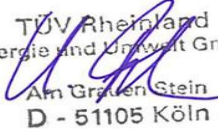




Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Certificate No.		011-7S 2073 F			
						Date of issue		09-07-2013			
Company		Bosch Thermotechnik GmbH			Country		Germany				
Brand (optional)		Junkers			Website		www.junkers.com				
Street, number					E-mail		Solarthermie@de.bosch.com				
Postal Code		73249			Tel.		+49 (0)2557 9399-0				
City		Wernau			Fax		+49 (0)2557 9399-56				
Collector Type (flat plate / evacuate tubular / un-glazed)						Flat plate collector					
Integration in the roof possible ?						Yes					
						Power output per collector unit G = 1000 W/m ² T _m -T _a :					
						0 K	10 K	30 K	50 K	70 K	
Collector name		Aperture area (A_a) [m ²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A_g) [m ²]	[W]	[W]	[W]	[W]	
FKT-2W		2.426	1.175	2.170	87	2.550	1.946	1.849	1.634	1.390	
Collector efficiency parameters related to aperture area (A_a)						η_{0a}		0.802		-	
Type of fluid and flow rate see note 1						a_{1a}		3.833		W/(m ² K)	
						a_{2a}		0.015		W/(m ² K ²)	
Stagnation temperature - Weather conditions see note 2						t_{stg}		196		°C	
Effective thermal capacity						$c_{eff} = C/A_a$		6.05		kJ/(m ² K)	
Max. operation pressure - see note 3						p_{max}		1000		kPa	
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)	0.94	1.00	0.99	0.98	0.97	0.90	0.80
		0	0	K _θ (θ _L)	0.94	1.00	0.99	0.98	0.97	0.90	0.80
G_{DIF}/G_{TOT} : min&max - while measuring						Optional values					
Testing Laboratory						TÜV Energie und Umwelt GmbH					
Website						www.eco-tuv.de					
Test report id. number						21222048_EN_Bosch					
Date of test report						09-07-2013					
Perf. test method						EN 12975-2 6.1.5 (indoor)					
Comments of testing laboratory :											
Note 1	Fluid	Water	Flow rate	0.020	kg/s per m ²	 TÜV Rheinland Energie und Umwelt GmbH Am Gräfen Stein D - 51105 Köln					
Note 2	Irradiance, G_s=1000 W/m²										
Note 3	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.

011-7S 2073 F

Issued

09-07-2013

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			
FKT-2W	3 103	2 194	1 407	2 520	1 707	1 031	1 732	1 117	659	1 882	1 208	701			

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

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)