Solar Keymark Certificate

SC0015-18

Holder/Issued to/Manufacturer

Zhejiang Shentai Solar Energy Co., Ltd.

199 Lianhong road, Yuanhua industry zone, 314416, Haining, Zhejiang, China

Product name and description

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

Models:	SCM10-01	SCM12-01	SCM15-01	SCM16-01
	SCM18-01	SCM20-01	SCM22-01	SCM24-01
	SCM25-01	SCM28-01	SCM30-01	

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 2023-06-04 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. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

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2017-08-08

Annex to Solar Keymark Certificate

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results	Licence Number	SC0015-18
	Date issued	2018-06-04
	Issued by	RISE

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	Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector Gb = 850 W/m²; Gd = 150 W/m² ϑm - ϑa: 0 K	10 K	30 K	50 K	70 K	70 K
	m²	mm	mm	mm	W	W	W	W	W	W
SCM10-01	1,56	1 915	815	106	634	617	574	517	446	448
SCM12-01	1,85	1 915	965	106	750	731	679	612	528	530
SCM15-01	2,28	1 915	1 190	106	925	901	838	754	651	653
SCM16-01	2,42	1 915	1 265	106	984	958	891	802	692	695
SCM18-01	2,71	1 915	1 415	106	1100	1071	996	897	774	777
SCM20-01	3,00	1 915	1 565	106	1217	1185	1102	992	856	859
SCM22-01	3,28	1 915	1 715	106	1333	1299	1207	1087	938	942
SCM24-01	3,57	1 915	1 865	106	1450	1412	1313	1182	1020	1024
SCM25-01	3,72	1 915	1 940	106	1508	1469	1366	1230	1061	1065
SCM28-01	4,15	1 915	2 165	106	1683	1639	1524	1373	1184	1189
SCM30-01	4,43	1 915	2 315	106	1800	1753	1630	1468	1266	1271
Power output per m² gross area					406	395	368	331	286	287

Performance parameters test method		Steady state - outdoor							
Performance parameters (related to AG)		η0,hem	a1	a2					
Units		-	W/(m²K)	W/(m²K²)					
Test results		0,406	0,949	0,011					
Incidence angle modifier test method		Steady state - outdoor							
Bi-directional incidence angle modifiers	Yes								
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/(sm²)
Maximum temperature difference for thermal performance calculations	$(\vartheta_m-\vartheta_a)_{max}$	69,57	K
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)	ϑ_{stg}	210	°C
Effective thermal capacity, incl. fluid (per gross area, A_G)	C/m²	5,13	kJ/(Km²)
Maximum operating temperature	ϑ_{max_op}	--	°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**	2018-05-02

Comments of testing laboratory

Datasheet version: 5.01, 2016-03-01

intertek

William zheng

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Annex to Solar Keymark Certificate

Annex to Solar Keymark Certificate	Licence Number	SC0015-18
Supplementary Information	Issued	2018-06-04

Annual collector output in kWh/collector at mean fluid temperature ϑ_m, based on ISO 9806:2013 test results

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
SCM10-01	1177	983	754	972	772	564	711	552	394	767	597	422
SCM12-01	1394	1164	893	1151	914	668	842	653	466	908	707	500
SCM15-01	1719	1435	1101	1419	1127	824	1038	805	575	1120	872	616
SCM16-01	1827	1525	1170	1509	1198	875	1104	856	611	1191	927	655
SCM18-01	2043	1706	1309	1688	1340	979	1235	958	684	1332	1037	733
SCM20-01	2260	1887	1448	1867	1482	1083	1366	1059	756	1473	1147	811
SCM22-01	2477	2068	1587	2046	1624	1187	1496	1161	829	1615	1257	888
SCM24-01	2693	2249	1726	2225	1766	1291	1627	1262	901	1756	1367	966
SCM25-01	2802	2339	1795	2314	1838	1343	1693	1313	937	1826	1422	1005
SCM28-01	3127	2610	2003	2583	2051	1498	1889	1465	1046	2038	1587	1122
SCM30-01	3343	2791	2142	2761	2193	1602	2020	1567	1119	2179	1696	1199
Annual output per m² gross area	754	630	483	623	495	361	456	353	252	492	383	271
Fixed or tracking collector	Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane	1765 kWh/m²			1714 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. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc

Additional Information

Collector heat transfer medium	Water-Glycole	
Hybrid Thermal and Photo Voltaic collector	No	
The collector is deemed to be suitable for roof integration	No	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	C	--
Maximum tested positive load	2400	Pa
Maximum tested negative load	2400	Pa
Hail resistance using steel ball (maximum drop height)	1,4	m

Energy Labelling Information

	Reference Area, A_{sol} (m^2)
SCM10-01	1,56
SCM12-01	1,85
SCM15-01	2,28
SCM16-01	2,42
SCM18-01	2,71
SCM20-01	3,00
SCM22-01	3,28
SCM24-01	3,57
SCM25-01	3,72
SCM28-01	4,15
SCM30-01	4,43

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

Collector efficiency (η_{col})	35	%

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/m², 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 9806:2013.

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

Zero-loss efficiency (η_0)	0,406	--
First-order coefficient (a_1)	0,95	W/(m²K)
Second-order coefficient (a_2)	0,011	W/(m²K²)
Incidence angle modifier IAM (50°)	1,18	--

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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