

Annex to Solar Keymark Certificate Supplementary Information				Licence Number		SKM10039											
				Issued		2022-07-28											
Gross Thermal Yield 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							
FMAX TOP_2.72		3,459	2,654	1,803	2,759	1,998	1,274	2,011	1,400	866	2,178	1,517	924				
FMAX TOP_2.72H		3,459	2,654	1,803	2,759	1,998	1,274	2,011	1,400	866	2,178	1,517	924				
Gross Thermal Yield per m ² gross area		1,267	972	660	1,011	732	467	737	513	317	798	556	338				
Annual efficiency, η_a		72%	55%	37%	62%	45%	29%	63%	44%	27%	64%	45%	27%				
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. 6.2 (13.01.2022). 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										No							
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										3000		Pa					
Maximum tested negative load										3000		Pa					
Hail resistance using steel ball (maximum drop height)										2		m					
Additional collector attribute(s)																	
Using external power source(s) for normal operation										No		Active or passive measure(s) for self-protection				No	
Co-generating thermal and electrical power										No		Façade collector(s)				No	
Energy Labelling Information						Additional Informative Technical Data											
						Reference Area, A _{sol} (m ²)		Hydraulic Designation Code				Aperture Area, A _a (m ²)					
FMAX TOP_2.72						2.73		14-V-1234S-A:7.2,2060-C:20.6,1320-				2.57					
FMAX TOP_2.72H						2.73		25-V-1234S-A:7.2,1158-C:20.6,2240-				2.57					
Data required for CDR (EU) No 811/2013 - Reference Area						Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}											
Collector efficiency (η_{col})						65%		Zero-loss efficiency (η_0)				0.79		--			
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)				2.48		W/(m ² K)			
								Second-order coefficient (a ₂)				0.025		W/(m ² K ²)			
								Incidence angle modifier IAM (50°)				0.94		--			
								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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