

Holder/Issued to/Manufacturer

Guangdong Fivestar Solar Energy Co., Ltd.

Liuchongwei Industrial Area, Wanjiang District, Dongguan City, Guangdong, 523051 China

Product name and description

Flat plate solar thermal collectors for water heating.
For technical information see Appendix (2 pages).

Models: FP3.0-F FP3.0-E FP3.0-G

Performance specification

The product is found to comply with the requirements in EN 12975-1:2006+A1:2010 Solar collectors, Part 1: General requirements and the Specific CEN Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN 12975-2:2006 Solar collectors Part 2: Test methods.

Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (RISE Research Institutes of Sweden AB, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

Validity

This certificate is valid until 2022-06-14 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <http://www.solarkeymark.org>.

Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of RISE. This certificate was first issued 2012-06-14. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Lennart Aronsson

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Certificate No. SC1118-12 | issue 4 | 2017-11-07

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2017-08-08



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Annex to Solar Keymark Certificate	Licence Number	SC1118-12
Supplementary Information	Issued	2017-11-07

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
Collector name	Standard Locations ϑ_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
FP3.0-F		3281	2370	1615	2538	1814	1220	1843	1252	811	1988	1332	848
FP3.0-E		2187	1580	1077	1692	1209	813	1229	835	541	1325	888	565
FP3.0-G		2734	1975	1346	2115	1511	1016	1536	1043	676	1657	1110	707
Annual output per m ² gross area		1094	790	538	846	605	407	614	417	270	663	444	283
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
Mean annual ambient air temperature		18,5°C			3,2°C			7,5°C			9,0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		

The collector is operated at constant temperature ϑ_m (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc

Additional Information		
Collector heat transfer medium	Water-Glycole	
Hybrid Thermal and Photo Voltaic collector	No	
The collector is deemed to be suitable for roof integration	No	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	C	--
Maximum tested positive load	5640	Pa
Maximum tested negative load	1000	Pa
Hail resistance using steel ball (maximum drop height)	1,4	m

Energy Labelling Information				
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}		
FP3.0-F	3,00	Collector efficiency (η_{col})	61	%
FP3.0-E	2,00	<i>Remark: Collector efficiency (η_{col}) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m², expressed in % and rounded to the nearest integer. Deviating from the regulation η_{col} is based on reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.</i>		
FP3.0-G	2,50			
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}		
		Zero-loss efficiency (η_0)	0,758	--
		First-order coefficient (a_1)	3,25	W/(m ² K)
		Second-order coefficient (a_2)	0,009	W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,82	--
		<i>Remark: The data given in this section are related to collector reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.</i>		