.6	948.4	1688.9	2453.8	3041.2	3562.9
10	APPARENT POWER (S)	480.6	1208.1	2424.3	4179.0	5838.5	7442.5
11	FREQUENCY (Hz)	----	----	26.1	34.4	39.8	44.0
12	EFFICIENCY (%)	76.8	80.9	89.8	94.5	95.3	95.5
13	MPPT EFFICIENCY (%)	98.6	99.7	99.8	99.9	99.9	97.8
14	OVERALL SYSTEM EFFICIENCY (%)	75.7	80.6	89.7	94.3	95.2	93.3

Table.1: Conversion efficiency at rated voltage (tested at Voltage at 508 V)

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	363.8	368.9	390.2	399.2	384.1	395.7
2	DC CURRENT 1(I)	0.9	1.8	4.3	8.4	13.2	16.6
3	TOTAL INPUT DC POWER (W)	330.8	663.0	1663.5	3333.8	5060.2	6577.7
4	AC VOLTAGE 1 (V)	93.2	144.4	229.3	306.7	354.5	387.3
5	AC CURRENT 1 (I)	3.8	4.6	5.9	7.9	9.5	11.0
6	AC VOLTAGE 2 (V)	94.1	145.4	230.4	307.5	355.2	388.0
7	AC CURRENT 2 (I)	3.8	4.7	5.9	7.8	9.5	10.9
8	ACTIVE POWER (P)	256.0	550.9	1523.2	3182.5	4841.0	6301.0
9	REACTIVE POWER (Q)	562.0	1040.2	1817.2	2716.9	3336.1	3913.3
10	APPARENT POWER (S)	706.1	1348.3	2711.5	4805.8	6750.6	8483.6
11	FREQUENCY (Hz)	----	----	27.9	36.5	42.4	46.4
12	EFFICIENCY (%)	77.4	83.1	91.6	95.5	95.7	95.8
13	MPPT EFFICIENCY (%)	99.3	99.6	99.3	99.8	99.9	98.3
14	OVERALL SYSTEM EFFICIENCY (%)	76.8	82.7	91.5	95.3	95.6	94.2

Tested By  
*Komalsh*  
*M. H. S. G. S.*  
 Date.....  
*L. Ch.*

Authorized Signatory  
*Rajendra Kumar*  
*6/6/2017*  
 Date.....



Issued By  
*Shuchi*  
*7/6/2017*  
 Date.....

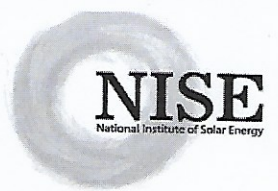


Table.1: Conversion efficiency at maximum voltage (tested at Voltage at 560 V)

S.No.	Load %	5	10	25	50	75	100
1	DC VOLTAGE 1 (V)	399.9	429.9	443.7	434.5	460.6	456.4
2	DC CURRENT 1(I)	0.9	2.2	4.3	9.0	12.5	16.5
3	TOTAL INPUT DC POWER (W)	374.8	767.7	1899.0	3850.9	5736.0	7548.8
4	AC VOLTAGE 1 (V)	102.8	150.7	244.7	325.4	378.1	406.8
5	AC CURRENT 1 (I)	4.3	5.7	6.4	8.5	10.3	11.9
6	AC VOLTAGE 2 (V)	103.5	151.6	245.9	326.0	378.9	407.5
7	AC CURRENT 2 (I)	4.3	5.8	6.4	8.4	10.2	11.8
8	ACTIVE POWER (P)	290.8	673.1	1759.1	3684.9	5534.0	7253.9
9	REACTIVE POWER (Q)	714.6	1341.7	2098.8	3036.5	3846.1	4340.7
10	APPARENT POWER (S)	885.7	1726.6	3150.0	5503.7	7742.6	9628.4
11	FREQUENCY (Hz)	----	7.1	29.5	38.4	44.2	48.7
12	EFFICIENCY (%)	77.6	87.7	92.6	95.7	96.5	96.1
13	MPPT EFFICIENCY (%)	98.7	99.5	97.4	99.9	99.9	99.3
14	OVERALL SYSTEM EFFICIENCY (%)	76.6	87.3	90.2	95.6	96.4	95.4

*Rajendra Kumar*  
6/6/17



*Kamlesh*  
Tested By  
*Mithila*  
Date.....  
*Rishi*

Authorized Signatory  
Date.....

Issued By *Rishi*  
7/6/2017  
Date.....



Annexure-II

Remote monitoring:

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

NISE Observation	Remote monitored discharge data	Remarks
32650 Ltr	<p style="text-align: center;">33140 Ltr</p>	<p>-1.5% error observed in estimated method of discharge measurement using remote monitoring</p>

(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\_0075\_000482  
 Status: System is running at ks\_0616\_0075\_000482 in Gurgaon



*Kamlesh*  
 Tested By  
*[Signature]*  
 Date.....

*Rajendra Kumar*  
 6/6/17  
 Authorized Signatory  
 Date.....

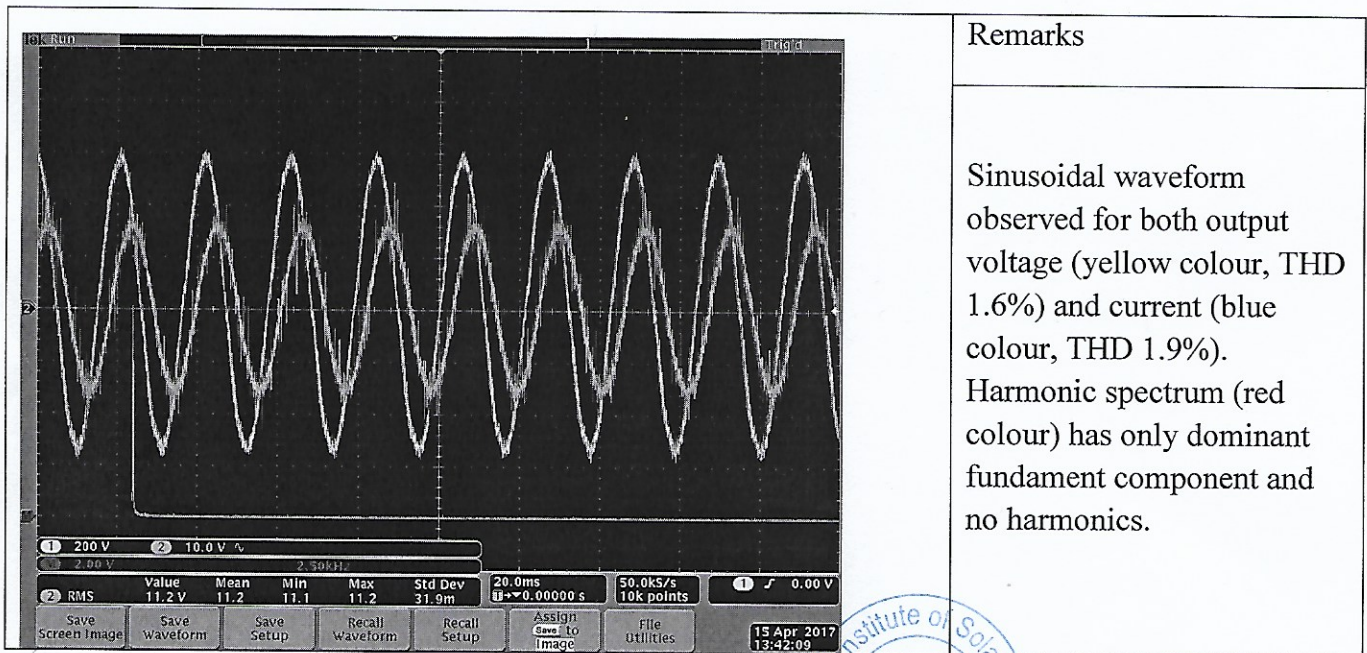
Issued By  
*[Signature]*  
 7/6/2017  
 Date.....

*[Signature]*



Id #	Date	Time	MPPT Power (W)	Frequency (Hz)	Flow Rate (LPM)	Condition	Status
	From					All...	All...
	To						
130	2017-04-20	14:22:25	11	0.00	0	System OK	OFF
129	2017-04-20	14:21:23	11	0.00	0	System OK	OFF
128	2017-04-20	14:20:21	1109	36.24	55	System OK	ON
127	2017-04-20	14:19:19	1192	36.38	62	System OK	ON
126	2017-04-20	14:18:17	1249	36.49	67	System OK	ON
125	2017-04-20	14:17:15	1283	36.55	70	System OK	ON
124	2017-04-20	14:16:13	1350	36.67	75	System OK	ON
123	2017-04-20	14:15:11	1445	36.84	83	System OK	ON
122	2017-04-20	14:14:09	1539	37.01	91	System OK	ON
121	2017-04-20	14:13:07	1622	37.16	98	System OK	ON
120	2017-04-20	14:12:05	1724	37.34	107	System OK	ON

(C) Power quality:



*Komalash*  
 Tested By  
*M. K. ...*  
 Date.....

Annexure-III  
*Rajendra*  
 Authorized Signatory  
 616112

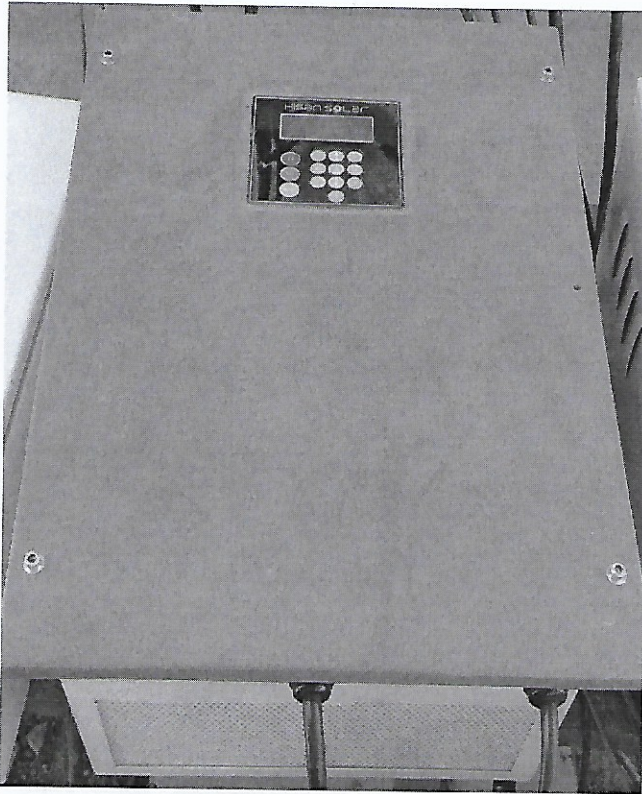
Issued By  
*Shuchi*  
 7/8/2017  
 Date.....

*S. ...*

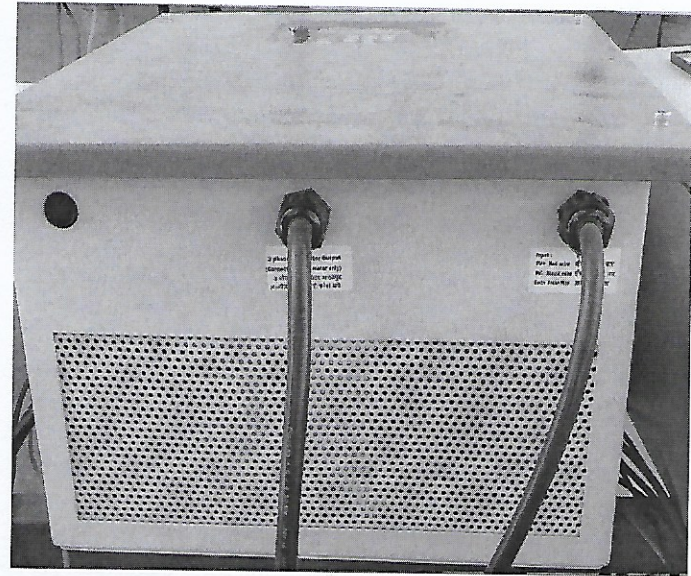
Date.....

Visual inspection of product

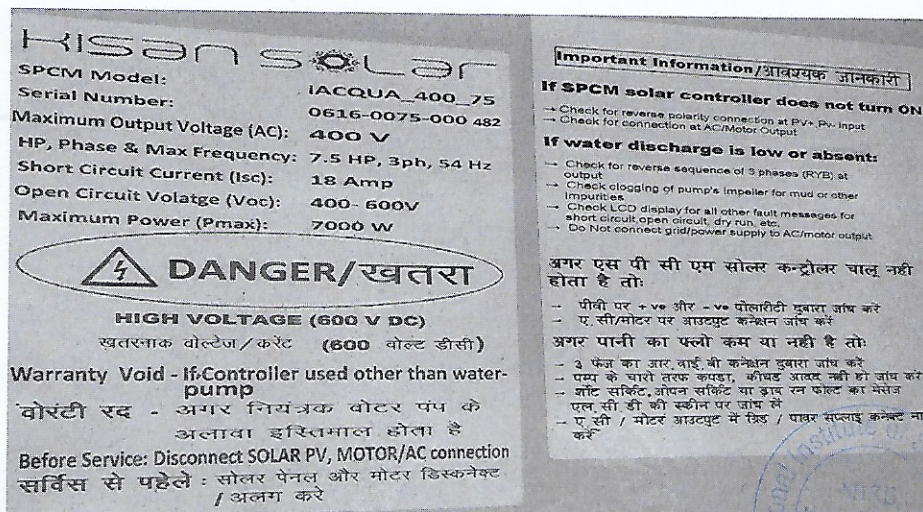
a. Top View (photograph)



b. Side View (photograph)



c. Marking Label (photograph)



*Kamlesh*  
 Tested By  
*Mishra*  
 Date.....  
*Rishi*

*Rajesh Kumar*  
 6/6/2012  
 Authorized Signatory



Issued By  
*Shuchi*  
 7/6/2017  
 Date.....