



CERTIFICATE

Solar Keymark Certificate

No. SP SC0239-17

Holder/Issued to/Manufacturer

Company: Himin Solar Co., Ltd.

Address: Sun-Moon Mansion, Solar Valley Road, Economic Development Zone, Dezhou City, Shandong, China

Product name and description

Vacuum tube solar thermal collectors for water heating

For technical information see Appendix (2 pages).

Models:	JPS-20TT18	JPS-20TT21
	JPS-25TT18	JPS-25TT21
	JPS-30TT18	JPS-30TT21

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 ISO 9806:2013 Solar thermal collectors – 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 2022-04-12 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 is the first version of this certificate.

Borås, Sweden 2017-04-12

SP Technical Research Institute of Sweden Certification

Lennart Aronsson
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Certification Officer



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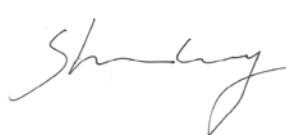
Empowered Certification Body No. 012: SP Certification, Sweden

For more information of Solar Keymark visit: 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.



Annex to Solar Keymark Certificate

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		SP SC0239-17																	
					Date issued		2017-04-12																	
					Issued by		SP																	
Licence holder		Himin Solar Co.,Ltd			Country		China																	
Brand (optional)		Himin			Web		http://www.himin.com																	
Street, Number		Sun-Moon Mansion, Solar Valley Road, Economic Development Zone					E-mail		info@himin.com															
Postcode, City		253000-Dezhou city, ShanDong Province			Tel		+86 5345089643																	
Collector Type					Evacuated tubular collector																			
Collector name					Gross area (A_G)		Gross length		Gross width		Gross height		Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² θ _m - θ _a											
					m ²		mm		mm		mm		0 K		10 K		30 K		50 K		70 K		64 K	
					W		W		W		W		W		W		W		W					
JPS-20TT18					3,31		1 915		1 730		136		1 436		1 393		1 307		1 222		1 136		1 162	
JPS-25TT18					4,08		1 915		2 130		136		1 767		1 715		1 609		1 504		1 399		1 430	
JPS-30TT18					4,84		1 915		2 500		136		2 099		2 037		1 912		1 787		1 661		1 699	
JPS-20TT21					3,93		2 270		1 730		136		1 702		1 651		1 550		1 448		1 347		1 377	
JPS-25TT21					4,84		2 270		2 130		136		2 095		2 033		1 908		1 783		1 658		1 696	
JPS-30TT21					5,68		2 270		2 500		136		2 459		2 386		2 239		2 093		1 946		1 990	
Power output per m² gross area					433		420		395		369		343		351									
Performance parameters test method					Steady state - outdoor																			
Performance parameters (related to AG)					η _{0,hem}		a ₁		a ₂															
Units					-		W/(m ² K)		W/(m ² K ²)															
Test results					0,433		1,291		0,000															
Incidence angle modifier test method					Quasi dynamic - outdoor																			
Bi-directional incidence angle					Yes																			
Incidence angle modifier					Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
Transversal					K _{G,T, coll}		1,03		1,06		1,11		1,15		1,20		1,26		0,84		0,42		0,00	
Longitudinal					K _{G,L, coll}		0,99		0,98		0,97		0,95		0,90		0,85		0,57		0,28		0,00	
Heat transfer medium for testing					Water																			
Flow rate for testing (per gross area, A_G)					dm/dt		0,014		kg/(sm ²)															
Maximum temperature difference for thermal performance calculations					(θ _m -θ _a) _{max}		64		K															
Standard stagnation temperature (G = 1000 W/m²; θ_a = 30 °C)					θ _{stg}		230		°C															
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²		80		kJ/(Km ²)															
Maximum operating temperature					θ _{max, op}		150		°C															
Maximum operating pressure					p _{max, op}		60		kPa															
Testing		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					http://www.Intertek.com																	
Test report(s)		160728026GZU-001					Dated		2017-02-13															
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01																			
Test flow rate was determined according to client requirement.																								
Internal thermal shock test was not performed as client claim that water should continuously flow through collector to protect it.																								
Certification Body: 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

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	SP SC0239-17
	Issued	2017-04-12

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
Collector name	Standard Locations ϑ_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
JPS-20TT18		2 539	2 129	1 778	2 095	1 749	1 460	1 519	1 222	989	1 638	1 317	1 058
JPS-25TT18		3 126	2 622	2 189	2 580	2 153	1 798	1 870	1 505	1 218	2 016	1 622	1 303
JPS-30TT18		3 713	3 114	2 600	3 064	2 557	2 135	2 221	1 788	1 446	2 395	1 926	1 548
JPS-20TT21		3 010	2 524	2 108	2 484	2 073	1 731	1 800	1 449	1 172	1 941	1 561	1 255
JPS-25TT21		3 706	3 108	2 595	3 058	2 552	2 131	2 216	1 784	1 443	2 390	1 922	1 545
JPS-30TT21		4 349	3 647	3 046	3 589	2 996	2 501	2 601	2 094	1 694	2 805	2 256	1 813
Annual output per m ² gross area		766	643	537	633	528	441	458	369	298	494	398	319
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
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 ϑ_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

Additional Information

Collector heat transfer medium	Water
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)	B --
Maximum tested positive load	2800 Pa
Maximum tested negative load	2400 Pa
Hail resistance using steel ball (maximum drop height)	0,6 m

Energy Labelling Information

	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
JPS-20TT18	3,31	Collector efficiency (η_{col})	38 %
JPS-25TT18	4,08	Remark: Collector efficiency (η_{col}) 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 ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{col} is based on reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.	
JPS-30TT18	4,84		
JPS-20TT21	3,93		
JPS-25TT21	4,84		
JPS-30TT21	5,68		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0,433 --
		First-order coefficient (a_1)	1,29 W/(m ² K)
		Second-order coefficient (a_2)	0,000 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	1,09 --
Remark: The data given in this section are related to collector reference area (A_{sol}) 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.			