
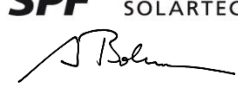


Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S2847 F					
					Date issued		2018-03-22					
					Issued by							
Licence holder		Riello S.p.A.			Country		Italy					
Brand (optional)		Beretta			Web		marketing@berettaclima.it					
Street, Number		Via Ing. Pilade Riello, 7			E-mail		www.berettaclima.it					
Postcode, City		IT-37045 Legnago (VR)			Tel		+39 0341 277111					
Collector Type					Flat plate collector, glazed							
Collector name	Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ∅ _m - ∅ _a							
					0 K	10 K	30 K	50 K	70 K	130 K		
					W	W	W	W	W	W		
SCF-25/2 B	2.30	2'004	1'148	86	1'767	1'671	1'471	1'261	1'040	317		
Power output per m ² gross area					768	726	639	548	452	138		
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		0.768	4.120	0.006								
Incidence angle modifier test method		Steady state - outdoor										
Bi-directional incidence angle modifiers		Yes										
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°	
Transversal		K _{GT, coll}	1.00	1.00	0.99	0.98	0.94	0.87	0.74	0.43	0.00	
Longitudinal		K _{θL, coll}	1.00	1.00	0.99	0.98	0.94	0.87	0.73	0.47	0.00	
Heat transfer medium for testing		Water-Glycole										
Flow rate for testing (per gross area, A _G)		dm/dt	0.020	kg/(sm ²)								
Maximum temperature difference for thermal performance calculations		(∅ _m -∅ _a) _{max}	130	K								
Standard stagnation temperature (G = 1000 W/m ² ; ∅ _a = 30 °C)		∅ _{stg}	198	°C								
Effective thermal capacity, incl. fluid (per gross area, A _G)		C/m ²	4.91	kJ/(Km ²)								
Maximum operating temperature		∅ _{max, op}	--	°C								
Maximum operating pressure		p _{max, op}	1000	kPa								
Testing laboratory		SPF, CH-8640 Rapperswil			www.spf.ch							
Test report(s)		C1754LPEN C1754QPEN			Dated		21.03.2018 21.03.2018					
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01							
--					 INSTITUT FÜR SOLARTECHNIK 							
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2847 F
	Issued	2018-03-22

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN ISO 9806:2013 test results

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
Collector name													
SCF-25/2 B		2'809	1'957	1'283	2'102	1'444	931	1'548	999	615	1'685	1'076	652
Annual output per m ² gross area		1'221	850	558	914	628	405	673	434	267	732	468	284
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	Yes	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	A	--
Maximum tested positive load	2400	Pa
Maximum tested negative load	2400	Pa
Hail resistance using ice balls (diameter)	45	mm

Energy Labelling Information

	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
SCF-25/2 B	2.30	Collector efficiency (η_{col})	59 %
		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)	0.768 --
		First-order coefficient (a_1)	4.12 W/(m ² K)
		Second-order coefficient (a_2)	0.006 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0.95 --
		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.	