

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S3199 F
	Issued	2024-08-01

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m													
Collector name	Standard Locations ϑ_m	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
ZHS200 Neo		2 022	1 457	976	1 545	1 085	709	1 128	750	470	1 235	815	503
ZHS220 Neo		2 298	1 655	1 110	1 756	1 233	805	1 282	852	534	1 403	926	572
ZHS250 Neo		2 654	1 912	1 282	2 028	1 424	930	1 481	984	616	1 621	1 070	660
Gross Thermal Yield per m ² gross area		1 149	828	555	878	617	403	641	426	267	702	463	286
Annual efficiency, η_a		65%	47%	31%	54%	38%	25%	55%	37%	23%	56%	37%	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	2750		Pa
Maximum tested negative load	2500		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	Facade 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)
ZHS200 Neo	1.76	8-V-1234S-7.2,1780-20.6,921-D	1.71
ZHS220 Neo	2.00	8-V-1234S-7.2,1828-20.6,1055-D	1.95
ZHS250 Neo	2.31	10-V-1234S-7.2,1828-20.6,1181-D	2.25

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})	56%	Zero-loss efficiency (η_0)	0.71
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)	3.37
		Second-order coefficient (a_2)	0.009
		Incidence angle modifier IAM (50°)	0.96
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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.