


Annex to Solar Keymark Certificate					Licence Number		011-7S3289 F							
					Date issued		2025-03-07							
					Issued by		DINCERTCO							
Licence holder			Ariston S.p.A.		Country		Italy							
Brand (optional)			NNA		Web		www.ariston.com							
Street, Number			Via A. Merloni 45		E-mail		marketing@ariston.com							
Postcode, City			60044 Fabriano (AN)		Tel		+39 02763209-1							
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 $\vartheta_m - \vartheta_a$									
					Gross area (A _G)	Gross length	Gross width	Gross height	0 K	10 K	30 K	50 K	70 K	90 K
					m ²	mm	mm	mm	W	W	W	W	W	W
CF2.0-1					2.01	2 004	1 004	78	1 347	1 274	1 115	937	739	522
Power output per m ² gross area					670	634	555	466	368	260				
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			0.678	3.48	0.012	0.000	0.00	3 920	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 _{gT, coll}	1.00	0.99	0.97	0.94	0.90	0.81	0.64	0.32	0.00		
Longitudinal			K _{gL, coll}	1.00	0.99	0.97	0.94	0.90	0.81	0.64	0.32	0.00		
Heat transfer medium for testing					Water-Glycol									
Flow rate for testing (per gross area, A _G)					dm/dt	0.025	kg/(sm ²)							
Maximum temperature difference during thermal performance test					($\vartheta_m - \vartheta_a$) _{max}	60	K							
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)					ϑ_{stg}	190	°C							
Maximum operating temperature					$\vartheta_{max, op}$	190	°C							
Maximum operating pressure					p _{max, op}	600	kPa							
Testing laboratory			TÜV Rheinland Energy GmbH					http://www.tuv.com/solar						
Test report(s)			21229451.002					Dated		03.12.2015				
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
Additional information:														
Performance parameters (related to A Aperture): 0.74 /// 3.92 /// 0.013														
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Supplementary Information		011-7S3289 F												
		Issued												
		2025-03-07												
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	
CF2.0-1		2 112	1 448	895	1 570	1 038	610	1 161	727	415	1 268	785	440	
Gross Thermal Yield per m ² gross area		1 051	721	445	781	516	304	578	362	207	631	391	219	
Annual efficiency, η_a		60%	41%	25%	48%	32%	19%	50%	31%	18%	51%	31%	18%	
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/m ²) >		1000		ϑ_a (°C) >		20		H _x (MJ/m ²) >			600			
Maximum tested positive load											5400		Pa	
Maximum tested negative load											3500		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)		Hydraulic Designation Code				Aperture Area, A _a (m ²)		
CF2.0-1						2.01		7-V-1234S-A:7.3,1865-C:16.6,996				1.83		
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})						51%		Zero-loss efficiency (η_0)				0.67		--
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)				3.48		W/(m ² K)
								Second-order coefficient (a ₂)				0.012		W/(m ² K ²)
								Incidence angle modifier IAM (50°)				0.89		--
						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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