

# AENOR

## Keymark Certificate Solar thermal energy



**078/000115**

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 DE DIETRICH C250H  
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.

This certificate supersedes 078/000115, dated 2017-07-24

First issued on 2012-07-24  
Modified on 2017-10-10  
Validity date 2022-07-24

Rafael GARCÍA MEIRO  
Chief Executive Officer



Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		078/000115					
					Date issued		2017-10-10					
					Issued by							
Licence holder		BDR THERMEA GROUP B.V.			Country		NETHERLANDS					
Brand (optional)		Abrand			Web		<a href="http://www.bdrthermea.com">http://www.bdrthermea.com</a>					
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							
					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>							
						0 K	10 K	30 K	50 K	70 K	90 K	
Collector name		Gross area (A <sub>G</sub> )	Gross length	Gross width	Gross height	W	W	W	W	W	W	
		m <sup>2</sup>	mm	mm	mm							
DE DIETRICH C250H		2,51	1.147	2.187	87	1.940	1.848	1.640	1.402	1.133	835	
Power output per m <sup>2</sup> gross area						773	736	653	558	452	333	
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		0,773	3,542	0,015								
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	0,97	0,95	0,91	0,83	0,68	-	0,00	
Longitudinal		K <sub>θL, coll</sub>	1,00	0,99	0,97	0,95	0,91	0,83	0,68	-	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>		200	°C				
Effective thermal capacity, incl. fluid (per gross area, A <sub>G</sub> )					C/m <sup>2</sup>		7,14	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			<a href="http://www.tuv.com/st">http://www.tuv.com/st</a>				
Test report(s)					21240494.002_SOL250H_R 21217925_EN_P_SOL250H			Dated		26/09/2017 04/06/2012		
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 2.372 m<sup>2</sup> aperture area had been: eta0a=0.818; a1a=3.748; a2a=0.016.</p>					 <b>TÜVRheinland®</b> Precisely Right.							
AENOR INTERNACIONAL, S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00 - <a href="http://www.aenor.com">www.aenor.com</a>												
Product certification body accredited by ENAC, number 01/C-PR002.078												



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000115
	Issued	2017-10-10

**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
DE DIETRICH C250H		3.005	2.133	1.373	2.286	1.568	968	1.680	1.094	653	1.823	1.176	690
Annual output per m <sup>2</sup> gross area		1.197	850	547	911	625	386	670	436	260	726	469	275
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 $A_{sol}$	
DE DIETRICH C250H	2,51	Collector efficiency ( $\eta_{col}$ )	61 %
		<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 ( $\eta_0$ )	0,773 --
		First-order coefficient ( $a_1$ )	3,54 W/(m <sup>2</sup> K)
		Second-order coefficient ( $a_2$ )	0,015 W/(m <sup>2</sup> K <sup>2</sup> )
		Incidence angle modifier IAM (50°)	0,91 --
		<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>	