

AENOR

Keymark Certificate Solar thermal energy



078/000191

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 REMEHA DB 200H
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 2013-05-06

Last issued on 2018-04-24

Validity date 2023-04-24

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		078/000191				
					Date issued		2018-04-24				
					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) 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 ϑ _m - ϑ _a						
					0 K W	10 K W	30 K W	50 K W	70 K W	90 K W	
REMEHA DB 200H	2,01	1.147	1.753	87	1.485	1.408	1.241	1.059	860	645	
Power output per m ² gross area					739	701	618	527	428	321	
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		0,739	3,747	0,010							
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 _{θT, coll}	1,00	0,99	0,98	0,95	0,92	0,85	0,71	-	0,00
Longitudinal		K _{θL, coll}	1,00	0,99	0,98	0,95	0,92	0,85	0,71	-	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		(ϑ _m -ϑ _a) _{max}	90	K							
Standard stagnation temperature (G = 1000 W/m ² ; ϑ _a = 30 °C)		ϑ _{stg}	190	°C							
Effective thermal capacity, incl. fluid (per gross area, A _G)		C/m ²	5,16	kJ/(Km ²)							
Maximum operating temperature		ϑ _{max, op}	n.n.	°C							
Maximum operating pressure		p _{max, op}	1000	kPa							
Testing laboratory		TÜV Rheinland Energy GmbH				http://www.tuv.com/st					
Test report(s)		21240494.003_DB200V_R 21220865_EN_P_DB200H				Dated		26/09/2017 13/02/2013			
Comments of testing laboratory		Datasheet version: 5.01, 2016-03-01									
<p>*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 1.891 m² aperture area had been: eta0a=0.785; a1a=3.983; a2a=0.011.</p>											
<p>AENOR INTERNACIONAL, S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00 - www.aenor.com</p>											
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000191
	Issued	2018-04-24

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN 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
REMEHA DB 200H		2.314	1.613	1.035	1.737	1.181	735	1.280	822	492	1.391	883	520
Annual output per m ² gross area		1.151	802	515	864	588	366	637	409	245	692	439	259
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}	
REMEHA DB 200H	2,01	Collector efficiency (η_{col})	57 %
		<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)	0,739 --
		First-order coefficient (a_1)	3,75 W/(m ² K)
		Second-order coefficient (a_2)	0,010 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,92 --
		<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>	