

AENOR

Keymark Certificate Solar thermal energy



078/000181

AENOR certifies that the organization

BDR THERMEA GROUP B.V

registered office MERCHANTSTRAAT, 55 7300 AA APELDOORN (Holanda - Países Bajos)

supplies Solar collectors

in compliance with UNE-EN 12975-1:2006 (EN 12975-1:2006)

Trade Mark GIACOMINI GSUN 200
Technical information Specified in Annexes to the Certificate

Production site CL MANGANÉS, 2 08755 CASTELLBISBAL (Barcelona - España)

Certification scheme In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 078.01.

First issued on 2013-04-10

Last issued on 2018-04-10

Validity date 2023-04-10

Rafael GARCÍA MEIRO
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL S.A.U.
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Product certification body accredited by ENAC, number 01/C-PR002.078



Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		078/000181							
					Date issued		2018-04-10							
					Issued by									
Licence holder		BDR THERMEA GROUP B.V.			Country		NETHERLANDS							
Brand (optional)		Abrand			Web		http://www.bdrthermea.com							
Street, Number		MARCHANSTRAAT 55			E-mail		oleguer.fuertes@baxi.es							
Postcode, City		7300 AA, APPELDOORN			Tel		+34 902 89 80 00							
Collector Type					Flat plate collector, glazed									
Collector name					Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector $G_b = 850 \text{ W/m}^2$; $G_d = 150 \text{ W/m}^2$ $\vartheta_m - \vartheta_a$					
					m ²	mm	mm	mm	0 K	10 K	30 K	50 K	70 K	90 K
GIACOMINI GSUN 200					2,01	1.753	1.147	87	1.548	1.474	1.306	1.110	887	637
Power output per m ² gross area					770	733	650	552	441	317				
Performance parameters test method					Steady state - indoor									
Performance parameters (related to A_G)					η_0, hem	a1	a2							
Units					-	W/(m ² K)	W/(m ² K ²)							
Test results					0,770	3,503	0,017							
Incidence angle modifier test method					Quasi dynamic - outdoor									
Bi-directional incidence angle modifiers					No									
Incidence angle modifier					Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal					$K_{\theta T, \text{coll}}$	1,00	0,99	0,97	0,95	0,91	0,83	0,67	-	0,00
Longitudinal					$K_{\theta L, \text{coll}}$	1,00	0,99	0,97	0,95	0,91	0,83	0,67	-	0,00
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt		0,020	kg/(sm ²)						
Maximum temperature difference for thermal performance calculations					$(\vartheta_m - \vartheta_a)_{\text{max}}$		90	K						
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30 \text{ °C}$)					ϑ_{stg}		200	°C						
Effective thermal capacity, incl. fluid (per gross area, A_G)					C/m^2		6,49	kJ/(Km ²)						
Maximum operating temperature					$\vartheta_{\text{max, op}}$		n.n.	°C						
Maximum operating pressure					$p_{\text{max, op}}$		1000	kPa						
Testing laboratory					TÜV Rheinland Energy GmbH					http://www.tuv.com/st				
Test report(s)					21240494.002_SOL250H_R 21217926_EN_P1_SOL200V					Dated		26/09/2017 04/06/2012		
Comments of testing laboratory					Datasheet version: 5.01, 2016-03-01									
*The initial thermal performance testing was not performed according to ISO 9806:2013, but EN 12975-2:2006. The steady state test evaluation was recalculated with gross area. The former values related to 1.895 m ² aperture area had been: $\eta_{a0a}=0.817$; $a1a=3.716$; $a2a=0.018$.														
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000181
	Issued	2018-04-10

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

Standard Locations 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
GIACOMINI GSUN 200		2.395	1.694	1.075	1.821	1.239	749	1.339	866	508	1.453	931	536
Annual output per m ² gross area		1.192	843	535	906	616	373	666	431	253	723	463	267
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)	A --
Maximum tested positive load	5400 Pa
Maximum tested negative load	3000 Pa
Hail resistance using ice balls (diameter)	35 mm

Energy Labelling Information

	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
GIACOMINI GSUN 200	2,01	Collector efficiency (η_{col})	60 %
		<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)	0,770 --
		First-order coefficient (a_1)	3,50 W/(m ² K)
		Second-order coefficient (a_2)	0,017 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,91 --
		<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>	