


Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results						Licence Number		011-7S1671 F							
						Date issued		2018-09-03							
						Issued by		DIN CERTCO							
Licence holder		GREENoneTEC Solarindustrie GmbH				Country		ÖSTERREICH							
Brand (optional)						Web		www.greenonetec.com							
Street, Number		Industriepark St. Veit, Energieplatz 1				E-mail		info@greenonetec.com							
Postcode, City		9300		St. Veit a.d. Glan		Tel		+43 4212 28136-0							
Collector Type						Flat plate collector, glazed									
Collector name						Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ; u = 3 m/s ϑ _m - ϑ _a									
						Gross area (A _G)	Gross length	Gross width	Gross height	0 K	10 K	30 K	50 K	70 K	100 K
						m ²	mm	mm	mm	W	W	W	W	W	W
FK7202 N4A AI FL						2.12	2 039	1 040	89	1 387	1 310	1 146	966	770	449
FK7202 L2A AI FL						2.12	2 039	1 040	89	1 387	1 310	1 146	966	770	449
FK7202 N2A AI FL						2.12	2 039	1 040	89	1 387	1 310	1 146	966	770	449
Power output per m ² gross area						654	618	540	455	363	212				
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						0.658	3.525	0.009	0.000	0.000	0.000	0.962			
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	0.97	0.94	0.90	0.81	0.41	0.00
Longitudinal						K _{θL, coll}	1.00	0.99	0.98	0.97	0.94	0.90	0.81	0.41	0.00
Heat transfer medium for testing						Water									
Flow rate for testing (per gross area, A _G)						dm/dt	0.017	kg/(sm ²)							
Maximum temperature difference for thermal performance calculations						(ϑ _m -ϑ _a) _{max}	100	K							
Standard stagnation temperature (G = 1000 W/m ² ; ϑ _a = 30 °C)						ϑ _{stg}	199	°C							
Effective thermal capacity, incl. fluid (per gross area, A _G)						C/m ²	8.346	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)						11COL1002/1 / 11COL1002Q/1 11COL1003/1 11COL1004/1				Dated 03.09.2018 / 03.09.2018 03.09.2018 03.09.2018					
Comments of testing laboratory						Datashet version: 5.01, 2016-03-01									
<p>This data sheet replaces the data sheet issued on 11.02.2014</p> <p>Documented performance parameters are taken from 11COL1003/1(FK 7202 L2A AI FL)</p> <p>Changing the dimensions and the gross area from 2.09 m² to 2.12 m²</p> <p>Changing of the collector type from FK 7200 xxx to FK 7202 xxx</p> <p>Changing of the E-Mail address and the phone number</p>						 Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik, Appl. Vibrationstechnik Universität Stuttgart Pfaffenwaldring 6, 70569 Stuttgart (Vaihingen)									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S1671 F
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
Collector name	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
FK7202 N4A AI FL		2 239	1 542	970	1 661	1 108	667	1 231	775	449	1 346	840	479
FK7202 L2A AI FL		2 239	1 542	970	1 661	1 108	667	1 231	775	449	1 346	840	479
FK7202 N2A AI FL		2 239	1 542	970	1 661	1 108	667	1 231	775	449	1 346	840	479
Annual output per m ² gross area		1 056	727	458	784	523	315	581	365	212	635	396	226
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)	C	--
Maximum tested positive load	3000	Pa
Maximum tested negative load	3000	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}	
FK7202 N4A AI FL	2.12	Collector efficiency (η_{col})	50 %
FK7202 L2A AI FL	2.12	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.	
FK7202 N2A AI FL	2.12		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0.654 --
		First-order coefficient (a_1)	3.53 W/(m ² K)
		Second-order coefficient (a_2)	0.009 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.	