





Annex to Solar Keymark Certificate Supplementary Information	Licence Number	OEM 10003/1/1
	Issued	2019-06-10

**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
SIME PLANO EV 130		1.760	1.234	743	1.333	879	485	985	620	335	1.070	670	356
SIME PLANO EV 160		2.266	1.590	957	1.717	1.132	625	1.268	798	432	1.378	862	459
SIME PLANO EV 180		2.324	1.631	981	1.761	1.161	641	1.301	819	443	1.413	885	471
SIME PLANO EV 200		2.606	1.828	1.100	1.974	1.302	719	1.458	918	497	1.584	992	528
SIME PLANO EV 230		2.937	2.060	1.240	2.225	1.467	810	1.643	1.035	560	1.785	1.118	595
Annual output per m <sup>2</sup> gross area		1.162	815	491	881	581	321	650	409	221	707	442	235
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)	A	--
Maximum tested positive load	2400	Pa
Maximum tested negative load	2400	Pa
Hail resistance using steel ball (maximum drop height)	2	m

**Energy Labelling Information**

	Reference Area, $A_{sol}$ (m <sup>2</sup> )	Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$	
SIME PLANO EV 130	1,51	Collector efficiency ( $\eta_{col}$ )	57 %
SIME PLANO EV 160	1,95	Remark: Collector efficiency ( $\eta_{col}$ ) 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 <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ 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.	
SIME PLANO EV 180	2,00		
SIME PLANO EV 200	2,24		
SIME PLANO EV 230	2,53		
		Data required for CDR (EU) No 812/2013 - Reference Area $A_{sol}$	
		Zero-loss efficiency ( $\eta_0$ )	0,735 --
		First-order coefficient ( $a_1$ )	3,24 W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,025 W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	0,93 --
		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.	