

[illegible]



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	SKM 10013/1
	Issued	2017-12-20

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 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
H81-15		1,568	1,042	599	1,149	725	385	855	511	265	932	551	282
H81-17		1,748	1,161	667	1,280	808	429	953	569	295	1,039	614	314
H81-19		2,050	1,362	783	1,501	947	503	1,118	668	346	1,218	720	368
H81-20		2,106	1,400	804	1,542	973	517	1,148	686	356	1,252	740	378
H81-21		2,240	1,489	855	1,641	1,036	550	1,222	730	378	1,332	787	402
H81-23		2,341	1,556	894	1,715	1,082	574	1,277	763	395	1,392	822	420
H81-25		2,655	1,764	1,014	1,944	1,227	651	1,448	865	448	1,578	933	477
H81-26		2,711	1,802	1,035	1,985	1,253	665	1,478	883	458	1,611	952	487
Annual output per m ² gross area		1,120	744	428	820	518	275	611	365	189	666	394	201
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 ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	A	--
Maximum tested positive load	2400	Pa
Maximum tested negative load	2400	Pa
Hail resistance using steel ball (maximum drop height)	2	m

Energy Labelling Information				
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}		
H81-15	1.40	Collector efficiency (η_{col})	52	%
H81-17	1.56	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.		
H81-19	1.83			
H81-20	1.88			
H81-21	2.00			
H81-23	2.09			
H81-25	2.37			
H81-26	2.42			
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}		
		Zero-loss efficiency (η_0)	0.707	--
		First-order coefficient (a_1)	3.90	W/(m ² K)
		Second-order coefficient (a_2)	0.018	W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0.94	--
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.				