

Annex to Solar Keymark Certificate						Licence Number		011-7S1008 F			
						Date issued		2022-07-27			
						Issued by		DIN CERTCO			
Licence holder		Sunex S.A.				Country		Poland			
Brand (optional)						Web		www.sunex.pl			
Street, Number		ul. Piaskowa 7				E-mail		info@sunex.pl			
Postcode, City		47-400 , Raciborz				Tel		+48324149214			
Collector Type						Flat plate collector					
Collector name		Gross area (A _G)	Gross length	Gross width	Gross height	Power output per collector					
						G _b = 850 W/m2, G _d = 150 W/m2 & u = 1.3 m/s					
						θ _m - θ _a					
		m ²	mm	mm	mm	0 K	10 K	30 K	50 K	70 K	90 K
						W	W	W	W	W	W
Basicx 2.0 4C		2,02	1.900	1.060	89	1.414	1.344	1.189	1.015	821	608
Basicx 2.38 4C		2,38	2.240	1.060	89	1.666	1.583	1.401	1.196	968	717
Basicx 2.51 4C		2,51	2.240	1.120	89	1.756	1.669	1.477	1.260	1.020	756
Basicx 2.85 4C		2,85	2.240	1.270	89	1.995	1.896	1.677	1.432	1.159	858

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Supplementary Information								Issued		2022-07-27			

Gross Thermal Yield 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
Basicx 2.0 4C		2.159	1.513	968	1.632	1.111	686	1.199	773	462	1.302	830	486
Basicx 2.38 4C		2.543	1.783	1.140	1.923	1.309	808	1.413	911	544	1.533	978	573
Basicx 2.51 4C		2.681	1.879	1.202	2.027	1.380	852	1.489	960	573	1.616	1.031	604
Basicx 2.85 4C		3.046	2.135	1.365	2.302	1.568	968	1.691	1.091	651	1.836	1.171	686
Gross Thermal Yield per m ² gross area		1.069	749	479	808	550	340	593	383	229	644	411	241
Annual efficiency, η_a		61%	42%	27%	50%	34%	21%	51%	33%	20%	52%	33%	19%
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. 6.2 (13.01.2022). 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				No
The collector was tested successfully under the following conditions:				
Climate class (A+, A, B or C)				B
G (W/m ²) >	900	ϑ_a (°C) >		15
Maximum tested positive load				1000 Pa
Maximum tested negative load				1000 Pa
Hail resistance using steel ball (maximum drop height)				35 m
Additional collector attribute(s)				
Using external power source(s) for normal operation		No	Active or passive measure(s) for self-protection	
Co-generating thermal and electrical power		No	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)
Basicx 2.0 4C	2,02	10-V-1234S-8,1790-22,1024	1,85
Basicx 2.38 4C	2,38	10-V-1234S-8,2130-22,1120	"[Aa]"
Basicx 2.51 4C	2,51	10-V-1234S-8,2130-22,1180	"[Aa]"
Basicx 2.85 4C	2,85	12-V-1234S-8,2130-22,1330	2,65

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)	0,70
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)	3,35 W/(m ² K)
		Second-order coefficient (a_2)	0,012 W/(m ² K ²)
		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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