


Annex to Solar Keymark Certificate					Licence Number		011-7S2904 R							
					Date issued		2020-10-20							
					Issued by		DIN CERTCO							
Licence holder		Kloben Industries S.r.l			Country		Italy							
Brand (optional)					Web		www.klobenindustries.it							
Street, Number		Via Pier Luigi Da Palestrina, 2			E-mail		ufficio.tecnico@klobenindustries.it							
Postcode, City		20124 Milano			Tel		+39 454 743 243							
Collector Type					Evacuated tubular 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	109 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
ATON G 10 - O					2.17	1925	1122	126	1342	1324	1278	1217	1143	959
ATON G 12 - O					2.58	1925	1342	126	1595	1574	1519	1447	1359	1140
ATON G 14 - O					3.01	1925	1562	126	1861	1836	1772	1689	1586	1330
ATON G 16 - O					3.43	1925	1782	126	2121	2093	2019	1924	1807	1516
ATON G 18 - O					3.86	1925	2002	126	2387	2355	2273	2166	2034	1706
ATON G 20 - O					4.28	1925	2222	126	2646	2611	2520	2401	2255	1892
ATON G 22 - O					4.71	1925	2446	126	2912	2873	2773	2642	2482	2082
NATURAL ATON 12 - 200 - O					2.58	1925	1342	116	1595	1574	1519	1447	1359	1140
NATURAL ATON 16 - 300 - O					3.43	1925	1782	116	2121	2093	2019	1924	1807	1516
Power output per m² gross area					618	610	589	561	527	442				
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		0.611	0.746	0.008	0.000	0.00	36 480	0.000	0.00	0.0	1.08			
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	0.99	1.00	1.00	1.10	1.14	1.25	0.63	0.00			
Longitudinal		K _{θL, coll}	1.00	0.99	0.98	0.96	0.94	0.85	0.74	0.37	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}		79	K						
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)					ϑ _{stg}		290	°C						
Maximum operating temperature					ϑ _{max op}		150	°C						
Maximum operating pressure					p _{max, op}		600	kPa						
Testing laboratory		Institut für Gebäudeenergetik, Thermotechnik und Energiespeicherung (IGTE)					http://www.igte.uni-stuttgart.de							
Test report(s)		20COL1569 20COL1570 20COL1570Q					Dated		20.10.2020 20.10.2020 20.10.2020					
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
Documented performance parameters are taken from test report 20COL1569 (ATON G 10 - O)					 TzS Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Pfaffenwaldring 8, 70560 Stuttgart (Vaihingen)									
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