

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S1323 F
	Issued	2020-09-07

Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
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
FK8203N 4H FG/BF		2 397	1 648	1 030	1 780	1 185	708	1 316	826	476	1 440	896	508
FK8203N 2H FG/BF		2 397	1 648	1 030	1 780	1 185	708	1 316	826	476	1 440	896	508
FK8233N 4H FG/BF		2 776	1 909	1 193	2 063	1 372	820	1 524	957	551	1 668	1 038	588
FK8233N 2H FG/BF		2 776	1 909	1 193	2 063	1 372	820	1 524	957	551	1 668	1 038	588
FK8253N 4H FG/BF		2 990	2 056	1 285	2 221	1 478	883	1 641	1 030	593	1 796	1 118	634
FK8253N 2H FG/BF		2 990	2 056	1 285	2 221	1 478	883	1 641	1 030	593	1 796	1 118	634
Annual output per m ² gross area		1 186	816	510	881	587	350	651	409	235	713	444	251
Annual efficiency, η_a		67%	46%	29%	54%	36%	21%	56%	35%	20%	57%	36%	20%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1630 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. 6.1 (September 2019). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/													

Additional Information			
Collector heat transfer medium	Water-Glycole		
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)	A		--
G (W/m ²) >	1000	ϑ_a (°C) >	20
		H_x (MJ/m ²) >	600
Maximum tested positive load	3000		Pa
Maximum tested negative load	2500		Pa
Hail resistance using steel ball (maximum drop height)	2		m

Additional collector attribute(s)			
<input type="checkbox"/> Using external power source(s) for normal operation	<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)
FK8203N 4H FG/BF	2.02	12-V-1234S-7.2,1568-20.4,1215-D	1.84
FK8203N 2H FG/BF	2.02	12-V-12S-7.2,1568-20.4,1215	1.84
FK8233N 4H FG/BF	2.34	12-V-1234S-7.2,1838-20.4,1215-D	2.22
FK8233N 2H FG/BF	2.34	12-V-12S-7.2,1838-20.4,1215	2.22
FK8253N 4H FG/BF	2.52	12-V-1234S-7.2,1988-20.4,1215-D	2.31
FK8253N 2H FG/BF	2.52	12-V-12S-7.2,1988-20.4,1215	2.31

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
Collector efficiency (η_{col})	55%	Zero-loss efficiency (η_0)	0.73
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)	3.96
		Second-order coefficient (a_2)	0.011
		Incidence angle modifier IAM (50°)	0.96
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.			