

Holder/Issued to/Manufacturer

IES-Rudert (Asia) Limited

2 Hongyuan Road, Shigu, Tangxia Town, Dongguan City, Guangdong Province, China

Product name and description

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

Model: FKA-F-1200.e

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 2013-08-19. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Lennart Aronsson

Magnus Sturesson

Certificate No. SC1017-13 | issue 2 | 2017-11-20


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



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Annex to Solar Keymark Certificate - Summary of ISO 9806:2013 Test Results						Licence Number		SC1017-13							
						Date issued		2017-11-20							
						Issued by		RISE							
Licence holder		IES-RUDERT (ASIA) LIMITED				Country		China							
Brand (optional)		IES-RUDERT				Web		www.ieshk.com.hk							
Street, Number		2 Hongyuan Road, Shigu, Tangxia Town				E-mail		sales@ieshk.com.hk							
Postcode, City		Dongguan				Tel		+852 29920830							
Collector Type						Flat plate collector, glazed									
						Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ∅ _m - ∅ _a									
Collector name		Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	0 K W	10 K W	30 K W	50 K W	70 K W	56 K W				
FKA-F-1200.e		2,00	2000	1000	95	1524	1462	1332	1197	1055	1153				
Power output per m² gross area						762	731	666	598	527	576				
Performance parameters test method						Steady state - outdoor									
Performance parameters (related to AG)						η _{0,hem}	a ₁	a ₂							
Units						-	W/(m ² K)	W/(m ² K ²)							
Test results						0,762	3,072	0,004							
Incidence angle modifier test method						Steady state - outdoor									
Bi-directional incidence angle modifiers						No									
Incidence angle modifier						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal						K _{θT, coll}					0,83				0,00
Longitudinal						K _{θL, coll}					0,83				0,00
Heat transfer medium for testing						Water									
Flow rate for testing (per gross area, A_G)						dm/dt		0,02		kg/(sm ²)					
Maximum temperature difference for thermal performance calculations						(∅ _m -∅ _a) _{max}		56,29		K					
Standard stagnation temperature (G = 1000 W/m²; ∅_a = 30 °C)						∅ _{stg}		190		°C					
Effective thermal capacity, incl. fluid (per gross area, A_G)						C/m ²		10,97		kJ/(Km ²)					
Maximum operating temperature						∅ _{max, op}		120		°C					
Maximum operating pressure						p _{max, op}		800		kPa					
Testing laboratory						Intertek Testing Services Shenzhen Ltd. Guangzhou Branch				http://www.intertek.com					
Test report(s)						130730055GZU-001				Dated		2013-08-19			
Comments of testing laboratory						Datasheet version: 5.01, 2016-03-01									
Tests were performed based on EN 12975-2:2006															
RISE Research Institutes of Sweden AB Certification Box 857, SE-501 15 Borås, Sweden Phone: +46 10-516 50 00, certifying@ri.se www.ri.se															

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	SC1017-13
	Issued	2017-11-20

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg		
	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
FKA-F-1200.e		2224	1662	1203	1747	1304	947	1263	896	623	1362	954	655
Annual output per m ² gross area		1112	831	602	874	652	473	632	448	312	681	477	327
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}		
FKA-F-1200.e	2,00	Collector efficiency (η_{col})	63	%
		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 9806:2013.		
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}		
		Zero-loss efficiency (η_0)	0,762	--
		First-order coefficient (a_1)	3,07	W/(m ² K)
		Second-order coefficient (a_2)	0,004	W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,83	--
		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.		