

KEYMARK CERTIFICATE

SK08055361901

TUV CYPRUS LTD Certifies that the organization

ELCORA LTD

Address: Iapetou 36, Athanasios Industrial Area,
4101 Limassol, CYPRUS

Supplies: Solar thermal collectors

In compliance with: EN 12975-1:2006+A1:2010 & EN ISO 9806:2013

Certified Product: Solar Collector

Trade Mark: EL-OAS 1.5, EL-OAS 1.6, EL-OAS 2.0, EL-OAS 2.5

Test Results: Annex to certificate

Certification scheme: The initial Certificate with number SK08055361902 of Solar Keymark Certification Body CEN033 was issued on 27/07/2019. In order to grant this certificate, TUV CYPRUS has visited the manufacturing site and verified the implementation of the quality management system. TUV CYPRUS performs these tasks periodically while the certificate has not been cancelled, in accordance with the Product Certification Regulations and the Rules for Authorization to use Conformity Mark for Solar Collectors.



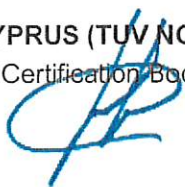
SOLAR KEYMARK
CERTIFICATION BODY
CEN 033

Accredited by

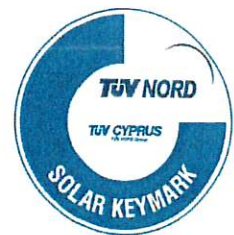


Certificate No. 885



TUV CYPRUS (TUV NORD) LTD
Certification Body



Nicosia , 27/07/2019
Initial Certification : 27/07/2019
Valid until : 27/07/2024





Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		SK08055361901				
					Date issued		2019-07-27				
					Issued by		TUV CYPRUS				
Licence holder		ELCORA LTD			Country		Cyprus				
Brand (optional)					Web		www.elcora.com.cy				
Street, Number		IAPETOU 36, ST. ATHANASIOS INDUSTRIAL AREA			E-mail		info@elcora.com.cy				
Postcode, City		4101, LIMASSOL			Tel		357 25720777				
Collector Type					Flat plate collector, glazed						
Collector name	Gross area (A _G)	Gross length	Gross width	Gross height	Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² θ _m - θ _a						
	m ²	mm	mm	mm	0 K	10 K	30 K	50 K	70 K	45 K	
EL-OAS 1.5	1,48	1.490	992	85	999	938	800	643	465	686	
EL-OAS 1.6	1,61	1.730	930	85	1.087	1.020	871	699	506	746	
EL-OAS 2.0	1,97	1.990	990	85	1.330	1.248	1.065	856	619	913	
EL-OAS 2.5	2,44	1.990	1.225	85	1.647	1.546	1.320	1.060	767	1.130	
Power output per m ² gross area					675	634	541	434	314	463	
Performance parameters test method		Steady state - indoor									
Performance parameters (related to AG)		η _{0,hem}	a1	a2							
Units		-	W/(m ² K)	W/(m ² K ²)							
Test results		0,675	3,964	0,017							
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}					0,92				0,00
Longitudinal		K _{θL, coll}					0,92				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}	44,8		K						
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)		θ _{stg}	157		°C						
Effective thermal capacity, incl. fluid (per gross area, A _G)		C/m ²	8,445		kJ/(Km ²)						
Maximum operating temperature		θ _{max, op}	100		°C						
Maximum operating pressure		P _{max, op}	600		kPa						
Testing laboratory		AElab			http://www.aelab.gov.cy						
Test report(s)		Report: Σ.12.05.17.01 Dur Report: Σ.13.01.17.01 PD, Report: Σ.13.01.17.02 PD Report: Σ.13.01.17.01 Per, Report: Σ.13.01.17.02 Per			Dated		28/6/2018 28/6/2018 28/6/2018				
Comments of testing laboratory		Not entered									
		 									
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Annex to Solar Keymark Certificate		Licence Number		SK08055361901									
Supplementary Information		Issued		2019-07-27									
Annual collector output in kWh/collector at mean fluid temperature ϑ_m, based on ISO 9806:2013 test results													
Collector name	Standard Locations	Athens		Davos		Stockholm			Würzburg				
	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
EL-OAS 1.5		1.550	1.000	554	1.120	688	350	835	486	243	910	521	257
EL-OAS 1.6		1.686	1.088	602	1.218	749	381	908	528	264	990	567	280
EL-OAS 2.0		2.063	1.331	737	1.491	916	466	1.111	646	323	1.212	693	342
EL-OAS 2.5		2.555	1.649	913	1.847	1.135	577	1.376	801	400	1.501	859	424
Annual output per m ² gross area		1.047	676	374	757	465	237	564	328	164	615	352	174
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								
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					1998	Pa							
Maximum tested negative load					1800	Pa							
Hail resistance using steel ball (maximum drop height)					1,4	m							
Energy Labelling Information													
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}											
EL-OAS 1.5	1,48	Collector efficiency (η_{col})		49	%								
EL-OAS 1.6	1,61	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.											
EL-OAS 2.0	1,97												
EL-OAS 2.5	2,44												
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}											
		Zero-loss efficiency (η_0)		0,675	--								
		First-order coefficient (a_1)		3,96	W/(m ² K)								
		Second-order coefficient (a_2)		0,017	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.													
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