



Annex to Solar Keymark Certificate		Licence Number											
Supplementary Information		011-7S3059 R											
		Issued											
		2021-09-10											
<b>Annual collector output in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>													
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
SEIDO 1-8		1,780	1,445	1,088	1,461	1,140	828	1,054	795	559	1,141	862	599
SEIDO 1-12		2,710	2,199	1,656	2,224	1,736	1,261	1,605	1,209	850	1,736	1,312	912
SEIDO 1-16		3,587	2,911	2,192	2,944	2,297	1,669	2,124	1,601	1,126	2,298	1,736	1,207
Annual output per m <sup>2</sup> gross area		877	712	536	720	562	408	519	391	275	562	424	295
Annual efficiency, $\eta_a$		50%	40%	30%	44%	34%	25%	45%	34%	24%	45%	34%	24%
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											No		
The collector was tested successfully under the following conditions:													
Climate class (A+, A, B or C)											B		--
G (W/m <sup>2</sup> ) >		900		$\vartheta_a$ (°C) >		15		H <sub>x</sub> (MJ/m <sup>2</sup> ) >		540			
Maximum tested positive load											2400		Pa
Maximum tested negative load											2400		Pa
Hail resistance using steel ball (maximum drop height)											1.2		m
<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 <sub>sol</sub> (m <sup>2</sup> )			Hydraulic Designation Code			Aperture Area, A <sub>a</sub> (m <sup>2</sup> )					
SEIDO 1-8		2.03			1-H-12S-C:22,980-D			1.45					
SEIDO 1-12		3.09			1-H-12S-C:22,1440-D			2.18					
SEIDO 1-16		4.09			1-H-12S-C:22,1940-D			2.90					
<b>Data required for CDR (EU) No 811/2013 - Reference Area</b>							<b>Data required for CDR (EU) No 812/2013 - Reference Area A<sub>sol</sub></b>						
Collector efficiency ( $\eta_{col}$ )		45%					Zero-loss efficiency ( $\eta_0$ )		0.53		--		
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 <sub>sol</sub> ) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.		First-order coefficient (a <sub>1</sub> )		1.41		W/(m <sup>2</sup> K)							
		Second-order coefficient (a <sub>2</sub> )		0.011		W/(m <sup>2</sup> K <sup>2</sup> )							
		Incidence angle modifier IAM (50°)		1.01		--							
							Remark: The data given in this section are related to collector reference area (A <sub>sol</sub> ) 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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