

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S095 F							
					Date issued		2016-11-29							
					Issued by		DIN CERTCO							
Licence holder	SOLARFOCUS GmbH				Country	Austria								
Brand (optional)	Abrand				Web	http://www.solarfocus.at								
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Postcode, City	A-4451 St.Ulrich/Steyr				Tel	+43	7252 50002-9640							
Collector Type					Concentrating 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 ϑ _m - ϑ _a									
					0 K W	10 K W	30 K W	50 K W	70 K W	100 K W				
CPC S1	2.78	2 404	1 155	68	1 694	1 587	1 347	1 073	766	244				
Power output per m² gross area					609	571	484	386	276	88				
Performance parameters test method					Quasi dynamic									
Performance parameters (related to AG)					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					0.608	3.718	0.015	0.000	0.000	0.000	1.016			
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}	1.00	0.99	0.97	0.94	0.88	0.77	0.53	0.27	0.00
Longitudinal					K _{θL, coll}	1.02	1.03	1.02	1.01	1.03	0.96	0.67	0.34	0.00
Heat transfer medium for testing					Water-Glycole									
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}	100		K						
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)					ϑ _{stg}	163		°C						
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²	7.805		kJ/(Km ²)						
Maximum operating temperature					ϑ _{max, op}	120		°C						
Maximum operating pressure					p _{max, op}	100		kPa						
Testing laboratory					TZS, ITW University Stuttgart			www.itw.uni-stuttgart.de						
Test report(s)					16COL1331 16COL1331Q			Dated		17.11.2016 17.11.2016				
Comments of testing laboratory					Datashet version: 5.01, 2016-03-01									
none														
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S095 F
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results

Standard Locations	ϑ_m	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
Collector name													
CPC S1		2 742	1 771	981	1 979	1 213	614	1 466	847	422	1 616	924	451
Annual output per m ² gross area		986	637	353	712	436	221	527	305	152	581	332	162
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	2000	Pa
Maximum tested negative load	2000	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}	
CPC S1	2.78	Collector efficiency (η_{col})	44 %
		<i>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/m², 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.</i>	
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0.609 --
		First-order coefficient (a_1)	3.72 W/(m ² K)
		Second-order coefficient (a_2)	0.015 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0.95 --
		<i>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.</i>	