

Annex to Solar Keymark Certificate					Licence Number		011-7S2860 F							
					Date issued		2025-07-31							
					Issued by		DINCERTCO							
Licence holder		ALISIOS S.R.L. (SEDE LEGALE)			Country		ITALY							
Brand (optional)					Web		www.alisios.it							
Street, Number		VIA ZANZOTTO, 28/17			E-mail		direzione@alisios.it							
Postcode, City		31053 PIEVE DI SOLIGO (TV)			Tel		+39 (0)4227 77436							
Collector Type					Flat plate collector									
Collector name					Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s θ _m - θ _a					
									0 K W	10 K W	30 K W	50 K W	70 K W	108 K W
HEBEN HP180					1.76	1 916	916	92	1 252	1 192	1 060	916	760	427
HEBEN HP210					2.07	1 761	1 176	92	1 473	1 401	1 247	1 078	894	503
HEBEN HP230					2.31	1 961	1 176	92	1 644	1 564	1 392	1 203	997	561
HEBEN HP270					2.66	2 261	1 176	92	1 893	1 801	1 603	1 385	1 148	646
Power output per m ² gross area					712	677	602	521	432	243				
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		0.713	3.37	0.009	0.000	0.00	13 380	0.000	0.00	0.0	0.99			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1.00	1.00	0.99	0.98	0.92	0.74	0.50	0.25	0.00			
Longitudinal		K _{θL, coll}	1.00	1.00	0.99	0.98	0.92	0.74	0.50	0.25	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					(θ _m -θ _a) _{max}		78		K					
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)					θ _{stg}		201		°C					
Maximum operating temperature					θ _{max op}		100		°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)		17COL1400OEM01/1 17COL1401OEM01/1 17COL1401QOEM01/1					Dated		12.05.2025 12.05.2025 12.05.2025					
Comments of testing laboratory					Ver. 6.2 (13.01.2022)									
Documented performance parameters are taken from test report 17COL1401OEM01/1 (HEBEN HP270). The values related to 2.49m ² aperture area are: eta0a = 0.762; c1a=3.598; c2a=0.010. This data sheet replaces the data sheet dated 11 th June 2018. Reason for replacement: Change of address details and collector type name at the customer's request.					 Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Pfaaffenwaldring 6, 70550 Stuttgart (Vaihingen)									
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Supplementary Information							Issued			2025-07-31			
Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
HEBEN HP180		2 022	1 457	976	1 545	1 085	709	1 128	750	470	1 235	815	503
HEBEN HP210		2 378	1 713	1 148	1 817	1 276	833	1 327	882	552	1 453	959	592
HEBEN HP230		2 654	1 912	1 282	2 028	1 424	930	1 481	984	616	1 621	1 070	660
HEBEN HP270		3 056	2 202	1 476	2 335	1 640	1 071	1 705	1 133	710	1 867	1 232	760