



Annex to Solar Keymark Certificate							Licence Number		011-7S2967 F				
Supplementary Information							Issued		2020-02-11				
Annual collector output in kWh/collector at mean fluid temperature $\vartheta_m$													
Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	$\vartheta_m$	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
ELEKTRA One-2 1.7H		1'774	1'250	771	1'346	901	519	991	631	353	1'078	682	376
Annual output per m <sup>2</sup> gross area		1'082	762	470	821	549	316	604	385	215	657	416	229
Annual efficiency, $\eta_a$		61%	43%	27%	50%	34%	19%	52%	33%	18%	53%	33%	18%
Fixed or tracking collector	Fixed (slope = latitude - 15°; rounded to nearest 5°)												
Annual irradiation on collector plane	1765 kWh/m <sup>2</sup>			1630 kWh/m <sup>2</sup>			1166 kWh/m <sup>2</sup>			1244 kWh/m <sup>2</sup>			
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 $\vartheta_m$ (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 <a href="http://www.estif.org/solarkeymarknew/">http://www.estif.org/solarkeymarknew/</a>													
<b>Additional Information</b>													
Collector heat transfer medium							Water-Glycole						
The collector is deemed to be suitable for roof integration							Yes						
The collector was tested successfully under the following conditions:													
Climate class (A+, A, B or C)							A			--			
G (W/m <sup>2</sup> ) >		1000		$\vartheta_a$ (°C) >		20		$H_x$ (MJ/m <sup>2</sup> ) >		600			
Maximum tested positive load							2400			Pa			
Maximum tested negative load							2400			Pa			
Hail resistance using ice balls (diameter)							45			mm			
<b>Additional collector attribute(s)</b>													
<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)									
<b>Energy Labelling Information</b>					<b>Additional Informative Technical Data</b>								
		Reference Area, $A_{sol}$ (m <sup>2</sup> )			Hydraulic Designation Code				Aperture Area, $A_a$ (m <sup>2</sup> )				
ELEKTRA One-2 1.7H		1.64			X-H-34S-A:9.2,7650-C:X				1.34				
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 ( $\eta_{col}$ )		52%			Zero-loss efficiency ( $\eta_0$ )				0.68				--
Remark: Collector efficiency ( $\eta_{col}$ ) 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 <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ 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 ( $a_1$ )				3.09				W/(m <sup>2</sup> K)
					Second-order coefficient ( $a_2$ )				0.019				W/(m <sup>2</sup> K <sup>2</sup> )
					Incidence angle modifier IAM (50°)				0.95				--
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.													
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