

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2039 F
	Date of issue	30.09.2013

Company	Kingspan Environmental	Country	Northern Ireland (UK)
Brand (optional)	Kingspan Solar	Website	www.kingspanenviro.co.uk
Street, number	180, Gilford Road	E-mail	tommy.williamson@kingspan.com
Postal Code	BT63 5LF	Tel.	+44 2 838 364 500
City	Portadown	Fax	+44 2 838 364 501

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 (Aa) [m ²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (Ag) [m ²]	Power output per collector unit G = 1000 W/m ² Tm-Ta :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
Kingspan Solar FPW18	1.62	1 929	933	91	1.80	1 272	1 209	1 073	922	754
Kingspan Solar FPW21*	1.92	1 988	1 041	90	2.07	1 507	1 433	1 272	1 092	894
Kingspan Solar FPW25	2.23	1 990	1 222	91	2.43	1 751	1 665	1 477	1 269	1 038

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.785	-
	a_{1a}	3.722	W/(m ² K)
	a_{2a}	0.012	W/(m ² K ²)

Stagnation temperature - Weather conditions see note 2	t _{stg}	203	°C
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Effective thermal capacity	c _{eff} = C/Aa	9.54	kJ/(m ² K)
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Max. operation pressure - see note 3	p _{max}	1000	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)	0.94	1.00	0.99	0.98	0.97	0.90	0.80
	-	-	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	TZS, ITW University of Stuttgart
Website	www.tzs.uni-stuttgart.de
Test report id. number	12COL1078OEM06, 12COL1079OEM06, 12COL1079QOEM06
Date of test report	29.10.2012
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :
* dimensions according to manufacturer

Note 1	Fluid	Water	Flow rate	0.020	kg/s per m ²
Note 2	Irradiance, G _s =1000 W/m ²				
Note 3	Ambient temperature, T _a =30 °C				
	Given by manufacturer				



**Annual collector output based on EN 12975 Test Results,
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Issued

30.09.2013
Annual collector output kWh
Location and collector temperature (T_m)

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
Kingspan Solar FPW18	2 061	1 476	974	1 678	1 158	725	1 154	757	461	1 256	821	492
Kingspan Solar FPW21*	2 443	1 749	1 154	1 989	1 372	859	1 368	897	546	1 489	973	583
Kingspan Solar FPW25	2 837	2 032	1 341	2 310	1 594	998	1 589	1 042	635	1 729	1 130	677

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>)

DIN CERTCO • Alboinstraße 56 • 12103 Berlin

 Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de

Datasheet version:

VERSION 3.6, 2012.01.13

Calculation program version:

3.07, October 2011 (SP)