


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate							Licence Number		011-7S538 F				
							Issued		2013-09-19				
Company holding the			GREENoneTEC Solarindustrie GmbH				Country		Austria				
Brand (optional)							Website		www.greenonetec.com				
Street, street number			Industriepark St. Veit, Energieplatz 1				E-mail		info@greenonetec.com				
Postal Code / City, province			9300 St. Viet/Glan		Tel/Fax		43 4241 281 36-0						
Collector Type (flat plate glazed/un-glazed; evacuate tubular)							Flat plate collector - glazed						
Thermal / photo voltaic hybrid collector? (PVT collector)							No						
Integration in the roof possible? (manufacturers declaration)							No						
Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	Power output per collector module							
						G = 1000 W/m ²							
						T _m -T _a							
						0 K	10 K	30 K	50 K	70 K			
						W	W	W	W	W			
FK 8201 N4H FG	1,92	1.730	1.170	73	2,02	1.451	1.376	1.209	1.019	806			
FK 8231 N4H FG	2,24	2,000	1,710	73	2,34	1.688	1.601	1.407	1.186	938			
Performance test method							Glazed liquid heating collector - steady state - outdoor						
Performance parameters related to aperture area			η ₀	a ₁	a ₂								
Units			-	W/(m ² K)	W/(m ² K ²)								
Test results - Flow rate and fluid see note 1			0,755	3,745	0,015								
Bi-directional incidence angle modifiers?			No										
Incidence angle modifiers K _θ (θ)			<i>K_θ values are obligatory for 50°.</i>										
			Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°	
			K _θ (θ)	1,00	1,00	1,00	0,99	0,96	0,91	0,78	0,53	0,00	
Incidence angle modifier not bi-directional - leave fields blank													
Stagnation temperature - Weather conditions see note 2			T _{stg}	197 °C									
Effective thermal capacity			c _{eff} = C/Ag	4,95 kJ/(m ² K)									
Max. intended operation temperature - see note 3			T _{max,op}	100 °C									
Max. operation pressure - see note 3			p _{max,op}	1000 kPa									
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area													
Flow rate	kg/(s m ²)	0,007	0,014	0,021	0,028	0,035	0,042	0,049	0,056	0,063	0,070		
Pressure drop, ΔP	Pa	80	170	260	360	460	560	690	810	940	1070		
Optional weather data	Location					Link							
Testing Laboratory			TestLab Solar Thermal Systems, Fraunhofer ISE										
Website			www.kollektortest.de										
Test report id. number			ktb-2012-09; ktb2013-09				Date of test report		04.12.2012; 19.09.2013				
During the test GDIF/GTOT was always between			0,1	and	0,2								
Comments of testing laboratory:													
<div style="text-align: right;">  <p> TestLab Solar Thermal Systems Heidenhofstraße 2 D-79110 Freiburg Tel: +49 (0)761 4588 5354 </p> </div>													
Note 1	Flow rate	0,020	kg/(s m ²)	Fluid	Water								
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C												
Note 3	Given by manufacturer												
Datasheet version: 4.04, 2013-04-22													



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S538 F
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Annual collector output kWh/module

Collector name	Location and collector temperature (Tm)											
	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 8201 N4H FG	2.345	1.643	1.036	1.766	1.191	714	1.302	830	479	1.418	898	511
FK 8231 N4H FG	2.728	1.911	1.205	2.055	1.386	831	1.514	965	558	1.650	1.045	595

Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1.765	18,5	South, 25°
Davos	47	1.714	3,2	South, 30°
Stockholm	59	1.166	7,5	South, 45°
Würzburg	50	1.244	9,0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.