



Korea Testing Certification

Test Report

Report No. : T2016-12706

Company : HANYANG ELECTRIC CO.,LTD
 Representative : Yang Kyuhyun, Yang Jeungil
 Address : 28, Myeongbongsan-ro 114beon-gil, Jori-eup, Paju-si, Gyeonggi-do, Republic of Korea

- Product Name : Grid-tied Inverter for photovoltaic[Manufacturer:HANYANG ELECTRIC CO.,LTD]
 - Type and Model : 3P4W, 380/220 V, 60 Hz, 20 kW / HYPIS-KL3
- Use of Report : For Quality Management
- Date of Receipt : 2016. 12. 05.
- Date of Test : 2016. 12. 05. - 2017. 01. 09.
- Testing Method : The applicant's proposed standard
- Test Results : Attached test result

Tested by : TAEHWAN,KIM

김태환

Approved by : yooseok kim

김유석

- This report is based on the test and analysis performed with the sample(s) submitted by the client.
 Therefore, the report does not guarantee the quality of entire products.
- This report should not be used for advertising, lawsuit, etc. without any official permission of KTC.
 It is only used for the purpose of the quality test.
- The copy of this report is invalid for use.
- This test report is the translated version issued as the test report No. T2016-12706
 (Date of issue: 2017. 01. 24.) without amendments.

2017. 01. 24.



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Test Sample Overview

Test report number : T2016-12706

* Test sample specification and model name

Model name : HYPIS-KL3

(1) Electricity of grid-connection, Voltage, Frequency

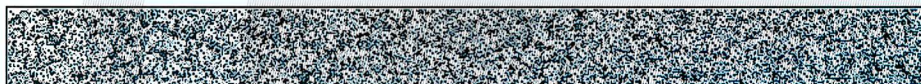
3Ø4W, 380/220 V, 60 Hz, 20 kW, Transless type

(2) DC input range

180 Vdc - 1000 Vdc

(3) S/N

1612B902KL3



Test Results

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Test subject	Criteria	Unit	Measurements
Output Over Voltage	The protective level is $+10 \pm 2$ % of nominal voltage.	%	+ 9.31
	The operating level is within 1.0 sec.	sec	0.75
Output Under Voltage	The protective level is -12 ± 2 % of nominal voltage.	%	- 11.39
	The operating level is within 2.0 sec.	sec	0.73
Frequency Rise	The protective level is $+0.5 \pm 0.05$ Hz of standard frequency.	Hz	60.49
	The operating level is within 0.16 sec.	sec	0.11
Frequency Decline	The protective level is -0.7 ± 0.05 Hz of standard frequency.	Hz	59.32
	The operating level is within 0.16 sec.	sec	0.12
Islanding Protection	Switching device should open and gate block function should operate within 0.5 sec.	sec	0.44
Power Factor	Power factor should be over than 0.95.	-	0.99
Rapidly Changing Input Power	Inverter should track rapid changes in DC Input Power for stable operation.	-	Stable
Fixed time closing block after re-energizing	EUT should not be re-operated more than 5 minutes after power recovery.	-	5 min 9 sec
Harmonic	Output current distortion rate should be not more than 5 % for total current distortion rate.	%	1.63
	Output current distortion rate should be not more than 3 % for each current harmonic distortion rate.		1.21
Conversion Efficiency	Conversion efficiency at rated output should be greater than 90 %.(at 50 % output)	%	97.52
EURO Efficiency	EURO efficiency at rated output should be greater than 90 %.	%	97.18



Test Results

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Test subject	Criteria	Unit	Measurements
DC Output Current Detection	Should be within 0.5 % of rated output current of protection level.	%	0.13
Maximum Power Tracking	Maximum power tracking efficiency should be over 95 %.	%	99.95
Standby Loss	Standby loss should be under 100 W.	W	14.00
Ingress Protection	IP 65 be satisfied according to KS C IEC 60529 : 2006	-	Pass

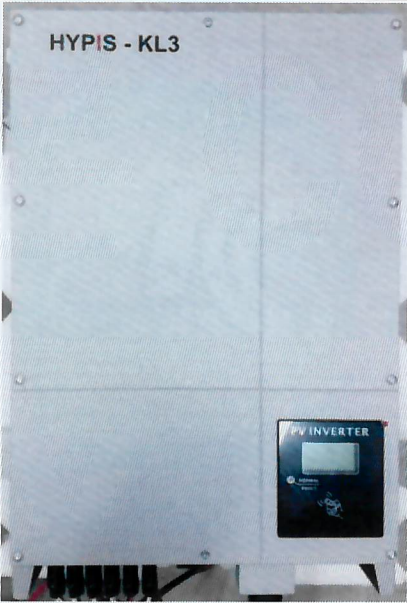
Note : 1. The above test results show the results of the sample provided by the client.
2. Attachment : Photos of test sample.



Photos of Test sample

Test report number : T2016-12706

Front of sample



Marking of sample

