



# CERTIFICATE

## Solar Keymark Certificate

No. SP SC0938-11

### Holder/Issued to/Manufacturer

Company: Changzhou Xinwang Green Energy Co., Ltd

Address: 1999, Longcheng Road Changzhou, Jiangsu Province 213012, China

### Product name and description

Vacuum tube solar thermal collectors.

For technical information see Appendix (2 pages).

Models:	<b>AKHII1800/58-12</b> <b>AKHII1800/58-16</b> <b>AKHII1800/58-18</b> <b>AKHII1800/58-20</b> <b>AKHII1800/58-24</b>
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### Certificate

The product is found to comply with the requirements in EN 12975-1:2006+A1:2010 Solar collectors Part 1: General requirements and the Specific CEN Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN 12975-2:2006 Solar collectors Part 2: Test methods.

### Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (SP Technical Research Institute of Sweden, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

### Validity

This certificate is valid until 2021-09-30 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <http://www.solarkeymark.org>.

### Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of SP. This certificate was first issued 2011-09-28. This is issue number two.

Borås, Sweden 2017-04-27

### SP Technical Research Institute of Sweden Certification

Lennart Aronsson  
Certification Manager

Magnus Sturesson  
Certification Officer



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### SP Technical Research Institute of Sweden

Box 857, SE-501 15 Borås, Sweden

Phone: +46 10-516 50 00

E-mail/internet: [info@sp.se](mailto:info@sp.se)/[www.sp.se](http://www.sp.se)

Empowered Certification Body No. 012: SP Certification, Sweden

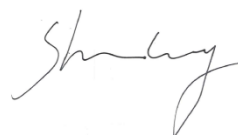
For more information of Solar Keymark visit: [www.solarkeymar.org](http://www.solarkeymar.org)

This certificate may not be reproduced other than in full, except with the prior written approval by SP. SP Certification rules SPCR402 applies.



# Appendix to Solar Keymark Certificate



Annex to Solar Keymark Certificate - Summary of EN12975-2:2006 Test Results					Licence Number		SP SC0938-11							
					Date issued		2017-04-27							
					Issued by		SP							
Licence holder		Changzhou Xingwang Green Energy Co.,Ltd			Country		China							
Brand (optional)		AUCKLAT			Web		www.aucklatsolar.com							
Street, Number		1999, longcheng Road			E-mail		Sales-aktosolar@vip.163.com							
Postcode, City		213012, Changzhou			Tel		+86 0519-83268883							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector Gb = 850 W/m <sup>2</sup> ; Gd = 150 W/m <sup>2</sup> θ <sub>m</sub> - θ <sub>a</sub>									
					Gross area (A <sub>G</sub> )	Gross length	Gross width	Gross height	0 K	10 K	30 K	50 K	70 K	50 K
					m <sup>2</sup>	mm	mm	mm	W	W	W	W	W	W
AKHII 1800/58-12					1,95	1 920	1 015	150	817	785	707	610	495	611
AKHII 1800/58-16					2,60	1 920	1 354	150	1 089	1 047	943	814	660	815
AKHII 1800/58-18					2,92	1 920	1 523	150	1 225	1 177	1 060	916	743	917
AKHII 1800/58-20					3,25	1 920	1 692	150	1 361	1 308	1 178	1 017	825	1 019
AKHII 1800/58-24					3,79	1 920	1 975	150	1 589	1 527	1 375	1 187	963	1 189
Power output per m <sup>2</sup> gross area									419	403	363	313	254	314
Performance parameters test method					Steady state - outdoor									
Performance parameters (related to AG)					η <sub>0,hem</sub>	a <sub>1</sub>	a <sub>2</sub>							
Units					-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )							
Test results					0,419	1,518	0,012							
Incidence angle modifier test method					Steady state - outdoor									
Bi-directional incidence angle modifiers					Yes									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					K <sub>θT, coll</sub>	1,02	1,04	1,12	1,19	1,32	1,45	0,97	0,48	0,00
Longitudinal					K <sub>θL, coll</sub>	0,98	0,96	0,95	0,93	0,91	0,68	0,46	0,23	0,00
Heat transfer medium for testing					Water-Glycole									
Flow rate for testing (per gross area, A <sub>G</sub> )					dm/dt		0,020	kg/(sm <sup>2</sup> )						
Maximum temperature difference for thermal performance calculations					(θ <sub>m</sub> -θ <sub>a</sub> ) <sub>max</sub>		49,8	K						
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; θ <sub>a</sub> = 30 °C)					θ <sub>stg</sub>		210	°C						
Effective thermal capacity, incl. fluid (per gross area, A <sub>G</sub> )					C/m <sup>2</sup>		18,6	kJ/(Km <sup>2</sup> )						
Maximum operating temperature					θ <sub>max, op</sub>		120	°C						
Maximum operating pressure					p <sub>max, op</sub>		900	kPa						
Testing laboratory					Intertek Testing Services Shenzhen Ltd. Guangzhou Branch			http://www.intertek.com						
Test report(s)					GZ11051337-1			Dated		2011-09-15				
Comments of testing laboratory					Datashet version: 5.01, 2016-03-01									
Negative pressure test was not performed for ETC collector.														
<b>Certification Body:</b> SP Technical Research Institute of Sweden Box 857, 501 15 Borås, Sweden www.sp.se info@sp.se tel +4610 516 5000														

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	SP SC0938-11
	Issued	2017-04-27

Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$ based on EN 12975-2 test results													
Collector name	Standard Locations $\vartheta_m$	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
AKHII 1800/58-12		1 450	1 112	769	1 141	832	540	843	594	379	913	643	403
AKHII 1800/58-16		1 934	1 484	1 026	1 522	1 110	721	1 125	793	505	1 218	858	537
AKHII 1800/58-18		2 175	1 669	1 154	1 712	1 249	811	1 265	892	569	1 370	965	604
AKHII 1800/58-20		2 416	1 854	1 282	1 902	1 388	901	1 406	991	632	1 522	1 072	671
AKHII 1800/58-24		2 821	2 164	1 496	2 221	1 620	1 051	1 641	1 156	737	1 776	1 251	784
Annual output per m <sup>2</sup> gross area		744	571	394	586	427	277	433	305	194	468	330	207
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m <sup>2</sup>			1714 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>		
Mean annual ambient air temperature		18,5°C			3,2°C			7,5°C			9,0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		

The collector is operated at constant temperature  $\vartheta_m$  (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 5.01 (March 2016). A detailed description of the calculations is available at [www.solarkeymark.org/scenocalc](http://www.solarkeymark.org/scenocalc)

Additional Information		
Collector heat transfer medium	Water-Glycole	
Hybrid Thermal and Photo Voltaic collector	No	
The collector is deemed to be suitable for roof integration	No	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	C	--
Maximum tested positive load	2400	Pa
Maximum tested negative load	--	Pa
Hail resistance using steel ball (maximum drop height)	--	m

Energy Labelling Information			
	Reference Area, $A_{sol}$ (m <sup>2</sup> )	Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$	
AKHII 1800/58-12	1,95	Collector efficiency ( $\eta_{col}$ )	34 %
AKHII 1800/58-16	2,60	<i>Remark: Collector efficiency (<math>\eta_{col}</math>) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m<sup>2</sup>, expressed in % and rounded to the nearest integer. Deviating from the regulation <math>\eta_{col}</math> is based on reference area (<math>A_{sol}</math>) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.</i>	
AKHII 1800/58-18	2,92		
AKHII 1800/58-20	3,25		
AKHII 1800/58-24	3,79		
		Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$	
		Zero-loss efficiency ( $\eta_0$ )	0,419 --
		First-order coefficient ( $a_1$ )	1,52 W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,012 W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	1,11 --
		<i>Remark: The data given in this section are related to collector reference area (<math>A_{sol}</math>) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.</i>	

**Certification Body:**

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[www.sp.se](http://www.sp.se) [info@sp.se](mailto:info@sp.se) tel +4610 516 5000