

Annex to Solar Keymark Certificate

Licence Number	011-7S 404 F
Date issued	2021-02-03
Issued by	TÜV Rheinland Energy GmbH

Licence holder	SDECCI SAS	Country	FRANCE
Brand (optional)		Web	www.vaillant.com
Street, Number	17, rue de la Petite Baratte	E-mail	info@vaillant.com
Postcode, City	44300 Nantes	Tel	+49 2191180-0

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/m ² , G _d = 150 W/m ² & u = 1.3 m/s ϑ _m - ϑ _a					
					0 K	10 K	30 K	50 K	70 K	100 K
					W	W	W	W	W	W
SRDV 2.3/2	2.51	2 033	1 233	80	1 831	1 744	1 548	1 325	1 073	644
SRD 2.3/2	2.51	1 233	2 033	80	1 831	1 744	1 548	1 325	1 073	644
SRD 2.3 V/2	2.51	2 033	1 233	80	1 831	1 744	1 548	1 325	1 073	644
SRD 2.3 H/2	2.51	1 233	2 033	80	1 831	1 744	1 548	1 325	1 073	644
Power output per m ² gross area					729	695	617	528	428	256

Performance parameters test method	Quasi dynamic									
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	0.736	3.33	0.014	0.000	0.00	5 222	0.000	0.00	0.0E+00	0.94

Incidence angle modifier test method		Quasi dynamic - outdoor								
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	$K_{\theta T, coll}$	1.00	1.00	0.99	0.93	0.88	0.78	0.58	0.29	0.00
Longitudinal	$K_{\theta L, coll}$	1.00	1.00	0.99	0.93	0.88	0.78	0.58	0.29	0.00

Heat transfer medium for testing	Water		
Flow rate for testing (per gross area, A_g)	dm/dt	0.021	kg/(sm ²)
Maximum temperature difference during thermal performance test	$(\vartheta_m - \vartheta_a)_{\max}$	70	K
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30 \text{ }^\circ\text{C}$)	ϑ_{stg}	220	$^\circ\text{C}$
Maximum operating temperature	$\vartheta_{\max \text{ op}}$	n.n.	$^\circ\text{C}$
Maximum operating pressure	$p_{\max \text{ op}}$	1000	kPa

Testing laboratory	TÜV Rheinland Energy GmbH		http://www.tuv.com/solar	
Test report(s)	21250538.001rev02	Dated	29.01.2021	
	21250538.002		29.01.2021	

Comments of testing laboratory Datasheet version: 6.1, 2019-07-11



The data sheet is related to the following brands:

SRDV 2.3/2, (Bulex, Saunier Duval , Protherm)

SRD 2.3 V/2, (Saunier Duval , Protherm, Hermann Saunier Duval)

SRD 2.3/2, (Bulex, Saunier Duval, Protherm)

SRD 2.3 H/2 (Saunier Duval, Hermann Saunier Duval, Protherm)

 TÜV Rheinland® ab
Genau. Richtig.
TÜV Rheinland Energie GmbH
Am Grauen Stein
51105 Köln 



Annex to Solar Keymark Certificate						Licence Number		011-7S 404 F										
Supplementary Information						Issued		2021-02-03										
Annual collector output 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					
SRDV 2.3/2		2 897	2 071	1 344	2 204	1 517	942	1 619	1 059	635	1 766	1 146	677					
SRD 2.3/2		2 897	2 071	1 344	2 204	1 517	942	1 619	1 059	635	1 766	1 146	677					
SRD 2.3 V/2		2 897	2 071	1 344	2 204	1 517	942	1 619	1 059	635	1 766	1 146	677					
SRD 2.3 H/2		2 897	2 071	1 344	2 204	1 517	942	1 619	1 059	635	1 766	1 146	677					
Annual output per m ² gross area		1 154	825	535	878	604	375	645	422	253	704	457	270					
Annual efficiency, η_a		65%	47%	30%	54%	37%	23%	55%	36%	22%	57%	37%	22%					
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. 6.1 (July 2019). 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/m ²) >		1100		ϑ_a (°C) >		40		H _x (MJ/m ²) >		700								
Maximum tested positive load										5400		Pa						
Maximum tested negative load										3000		Pa						
Hail resistance using ice balls (diameter)										45		mm						
Additional collector attribute(s)																		
<input type="checkbox"/> Using external power source(s) for normal operation <input type="checkbox"/> Active or passive measure(s) for self-protection <input type="checkbox"/> Co-generating thermal and electrical power <input type="checkbox"/> 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)								
SRDV 2.3/2	2.51				1-H-1234S-A:9.2,20630-C:10.5,1180					2.35								
SRD 2.3/2	2.51				1-H-14S-A:9.2,20142-C:0,0-D					2.35								
SRD 2.3 V/2	2.51				1-H-1234S-A:9.2,20630-C:10.5,1180					2.35								
SRD 2.3 H/2	2.51				1-H-14S-A:9.2,20142-C:0,0-D					2.35								
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)					3.33					W/(m ² K)			
					Second-order coefficient (a ₂)					0.014					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.													
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																		