



<b>Annex to Solar Keymark Certificate</b>							<b>Licence Number</b>		<b>011-7S3114 L</b>							
<b>Supplementary Information</b>							<b>Issued</b>		<b>2022-03-15</b>							
<b>Gross Thermal Yield in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>																
	<b>Standard Locations</b>	<b>Athens</b>			<b>Davos</b>			<b>Stockholm</b>			<b>Würzburg</b>					
<b>Collector name</b>	$\vartheta_m$	<b>25°C</b>	<b>50°C</b>	<b>75°C</b>	<b>25°C</b>	<b>50°C</b>	<b>75°C</b>	<b>25°C</b>	<b>50°C</b>	<b>75°C</b>	<b>25°C</b>	<b>50°C</b>	<b>75°C</b>			
CALENTO SL G		1.298	405		651	186		549	151		602	161				
Gross Thermal Yield per m <sup>2</sup> gross area		499	156	--	250	71	--	211	58	--	231	62	--			
Annual efficiency, $\eta_a$		28%	9%	--	15%	4%	--	18%	5%	--	19%	5%	--			
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. 6.2 (13.01.2022). 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										Air						
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										1500		Pa				
Maximum tested negative load										500		Pa				
Hail resistance using ice balls (diameter)										35		mm				
<b>Additional collector attribute(s)</b>																
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)				Yes				
<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> )						
CALENTO SL G						2,60		Not applicable (custom built)		2,37						
<b>Data required for CDR (EU) No 811/2013 - Reference Area A<sub>sol</sub></b>						<b>Data required for CDR (EU) No 812/2013 - Reference Area A<sub>sol</sub></b>										
Collector efficiency ( $\eta_{col}$ )						18%										
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.						Zero-loss efficiency ( $\eta_0$ )						0,42	--			
						First-order coefficient (a <sub>1</sub> )						6,07	W/(m <sup>2</sup> K)			
						Second-order coefficient (a <sub>2</sub> )						0,000	W/(m <sup>2</sup> K <sup>2</sup> )			
						Incidence angle modifier IAM (50°)						0,60	--			
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.																
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany																
Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: <a href="mailto:info@dincertco.de">info@dincertco.de</a> • <a href="http://www.dincertco.de">www.dincertco.de</a>																