

Annex to Solar Keymark Certificate							Licence Number		011-7S3220 P						
Supplementary Information							Issued		2023-12-19						
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		
PX-1		1.347	70		410	3		424	9		495	17			
Gross Thermal Yield per m ² gross area		675	35	--	206	2	--	212	5	--	248	9	--		
Annual efficiency, η_a		38%	2%	--	13%	0%	--	18%	0%	--	20%	1%	--		
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										5400		Pa			
Maximum tested negative load										2400		Pa			
Hail resistance using ice balls (diameter)										25		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					Yes		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)					
PX-1						X-VH-24R-A:X-C:X				"[Aa]"					
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})						-12%		Zero-loss efficiency (η_0)				0,53			--
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 collector inlet and the collector outlet of 40 K and a solar						First-order coefficient (a_1)				16,05			W/(m ² K)		
						Second-order coefficient (a_2)				0,000			W/(m ² K ²)		
						Incidence angle modifier IAM (50°)				0,95			--		

between the solar collector and the surrounding air or 40 K and a global solar irradiance of 1000 W/m², 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.

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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