

Page 27 of 30

Annex to Solar Keymark Certificate

Supplementary Information

Licence Number

011-7S2704 R

Issued

2021-09-29

Annual collector output 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
CPC 12 NERO		2 325	2 027	1 722	1 946	1 659	1 383	1 424	1 183	961	1 546	1 288	1 048
CPC 18 NERO		3 467	3 021	2 567	2 901	2 473	2 062	2 122	1 764	1 433	2 305	1 921	1 563
Annual output per m² gross area		1 067	930	790	892	761	634	653	543	441	709	591	481
Annual efficiency, η_a		60%	53%	45%	55%	47%	39%	56%	47%	38%	57%	48%	39%
Fixed or tracking collector	Fixed (slope = latitude - 15°; rounded to nearest 5°)												
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 kWh/m²		
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-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/m²) >	1000
ϑ_a (°C) >	20
H_x (MJ/m²) >	600
Maximum tested positive load	2500 Pa
Maximum tested negative load	1250 Pa
Hail resistance using steel ball (maximum drop height)	0.5 m

Additional collector attribute(s)

☐ Using external power source(s) for normal operation	☐ Active or passive measure(s) for self-protection
☐ Co-generating thermal and electrical power	☐ Façade collector(s)

Energy Labelling Information

	Reference Area, A_{sol} (m²)	Hydraulic Designation Code	Aperture Area, A_a (m²)
CPC 12 NERO	2.18	12-V-1122S-A:6;3517-C:16.2;1345	1.89
CPC 18 NERO	3.25	18-V-1122S-A65;3517-C:16.2;2005	2.84

Additional Informative Technical Data

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})	53%	Zero-loss efficiency (η_0)	0.59 --
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/m², 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)	1.25 W/(m²K)
		Second-order coefficient (a_2)	0.004 W/(m²K²)
		Incidence angle modifier IAM (50°)	0.96 --
		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.	

DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany

Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de