

Annex to Solar Keymark Certificate					Licence Number		011-7S3138F								
					Date issued		2022-08-15								
					Issued by		DIN CERTCO								
Licence holder		BLULAR			Country		France								
Brand (optional)		BLULAR			Web		www.blular.com								
Street, Number		9, rue de la Mare			E-mail		serge.toulzac@blular.com								
Postcode, City		75020 Paris			Tel		+33 1 87 66 99 82								
Collector Type					Flat plate collector										
Collector name					Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\dot{\vartheta}_m - \dot{\vartheta}_a$										
					Gross area (A _G)		Gross length	Gross width	Gross height	0 K	10 K	30 K	50 K	70 K	89 K
					m ²		mm	mm	mm	W	W	W	W	W	W
ETK2.0M					2.00		2,000	1,000	80	1,468	1,374	1,168	936	678	414
ETK2.5M					2.50		2,000	1,250	80	1,835	1,718	1,460	1,170	848	518
ETK2.7M					2.68		2,000	1,340	80	1,967	1,841	1,565	1,254	909	555
ETK3.0M					3.00		2,000	1,500	80	2,202	2,061	1,752	1,404	1,018	621

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Supplementary Information		011-7S3138F											
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Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
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
ETK2.0M		2,185	1,375	750	1,564	949	482	1,165	666	334	1,269	711	351
ETK2.5M		2,732	1,719	938	1,955	1,187	603	1,456	833	418	1,586	889	439
ETK2.7M		2,928	1,843	1,005	2,096	1,272	646	1,561	893	448	1,700	953	470
ETK3.0M		3,278	2,063	1,125	2,347	1,424	724	1,748	999	502	1,903	1,067	526
Gross Thermal Yield per m ² gross area		1,093	688	375	782	475	241	583	333	167	634	356	175
Annual efficiency, η_a		62%	39%	21%	48%	29%	15%	50%	29%	14%	51%	29%	14%
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 Draft Ver. 6.2 (22.09.2021). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/													
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)											B		--
G (W/m ²) >		900		ϑ_a (°C) >		15		H _x (MJ/m ²) >		540			
Maximum tested positive load											5900		Pa
Maximum tested negative load											3000		Pa
Hail resistance using steel ball (maximum drop height)											2		m
Additional collector attribute(s)													
Using external power source(s) for normal operation					No		Active or passive measure(s) for self-protection					No	
Co-generating thermal and electrical power					No		Façade collector(s)					No	
Energy Labelling Information							Additional Informative Technical Data						
							Reference Area, A _{sol} (m ²)		Hydraulic Designation Code			Aperture Area, A _a (m ²)	
ETK2.0M							2.00		8-VH-1234S-A:10,1885-C22,1060-D			1.85	
ETK2.5M							2.50		8-VH-1234S-A:10,1885-C22,1310-D			2.34	
ETK2.7M							2.68		8-VH-1234S-A:10,1885-C22,1400-D			2.52	
ETK3.0M							3.00		8-VH-1234S-A:10,1885-C22,1560-D			2.83	
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})							53%		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)		4.52		W/(m ² K)		
							Second-order coefficient (a ₂)		0.016		W/(m ² K ²)		
							Incidence angle modifier IAM (50°)		0.87		--		
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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