Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate				Licence Number	011-7S2561 R
				Issued	2015-09-17
Company holding the	CMG SOLARI SRL			Country	Italien
Brand (optional)				Website	www.cmgsolari.it
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Postal Code / City, province	73040	Melissano (LE)		Tel/Fax	+39 (0)833581428

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Evacuated tubular collector
Thermal / photo voltaic hybid 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 Gb = 850 W/m²; Gd = 150 W/m² Tm-Ta 0 K	10 K	30 K	50 K	70 K
	m²	mm	mm	mm	m²	W	W	W	W	W
IT-12	1.08	2 033	1 147	200	2.33	786	767	725	679	631
IT-14*	1.26	2 035	1 301	210	2.65	917	894	846	793	736
IT-15*	1.35	2 035	1 298	210	2.64	983	958	906	849	788
IT-16*	1.44	2 035	1 467	210	2.99	1 048	1 022	966	906	841
IT-18*	1.62	2 035	1 633	210	3.32	1 179	1 150	1 087	1 019	946
IT-20	1.80	2 032	1 810	205	3.68	1 310	1 278	1 208	1 132	1 051
IT-24*	2.16	2 035	2 131	210	4.34	1 572	1 533	1 449	1 359	1 261
IT-30*	2.70	2 035	2 543	210	5.18	1 965	1 916	1 812	1 699	1 577

Performance test method	Liquid heating collector - quasi-dynamic - outdoor								
Performance parameters related to aperture	η0b	c1	c2	c3	c4	c6	Kθd		
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	s/m	-		
Test results - Flow rate and fluid see note 1	0.694	1.776	0.004	0.000	0.000	0.000	1.326		

Bi-directional incidence angle modifiers?	Yes	*Kϑ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θT) transversal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θT)	1.06	1.12	1.25	1.37	1.75	1.82	2.15	1.08	0.00
Incidence angle modifiers Kθ(θL) longitudinal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θL)	1.00	0.99	0.97	0.95	0.92	0.84	0.70	0.35	0.00

Stagnation temperature - Weather conditions see note 2	Tstg	248	°C
Effective thermal capacity	ceff = C/Ag	285	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	-	°C
Max. operation pressure - see note 3	pmax,op	20	kPa

Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area											
Flow rate	kg/(s m²)	-	-	-	-	-	-	-	-	-	-
Pressure drop, ΔP	Pa	-	-	-	-	-	-	-	-	-	-

Optional weather data	Location		Link	
Testing Laboratory	TZS, ITW University Stuttgart			
Website	http://www.itw.uni-stuttgart.de			
Test report id. number	11COL1011OEM01, 11COL1010OEM01, 11COL1011QOEM01	Date of test report	2015.09.17	

During the test GDIF/GTOT was always between	0	and	1

Comments of testing laboratory:

* dimensions according to manufacturer

Note 1	Flow rate	0.025	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

Datasheet version: 4.06, 2014-01-15

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2561 R
	Issued	17.09.2015

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
IT-12	1 697	1 492	1 289	1 414	1 221	1 038	1 047	885	737	1 131	956	797
IT-14	1 980	1 741	1 503	1 650	1 425	1 211	1 222	1 032	859	1 319	1 115	929
IT-15	2 121	1 865	1 611	1 768	1 526	1 298	1 309	1 106	921	1 414	1 195	996
IT-16	2 262	1 990	1 718	1 886	1 628	1 384	1 396	1 179	982	1 508	1 275	1 062
IT-18	2 545	2 238	1 933	2 121	1 832	1 557	1 571	1 327	1 105	1 696	1 434	1 195
IT-20	2 828	2 487	2 148	2 357	2 035	1 730	1 745	1 474	1 228	1 885	1 593	1 328
IT-24	3 394	2 985	2 577	2 828	2 442	2 077	2 095	1 769	1 473	2 262	1 912	1 593
IT-30	4 242	3 731	3 222	3 536	3 053	2 596	2 618	2 212	1 842	2 827	2 390	1 991

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/m²
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.

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ScenoCalc version: Ver. 4.06 (Jan, 2014)