Annex to Solar Keymark Certificate

Licence Number	**SKM 10132.1.1**
Date issued	**2025-12-15**
Issued by	**DQS Hellas**

Licence holder	**ROSSATO S.p.A.**	**Country**	Italy
Brand (optional)		**Web**	www.rossatogroup.com
Street, Number	Via del Murillo 3,5 km	**E-mail**	m.tolone@rossato.it
Postcode, City	4013, Sermoneta (LT)	**Tel**	+39 0773844051

Collector Type	Flat plate collector

Collector name	**Gross area (A_G)**	**Gross length**	**Gross width**	**Gross height**	**Power output per collector** Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s $\vartheta_m - \vartheta_a$ 0 K	10 K	30 K	50 K	70 K	87 K
	m²	mm	mm	mm	W	W	W	W	W	W
CSP 200V	2,00	1.980	1.010	86	1.594	1.523	1.368	1.198	1.013	847
CSP 200H	2,00	1.010	1.980	86						
CSP 240V	2,37	1.930	1.230	86	1.892	1.808	1.624	1.422	1.202	1.006
CSP 240H	2,37	1.230	1.930	86						
CSP 250V	2,49	1.980	1.260	86	1.989	1.900	1.707	1.495	1.264	1.057
CSP 250H	2,49	1.260	1.980	86						
CSP 270V	2,72	2.160	1.260	86	2.101	2.007	1.803	1.579	1.335	1.116
CSP 270H	2,72	1.260	2.160	86						
CSP 300V	3,02	2.160	1.400	86	2.411	2.303	2.069	1.812	1.532	1.281
CSP 300H	3,02	1.400	2.160	86	0	0	0	0	0	0
Power output per m² gross area					797	761	684	599	506	424

Performance parameters test method	Steady state - outdoor									
Performance parameters (related to A_G)	η0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	J/(m²K)	s/m	W/(m²K⁴)	W/(m²K⁴)	-
Test results	0,806	3,48	0,010	0,000	0,00	9.607	0,000	0,00	0,0E+00	0,93

Incidence angle modifier test method		Steady state - outdoor								
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	$K_{\theta T,coll}$	1,00	1,00	1,00	0,99	0,97	0,92	0,80	0,55	0,00
Longitudinal	$K_{\theta L,coll}$	1,00	1,00	1,00	0,99	0,97	0,92	0,80	0,55	0,00

Heat transfer medium for testing	Water		
Flow rate for testing (per gross area, A_G)	dm/dt	0,020	kg/(sm²)
Maximum temperature difference during thermal performance test	$(\vartheta_m-\vartheta_a)_{max}$	56,6	K
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)	ϑ_{stg}	231	°C
Maximum operating temperature	ϑ_{max_op}	250	°C
Maximum operating pressure	$p_{max,op}$		kPa

Testing laboratory	NCSR "DEMOKRITOS"	www.solar.demokritos.gr	
Test report(s)	4416 DE1	**Dated**	17/7/2024
	4418 DE1		18/7/2024
	4420 DQ1		13/9/2024

Comments of testing laboratory	Ver. 6.2 (13.01.2022)

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Supplementary Information	Issued	2025-12-15

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m

Collector name	Standard Locations ϑ_m	Athens 25°C	Athens 50°C	Athens 75°C	Davos 25°C	Davos 50°C	Davos 75°C	Stockholm 25°C	Stockholm 50°C	Stockholm 75°C	Würzburg 25°C	Würzburg 50°C	Würzburg 75°C
CSP 200V		2.600	1.927	1.340	2.015	1.457	986	1.476	1.009	655	1.604	1.094	698
CSP 200H													
CSP 240V		3.087	2.287	1.590	2.392	1.729	1.170	1.752	1.198	778	1.904	1.299	829
CSP 240H													
CSP 250V		3.244	2.404	1.671	2.513	1.817	1.230	1.841	1.259	817	2.000	1.365	871
CSP 250H													
CSP 270V		3.427	2.539	1.765	2.655	1.919	1.299	1.944	1.330	863	2.113	1.442	920
CSP 270H													
CSP 300V		3.932	2.914	2.026	3.047	2.203	1.490	2.231	1.526	990	2.425	1.655	1.056
CSP 300H													
Gross Thermal Yield per m² gross area		1.300	964	670	1.007	728	493	738	505	328	802	547	349
Annual efficiency, η_a		74%	55%	38%	62%	45%	30%	63%	43%	28%	64%	44%	28%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 kWh/m²		
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 ϑm (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/m²) >	1000	ϑ_a (°C) >	20	H_x (MJ/m²) >	600
Maximum tested positive load				3000	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

	Reference Area, A_{sol} (m²)
CSP 200V	2,00
CSP 200H	
CSP 240V	2,37
CSP 240H	
CSP 250V	2,49
CSP 250H	
CSP 270V	2,64
CSP 270H	
CSP 300V	3,02
CSP 300H	

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}

Collector efficiency (η_{col})	64%

Remark: Collector efficiency (ηcol) 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/m², expressed in % and rounded to the nearest integer. Deviating from the regulation ηcol is based on reference area (Asol) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.

Additional Informative Technical Data

	Hydraulic Designation Code	Aperture Area, A_a (m²)
CSP 200V	1-H-1234S-A:7.2,24070-C:20.6, 1080-D	1,88
CSP 200H		
CSP 240V	1-H-1234S-A:7.2,32207-C:20.6, 1300-D	2,25
CSP 240H		
CSP 250V	1-H-1234S-A:7.2,34215-C:20.6, 1330-D	2,37
CSP 250H		
CSP 270V	1-H-1234S-A:7.2,34560-C:20.6, 1330-D	2,59
CSP 270H		
CSP 300V	1-H-1234S-A:7.2,39040-C:20.6, 1470-D	2,88
CSP 300H		

Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}

Zero-loss efficiency (η_0)	0,80	--
First-order coefficient (a_1)	3,48	W/(m²K)
Second-order coefficient (a_2)	0,010	W/(m²K²)
Incidence angle modifier IAM (50°)	0,97	--

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.

Central Offices: Kalavriton 2, 145 64 kifisia, Athens, Tel: +30 210 6233493-4 , Fax: +30 210 6233495, http://www.www.dqsglobal.com, e-mail: i.alexiou@dqs.gr