Solar Keymark Certificate

SC0988-14

Holder/Issued to/Manufacturer

Zhejiang Jiadele Technology Co., Ltd.

No.12 Fenghuang Rd, Dingqiao Town, Haining, Jiaxing, Zhejiang, China

Product name and description

Vacuum tube solar thermal collectors for water heating.
For technical information see Appendix (2 pages).

Models:	JDL-HP100	JDL-HP150	JDL-HP180	JDL-HP200
	JDL-HP240	JDL-HP250	JDL-HP300	

Performance specification

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 (RISE Research Institutes of Sweden AB, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

Validity

This certificate is valid until 2024-11-17 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 RISE. This certificate was first issued 2014-11-17. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Signed by: Johan Åkesson
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2017-08-08

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Annex to Solar Keymark Certificate

Annex to Solar Keymark Certificate		Licence Number	SC0988-14
		Date issued	2020-02-24
		Issued by	RISE

Licence holder	Zhejiang Jiadele Technology Co., Ltd.	**Country**	CN
Brand (optional)	Jiadele	**Web**	www.sh-jiadele.com
Street, Number	No. 12 Fenghuang Road, Dingqiao Town	**E-mail**	webmaster@sh-jiadele.com
Postcode, City	314413, Haining, Zhejiang	**Tel**	+86 573-87797662

Collector Type	Evacuated tubular collector

Collector name	Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s $\vartheta_m - \vartheta_a$					
					0 K	10 K	30 K	50 K	70 K	81 K
	m²	mm	mm	mm	W	W	W	W	W	W
JDL-HP100	1,54	1 920	800	100	708	679	613	538	453	402
JDL-HP150	2,26	1 920	1 175	100	1 038	996	900	790	665	590
JDL-HP180	2,69	1 920	1 400	100	1 236	1 185	1 071	940	792	703
JDL-HP200	2,98	1 920	1 550	100	1 369	1 313	1 187	1 042	877	778
JDL-HP240	3,55	1 920	1 850	100	1 631	1 565	1 414	1 241	1 045	927
JDL-HP250	3,70	1 920	1 925	100	1 700	1 631	1 474	1 293	1 089	967
JDL-HP300	4,42	1 920	2 300	100	2 031	1 948	1 761	1 545	1 301	1 155
Power output per m² gross area					460	441	398	350	294	261

Performance parameters test method	Quasi dynamic									
Performance parameters (related to A_G)	η0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	J/(m²K)	s/m	W/(m²K⁴)	W/(m²K⁴)	-
Test results	0,462	1,80	0,008	0,000	0,00	4 524	0,000	0,00	0,00	0,96

Incidence angle modifier test method		Quasi dynamic - outdoor								
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	$K_{\theta T,coll}$	1,03	1,05	1,14	1,23	1,27	1,30	0,87	0,43	0,00
Longitudinal	$K_{\theta L,coll}$	0,98	0,96	0,94	0,92	0,90	0,68	0,43	0,23	0,00

Heat transfer medium for testing	Water		
Flow rate for testing (per gross area, A_G)	dm/dt	0,020	kg/(sm²)
Maximum temperature difference during thermal performance test	$(\vartheta_m-\vartheta_a)_{max}$	51	K
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)	ϑ_{stg}	200	°C
Maximum operating temperature	$\vartheta_{max\ op}$	120	°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)	140609195GZU-001	**Dated**	2016.12.19

Comments of testing laboratory

Datasheet version: 6.1, 2019-09-26

This data sheet replace the previous version issued on 2017-01-16;
Above efficiency parameters come from test type JDL-HP100;
Tthe efficiency parameter related to aperture area (0.94m^2) are: $\eta_{0,b}$=0.756, a_1'=2.949, a_2'=0.013

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Annex to Solar Keymark Certificate

Annex to Solar Keymark Certificate	Licence Number	SC0988-14
Supplementary Information	Issued	2020-02-24

Annual collector output 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
JDL-HP100		1 242	954	685	978	729	505	720	515	347	779	556	369
JDL-HP150		1 823	1 401	1 005	1 435	1 069	741	1 057	756	510	1 143	816	541
JDL-HP180		2 170	1 667	1 196	1 708	1 273	882	1 258	900	607	1 361	971	644
JDL-HP200		2 404	1 847	1 325	1 893	1 410	977	1 393	997	672	1 507	1 075	713
JDL-HP240		2 863	2 200	1 578	2 255	1 680	1 164	1 660	1 188	801	1 795	1 281	850
JDL-HP250		2 984	2 293	1 645	2 350	1 751	1 214	1 730	1 238	834	1 871	1 335	885
JDL-HP300		3 565	2 739	1 965	2 807	2 092	1 450	2 067	1 479	997	2 235	1 595	1 058
Annual output per m² gross area		807	620	445	635	473	328	468	335	226	506	361	239
Annual efficiency, η_a		46%	35%	25%	39%	29%	20%	40%	29%	19%	41%	29%	19%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 kWh/m²		
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 ϑm (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/m²) >	800	ϑ_a (°C) >	10	H_x (MJ/m²) >		420
Maximum tested positive load					3970	Pa
Maximum tested negative load					2400	Pa
Hail resistance using steel ball (maximum drop height)					1,0	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

	Reference Area, A_{sol} (m²)
JDL-HP100	1,54
JDL-HP150	2,26
JDL-HP180	2,69
JDL-HP200	2,98
JDL-HP240	3,55
JDL-HP250	3,70
JDL-HP300	4,42

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}

Collector efficiency (η_{col})	37%

Remark: Collector efficiency (ηcol) 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/m², expressed in % and rounded to the nearest integer. Deviating from the regulation ηcol is based on reference area (Asol) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.

Additional Informative Technical Data

Hydraulic Designation Code	Aperature Area, A_a (m²)
1-H-12S-C:20-869-D	0.94
1-H-12S-C:20-1244-D	1,41
1-H-12S-C:20-1469-D	1,69
1-H-12S-C:20-1619-D	1,88
1-H-12S-C:20-1919-D	2,26
1-H-12S-C:20-1994-D	2,35
1-H-12S-C:20-2369-D	2,82

Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}

Zero-loss efficiency (η_0)	0,46	--
First-order coefficient (a_1)	1,80	W/(m²K)
Second-order coefficient (a_2)	0,008	W/(m²K²)
Incidence angle modifier IAM (50°)	1,11	--

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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