AENOR

Keymark Certificate
Solar thermal energy

078/000215

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 Technical information	DE DIETRICH DH 200 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 078/000215, dated 2014-03-20
First issued on Modified on Validity date	2014-03-20 2017-11-23 2019-03-20

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

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Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	078/000215
	Date of issue	2017-11-23

Company	BDR THERMEA GROUP B.V.	**Country**		NETHERLANDS
Brand *(optional)*		**Website**		www.bdrthermea.com
Street, number	MARCHANSTRAAT 55	**E-mail**		oleguer.fuertes@baxi.es
Postal Code	7300 AA	**Tel.**	+34	902898989
City	APPELDOORN	**Fax**		

Collector Type *(flat plate / evacuate tubular / un-glazed)*	Flat plate collector
Integration in the roof possible ?	Yes

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (Ag)	Power output per collector unit G = 1000 W/m² Tm-Ta : 0 K	10 K	30 K	50 K	70 K
	[m²]	[mm]	[mm]	[mm]	[m²]	[W]	[W]	[W]	[W]	[W]
DE DIETRICH DH 200	1,920	1.753	1.147	87	2,01	1.478	1.401	1.233	1.049	848

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	h_{0a}	0,770	-
	a_{1a}	3,924	W/(m²K)
	a_{2a}	0,011	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	198	°C
Effective thermal capacity	c_{eff} = C/Aa	5,58	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	1000	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	10°	20°	30°	40°	60°	70°
			$K_\theta(\theta_T)$	0,91	1,00	0,99	0,98	0,95	0,84	0,70
	0,1	0,27	$K_\theta(\theta_L)$	0,91	1,00	0,99	0,98	0,95	0,84	0,70
G_{DIF}/G_{TOT}: min&max - while measuring					***Optional values***					

Testing Laboratory	TÜV Energie und Umwelt GmbH
Website	www.eco-tuv.de
Test report id. number	21217924_EN_P1_MED200; 21217924_EN_P_MED250; 21217924_EN_R_MED250
Date of test report	all 04-06-2012
Perf. test method	EN 12975-2 6.1.5 *(indoor)*

Comments of testing laboratory *:*

Note 1	**Fluid**	Water	**Flow rate**	0,021	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²** **Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

Stamp & signature of test lab

VERSION 3.5, 2012.01.13

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate No.	078/000215
	Issued	2017-11-23

Annual collector output kWh

	Location and collector temperature (Tm)														
	Athens			Davos			Stockholm			Würzburg					
Collector name	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 DH 200	2.295	1.592	1.014	1.843	1.236	753	1.267	810	480	1.377	870	507			

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

Overview of locations

Location	Latitude °	Gtot kWh/m²	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/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). Detailed description with all equations used is available from the Solar Keymark web site (direct link: http://www.estif.org/solarkeymark/annexb1.php)