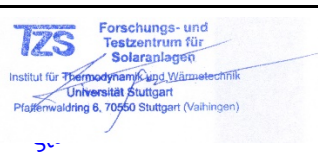


Annex to Solar Keymark Certificate					Licence Number		011-7S2903 F							
					Date issued		2021-10-25							
					Issued by		DIN CERTCO							
Licence holder		Zantia Climatizacao, S.A.			Country		Portugal							
Brand (optional)					Web		www.zantia.com							
Street, Number		Zona Industrial do Mundao, Lote 10-A			E-mail		ruimarques@zantia.com							
Postcode, City		3505-459 Viseu			Tel		+351 927 996 552							
Collector Type					Flat plate collector									
Collector name					Power output per collector									
					$G_b = 850 \text{ W/m}^2, G_d = 150 \text{ W/m}^2 \text{ \& } u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	118 K				
					m ²	mm	mm	mm	mm	mm				
					W	W	W	W	W	W				
ZHS/200					2.02	1 730	1 170	85	1 476	1 394	1 216	1 020	807	223
ZHS/250					2.52	2 150	1 170	85	1 841	1 739	1 517	1 273	1 007	278
Power output per m² gross area					731	690	602	505	400	110				
Performance parameters test method		Quasi dynamic												
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		0.734	3.96	0.011	0.000	0.00	11 450	0.000	0.00	0.0	0.97			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		$K_{\theta T, coll}$	1.00	1.00	0.99	0.98	0.96	0.89	0.71	0.36	0.00			
Longitudinal		$K_{\theta L, coll}$	1.00	1.00	0.99	0.98	0.96	0.89	0.71	0.36	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					$(\vartheta_m - \vartheta_a)_{max}$		88	K						
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30 \text{ }^\circ\text{C}$)					ϑ_{stg}		200	°C						
Maximum operating temperature					$\vartheta_{max, op}$		-	°C						
Maximum operating pressure					$p_{max, op}$		1000	kPa						
Testing laboratory		Institut für Gebäudeenergetik, Thermotechnik und Energiespeicherung (IGTE)					http://www.igte.uni-stuttgart.de							
Test report(s)		20COL1537/1OEM04 20COL1538/1OEM4 20COL1538Q/2OEM04					Dated		25.10.2021 25.10.2021 25.10.2021					
Comments of testing laboratory					Datashet version: 6.1, 2019-09-26									
<i>Thermal performance parameters are given from test report 20COL1537/1OEM04 (ZHS/200)</i>					 <p>Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Pfaffenwaldring 8, 70560 Stuttgart (Vaihingen)</p>									
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