

Annex to Solar Keymark Certificate					Licence Number		011-7S3149 F							
					Date issued		2022-11-14							
					Issued by		DIN CERTCO							
Licence holder		Remon Technische Groothandel			Country		Netherlands							
Brand (optional)					Web		www.remon-techniek.nl							
Street, Number		Schakelstraat 4			E-mail		inkoop@remon.com							
Postcode, City		NL- 9363 TH Marum			Tel		31 594-648080							
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	88 K				
					m ²	mm	mm	mm	mm	mm	mm			
Remontec 2530					2.53	2 102	1 202	80	1 856	1 762	1 556	1 327	1 072	823
Power output per m² gross area					735	697	616	525	424	326				
Performance parameters test method		Steady state - indoor												
Performance parameters (related to A_G)		η_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		0.748	3.59	0.012			5 660				0.88			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1.00	0.99	0.98	0.96	0.93	0.87	0.75	0.37	0.00			
Longitudinal		K _{θL, coll}	1.00	0.99	0.98	0.96	0.93	0.87	0.75	0.37	0.00			
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt		0.020	kg/(sm ²)						
Maximum temperature difference during thermal performance test					$(\vartheta_m - \vartheta_a)_{max}$		58	K						
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30$ °C)					ϑ_{stg}		200	°C						
Maximum operating temperature					$\vartheta_{max, op}$		100	°C						
Maximum operating pressure					p _{max, op}		1000	kPa						
Testing laboratory		ISFH CalTeC			https://isfh.de/									
Test report(s)		153-22/B			Dated		14.11.2022							
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
					Institut für Solarenergieforschung GmbH Am Ohrberg 1 D-31880 Emmerthal Tel.: 05151/999-100 Fax: 05151/999-500									
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Supplementary Information		011-7S3149 F													
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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		
Remontec 2530		2 916	2 049	1 316	2 200	1 500	927	1 621	1 046	622	1 762	1 126	660		
Gross Thermal Yield per m ² gross area		1 154	811	521	871	594	367	641	414	246	697	446	261		
Annual efficiency, η_a		65%	46%	30%	53%	36%	23%	55%	35%	21%	56%	36%	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											No				
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											3030		Pa		
Maximum tested negative load											2800		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)				
Remontec 2530							1-VH-12S-A:11.3,17042				2.36				
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)			0.73	--
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)				3.59			W/(m ² K)	
							Second-order coefficient (a ₂)				0.012			W/(m ² K ²)	
							Incidence angle modifier IAM (50°)				0.92			--	
							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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