

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S2707 F					
					Date issued		2016-09-29					
					Issued by							
Licence holder		Fondital S.p.a.			Country		Italy					
Brand (optional)					Web							
Street, Number		Via Cerreto 40			E-mail							
Postcode, City		25079 Vobarno			Tel							
Collector Type					Flat plate collector, glazed							
					Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² θ _m - θ _a							
					0 K	10 K	30 K	50 K	70 K	100 K		
Collector name		Gross area (A_G)	Gross length	Gross width	Gross height	W	W	W	W	W	W	
VLC 25		2,57	1.238	2.078	100	1.749	1.667	1.476	1.248	985	521	
Power output per m² gross area						680	648	574	485	383	203	
Performance parameters test method					Steady state - indoor							
Performance parameters (related to A_G)					η _{0,hem}	a ₁	a ₂					
Units					-	W/(m ² K)	W/(m ² K ²)					
Test results					0,680	3,012	0,018					
Incidence angle modifier test method												
Bi-directional incidence angle modifiers					No							
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°	
Transversal		K _{θT, coll}					0,96				0,00	
Longitudinal		K _{θL, coll}					0,96				0,00	
Heat transfer medium for testing					Water							
Flow rate for testing (per gross area, A_G)					dm/dt					kg/(sm²)		
Maximum temperature difference for thermal performance calculations					(θ _m -θ _a) _{max}		100			K		
Standard stagnation temperature (G = 1000 W/m²; θ_a = 30 °C)					θ _{stg}		198			°C		
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m ²		5,35			kJ/(Km ²)		
Maximum operating temperature					θ _{max, op}		-			°C		
Maximum operating pressure					p _{max, op}		1000			kPa		
Testing laboratory					AIT Austrian Institute of Technology GmbH				www.ait.ac.at			
Test report(s)					2.04.00830.1.0-LT(7) & -QT(7) 2.04.00461.1.02a(4)				Dated		26.09.2016 26.09.2016	
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01							
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2707 F
	Issued	2016-09-29

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN ISO 9806:2013 test results

Collector name	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
VLC 25		2.847	2.040	1.296	2.169	1.477	877	1.604	1.037	597	1.743	1.126	637
Annual output per m ² gross area		1.107	793	504	843	574	341	623	403	232	677	438	248
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	Yes	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	B	--
Maximum tested positive load	1000	Pa
Maximum tested negative load	1000	Pa
Hail resistance using steel ball (maximum drop height)	-	m

Energy Labelling Information

	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
VLC 25	2,57	Collector efficiency (η_{col})	53 %
		<i>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/m², 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.</i>	
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0,680 --
		First-order coefficient (a_1)	3,01 W/(m ² K)
		Second-order coefficient (a_2)	0,018 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,96 --
		<i>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.</i>	