

Annex to Solar Keymark Certificate							Licence Number		011-7S3140 F					
Supplementary Information							Issued		2022-09-05					
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	
CAS 950 Plus		1 927	1 349	873	1 448	987	616	1 065	688	415	1 165	744	441	
CAS 1200 Plus		2 228	1 560	1 009	1 674	1 141	713	1 231	796	480	1 347	861	510	
CAS 1200 L Plus		2 605	1 824	1 180	1 957	1 334	833	1 439	930	561	1 574	1 006	596	
Gross Thermal Yield per m ² gross area		1 077	754	488	809	551	344	595	384	232	651	416	246	
Annual efficiency, η_a		61%	43%	28%	50%	34%	21%	51%	33%	20%	52%	33%	20%	
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							2250			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)					
CAS 950 Plus		1.79			8-V-4L,2R&3R,1L-7.1,1840-16.6,973				1.62					
CAS 1200 Plus		2.07			9-V-4L,2R&3R,1L-7.1,1900-16.6,1087				1.92					
CAS 1200 L Plus		2.42			10-V-4L,2R&3R,1L-7.1,1900-16.6,1264				2.23					
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})		53%			Zero-loss efficiency (η_0)				0.69		--			
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)				3.45		W/(m ² K)			
					Second-order coefficient (a ₂)				0.009		W/(m ² K ²)			
					Incidence angle modifier IAM (50°)				0.88		--			
					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.									
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany														
Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de														