

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S3000 F
	Issued	2021-01-23

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
KS2100F TLP ACRm 4		2'642	1'930	1'293	2'040	1'442	933	1'492	1'001	622	1'622	1'082	663
KS2200F TLP ACRm 4		2'886	2'108	1'412	2'228	1'575	1'019	1'630	1'093	680	1'772	1'182	724
KS2400F TLP ACRm 4		3'116	2'276	1'525	2'406	1'701	1'100	1'760	1'181	734	1'913	1'277	782
KS2550F TLP ACRm 4		3'283	2'398	1'607	2'535	1'792	1'159	1'854	1'244	773	2'016	1'345	824
KS2600F TLP ACRm 4		3'360	2'454	1'645	2'595	1'834	1'186	1'898	1'273	792	2'063	1'377	843
Annual output per m ² gross area		1'283	937	628	990	700	453	724	486	302	787	525	322
Annual efficiency, η_a		73%	53%	36%	61%	43%	28%	62%	42%	26%	63%	42%	26%
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	Yes				
The collector was tested successfully under the following conditions:					
Climate class (A+, A, B or C)	A		--		
G (W/m ²) >	1000	ϑ_a (°C) >	20	H_x (MJ/m ²) >	600
Maximum tested positive load	5400		Pa		
Maximum tested negative load	2400		Pa		
Hail resistance using ice balls (diameter)	45		mm		
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)
KS2100F TLP ACRm 4-50	2.06	1-V-1234S-A:9,22461-C:16,1052-D	1.93
KS2200F TLP ACRm 4-50	2.25	1-V-1234S-A:9,24485-C:16,1144-D	2.11
KS2400F TLP ACRm 4-50	2.43	1-V-1234S-A:9,26509-C:16,1236-D	2.28
KS2550F TLP ACRm 4-50	2.56	1-V-1234S-A:9,28034-C:16,1199-D	2.40
KS2600F TLP ACRm 4-50	2.62	1-V-1234S-A:9,28533-C:16,1328-D	2.46

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})	64%	Zero-loss efficiency (η_0)	0.80
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)	3.49
		Second-order coefficient (a_2)	0.014
		Incidence angle modifier IAM (50°)	0.97
		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.	