




ICIM S.p.A. a socio unico

Piazza Don Enrico Mapelli, 75 - 20099 Sesto San Giovanni (MI)
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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

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number						
						115BN/0						
						Issued						
						2013-04-30						
Company holding the			Costruzioni Solari S.r.l.			Country		Italy				
Brand (optional)						Website		www.costruzionisolari.it				
Street, street number			Via Rosario Romeo, 4			E-mail		www.costruzionisolari.it				
Postal Code / City, province			73020 Cavallino (LE)			Tel/Fax		39 (0)832 612 626				
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed						
Thermal / photo voltaic hybrid collector? (PVT collector)						No						
Integration in the roof possible ? (manufacturers declaration)						No						
Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module						
						G = 1000 W/m ²						
						Tm-Ta						
	m ²	mm	mm	mm	m ²	0 K	10 K	30 K	50 K	70 K		
						W	W	W	W	W		
Panda 2.7	2,40	2.380	1.130	110	2,69	1.920	1.834	1.646	1.435	1.200		
Panda 2.3	2,02	1.996	1.130	110	2,25	1.616	1.544	1.386	1.208	1.010		
Panda 2.0	1,81	1.796	1.130	110	2,02	1.448	1.384	1.241	1.082	905		
Performance test method						Glazed liquid heating collector - steady state - indoor						
Performance parameters related to aperture area			η_0	a1	a2							
Units			-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1			0,800	3,443	0,012							
Bi-directional incidence angle modifiers?			No <i>Kθ values are obligatory for 50°.</i>									
Incidence angle modifiers K θ (θ)			Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
			K θ (θ)					0,92				0,00
Incidence angle modifier not bi-directional - leave fields blank												
Stagnation temperature - Weather conditions see note 2						Tstg	195,3	°C				
Effective thermal capacity						ceff = C/Ag	11,3	kJ/(m ² K)				
Max. intende operation temperature - see note 3						Tmax,op	100	°C				
Max. operation pressure - see note 3						pmax,op	1000	kPa				
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area												
Flow rate		kg/(s m ²)	--	--	--	--	--	--	--	--	--	--
Pressure drop, ΔP		Pa	--	--	--	--	--	--	--	--	--	--
Optional weather data			Location				Link					
Testing Laboratory			Istituto Giordano									
Website			www.giordano.it									
Test report id. number			304809, 304807				Date of test report		2013/04/17			
During the test GDIF/GTOT was always between			0,1	and	0,2							
Comments of testing laboratory:												
 ISTITUTO GIORDANO S.p.A. Sede Legale e Amministrativa: Via G. Rossini, 2 - 47014 BELLARIA (RN) Cod. Fisc. e P. IVA 00549540406 Distaccamento: Via Erbesa, 70/84 - 47043 CATTEO (FC)												
Note 1	Flow rate	0,020	kg/(s m ²)	Fluid	Water							
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, Ta=30 °C											
Note 3	Given by manufacturer											
Datasheet version: 4.06, 2014-01-15												



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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	115BN/0
	Issued	30/04/2013

Annual collector output kWh/module														
Collector name	Location and collector temperature (Tm)													
	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		
Panda 2.7	3.019	2.209	1.500	2.329	1.659	1.093	1.706	1.153	730	1.850	1.243	774		
Panda 2.3	2.541	1.859	1.263	1.960	1.397	920	1.436	970	615	1.557	1.046	651		
Panda 2.0	2.277	1.666	1.132	1.757	1.252	825	1.286	869	551	1.395	937	584		

Collector mounting: Fixed or tracking Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations				
Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1.765	18,5	South, 25°
Davos	47	1.714	3,2	South, 30°
Stockholm	59	1.166	7,5	South, 45°
Würzburg	50	1.244	9,0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m ²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

	Datasheet version:	4.06, 2014-01-15
	ScenoCalc version:	Ver. 4.06 (Jan, 2014)