



<b>Annex to Solar Keymark Certificate</b>					<b>Licence Number</b>		<b>011-7S3143 F</b>																	
					<b>Date issued</b>		<b>2022-10-12</b>																	
					<b>Issued by</b>		<b>DIN CERTCO</b>																	
<b>Licence holder</b>		<b>EAUTECHNIK GmbH</b>			<b>Country</b>		<b>Germany</b>																	
<b>Brand (optional)</b>		<b>Eautek</b>			<b>Web</b>		<b>http://www.eautek.com</b>																	
<b>Street, Number</b>		<b>Herriotstr. 1</b>			<b>E-mail</b>		<b>info@eautek.com</b>																	
<b>Postcode, City</b>		<b>60528 Frankfurt am Main</b>			<b>Tel</b>		<b>+45 232 01435</b>																	
<b>Collector Type</b>					<b>Flat plate collector</b>																			
<b>Collector name</b>					<b>Gross area (A<sub>G</sub>)</b>		<b>Gross length</b>		<b>Gross width</b>		<b>Gross height</b>		<b>Power output per collector</b>											
					m <sup>2</sup>		mm		mm		mm		G <sub>b</sub> = 850 W/m <sup>2</sup> , G <sub>d</sub> = 150 W/m <sup>2</sup> & u = 1.3 m/s $\vartheta_m - \vartheta_a$											
					0 K		10 K		30 K		50 K		70 K		94 K									
					W		W		W		W		W		W									
<b>EAUSUN 151B</b>					1.50		1 000		1 500		80		1 087		1 029		906		771		626		439	
<b>EAUSUN 152B</b>					1.50		1 500		1 000		80		1 087		1 029		906		771		626		439	
<b>EAUSUN 201B</b>					2.00		1 000		2 000		80		1 450		1 372		1 207		1 028		835		585	
<b>EAUSUN 202B</b>					2.00		2 000		1 000		80		1 450		1 372		1 207		1 028		835		585	
<b>EAUSUN 241B</b>					2.40		1 000		2 400		80		1 739		1 647		1 449		1 234		1 002		702	
<b>EAUSUN 242B</b>					2.40		2 400		1 000		80		1 739		1 647		1 449		1 234		1 002		702	
<b>EAUSUN 251B</b>					2.50		2 500		1 000		80		1 812		1 715		1 509		1 285		1 044		731	
<b>EAUSUN 252B</b>					2.52		2 100		1 200		80		1 826		1 729		1 521		1 296		1 052		737	
<b>EAUSUN 301B</b>					3.00		3 000		1 000		80		2 174		2 058		1 811		1 543		1 253		878	
<b>EAUSUN 302B</b>					3.00		2 500		1 200		80		2 174		2 058		1 811		1 543		1 253		878	
<b>Power output per m<sup>2</sup> gross area</b>													725		686		604		514		418		293	
<b>Performance parameters test method</b>					<b>Quasi dynamic</b>																			
<b>Performance parameters (related to A<sub>G</sub>)</b>					η <sub>0</sub> , b		a1		a2		a3		a4		a5		a6		a7		a8		Kd	
<b>Units</b>					-		W/(m <sup>2</sup> K)		W/(m <sup>2</sup> K <sup>2</sup> )		J/(m <sup>3</sup> K)		-		J/(m <sup>2</sup> K)		s/m		W/(m <sup>2</sup> K <sup>4</sup> )		W/(m <sup>2</sup> K <sup>4</sup> )		-	
<b>Test results</b>					0.732		3.77		0.009		0.000		0.00		11 756		0.000		0.00		0.0E+00		0.93	
<b>Incidence angle modifier test method</b>					<b>Quasi dynamic - outdoor</b>																			
<b>Incidence angle modifier</b>					Angle		10°		20°		30°		40°		50°		60°		70°		80°		90°	
<b>Transversal</b>					K <sub>θT, coll</sub>		1.00		0.99		0.97		0.94		0.89		0.81		0.63		-		0.00	
<b>Longitudinal</b>					K <sub>θL, coll</sub>		1.00		0.99		0.97		0.94		0.89		0.81		0.63		-		0.00	
<b>Heat transfer medium for testing</b>					<b>Water</b>																			
<b>Flow rate for testing (per gross area, A<sub>G</sub>)</b>					dm/dt		0.020		kg/(sm <sup>2</sup> )															
<b>Maximum temperature difference during thermal performance test</b>					(ϑ <sub>m</sub> -ϑ <sub>a</sub> ) <sub>max</sub>		64		K															
<b>Standard stagnation temperature (G = 1000 W/m<sup>2</sup>; ϑ<sub>a</sub> = 30 °C)</b>					ϑ <sub>stg</sub>		213		°C															
<b>Maximum operating temperature</b>					ϑ <sub>max op</sub>		99		°C															
<b>Maximum operating pressure</b>					p <sub>max, op</sub>		1000		kPa															
<b>Testing laboratory</b>					<b>TÜV Rheinland (Guangdong) Ltd.</b>						<b>http://www.tuv.com</b>													
<b>Test report(s)</b>					CN22ADPK 001 CN22LSVE 001						<b>Dated</b>		2022-10-12 2022-10-12											
<b>Comments of testing laboratory</b>					Ver. 6.2 (13.01.2022)																			
<i>Given collector parameters are determined on EAUSUN 152B;</i>					 Precisely Right. 																			
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de																								

Annex to Solar Keymark Certificate							Licence Number			011-7S3143 F				
Supplementary Information							Issued			2022-10-12				
<b>Gross Thermal Yield 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	
EAUSUN 151B		1 709	1 186	760	1 276	862	534	942	601	359	1 028	650	381	
EAUSUN 152B		1 709	1 186	760	1 276	862	534	942	601	359	1 028	650	381	
EAUSUN 201B		2 279	1 581	1 013	1 701	1 149	712	1 256	801	479	1 371	866	508	
EAUSUN 202B		2 279	1 581	1 013	1 701	1 149	712	1 256	801	479	1 371	866	508	
EAUSUN 241B		2 735	1 897	1 215	2 041	1 379	855	1 507	961	574	1 646	1 039	610	
EAUSUN 242B		2 735	1 897	1 215	2 041	1 379	855	1 507	961	574	1 646	1 039	610	
EAUSUN 251B		2 849	1 977	1 266	2 126	1 437	890	1 570	1 001	598	1 714	1 083	635	
EAUSUN 252B		2 872	1 992	1 276	2 143	1 448	897	1 582	1 010	603	1 728	1 091	640	
EAUSUN 301B		3 419	2 372	1 519	2 551	1 724	1 068	1 884	1 202	718	2 057	1 299	762	
EAUSUN 302B		3 419	2 372	1 519	2 551	1 724	1 068	1 884	1 202	718	2 057	1 299	762	
Gross Thermal Yield per m <sup>2</sup> gross area		1 140	791	506	850	575	356	628	401	239	686	433	254	
Annual efficiency, $\eta_a$		65%	45%	29%	52%	35%	22%	54%	34%	21%	55%	35%	20%	
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)										B		--		
G (W/m <sup>2</sup> ) >		900		$\vartheta_a$ (°C) >		15		$H_x$ (MJ/m <sup>2</sup> ) >		540				
Maximum tested positive load										2200		Pa		
Maximum tested negative load										1650		Pa		
Hail resistance using steel ball (maximum drop height)										1.0		m		
<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, $A_{sol}$ (m <sup>2</sup> )		Hydraulic Designation Code				Aperture Area, $A_a$ (m <sup>2</sup> )						
EAUSUN 151B		1.50		8-HV-1234V-A:8,1400-C:20.4,1060				1.39						
EAUSUN 152B		1.50		8-VH-1234S-A:8,1400-C:20.4,1060				1.39						
EAUSUN 201B		2.00		8-HV-1234V-A:8,1900-C:20.4,1060				1.87						
EAUSUN 202B		2.00		8-VH-1234S-A:8,1900-C:20.4,1060				1.87						
EAUSUN 241B		2.40		8-HV-1234V-A:8,2300-C:20.4,1060				2.25						
EAUSUN 242B		2.40		8-VH-1234S-A:8,2300-C:20.4,1060				2.25						
EAUSUN 251B		2.50		8-VH-1234S-A:8,2400-C:20.4,1060				2.34						
EAUSUN 252B		2.52		10-VH-1234S-A:8,2000-C:20.4,1260				2.34						
EAUSUN 301B		3.00		8-VH-1234S-A:8,2900-C:20.4,1060				2.84						
EAUSUN 302B		3.00		10-VH-1234S-A:8,2400-C:20.4,1260				2.84						
<b>Data required for CDR (EU) No 811/2013 - Reference Area <math>A_{sol}</math></b>						<b>Data required for CDR (EU) No 812/2013 - Reference Area <math>A_{sol}</math></b>								
Collector efficiency ( $\eta_{col}$ )		56%				Zero-loss efficiency ( $\eta_0$ )		0.72		--				
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 ( $a_1$ )		3.77		W/(m <sup>2</sup> K)								
		Second-order coefficient ( $a_2$ )		0.009		W/(m <sup>2</sup> K <sup>2</sup> )								
		Incidence angle modifier IAM (50°)		0.89		--								
						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.								
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>														