

Annex to Solar Keymark Certificate						Licence Number		011-7S2813 F											
Supplementary Information						Issued		2022-11-23											
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						
FG 21		2440	1729	1152	1841	1280	836	1350	885	552	1479	961	591						
FG 25		2852	2022	1347	2152	1497	977	1579	1034	646	1729	1124	691						
Gross Thermal Yield per m ² gross area		1 179	835	556	889	618	404	652	427	267	714	464	286						
Annual efficiency, η_a		67%	47%	32%	55%	38%	25%	56%	37%	23%	57%	37%	23%						
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)										B		--							
G (W/m ²) >		900		ϑ_a (°C) >		15		H _x (MJ/m ²) >		540									
Maximum tested positive load										2500		Pa							
Maximum tested negative load										1600		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)									
FG 21						2.07				10-V-1234S-7.1,1894-16.6,1087-D				1.89					
FG 25						2.42				12-V-1234S-7.1,1894-16.6,1264-D				2.27					
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})						57%						Zero-loss efficiency (η_0)		0.73		--			
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)						3.74		W/(m ² K)		--			
						Second-order coefficient (a ₂)						0.006		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.													
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																			