


Annex to Solar Keymark Certificate					Licence Number		011-7S3020 R							
					Date issued		2024-07-11							
					Issued by		DIN CERTCO							
Licence holder		Zhejiang Shentai Solar Energy Co., Ltd			Country		CHINA							
Brand (optional)		Suntask, SHENTAL			Web		www.suntasksolar.com							
Street, Number		199 lianhong road,yuanhua industry zone			E-mail		info@suntasksolar.com							
Postcode, City		314416, haining City, zhejiang Province			Tel		+86 573-87861111							
Collector Type					Evacuated tubular collector									
Collector name					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	84 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
SHC10					2.24	1980	1130	133	1,298	1,262	1,152	994	788	619
SHC12					2.67	1980	1350	133	1,551	1,507	1,377	1,188	942	740
SHC14					3.11	1980	1570	133	1,804	1,753	1,601	1,382	1,095	860
SHC15					3.33	1980	1680	133	1,930	1,876	1,713	1,479	1,172	920
SHC16					3.54	1980	1790	133	2,057	1,999	1,825	1,575	1,249	981
SHC18					3.98	1980	2010	133	2,309	2,244	2,050	1,769	1,402	1,101
SHC20					4.42	1980	2230	133	2,562	2,490	2,274	1,963	1,556	1,222
SHC21					4.63	1980	2340	133	2,689	2,613	2,386	2,059	1,633	1,282
SHC22					4.85	1980	2450	133	2,815	2,722	2,498	2,156	1,709	1,342
SHC24					5.29	1980	2670	133	3,068	2,981	2,723	2,350	1,863	1,463
SHC25					5.50	1,980	2,780	133	3,194	3,104	2,835	2,447	1,940	1,523
SHC28					6.04	1,980	3,050	133	3,504	3,406	3,110	2,684	2,128	1,671
Power output per m² gross area					580	564	515	444	352	277				
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		0.583	1.37	0.027	0.000	0.00	12220	0.000	0.00	0	0.97			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1.02	1.03	1.04	1.05	1.12	1.18	0.79	0.39	0.00			
Longitudinal		K _{θL, coll}	1.00	1.00	0.99	0.98	0.95	0.88	0.75	0.50	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					($\vartheta_m - \vartheta_a$) _{max}	53.72	K							
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30$ °C)					ϑ_{stg}	280	°C							
Maximum operating temperature					$\vartheta_{max, op}$	230	°C							
Maximum operating pressure					p _{max, op}	1000	kPa							
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					http://www.intertek.com							
Test report(s)		231031204GZU-001					Dated		2024/7/10					
Comments of testing laboratory					Draft Ver. 6.2 (22.09.2021)									
<i>Above efficiency parameters come from test type SHC10:</i>					 Stamp & signature									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S3020 R
	Issued	2024-07-11

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg		
	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
SHC10		2,242	1,779	1,206	1,823	1,333	823	1,331	950	577	1,440	1,032	618
SHC12		2,678	2,126	1,441	2,177	1,593	983	1,590	1,135	689	1,720	1,233	738
SHC14		3,114	2,472	1,676	2,532	1,852	1,143	1,849	1,319	802	2,001	1,434	859
SHC15		3,333	2,645	1,793	2,710	1,982	1,223	1,978	1,412	858	2,141	1,535	919
SHC16		3,551	2,819	1,911	2,887	2,112	1,303	2,108	1,504	914	2,281	1,636	979
SHC18		3,987	3,165	2,146	3,242	2,371	1,463	2,367	1,689	1,026	2,561	1,837	1,100
SHC20		4,424	3,511	2,380	3,597	2,631	1,623	2,626	1,874	1,139	2,842	2,038	1,220
SHC21		4,642	3,685	2,498	3,774	2,760	1,704	2,755	1,966	1,195	2,982	2,138	1,280
SHC22		4,860	3,858	2,615	3,952	2,890	1,784	2,885	2,059	1,251	3,122	2,239	1,340
SHC24		5,296	4,204	2,850	4,307	3,150	1,944	3,144	2,244	1,363	3,402	2,440	1,461
SHC25		5,515	4,378	2,968	4,484	3,280	2,024	3,273	2,336	1,419	3,542	2,540	1,521
SHC28		6,050	4,803	3,256	4,920	3,598	2,220	3,591	2,563	1,557	3,886	2,787	1,668
Gross Thermal Yield per m ² gross area		1,002	795	539	815	596	368	595	424	258	644	461	276
Annual efficiency, η_a		57%	45%	31%	50%	37%	23%	51%	36%	22%	52%	37%	22%
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 Draft Ver. 6.2 (22.09.2021). 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
Maximum tested positive load	2800		Pa
Maximum tested negative load	1000		Pa
Hail resistance using steel ball (maximum drop height)	0.6		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)
SHC10	2.24	1-H-12S-C:19,1205-D	1.82
SHC12	2.67	1-H-12S-C:19,1425-D	2.16
SHC14	3.11	1-H-12S-C:19,1645-D	2.52
SHC15	3.33	1-H-12S-C:19,1755-D	2.70
SHC16	3.54	1-H-12S-C:19,1865-D	2.87
SHC18	3.98	1-H-12S-C:19,2085-D	3.23
SHC20	4.42	1-H-12S-C:19,2305-D	3.59
SHC21	4.63	1-H-12S-C:19,2415-D	3.77
SHC22	4.85	1-H-12S-C:19,2525-D	3.95
SHC24	5.29	1-H-12S-C:19,2745-D	4.41
SHC25	5.50	1-H-12S-C:19,2855-D	4.59
SHC28	6.04	1-H-12S-C:19,3185-D	5.24

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})	48%	Zero-loss efficiency (η_0)	0.58
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)	1.37
		Second-order coefficient (a_2)	0.027
		Incidence angle modifier IAM (50°)	1.02
		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.	