Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2250 R
	Date of issue	09.10.2013

Company	Jiangsu Micoe Solar Energy Co., Ltd.	**Country**		P.R.China	
Brand (optional)		**Website**		www.micoe.com	
Street, number	No.199, Yingzhou Road	**E-mail**		certification@micoe.com	
Postal Code		**Tel.**	0086	518 8595 9563	
City	Lianyungang City, Jiangsu Province	**Fax**	0086	518 8595 9565	

Collector Type (flat plate / evacuate tubular / un-glazed)	Evacuated tubular collector
Integration in the roof possible ?	No

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]
SZ58/1800-12G	1.08	2 033	1 147	200	2.33	824	804	763	717	669
SZ58/1800-14G*	1.26	2 035	1 301	210	2.65	961	938	890	837	780
SZ58/1800-15G*	1.35	2 035	1 298	210	2.64	1 030	1 006	953	897	836
SZ58/1800-16G*	1.44	2 035	1 467	210	2.99	1 099	1 073	1 017	956	891
SZ58/1800-18G*	1.62	2 035	1 633	210	3.32	1 236	1 207	1 144	1 076	1 003
SZ58/1800-20G	1.80	2 032	1 810	205	3.68	1 373	1 341	1 271	1 196	1 114
SZ58/1800-24G*	2.16	2 035	2 131	210	4.34	1 648	1 609	1 525	1 435	1 337
SZ58/1800-30G*	2.70	2 035	2 543	210	5.18	2 060	2 011	1 907	1 793	1 672

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.763	-
	a_{1a}	1.776	W/(m²K)
	a_{2a}	0.004	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	248	°C
Effective thermal capacity	$c_{eff} = C/A_a$	285	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	20	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°
			$K_\theta(\theta_T)$	1.75	1.06	1.12	1.25	1.37	1.82	2.15
	-	-	$K_\theta(\theta_L)$	0.92	1.00	0.99	0.97	0.95	0.84	0.70

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	13COL1176, 13COL1177, 13COL1177Q
Date of test report	09.10.2013
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :

* dimensions according to manufacturer

Note 1	**Fluid**	Water	**Flow rate**	0.025	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²** **Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

TZS Forschungs- und Testzentrum für Solaranlagen
Institut für Thermodynamik und Wärmetechnik Universität Stuttgart
Pfaffenwaldring 6, 70550 Stuttgart (Vaihingen)

VERSION 3.6, 2012.01.13

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	011-7S2250 R
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Annual collector output kWh

Collector name	Location and collector temperature (Tm)											
	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
SZ58/1800-12G	1 694	1 489	1 285	1 539	1 344	1 152	1 045	883	735	1 128	954	794
SZ58/1800-14G*	1 976	1 737	1 499	1 796	1 568	1 344	1 219	1 030	858	1 316	1 113	926
SZ58/1800-15G*	2 118	1 861	1 606	1 924	1 680	1 440	1 306	1 104	919	1 410	1 193	993
SZ58/1800-16G*	2 259	1 985	1 713	2 052	1 792	1 536	1 393	1 177	980	1 504	1 272	1 059
SZ58/1800-18G*	2 541	2 234	1 928	2 309	2 016	1 728	1 568	1 325	1 103	1 692	1 431	1 191
SZ58/1800-20G	2 823	2 482	2 142	2 565	2 240	1 920	1 742	1 472	1 225	1 880	1 590	1 323
SZ58/1800-24G*	3 388	2 978	2 570	3 078	2 688	2 304	2 090	1 766	1 470	2 256	1 908	1 588
SZ58/1800-30G*	4 235	3 723	3 213	3 848	3 360	2 880	2 613	2 208	1 838	2 820	2 385	1 985

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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