


Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S2869 F							
					Date issued		2018-07-16							
					Issued by		DIN CERTCO							
Licence holder	PERAKIS A. & SIA OE				Country	Greece								
Brand (optional)	OLYMPIC SUN				Web	www.olympicsun.gr								
Street, Number	Mouzouras Akrotitiou - Chania				E-mail	olympicsun@hotmail.com								
Postcode, City	73100 Creta				Tel	+30 2 821 063 131								
Collector Type					Flat plate collector, glazed									
Collector name	Gross area (A_G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ; u = 3 m/s ϑ _m - ϑ _a									
					0 K W	10 K W	30 K W	50 K W	70 K W	112 K W				
OLS 250	2.53	2 008	1 258	85	1 756	1 664	1 469	1 260	1 036	521				
OLS 230	2.24	1 893	1 183	85	1 557	1 475	1 302	1 117	919	462				
OLS 200	2.02	2 006	1 007	85	1 404	1 331	1 175	1 007	829	417				
Power output per m² gross area					695	659	582	499	410	206				
Performance parameters test method					Quasi dynamic									
Performance parameters (related to AG)					η _{0,b}	c ₁	c ₂	c ₃	c ₄	c ₆	K _d			
Units					-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	s/m	-			
Test results					0.696	3.581	0.007	0.000	0.000	0.000	0.993			
Incidence angle modifier test method					Quasi dynamic - outdoor									
Bi-directional incidence angle modifiers					No									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					K _{θT, coll}	1.00	0.99	0.98	0.96	0.92	0.86	0.73	0.34	0.00
Longitudinal					K _{θL, coll}	1.00	0.99	0.98	0.96	0.92	0.86	0.73	0.34	0.00
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt	0.020		kg/(sm ²)						
Maximum temperature difference for thermal performance calculations					(ϑ _m -ϑ _a) _{max}	112		K						
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)					ϑ _{stg}	199		°C						
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²	11.669		kJ/(Km ²)						
Maximum operating temperature					ϑ _{max, op}	n.a.		°C						
Maximum operating pressure					p _{max, op}	1000		kPa						
Testing laboratory					TZS, ITW University Stuttgart			www.itw.uni-stuttgart.de						
Test report(s)					10COL933/3OEM21 10COL934/3OEM21 10COL934Q/3OEM21			Dated		11.07.2018 11.07.2018 11.07.2018				
Comments of testing laboratory					Datashet version: 5.01, 2016-03-01									
Documented performance parameters are taken from test report 10COL933/3OEM21 (OLS 200)					 Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Pfaffenwaldring 6, 70550 Stuttgart (Vaihingen)									
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														

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2869 F
	Issued	2018-07-16

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
OLS 250		2 847	2 007	1 319	2 136	1 468	935	1 576	1 022	624	1 726	1 111	668
OLS 230		2 524	1 779	1 169	1 894	1 301	828	1 397	906	553	1 530	985	592
OLS 200		2 277	1 605	1 055	1 708	1 174	747	1 260	817	499	1 380	889	534
Annual output per m ² gross area		1 127	795	522	846	581	370	624	405	247	683	440	264
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)	B	--
Maximum tested positive load	2500	Pa
Maximum tested negative load	2250	Pa
Hail resistance using steel ball (maximum drop height)	n.a.	m

Energy Labelling Information			
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
OLS 250	2.53	Collector efficiency (η_{col})	54 %
OLS 230	2.24	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.	
OLS 200	2.02		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0.695 --
		First-order coefficient (a_1)	3.58 W/(m ² K)
		Second-order coefficient (a_2)	0.007 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.	