



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate				Licence number		011-7S1750 F					
				Date of issue		28.09.2012					
Company holding the licence		Solvis GmbH & Co. KG		Country		Germany					
Brand (optional)		-		Website		www.solvis.de					
Street, number		Grotrian-Steinweg-Str. 12		E-mail		info@solvis-solar.de					
Postal Code		38112		Tel.		+49 531 28904-0					
City		Braunschweig		Fax		+49 531 28904-100					
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 Tm-Ta :					
						0 K	10 K	30 K	50 K	70 K	
						[W]	[W]	[W]	[W]	[W]	
Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (Ae)						
	[m ²]	[mm]	[mm]	[mm]	[m ²]						
SolvisFera F-282-I AR	2.57	1 480	1 909	105	2.83	2 137	2 042	1 827	1 577	1 293	
SolvisFera F-552-I AR	5.16	1 480	3 793	105	5.61	4 289	4 099	3 666	3 165	2 595	
SolvisFera F-652-I AR	6.45	1 480	4 735	105	7.01	5 361	5 123	4 583	3 956	3 243	
SolvisFera F-802-I AR	7.74	1 480	5 677	105	8.40	6 433	6 148	5 499	4 747	3 892	
SolvisFera F-552-S AR	5.16	1 480	3 793	105	5.61	4 289	4 099	3 666	3 165	2 595	
SolvisFera F-652-S AR	6.45	1 480	4 735	105	7.01	5 361	5 123	4 583	3 956	3 243	
SolvisFera F-802-S AR	7.74	1 480	5 677	105	8.40	6 433	6 148	5 499	4 747	3 892	
SolvisFera F-552-D AR	5.16	1 480	3 793	105	5.61	4 289	4 099	3 666	3 165	2 595	
SolvisFera F-652-D AR	6.45	1 480	4 735	105	7.01	5 361	5 123	4 583	3 956	3 243	
SolvisFera F-802-D AR	7.74	1 480	5 677	105	8.40	6 433	6 148	5 499	4 747	3 892	
Collector efficiency parameters related to aperture area (Aa)						η_{0a}	0.831	-			
Type of fluid and flow rate see note 1						a_{1a}	3.52	W/(m ² K)			
						a_{2a}	0.0167	W/(m ² K ²)			
Stagnation temperature - Weather conditions see note 2						t_{stg}	209	°C			
Effective thermal capacity						$C_{eff} = C/Aa$	4.8	kJ/(m ² K)			
Max. operation pressure - see note 3						p_{max}	400	kPa			
Incidence angle modifiers $K_0(\theta)$						K_{0d}	θ_T / θ_L 50°		at G_{DIF}/G_{TOT}	0.15	
							0.88	$K_0(\theta)$			
						b_0	0.12				
Testing Laboratory						Institut für Solarenergieforschung Hameln					
Website						www.isfh.de					
Test report id. number						06-08/D; 07-08/Q					
Date of test report						12.05.2011; 16.05.2011					
Perf. test method						EN 12975-2 6.1.5 (indoor)					
Comments of testing laboratory :											
The manufacturer distributes of the collector types SolvisFera F-552-D AR, SolvisFera F-652-D AR and SolvisFera F-802-D AR the modell "[type name]-RL" and "[type name]-LR". The modells are differing only in the position of collector connections.											
Note 1	Fluid	Water	Flow rate	0.016	kg/s per m ²	Institut für Solarenergieforschung GmbH Am Ohrberg 1 D-31860 Emmertal Tel.: 0 51 51 / 999-100 Fax: 0 51 51 / 999-500					
Note 2	Irradiance, $G_s=1000$ W/m ² ; 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	Licence number	011-7S1750 F
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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	
SolvisFera F-282-I AR	3 399	2 478	1 643	2 806	1 961	1 227	1 923	1 283	784	2 086	1 386	832	
SolvisFera F-552-I AR	6 825	4 975	3 299	5 634	3 937	2 463	3 861	2 575	1 573	4 188	2 783	1 671	
SolvisFera F-652-I AR	8 531	6 218	4 124	7 043	4 921	3 079	4 826	3 219	1 967	5 235	3 479	2 089	
SolvisFera F-802-I AR	10 237	7 462	4 949	8 452	5 905	3 695	5 791	3 863	2 360	6 282	4 174	2 507	
SolvisFera F-552-S AR	6 825	4 975	3 299	5 634	3 937	2 463	3 861	2 575	1 573	4 188	2 783	1 671	
SolvisFera F-652-S AR	8 531	6 218	4 124	7 043	4 921	3 079	4 826	3 219	1 967	5 235	3 479	2 089	
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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/annex1.php>)

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	VERSION 3.6, 2012.01.20
	Calculation program version:
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