


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate					Licence Number		011-7S1551 F																		
					Issued		2015-03-25																		
Company holding the			General Solar Systems GmbH		Country		Österreich																		
Brand (optional)					Website		www.sonnenkraft.at																		
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Postal Code / City, province		A - 9300		St. Veit/Glan		Tel/Fax		+43			4212 45010-0 / 4212 45010-477														
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed																			
Thermal / photo voltaic hybrid collector? (PVT collector)						No																			
Integration in the roof possible? (manufacturers declaration)						Yes																			
						<b>Power output per collector module</b>																			
						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											
Collector name						m <sup>2</sup>		mm		mm		mm		m <sup>2</sup>		W									
IDMK12-AL						1.11		1 016		1 228		109		1.25		849									
IDMK25-AL						2.33		2 061		1 225		107		2.52		1 782									
Performance test method						Glazed liquid heating collector - steady state - indoor																			
Performance parameters related to aperture						η <sub>0</sub>		a <sub>1</sub>		a <sub>2</sub>															
Units						-		W/(m <sup>2</sup> K)		W/(m <sup>2</sup> K <sup>2</sup> )															
Test results - Flow rate and fluid see note 1						0.765		3.951		0.011															
Bi-directional incidence angle modifiers? No						<i>K<sub>θ</sub> values are obligatory for 50°.</i>																			
Incidence angle modifiers K <sub>θ</sub> (θ)						Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
						K <sub>θ</sub> (θ)		1.00		0.99		0.98		0.96		0.92		0.86		0.73		0.34		0.00	
Incidence angle modifier not bi-directional - leave fields blank																									
Stagnation temperature - Weather conditions see note 2								T <sub>stg</sub>		191														°C	
Effective thermal capacity								c <sub>eff</sub> = C/Ag		13.23														kJ/(m <sup>2</sup> K)	
Max. intended operation temperature - see note 3								T <sub>max,op</sub>		-														°C	
Max. operation pressure - see note 3								p <sub>max,op</sub>		1000														kPa	
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m <sup>2</sup> aperture area						Flow rate		kg/(s m <sup>2</sup> )		-		-		-		-		-		-		-		-	
Pressure drop, ΔP						Pa		-		-		-		-		-		-		-		-		-	
Optional weather data						Location		-		Link		-													
Testing Laboratory						TZS, ITW University Stuttgart																			
Website						http://www.itw.uni-stuttgart.de																			
Test report id. number						09COL785OEM06, 09COL784OEM06, 09COL784QOEM06				Date of test report		2011.03.24													
During the test GDIF/GTOT was always between						0		and		1															
Comments of testing laboratory:						none																			
Note 1						Flow rate		0.020 kg/(s m <sup>2</sup> )		Fluid		Water													
Note 2						Irradiance, G = 1000 W/m <sup>2</sup> ; Ambient temperature, T <sub>a</sub> =30 °C																			
Note 3						Given by manufacturer																			
						 Datasheet version: 4.06, 2014-01-15																			
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S1551 F
	Issued	25.03.2015

Annual collector output kWh/module														
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		
IDMK12-AL	1 327	918	583	993	669	410	732	466	275	796	501	291		
IDMK25-AL	2 786	1 928	1 223	2 084	1 405	860	1 537	978	576	1 672	1 052	610		

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G <sub>tot</sub> kWh/m <sup>2</sup>	T <sub>a</sub> °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 <sub>tot</sub>	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
T <sub>a</sub>	Mean annual ambient air temperature	°C
T <sub>m</sub>	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T<sub>m</sub>). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.