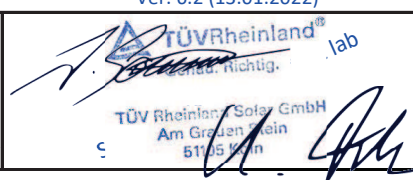


Annex to Solar Keymark Certificate					Licence Number		011-7S2081 F							
					Date issued		2023-05-02							
					Issued by		DINCERTCO							
Licence holder		Bosch Thermotechnik GmbH			Country		Germany							
Brand (optional)		Buderus			Web		www.buderus.com							
Street, Number					E-mail		solarthermie@de.bosch.com							
Postcode, City		35576 Wetzlar			Tel		49 (0)2557 9399-0 / -							
Collector Type					Flat plate collector									
Collector name					Power output per collector									
					Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	115 K				
					W	W	W	W	W	W				
SKT 1.0-s					2.55	2 170	1 175	87	1 884	1 789	1 578	1 338	1 070	362
					0	0	0	0	0	0	0	0	0	
Power output per m² gross area					739	702	619	525	420	142				
Performance parameters test method		Steady state - indoor												
Performance parameters (related to A_G)		$\eta_{0, b}$	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-			
Test results		0.744	3.58	0.014	0.000	0.00	3 947	0.000	0.00	0.0E+00	0.95			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{GT, coll}	1.00	0.99	0.98	0.96	0.93	0.88	0.76	0.38	0.00			
Longitudinal		K _{GL, coll}	1.00	0.99	0.98	0.96	0.93	0.88	0.76	0.38	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 during thermal performance test					($\vartheta_m - \vartheta_a$) _{max}	85	K							
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30$ °C)					ϑ_{stg}	200	°C							
Maximum operating temperature					$\vartheta_{max, op}$	n.n.	°C							
Maximum operating pressure					p _{max, op}	1000	kPa							
Testing laboratory		TÜV Rheinland Energy GmbH			www.tuv.com/solarthermal									
Test report(s)		21249762.001			Dated		24.08.2020							
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
														
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de														

Annex to Solar Keymark Certificate						Licence Number		011-7S2081 F						
Supplementary Information						Issued		2023-05-02						
Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m														
Standard Locations		Athens			Davos			Stockholm			Würzburg			
Collector name	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	
SKT 1.0-s		3 031	2 137	1 361	2 284	1 547	936	1 686	1 083	633	1 841	1 175	676	
Gross Thermal Yield per m² gross area		1 189	838	534	895	607	367	661	425	248	722	461	265	
Annual efficiency, η_a		67%	47%	30%	55%	37%	23%	57%	36%	21%	58%	37%	21%	
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								Yes						
The collector was tested successfully under the following conditions:														
Climate class (A+, A, B or C)								A		--				
G (W/m²) >		1000		ϑ_a (°C) >		20		H_x (MJ/m²) >		600				
Maximum tested positive load								4000		Pa				
Maximum tested negative load								3000		Pa				
Hail resistance using ice balls (diameter)								35		mm				
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)		2.55				Hydraulic Designation Code			Aperture Area, A _a (m ²)					
SKT 1.0-s		2.55				2-V-1234S-A:7.1.14592-C:16.8.1129			2.43					
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})		57%				Zero-loss efficiency (η_0)		0.74		--				
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 (a₁)		3.58		W/(m ² K)				
						Second-order coefficient (a₂)		0.014		W/(m ² K ²)				
						Incidence angle modifier IAM (50°)		0.93		--				
						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.								
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany														
Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de														