


Annex to Solar Keymark Certificate					Licence Number		011-7S3026 R							
					Date issued		2021-07-23							
					Issued by		DIN CERTCO							
Licence holder		Zhejiang Jiadele Technology Co., Ltd.			Country		CHINA							
Brand (optional)		Jiadele			Web		http://www.sh-jiadele.com							
Street, Number		No.12 Fenghuang Rd, Dingqiao Town			E-mail		webmaster@sh-jiadele.com							
Postcode, City		314413/Haining City, Zhejiang Province			Tel		+86 573-87797662							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector									
					$G_b = 850 \text{ W/m}^2, G_d = 150 \text{ W/m}^2 \text{ \& } u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	92 K				
					m ²	mm	mm	mm	mm	mm	mm			
					W	W	W	W	W	W				
JDL-HP100A					1.54	1,920	800	110	674	654	600	527	435	314
JDL-HP120A					1.83	1,920	950	110	801	777	712	626	517	373
JDL-HP150A					2.26	1,920	1,175	110	989	960	880	773	639	460
JDL-HP180A					2.69	1,920	1,400	110	1,177	1,142	1,047	920	761	548
JDL-HP200A					2.98	1,920	1,550	110	1,304	1,265	1,160	1,019	843	607
JDL-HP240A					3.55	1,920	1,850	110	1,554	1,507	1,382	1,214	1,004	723
JDL-HP250A					3.70	1,920	1,925	110	1,620	1,571	1,440	1,265	1,046	754
JDL-HP300A					4.42	1,920	2,300	110	1,935	1,877	1,721	1,512	1,250	900
Power output per m ² gross area					438	425	389	342	283	204				
Performance parameters test method		Steady state - outdoor												
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		0.437	1.164	0.015	0.000	0.00	7,190	0.000	0.00	0.00	1.01			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		$K_{\theta T, coll}$	1.08	1.16	1.24	1.33	1.42	1.06	0.71	0.35	0.00			
Longitudinal		$K_{\theta L, coll}$	1.00	0.98	0.95	0.90	0.82	0.71	0.55	0.33	0.00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A _G)		dm/dt	0.02	kg/(sm ²)										
Maximum temperature difference during thermal performance test		$(\vartheta_m - \vartheta_a)_{max}$	62	K										
Standard stagnation temperature ($G = 1000 \text{ W/m}^2; \vartheta_a = 30 \text{ }^\circ\text{C}$)		ϑ_{stg}	210	°C										
Maximum operating temperature		$\vartheta_{max, op}$	160	°C										
Maximum operating pressure		$p_{max, op}$	600	kPa										
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					http://www.intertek.com							
Test report(s)		190823044GZU-001					Dated		2020/12/10					
Comments of testing laboratory		1. Above efficiency parameters come from test type JDL-HP100A.												
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
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
JDL-HP100A		1,246	1,011	737	1,021	784	543	748	559	380	803	600	402
JDL-HP120A		1,481	1,201	876	1,214	931	645	889	664	451	954	714	477
JDL-HP150A		1,829	1,483	1,082	1,499	1,150	797	1,097	821	557	1,178	881	590
JDL-HP180A		2,177	1,765	1,288	1,784	1,369	948	1,306	977	663	1,402	1,049	702
JDL-HP200A		2,412	1,955	1,427	1,976	1,516	1,050	1,447	1,082	735	1,553	1,162	777
JDL-HP240A		2,873	2,329	1,700	2,354	1,806	1,251	1,724	1,289	875	1,850	1,384	926
JDL-HP250A		2,995	2,428	1,771	2,454	1,883	1,304	1,796	1,343	912	1,928	1,443	965
JDL-HP300A		3,577	2,900	2,116	2,931	2,249	1,558	2,146	1,605	1,089	2,304	1,723	1,153
Annual output per m ² gross area		809	656	479	663	509	352	486	363	246	521	390	261
Annual efficiency, η_a		46%	37%	27%	41%	31%	22%	42%	31%	21%	42%	31%	21%
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. 6.1 (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)		B	--
G (W/m ²) >	900	ϑ_a (°C) >	15
		H_x (MJ/m ²) >	540
Maximum tested positive load		1500	Pa
Maximum tested negative load		1500	Pa
Hail resistance using steel ball (maximum drop height)		0.4	m

Additional collector attribute(s)

- Using external power source(s) for normal operation Active or passive measure(s) for self-protection
 Co-generating thermal and electrical power Façade collector(s)

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
JDL-HP100A	1.54	1-H-12S-C:20,875-D	0.93
JDL-HP120A	1.83	1-H-12S-C:20,1025-D	1.12
JDL-HP150A	2.26	1-H-12S-C:20,1250-D	1.40
JDL-HP180A	2.69	1-H-12S-C:20,1475-D	1.67
JDL-HP200A	2.98	1-H-12S-C:20,1625-D	1.86
JDL-HP240A	3.55	1-H-12S-C:20,1925-D	2.23
JDL-HP250A	3.70	1-H-12S-C:20,2000-D	2.33
JDL-HP300A	4.42	1-H-12S-C:20,2375-D	2.80

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})	37%	Zero-loss efficiency (η_0)	0.44
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)	1.16
		Second-order coefficient (a_2)	0.015
		Incidence angle modifier IAM (50°)	1.17
		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.	