

Holder/Issued to/Manufacturer**Elioteknology Ltd.**

2318 Leighton Centre, 77 Leighton Road, Causeway bay, Hong Kong

Product name and description

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

Model: FPC1200D

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 2023-12-04 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 2014-06-02. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Johan Åkesson

Certificate No. SC0388-14 | issue 3 | 2020-08-21



RISE Research Institutes of Sweden AB | Certification
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2017-08-08



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Annex to Solar Keymark Certificate					Licence Number		SC0388-14							
					Date issued		2020-08-21							
					Issued by		RISE							
Licence holder		ELIOTEKNOLOGY Ltd			Country		Hong Kong							
Brand (optional)		ELIOTEKNOLOGY			Web		www.elioteknology.com							
Street, Number		Leighton Centre, 77 Leighton Road			E-mail		contact@elioteknology.com							
Postcode, City		2318, causeway bay Hong Kong			Tel		+852 3796 9644							
Collector Type					Flat plate collector									
Collector name					Power output per collector									
					Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	82 K				
					W	W	W	W	W	W				
FPC1200D					2,00	2 000	1 000	80	1 413	1 319	1 104	852	564	375
Power output per m ² gross area					706	660	552	426	282	188				
Performance parameters test method		Steady state - outdoor												
Performance parameters (related to A _G)		η_0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-			
Test results		0,723	4,456	0,023	0,000	0,00	2 570	0,000	0,00	0,00	0,847			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1,00	0,99	0,97	0,94	0,88	0,78	0,63	0,39	0,00			
Longitudinal		K _{θL, coll}	1,00	0,99	0,97	0,94	0,88	0,78	0,63	0,39	0,00			
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A _G)					dm/dt	0,019	kg/(sm ²)							
Maximum temperature difference during thermal performance test					($\vartheta_m - \vartheta_a$) _{max}	51,84	K							
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)					ϑ_{stg}	170	°C							
Maximum operating temperature					$\vartheta_{max, op}$	120	°C							
Maximum operating pressure					p _{max, op}	1200	kPa							
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					http://www.intertek.com							
Test report(s)		140321058GZU-001					Dated		2020-08-12					
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
<p>Tests were performed based on EN 12975-2:2006; This data sheet replace the previous version issued on 2018-12-18.</p>					 									
<p>RISE Research Institutes of Sweden AB Certification Box 857, SE-501 15 Borås, Sweden, Phone: +46 10-516 50 00, certifierring@ri.se www.ri.se</p>														

Annex to Solar Keymark Certificate Supplementary Information							Licence Number			SC0388-14				
							Issued			2020-08-21				
Annual collector output in kWh/collector at mean fluid temperature ϑ_m														
Standard Locations		Athens			Davos			Stockholm			Würzburg			
Collector name		ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
FPC1200D			2 131	1 305	655	1 506	867	386	1 129	617	275	1 232	660	292
Annual output per m ² gross area			1 066	653	328	753	434	193	564	308	138	616	330	146
Annual efficiency, η_a			60%	37%	19%	46%	27%	12%	48%	26%	12%	50%	27%	12%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)												
Annual irradiation on collector			1765 kWh/m ²			1630 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
Mean annual ambient air			18,5°C			3,2°C			7,5°C			9,0°C		
Collector orientation or tracking			South, 25°			South, 30°			South, 45°			South, 35°		
<p>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. 6.1 (September 2019). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/</p>														
Additional Information														
Collector heat transfer medium							Water							
The collector is deemed to be suitable for roof integration							Yes							
The collector was tested successfully under the following conditions:														
Climate class (A+, A, B or C)							C			--				
G (W/m ²) >		800	ϑ_a (°C) >		10	H_x (MJ/m ²) >			420					
Maximum tested positive load							5900			Pa				
Maximum tested negative load							3000			Pa				
Hail resistance using steel ball (maximum drop height)							2,0			m				
Additional collector attribute(s)														
<input type="checkbox"/> Using external power source(s) for normal				<input type="checkbox"/> Active or passive measure(s) for self-protection										
<input type="checkbox"/> Co-generating thermal and electrical power				<input type="checkbox"/> Façade collector(s)										
Energy Labelling Information						Additional Informative Technical Data								
		Reference Area, A_{sol} (m ²)		Hydraulic Designation Code			Aperture Area, A_a (m ²)							
FPC1200D		2,00		9-VH-1234S-A:8,1878-C:22,1061-D			1,85							
Data required for CDR (EU) No 811/2013 - Reference						Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}								
Collector efficiency (η_{col})		49%				Zero-loss efficiency (η_0)		0,71		--				
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/m ² , 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 9806:2017.		First-order coefficient (a_1)		4,46		Second-order coefficient (a_2)		0,023		W/(m ² K)				
		Incidence angle modifier IAM (50°)		0,88				--						
		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.												
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