

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S1913 F
	Date of issue	04-12-2015

Company	STI - Solar Technologie International GmbH	Country	Germany
Brand (optional)	STI	Website	www.sti-solar.de
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Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
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Integration in the roof possible ?	Yes
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Collector name	Aperture area (A _a) [m ²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A _G) [m ²]	Power output per collector unit G = 1000 W/m ² T _m -T _a :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
FKF 200 V AIAI	1.830	1 746	1 200	85	2.095	1 482	1 410	1 245	1 056	843
FKF 240 V AIAI	2.220	2 100	1 200	85	2.520	1 798	1 710	1 511	1 282	1 022
FKF 270 V AIAI	2.520	2 373	1 200	85	2.850	2 041	1 941	1 715	1 455	1 160
FKF 200 H AIAI	1.830	1 200	1 746	85	2.095	1 482	1 410	1 245	1 056	843
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Collector efficiency parameters related to aperture area (A_a) Type of fluid and flow rate see note 1	η _{0a}	0.810	-
	α _{1a}	3.804	W/(m ² K)
	α _{2a}	0.017	W/(m ² K ²)

Stagnation temperature - Weather conditions see note 2	t _{stg}	183.4	°C
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Effective thermal capacity	C _{eff} = C/A _a	6.58	kJ/(m ² K)
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Max. operation pressure - see note 3	p _{max}	600	kPa
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Incidence angle modifiers K _θ (θ)	G _{DIF} /G _{TOT}		θ _T / θ _L	50°	10°	20°	30°	40°	60°	70°
	min	max	K _θ (θ _T)	0.90	1.00	0.99	0.97	0.95	0.83	0.67
	G _{DIF} /G _{TOT} : min&max - while measuring		K _θ (θ _L)	0.90	1.00	0.99	0.97	0.95	0.83	0.67
					Optional values					

Testing Laboratory	TÜV Energie und Umwelt GmbH
Website	www.eco-tuv.de
Test report id. number	21219827_P3_AIAI; 21219827_P0; 21219827_R0_AICu
Date of test report	24.05.2013; (all)
Perf. test method	EN 12975-2 6.1.5 (indoor)

Comments of testing laboratory :	
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Note 1	Fluid	Water	Flow rate	0.020	kg/s per m ²	 <p>Genau. Richtig. TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Köln</p>
Note 2	Irradiance, G_s=1000 W/m² Ambient temperature, T_a=30 °C					
Note 3	Given by manufacturer					



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S1913 F
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Annual collector output kWh													
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	
FKF 200 V AIAI	2 288	1 605	1 013	1 853	1 244	740	1 273	818	477	1 382	878	504	
FKF 240 V AIAI	2 775	1 947	1 229	2 248	1 509	898	1 544	992	578	1 676	1 066	611	
FKF 270 V AIAI	3 150	2 210	1 395	2 552	1 713	1 020	1 752	1 126	656	1 903	1 210	693	
FKF 200 H AIAI	2 288	1 605	1 013	1 853	1 244	740	1 273	818	477	1 382	878	504	
FKF 240 H AIAI	2 775	1 947	1 229	2 248	1 509	898	1 544	992	578	1 676	1 066	611	
FKF 270 H AIAI	3 150	2 210	1 395	2 552	1 713	1 020	1 752	1 126	656	1 903	1 210	693	

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

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). Detailed description with all equations used is available from the Solar Keymark web site (direct link: <http://www.estif.org/solarkeymark/annexb1.php>)

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	VERSION 3.5, 2012.01.13
	Calculation program version: 3.07, October 2011 (SP)