

Annex to Solar Keymark Certificate					Licence Number		011-7S2800 F							
					Date issued		2022-11-08							
					Issued by		DIN CERTCO							
Licence holder		Zhejiang Jiajiare New Energy Co., Ltd.			Country		China							
Brand (optional)		Jiajiare			Web		www.jiajiare.com							
Street, Number		No. 68 Yuanxi Road, Yuanhua Industrial Area			E-mail		info@jiajiare.com							
Postcode, City		Haining, 314416, Zhejiang Province			Tel		+86 (0)573 87865578							
Collector Type					Flat plate collector									
Collector name					Gross area (A_G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$					
									0 K	10 K	30 K	50 K	70 K	94 K
JJR/NAT-FPT-01					2.00	2 000	1 000	80	1 355	1 284	1 125	944	740	468
JJR/NAT-FPT-02					2.50	2 000	1 250	80	1 694	1 605	1 406	1 179	926	585
Power output per m² gross area									677	642	562	472	370	234
Performance parameters test method					Quasi dynamic									
Performance parameters (related to A_G)					η_0 , b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units					-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-
Test results					0.700	3.42	0.014	0.000	0.00	15 345	0.000	0.00	0.0E+00	0.79
Incidence angle modifier test method					Quasi dynamic - outdoor									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					K _{θT, coll}	1.00	0.99	0.98	0.95	0.91	0.84	0.70	-	0.00
Longitudinal					K _{θL, coll}	1.00	0.99	0.98	0.95	0.91	0.84	0.70	-	0.00
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt		0.020		kg/(sm ²)					
Maximum temperature difference during thermal performance test					(θ _m -θ _a) _{max}		64		K					
Standard stagnation temperature (G = 1000 W/m²; θ_a = 30 °C)					θ _{stg}		197		°C					
Maximum operating temperature					θ _{max op}		100		°C					
Maximum operating pressure					p _{max, op}		1000		kPa					
Testing laboratory					TÜV Rheinland (Shanghai) Co., Ltd.					http://www.tuv.com				
Test report(s)					154250318_Jiajiare_JJR-NAT-FPT-01_ISO_Report_Chen 154250318_Jiajiare_JJR-NAT-FPT-02_ISO_Report_Chen 50147926-001					Dated		2017-10-19 2017-10-19 2018-05-18		
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
No comment					 TÜVRheinland® Precisely Right. <i>Constant Zhu</i>									
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Supplementary Information										Issued		2022-11-08						
Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m																		
Standard Locations		Athens			Davos			Stockholm			Würzburg							
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C					
JJR/NAT-FPT-01		2 048	1 399	857	1 532	1 015	595	1 129	708	402	1 221	754	422					
JJR/NAT-FPT-02		2 560	1 749	1 071	1 915	1 269	744	1 411	885	503	1 526	943	528					
Gross Thermal Yield per m ² gross area		1 024	700	428	766	508	298	564	354	201	610	377	211					
Annual efficiency, η_a		58%	40%	24%	47%	31%	18%	48%	30%	17%	49%	30%	17%					
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)																
Annual irradiation on collector plane		1765 kWh/m ²			1630 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. 6.2 (13.01.2022). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/																		
Additional Information																		
Collector heat transfer medium										Water-Glycole								
The collector is deemed to be suitable for roof integration										No								
The collector was tested successfully under the following conditions:																		
Climate class (A+, A, B or C)										C		--						
G (W/m ²) >		800		ϑ_a (°C) >		10		H _x (MJ/m ²) >		420								
Maximum tested positive load										2400		Pa						
Maximum tested negative load										2400		Pa						
Hail resistance using steel ball (maximum drop height)										2		m						
Additional collector attribute(s)																		
Using external power source(s) for normal operation					No					Active or passive measure(s) for self-protection					No			
Co-generating thermal and electrical power					No					Façade collector(s)					No			
Energy Labelling Information										Additional Informative Technical Data								
					Reference Area, A _{sol} (m ²)					Hydraulic Designation Code					Aperture Area, A _a (m ²)			
JJR/NAT-FPT-01					2.00					8-VH-12S-A:9,1877-C:22,896					1.84			
JJR/NAT-FPT-02					2.50					10-VH-12S-A:9,1877-C:22,1120					2.32			
Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}										Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}								
Collector efficiency (η_{col})					52%					Zero-loss efficiency (η_0)					0.68		--	
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 9806:2017.										First-order coefficient (a_1)					3.42		W/(m ² K)	
										Second-order coefficient (a_2)					0.014		W/(m ² K ²)	
										Incidence angle modifier IAM (50°)					0.88		--	
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.																		
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