

# AENOR

## Keymark Certificate Solar thermal energy



078/000189

AENOR certifies that the organization

### BDR THERMEA GROUP B.V

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

supplies Solar collectors

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

Trade Mark OERTLI 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 2018-05-06

Validity date 2023-05-06

Rafael GARCÍA MEIRO  
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL S.A.U.  
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Tel. 91 432 60 00.- www.aenor.com

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		078/000189								
					Date issued		2018-05-06								
					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 <sub>G</sub> )	Gross length	Gross width	Gross height	Power output per collector G <sub>b</sub> = 850 W/m <sup>2</sup> ; G <sub>d</sub> = 150 W/m <sup>2</sup> ϑ <sub>m</sub> - ϑ <sub>a</sub>						
					m <sup>2</sup>	mm	mm	mm	0 K	10 K	30 K	50 K	70 K	90 K	
OERTLI DB 200H					2,01	1.147	1.753	87	1.485	1.408	1.241	1.059	860	645	
Power output per m <sup>2</sup> gross area					739	701	618	527	428	321					
Performance parameters test method					Steady state - indoor										
Performance parameters (related to AG)					η <sub>0,hem</sub>	a <sub>1</sub>	a <sub>2</sub>								
Units					-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )								
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 <sub>θT, coll</sub>	1,00	0,99	0,98	0,95	0,92	0,85	0,71	-	0,00	
Longitudinal					K <sub>θL, coll</sub>	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 <sub>G</sub> )					dm/dt		0,020	kg/(sm <sup>2</sup> )							
Maximum temperature difference for thermal performance calculations					(ϑ <sub>m</sub> -ϑ <sub>a</sub> ) <sub>max</sub>		90	K							
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; ϑ <sub>a</sub> = 30 °C)					ϑ <sub>stg</sub>		190	°C							
Effective thermal capacity, incl. fluid (per gross area, A <sub>G</sub> )					C/m <sup>2</sup>		5,16	kJ/(Km <sup>2</sup> )							
Maximum operating temperature					ϑ <sub>max, op</sub>		n.n.	°C							
Maximum operating pressure					p <sub>max, op</sub>		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										
*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 m <sup>2</sup> aperture area had been: eta0a=0.785; a1a=3.983; a2a=0.011.															
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000189
	Issued	2018-05-06

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

Collector name	Standard Locations $\vartheta_m$	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
OERTLI 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 <sup>2</sup> 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 <sup>2</sup>			1714 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>		
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  $\vartheta_m$  (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](http://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 <sup>2</sup> )	Data required for CDR (EU) No 811/2013 - Reference Area $A_{sol}$	
OERTLI DB 200H	2,01	Collector efficiency ( $\eta_{col}$ )	57 %
		<i>Remark: Collector efficiency (<math>\eta_{col}</math>) 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/m<sup>2</sup>, expressed in % and rounded to the nearest integer. Deviating from the regulation <math>\eta_{col}</math> is based on reference area (<math>A_{sol}</math>) 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 ( $\eta_0$ )	0,739 --
		First-order coefficient ( $a_1$ )	3,75 W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,010 W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	0,92 --
		<i>Remark: The data given in this section are related to collector reference area (<math>A_{sol}</math>) 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>	