

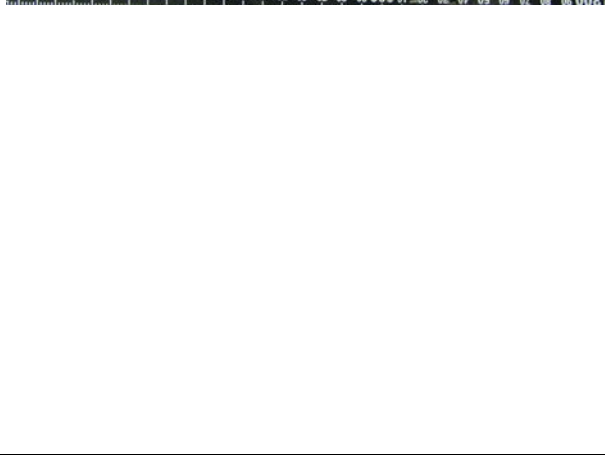
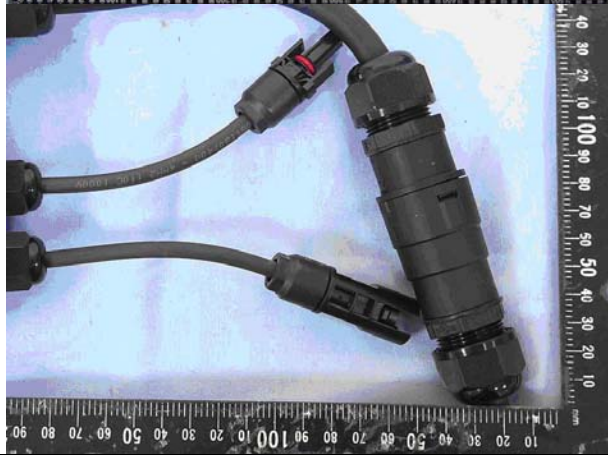
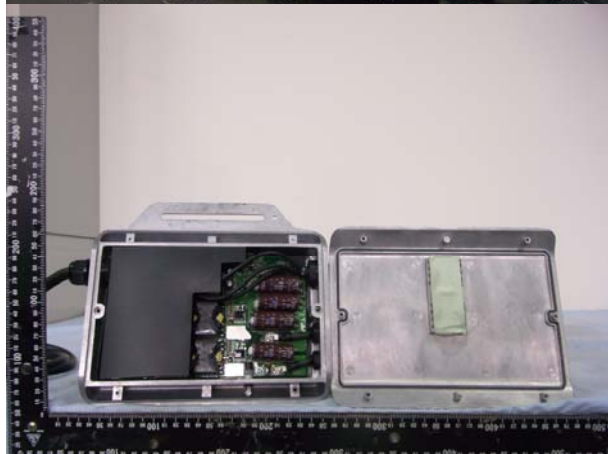


Prüfbericht - Nr.: 10034542 001		Seite 1 von 1	
<i>Test Report No.:</i>		<i>Page 1 of 1</i>	
Auftraggeber: <i>Client:</i>	i-Energy Corporation Ltd. 7F.-4, No. 128, Sec. 3, Minsheng E. Rd., SONGSHAN DIST., TAIPEI CITY 105 TAIWAN.		
Gegenstand der Prüfung: <i>Test item:</i>	PV MICRO-INVERTER		
Bezeichnung: <i>Identification:</i>	GT260	Serien-Nr.: <i>Serial No.:</i>	Engineering Samples
Wareneingangs-Nr.: <i>Receipt No.:</i>	TCH32301	Eingangsdatum: <i>Date of receipt:</i>	Nov., 2011
Prüfört: <i>Testing location:</i>	TUV Rheinland Taiwan Ltd., Taichung Laboratory No. 9, Ln. 36, Sec. 3, Minsheng Rd., Daya District, Taichung City 428, Taiwan		
Prüfgrundlage: <i>Test specification:</i>	IEC 60529: 2001		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>		
Prüflaboratorium: <i>Testing Laboratory:</i>	TUV Rheinland Taiwan Ltd.		
geprüft/ tested by:	kontrolliert/ reviewed by:		
 13/01/2012 Best Chen / Senior Manager Datum Name/Stellung Unterschrift Date Name/Position Signature		 13/01/2012 David Lee / General Manager Datum Name/Stellung Unterschrift Date Name/Position Signature	
Sonstiges/ Other Aspects:			
This test report consists of 9 pages for IP66 test, which critical components shall be linked to report no. 10034543 001.			
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</p> <p><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>			

TEST REPORT IEC 60529 Degrees of protection provided by enclosures (IP code)	
Report reference No.	: 10034542 001
Compiled by (+ signature)	: See cover sheet
Approved by (+ signature)	: See cover sheet
Date of issue	: See cover sheet
Testing laboratory	: TÜV Rheinland Taiwan Ltd., Taichung Laboratory.
Address	: No. 9, Ln. 36, Sec. 3, Minsheng Rd., Daya District, Taichung City 428, Taiwan
Testing location	: As above
Applicant.....	: i-Energy Corporation Ltd.
Address	: 7F.-4, No. 128, Sec. 3, Minsheng E. Rd., SONGSHAN DIST., TAIPEI CITY 105 TAIWAN.
Standard.....	: IEC 60529: 2001
Test Report Form No.	: T529B
TRF originator.	: TÜV Rheinland Taiwan Ltd., Taichung Laboratory.
Master TRF	: 02.2002
Copyright blank test report.....	: TÜV Rheinland Taiwan Ltd., Taichung Laboratory.
Test procedure	: TÜV Rheinland-Partial Test Report
Procedure deviation.....	: N/A
Non-standard test method	: N/A
Type of test object.....	: PV MICRO-INVERTER
Model/type reference	: GT260
Possible test case verdicts:	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement.....	: P(ass)
- test object does not meet the requirement	: Fail
<p>Clause numbers between brackets refer to clauses in IEC60529.</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see Annex #)" refers to an annex appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p>	

Photos:



IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
4.	Designations:		P
4.1	Arrangement of the IP Code: IP66 degree defined by manufacturer	IP66 for equipment which should in the manual and label.	P

11	General requirements for tests		P
11.1	Atmospheric conditions for water or dust tests		P
	Unless otherwise specified in the relevant product standard, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.		—
	The recommended atmospheric conditions during the tests are as follows:		—
	Temperature range: 15°C to 35°C	24 °C	P
	Relative humidity: 25 % to 75 %	58 %	P
	Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar)	1010 mbar	P
11.2	Test samples		P
	The tests specified in this standard are type tests		P
	Unless otherwise specified in a relevant product standard, the test samples for each test shall be in a clean and new condition, with all parts in place and mounted in the manner stated by the manufacturer.	No specified	N/A
	If it is impracticable to test the complete equipment, representative parts or smaller equipment having the same full-scale design details shall be tested.	Ditto	N/A
	The relevant product standard shall specify details such as:		P
	- the number of sample to be tested;	1 sample was conducted	P
	- conditions for mounting, assembling and positioning of the samples, for example by the use of an artificial surface (ceiling, floor or wall)	The sample was placed horizontally on the supporting table and vertical fixed on the wall.	P
	- the pre-conditioning, if any, which is to be used;		N/A
	- whether to be tested energized or not;	Without energized	P
	- whether to be tested with its parts in motion or not.		N/A

IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
	In the absence of such specification, the manufacturer's instructions shall apply.		N/A

13	TESTS FOR PROTECTION AGAINST SOLID FOREIGN OBJECTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL			P	
13.1	Test means			—	
	Test means and the main test conditions are given in Tab. VII.				
	Tab. VII-7 Test means for the tests for protection against solid foreign objects			—	
	First characteristic numeral	Test means	Test force	Test conditions	—
	0	<i>No test required</i>	—	—	N/A
	1	<i>Rigid sphere without handle or guard 50 mm diameter</i>	50 N ± 10%	13.2	N/A
	2	<i>Rigid sphere without handle or guard 12,5 mm diameter</i>	30 N ± 10%	13.2	N/A
	3	<i>Rigid steel rod 2,5 mm diameter with edges free from burrs</i>	3 N ± 10%	13.2	N/A
	4	<i>Rigid steel wire 1 mm diameter with edges free from burrs</i>	1 N ± 10%	13.2	N/A
	5	<i>Dust chamber Fig. 2, with or without underpressure</i>	—	13.4 and 13.5	N/A
	6	<i>Dust chamber Fig. 2, with underpressure</i>	—	13.4 and 13.6	P
13.4	Dust test for first characteristic numerals 5 and 6			—	
	The test is made using a dust chamber incorporating the basic principles shown in Fig. 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 mm and the nominal width of a gap between wires 75 mm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.				P
	Enclosures are of necessity in one of two categories:				—

IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
	Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, e.g., due to thermal cycling effects.		P
	Category 2: Enclosures where no pressure difference relative to the surrounding air is present		N/A
	Category 1 enclosures:		—
	The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump.		P
	The suction connection shall be made to a hole specially provided for this test.		N/A
	If not otherwise specified in the relevant product standard, this hole shall be in the vicinity of the vulnerable parts.		N/A
	If it is impracticable to make a special hole, the suction connection shall be made to the cable inlet hole.		N/A
	If there are other holes (e.g., more cable inlet holes or drain-holes) these shall be treated as intended for normal use on site.		P
	The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour. .		N/A
	In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in Fig. 2.		P
	If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h.		N/A
	If, with a maximum depression of 2 kPa (20 mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8 h has elapsed.		N/A
	or a period of 8 h has elapsed.		P
	Category 2 enclosures:		—

IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
	The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump.		N/A
	Any drain-hole normally open shall be left open for the duration of the test.		N/A
	The test shall be continued for a period of 8		N/A
	Category 1 and category 2 enclosures:		—
	If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall be applied:		N/A
	testing of individually enclosed sections of the enclosure;		N/A
	testing of representative parts of the enclosure, comprising components such as doors, ventilation openings, joints, shaft seals, etc., in position during test;		N/A
	testing of a smaller enclosure having the same full-scale design details.		N/A
	In the last two cases, the volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale		N/A
13.6	Special conditions for first characteristic numeral 6		—
13.6.1	Test conditions for first characteristic numeral 6		—
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		P
13.6.2	Acceptance conditions for first characteristic numeral 6		—
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.	No dust entered into the sample.	P

14	Tests for protection against water indicated by the second characteristic numeral.		P
14.1	Test means: (Test means and the main test conditions are given in table 8.)		P
	- 0: No test required		N/A
	- 1: Drip box, Figure 3, Enclosure on turntable.		N/A

IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
	- 2: Drip box, Figure 3, Enclosure in 4 fixed positions of 15° tilt.		N/A
	- 3: Oscillating tube, figure 4, Spray ± 60° from vertical, distance max. 200 mm or Spray nozzle, Figure 5, Spray ± 60° from vertical.		N/A
	- 4: As for number 3, Spray ± 180° from vertical		N/A
	- 5: Water jet hose nozzle, Figure 6, Nozzle 6.3 mm diameter, distance 2.5 m to 3 m.		N/A
	- 6: Water jet hose nozzle, Figure 6, Nozzle 12.5 mm diameter, distance 2.5 m to 3 m.	See clause 14.2.1 and 14.3	P
	- 7: Immersion tank, Water-level on enclosure: 0.15 m above bottom.		N/A
	- 8: Immersion tank, Water-level on enclosure: by agreement		N/A
14.2.1	Test for second characteristic numeral 6 with the 12.5mm nozzle		P
	The test is made with a device which produces a uniform flow of water drops over the whole area of the enclosure.		—
	An example of such a device is shown in figure 3 a).		—
	The turntable on which the enclosure is placed has a rotation speed of 1 r/min and the eccentricity (distance between turntable axis and specimen axis) is approximately 100mm		—
	The enclosure under test is placed in its normal operating position under the drip box, the base of which is larger than that of the enclosure. Except for enclosures designed for wall or ceiling mounting, the support for the enclosure under test should be smaller than the base of the enclosure.		—
	An enclosure normally fixed to a wall or ceiling is fixed its normal position of use to a wooden board having dimensions which are equal to those of that surface of enclosure which is in contact with the wall or ceiling when the enclosure is mounted as in normal use.		—

IEC 60529			
Clause	Requirement-Test	Result - Remark	Verdict
	The total duration of the test is 10 min.		—
14.3	Acceptance conditions		P
	After the test, the enclosure shall be inspected for ingress of water.	No trace of water inside the sample.	P
	It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.	No requirements for the sample.	N/A
	In general, if any water has entered, it shall not:	No water entered into the sample.	N/A
	- be sufficient to interfere with the correct operation of the equipment or impair safety;		N/A
	- deposit on insulation parts where it could lead to tracking along the creepage distances;		N/A
	- reach live parts or windings not designed to operate when wet;		N/A
	- accumulate near the cable end or enter the cable if any.		N/A
	If the enclosure is provided with drain-hole, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.	No drain-hole used	N/A
	For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.	No trace of water inside the sample.	P