


Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S1757 F							
					Date issued		2017-07-12							
					Issued by		Din Certco							
Licence holder		GREENoneTEC			Country		ÖSTERREICH							
Brand (optional)					Web		www.greenonetec.com							
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Postcode, City		9300 St. Veit a.d. Glan			Tel/Fax		+43 (0) 421228136-245							
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 θ _m - θ _a					
									0 K	10 K	30 K	50 K	70 K	75 K
FK 9250 N/L					2,58	2.080	1.241	96	1.811	1.725	1.532	1.312	1.065	999
Power output per m ² gross area					702	669	594	509	413	387				
Performance parameters test method					Steady state - outdoor									
Performance parameters (related to AG)					η _{0,hem}	a1	a2							
Units					-	W/(m ² K)	W/(m ² K ²)							
Test results					0,702	3,22	0,013							
Incidence angle modifier test method					Steady state - 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	1,00	0,99	0,97	0,93	0,86	0,72	0,45	0,00
Longitudinal					K _{θL, coll}	1,00	1,00	0,99	0,97	0,93	0,86	0,72	0,45	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}	75	K							
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)					θ _{stg}	196	°C							
Effective thermal capacity, incl. fluid (per gross area, A _G)					C/m ²	4,6	kJ/(Km ²)							
Maximum operating temperature					θ _{max, op}	n.a.	°C							
Maximum operating pressure					p _{max, op}	1000	kPa							
Testing laboratory					TestLab Solar Thermal Systems, Fraunhofer ISE			http://www.collectortest.com						
Test report(s)					ktb-2011-.29-k1 ktb-2011-30 ktb-			Dated		12.07.2017 29.03.2012 01.01.2016				
Comments of testing laboratory					Datashet version: 5.01, 2016-03-01									
According to Scenocalc v5.01 the power output per collector unit of a steady state performance test does not consider the fraction of the diffuse irradiance, but it is calculated based on η _{0,hem} for a global hemispherical irradiance of 1000 W/m ² .					 <p>TestLab Solar Thermal Systems Heidenhofstraße 7 D-79110 Freiburg Tel: +49 (0)761 4588 5354</p>									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S1757 F
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN 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
FK 9250 N/L		2.875	2.058	1.342	2.194	1.519	952	1.611	1.057	637	1.750	1.140	677
Annual output per m ² gross area		1.114	798	520	850	589	369	625	410	247	678	442	262
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	1000	Pa
Maximum tested negative load	1000	Pa
Hail resistance using ice balls (diameter)	0	mm

Energy Labelling Information			
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
FK 9250 N/L	2,58	Collector efficiency (η_{col})	55 %
		<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)	0,702 --
		First-order coefficient (a_1)	3,22 W/(m ² K)
		Second-order coefficient (a_2)	0,013 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,93 --
		<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>	