



<b>Annex to Solar Keymark Certificate</b>		<b>Licence Number</b>		<b>011-7S2076 F</b>											
<b>Supplementary Information</b>		<b>Issued</b>		<b>2023-05-02</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>		
FKT-2W		3 140	2 174	1 354	2 340	1 555	916	1 733	1 089	620	1 896	1 183	663		
Gross Thermal Yield per m <sup>2</sup> gross area		1 231	853	531	918	610	359	680	427	243	743	464	260		
Annual efficiency, $\eta_a$		70%	48%	30%	56%	37%	22%	58%	37%	21%	60%	37%	21%		
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											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 <sub>x</sub> (MJ/m <sup>2</sup> ) >		600					
Maximum tested positive load											4000		Pa		
Maximum tested negative load											3000		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)					No			
<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> )					
FKT-2W							2-V-1234S-A:7.1.13219-C:16.8.2125			2.43					
<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 ( $\eta_{col}$ )							58%		Zero-loss efficiency ( $\eta_0$ )		0.76		--		
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> )		3.96		W/(m <sup>2</sup> K)		--		
							Second-order coefficient (a <sub>2</sub> )		0.014		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 <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>															