


Annex to Solar Keymark Certificate					Licence Number		011-7S3056 R							
					Date issued		2021-08-12							
					Issued by		DIN CERTCO							
Licence holder		Jiaxing JinYi Solar Energy Technology Co.,Ltd.			Country		China							
Brand (optional)		Jinyi			Web		www.jinyi-solar.com							
Street, Number		Caozhuang Industrial Park, Yuxin Town			E-mail		info@jinyi-solar.com							
Postcode, City		314022, Jiaxing City, Zhejiang Province.			Tel		+86 573 82848871							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector									
					G <sub>b</sub> = 850 W/m <sup>2</sup> , G <sub>d</sub> = 150 W/m <sup>2</sup> & u = 1.3 m/s θ <sub>m</sub> - θ <sub>a</sub>									
					0 K	10 K	30 K	50 K	70 K	90 K				
					W	W	W	W	W	W				
JMC-5818-10					1.56	1,944	804	132	727	714	675	615	535	433
JMC-5818-12					1.85	1,944	954	132	862	848	801	730	635	514
JMC-5818-15					2.29	1,944	1,179	132	1,066	1,048	989	902	785	635
JMC-5818-18					2.73	1,944	1,404	132	1,269	1,248	1,178	1,074	935	757
JMC-5818-20					3.02	1,944	1,554	132	1,405	1,381	1,304	1,189	1,034	837
JMC-5818-22					3.31	1,944	1,704	132	1,541	1,514	1,430	1,303	1,134	918
JMC-5818-24					3.60	1,944	1,854	132	1,676	1,648	1,556	1,418	1,234	999
JMC-5818-25					3.75	1,944	1,929	132	1,744	1,714	1,619	1,475	1,284	1,039
JMC-5818-30					4.48	1,944	2,304	132	2,083	2,047	1,934	1,762	1,534	1,242
Power output per m <sup>2</sup> gross area					465	457	432	393	342	277				
Performance parameters test method		Steady state - outdoor												
Performance parameters (related to A <sub>G</sub> )		η <sub>0</sub> , b	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	a <sub>4</sub>	a <sub>5</sub>	a <sub>6</sub>	a <sub>7</sub>	a <sub>8</sub>	K <sub>d</sub>			
Units		-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )	J/(m <sup>3</sup> K)	-	J/(m <sup>2</sup> K)	s/m	W/(m <sup>2</sup> K <sup>4</sup> )	W/(m <sup>2</sup> K <sup>4</sup> )	-			
Test results		0.462	0.632	0.016	0.000	0.000	6,345	0.000	0.000	0.000	1.04			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K <sub>θT, coll</sub>	1.03	1.06	1.16	0.95	1.37	1.47	0.98	0.49	0.00			
Longitudinal		K <sub>θL, coll</sub>	1.00	1.00	0.98	0.95	0.89	0.80	0.64	0.40	0.00			
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A <sub>G</sub> )					dm/dt	0.012	kg/(sm <sup>2</sup> )							
Maximum temperature difference during thermal performance test					(θ <sub>m</sub> - θ <sub>a</sub> ) <sub>max</sub>	60.39	K							
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; θ <sub>a</sub> = 30 °C)					θ <sub>stg</sub>	218.9	°C							
Maximum operating temperature					θ <sub>max op</sub>	125	°C							
Maximum operating pressure					p <sub>max, op</sub>	1200	kPa							
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou					http://www.intertek.com							
Test report(s)		130730059GZU-001					Dated		2013.12.19					
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
<p>1. The "negative pressure test of the collector" according to EN 12975-2:2006, 5.9.2 was not performed.</p> <p>2. Tests were performed based on EN 12975-2:2006.</p> <p>3. Above efficiency parameters come from test type JMC-5818-10.</p>					 <p>Stamp &amp; signature</p>									
<p>DIN CERTCO ● Alboinstraße 56 ● D-12103 Berlin</p> <p>Tel: +49 30 7562-1131 ● Fax: +49 30 7562-1141 ● E-Mail: info@dincertco.de ● www.dincertco.de</p>														

<b>Annex to Solar Keymark Certificate Supplementary Information</b>	<b>Licence Number</b>	<b>011-7S3056 R</b>
	<b>Issued</b>	<b>2021-08-12</b>

Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$													
Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg		
	$\vartheta_m$	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
JMC-5818-10		1,343	1,167	914	1,138	927	683	829	666	481	893	721	518
JMC-5818-12		1,593	1,384	1,085	1,350	1,100	811	983	790	570	1,059	856	615
JMC-5818-15		1,969	1,711	1,341	1,669	1,359	1,002	1,215	976	705	1,309	1,058	760
JMC-5818-18		2,345	2,037	1,597	1,988	1,618	1,193	1,447	1,163	839	1,559	1,259	905
JMC-5818-20		2,595	2,255	1,767	2,200	1,791	1,320	1,601	1,287	929	1,725	1,394	1,001
JMC-5818-22		2,846	2,473	1,938	2,412	1,964	1,448	1,756	1,411	1,018	1,892	1,528	1,098
JMC-5818-24		3,096	2,690	2,109	2,625	2,137	1,575	1,911	1,535	1,108	2,058	1,663	1,195
JMC-5818-25		3,221	2,799	2,194	2,731	2,224	1,639	1,988	1,597	1,153	2,142	1,730	1,243
JMC-5818-30		3,848	3,343	2,620	3,262	2,656	1,957	2,374	1,908	1,377	2,558	2,067	1,485
Annual output per m <sup>2</sup> gross area		859	746	585	728	593	437	530	426	307	571	461	331
Annual efficiency, $\eta_a$		49%	42%	33%	45%	36%	27%	45%	37%	26%	46%	37%	27%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m <sup>2</sup>			1630 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. 6.1 (September 2019). 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 <sup>2</sup> ) >	800	$\vartheta_a$ (°C) >	10
		$H_x$ (MJ/m <sup>2</sup> ) >	420
Maximum tested positive load	3200		Pa
Maximum tested negative load	--		Pa
Hail resistance using steel ball (maximum drop height)	1		m
Additional collector attribute(s)			
<input type="checkbox"/> Using external power source(s) for normal operation	<input type="checkbox"/> Active or passive measure(s) for self-protection		
<input type="checkbox"/> Co-generating thermal and electrical power	<input type="checkbox"/> Façade collector(s)		

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, $A_{sol}$ (m <sup>2</sup> )	Hydraulic Designation Code	Aperture Area, $A_a$ (m <sup>2</sup> )
JMC-5818-10	1.56	1-H-12S-C:20,890-D	0.95
JMC-5818-12	1.85	1-H-12S-C:20,1040-D	1.13
JMC-5818-15	2.29	1-H-12S-C:20,1265-D	1.42
JMC-5818-18	2.73	1-H-12S-C:20,1490-D	1.70
JMC-5818-20	3.02	1-H-12S-C:20,1640-D	1.89
JMC-5818-22	3.31	1-H-12S-C:20,1790-D	2.08
JMC-5818-24	3.60	1-H-12S-C:20,1940-D	2.27
JMC-5818-25	3.75	1-H-12S-C:20,2015-D	2.36
JMC-5818-30	4.48	1-H-12S-C:20,2390-D	2.84

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 ( $\eta_{col}$ )	41%	Zero-loss efficiency ( $\eta_0$ )	0.47
Remark: Collector efficiency ( $\eta_{col}$ ) 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 <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ 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 ( $a_1$ )	0.63
		Second-order coefficient ( $a_2$ )	0.016
		Incidence angle modifier IAM (50°)	0.92
			--
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.			