



ICIM S.p.A.

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 Capitale Soc EUR. 260.000,00 int. versato ed esistente
 C.F./P. IVA e Iscriz. Reg. Imprese di Milano n. 12908230159 - R.E.A. n. 1596292

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		063BN/1							
					Date issued		2010-07-20							
					Issued by		ICIM S.p.A.							
Licence holder	Riello S.p.A.				Country	Italy								
Brand (optional)	Riello				Web	www.riello.it								
Street, Number	Via Ing. Pilade Riello, 7				E-mail	info@riello.it								
Postcode, City	37045 Legnago (VR)				Tel	-- --								
Collector Type					Evacuated tubular collector									
Collector name	Gross area (A_G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² $\vartheta_m - \vartheta_a$									
					0 K W	10 K W	30 K W	50 K W	70 K W	100 K W				
CSV 25 R	2,77	1730	1600	145	1.679	1.648	1.571	1.471	1.350	1.126				
CSV 35 R	3,91	1730	2260	145	2.369	2.327	2.217	2.077	1.905	1.589				
Power output per m ² gross area					606	595	567	531	487	406				
Performance parameters test method					Steady state - outdoor									
Performance parameters (related to AG)					$\eta_{0,hem}$	a1	a2							
Units					-	W/(m ² K)	W/(m ² K ²)							
Test results					0,606	0,996	0,010							
Incidence angle modifier test method					Steady state - outdoor									
Bi-directional incidence angle modifiers					Yes									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					$K_{\theta T, coll}$			0,99		1,07	1,14			0,00
Longitudinal					$K_{\theta L, coll}$			0,99		0,95	0,86			0,00
Heat transfer medium for testing					Water-Glycole									
Flow rate for testing (per gross area, A_G)					dm/dt	0,020	kg/(sm ²)							
Maximum temperature difference for thermal performance calculations					$(\vartheta_m - \vartheta_a)_{max}$	100	K							
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30^\circ\text{C}$)					ϑ_{stg}	268	°C							
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²	9,96	kJ/(Km ²)							
Maximum operating temperature					$\vartheta_{max, op}$	260	°C							
Maximum operating pressure					$p_{max, op}$	1000	kPa							
Testing laboratory					Eurofins - Modulo Uno									
Test report(s)					www.product-testing.eurofins.com									
					Dated	28/05/2010								
						29/06/2010								
						02/12/2011								
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01									
Test results according to EN 12975-2. Datasheet current issue date: 17/11/2017 The datasheet is signed by the certification body since at the date of the current issue, the testing laboratory is not operating anymore in Solar Keymark Network					Stamp & signature of test lab									

Annex to Solar Keymark Certificate Supplementary Information				Licence Number		063BN/1							
				Issued		2010-07-20							
Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results													
Collector name	Standard Locations ϑ_m	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
CSV 25 R		2.832	2.473	2.047	2.417	2.038	1.638	1.738	1.434	1.122	1.871	1.547	1.207
CSV 35 R		3.997	3.491	2.889	3.412	2.877	2.311	2.454	2.024	1.583	2.641	2.184	1.704
Annual output per m ² gross area		1.022	893	739	873	736	591	628	518	405	675	559	436
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 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. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													
Additional Information													
Collector heat transfer medium		Water-Glycole											
Hybrid Thermal and Photo Voltaic collector		No											
The collector is deemed to be suitable for roof integration		No											
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:													
Climate class (A, B or C)		--			--			--			--		
Maximum tested positive load		1000			Pa			300			Pa		
Maximum tested negative load		300			Pa			300			Pa		
Hail resistance using steel ball (maximum drop height)		--			m			--			m		
Energy Labelling Information													
		Reference Area, A_{sol} (m ²)		Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}									
CSV 25 R		2,77		Collector efficiency (η_{col})			55			%			
CSV 35 R		3,91		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 9806:2013.									
				Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}									
				Zero-loss efficiency (η_0)			0,606			--			
				First-order coefficient (a_1)			1,00			W/(m ² K)			
				Second-order coefficient (a_2)			0,010			W/(m ² K ²)			
				Incidence angle modifier IAM (50°)			0,00			--			
		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.											