

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S2666 R							
					Date issued		2016-06-27							
					Issued by		DIN CERTCO							
Licence holder	C&G ENERGY S.R.L.				Country	Italien								
Brand (optional)					Web	www.ktsolar.it								
Street, Number	Loc.Tà Terzerie				E-mail	info@ktsolar.it								
Postcode, City	84060 Ogliastro C.to (SA)				Tel	+39	3334904236							
Collector Type					Evacuated tubular collector									
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 ∅ _m - ∅ _a									
					0 K W	10 K W	30 K W	50 K W	70 K W	107 K W				
PANNELLO SKY PRO 8 CPC 58	1.75	1 926	909	117	1 022	1 002	957	907	852	734				
PANNELLO SKY PRO 8 ADVANCED	1.75	1 926	909	117	1 022	1 002	957	907	852	734				
PANNELLO NATURAL SKY 8-120 L	1.75	1 926	909	117	1 022	1 002	957	907	852	734				
Power output per m² gross area					584	572	547	519	487	420				
Performance parameters test method					Quasi dynamic									
Performance parameters (related to A_G)					η _{0,b}	c1	c2	c3	c4	c6	Kd			
Units					-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	s/m	-			
Test results					0.581	1.107	0.004	0.000	0.000	0.000	1.033			
Incidence angle modifier test method					Quasi dynamic - outdoor									
Bi-directional incidence angle modifiers					Yes									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					K _{θT, coll}	0.99	0.98	1.00	1.02	1.10	1.16	1.40	0.70	0.00
Longitudinal					K _{θL, coll}	1.00	1.00	0.98	0.96	0.93	0.84	0.76	0.38	0.00
Heat transfer medium for testing					Water-Glycole									
Flow rate for testing (per gross area, A_G)					dm/dt	0.017	kg/(sm ²)							
Maximum temperature difference for thermal performance calculations					(∅ _m -∅ _a) _{max}	107	K							
Standard stagnation temperature (G = 1000 W/m²; ∅_a = 30 °C)					∅ _{stg}	259	°C							
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²	51.02	kJ/(Km ²)							
Maximum operating temperature					∅ _{max, op}	n.a	°C							
Maximum operating pressure					p _{max, op}	600	kPa							
Testing laboratory					TZS, ITW University Stuttgart									
Test report(s)					12COL1099/2 10COL943Q/3									
					www.itw.uni-stuttgart.de									
					Dated									
					22.06.2016 22.06.2016									
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2666 R
	Issued	2016-06-27

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
PANNELLO SKY PRO 8 CPC 58		1 808	1 593	1 370	1 530	1 321	1 117	1 113	939	775	1 201	1 015	838
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PANNELLO SKY PRO 8 CPC 58		1 808	1 593	1 370	1 530	1 321	1 117	1 113	939	775	1 201	1 015	838
Annual output per m ² gross area		1 033	910	783	874	755	638	636	537	443	686	580	479
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	2000	Pa
Maximum tested negative load	n.a.	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}	
PANNELLO SKY PRO 8 CPC 58	1.75	Collector efficiency (η_{col})	53 %
PANNELLO SKY PRO 8 CPC 58	1.75	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.	
PANNELLO SKY PRO 8 CPC 58	1.75		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0.584 --
		First-order coefficient (a_1)	1.11 W/(m ² K)
		Second-order coefficient (a_2)	0.004 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0.98 --
		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.	