



Keymark Certificate



078/000418

AENOR certifies that the organization

BDR THERMEA GROUP B.V.

registered office KANAAL ZUID, 106 7332 BD APELDOORN (Güeldres - Países Bajos)

supplies **Solar collectors**

in compliance with UNE-EN 12975-1:2006+A1:2011 (EN 12975-1:2006+A1:2010)

Trade Mark BRÖTJE FK 25 W.1
Technical information Specified in Annexes to the Certificate

Production site CL MANGANÈS, 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 2024-05-10
Validity 2029-05-10

Rafael GARCÍA MEIRO
CEO





Annex to Solar Keymark Certificate					Licence Number		078/000418							
					Date issued		2024-05-10							
					Issued by		AENOR							
Licence holder		BDR THERMEA GROUP B.V.			Country		NETHERLANDS							
Brand (optional)		BAXI			Web		http://www.bdrthermea.com							
Street, Number		KANAAL ZUID, 106			E-mail		oscar.mongro@BDRThermea.com							
Postcode, City		7332 BD APELDOORN (Güeldres)			Tel		+34 936828040							
Collector Type					Flat plate collector									
Collector name					Power output per collector									
					G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	100 K				
					m ²	mm	mm	mm	mm	mm	mm			
BRÖTJE FK 25 W.1					2,51	2.187	1.147	75	1.824	1.713	1.464	1.179	857	307
Power output per m ² gross area					727	682	583	470	342	122				
Performance parameters test method		Steady state - indoor												
Performance parameters (related to A _G)		η_0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-			
Test results		0,732	4,24	0,018	0,000	0,00	4.473	0,000	0,00	0,0E+00	0,95			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{ET, coll}	1,00	0,99	0,98	0,96	0,94	0,88	0,78	0,45	0,00			
Longitudinal		K _{GL, coll}	1,00	0,99	0,98	0,96	0,94	0,88	0,78	0,45	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 during thermal performance test		($\vartheta_m - \vartheta_a$) _{max}	70	K										
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)		ϑ_{stg}	180	°C										
Maximum operating temperature		$\vartheta_{max, op}$	n.n.	°C										
Maximum operating pressure		p _{max, op}	1000	kPa										
Testing laboratory		TÜV Rheinland Energy GmbH					http://www.tuv.com/solar							
Test report(s)		DE23EP1P 001 DE239ZFN 001					Dated		27/09/2023 28/02/2024					
Comments of testing laboratory		Ver. 6.2 (13.01.2022)												
The mechanical load limits given under General Information on page 2 are related to the mounting set up for floor/ flat roof mounting. The mounting set up for tilted roof mounting in the given mounting range can resist values of +3250 Pa and -2400 Pa.														
AENOR CONFÍA S.A.U. - Génova, 6. - 28004 - Madrid, España - Tel. 91 432 60 00- www.aenor.com														
Product certification body accredited by ENAC, number 1/C-PR271														



Annex to Solar Keymark Certificate Supplementary Information	Licence Number	078/000418
	Issued	2024-05-10

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
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
BRÖTJE FK FK 25 W.1		2.913	1.901	1.067	2.107	1.301	668	1.575	922	464	1.724	997	494
Gross Thermal Yield per m ² gross area		1.161	758	425	840	518	266	627	367	185	687	397	197
Annual efficiency, η_a		66%	43%	24%	52%	32%	16%	54%	31%	16%	55%	32%	16%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1630 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. 6.2 (13.01.2022). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/													

Additional Information			
Collector heat transfer medium	Water-Glycole		
The collector is deemed to be suitable for roof integration	No		
The collector was tested successfully under the following conditions:			
Climate class (A+, A, B or C)	A		--
G (W/m ²) >	1000	ϑ_a (°C) >	20
Maximum tested positive load	1750		Pa
Maximum tested negative load	2000		Pa
Hail resistance using ice balls (diameter)	35		mm

Additional collector attribute(s)			
Using external power source(s) for normal operation	No	Active or passive measure(s) for self-protection	No
Co-generating thermal and electrical power	No	Façade collector(s)	No

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
BRÖTJE FK FK 25 W.1	2,51	1-H-1234S-A:7.2,22272-	2,32

Data required for CDR (EU) No 811/2013 - Reference Area		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
Collector efficiency (η_{col})	53%	Zero-loss efficiency (η_0)	0,73
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/m ² , 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 9806:2017.		First-order coefficient (a_1)	4,24
		Second-order coefficient (a_2)	0,018
		Incidence angle modifier IAM (50°)	0,93
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.			