

Annex to Solar Keymark Certificate					Licence Number		011-7S2907 F							
Supplementary Information					Issued		2019-01-28							
Annual collector output 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	
KAIROS DR 2.0-2 N		1 938	1 243	689	1 388	846	430	1 038	598	300	1 140	648	318	
Annual output per m ² gross area		1 009	647	359	723	441	224	540	312	156	594	338	166	
Fixed or tracking collector	Fixed (slope = latitude - 15°; rounded to nearest 5°)													
Annual irradiation on collector plane		1765 kWh/m ²			1714 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. 6.0 (October 2018). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc														
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) >		1100		ϑ_a (°C) >		40		H _x (MJ/m ²) >		700				
Maximum tested positive load										2400		Pa		
Maximum tested negative load										2250		Pa		
Hail resistance using steel ball (maximum drop height)										35		m		
Additional collector attribute(s)														
<input type="checkbox"/> Using external power source(s) for normal operation					<input type="checkbox"/> Active or passive measure(s) for self-protection									
<input type="checkbox"/> Co-generating thermal and electrical power					<input type="checkbox"/> Wind and/or infrared sensitive collector(s) (WISC)									
<input type="checkbox"/> Façade collector(s)														
Energy Labelling Information														
	Reference Area, A _{sol} (m ²)				Hydraulic Designation Code									
KAIROS DR 2.0-2 N	1.92				6-VH-1234S-A:11.2,1863-C:20.6,996									
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})					46%				Zero-loss efficiency (η_0)		0.64		--	
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)		3.92		W/(m ² K)	
									Second-order coefficient (a ₂)		0.014		W/(m ² K ²)	
									Incidence angle modifier IAM (50°)		0.90		--	
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														