

Holder/Issued to/Manufacturer

Eco4you Holding B.V.

Risseweg 30, 6004RM, Weert, the Netherlands

Product name and description

Vacuum tube solar thermal collectors for water heating.
For technical information see Appendix (2 pages).

Models:	CPC-HP8	CPC-HP9	CPC-HP10	CPC-HP12
	CPC-HP14	CPC-HP15	CPC-HP16	CPC-HP18
	CPC-HP20	CPC-HP21	CPC-HP22	CPC-HP24

Performance specification

The product is found to comply with the requirements in EN 12975-1:2006+A1:2010 Solar collectors, Part 1: General requirements and the Specific CEN Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN 12975-2:2006 Solar collectors Part 2:Test methods.

Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (RISE Research Institutes of Sweden AB, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

Validity

This certificate is valid until 2024-01-20 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <http://www.solarkeymark.org>.

Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of RISE. RISE certification rules SPCR 402 for Keymark – Solar Thermal Products applies.

Johan Åkesson

Certificate No. C900118 | issue 1 | 2020-06-09


RISE Research Institutes of Sweden AB | Certification
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2017-08-08



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Annex to Solar Keymark Certificate					Licence Number		C900118							
					Date issued		2020-06-09							
					Issued by		RISE							
Licence holder		Eco4you Holding B.V.			Country		Netherlands							
Brand (optional)		Eco4you			Web		www.biodombenelux.com							
Street, Number		Risseweg 30, 6004RM			E-mail		info@biodombenelux.com							
Postcode, City		Weert			Tel		+31 495 564 143							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector									
					Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	93 K				
					m ²	mm	mm	mm	mm	mm	mm			
					W	W	W	W	W	W				
CPC-HP8					1,74	1 917	910	133	938	916	869	816	757	681
CPC-HP9					1,96	1 917	1 020	133	1 052	1 027	974	914	848	764
CPC-HP10					2,17	1 917	1 130	133	1 167	1 140	1 081	1 015	942	848
CPC-HP12					2,59	1 917	1 350	133	1 393	1 361	1 290	1 211	1 124	1 012
CPC-HP14					3,01	1 917	1 570	133	1 619	1 582	1 500	1 408	1 306	1 176
CPC-HP15					3,22	1 917	1 680	133	1 732	1 692	1 604	1 506	1 397	1 258
CPC-HP16					3,43	1 917	1 790	133	1 845	1 803	1 709	1 604	1 488	1 340
CPC-HP18					3,85	1 917	2 010	133	2 071	2 023	1 918	1 801	1 671	1 504
CPC-HP20					4,28	1 917	2 230	133	2 303	2 249	2 132	2 002	1 857	1 672
CPC-HP21					4,49	1 917	2 340	133	2 416	2 360	2 237	2 100	1 948	1 754
CPC-HP22					4,70	1 917	2 450	133	2 528	2 470	2 342	2 198	2 040	1 837
CPC-HP24					5,12	1 917	2 670	133	2 754	2 691	2 551	2 394	2 222	2 001
Power output per m ² gross area					538	526	498	468	434	391				
Performance parameters test method		Steady state - outdoor												
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		0,540	1,206	0,004	0,000	0,00	2 556	0,000	0,00	0,00	0,975			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{GT, coll}	1,02	1,03	1,04	1,05	1,12	1,18	0,79	0,39	0,00			
Longitudinal		K _{GL, coll}	1,00	0,99	0,99	0,97	0,95	0,91	0,83	0,57	0,00			
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A _G)					dm/dt	0,016	kg/(sm ²)							
Maximum temperature difference during thermal performance test					($\vartheta_m - \vartheta_a$) _{max}	63,24	K							
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)					ϑ_{stg}	280	°C							
Maximum operating temperature					$\vartheta_{max, op}$	120	°C							
Maximum operating pressure					p _{max, op}	1000	kPa							
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch				http://www.intertek.com								
Test report(s)		200601019GZU-001				Dated		2020-06-08						
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.														
Tests were performed based on EN 12975-2:2006.														
<p style="text-align: center;">RISE Research Institutes of Sweden AB Certification Box 857, SE-501 15 Borås, Sweden, Phone: +46 10-516 50 00, certifierring@ri.se www.ri.se</p>														

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	C900118
	Issued	2020-06-09

Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg		
	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
CPC-HP8		1 632	1 405	1 178	1 373	1 160	960	990	813	653	1 068	877	703
CPC-HP9		1 829	1 575	1 321	1 539	1 301	1 076	1 110	911	732	1 197	984	788
CPC-HP10		2 030	1 748	1 466	1 709	1 444	1 195	1 232	1 011	813	1 329	1 092	875
CPC-HP12		2 423	2 086	1 750	2 040	1 723	1 426	1 470	1 207	970	1 586	1 303	1 044
CPC-HP14		2 816	2 424	2 034	2 370	2 003	1 657	1 708	1 403	1 127	1 843	1 514	1 213
CPC-HP15		3 012	2 593	2 176	2 536	2 142	1 773	1 828	1 500	1 206	1 971	1 620	1 298
CPC-HP16		3 209	2 762	2 318	2 701	2 282	1 889	1 947	1 598	1 284	2 100	1 726	1 383
CPC-HP18		3 602	3 101	2 602	3 032	2 562	2 120	2 185	1 794	1 442	2 357	1 937	1 552
CPC-HP20		4 004	3 447	2 892	3 370	2 848	2 357	2 429	1 994	1 603	2 620	2 153	1 725
CPC-HP21		4 200	3 616	3 034	3 536	2 987	2 472	2 548	2 092	1 681	2 749	2 259	1 810
CPC-HP22		4 397	3 785	3 176	3 701	3 127	2 588	2 668	2 190	1 760	2 878	2 365	1 894
CPC-HP24		4 790	4 124	3 460	4 032	3 407	2 819	2 906	2 386	1 917	3 135	2 576	2 064
Annual output per m ² gross area		936	805	676	787	665	551	568	466	374	612	503	403
Annual efficiency, η_a		53%	46%	38%	48%	41%	34%	49%	40%	32%	49%	40%	32%
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. 6.1 (September 2019). A detailed description of the calculations is available at <http://www.estif.org/solarkeymarknew/>

Additional Information					
Collector heat transfer medium	Water				
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)	C		--		
G (W/m ²) >	850	ϑ_a (°C) >	10	H_x (MJ/m ²) >	420
Maximum tested positive load	2860		Pa		
Maximum tested negative load	--		Pa		
Hail resistance using steel ball (maximum drop height)	0,8		m		

Additional collector attribute(s)	
<input type="checkbox"/> Using external power source(s) for normal operation	<input type="checkbox"/> Active or passive measure(s) for self-protection
<input type="checkbox"/> Co-generating thermal and electrical power	<input type="checkbox"/> Façade collector(s)

Energy Labelling Information		Additional Informative Technical Data	
	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
CPC-HP8	1,74	1-H-12S-C:20,985-D	1,41
CPC-HP9	1,96	1-H-12S-C:20,1095-D	1,59
CPC-HP10	2,17	1-H-12S-C:20,1205-D	1,78
CPC-HP12	2,59	1-H-12S-C:20,1425-D	2,16
CPC-HP14	3,01	1-H-12S-C:20,1645-D	2,53
CPC-HP15	3,22	1-H-12S-C:20,1755-D	2,72
CPC-HP16	3,43	1-H-12S-C:20,1865-D	2,91
CPC-HP18	3,85	1-H-12S-C:20,2085-D	3,28
CPC-HP20	4,28	1-H-12S-C:20,2305-D	3,66
CPC-HP21	4,49	1-H-12S-C:20,2415-D	3,84
CPC-HP22	4,70	1-H-12S-C:20,2525-D	4,03
CPC-HP24	5,12	1-H-12S-C:20,2745-D	4,41

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
Collector efficiency (η_{col})	48%	Zero-loss efficiency (η_0)	0,54
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)	1,21
		Second-order coefficient (a_2)	0,004
		Incidence angle modifier IAM (50°)	1,01
		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.	