

# AENOR

## Keymark Certificate Solar thermal energy



078/000264

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 DH200 SL  
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 078/000264, dated 2016-02-16

First issued on 2016-02-16  
Modified on 2017-11-23  
Validity date 2021-02-16


Rafael GARCÍA MEIRO  
Chief Executive Officer

Original Electronic Certificate

AENOR INTERNACIONAL S.A.U.  
Génova, 6. 28004 Madrid. España  
Tel. 91 432 60 00.- www.aenor.com

Product certification body accredited by ENAC, number 01/C-PR002.078



<b>Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate</b>						<b>Licence Number</b>		<b>078/000264</b>																					
						<b>Issued</b>		<b>2017-11-23</b>																					
<b>Company holding the</b>		<b>BDR THERMEA GROUP B.V.</b>				<b>Country</b>		<b>NETHERLANDS</b>																					
<b>Brand (optional)</b>		<b>--</b>				<b>Website</b>		<b>www.bdrthermea.com</b>																					
<b>Street, street number</b>		<b>MARCHANSTRAAT 55</b>				<b>E-mail</b>		<b>oleguer.fuertes@baxi.es</b>																					
<b>Postal Code / City, province</b>		<b>7300 AA</b>		<b>APPELDOORN</b>		<b>Tel/Fax</b>		<b>+34 902898989</b>																					
<b>Collector Type (flat plate glazed/un-glazed; evacuate tubular)</b>						<b>Flat plate collector - glazed</b>																							
<b>Thermal / photo voltaic hybrid collector? (PVT collector)</b>						<b>No</b>																							
<b>Integration in the roof possible ? (manufacturers declaration)</b>						<b>No</b>																							
						<b>Power output per collector module</b>																							
						<b>G = 1000 W/m<sup>2</sup></b>																							
						<b>Tm-Ta</b>																							
						<b>0 K</b>		<b>10 K</b>		<b>30 K</b>		<b>50 K</b>		<b>70 K</b>															
<b>Collector name</b>						<b>W</b>		<b>W</b>		<b>W</b>		<b>W</b>		<b>W</b>															
<b>DE DIETRICH DH200 SL</b>		<b>1,92</b>		<b>1.757</b>		<b>1.151</b>		<b>46</b>		<b>2,02</b>		<b>1.405</b>		<b>1.328</b>		<b>1.154</b>		<b>953</b>		<b>727</b>									
<b>Performance test method</b>						<b>Glazed liquid heating collector - steady state - indoor</b>																							
<b>Performance parameters related to aperture</b>						$\eta_0$		a1		a2																			
<b>Units</b>						-		W/(m <sup>2</sup> K)		W/(m <sup>2</sup> K <sup>2</sup> )																			
<b>Test results - Flow rate and fluid see note 1</b>						<b>0,732</b>		<b>3,860</b>		<b>0,017</b>																			
<b>Bi-directional incidence angle modifiers?</b>						<b>No</b>		<i>K<math>\theta</math> values are obligatory for 50°.</i>																					
<b>Incidence angle modifiers K<math>\theta</math>(<math>\theta</math>)</b>						<b>Angle</b>		<b>10°</b>		<b>20°</b>		<b>30°</b>		<b>40°</b>		<b>50°</b>		<b>60°</b>		<b>70°</b>		<b>80°</b>		<b>90°</b>					
						<b>K<math>\theta</math>(<math>\theta</math>)</b>								<b>0,95</b>										<b>0,00</b>					
<b>Incidence angle modifier not bi-directional - leave fields blank</b>																													
<b>Stagnation temperature - Weather conditions see note 2</b>												<b>Tstg</b>		<b>212,3</b>		<b>°C</b>													
<b>Effective thermal capacity</b>												<b>ceff = C/Ag</b>		<b>3,79</b>		<b>kJ/(m<sup>2</sup>K)</b>													
<b>Max. intende operation temperature - see note 3</b>												<b>Tmax,op</b>		<b>180</b>		<b>°C</b>													
<b>Max. operation pressure - see note 3</b>												<b>pmax,op</b>		<b>1000</b>		<b>kPa</b>													
<b>Pressure drop table - for a collector family, the values shall be for the module with highest <math>\Delta P</math> per m<sup>2</sup> aperture area</b>																													
<b>Flow rate</b>		<b>kg/(s m<sup>2</sup>)</b>		<b>0,000</b>		<b>0,010</b>		<b>0,023</b>		<b>0,035</b>		<b>0,047</b>		<b>0,060</b>															
<b>Pressure drop, <math>\Delta P</math></b>		<b>Pa</b>		<b>0</b>		<b>56</b>		<b>161</b>		<b>283</b>		<b>432</b>		<b>636</b>															
<b>Optional weather data</b>						<b>Location</b>			<b>Link</b>																				
<b>Testing Laboratory</b>						<b>Fundación CENER-CIEMAT, LEST</b>																							
<b>Website</b>						<b>www.cener.com</b>																							
<b>Test report id. number</b>						<b>30.2755.0-1-1 R</b>				<b>30.2755.0-2-1 / 30.2755.0</b>				<b>Date of test report</b>		<b>04/02/2016</b>		<b>28/12/2015</b>											
<b>During the test GDIF/GTOT was always between</b>						<b>0,08</b>		and		<b>0,09</b>																			
<b>Comments of testing laboratory:</b>																													
<b>Note 1</b>		<b>Flow rate</b>		<b>0,020</b>		<b>kg/(s m<sup>2</sup>)</b>		<b>Fluid</b>		<b>Water</b>				 Datasheet version: 4.06, 2014-01-15															
<b>Note 2</b>		<b>Irradiance, G = 1000 W/m<sup>2</sup>; Ambient temperature , Ta=30 °C</b>																											
<b>Note 3</b>		<b>Given by manufacturer</b>																											
<b>AENOR INTERNACIONAL,S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00- www.aenor.com</b>																													
<b>Product certification body accredited by ENAC, number 01/C-PR002.078</b>																													



<b>Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate</b>	<b>Licence Number</b>	<b>078/00264</b>
	Issued	<b>2017-11-23</b>

<b>Annual collector output kWh/module</b>														
<b>Collector name</b>	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		
DE DIETRICH DH200 SL	2.253	1.532	916	1.667	1.082	604	1.239	760	412	1.350	822	439		

**Collector mounting: Fixed or tracking** Fixed; slope = latitude - 15° (rounded to nearest 5°)

<b>Overview of locations</b>				
Location	Latitude °	Gtot kWh/m <sup>2</sup>	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/m <sup>2</sup>
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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Product certification body accredited by ENAC, number 01/C-PR002.078	ScenoCalc version: Ver. 4.06 (Jan, 2014)