



<b>Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate</b>				<b>Certificate No.</b> <b>011-7S2057 F</b>	
				Date of issue <b>11.12.2012</b>	
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**Collector Type** (flat plate / evacuate tubular / un-glazed) **Flat plate collector**

**Integration in the roof possible ?** **No**

Collector name	Aperture area (A <sub>a</sub> ) [m <sup>2</sup> ]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A <sub>c</sub> ) [m <sup>2</sup> ]	Power output per collector unit G = 1000 W/m <sup>2</sup> T <sub>m</sub> -T <sub>a</sub> :				
						0 K	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
IDK25A	2.33	2061	1225	109	2.52	1808	1729	1555	1360	1145

<b>Collector efficiency parameters related to aperture area (A<sub>a</sub>)</b>				η <sub>0a</sub> <b>0.776</b> -	
Type of fluid and flow rate see note 1				a <sub>1a</sub> <b>3.293</b> W/(m <sup>2</sup> K)	
				a <sub>2a</sub> <b>0.011</b> W/(m <sup>2</sup> K <sup>2</sup> )	

**Stagnation temperature** - Weather conditions see note 2 **t<sub>stg</sub>** **191** °C

**Effective thermal capacity** **C<sub>eff</sub> = C/A<sub>a</sub>** **10.95** kJ/(m<sup>2</sup>K)


**Max. operation pressure** - see note 3 **p<sub>max</sub>** **1000** kPa

Incidence angle modifiers K <sub>θ</sub> (θ)	G <sub>DIF</sub> /G <sub>TOT</sub>		θ <sub>T</sub> / θ <sub>L</sub>	50°	10°	20°	30°	40°	60°	70°
	min	max								
		-	-	K <sub>θ</sub> (θ <sub>L</sub> )	0.94	1.00	0.99	0.98	0.97	0.89
G <sub>DIF</sub> /G <sub>TOT</sub> : min&max - while measuring				0.94	1.00	0.99	0.98	0.97	0.89	0.79

*Optional values*

<b>Testing Laboratory</b>	<b>TZS, ITW University of Stuttgart</b>
<b>Website</b>	<b><a href="http://www.tzs.uni-stuttgart.de">www.tzs.uni-stuttgart.de</a></b>
<b>Test report id. number</b>	<b>09COL784/10EM13, 09COL784Q/10EM13</b>
<b>Date of test report</b>	<b>11.12.2012</b>
<b>Perf. test method</b>	<b>EN 12975-2 6.1.4 (outdoor)</b>

**Comments of testing laboratory :**

Note 1	<b>Fluid</b> <b>Water</b>	<b>Flow rate</b> <b>0.020</b> kg/s per m <sup>2</sup>	
Note 2	<b>Irradiance, G<sub>s</sub>=1000 W/m<sup>2</sup></b>		
Note 3	<b>Ambient temperature, T<sub>a</sub>=30 °C</b>		
Note 3	<b>Given by manufacturer</b>		



Annual collector output based on EN 12975 Test Results,  
annex to Solar KEYMARK Certificate

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**Annual collector output kWh**

**Location and collector temperature (T<sub>m</sub>)**

Collector name	Location and collector temperature (T <sub>m</sub> )														
	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			
IDK25A	2859	2107	1446	2370	1696	1122	1619	1103	708	1757	1191	753			

Collector mounting: Fixed or tracking

Fixed; slope = latitude - 15° (rounded to nearest 5°)

**Overview of locations**

Location	Latitude °	Gtot kWh/m <sup>2</sup>	Ta °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°

Gtot	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
Ta	Mean annual ambient air temperature	°C
Tm	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<sub>m</sub>). 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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	Calculation program version:
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