Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S360 F
	Date of issue	01.02.2008

Company	SOLution Solartechnik GmbH	**Country**		Österreich
Brand (optional)		**Website**		www.sol-ution.com
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City	Sattledt	**Fax**	+43	7244 20380 – 18

Collector Type (flat plate / evacuate tubular / un-glazed)	Flat plate collector
Integration in the roof possible ?	Yes

Collector name	Aperture area (Aa) [m²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (AG) [m²]	Power output per collector unit G = 1000 W/m², Tm-Ta : 0 K [W]	10 K [W]	30 K [W]	50 K [W]	70 K [W]
INSOL20-1 *	1.83	2028	1013	111	2.05	1325	1255	1103	933	745
INSOL20-1 FLOAT*	1.83	2028	1013	111	2.05	1325	1255	1103	933	745
INSOL11-1 *	0.91	1 058	1 013	111	1.07	659	624	548	464	370
INSOL11-1 FLOAT*	0.91	1 058	1 013	111	1.07	659	624	548	464	370

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.724	-
	a_{1a}	3.687	W/(m²K)
	a_{2a}	0.012	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	208	°C
Effective thermal capacity	$c_{eff} = C/A_a$	10640	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	600	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	10°	20°	30°	40°	60°	70°
			$K_\theta(\theta_T)$	0.91	1.00	0.99	0.98	0.95	0.84	0.69
	-	-	$K_\theta(\theta_L)$	0.91	1.00	0.99	0.98	0.95	0.84	0.69

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	05COL423/1OEM05
Date of test report	01.02.2008
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 m²
Note 2	**Irradiance, Gs=1000 W/m²** **Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

VERSION 3.6, 2012.01.13

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S360 F
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Annual collector output kWh

	Location and collector temperature (Tm)														
	Athens			Davos			Stockholm			Würzburg					
Collector name	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C			
INSOL20-1 *	2055	1420	892	1645	1094	653	1134	719	419	1233	772	443			
INSOL20-1 FLOAT*	2055	1420	892	1645	1094	653	1134	719	419	1233	772	443			
INSOL11-1 *	1022	706	444	818	544	325	564	358	208	613	384	220			
INSOL11-1 FLOAT*	1022	706	444	818	544	325	564	358	208	613	384	220			

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	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/m²
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 (Tm). 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:
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Calculation program version:
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