



Annex to Solar Keymark Certificate					Licence Number		OEM 10115.1.1							
					Date issued		2023-04-20							
					Issued by		DQS Hellas							
Licence holder		FERROLI S.p.A.			Country		Italy							
Brand (optional)		SOLAREVO			Web		www.ferroli.com							
Street, Number		Via Ritonda 78/A			E-mail		info@ferroli.it							
Postcode, City		37047 San Bonifacio (VR) 37047			Tel		+39 0456139411							
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	W	W	W			
SOLAREVO 2.1 V					2,09	1.696	1.230	86	1.640	1.559	1.375	1.165	928	694
SOLAREVO 2.6 V					2,60	2.111	1.230	86	2.041	1.939	1.711	1.449	1.154	864
SOLAREVO 2.6 H					2,60	1.230	2.111	86	2.041	1.939	1.711	1.449	1.154	864
SOLAREVO 3 V					3,00	1.996	1.500	86	2.355	2.237	1.974	1.672	1.332	997
SOLAREVO 3 H					3,00	1.500	1.996	86	2.355	2.237	1.974	1.672	1.332	997
Power output per m ² gross area									785	746	658	557	444	332
Performance parameters test method		Steady state - outdoor												
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		0,795	3,75	0,016	0,000	0,00	0	0,000	0,00	0,0E+00	0,92			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1,00	1,00	1,00	0,98	0,96	0,89	0,76	0,51	0,00			
Longitudinal		K _{θL, coll}	1,00	1,00	1,00	0,98	0,96	0,89	0,76	0,51	0,00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A _G)		dm/dt	0,022		kg/(sm ²)									
Maximum temperature difference during thermal performance test		($\vartheta_m - \vartheta_a$) _{max}	57,8		K									
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)		ϑ_{stg}	175,7		°C									
Maximum operating temperature		$\vartheta_{max, op}$	°C											
Maximum operating pressure		p _{max, op}	1000		kPa									
Testing laboratory		NCSR Demokritos / Solar & other Energy System					www.solar.demokritos.gr							
Test report(s)		4295 DQ1 4301 DE1 4302 DE1					Dated		4/12/2020 4/12/2020 4/12/2020					
Comments of testing laboratory		Datasheet version: 6.1, 2019-09-26												
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Supplementary Information		Issued		2023-04-20													
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				
SOLAREVO 2.1 V		2.637	1.867	1.190	1.999	1.361	826	1.472	948	555	1.602	1.026	591				
SOLAREVO 2.6 V		3.281	2.323	1.480	2.487	1.693	1.027	1.832	1.180	690	1.993	1.277	736				
SOLAREVO 2.6 H		3.281	2.323	1.480	2.487	1.693	1.027	1.832	1.180	690	1.993	1.277	736				
SOLAREVO 3 V		3.785	2.680	1.708	2.870	1.953	1.185	2.113	1.361	797	2.300	1.473	849				
SOLAREVO 3 H		3.785	2.680	1.708	2.870	1.953	1.185	2.113	1.361	797	2.300	1.473	849				
Annual output per m ² gross area		1.262	893	569	957	651	395	704	454	266	767	491	283				
Annual efficiency, η_a		71%	51%	32%	59%	40%	24%	60%	39%	23%	62%	39%	23%				
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 (September 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										No							
The collector was tested successfully under the following conditions:																	
Climate class (A+, A, B or C)										A		--					
<input type="checkbox"/> G (W/m ²) >		1000		ϑ_a (°C) >		20		H_x (MJ/m ²) >		600							
<input type="checkbox"/> Maximum tested positive load										3000		Pa					
Maximum tested negative load										3000		Pa					
Hail resistance using steel ball (maximum drop height)										1,6		m					
Additional collector attribute(s)																	
Using external power source(s) for normal operation						Active or passive measure(s) for self-protection											
Co-generating thermal and electrical power						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)									
SOLAREVO 2.1 V	2,09	14-VH-1234S-A:7.2,1600-C:20.6,1295-						1,96									
SOLAREVO 2.6 V	2,60	14-VH-1234S-A:7.2,2009-C:20.6,1295-						2,44									
SOLAREVO 2.6 H	2,60	18-H-1234S-A:7.2,1131-C:20.6,2170-						2,44									
SOLAREVO 3 V	3,00	17-VH-1234S-A:7.2,1900-C:20.6,1563-						2,84									
SOLAREVO 3 H	3,00	18-H-1234S-A:7.2,1400-C:20.6,2060-						2,84									
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})						61%						Zero-loss efficiency (η_0)		0,78		--	
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)						3,75		W/(m ² K)			
						Second-order coefficient (a_2)						0,016		W/(m ² K ²)			
						Incidence angle modifier IAM (50°)						0,96		--			
						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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