



Annex to Solar Keymark Certificate	Licence Number	SKM 9999.1.17
Supplementary Information	Issued	2025-05-30

Gross Thermal Yield 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
ATON 415-KC1500						1.848	1.320	859	1.405	970	605	1.034	675	405	1.125	731	431
ATON 415-KC1500H						1.848	1.320	859	1.405	970	605	1.034	675	405	1.125	731	431
ATON 415-KC1800						2.243	1.601	1.042	1.705	1.177	734	1.254	819	491	1.365	886	523
ATON 415-KC1800H						2.243	1.601	1.042	1.705	1.177	734	1.254	819	491	1.365	886	523
ATON 415-KC2000						2.464	1.759	1.145	1.874	1.293	806	1.379	900	540	1.500	974	575
ATON 415-KC2000H						2.464	1.759	1.145	1.874	1.293	806	1.379	900	540	1.500	974	575
ATON 415-KC2500						2.920	2.085	1.357	2.221	1.532	955	1.634	1.066	639	1.778	1.154	682
ATON 415-KC2500H						2.920	2.085	1.357	2.221	1.532	955	1.634	1.066	639	1.778	1.154	682
ATON 415-KC2700						3.352	2.393	1.558	2.549	1.759	1.097	1.875	1.223	734	2.040	1.325	782
ATON 415-KC2700H						3.352	2.393	1.558	2.549	1.759	1.097	1.875	1.223	734	2.040	1.325	782

Gross Thermal Yield per m ² gross area	1.232	880	573	937	647	403	689	450	270	750	487	288
Annual efficiency, η_a	70%	50%	32%	57%	40%	25%	59%	39%	23%	60%	39%	23%

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. 6.2 (13.01.2022). 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/m ²) >	1000	ϑ _a (°C) >	20	H _x (MJ/m ²) >	600	
Maximum tested positive load					3000	Pa
Maximum tested negative load					3000	Pa
Hail resistance using steel ball (maximum drop height)					2	m

Additional collector attribute(s)

Using external power source(s) for normal operation	No	Active or passive measure(s) for self-protection	No
Co-generating thermal and electrical power	No	Façade collector(s)	No

Energy Labelling Information**Additional Informative Technical Data**

	Reference Area, A_{sol} (m ²)	Hydraulic Designation Code	Aperture Area, A_a (m ²)
ATON 415-KC1500	1,50	9-V-1234S-A:7.2,1380-C:20.6,1080-D	1,38
ATON 415-KC1500H	1,50	14-V-1234S-A:7.2,908-C:20.6,1560-D	1,38
ATON 415-KC1800	1,82	11-V-1234S-A:7.2,1378-C:20.6,1300-D	1,72
ATON 415-KC1800H	1,82	14-V-1234S-A:7.2,1128-C:20.6,1560-D	1,72
ATON 415-KC2000	2,00	9-V-1234S-A:7.2,1878-C:20.6,1080-D	1,86
ATON 415-KC2000H	2,00	18-V-1234S-A:7.2,908-C:20.6,2060-D	1,86
ATON 415-KC2500	2,37	11-V-1234S-A:7.2,1828-C:20.6,1300-D	2,23
ATON 415-KC2500H	2,37	18-V-1234S-A:7.2,1128-C:20.6,2010-D	2,23
ATON 415-KC2700	2,72	11-V-1234S-A:7.2,2060-C:20.6,1320-D	2,57
ATON 415-KC2700H	2,72	18-V-1234S-A:7.2,1158-C:20.6,2240-D	2,57

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}

Collector efficiency (η_{col})	60%	Zero-loss efficiency (η_0)	0,76	--
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)		3,59	W/(m ² K)
	Second-order coefficient (a_2)		0,014	W/(m ² K ²)
	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.