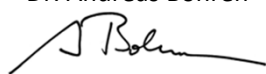


Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate							Licence Number		011-7S2518 F			
							Issued		2015-05-13			
Company holding the	SOLTOP Schuppisser AG						Country	Switzerland				
Brand (optional)	-						Website	www.soltop.ch				
Street, street number	St. Gallerstrasse 5a						E-mail	info@soltop.ch				
Postal Code / City, province	CH-8353	Elgg				Tel/Fax	+41 (0)52 397 77-77 /-78					
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					
Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module						
	m ²	mm	mm	mm	m ²	G = 1000 W/m ²						
						Tm-Ta						
						0 K	10 K	30 K	50 K	70 K		
						W	W	W	W	W		
ELEKTRA One 1.7H	1.356	1'018	1'612	60	1.641	1'163	1'105	979	840	688		
Performance test method	Glazed liquid heating collector - steady state - outdoor											
Performance parameters related to <u>aperture</u>	η0	a1	a2									
Units	-	W/(m ² K)	W/(m ² K ²)									
Test results - Flow rate and fluid see note 1	0.858	4.20	0.0115									
Bi-directional incidence angle	Yes	Kθ values are obligatory for 50°.										
Incidence angle modifiers Kθ(θT) transversal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°		
	Kθ(θT)	1.00	1.00	0.99	0.97	0.93	0.85	0.70	0.40	0.00		
Incidence angle modifiers Kθ(θL) longitudinal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°		
	Kθ(θL)	1.00	1.00	0.99	0.97	0.93	0.85	0.70	0.40	0.00		
Stagnation temperature - Weather conditions see note 2							T _{stg}	182	°C			
Effective thermal capacity							C _{eff} = C/A _g	7.9	kJ/(m ² K)			
Max. intended operation temperature - see note 3							T _{max,op}	130	°C			
Max. operation pressure - see note 3							p _{max,op}	600	kPa			
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area												
Flow rate	kg/(s m ²)	0.009	0.017	0.026	0.035	0.043	0.052	0.061	0.069	0.078	0.086	
Pressure drop, ΔP	Pa	449	1141	2075	3251	4670	6331	8235	10381	12769	15400	
Optional weather data	Location					Link						
Testing Laboratory	SPF, CH-8640 Rapperswil											
Website	www.spf.ch											
Test report id. number	C1670LPEN, C1670QPEN						Date of test reports	11.05.2015				
During the test G _{DIF} /G _{TOT} was always between	0.09	and	0.20									
Comments of testing laboratory:	-											
Note 1	Flow rate	0.043	kg/(s m ²)	Fluid	Water-Glycole							Dr. Andreas Bohren 
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, Ta=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	011-7S2518 F
	Issued	2015-05-13

Annual collector output kWh/module													
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	
ELEKTRA One 1.7H	1'832	1'296	849	1'388	959	610	1'019	665	406	1'108	716	430	

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

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_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

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	4.06, 2014-01-15
	ScenoCalc version:
	Ver. 4.06 (Jan, 2014)