

Annex to Solar Keymark Certificate		Licence Number		011-7S3039 F									
Supplementary Information		Issued		2021-08-18									
Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
	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
FPC1200D		2,134	1,307	657	1,508	869	388	1,130	618	276	1,233	661	293
Annual output per m ² gross area		1,067	654	329	754	435	194	565	309	138	616	331	147
Annual efficiency, η_a		60%	37%	19%	46%	27%	12%	48%	26%	12%	50%	27%	12%
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		
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)											C		--
G (W/m ²) >		800		ϑ_a (°C) >		10		H _x (MJ/m ²) >		420			
Maximum tested positive load											5900		Pa
Maximum tested negative load											3000		Pa
Hail resistance using steel ball (maximum drop height)											2		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)					
FPC1200D		2.00		9-VH-1234S-A:8,1878-C:22,1061-D				1.85					
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})		49%				Zero-loss efficiency (η_0)		0.71		--			
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)		4.46		Second-order coefficient (a ₂)		0.023		W/(m ² K)			
		Incidence angle modifier IAM (50°)		0.88		--		W/(m ² K ²)					
		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.											
		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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