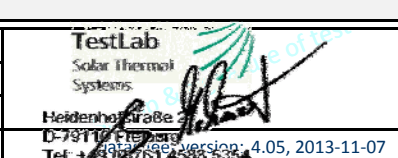


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S784 F							
						Issued		2014-01-24							
Company holding the		SEG Solar Energy GbmH				Country		Austria							
Brand (optional)						Website		www.solarenergy.at							
Street, street number		Solarstraße 1, Industriepark				E-mail		office@solarenergy.at							
Postal Code / City, province		9300 St. Veit/Glan				Tel/Fax		43 4212 28666 / 2866655							
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									
						Power output per collector module									
						G = 1000 W/m ²									
						Tm-Ta									
						0 K	10 K	30 K	50 K	70 K					
Collector name						W	W	W	W	W					
						m ²	mm	mm	mm	m ²					
Aperture area (Aa)						Gross length	Gross width	Gross height	Gross area (AG)						
RK2300 Mediterano						2,24	2.000	1.170	73	2,34	1.642	1.543	1.326	1.084	816
RK2001 Mediterano						1,92	1.730	1.170	73	2,02	1.407	1.323	1.137	929	699
Performance test method						Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture area						η0	a1	a2							
Units						-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1						0,733	4,269	0,0143							
Bi-directional incidence angle modifiers?						Yes <i>Kθ values are obligatory for 50°.</i>									
Incidence angle modifiers Kθ(θT) transversal direction						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						Kθ(θT)	1,00	1,00	0,99	0,98	0,94	0,87	0,73	0,48	0,00
Incidence angle modifiers Kθ(θL) longitudinal direction						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						Kθ(θL)	1,00	1,00	0,99	0,98	0,94	0,87	0,73	0,48	0,00
Stagnation temperature - Weather conditions see note 2						Tstg		210		°C					
Effective thermal capacity						ceff = C/Ag		4,56		kJ/(m ² K)					
Max. intende operation temperature - see note 3						Tmax,op		n. s.		°C					
Max. operation pressure - see note 3						pmax,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)	0,003	0,007	0,010	0,013	0,017	0,020	0,023	0,027	0,030	0,033			
Pressure drop, ΔP *		Pa	40	100	140	180	230	270	320	370	410	450			
Optional weather data		Location			Link										
Testing Laboratory		TestLab Solar Thermal Systems, Fraunhofer ISE													
Website		www.kollektortest.de													
Test report id. number		ktb-2008-18-a, ktb2013-09-b			Date of test report		2009.04.01 / 2013.12.03								
During the test GDIF/GTOT was always between		0,1		and		0,2									
Comments of testing laboratory:															
* manufacturer's data															
Note 1 Flow rate 0,020 kg/(s m ²) Fluid Water															
Note 2 Irradiance, G = 1000 W/m ² ; Ambient temperature, Ta=30 °C															
Note 3 Given by manufacturer															
						 <p>TestLab Solar Thermal Systems Heidenhofstraße D-78110 Heidenheim Tel: +49 7141 61 4398 5354 Version: 4.05, 2013-11-07</p>									
<p>DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de</p>															

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S784 F
	Issued	24.01.2014

Annual collector output kWh/module													
Collector name	Location and collector temperature (T _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	
RK2300 Mediterano	2.594	1.710	995	1.893	1.201	658	1.405	840	446	1.533	904	474	
RK2001 Mediterano	2.224	1.466	853	1.622	1.029	564	1.204	720	383	1.314	775	406	

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

Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °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°

G _{tot}	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	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 (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.