

Annex to Solar Keymark Certificate		Licence Number		011-7S2836 F									
Supplementary Information		Issued		2018-02-16									
Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN 12975-2:2006 test results													
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
CC-HLF 2018		2 795	1 931	1 228	2 093	1 416	875	1 538	981	584	1 673	1 054	618
Annual output per m ² aperture area		1 105	763	485	827	560	346	608	388	231	661	417	244
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. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													
Additional Information													
Collector heat transfer medium											Water-Glycole		
Hybrid Thermal and Photo Voltaic collector											No		
The collector is deemed to be suitable for roof integration											No		
The collector was tested successfully according to EN 12975-2:2006 under the following conditions:													
Climate class (A, B or C)											--		--
Maximum tested positive load											5000		Pa
Maximum tested negative load											2890		Pa
Hail resistance using steel ball (maximum drop height)											1.6		m
Energy Labelling Information													
		Reference Area, A_{sol} (m ²)		Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}									
CC-HLF 2018		2.53		Collector efficiency (η_{col})				55		%			
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 9806:2013.													
				Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}									
				Zero-loss efficiency (η_0)				0.714		--			
				First-order coefficient (a_1)				3.71		W/(m ² K)			
				Second-order coefficient (a_2)				0.010		W/(m ² K ²)			
				Incidence angle modifier IAM (50°)				0.92		--			
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													