

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

Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$ , based on ISO 9806:2013 test results													
Collector name	Standard Locations $\vartheta_m$	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		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 m <sup>2</sup> 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/m <sup>2</sup>			1714 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>		
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  $\vartheta_m$  (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 5.01 (March 2016). A detailed description of the calculations is available at [www.solarkeymark.org/scenocalc](http://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 <sup>2</sup> )	Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$		
SCM10-01	1,56	Collector efficiency ( $\eta_{col}$ )	35	%
SCM12-01	1,85	<i>Remark: Collector efficiency (<math>\eta_{col}</math>) 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<sup>2</sup>, expressed in % and rounded to the nearest integer. Deviating from the regulation <math>\eta_{col}</math> is based on reference area (<math>A_{sol}</math>) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.</i>		
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	Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$		
SCM28-01	4,15	Zero-loss efficiency ( $\eta_0$ )	0,406	--
SCM30-01	4,43	First-order coefficient ( $a_1$ )	0,95	W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,011	W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	1,18	--
<i>Remark: The data given in this section are related to collector reference area (<math>A_{sol}</math>) 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.</i>				