


ZERTIFIKAT

Zertifikatinhaber	STI Solar-Technologie-International GmbH Seiferitzer Allee 14 08393 Meerane
Herstellwerk	Meerane
Produkt	Sonnenkollektoren
Typ, Modell	FKF 200 V AlCu, FKF 240 V AlCu, FKF 270 V AlCu, FKF 200 H AlCu, FKF 240 H AlCu, FKF 270 H AlCu
Prüfgrundlage(n)	DIN EN 12975-1:2011-01 DIN EN 12975-2:2006-06 CEN-KEYMARK-Programmregeln Solarthermische Produkte Version 30 (2017-04)
Konformitätszeichen	
Registernummer	011-7S1914 F
Gültig bis	2023-05-31
Nutzungsrecht	Dieses Zertifikat berechtigt zum Führen des oben stehenden Konformitätszeichens in Verbindung mit der genannten Registernummer. Weitere Angaben siehe Anhang.

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S1914 F
	Date of issue	04-12-2015

Company	STI - Solar Technologie International GmbH	Country	Germany
Brand (optional)	STI	Website	www.sti-solar.de
Street, number	Seiferitzer Allee 14	E-mail	info@sti-solar.de
Postal Code	08393	Tel.	+49 (0) 3763 7956 10
City	Meerane	Fax	+49 (0) 3763 7956 115

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 AlCu	1.830	1 746	1 200	85	2.095	1 455	1 375	1 198	997	773
FKF 240 V AlCu	2.220	2 100	1 200	85	2.520	1 765	1 668	1 453	1 209	938
FKF 270 V AlCu	2.520	2 373	1 200	85	2.850	2 003	1 893	1 649	1 373	1 064
FKF 200 H AlCu	1.830	1 200	1 746	85	2.095	1 455	1 375	1 198	997	773
FKF 240 H AlCu	2.220	1 200	2 100	85	2.520	1 765	1 668	1 453	1 209	938
FKF 270 H AlCu	2.520	1 200	2 373	85	2.850	2 003	1 893	1 649	1 373	1 064

Collector efficiency parameters related to aperture area (A_a) Type of fluid and flow rate see note 1	η _{0a}	0.795	-
	α _{1a}	4.204	W/(m ² K)
	α _{2a}	0.016	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	7.14	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_P2_AlCu; 21219827_P0; 21219827_R0_AlCu
Date of test report	24.05.2013; (all)
Perf. test method	EN 12975-2 6.1.5 (indoor)

Comments of testing laboratory :	

Note 1	Fluid	Water	Flow rate	0.021 kg/s per m ²	 Genau. Richtig. TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Köln
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.	011-7S1914 F
	Issued	04-12-2015

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 AlCu	2 235	1 510	909	1 775	1 145	647	1 223	755	419	1 331	810	442			
FKF 240 V AlCu	2 712	1 832	1 103	2 153	1 389	785	1 484	916	508	1 615	982	536			
FKF 270 V AlCu	3 078	2 079	1 252	2 444	1 577	891	1 685	1 040	577	1 833	1 115	608			
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Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations				
Location	Latitude °	G_{tot} kWh/m²	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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Datasheet version:
 VERSION 3.5, 2012.01.13
 Calculation program version:
 3.07, October 2011 (SP)