

Annex to Solar Keymark Certificate				Licence Number		SKM 10132.1													
Supplementary Information				Issued		2024-09-20													
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	25°C	50°C	75°C						
MSFC100-200		2,600	1,927	1,340	2,015	1,457	986	1,476	1,009	655	1,604	1,094	698						
MSFC100-237		3,087	2,287	1,590	2,392	1,729	1,170	1,752	1,198	778	1,904	1,299	829						
MSFC100-250		3,244	2,404	1,671	2,513	1,817	1,230	1,841	1,259	817	2,000	1,365	871						
MSFC100-272		3,427	2,539	1,765	2,655	1,919	1,299	1,944	1,330	863	2,113	1,442	920						
MSFC100-300		3,932	2,914	2,026	3,047	2,203	1,490	2,231	1,526	990	2,425	1,655	1,056						
Gross Thermal Yield per m ² gross area		1,300	964	670	1,007	728	493	738	505	328	802	547	349						
Annual efficiency, η_a		74%	55%	38%	62%	45%	30%	63%	43%	28%	64%	44%	28%						
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)								
MSFC100-200							2.00				1-H-1234S-A:7.2,24070-C:20.6, 1080-D				1.88				
MSFC100-237							2.37				1-H-1234S-A:7.2,32207-C:20.6, 1300-D				2.25				
MSFC100-250							2.49				1-H-1234S-A:7.2,34215-C:20.6, 1330-D				2.37				
MSFC100-272							2.64				1-H-1234S-A:7.2,34560-C:20.6, 1330-D				2.59				
MSFC100-300							3.02				1-H-1234S-A:7.2,39040-C:20.6, 1470-D				2.88				
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})							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)							3.48		W/(m ² K)			
							Second-order coefficient (a_2)							0.010		W/(m ² K ²)			
							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.												
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