

Annex to Solar Keymark Certificate						Licence Number			011-7S2866 R				
Supplementary Information						Issued			2023-01-25				
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
XL 19/49		5.237	4.962	4.494	4.676	4.285	3.754	3.375	3.066	2.654	3.619	3.305	2.865
Gross Thermal Yield per m ² gross area		1.060	1.004	910	947	867	760	683	621	537	733	669	580
Annual efficiency, η_a		60%	57%	52%	58%	53%	47%	59%	53%	46%	59%	54%	47%
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				
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 ice balls (diameter)									35		mm		
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)				
XL 19/49						4,94			7-V-12S			4,50	
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})						58%							
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.						Zero-loss efficiency (η_0)			0,61			--	
						First-order coefficient (a ₁)			0,24			W/(m ² K)	
						Second-order coefficient (a ₂)			0,009			W/(m ² K ²)	
						Incidence angle modifier IAM (50°)			0,96			--	
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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