


Annex to Solar Keymark Certificate					Licence Number		011-7S3021 R				
					Date issued		2021-06-08				
					Issued by		DIN CERTCO				
Licence holder		Zhejiang shentai solar energy co.,ltd			Country		China				
Brand (optional)		Suntask, SHENTAI			Web		www.suntasksolar.com				
Street, Number		199 lianhong road,yuanhua industry zone			E-mail		info@suntasksolar.com				
Postcode, City		314416	haining, zhejiang		Tel		+86 573-87861111				
Collector Type					Evacuated tubular collector						
Collector name					Power output per collector						
					Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$						
					0 K	10 K	30 K	50 K	70 K	100 K	
					m ²	mm	mm	mm	W	W	W
					W	W	W	W	W	W	
SCM10-01					1.56	1,915	815	106	634	617	574
SCM12-01					1.85	1,915	965	106	751	731	680
SCM15-01					2.28	1,915	1,190	106	925	901	838
SCM16-01					2.42	1,915	1,265	106	984	958	891
SCM18-01					2.71	1,915	1,415	106	1,100	1,072	997
SCM20-01					3.00	1,915	1,565	106	1,217	1,185	1,102
SCM22-01					3.28	1,915	1,715	106	1,334	1,299	1,208
SCM24-01					3.57	1,915	1,865	106	1,450	1,413	1,313
SCM25-01					3.72	1,915	1,940	106	1,509	1,469	1,366
SCM28-01					4.15	1,915	2,165	106	1,684	1,640	1,525
SCM30-01					4.43	1,915	2,315	106	1,800	1,753	1,630
Power output per m² gross area					406	396	368	331	286	203	
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		0.404	0.949	0.011	0.000	0.000	5,330	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		$K_{\theta T, coll}$	1.02	1.04	1.14	1.24	1.36	1.46	0.97	0.49	0.00
Longitudinal		$K_{\theta L, coll}$	1.00	0.99	0.97	0.95	0.91	0.84	0.69	0.23	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					$(\vartheta_m - \vartheta_a)_{max}$		69.57		K		
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30^\circ\text{C}$)					ϑ_{stg}		210		°C		
Maximum operating temperature					$\vartheta_{max, op}$		250		°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)		161107081GZU-001					Dated		2018/5/2		
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26						
<i>Above efficiency parameters come from test type SCM10-01;</i>											
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S3021 R
	Issued	2021-06-08

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
SCM10-01		1,177	982	754	972	772	564	711	551	394	767	597	422
SCM12-01		1,393	1,163	892	1,151	914	668	842	653	466	908	707	500
SCM15-01		1,718	1,434	1,101	1,419	1,127	823	1,038	805	575	1,120	872	616
SCM16-01		1,826	1,525	1,170	1,508	1,198	875	1,103	856	611	1,190	927	655
SCM18-01		2,043	1,705	1,309	1,687	1,340	979	1,234	957	684	1,331	1,036	733
SCM20-01		2,259	1,886	1,447	1,866	1,482	1,083	1,365	1,059	756	1,473	1,146	810
SCM22-01		2,476	2,067	1,586	2,045	1,624	1,187	1,496	1,160	828	1,614	1,256	888
SCM24-01		2,692	2,248	1,725	2,224	1,766	1,291	1,627	1,262	901	1,755	1,366	966
SCM25-01		2,801	2,338	1,794	2,313	1,837	1,342	1,692	1,312	937	1,826	1,421	1,005
SCM28-01		3,125	2,609	2,002	2,582	2,050	1,498	1,888	1,465	1,046	2,037	1,586	1,121
SCM30-01		3,342	2,790	2,141	2,761	2,192	1,602	2,019	1,566	1,118	2,178	1,696	1,199
Annual output per m ² gross area		754	629	483	623	494	361	455	353	252	491	382	270
Annual efficiency, η_a		43%	36%	27%	38%	30%	22%	39%	30%	22%	39%	31%	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 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 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)				1.4	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 ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
SCM10-01	1.56	1-H-12S-C:19,891-D	0.94
SCM12-01	1.85	1-H-12S-C:19,1041-D	1.12
SCM15-01	2.28	1-H-12S-C:19,1266-D	1.40
SCM16-01	2.42	1-H-12S-C:19,1341-D	1.49
SCM18-01	2.71	1-H-12S-C:19,1491-D	1.68
SCM20-01	3.00	1-H-12S-C:19,1641-D	1.87
SCM22-01	3.28	1-H-12S-C:19,1791-D	2.05
SCM24-01	3.57	1-H-12S-C:19,1941-D	2.24
SCM25-01	3.72	1-H-12S-C:19,2016-D	2.33
SCM28-01	4.15	1-H-12S-C:19,2241-D	2.61
SCM30-01	4.43	1-H-12S-C:19,2391-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})	35%	Zero-loss efficiency (η_0)	0.41
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)	0.95
		Second-order coefficient (a_2)	0.011
		Incidence angle modifier IAM (50°)	1.16
		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.	