


Annex to Solar Keymark Certificate					Licence Number		011-7S3038 R							
					Date issued		2021-07-10							
					Issued by		DIN CERTCO							
Licence holder		Jiangsu Imposol New Energy Co., Ltd.			Country		CHINA							
Brand (optional)		IMPOSOL			Web		http://www.czimposol.cn							
Street, Number		No. 5, Shengda Road, Konggang Industrial Park, Luoxi Town, Xinbei District.			E-mail		Sales4@czimposol.cn							
Postcode, City		213136/Changzhou City, Jiangsu Province			Tel		+86 0519 8325 1620							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	101 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
IPRB 581810					1.68	1,990	845	137	744	731	687	621	532	352
IPRB 581812					2.17	1,990	1,090	137	961	944	888	802	687	454
IPRB 581815					2.65	1,990	1,330	137	1,173	1,152	1,084	980	839	555
IPRB 581818					3.12	1,990	1,570	137	1,381	1,357	1,276	1,153	988	653
IPRB 581820					3.44	1,990	1,730	137	1,523	1,496	1,407	1,272	1,089	720
IPRB 581822					3.76	1,990	1,890	137	1,665	1,635	1,538	1,390	1,191	787
IPRB 581824					4.08	1,990	2,050	137	1,806	1,774	1,669	1,508	1,292	854
IPRB 581825					4.24	1,990	2,130	137	1,877	1,844	1,734	1,567	1,343	887
IPRB 581830					4.89	1,990	2,455	137	2,165	2,127	2,000	1,808	1,548	1,024
Power output per m ² gross area					443	435	409	370	317	209				
Performance parameters test method		Steady state - outdoor												
Performance parameters (related to A _G)		η_0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	J/(m ² K)	s/m	W/(m ² K ⁴)	W/(m ² K ⁴)	-			
Test results		0.440	0.611	0.017	0.000	0.000	2,790	0.000	0.000	0.000	1.04			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{gT, coll}	1.03	1.06	1.12	1.18	1.33	1.47	0.98	0.49	0.00			
Longitudinal		K _{gL, coll}	1.00	1.00	0.99	0.96	0.92	0.84	0.69	0.44	0.00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A _G)		dm/dt	0.011	kg/(sm ²)										
Maximum temperature difference during thermal performance test		($\vartheta_m - \vartheta_a$) _{max}	71	K										
Standard stagnation temperature (G = 1000 W/m ² ; $\vartheta_a = 30$ °C)		ϑ_{stg}	250	°C										
Maximum operating temperature		$\vartheta_{max, op}$	226	°C										
Maximum operating pressure		p _{max, op}	600	kPa										
Testing laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch					http://www.intertek.com							
Test report(s)		130628151GZU-001 R1					Dated		2018/4/12					
Comments of testing laboratory		1. The "negative pressure test of the collector" according to EN 12975-2:2006, 5.9.2 was not performed. 2. Tests were performed based on EN 12975-2:2006. 3. Above efficiency parameters come from test type IPRB 581810.												
														
DIN CERTCO ● Alboinstraße 56 ● D-12103 Berlin Tel: +49 30 7562-1131 ● Fax: +49 30 7562-1141 ● E-Mail: info@dincertco.de ● www.dincertco.de														

Annex to Solar Keymark Certificate Supplementary Information		Licence Number		011-7S3038 R									
		Issued		2021-07-10									
Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
Standard Locations		Athens		Davos		Stockholm		Würzburg					
Collector name	ϑ_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
IPRB 581810		1,389	1,199	924	1,176	947	683	857	681	481	923	737	518
IPRB 581812		1,794	1,548	1,193	1,519	1,223	882	1,106	879	621	1,192	953	669
IPRB 581815		2,190	1,891	1,457	1,856	1,494	1,077	1,351	1,074	758	1,455	1,163	817
IPRB 581818		2,579	2,226	1,715	2,185	1,759	1,268	1,591	1,264	893	1,713	1,370	962
IPRB 581820		2,843	2,454	1,891	2,409	1,939	1,398	1,754	1,394	984	1,889	1,510	1,060
IPRB 581822		3,108	2,683	2,067	2,633	2,120	1,528	1,917	1,524	1,076	2,065	1,651	1,159
IPRB 581824		3,372	2,911	2,243	2,857	2,300	1,658	2,080	1,653	1,168	2,240	1,791	1,258
IPRB 581825		3,504	3,025	2,331	2,969	2,390	1,723	2,162	1,718	1,213	2,328	1,861	1,307
IPRB 581830		4,042	3,489	2,688	3,424	2,757	1,988	2,493	1,981	1,399	2,685	2,147	1,507
Annual output per m ² gross area		827	713	550	700	564	406	510	405	286	549	439	308
Annual efficiency, η_a		47%	40%	31%	43%	35%	25%	44%	35%	25%	44%	35%	25%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1630 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
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 ϑ_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 http://www.estif.org/solarkeymarknew/													
Additional Information													
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)										C		--	
G (W/m ²) >		800		ϑ_a (°C) >		10		H _x (MJ/m ²) >		420			
Maximum tested positive load										3100		Pa	
Maximum tested negative load										-		Pa	
Hail resistance using steel ball (maximum drop height)										1		m	
Additional collector attribute(s)													
<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)													
Energy Labelling Information						Additional Informative Technical Data							
		Reference Area, A _{sol} (m ²)		Hydraulic Designation Code				Aperture Area, A _a (m ²)					
IPRB 581810		1.68		1-H-12S-C:22,930-D				0.94					
IPRB 581812		2.17		1-H-12S-C:22,1090-D				1.13					
IPRB 581815		2.65		1-H-12S-C:22,1330-D				1.41					
IPRB 581818		3.12		1-H-12S-C:22,1570-D				1.70					
IPRB 581820		3.44		1-H-12S-C:22,1730-D				1.89					
IPRB 581822		3.76		1-H-12S-C:22,1890-D				2.07					
IPRB 581824		4.08		1-H-12S-C:22,2050-D				2.26					
IPRB 581825		4.24		1-H-12S-C:22,2130-D				2.36					
IPRB 581830		4.89		1-H-12S-C:22,2530-D				2.83					
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 (η_{col})		39%				Zero-loss efficiency (η_0)		0.44		--			
Remark: Collector efficiency (η_{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 ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{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)		0.61		W/(m ² K)							
		Second-order coefficient (a ₂)		0.017		W/(m ² K ²)							
		Incidence angle modifier IAM (50°)		1.12		--							
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 • D-12103 Berlin Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de													