TÜVRheinland®
DIN CERTCO

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2265 R
	Issued	09 Desember 2013

Company holding the		Country	
Brand (optional)		Website	
Street, street number		E-mail	
Postal Code / City, province		Tel/Fax	

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Evacuated tubular collector
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	No

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module Gb = 850 W/m²; Gd = 150 W/m² Tm-Ta 0 K	10 K	30 K	50 K	70 K
	m²	mm	mm	mm	m²	W	W	W	W	W
SZ58/1800-10HA	0.92	2 000	870	150	1.74	682	658	609	561	512
SZ58/1800-15HA	1.38	2 000	1 260	150	2.52	1 024	987	914	841	768
SZ58/1800-20HA	1.84	2 000	1 650	150	3.30	1 365	1 316	1 219	1 121	1 024
SZ58/1800-25HA	2.31	2 000	2 040	150	4.08	1 706	1 645	1 523	1 401	1 280
SZ58/1800-30HA	2.77	2 000	2 430	150	4.86	2 047	1 974	1 828	1 682	1 536

Performance test method	Liquid heating collector - quasi-dynamic - outdoor							
Performance parameters related to aperture	η0b	c1	c2	c3	c4	c6	KΘd	
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	s/m	-	
Test results - Flow rate and fluid see note 1	0.733	2.643	0.000	0.000	0.000	0.000	1.065	

Bi-directional incidence angle	Yes	*KΘ values are obligatory for 50°.*								
Incidence angle modifiers KΘ(ΘL)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
longitudinal direction	KΘ(ΘL)	1.00	1.00	0.99	0.98	0.96	0.94	0.88	0.00	0.00
Incidence angle modifiers KΘ(ΘT)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
transversal direction	KΘ(ΘT)	1.02	1.08	1.19	1.37	1.52	1.58	1.50	1.20	0.00

Stagnation temperature - Weather conditions see note 2	Tstg	227	°C
Effective thermal capacity	ceff = C/Ag	63.57	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	120	°C
Max. operation pressure - see note 3	pmax,op	600	kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area

Flow rate	kg/(s m²)	0.003	0.007	0.010	0.013	0.017	0.020	0.023	0.027	0.030	0.033
Pressure drop, ΔP	Pa	39	109	176	254	376	482	599	774	918	1075

Optional weather data	Location		Link	
Testing Laboratory	TUV Rheinland (Shanghai) Co., Ltd.			
Website	www.tuv.com			
Test report id. number	154019941_EN_Sunrain_30_Repor	Date of test report	04 Desember 2013	
During the test GDIF/GTOT was always between	0.065	and	0.892	

Comments of testing laboratory:

Example comment.

Note 1	Flow rate	0.028	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

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Datasheet version: 4.04, 2013-04-22

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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2265 R
	Issued	09 December 2013

Annual collector output kWh/module

	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
SZ58/1800-10HA	1 230	999	803	1 015	823	663	707	544	418	780	603	461
SZ58/1800-15HA	1 845	1 498	1 205	1 522	1 234	995	1 060	817	627	1 170	904	692
SZ58/1800-20HA	2 459	1 998	1 606	2 030	1 646	1 327	1 414	1 089	836	1 560	1 205	923
SZ58/1800-25HA	3 074	2 497	2 008	2 537	2 057	1 658	1 767	1 361	1 045	1 949	1 507	1 153
SZ58/1800-30HA	3 689	2 997	2 409	3 045	2 468	1 990	2 121	1 633	1 253	2 339	1 808	1 384

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

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 (Tm). 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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ScenoCalc version:	Ver. 4.04 (Jun, 2013)