Hi Physix Laboratory India Private Limited, Pune

ULR No. : TC1351825000001179F

DOC No.	:	HPLI/Test/2510056501	B-32/1/2, MIDC, Industrial Area, Ranjangaon, Pune, Pune, Pune, Maharashtra, India - 412220
Telephone	:	+91 8552003805	
FAX	:	-	
E-Mail	:	infohplindia@bureauveritas.com	
BO Code	:	NA	

Test REPORT AS PER : IS 16169 (2019)

QR Code/Barcode : 256766CRS

REPORT NO : SC25SPI03453_1 DATE : 16 Dec, 2025

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address	:	KSOLARE ENERGY PVT LTD SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, NA, MAHARASHTRA, India - 411046
b) Nature of sample	:	-
c) Grade/Variety/Type/Class Size etc	:	NA
d) Declare values, if any	:	-
e) Batch No. & Date of Manufacture	:	/
f) Quantity	:	2
g) Date of Receipt	:	03 Oct, 2025
h) BIS Seal	:	Verified by Sample Cell
i) IO's Signature	:	Verified by Sample Cell
j) Any other Information / Expiry Date, If any	:	/
k) Date of Commencement of Testing	:	17 Oct, 2025
l) Date of Completion of Testing	:	15 Dec, 2025
m) Section Code	:	25EF147N
n) Section Report No.	:	25EF147N_1
o) Report Type	:	New
p) Reference Report No.	:	
q) Remarks	:	Test report attached.

Mr. Abhishek Singh
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 16 Dec, 2025 09:43 AM

1.

This is a Computer Generated Report.

PART B. SUPPLEMENTARY INFORMATION

1.	Reference to sampling procedure, wherever applicable.	Not Applicable
2.	Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any.	Yes
3.	Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any.	Not Applicable
3.	NABL Report required ?	Yes

Mr. Alok Anand
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 18:01 PM

This is a Computer Generated Report.

PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	Annex B	Test for independent islanding device	-	-	-	-	Not applicable (for more details see attached test report)
2	Annex A	Islanding as it applies to PV systems	-	-	-	-	Complies (For see more details in test report Table 6.1)
3	6	Test for single or multi-phase inverter	-	-	-	-	0.132sec (for more details see attached test report)

Mr. Alok Anand
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 18:01 PM

This is a Computer Generated Report.

TC-13518

Section Report No. : 25EF147N_1

IS 16169 (2019)

PART D. REMARKS

See attached test report

Mr. Alok Anand
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 18:01 PM

This is a Computer Generated Report.

SUMMARY OF TEST REPORT NO: ULR- TC1351825000001179F Dated: 15/12/2025	HPLI/Test/2510056501	Number of pages in Test report: Page 1 to 33
TEST FORMAT AS PER IS 16169: 2019 / IEC 62116: 2014		
Name of Manufacturer	**KSOLARE ENERGY PVT LTD,** SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, MAHARASHTRA, 411046,	
Product	Power Inverters for use in photovoltaic power system (Grid-Connected PV Inverter)	
Model(s)	KSY-6.2KW-1P-22A **(Representative Model)** KSY-6KW-1P-22A, KSY-5.4KW-1P-22A, KSY-5KW-1P-22A, KSY-4.4KW-1P-22A, KSY-4KW-1P-22A, KSY-3.4KW-1P-22A KSY-3KW-1P-22A, KSY-2KW-1P-22A, KSY-1KW-1P-22A, **(Series Models)**	
4.Model differences provided (if applicable)	**Yes**	
5.Model differences verified as per MNRE Guidelines for series formulation	**Yes**	
6.Test Result: See below Decision Rule: The laboratory employs simple acceptance rule in making Pass or fail decisions on test results with no guard band.		

General Information:

1. The conformity certificates of critical components are verified to ensure complete compliance of apparatus under test and details regarding harmonized IEC standards (where IEC standards are not available) are also provided in the list of critical components.

Abbreviations: P = Pass N/A = Not Applicable

CONCLUSION:

I, hereby, undertake that the verdict stated in the test reports for all the tests matches with the test results.

1. Sample meets all relevant requirements of *IS* 16169: 2019/ IEC 62116: 2014. *Yes* ☑ ☐
2. Sample fails to meet the following test requirements: ***Yes*** ☑ *or No* ☐ :
3. If any deviation is found, suitable punitive action may be taken by BIS.

SANTOSH KUMAR

Digitally signed by SANTOSH KUMAR
Date: 2025.12.15 17:51:33 +05'30'

Santosh Kumar (Manager Testing)

Date:15/12/2025

(Signature of Authorized person with Stamp)

TC-13518

TEST REPORT

IS 16169: 2019/ IEC 62116: 2014

Test Procedure of Islanding Prevention Measures for

Utility-Interconnected - Photovoltaic Inverters

Report Reference No. .....:	HPLI/Test/2510056501
Date of issue .....:	15/12/2025
Total number of pages .....:	33
Testing Laboratory.....:	**Hi Physix Laboratory India Pvt. Ltd.**
Address .....:	B-32/1/2, MIDC, RANJANGAON, PUNE, MAHARASHTRA, PIN-412220.

Applicant's name .....:	**KSOLARE ENERGY PVT LTD,**
Address.....:	SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, MAHARASHTRA, 411046,
Test specification .....:	
Standard .....:	IS 16169: 2019/ IEC 62116: 2014
Test procedure .....:	BIS Compliance Report
Non-standard test method .....:	N/A
Test Report Form No. .....:	IS 16169/ IEC 62116_V1.0
Test Report Form Originator.....:	BIS
Master TRF.....:	
Test item description.....:	Utility-Interconnected - Photovoltaic Inverters
Trademark .....:	KSolare
Manufacturer.....:	**KSOLARE ENERGY PVT LTD,**

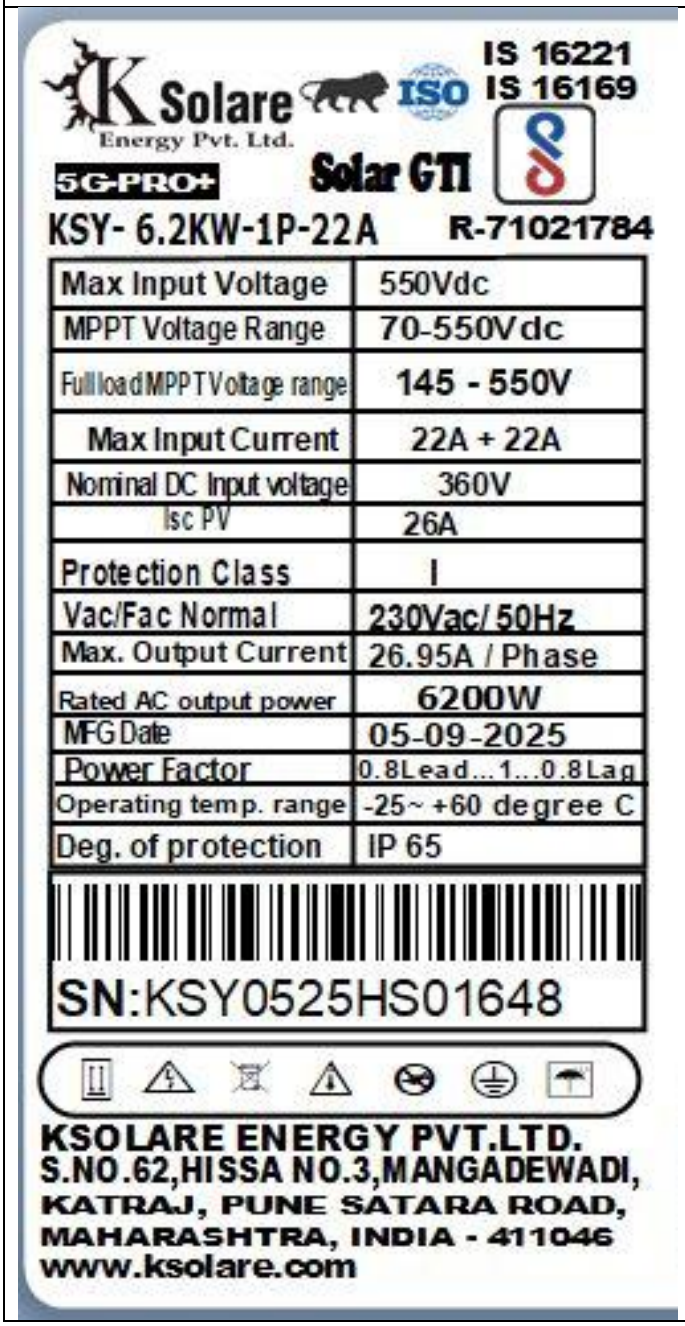
Factory…….....:	SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, MAHARASHTRA, 411046,
Model/Type reference .....:	KSY-6.2KW-1P-22A **(Representative Model)** KSY-6KW-1P-22A, KSY-5.4KW-1P-22A, KSY-5KW-1P-22A, KSY-4.4KW-1P-22A, KSY-4KW-1P-22A, KSY-3.4KW-1P-22A KSY-3KW-1P-22A, KSY-2KW-1P-22A, KSY-1KW-1P-22A, **(Series Models)**
Ratings.....:	see copy of marking label

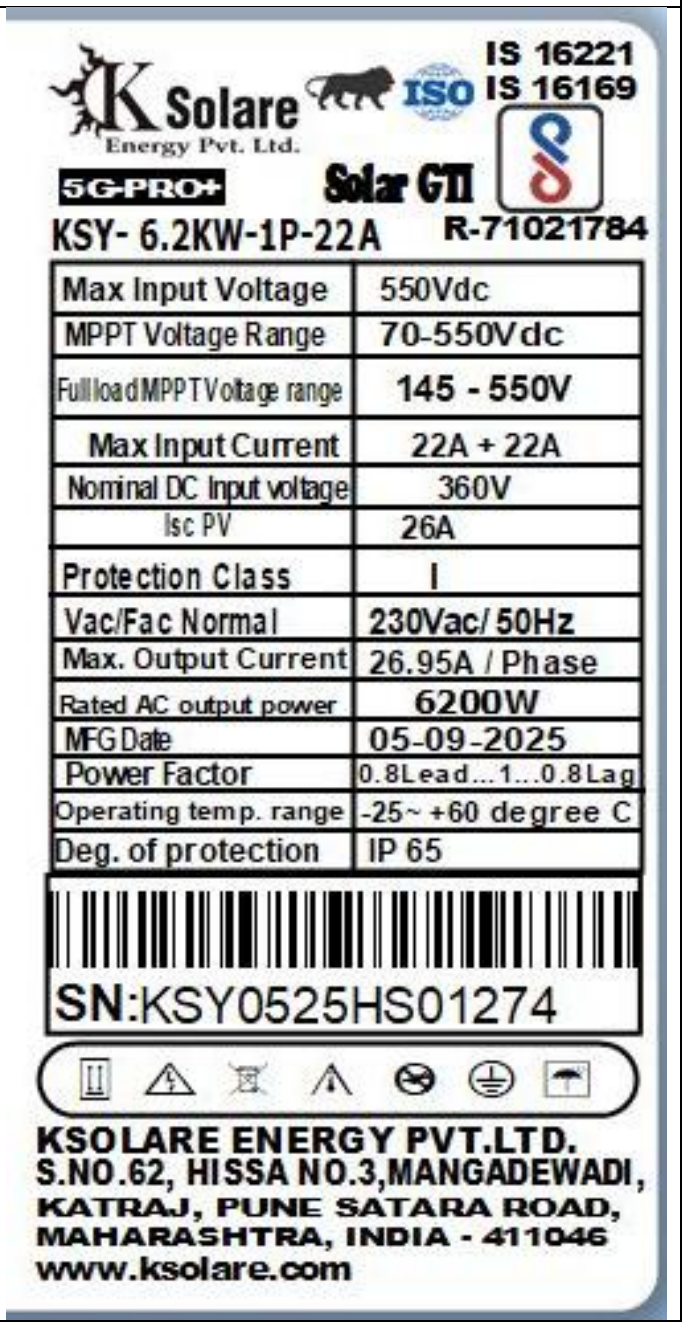
☑ **Testing Laboratory**.....: Testing location/ address .....:	**Hi Physix Laboratory India Pvt. Ltd.** B-32/1/2, M.I.D.C., Ranjangaon, Pune, Maharashtra-412220	
Tested by (name+ signature)..... :	(Nilesh Deshmukh / Senior Testing Engineer)	NILESH MANIKRAO DESHMUKH Digitally signed by NILESH MANIKRAO DESHMUKH Date: 2025.12.15 17:45:29 +05'30'
Checked by (name+ signature)..... :	Alok Anand / (Lab Manager solar operation)	ALOK ANAND Digitally signed by ALOK ANAND Date: 2025.12.15 17:49:11 +05'30'
Approved by / Authorized Signatory……..:	Santosh Kumar/ (Manager-Testing)	SANTOSH KUMAR Digitally signed by SANTOSH KUMAR Date: 2025.12.15 17:49:59 +05'30'
Issued by (name, function, Signature) ……..:	Abhishek Singh (Manager Sales & Customer Services - Solar)	ABHISHEK SINGH Digitally signed by ABHISHEK SINGH Date: 2025.12.15 17:52:33 +05'30'

Note: This document is digitally signed and does not require signature on subsequent pages.

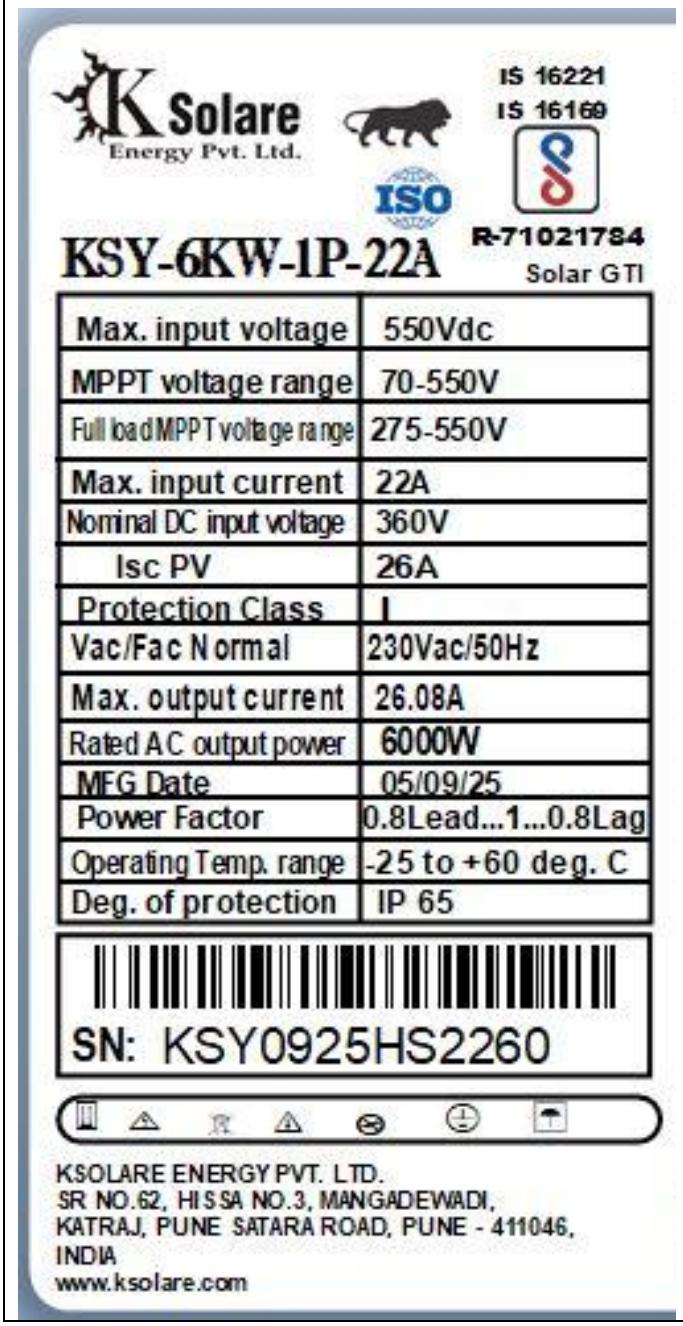
Summary of testing:		
Tests performed (name of test and test clause):		**Testing location:**
Test for single or multi-phase inverter	6.0	Hi Physix Laboratory India Pvt. Ltd. B-32/1/2, Midc, Ranjangaon, Pune, Maharashtra, Pin-412220.
Documentation	7.0	
Unintentional Islanding		

Copy of marking plate of the equipment (Representative model):





Copy of Marking & Warning plate of the equipment (Series models)



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

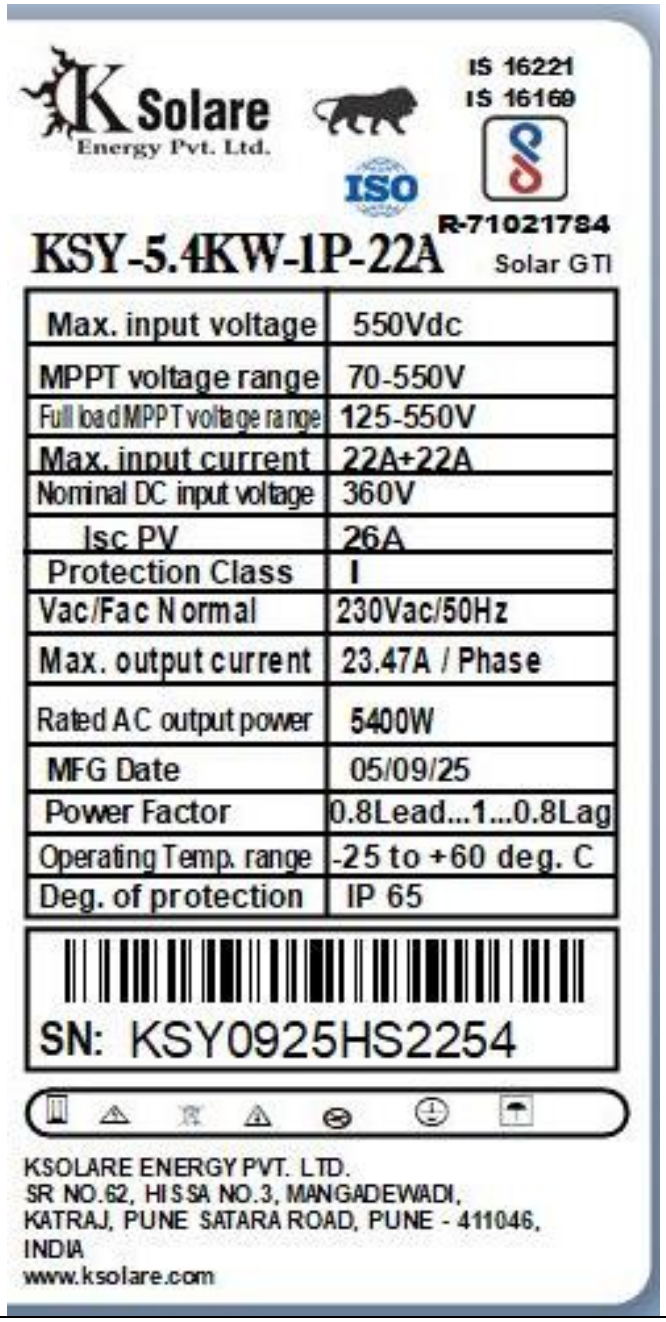
R-71021784

KSY-6KW-1P-22A Solar GTI

Max. input voltage	550Vdc
MPPT voltage range	70-550V
Full load MPPT voltage range	275-550V
Max. input current	22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	26.08A
Rated AC output power	6000W
MFG Date	05/09/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

SN: KSY0925HS2260

KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

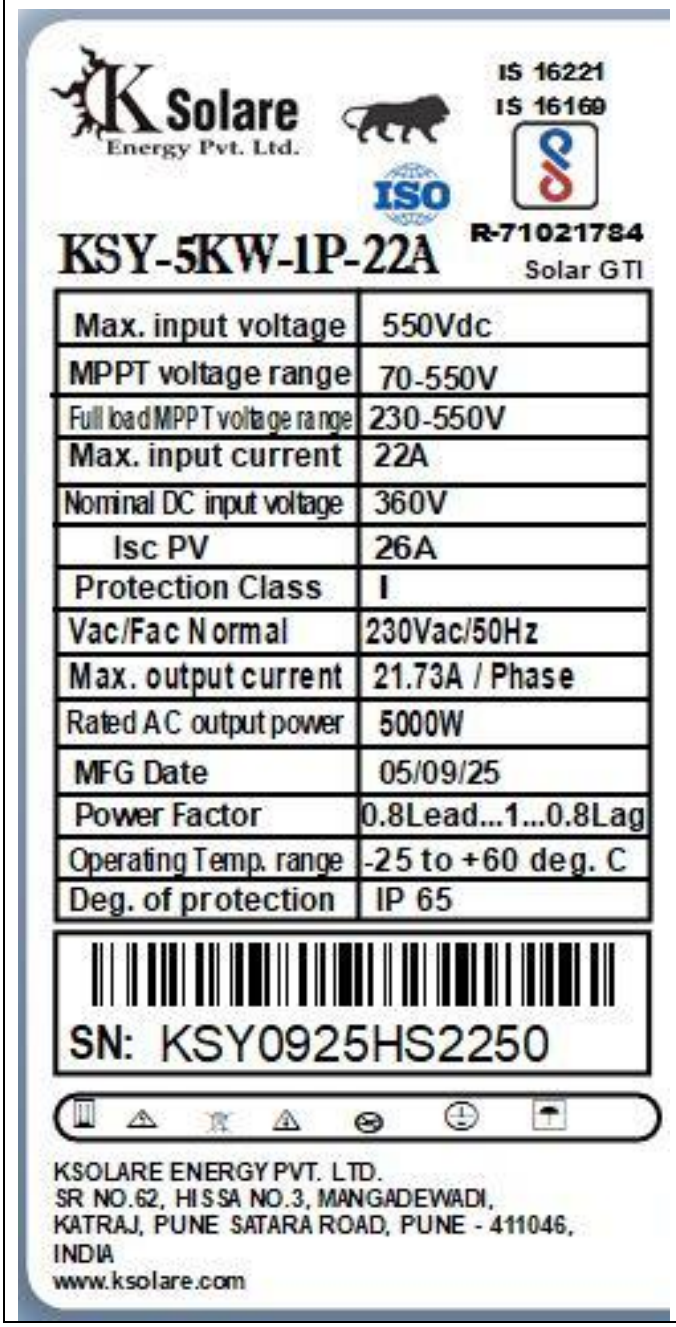
R-71021784

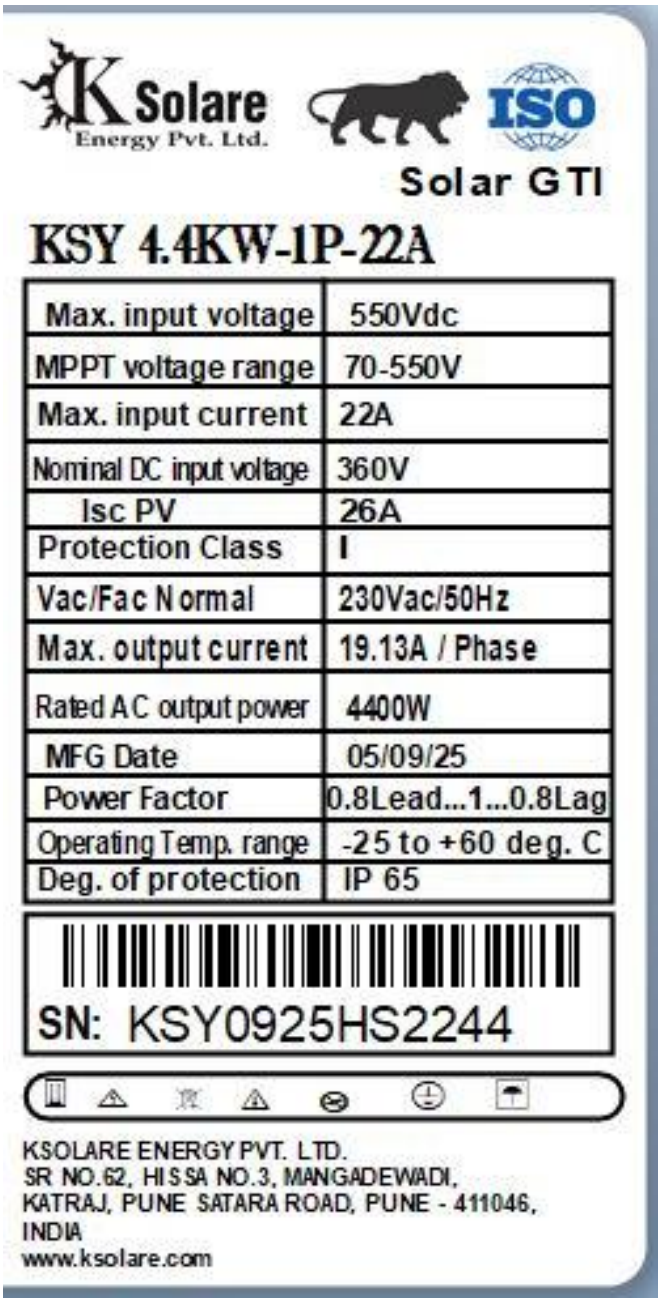
KSY-5.4KW-1P-22A Solar GTI

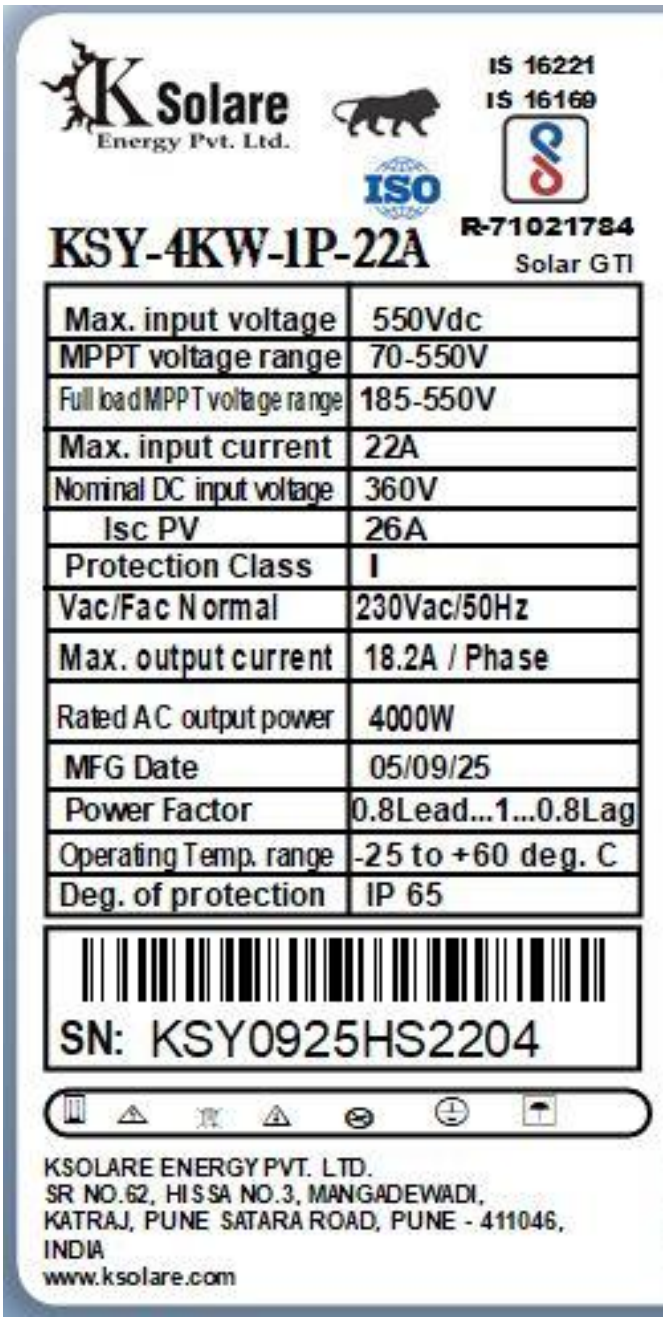
Max. input voltage	550Vdc
MPPT voltage range	70-550V
Full load MPPT voltage range	125-550V
Max. input current	22A+22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	23.47A / Phase
Rated AC output power	5400W
MFG Date	05/09/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

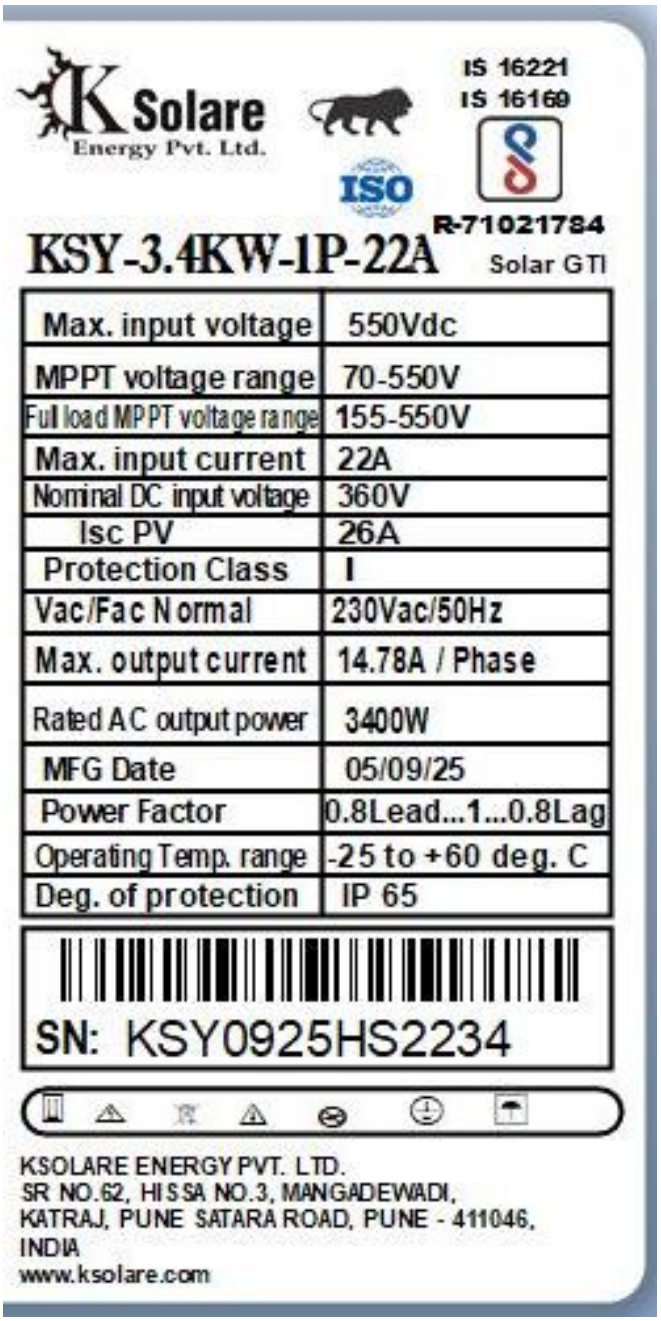
SN: KSY0925HS2254

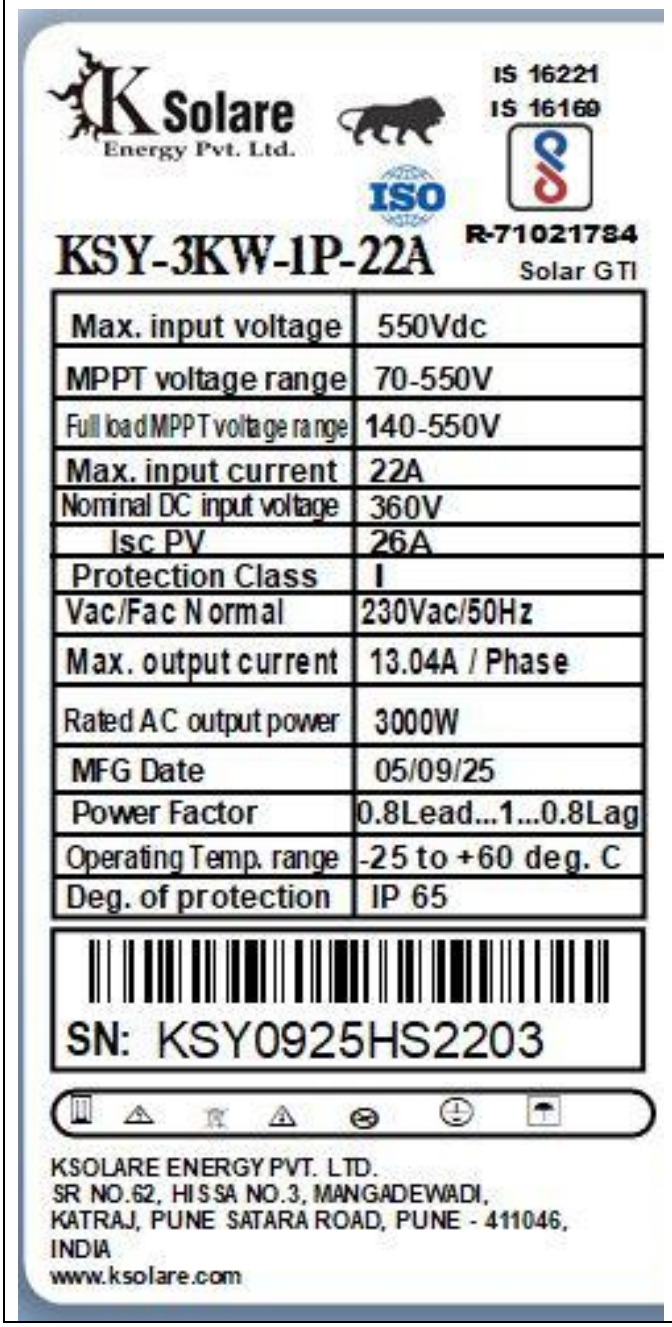
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com

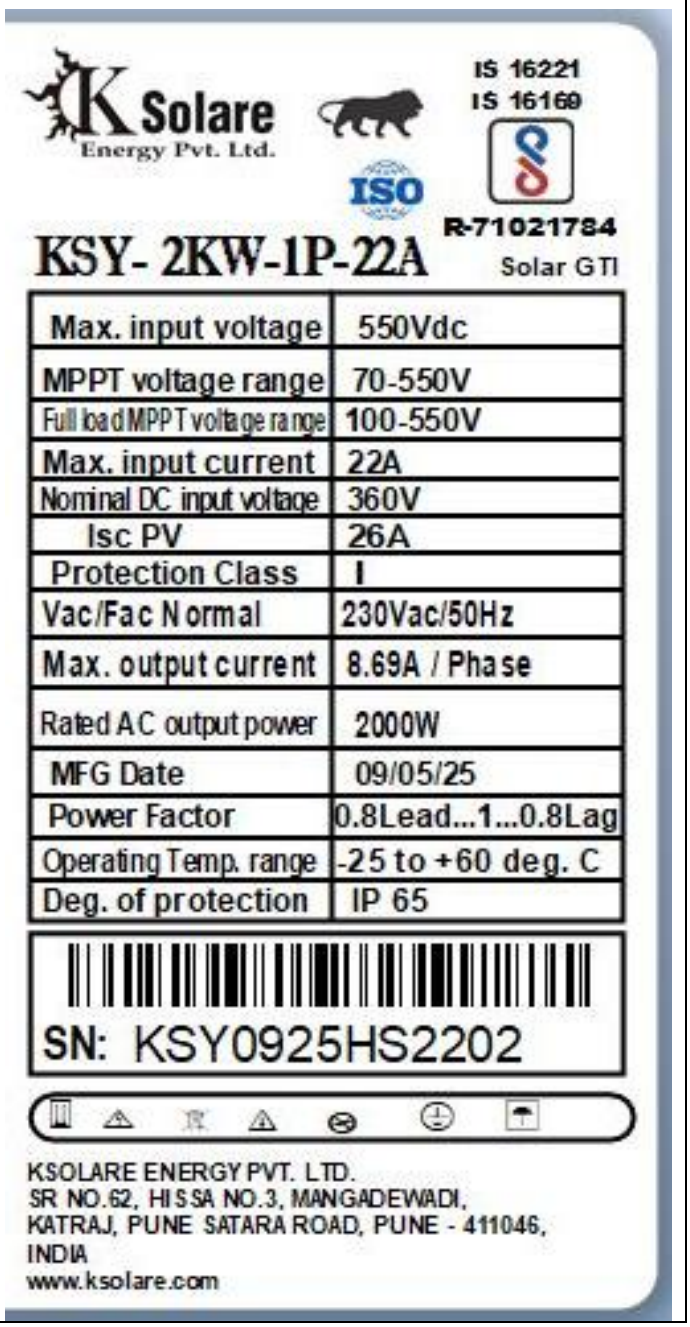

K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
Solar GTI
KSY-5KW-1P-22A
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 230-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 21.73A / Phase
Rated AC output power 5000W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2250
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com

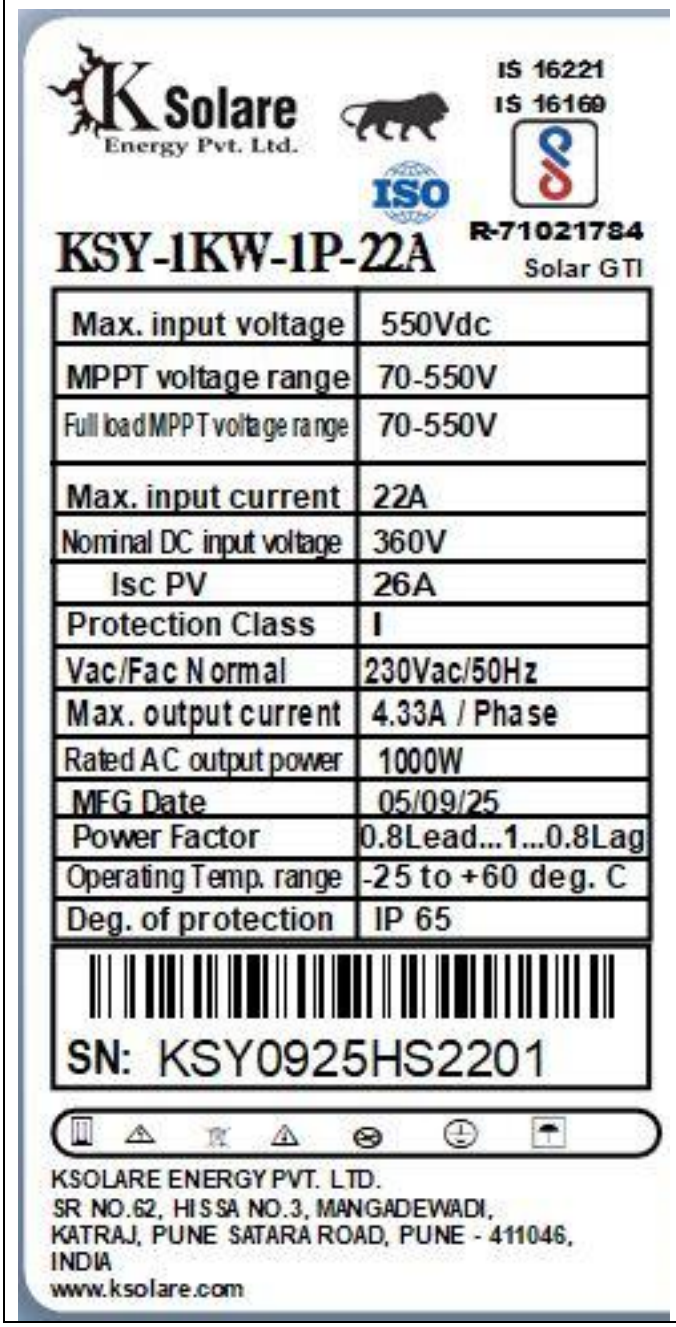

K Solare
Energy Pvt. Ltd.
ISO
Solar GTI
KSY 4.4KW-1P-22A
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 19.13A / Phase
Rated AC output power 4400W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2244
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com


K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
KSY-4KW-1P-22A
Solar GTI
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 185-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 18.2A / Phase
Rated AC output power 4000W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2204
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com


K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
KSY-3.4KW-1P-22A
Solar GTI
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 155-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 14.78A / Phase
Rated AC output power 3400W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2234
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com


K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
KSY-3KW-1P-22A
Solar GTI
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 140-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 13.04A / Phase
Rated AC output power 3000W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2203
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com


K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
KSY- 2KW-1P-22A
Solar GTI
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 100-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 8.69A / Phase
Rated AC output power 2000W
MFG Date 09/05/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2202
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com


K Solare
Energy Pvt. Ltd.
IS 16221
IS 16169
ISO
R-71021784
KSY-1KW-1P-22A
Solar GTI
Max. input voltage 550Vdc
MPPT voltage range 70-550V
Full load MPPT voltage range 70-550V
Max. input current 22A
Nominal DC input voltage 360V
Isc PV 26A
Protection Class I
Vac/Fac Normal 230Vac/50Hz
Max. output current 4.33A / Phase
Rated AC output power 1000W
MFG Date 05/09/25
Power Factor 0.8Lead...1...0.8Lag
Operating Temp. range -25 to +60 deg. C
Deg. of protection IP 65
SN: KSY0925HS2201
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com

GENERAL INFORMATION	
Test item particulars:	Power Inverters for use in photovoltaic power system (Grid-Connected PV Inverter)
Accessories and detachable parts included in the evaluation.....:	N/A
Options included.....:	N/A
Possible test case verdicts:	See below
Abbreviations used in the report:	See below
EUT – Equipment Under Test	MPPT – Maximum Power Point Tracking
Qf – Quality factor	W - Utility Real Power
Var – Utility Reactive Power	VDC – DC Voltage
VEUT – AC Voltage of EUT	tR – Run on time
IR – Resistive load current	IL–Inductive load current
IC – Capacitive load current	PAC – Utility Real Power
QAC – Utility Reactive Power	IAC – Utility Current
Possible test case verdicts: - test case does not apply to the test object .....:	 N/A
- test object does meet the requirement.….....:	Pass (P)
- test object does not meet the requirement.....:	Fail (F)
Testing Date of receipt of test item……..: Date(s) of performance test…….....….:	 10/09/2025 17/10/2025-15/12/2025

Manufacturer's Declaration per Standard:

Sr. No.	Representative model	Series models	Similarities	Differences
1	KSY-6.2KW-1P-22A	KSY-6KW-1P-22A, KSY-5.4KW-1P-22A, KSY-5KW-1P-22A, KSY-4.4KW-1P-22A, KSY-4KW-1P-22A, KSY-3.4KW-1P-22A KSY-3KW-1P-22A, KSY-2KW-1P-22A, KSY-1KW-1P-22A,	a) Same rated input voltage: 360Vdc, b) Same rated output voltage: 1/N/PE- 230Vac c) Same Frequency: 50/60Hz d) Same number of phases at output: Single phase, e) Same PCB design and layout: Same f) Power stage topology: Non-Isolated g) Same insulation class: Transformer less h) Same control algorithm/Firmware Version: V1.0.0.00 i) Same cabinet design and class of construction: IP65 with Class I	1) Model number 2) Electrical rating (As mentioned in marking plate)

Model No. tested with-in the family series: (KSY-6.2KW-1P-22A) **Lead Model**

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information 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.
Decision Rule: The laboratory employs simple acceptance rules in making Pass or fail decisions on test results with no guard band.

General Product Information:

Product Electrical Ratings

Parameter	Value		Remarks
1) Rating			
a) Maximum output power	VA	6200 VA	---
b) DC voltage range	Vdc	70-550Vdc	---
c) DC current limits	Idc	22A+22A	---
d) AC voltage range	Vac	230V	---
e) Frequency range	Hz	50 Hz	---
f) AC current limits	A	26.95A	---
g) Efficiency	%	96.0%	---
h) Voltage trip settings (magnitude and timing)	V	Over voltage: 253V, Tripping time: 2s Under voltage: 184V, Tripping time: 2s	---
i) Frequency trip settings (magnitude and timing)	Hz	Over frequency: 50.5Hz, Tripping time: 0.2s Under frequency: 47.5Hz, Tripping time: 0.2s	---
i) other software settings	---	Provided in user manual	---
j) Firmware version	---	Master software version: V1.0.0.00 Slave Software version: H910-00002-63 Safety software version: H910-20002-34	---
2) Others	---	---	---
a) Displays	---	LED with LCD Display	---
b) Temperature range	°C	-25°C to +60°C	---
c) Humidity	%	0% to 100%	---
d) Dimensions	mm	393 x 328 x 154 mm	
e) Weight	kg	10kg	
Online Test request no: **SC25SPI03453**			

IS 16169: 2019/ IEC 62116: 2014			
Clause	Requirement + Test	Result - Remark	Verdict
4	Testing circuit	See below	P
	The testing circuit shown in Figure 1 is employed.	See below	P
	Similar circuits are used for three-phase output.	Single-phase output	P
	Parameters to be measured are shown in Table 1 and Figure 1. Parameters to be recorded in the test report are discussed in Clause 7.	Parameters be measured according to clause 7 and recorded in the test report	P
5	Testing equipment	See below	P
5.1	Measuring instruments	See below	P
	The waveform measurement/capture device is able to record the waveform from the beginning of the islanding test until the EUT ceases to energize the island.	For waveform measurement digital oscilloscope is used.	P
	For multi-phase EUT, all phases are monitored.	single-phase output	P
	A waveform monitor designed to detect and calculate the run-on time may be used.	Complies	P
	For multi-phase EUT, the test and measurement equipment is recorded each phase current and each phase-to-neutral or phase-to-phase voltage, as appropriate, to determine fundamental frequency active and reactive power flow over the duration of the test.	Single-phase EUT	P
	A sampling rate of 10 kHz or higher is recommended. The minimum measurement accuracy is 1 % or less of rated EUT nominal output voltage and 1 % or less of rated EUT output current	Complies	P
	Current, active power, and reactive power measurements through switch S1 used to determine the circuit balance conditions report the fundamental (50 Hz or 60 Hz) component.	Complies	P
5.2	DC power source	See below	P
5.2.1	General	See below	P
	A PV array or PV array simulator (preferred) may be used. If the EUT can operate in utility- interconnected mode from a storage battery, a DC power source may be used in lieu of a battery as long as the DC power source is not the limiting device as far as the maximum EUT input current is concerned.	PV array simulator is used	P
	The DC power source provides voltage and current necessary to meet the testing requirements described in Clause 6.	Complies	P
5.2.2	PV array simulator	See below	P

IS 16169: 2019/ IEC 62116: 2014			
Clause	Requirement + Test	Result - Remark	Verdict
	The tests are conducted at the input voltage defined in Table 2 below, and the current is limited to 1,5 times the rated photovoltaic input current, except when specified otherwise by the test requirements.	Complies	P
	A PV array simulator is recommended; however, any type of power source may be used if it does not influence the test results.	PV array simulator is used	P
5.2.3	Current and voltage limited DC power supply with series resistance	Array simulator is used	N/A
	A DC power source used as the EUT input source is capable of EUT maximum input power (so as to achieve EUT maximum output power) at minimum and maximum EUT input operating voltage.	See above	N/A
	The power source provides adjustable current and voltage limit, set to provide the desired short circuit current and open circuit voltage when combined with the series and shunt resistance described below.	See above	N/A
	A series resistance (and, optionally, a shunt resistance) is selected to provide a fill factor within the range: Output power: Sufficient to provide maximum EUT output power and other levels specified by test conditions of table 5. Response speed: The response time of a simulator to a step in output voltage, due to a 5% load change, results in a settling of the output current to within 10% of its final value in less than 1ms. Stability: Excluding the variations caused by the EUT MPPT, simulator output power remains stable within 2 % of specified power level over the duration of the test: from the point where load balance is achieved until the island condition is cleared or the allowable run-on time is exceeded. Power factor: 0.25 to 0.8	See above	N/A
5.2.4	PV array	Array simulator is used	N/A
	A PV array used as the EUT input source is capable of EUT maximum input power at minimum and maximum EUT input operating voltage.	See above	N/A
	Testing is limited to times when the irradiance varies by no more than 2 % over the duration of the test as measured by a silicon-type pyranometer or reference device. It may be necessary to adjust the array configuration to achieve the input voltage and power levels prescribed in 6.1.	See above	N/A
5.3	AC power source	See below	P

IS 16169: 2019/ IEC 62116: 2014			
Clause	Requirement + Test	Result - Remark	Verdict

	The utility grid or other AC power source may be used as long as it meets the conditions specified in Table 4. **Table 4 – AC power source requirements** **Items** / **Conditions** Voltage / Nominal ±2,0 % Voltage THD / < 2,5 % Frequency / Nominal ±0,1 Hz Phase angle distance [1] / 120 ° ± 1,5 ° [1] Three-phase case only	Meets the conditions specified in Table 4.	P
5.4	AC loads	See below	P
	On the AC side of the EUT, variable resistance, capacitance, and inductance are connected in parallel as loads between the EUT and the AC power source. Other sources of load, such as electronic loads, may be used if it can be shown that the source does not cause results that are different than would be obtained with passive resistors, inductors, and capacitors.	Variable RLC (AC) load used	P
	All AC loads are rated for and adjustable to all test conditions. The equations for Qf are based upon an ideal parallel RLC circuit. For this reason, non- inductive resistors, low loss (high Qf) inductors, and capacitors with low effective series resistance and effective series inductance are utilized in the test circuit. Iron core inductors, if used, are not exceed a current THD of 2 % when operated at nominal voltage. Load components are conservatively rated for the voltage and power levels expected. Resistor power ratings are chosen so as to minimize thermally-induced drift in resistance values during the course of the test.	Meeting the requirement	P
	Active and reactive power is calculated (using the measurements provided in Table 1) in each of the R, L and C legs of the load so that these parasitic parameters (and parasitics introduced by variacs or autotransformers) are properly accounted for when calculating Qf.	Complies	P
6	Test for single or multi-phase inverter	See below	P
6.1	Test procedure	See below	P
	The test uses an RLC load, resonant at the EUT nominal frequency (50 Hz or 60 Hz) and matched to the EUT output power.	Variable RLC (AC) load used`	P

IS 16169: 2019/ IEC 62116: 2014			
Clause	Requirement + Test	Result - Remark	Verdict
	For multi-phase EUT, the load is balanced across all phases and switch S1 as in Figure 1 opens all phases	single-phase EUT	P
	This test is performed with the EUT conditions as in Table 5, where power and voltage values are given as a percent of EUT full output rating.	See below	P
	a) Determine EUT test output power	See appended table 6.1	P
	b) Adjusting the DC input source	See appended table 6.1	P
	c) Turn off the EUT and open S1	See appended table 6.1	P
	d) Adjust the RLC circuit to have Qf = 1.0 ±0.05	See appended table 6.1	P
	e) Connect the RLC load configured in step d) to the EUT by closing S2	See appended table 6.1	P
	f) Open the utility-disconnect switch S1 to initiate the test, Run-on time is recorded.	See appended table 6.1	P
	g) For test condition A, adjust the real load and only one of the reactive load components to each of the load imbalance conditions shown in the shaded portion of table 6. If any of the recorded run-on times are longer than the one recorded for the rated balance condition, then the non-shaded parameter combinations also require testing.	See appended table 6.1	P
	h) For test condition B and C, adjust the only one reactive load components by approximately 1,0% per test, within a total range of 95% to 105% of the operating point. If run-on times are still increasing at the 95% or 105% points, additional 1% increments have to be taken until run-on times begin decreasing.	See appended table 6.1	P
6.2	Pass/fail criteria	See below	P
	An EUT is considered to comply with the requirements for islanding protection when each case of recorded run-on time is less than 2 s or meets the requirements of local codes.	See appended table 6.1	P
7	Documentation	See below	P

IS 16169: 2019/ IEC 62116: 2014			
Clause	Requirement + Test	Result - Remark	Verdict
	At a minimum, the following information is recorded and maintained in the test report.	See below	P
	a) Specifications of EUT. Table 8 provides an example of the type of information that is provided.	See attached data sheet on page no. 32	P
	b) Measurement results. Table 9 provides an example of the type of information that is provided. Actual measured values is to be recorded.	See appended table 6.1	P
	c) Block diagram of test circuit.	See page no.33	P
	d) Specifications of the test and measurement equipment. Table 10 provides an example of the type of information that is provided.	Complies	P
	e) Any test configuration or procedure details such as methods of achieving specified load and EUT output conditions.	Complies	P
	f) Any additional information required by the testing laboratory's accreditation.	Nil	N/A
	g) Specify the evaluation criterion from clause 6.2 that was utilized to determine if the product passed or failed the test.	Comply with the criteria	P

Annex A	Islanding as it applies to PV systems (Informative)	Complies	P
A.1	General	See above Annex A	P
A.2	Impact of distortion on islanding	See above Annex A	P
Annex B	Test for independent islanding detection device (relay)(Informative)	No such application	N/A
B.1	Introduction	See above	N/A
B.2	Testing circuit	See above	N/A
B.3	Testing equipment	See above	N/A
B.4	Testing procedure	See above	N/A
B.5	Documentation	See above	N/A

6.1	Table: Tested condition and run-on time											
Sr. No.	**P_{EUT} (% of EUT rating)**	**Reactive load (% of Q_L)**	**P_{AC} (% of nominal)**	**Q_{AC} (% of nominal)**	**Run on time (ms)**	**P_{EUT} (W)**	**Pr (Resistive) (W)**	**Pl (Inductive) Var**	**Pc (Capacitive) Var**	**Actual Q_f**	**VDC**	**Remarks**
1	100	100	0	0	168.0	6200	6200	6210	6190	1.000	347.5	Test A at BL
2	66	66	0	0	132.0	4092	4092	4093	4089	1.000	255	Test B at BL
3	33	33	0	0	90.0	2046	2046	2045	2047	1.000	144	Test C at BL
4	100	100	-5	-5	220.0	6200	6510	6521	6190	0.976	347.5	Test A at IB
5	100	100	-5	0	201.0	6200	6505	6210	6190	0.953	347.5	Test A at IB
6	100	100	-5	5	221.0	6200	6510	5900	6190	0.928	347.5	Test A at IB
7	100	100	0	-5	212.0	6200	6200	6501	6190	1.023	347.5	Test A at IB
8	100	100	0	5	170.0	6200	6200	5886	6190	0.974	347.5	Test A at IB
9	100	100	5	-5	192.0	6200	5890	6491	6190	1.076	347.5	Test A at IB
10	100	100	5	0	201.0	6200	5865	6210	6190	1.057	347.5	Test A at IB
11	100	100	5	5	207.0	6200	5880	5901	6190	1.028	347.5	Test A at IB
12	100	100	-10	10	199.0	6200	6820	5589	6190	0.862	347.5	Test A at IB
13	100	100	-5	10	213.0	6200	6489	5614	6190	0.908	347.5	Test A at IB

Sr. No.	P_{EUT} (% of EUT rating)	Reactive load (% of Q_L)	P_{AC} (% of nominal)	Q_{AC} (% of nominal)	Run on time (ms)	P_{EUT} (W)	Pr (Resistive) (W)	Pl (Inductive) Var	Pc (Capacitive) Var	Actual Q_f	VDC	Remarks
14	100	100	0	10	193.0	6200	6211	5605	6190	0.948	347.5	Test A at IB
15	100	100	10	10	178.0	6200	5565	5605	6190	1.058	347.5	Test A at IB
16	100	100	10	5	172.0	6200	5591	5922	6190	1.083	347.5	Test A at IB
17	100	100	10	0	202.0	6200	5572	6210	6190	1.113	347.5	Test A at IB
18	100	100	10	-5	204.0	6200	5583	6491	6190	1.135	347.5	Test A at IB
19	100	100	10	-10	168.0	6200	5593	6831	6190	1.163	347.5	Test A at IB
20	100	100	5	-10	213.0	6200	5888	6831	6190	1.104	347.5	Test A at IB
21	100	100	-0	-10	218.0	6200	6200	6819	6190	1.048	347.5	Test A at IB
22	100	100	-5	-10	188.0	6200	6509	6827	6190	0.999	347.5	Test A at IB
23	100	100	-10	-10	215.0	6200	6820	6812	6190	0.952	347.5	Test A at IB
24	100	100	-10	-5	159.0	6200	6781	6507	6190	0.936	347.5	Test A at IB
25	100	100	-10	0	191.0	6200	6810	6210	6190	0.910	347.5	Test A at IB
26	100	100	-10	5	209.0	6200	6790	5925	6190	0.892	347.5	Test A at IB
27	100	100	5	-10	208.0	6200	6770	6213	6190	0.916	347.5	Test A at IB
28	66	66	0	-5	156.0	4092	4092	4313	4089	1.026	255	Test B at IB

Sr. No.	P_{EUT} (% of EUT rating)	Reactive load (% of Q_L)	P_{AC} (% of nominal)	Q_{AC} (% of nominal)	Run on time (ms)	P_{EUT} (W)	Pr (Resistive) (W)	Pl (Inductive) Var	Pc (Capacitive) Var	Actual Q_f	VDC	Remarks
29	66	66	0	-4	152.0	4092	4092	4257	4089	1.020	255	Test B at IB
30	66	66	0	-3	148.0	4092	4092	4216	4089	1.015	255	Test B at IB
31	66	66	0	-2	146.0	4092	4092	4175	4089	1.010	255	Test B at IB
32	66	66	0	-1	143.0	4092	4092	4134	4089	1.005	255	Test B at IB
33	66	66	0	1	140.0	4092	4092	4052	4089	0.995	255	Test B at IB
34	66	66	0	2	138.0	4092	4092	4011	4089	0.990	255	Test B at IB
35	66	66	0	3	134.0	4092	4092	3970	4089	0.985	255	Test B at IB
36	66	66	0	4	130.0	4092	4092	3929	4089	0.980	255	Test B at IB
37	66	66	0	5	126.0	4092	4092	3888	4089	0.974	255	Test B at IB
38	33	33	0	-5	130.0	2046	2046	2147	2047	1.025	144	Test C at IB
39	33	33	0	-4	126.0	2046	2046	2127	2047	1.020	144	Test C at IB
40	33	33	0	-3	123.0	2046	2046	2106	2047	1.015	144	Test C at IB
41	33	33	0	-2	120.0	2046	2046	2086	2047	1.010	144	Test C at IB
42	33	33	0	-1	118.0	2046	2046	2065	2047	1.005	144	Test C at IB
43	33	33	0	1	116.0	2046	2046	2025	2047	0.995	144	Test C at IB

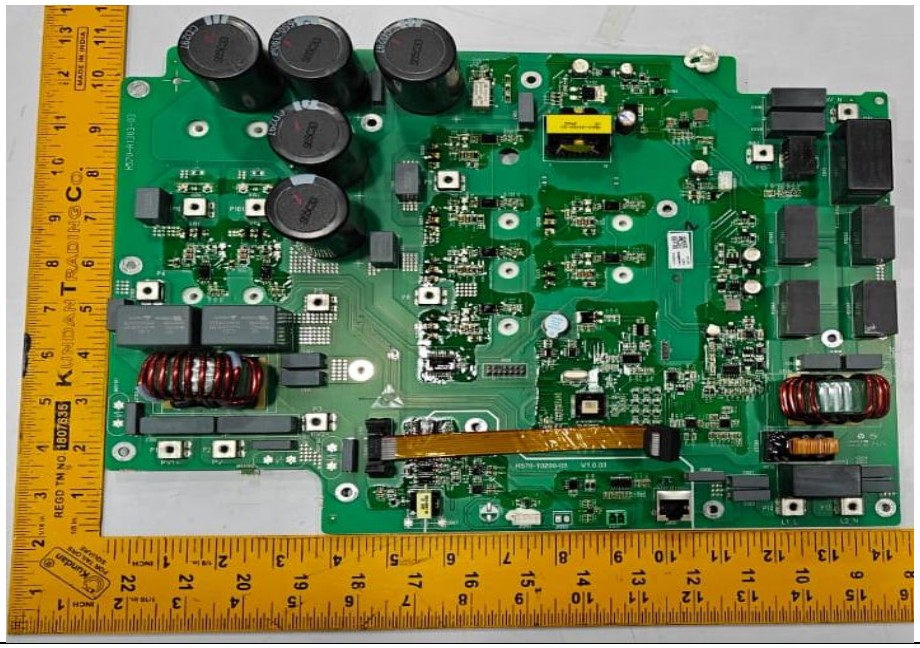
Sr. No.	PEUT (% of EUT rating)	Reactive load (% of QL)	PAC (% of nominal)	QAC (% of nominal)	Run on Time (ms)	PEUT (W)	Pr (Resistive) (W)	PI (Inductive) Var	Pc (Capacitive) Var	Actual Qf	144	Remarks
44	33	33	0	2	113.0	2046	2046	2004	2047	0.990	144	Test C at IB
45	33	33	0	3	98.0	2046	2046	1984	2047	0.985	144	Test C at IB
46	33	33	0	4	91.0	2046	2046	1963	2047	0.980	144	Test C at IB
47	33	33	0	5	88.0	2046	2046	1943	2047	0.975	144	Test C at IB

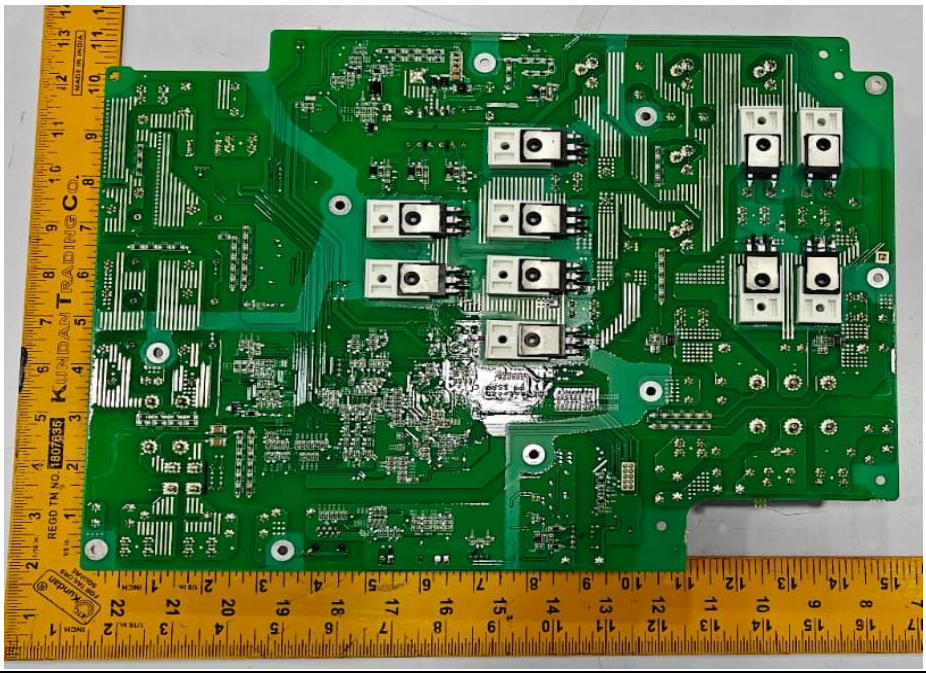
a PEUT: EUT output power.
b PAC: Active power flow at S1 in figure 1. Positive means power from EUT to utility. Nominal is the 0% test condition value.
C QAC: Reactive power flow at S1 in figure 1. Positive means power from EUT to utility. Nominal is the 0% test condition value.
D BL: balance condition, IB: imbalance condition.

Appendix A
Photographs

For Model	
	Front and Rear view
	

	String connecter / AC output
	Internal view

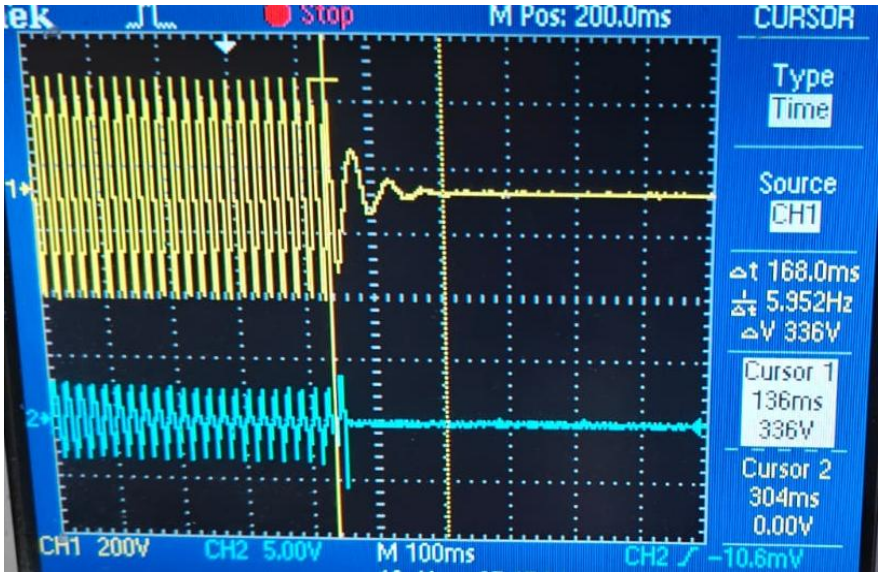
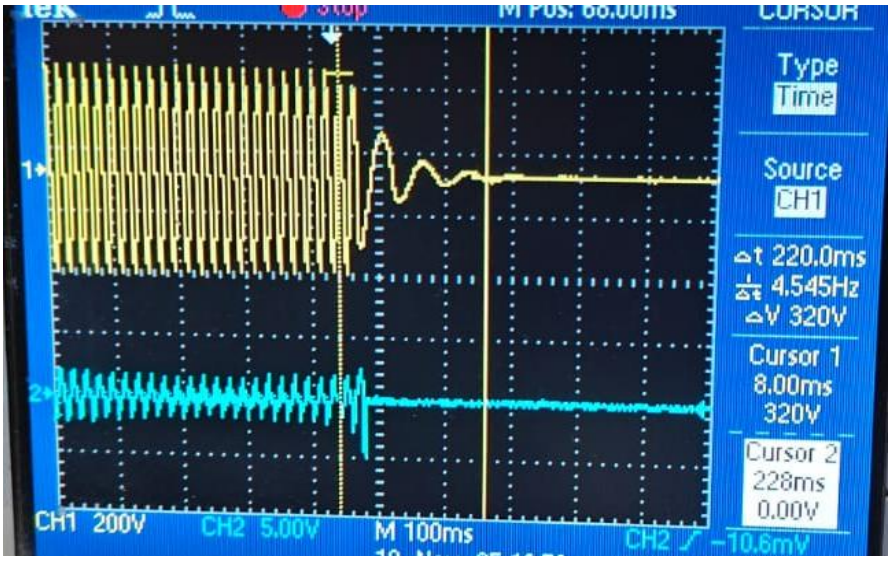


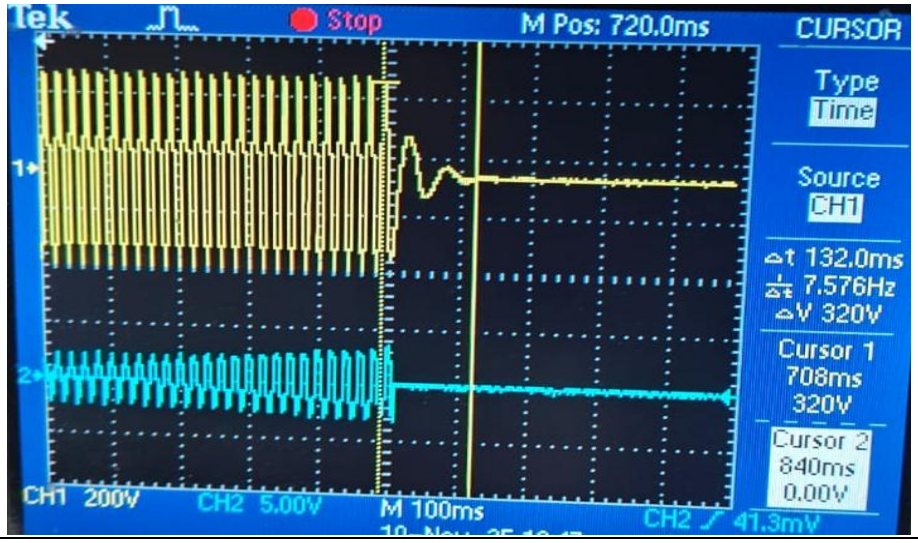
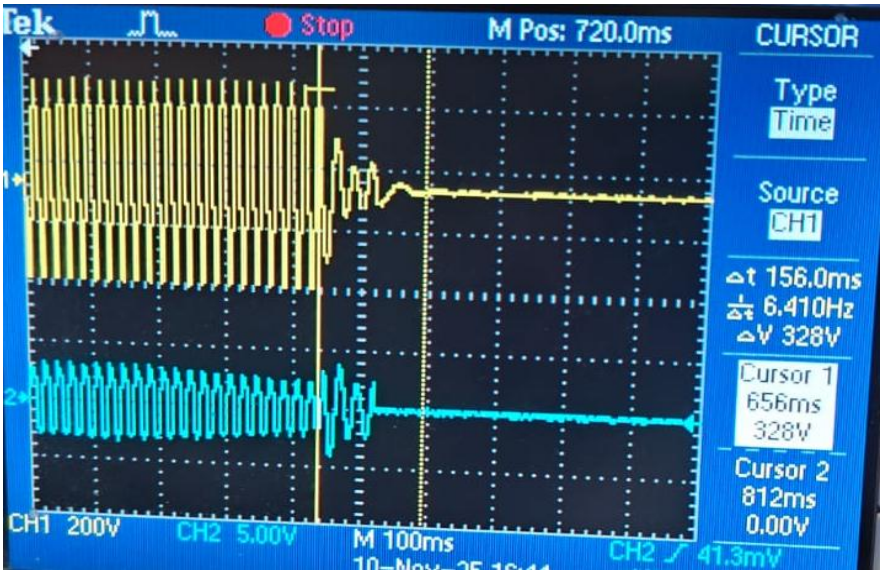


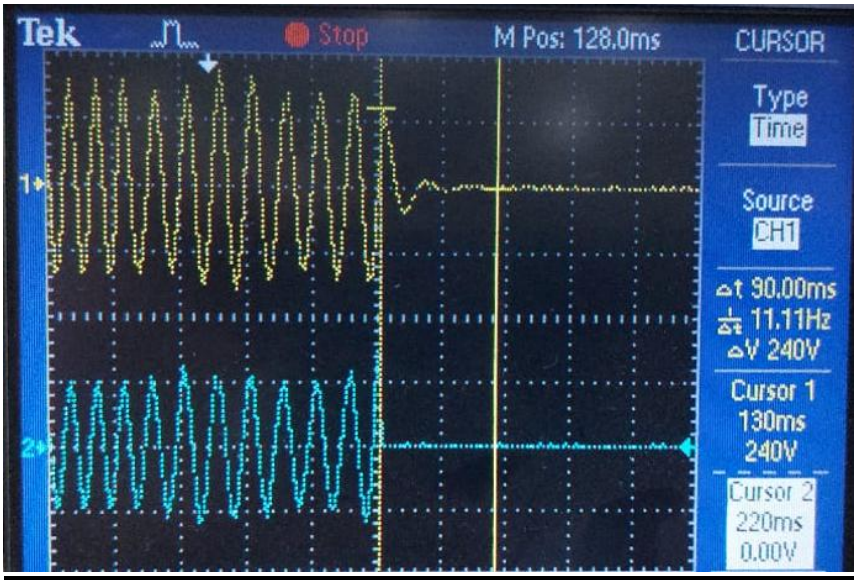
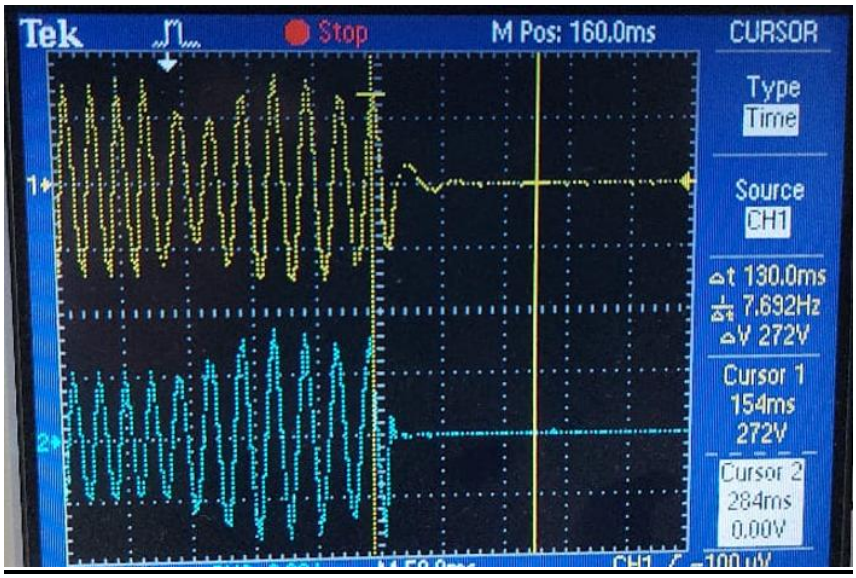
PCB Front and Rear View

QR code for IS 16221: 2015	QR code for IS 16169 : 2019	
N/A		**QR Code**

Waveforms:

100% Balance Condition [0 0]

100% Imbalance condition [-5 -5]


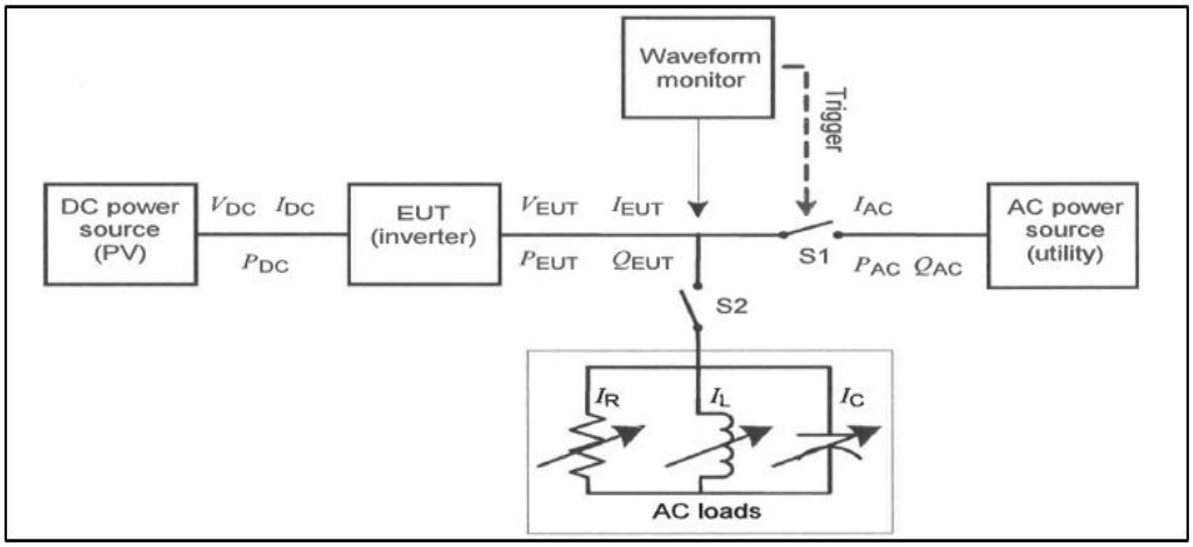
66% Balance Condition [0 0]

66% Imbalance condition [0 -5]


33% Balance Condition [0 0]

33% Imbalance condition [0 -5]


PRODUCT DATASHEET:

	Single Phase (1KW - 6KW)										Three Phase (3KW - 10KW)											
Model (KSY)(KW)	1	2	3	3.4	4	4.4	5	6	5.4	6.2	3	4	5	6	8	10	3	4	5	6	8	10
Input (DC)																						
Max Peak DC Input Power (KW)	1.3	2.6	3.9	4.4	4.8	5.2	6	7.2	6.4	7.2	3.9	5.2	6.5	7.8	10.4	12	3.9	5.2	6.5	7.8	10.4	12
Max. DC I/P (V dc)	550Vdc										1000Vdc				1000Vdc							
Max. MPPT I/P Current (A)	22A								22A+22A		22A				22A+22A							
MPPT Short Circuit Current (A)	26A										26A											
MPPT Tracking Voltage (Vdc)	70-550V										200-1000Vdc				200-1000Vdc							
Min. Start Voltage (V)	50Vdc						100Vdc				150Vdc				150Vdc							
Number of MPPT Tracker	1						2				1				2							
Strings per MPPT Trackers	1						1				1				1							
Output (AC)																						
Rated output power (kW)	1	2	3	3.4	4	4.4	5	6	5.4	6.2	3	4	5	6	8	10	3	4	5	6	8	10
Rated Grid Voltage (V)	230V (140V - 300V)										380V/400/415V (300V - 500V)											
Nominal Grid Freq.(Hz)	50Hz / 60Hz (47-52Hz) / (57-62Hz)										50Hz / 60Hz											
Max. output Current AC (A)	4.3	8.6	13	14.7	18.2	19.13	21.7	26	23.47	26.95	4.3	5.7	7.2	8.6	11.5	14.45	4.3	5.7	7.2	8.6	11.5	14.45
AC Connection (With PE)	P + N + E										3P + N + E											
THDI (%)	<3% (At Rated Power																					
Output Power Factor (%)	0.8 Leading... 1... 0.8 Lagging																					
Efficiency																						
Max. Conversion Eff.(%)	98.0																					
Max. Euro Efficiency (%)	97.5																					
Protection																						
Anti-islanding Protection	Integrated																					
Insulation Resistance Detection	Integrated																					
Residual Current Monitoring	Integrated																					
Over Voltage Protection	Integrated																					
DC Switch	Optional										Inbuilt											
Surge Protection	MOV / SPD / Filter																					
General Data																						
Dimensions(W*H*D) mm	297X223X117mm						393×328×154mm				425*351*160mm											
Weight (Kg)	4.5Kg						10Kg				13.7Kg											
Noise Emission (db)	<30dB																					
Display	LED with LCD Display																					
DC Connection Type	MC-4																					
AC Connection Type	Plug in Connector / Wi cables																					
Communication Interface	WiFi/ GPRS/ RS 485																					
Cooling Method	Natural Convection/Smart Fan Cooling																					
Operating Ambient	-25 C - +60°C																					
Relative Humidity	0% - 100%																					
Max. Operating Altitude(m)	2000 (>2000 Derating)																					
Protection Class	P65																					
Night Stand By Power Consumption (w)	<1																					

TEST CIRCUIT:



…..……..……..…..End of Test report ……..……

Hi Physix Laboratory India Private Limited, Pune

ULR No. : -

DOC No.	:	HPLI/Test/2510056601	B-32/1/2, MIDC, Industrial Area, Ranjangaon, Pune, Pune, Pune, Maharashtra, India - 412220
Telephone	:	+91 8552003805	
FAX	:	-	
E-Mail	:	infohplindia@bureauveritas.com	
BO Code	:	NA	

Test REPORT AS PER : IS 17980 (2022)

QR Code/Barcode : 256750CRS

REPORT NO : SC25SPI03445_1 DATE : 16 Dec, 2025

PART A. PARTICULARS OF SAMPLE SUBMITTED

a) Customer Name & Address	:	KSOLARE ENERGY PVT LTD SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, NA, MAHARASHTRA, India - 411046
b) Nature of sample	:	-
c) Grade/Variety/Type/Class Size etc	:	NA
d) Declare values, if any	:	-
e) Batch No. & Date of Manufacture	:	/
f) Quantity	:	2
g) Date of Receipt	:	03 Oct, 2025
h) BIS Seal	:	Verified by Sample Cell
i) IO's Signature	:	Verified by Sample Cell
j) Any other Information / Expiry Date, If any	:	/
k) Date of Commencement of Testing	:	25 Oct, 2025
l) Date of Completion of Testing	:	15 Dec, 2025
m) Section Code	:	25E1788N
n) Section Report No.	:	25E1788N_1
o) Report Type	:	New
p) Reference Report No.	:	
q) Remarks	:	Test report attached.

Mr. Abhishek Singh
OIC SAMPLE CELL
(Authorized Signatory)
Authorized on: 16 Dec, 2025 09:45 AM

1.

This is a Computer Generated Report.

PART B. SUPPLEMENTARY INFORMATION

1.	Reference to sampling procedure, wherever applicable.	Not Applicable
2.	Supporting documents for the measurements taken and results derived like graphs, table sketches and or photographs as appropriate to test report, if any.	Yes
3.	Deviation from the test methods as prescribed in relevant ISS/Work instruction, if any.	Not Applicable
3.	NABL Report required ?	No

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 17:57 PM

This is a Computer Generated Report.

PART C. TEST RESULT

S.No.	Clause No Table No. Sl. No	Parameter - Method of test	Test Description	Min Limit	Max Limit	Unit	Result/ Observation
1	Cl-4.1 (b)	Dynamic MPPT efficiency	-	-	-	-	Overall efficiency 96.24% (For more details see the attached test report)
2	Cl-4.1 (a)	Static MPPT efficiency	-	-	-	-	ηt,CEC (Overall efficiency) 96.12% (for more details Attached in test report)

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 17:57 PM

This is a Computer Generated Report.

PART D. REMARKS

See attached test report

Mr. Santosh Kumar Gupta
OIC Electrical
(Authorized Signatory)
Authorized on: 15 Dec, 2025 17:57 PM

This is a Computer Generated Report.

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

SUMMARY OF TEST REPORT

TEST REPORT NO: HPLI/Test/2510056601 **DATE: 15/12/2025**
(Number of Pages in Test Report: 27)

TEST FORMAT AS PER IS 17980:2022/IEC 62891:2020

1. Name of the Manufacturer: KSOLARE ENERGY PVT LTD,

2. Product: Utility-Interconnected - Photovoltaic Inverters

3. Models: KSY-6.2KW-1P-22A **(Representative Model)**
KSY-6KW-1P-22A, KSY-5.4KW-1P-22A, KSY-5KW-1P-22A,
KSY-4.4KW-1P-22A, KSY-4KW-1P-22A, KSY-3.4KW-1P-22A
KSY-3KW-1P-22A, KSY-2KW-1P-22A, KSY-1KW-1P-22A,
(Series Models)

4. Model differences provided (if applicable): Yes

5. Model differences verified as per MNRE Guidelines for series formulation: Yes

6. Test Results:

SL. NO.	TEST REQUIREMENT	CLAUSE	VERDICT
1.	**Static MPPT efficiency**	4.3	P
2.	**Test conditions for dynamic MPPT efficiency**	4.4	P

General Information:

1. The conformity certificates of critical components are verified to ensure complete testing of apparatus under test and details regarding harmonized IEC standards (where IEC standards are not available) are also provided in the list of critical components.

CONCLUSION:

1. Sample meets all relevant requirements of IS 17980:2022/IEC 62891:2020
2. ~~Sample fails to meet the following test requirements.~~

I hereby undertake that the verdict stated in the test reports for all the test matches with the test results. The sample meets all relevant requirements of IS 17980:2022/IEC 62891:2020 ~~does not meet the requirements stated above~~.

SANTOS H KUMAR
Digitally signed by SANTOSH KUMAR
Date: 2025.12.15 17:50:59 +05'30'

Santosh Kumar-Manager Testing

Date: 15/12/2025 (Signature of Authorized person with Stamp)

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

TEST REPORT
IS 17980:2022/IEC 62891:2020
Maximum Power Point Tracking Efficiency of Grid Connected Photovoltaic Inverters

Report reference number.....:	HPLI/Test/2510056601
Date of issue.....:.....	15/12/2025
Total number of pages.....:.....	27
Testing laboratory name.....:	**Hi Physix Laboratory India Pvt. Ltd.**
Address.....:	B-32/1/2, MIDC, RANJANGAON, PUNE, MAHARASHTRA, PIN-412220.
Accreditation.....:	N/A
Manufacture's name.....:	**KSOLARE ENERGY PVT LTD,**
Address.....:	SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, MAHARASHTRA, 411046
Test specification Standard.....:	**IS 17980:2022/IEC 62891:2020**
Test Report Form No.....:	
TRF Originator.....:	BIS
Master TRF.....:	N/A
Test item description.....:	Utility-Interconnected - Photovoltaic Inverters
Trademark.....:	KSolare
Model/Type.....:	KSY-6.2KW-1P-22A **(Representative Model)** KSY-6KW-1P-22A, KSY-5.4KW-1P-22A, KSY-5KW-1P-22A, KSY-4.4KW-1P-22A, KSY-4KW-1P-22A, KSY-3.4KW-1P-22A KSY-3KW-1P-22A, KSY-2KW-1P-22A, KSY-1KW-1P-22A, **(Series Models)**

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Testing Location.....: Hi Physix Laboratory India Pvt. Ltd. Address.....: B-32/1/2, MIDC, RANJANGAON, PUNE, MAHARASHTRA, PIN-412220.		
Tested by (name + signature) :	Chetan Shinde (Testing Engineer)	CHETAN LAXMAN SHINDE Digitally signed by CHETAN LAXMAN SHINDE Date: 2025.12.15 17:47:30 +05'30'
Checked by (name + signature):	Alok Anand (Lab Manager Operations)	ALOK ANAND Digitally signed by ALOK ANAND Date: 2025.12.15 17:48:35 +05'30'
Approved by (name + signature):	Santosh Kumar (Manager Testing)	SANTOSH KUMAR Digitally signed by SANTOSH KUMAR Date: 2025.12.15 17:50:34 +05'30'
Issued by (name, function, Signature) .....:	Abhishek SINGH (Manager Sales & Customer Services – Solar)	ABHISHEK SINGH Digitally signed by ABHISHEK SINGH Date: 2025.12.15 17:53:07 +05'30'
Manufacture's name.....: **KSOLARE ENERGY PVT LTD,** Address.....: SR NO.62, HISSA NO.3, MANGADEWADI, KATRAJ, PUNE SATARA ROAD, PUNE, MAHARASHTRA, PIN 411046, MAHARASHTRA, 411046		

Note: This document is digitally signed and does not require the signature on each page.

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Test item particulars.....:	**Maximum Power Point Tracking Efficiency of Grid Connected Photovoltaic Inverters**
Equipment mobility.....:	☐movable ☐hand-held ☐stationary ☒fixed ☐transportable ☐for building-in
Connection to the mains.....:	☒pluggable equipment ☐direct plug-in ☐ permanent connection ☐for building-in
Environmental category.....:	☒Outdoor ☐indoor unconditional ☐indoor conditioned
Over voltage category Mains.....:	☐OVCI ☐OVCII ☒OVCIII ☐ OVCIV
Over voltage category PV .....:	☐OVCI ☒OVCII ☐OVCIII ☐ OVCIV
Mains supply tolerance (%) .....:	**-90 / +110 %**
Tested for power systems .....:	**Yes (TN)**
IT testing, phase-phase voltage (V) ..... :	**---**
Class of equipment .....:	☒ClassI ☐ClassII ☐ClassIII ☐Notclassified
Mass of equipment (kg) ..... :	**10Kg**
Pollution degree ..... :	☐PD1 ☐PD2 ☒PD3
IP protection class..... :	**IP65**
Possible test case verdicts:	
-test case does not apply to the test object.....:	**N/A**
- test object does meet the requirement .....:	**P (Pass)**
–test object was note valuated for the requirement	**N/E**
- test object does not meet the requirement.....:	**F (Fail)**
Testing.....:	
Date of receipt of test item.....:	10/09/2025
Date (s) of performance of tests.....:	25/10/2025 to 15/12/2025
Online Test Request no: SC25SPI03445	

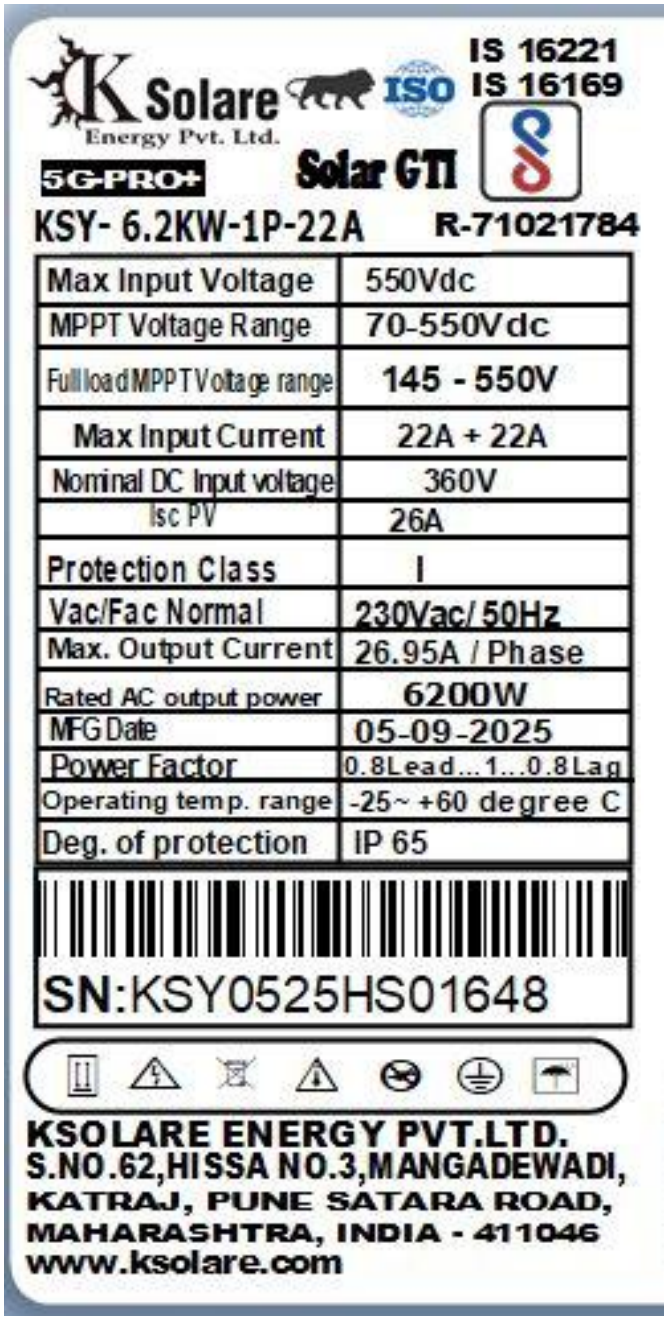
General remarks:

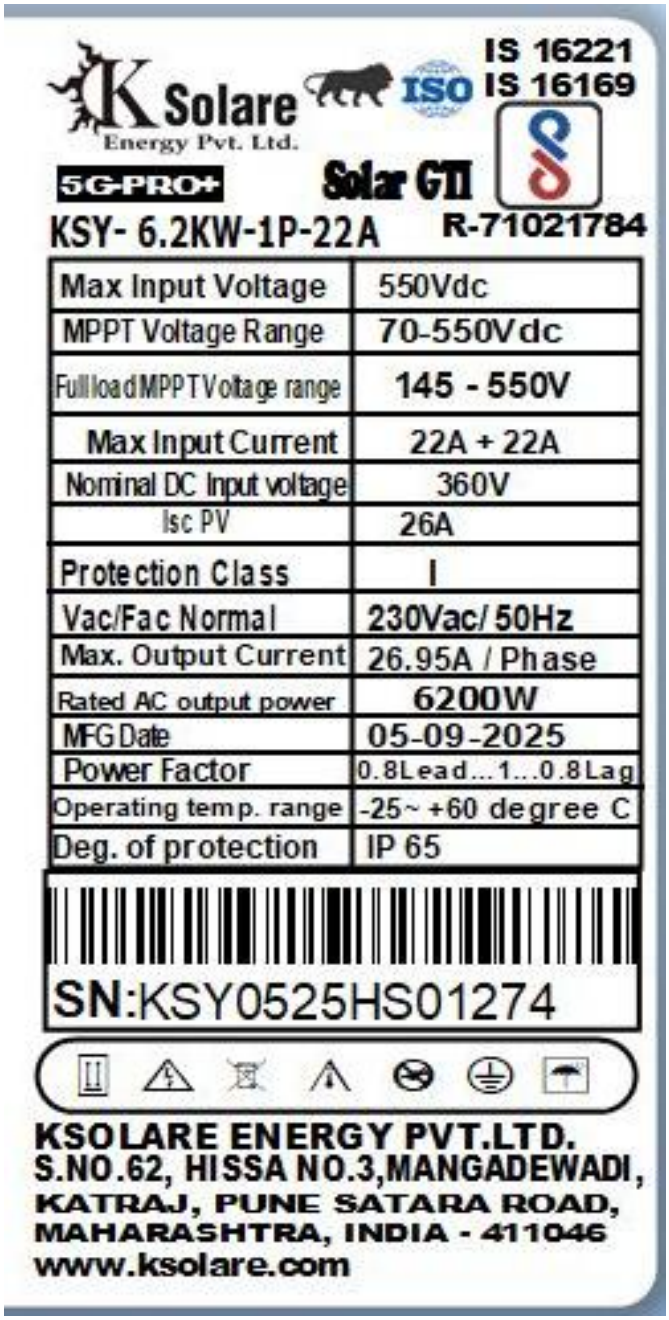
The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

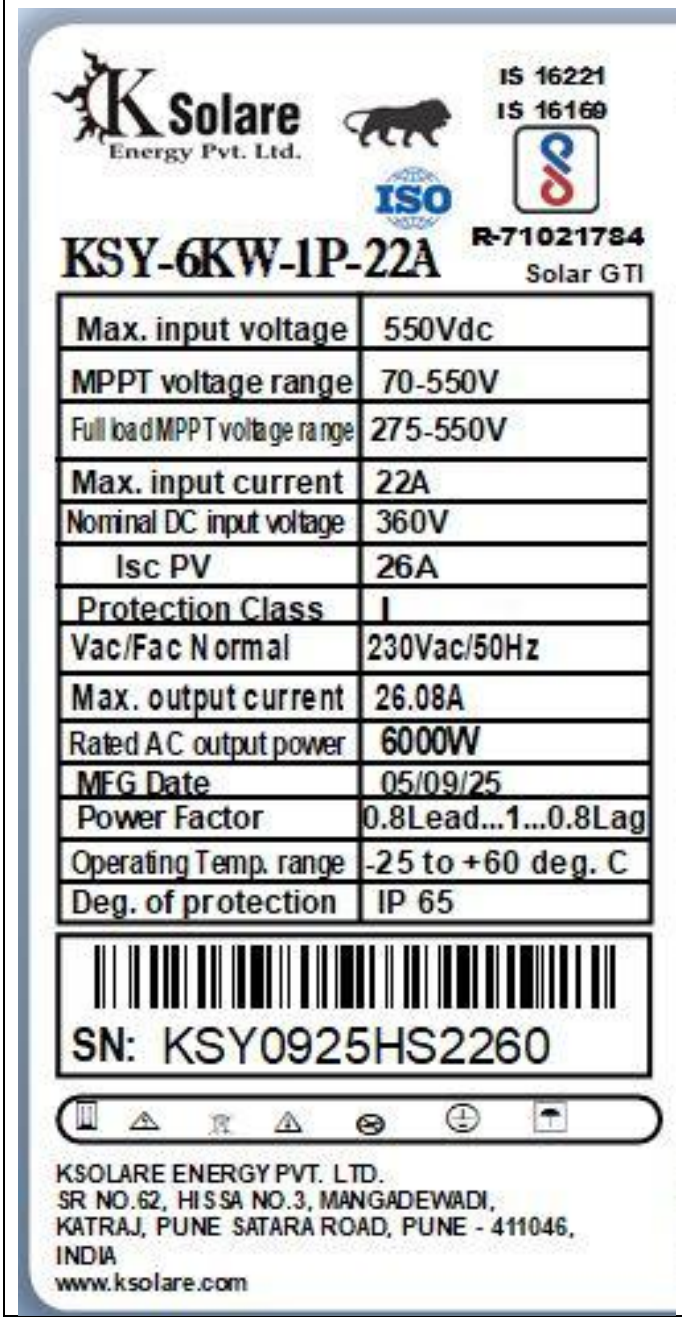
Copy of Marking& Warning plate of the equipment (Representative model)

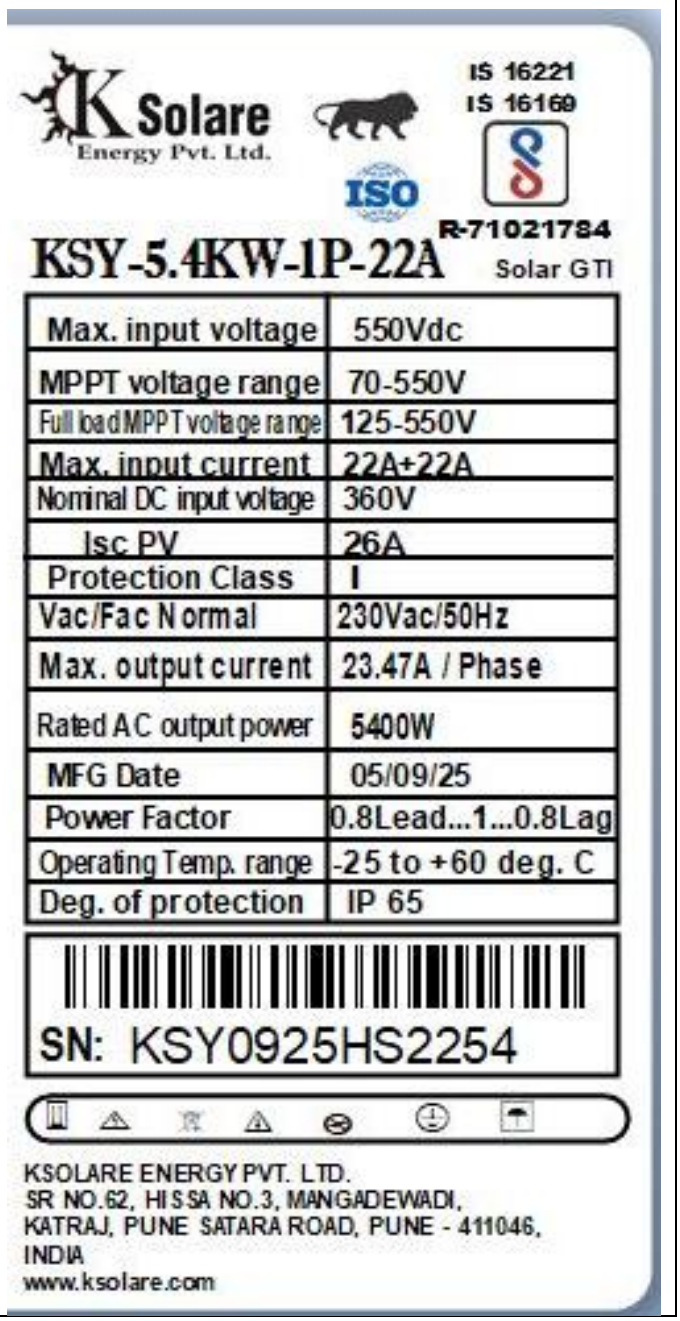




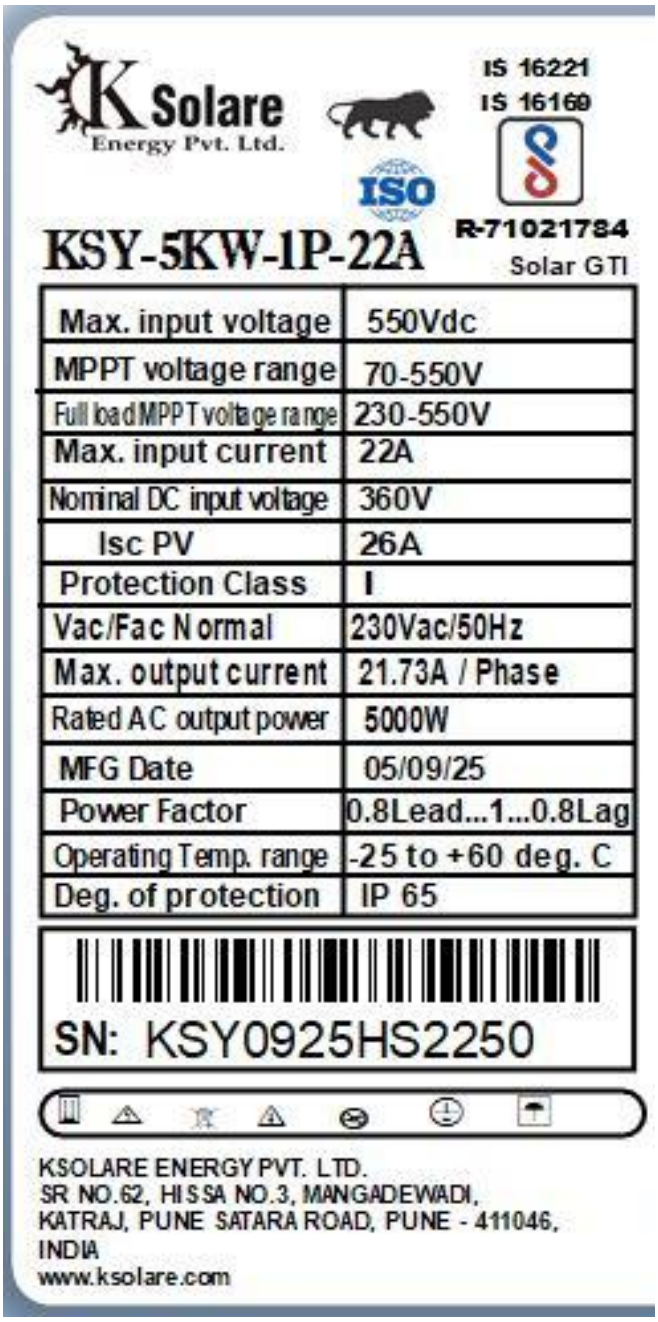
HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Copy of Marking& Warning plate of the equipment (Series models)





HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

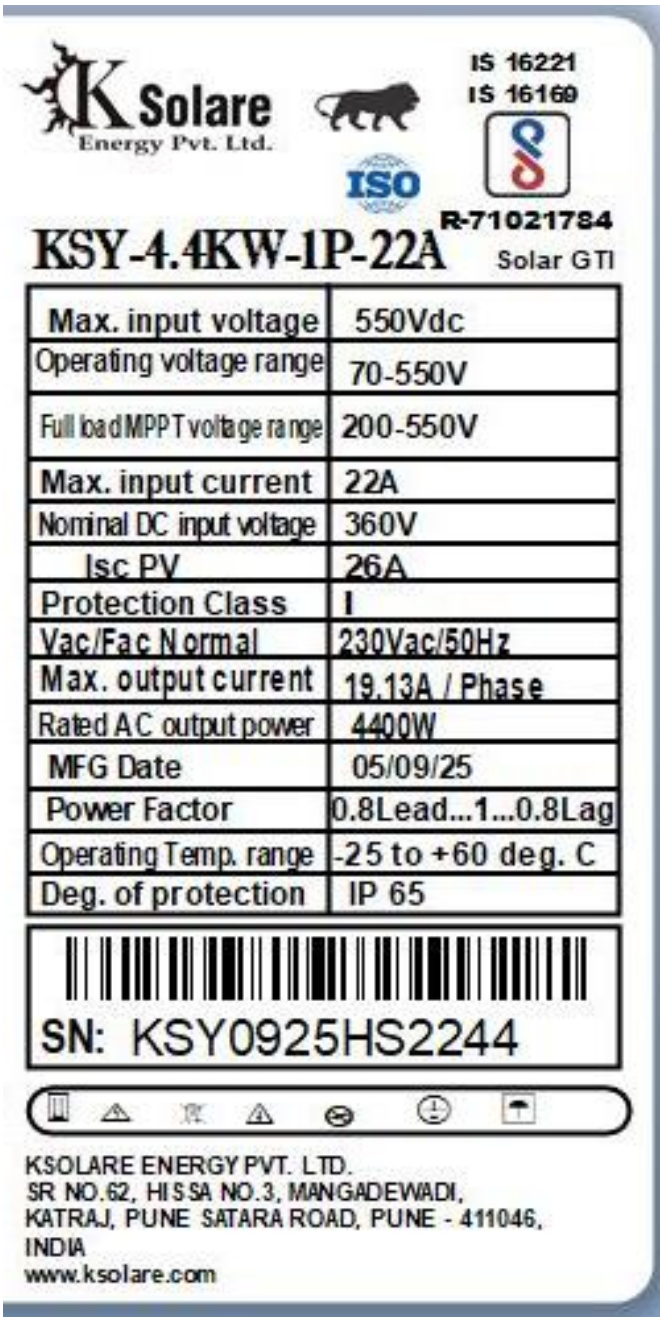
R-71021784

KSY-5KW-1P-22A Solar GTI

Max. input voltage	550Vdc
MPPT voltage range	70-550V
Full load MPPT voltage range	230-550V
Max. input current	22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	21.73A / Phase
Rated AC output power	5000W
MFG Date	05/09/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

SN: KSY0925HS2250

KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

R-71021784

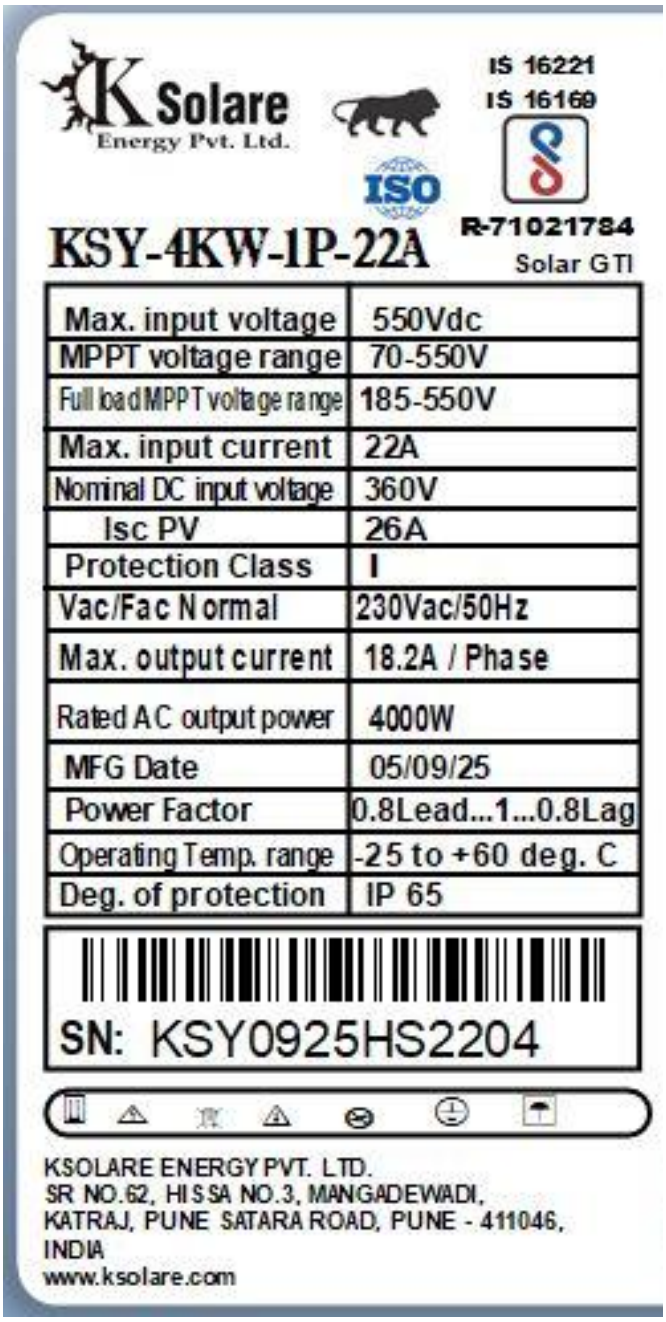
KSY-4.4KW-1P-22A Solar GTI

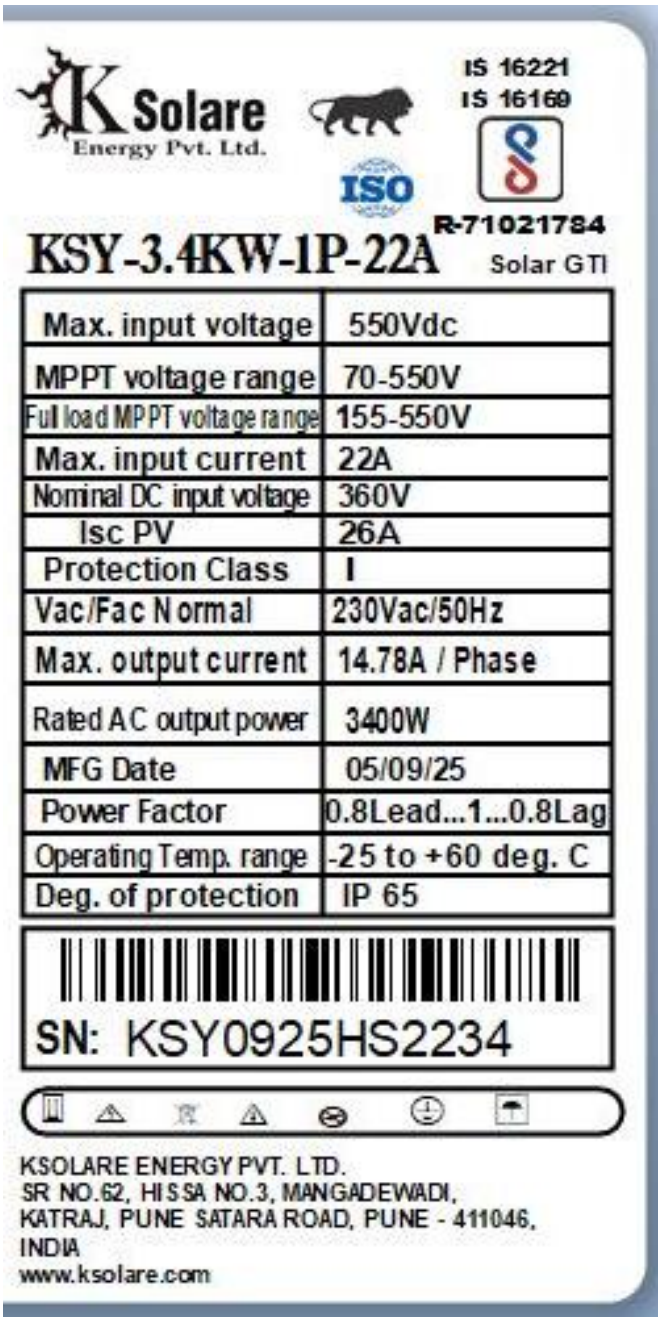
Max. input voltage	550Vdc
Operating voltage range	70-550V
Full load MPPT voltage range	200-550V
Max. input current	22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	19.13A / Phase
Rated AC output power	4400W
MFG Date	05/09/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

SN: KSY0925HS2244

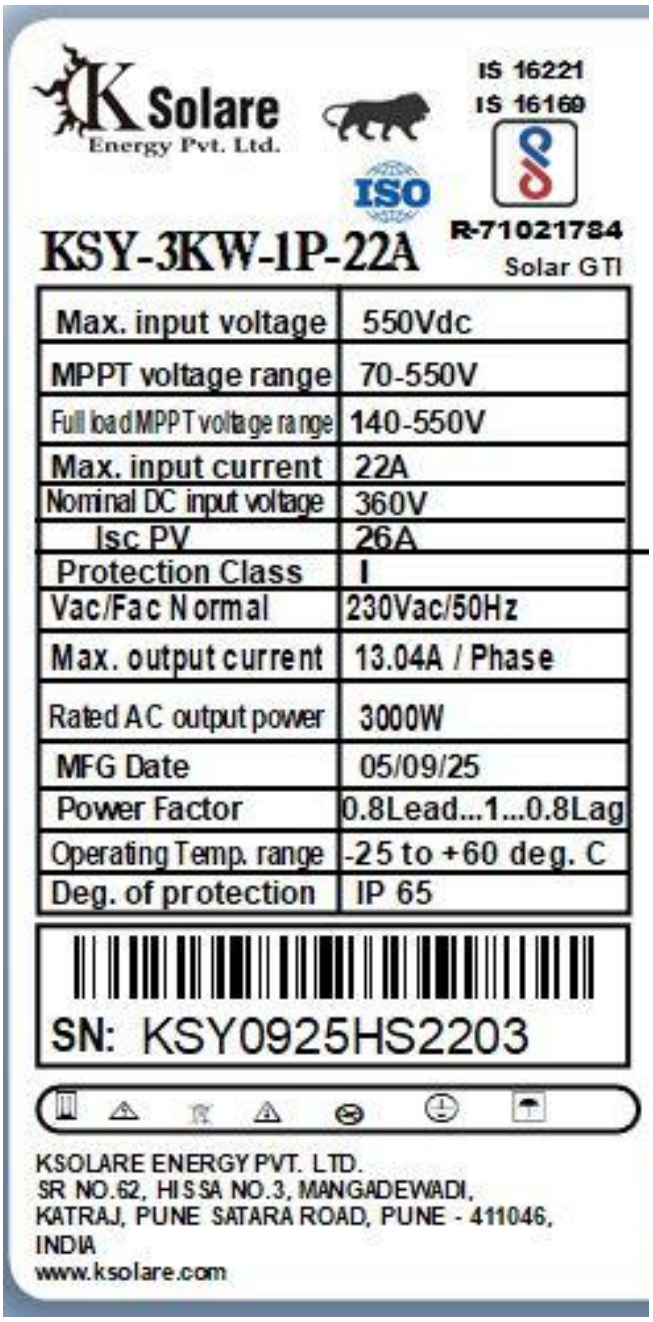
KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422





HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

R-71021784

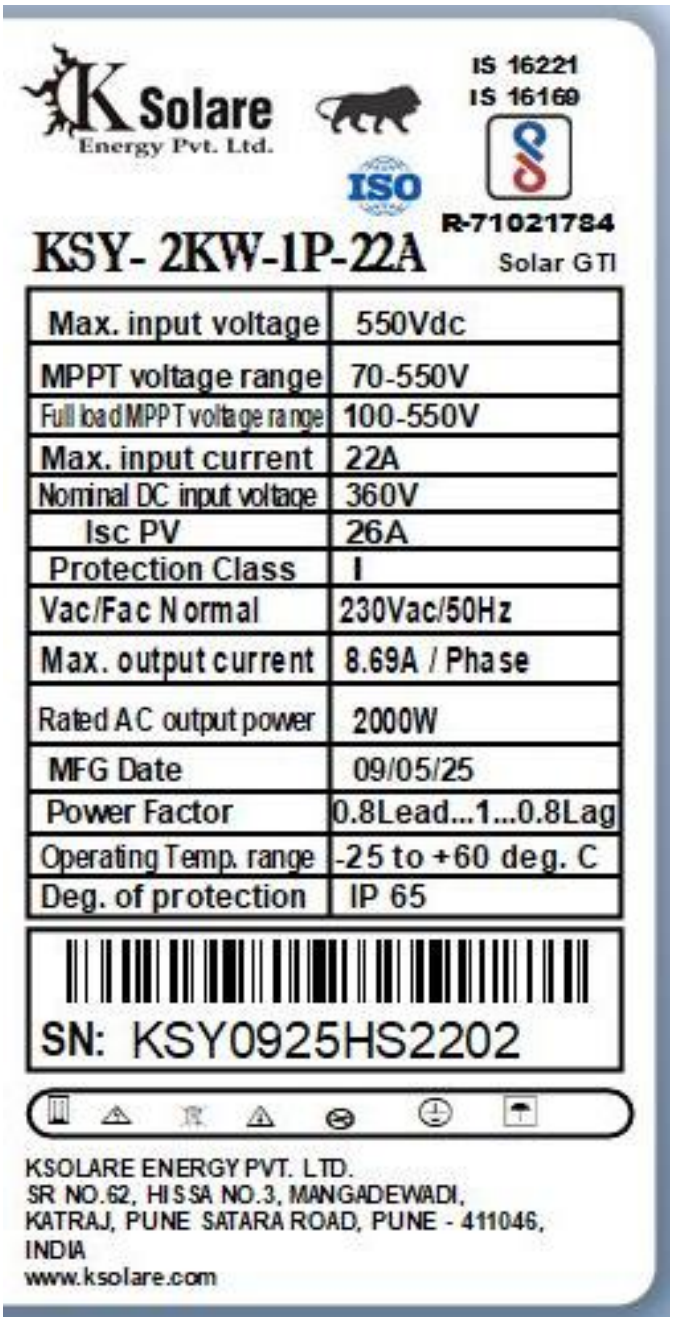
KSY-3KW-1P-22A

Solar GTI

Max. input voltage	550Vdc
MPPT voltage range	70-550V
Full load MPPT voltage range	140-550V
Max. input current	22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	13.04A / Phase
Rated AC output power	3000W
MFG Date	05/09/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

SN: KSY0925HS2203

KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com



K Solare Energy Pvt. Ltd.

IS 16221
IS 16169

R-71021784

KSY- 2KW-1P-22A

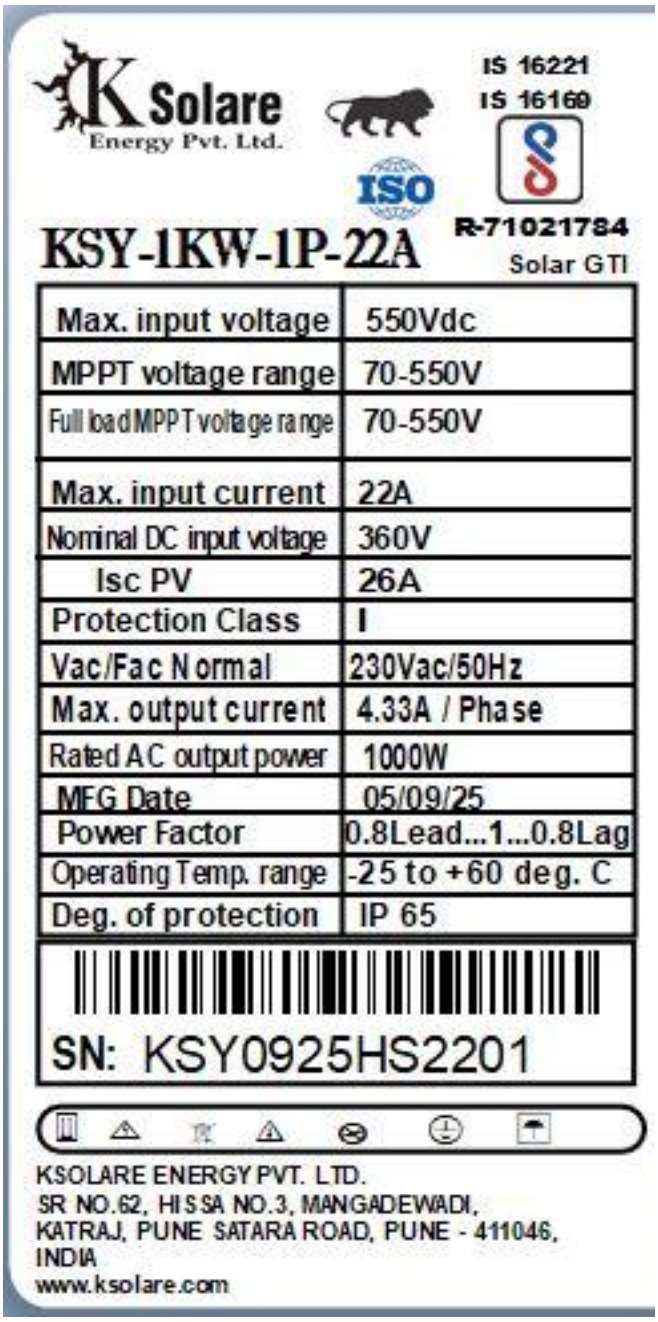
Solar GTI

Max. input voltage	550Vdc
MPPT voltage range	70-550V
Full load MPPT voltage range	100-550V
Max. input current	22A
Nominal DC input voltage	360V
Isc PV	26A
Protection Class	I
Vac/Fac Normal	230Vac/50Hz
Max. output current	8.69A / Phase
Rated AC output power	2000W
MFG Date	09/05/25
Power Factor	0.8Lead...1...0.8Lag
Operating Temp. range	-25 to +60 deg. C
Deg. of protection	IP 65

SN: KSY0925HS2202

KSOLARE ENERGY PVT. LTD.
SR NO.62, HISSA NO.3, MANGADEWADI,
KATRAJ, PUNE SATARA ROAD, PUNE - 411046,
INDIA
www.ksolare.com

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422



HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

General product information:

The product covered under this test report is power converters for use in photovoltaic power systems. The details of the product are stated below:

Manufacturer: KSOLARE ENERGY PVT LTD,

DC side: Max.input voltage:550V, MPPT Voltage Range:70V-550V, Max. input current:22+22A,
Nominal DC Input voltage: 360V Isc PV(absolute maximum):26A

AC side: Nominal grid voltage:1/N/PE 230V, Nominal grid frequency:50Hz, Rated AC output power: 6200W,
Max. output current:26.95A, Power factor: 0.8Lead…1...0.8Lag**, (Representative model)**

Equipment Class: Class I

Overvoltage category: OVC II (PV). OCV III(Mains)

Pollution degree: PD III (External), PD II (Internal)

Connection to the mains: Plug in Connector

Ambient temperature range: -25° to +60°C

IP protection class: IP65

Dimensions (mm): 393 x 328 x 154 mm

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

IS 17980:2022/IEC 62891:2020			
Clause	Requirement + Test	Result-Remark	Verdict
4	**MPPT efficiencies**	See below	P
4.1	**General description**	See below	P
	The MPPT efficiency describes the accuracy of an inverter to set its operating conditions to match the maximum power point on the characteristic curve of a PV generator. The overall MPPT efficiency is divided into static and dynamic efficiency components	Complied	P
	Because inverters with poor MPPT performance operate at a DC input voltage that is different from MPP voltage, and static power conversion efficiency depends on DC input voltage, the measurements of static MPPT efficiency and static power conversion efficiency according to 4.3 shall be performed simultaneously.	See table 4.3	P
	a) Static MPPT efficiency The static MPPT efficiency is determined by means of measurement as follows: $\eta_{MPPTstat} = \frac{1}{R_{MPP,PVS} \cdot T_M} \sum_i V_{DC,i} \cdot I_{DC,i} \cdot \Delta T$ Static MPPT efficiency describes the accuracy of an inverter to regulate on the maximum power point on a given static characteristic curve of a PV generator. *V*DC,*i* and *I*DC,*i* shall be sampled at the same time.	Complied	P
	b) Dynamic MPPT efficiency Variations of the irradiation intensity and the resulting transition of the inverter to the new operation point are not considered with the static MPPT efficiency. For the evaluation of this transient characteristic the dynamic MPPT efficiency is specified. The dynamic MPPT efficiency is defined as: $\eta_{MPPTdyn} = \frac{1}{\sum_j R_{MPP,PVS,j} \cdot \Delta T_j} \sum_i V_{DC,i} \cdot I_{DC,i} \cdot \Delta T_i$	Complied	P
4.2	**Test set-up** The generic test set-up for single phase grid connected inverters is depicted in Figure 1. The diagram can also be considered as a single-phase representation of a test-circuit for multi phase inverters.	Complied	P
4.3	**Static MPPT efficiency**	See below	P
4.3.1	**Test conditions** The measurement of the conversion and static MPPT efficiency shall be performed simultaneously with test specifications as defined in Table 1.	See table 4.3	P
	For test devices with several independent MPPT input terminals, the measurements shall be performed for all input configurations as intended by the manufacturer. Unless otherwise provided by the manufacturer, the total power shall be split equally on the individual	See table 4.3	P

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

	input terminals.		
	The measurement shall be performed at nominal grid voltage *V*AC,r in order to avoid any impact of the grid voltage level on the measurement results. Deviations shall be documented in the measurement report.	See table 4.3	P
	The measurement should be performed at an ambient temperature of 25 °C ± 5 °C. Other ambient temperatures can be mutually agreed. The actual ambient temperature shall be specified in the test report.	See table 4.3	P
4.3.2	**Measurement procedure**	See below	P
	For each of the above specified test conditions a corresponding I/V characteristic has to be defined which shall be emulated by means of the PV simulator.	See table 4.3	P
	After commissioning the device under test the stabilization of the MPP tracking shall be awaited firstly.	See table 4.3	P
	Given the multitude of various MPPT methods and their parameters, a specific waiting period is not defined in this standard. The stabilization time depends on the characteristics of the device under test and shall be set accordingly in each case. The stabilization time shall be documented in the test report. If a stabilisation of the MPPT can't be observed due to the behaviour of the device under test, a latency of at least 5 min is defined.	See table 4.3	P
	The measuring time for each test condition as specified in Table 1 amounts to 10 min. For the first power level of each MPP voltage setting, the stabilisation of the MPPT-tracker has to be awaited. If a stabilisation cannot be observed a stabilisation time of at least 5 min is defined.	See table 4.3	P
	After a change of the power level a general stabilisation period of 2 min should be used. Data recorded during the stabilisation periods are not to be considered for the calculation of the static MPPT and conversion efficiency.	See table 4.3	P
	After the stabilisation of the MPP tracking the following parameters shall be logged: – PMPP,PVS; MPP power provided by the PV simulator; – PDC; measured input power of the device under test; – VMPP,PVS; MPP voltage provided by the PV simulator; – IMPP,PVS; MPP current provided by the PV simulator; – IDC; measured input current of the device under test. – PAC; measured AC output power of the device under test	See table 4.3	P
	Both the sampling and recording rate are not specified. However, they shall be sufficiently high in order to map the specific MPP tracking behaviour of the device under test correctly. This covers in particular the fluctuation of the input voltage appearing at PV inverters with a multiple of the grid frequency. *V*DC may be calculated from *P*DC and *I*DC.	See table 4.3	P
4.3.3	**Evaluation – Calculation of static MPPT efficiency**	Complied	P

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

	For each measured power level specified in Table 1, static MPPT efficiency ηMPPT shall be calculated as energetic averages according to the definitions 3.4.2 and 3.4.1. The results shall be documented in the measurement report for each test condition according to Table 1.	See table 4.3	P
	Furthermore, modifications of the internal setting of the device under test, conspicuous behaviour during the measurement, as well as variations from the defined procedure, shall be documented.	See table 4.3	P
4.4	**Test conditions for dynamic MPPT efficiency**	Complied	P
4.4.1	**Dynamic MPPT efficiency**	See below	P
	The measurement of the dynamic MPPT efficiency shall be performed according to the test conditions as outlined in the tables in Annex B.	Complied	P
	The dynamics of the test sequences are generated by changes in solar irradiance. Measurements shall be performed with a c-Si PV model as a basis and can additionally be made with a TF model (see Table C.1). The chosen model (PV technology) shall be documented in the report.	See table 4.4	P
	Dynamic MPPT efficiency test shall be performed at rated DC voltage. For test devices with several independent MPPT input terminals, the measurements shall be performed for all input configurations as intended by the manufacturer. Unless otherwise provided by the manufacturer, the total power shall be split equally on the individual input terminals.	See table 4.4	P
	The measurement should be performed at an ambient temperature of 25 °C ± 5 °C. Other ambient temperatures can be mutually agreed upon. The actual ambient temperature shall be specified in the test report.	Complied	P
4.4.2	**Measurement procedure**	Complied	P
	For each of the test conditions specified in Annex B, a corresponding I/V characteristic shall be defined and shall be emulated by means of the PV simulator. A radiation intensity of 1000 W/m2 is related to the rated DC power *P*DC, r of the device under test. Prior to each test sequence a waiting period (initial set-up time) shall be implemented to allow the stabilization of the device under test. Values measured during this initial set-up time are not considered for calculation of the dynamic MPPT efficiency according to 4.4.3.	See table 4.4	P
	Given the multitude of various MPPT methods and their parameters, a specific waiting period is not defined in this standard. The stabilization time depends on the characteristics of the device under test and shall be set accordingly in each case. The stabilization time shall be documented in the test report. If a stabilization of the MPPT cannot be observed due to the behaviour of the device under test, a latency of at least 5 min is defined.	See table 4.4	P

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

	For the evaluation and the determination of the dynamic MPPT efficiency the following parameters are to be recorded during the measurement: – *P*MPPPVS; MPP power provided by the PV simulator; – *P*DC; measured input power of the device under test; – *V*MPP,PVS; MPP voltage provided by the PV simulator; – *V*DC; measured input voltage of the device under test; – *I*MPP,PVS; MPP current provided by the PV simulator; – *I*DC; measured input current of the device under test.	See table 4.4	P
	Both the sampling and recording rate are not specified. However, they shall be sufficiently high in order to map the specific MPP tracking behaviour of the device under test correctly. This covers in particular the fluctuation of the input voltage appearing at PV inverters with a multiple of the grid frequency. *V*DC and *I*DC shall be sampled at exactly the same time. *P*DC may be calculated from *V*DC and *I*DC.	See table 4.4	P
4.4.3	**Evaluation - Calculation of the dynamic MPPT efficiency**	See table 4.4	P
	The overall dynamic MPPT efficiency is the mean value of the single dynamic MPPT efficiencies of the test sequences according to Table B.1 and Table B.2. It is calculated by: $\eta_{MPPTdyn,t} = \frac{1}{N}\sum_{i=1}^{N} a_i \cdot \eta_{MPPTdyn,i}$	Complies	P
	For each test sequence specified in Annex B the dynamic MPPT efficiency ηMPPT,dyn is to be calculated based on the recorded data according the definition. The results are to be documented in the measuring report.	See table 4.4	P
	For each test sequence the calculated MPPT efficiency is to be documented with a table in the measuring report.	See table 4.4	P
	Furthermore, modifications of the internal setting of the device under test, conspicuous behaviour during the measurement, as well as variations from the defined procedure, shall be documented.	Complied	P

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

5	**Calculation of the overall efficiency**	See below	P
	The DC power is converted to the AC power *P*AC by means of the conversion efficiency ηconv. The actual DC power *P*DC of the device under test is the product of the static MPPT efficiency ηMPPTstat and the MPP power provided by the PV simulator *P*MPP, PVS: $P_{AC} = \eta_{conv} \cdot P_{DC} = \eta_{conv} \cdot \eta_{MPPTstat} \cdot P_{MPP,PVS} = \eta_t \cdot P_{MPP,\,PVS}$ The overall efficiency ηt can also be considered as: $\eta_t = \eta_{conv} \cdot \eta_{MPPTstat} = \frac{P_{AC}}{P_{MPP,PVS}}$ This Formula is to be applied for each power and voltage level of Table 1. By the application of EUR and CEC weighting factors according to Clause D.1 and Clause D.2, the efficiencies can summarised for each voltage level (*V*MPPmax, *V*DC,r, *V*MPPmin). As a result, the weighted overall efficiencies *η*t,EUR and *η*t,CEC are obtained.	See table 4.3	P

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

TABLE 1	**Test specifications for static MPPT efficiency**								
MPP voltage of the simulated I/V characteristic of the PV generator	**Simulated I/V Characteristic (see Annex C)**	**MPP power of the simulated I/V characteristic normalised to rated DC power d, *P*MPP,PVS/*P*DC,r f**							
		0,05	0,10	0,20	0,25	0,30	0,50	0,75	1,00
*V*MPP max or (0,8 · *V*DCmax a,c)	c-Si	440V							
*V*DC,r e	c-Si	360V							
*V*MPP min	c-Si	140V							
*V*MPP max or (0,7 · *V*DC max a,c)	TF	385V							
*V*DC,r	TF	360V							
*V*MPP min	TF	140V							
Supplementary Information: VDC max: 0.8*550=440V (c-Si), VDC max: 0.7*550=385V (Thin film) Vmax per marking is 550VDC Max. For Static efficiency we have taken VDC max, not VMPP max									

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Cl. 4.3	**TABLE: Static MPPT efficiency**								P
	Ambient temperature: 25°C								
Grid simulator voltage:		1/PE 230V / 50Hz							
Partial MPP power PMPP, PVS/PDC, r [%]		5	10	20	25	30	50	75	100
☒ c-Si									
Vmp Pmax VDC (440V)	PMPP, PVS [W]	309.5	619.0	1238.6	1548.1	1858.4	3097.0	4646.0	6194.9
	PDC [W]	303.8	610.0	1225.2	1544.7	1854.8	3091.8	4637.3	6089.0
	VMPP, PVS [V]	443.4	443.4	440.8	440.8	438.3	438.3	438.3	438.3
	VDC [V]	448.77	444.73	441.01	445.28	440.59	441.99	442.65	481.89
	IMPP, PVS [A]	0.70	1.40	2.81	3.51	4.24	7.07	10.60	14.13
	IDC [A]	0.68	1.37	2.78	3.47	4.21	7.00	10.48	12.64
	PAC [W]	289	589	1188	1497	1792	2985	4471	5948
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	289	589	1188	1497	1792	2985	4471	5948
	WDC [Wh]	303.8	610.0	1225.2	1544.7	1854.8	3091.8	4637.3	6089.0
	ηconv [%]	95.13	96.56	96.96	96.91	96.61	96.55	96.41	97.68
	ηt [%]	93.38	95.15	95.91	96.70	96.43	96.38	96.23	96.01
	ηMPP [%]	98.16	98.55	98.92	99.78	99.81	99.83	99.81	98.29
	ηMPPTstat,EUR [%]	99.28							
	ηt,EUR [%]	96.09							
	ηMPPTstat,CEC [%]	99.63							
	ηt,CEC [%]	96.22							
VDC, (360V)	PMPP, PVS [W]	309.8	619.0	1238.6	1548.4	1858.3	3097.0	4646.0	6194.5
	PDC [W]	296.8	608.9	1235.2	1545.6	1854.7	3092.8	4634.7	6094.7
	VMPP, PVS [V]	358.6	360.7	360.7	358.6	360.7	360.7	358.6	358.6
	VDC [V]	371.33	361.31	359.78	360.88	359.04	351.97	359.93	393.38
	IMPP, PVS [A]	0.86	1.72	3.43	4.32	5.15	8.59	12.96	17.27
	IDC [A]	0.80	1.69	3.43	4.28	5.17	8.79	12.88	15.49
	PAC [W]	280	590	1191	1501	1784	2970	4475	5932
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	280	590	1191	1501	1784	2970	4475	5932
	WDC [Wh]	296.8	608.9	1235.2	1545.6	1854.7	3092.8	4634.7	6094.7
	ηconv	94.34	96.90	96.42	97.11	96.19	96.03	96.55	97.33
	ηt	90.38	95.32	96.16	96.94	96.00	95.90	96.32	95.76
	ηMPP [%]	95.80	98.37	99.73	99.82	99.81	99.86	99.76	98.39
	ηMPPTstat,EUR [%]	99.33							
	ηt,EUR [%]	95.72							
	ηMPPTstat,CEC	99.59							

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

	[%]								
	ηt,CEC [%	96.12							
Vmp Pmin VDC (140V)	PMPP, PVS [W]	309.8	619.6	1239.4	1549.0	1858.6	3098.0	4647.6	6196.6
	PDC [W]	305.6	611.2	1231.4	1540.4	1848.6	3089.4	4633.2	6181.0
	VMPP, PVS [V]	140.3	140.3	139.5	139.5	139.5	139.5	139.5	140.5
	VDC [V]	142.32	141.17	138.66	139.98	140.86	140.19	141.32	142.23
	IMPP, PVS [A]	2.21	4.42	8.88	11.10	13.32	22.21	33.32	44.10
	IDC [A]	2.15	4.33	8.88	11.00	13.12	22.04	32.79	43.6
	PAC [W]	288	584	1189	1482	1782	2981	4470	5982
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	288	584	1189	1482	1782	2981	4470	5982
	WDC [Wh]	305.6	611.2	1231.4	1540.4	1848.6	3089.4	4633.2	6181.0
	ηconv [%]	94.24	95.55	96.56	96.21	96.40	96.49	96.48	96.78
	ηt [%]	92.96	94.25	95.93	95.67	95.88	96.22	96.18	96.54
	ηMPP [%]	98.64	98.64	99.35	99.44	99.46	99.72	99.69	99.75
	ηMPPTstat,EUR [%]	99.56							
	ηt,EUR [%]	96.00							
	ηMPPTstat,CEC [%]	99.58							
	ηt,CEC [%]	96.08							

Note:
c-Si: cSi-technology TF: Thin film technology
PMPP, PVS: MPP power provided by the PV simulator PDC: measured input power of the device under test VDC: measured input voltage of the device under test IMPP, PVS: MPP current provided by the PV simulator IDC: measured input current of the device under test
ηMPPTstat,*EUR* = 0,03xηMPP_5% + 0,06xηMPP_10% + 0,13xηMPP_20% + 0,1xηMPP_30% + 0,48xηMPP_50% + 0,2xηMPP_100%
ηMPPTstat,*CEC* = 0,04xηMPP_10% + 0,05xηMPP_20% + 0,12xηMPP_30% + 0,21xηMPP_50% + 0,53xηMPP_75% + 0,05xηMPP_100%
ηt= PAC/ PMPP, PVS

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Cl. 4.4	TABLE: Test conditions for dynamic MPPT efficiency							P
Ambient temperature: 25°C								
Test sequence with ramps 10%-50%								
From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
100-500	400					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dy n,I %	Overall efficiency
2	0.5	800	10	800	10	3540	94.42	96.24%
2	1	400	10	400	10	1940	96.53	
3	2	200	10	200	10	1560	96.02	
4	3	133	10	133	10	1447	96.26	
6	5	80	10	80	10	1380	95.73	
8	7	57	10	57	10	1374	96.85	
10	10	40	10	40	10	1300	97.62	
10	14	29	10	29	10	1071	95.34	
10	20	20	10	20	10	900	96.73	
10	30	13	10	13	10	767	97.01	
10	50	8	10	8	10	660	96.18	

Test sequence with ramps 30%-100%								
From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
300-1000	700					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dy n,I %	Overall efficiency
10	10	70	10	70	10	1900	96.23	96.15%
10	14	50	10	50	10	1500	96.04	
10	20	35	10	35	10	1200	96.31	
10	30	23	10	23	10	967	95.03	
10	50	14	10	14	10	780	96.18	
10	100	7	10	7	10	640	97.08	

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Start up and shut-down test with slow ramps

From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
10-100	90					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dyn,I %	Overall efficiency
1	0.1	980	30	980	30	2320	96.04%	-----

Note: $\eta_{MPPTdyn,t} = \frac{1}{N}\sum_{i=1}^{N} a_i \cdot \eta_{MPPTdyn,i}$

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Cl. 4.3	**TABLE: Static MPPT efficiency**								P
	Ambient temperature: 25°C								
Grid simulator voltage:		1/PE 230V / 50Hz							
Partial MPP power PMPP, PVS/PDC, r [%]		5	10	20	25	30	50	75	100
☒ Thin film									
Vmp Pmax VDC (385V)	PMPP, PVS [W]	310.2	620.3	1240.7	1551.2	1861.1	3101.7	4652.9	6204.2
	PDC [W]	297.9	607.1	1228.5	1539.5	1849.6	3088.2	4637.1	6171.8
	VMPP, PVS [V]	385.8	383.4	378.5	380.9	380.9	383.4	383.4	383.4
	VDC [V]	402.05	391.19	386.27	382.53	384.16	385.70	382.40	437.32
	IMPP, PVS [A]	0.80	1.62	3.28	4.07	4.89	8.09	12.14	16.18
	IDC [A]	0.74	1.55	3.18	4.02	4.81	8.01	12.13	14.11
	PAC [W]	283	587	1185	1489	1794	2987	4476	5982
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	283	587	1185	1489	1794	2987	4476	5982
	WDC [Wh]	297.9	607.1	1228.5	1539.5	1849.6	3088.2	4637.1	6171.8
	ηconv [%]	95.00	96.69	96.46	96.72	96.99	96.72	96.53	96.92
	ηt [%]	91.23	94.63	95.51	95.99	96.39	96.30	96.20	96.42
	ηMPP [%]	96.03	97.87	99.02	99.25	99.38	99.56	99.66	99.48
	ηMPPTstat,EUR [%]	99.25							
	ηt,EUR [%]	95.98							
	ηMPPTstat,CEC [%]	99.44							
	ηt,CEC [%]	96.16							
VDC, (360V)	PMPP, PVS [W]	310.3	620.5	1241.3	1550.9	1861.3	3101.8	4652.7	6204.3
	PDC [W]	296.5	608.5	1229.4	1539.2	1849.3	3090.3	4639.7	6180.8
	VMPP, PVS [V]	360.8	356.2	356.2	356.2	358.5	356.2	356.2	356.2
	VDC [V]	380.10	364.70	362.50	363.81	362.01	361.14	358.02	409.33
	IMPP, PVS [A]	0.86	1.74	3.48	4.35	5.19	8.71	13.06	17.42
	IDC [A]	0.78	1.67	3.39	4.23	5.11	8.56	12.98	15.10
	PAC [W]	281	587	1186	1487	1787	2989	4474	5985
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	281	587	1186	1487	1787	2989	4474	5985
	WDC [Wh]	296.5	608.5	1229.4	1539.2	1849.3	3090.3	4639.7	6180.8
	ηconv	94.77	96.47	96.47	96.61	96.63	96.72	96.43	96.83
	ηt	90.56	94.60	95.54	95.88	96.01	96.36	96.16	96.47
	ηMPP [%]	95.55	98.07	99.04	99.25	99.36	99.63	99.72	99.62
	ηMPPTstat,EUR [%]	99.31							

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

	ηt,EUR [%]	95.96							
	ηMPPTstat,CEC [%]	99.50							
	ηt,CEC [%	96.11							
Vmp Pmin VDC (140V)	PMPP, PVS [W]	310.1	620.3	1240.7	1550.7	1861.4	3101.7	4652.6	6203.4
	PDC [W]	302.2	616.6	1236.8	1545.2	1855.9	3096.3	4643.6	6192.6
	VMPP, PVS [V]	140.3	139.4	138.5	139.4	139.4	139.4	139.4	139.4
	VDC [V]	143.92	140.01	139.92	141.42	140.99	138.75	138.19	139.59
	IMPP, PVS [A]	2.21	4.45	8.96	11.12	13.35	22.25	33.38	44.50
	IDC [A]	2.10	4.40	8.84	10.93	13.16	22.32	33.60	44.36
	PAC [W]	288	590	1187	1478	1776	2959	4491	5978
	Time [s]	600	600	600	600	600	600	600	600
	WAC [Wh]	288	590	1187	1478	1776	2959	4491	5978
	WDC [Wh]	302.2	616.6	1236.8	1545.2	1855.9	3096.3	4643.6	6192.6
	ηconv [%]	95.30	95.69	95.97	95.65	95.69	95.57	96.71	96.53
	ηt [%]	92.87	95.12	95.67	95.31	95.41	95.40	96.53	96.37
	ηMPP [%]	97.45	99.40	99.69	99.65	99.70	99.83	99.81	99.83
	ηMPPTstat,EUR [%]	99.70							
	ηt,EUR [%]	95.54							
	ηMPPTstat,CEC [%]	99.76							
	ηt,CEC [%]	96.05							

Note:
c-Si: cSi-technology TF: Thin film technology
PMPP, PVS: MPP power provided by the PV simulator PDC: measured input power of the device under test VDC: measured input voltage of the device under test IMPP, PVS: MPP current provided by the PV simulator IDC: measured input current of the device under test
ηMPPTstat,*EUR* = 0,03xηMPP_5% + 0,06xηMPP_10% + 0,13xηMPP_20% + 0,1xηMPP_30% + 0,48xηMPP_50% + 0,2xηMPP_100%
ηMPPTstat,*CEC* = 0,04xηMPP_10% + 0,05xηMPP_20% + 0,12xηMPP_30% + 0,21xηMPP_50% + 0,53xηMPP_75% + 0,05xηMPP_100%
ηt= PAC/ PMPP, PVS

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Cl. 4.4	TABLE: Test conditions for dynamic MPPT efficiency							P
Ambient temperature: 25°C								
Test sequence with ramps 10%-50%								
From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
100-500	400					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dy n,I %	Overall efficiency
2	0.5	800	10	800	10	3540	95.83	96.17%
2	1	400	10	400	10	1940	96.45	
3	2	200	10	200	10	1560	96.33	
4	3	133	10	133	10	1447	96.53	
6	5	80	10	80	10	1380	96.59	
8	7	57	10	57	10	1374	95.73	
10	10	40	10	40	10	1300	96.12	
10	14	29	10	29	10	1071	95.34	
10	20	20	10	20	10	900	96.32	
10	30	13	10	13	10	767	96.25	
10	50	8	10	8	10	660	96.36	

Test sequence with ramps 30%-100%								
From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
300-1000	700					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dy n,I %	Overall efficiency
10	10	70	10	70	10	1900	95.15	96.13%
10	14	50	10	50	10	1500	96.16	
10	20	35	10	35	10	1200	96.37	
10	30	23	10	23	10	967	96.19	
10	50	14	10	14	10	780	96.23	
10	100	7	10	7	10	640	96.72	

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Start up and shut-down test with slow ramps

From-to W/m2	Delta W/m2		Dwell time s			Waiting time s		
10-100	90					300		
No.	Slope W/m2/s	Ramp ups	Dwell time	Ramp down	Dwell time	Duration	ηMPP,dyn,I %	Overall efficiency
1	0.1	980	30	980	30	2320	96.08%	-----

Note:

$$\eta_{MPPTdyn,t} = \frac{1}{N}\sum_{i=1}^{N} a_i \cdot \eta_{MPPTdyn,i}$$

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

Photographs of Equipment

Front view

Rear view

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

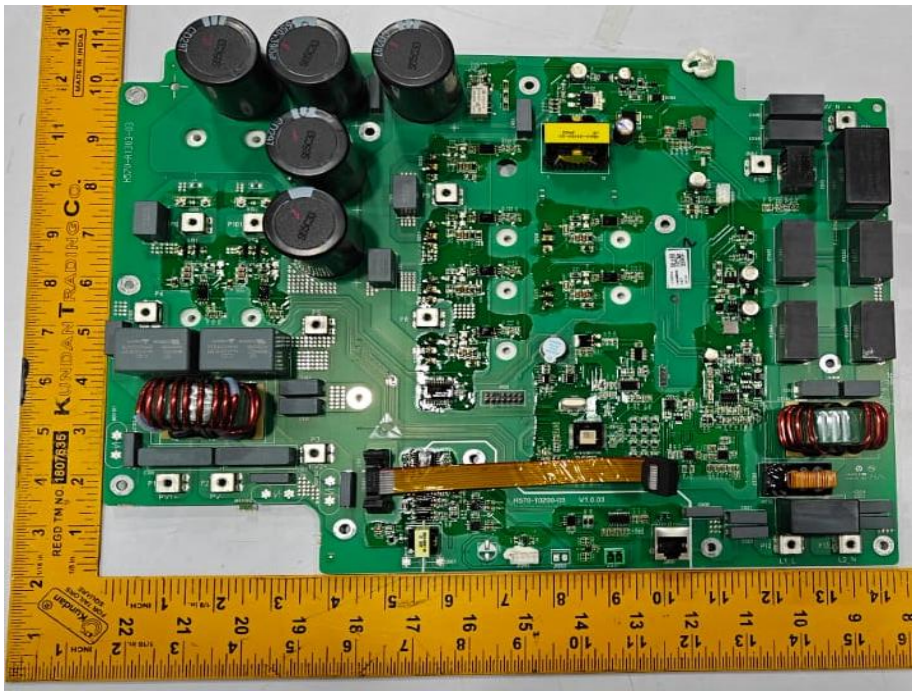
HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422

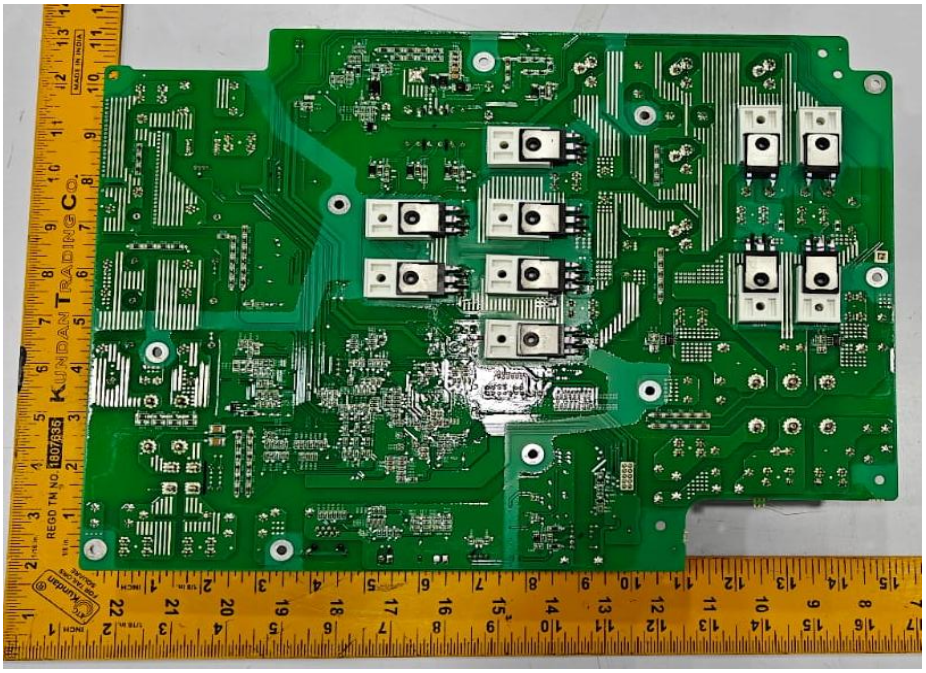
	**Internal construction view**
	**PV TERMINALS AND GRID**

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

HI PHYSIX
A BUREAU VERITAS COMPANY

HI PHYSIX LABORATORY INDIA PVT. LTD.
B-32/1/2, MIDC, Ranjangaon, Pune, Maharashtra
info@hiphysix.com, infohplindia@gmail.com
Phone : 02138 - 232901, 232902, 232903
CIN : U74120DL2009PTC194754
Mobile 1 : +91 7768005400
Mobile 2 : +91 7768005411
Mobile 3 : +91 7768005422





PCB Front and Rear View

……..……..……..…..End of Test report……..……..…..

www.hiphysix.com
Registered Office : Shop no.307, Third Floor, Vardhman Vasundhara Plaza
Plot No1, LSC, Vasundhara Enclave,Delhi-110096, India

To Whom It May Concern

	Lead Model	Series Models								
	KSY-6.2KW-1P-22A	KSY-6KW-1P-22A	KSY-5.4KW-1P-22A	KSY-5KW-1P-22A	KSY-4.4KW-1P-22A	KSY-4KW-1P-22A	KSY-3KW-1P-22A	KSY-3.4KW-1P-22A	KSY-2KW-1P-22A	KSY-1KW-1P-22A
Static efficiency - c-Si (crystalline)										
Conversion efficiency η_{conv} [%]	96.36	96.32	96.24	96.30	96.34	96.22	96.32	96.20	96.34	96.27
Min. overall efficiency η_t [%]	96.02	95.94	95.98	96.01	96.03	95.88	96.04	96.01	96.03	95.96
MPPT efficiency η_{MPP} [%]	98.94	98.90	98.91	98.88	98.96	98.80	98.90	98.85	98.91	98.94
European MPPT efficiency $\eta_{MPPTstat, EUR}$ [%]	99.30	99.32	99.22	99.20	99.32	99.10	99.25	99.20	99.26	99.28
European overall efficiency $\eta_{t,EUR}$ [%]	95.75	95.68	95.72	95.66	95.74	95.53	95.76	95.66	95.74	95.70
CEC MPPT efficiency $\eta_{MPPTstat, CEC}$ [%]	99.55	99.45	99.54	99.55	99.40	99.46	99.58	99.55	99.40	99.55
CEC overall efficiency $\eta_{t,CEC}$ [%]	96.10	96.02	96.12	96.08	96.10	96.15	96.06	96.08	96.15	96.04
Dynamic efficiency - c-Si (crystalline)										
Overall Efficiency $\eta_{MPPTdyn,t}$ [%]	96.22	96.12	96.10	96.18	96.20	96.21	96.28	96.09	96.24	96.12

Ksolare Energy Pvt. Ltd. Pune

We hereby declare that the efficiency of our solar inverters is as follows:

This declaration is valid for the specified models and provided for the purpose of product registration and certification processes.

Authorized Signatory:

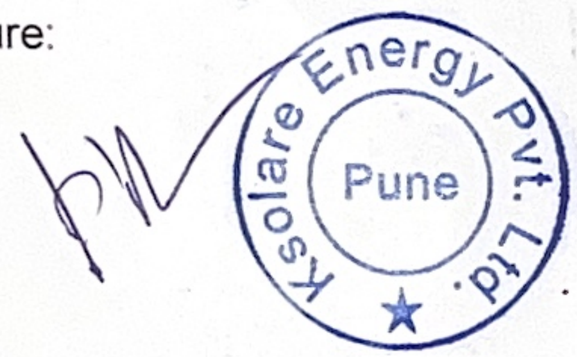
Name: SUNIL VASANT SINNARKAR

Designation: MANAGING DIRECTOR

Company: KSOLARE ENERGY PVT. LTD.

Date: 05/12/2025

Stamp & Signature:



To Whom It May Concern

	Lead Model	Series Models								
	KSY-6.2KW-1P-22A	KSY-6KW-1P-22A	KSY-5.4KW-1P-22A	KSY-5KW-1P-22A	KSY-4.4KW-1P-22A	KSY-4KW-1P-22A	KSY-3KW-1P-22A	KSY-3.4KW-1P-22A	KSY-2KW-1P-22A	KSY-1KW-1P-22A
Static efficiency - TF (Thin Film)										
Conversion efficiency η_{conv} [%]	96.24	96.22	96.14	96.12	96.20	96.02	96.12	96.18	96.09	96.05
Min. overall efficiency η_t [%]	95.57	95.44	95.42	95.64	95.53	95.48	95.44	95.57	95.38	95.46
MPPT efficiency η_{MPP} [%]	98.75	98.60	98.64	98.88	98.96	98.80	98.90	98.85	98.91	98.94
European MPPT efficiency $\eta_{MPPTstat, EUR}$ [%]	99.21	99.12	99.16	99.20	99.32	99.10	99.25	99.20	99.26	99.28
European overall efficiency $\eta_{t,EUR}$ [%]	95.58	95.38	95.32	95.53	95.44	95.35	95.26	95.36	95.24	95.30
CEC MPPT efficiency $\eta_{MPPTstat, CEC}$ [%]	99.32	99.25	99.14	99.15	99.40	99.46	99.58	99.55	99.40	99.55
CEC overall efficiency $\eta_{t,CEC}$ [%]	96.01	95.92	95.80	96.84	95.81	95.65	95.71	96.68	95.55	95.64
Dynamic efficiency - TF (Thin Film)										
Overall Efficiency $\eta_{MPPTdyn,t}$ [%]	96.11	96.13	96.01	96.06	96.11	96.11	96.11	96.11	96.11	96.11

Ksolare Energy Pvt. Ltd. Pune

We hereby declare that the efficiency of our solar inverters is as follows:

This declaration is valid for the specified models and provided for the purpose of product registration and certification processes.

Authorized Signatory:

Name: SUNIL VASANT SINNARKAR

Designation: MANAGING DIRECTOR

Company: KSOLARE ENERGY PVT. LTD.

Date: 05/12/2025

Stamp & Signature: