



Annex to Solar Keymark Certificate					Licence Number		011-7S1655 R							
					Date issued		2022-06-01							
					Issued by		DIN CERTCO							
Licence holder		Westech Solar Jiangsu Ltd.			Country		China							
Brand (optional)					Web		www.wt-solar.com							
Street, Number		509 Of West Tower Of Urban Development			E-mail		roger@wt-solar.com							
Postcode, City		214072, BINHU DISTRICT, WUXI			Tel		0086-510-85160845							
Collector Type					Evacuated tubular collector									
Collector name					Power output per collector									
					Gb = 850 W/m <sup>2</sup> , Gd = 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	100 K				
					m <sup>2</sup>	mm	mm	mm	mm	mm	mm			
					W	W	W	W	W	W				
WT-B58-30					5,05	2.030	2.490	172	1.549	1.472	1.308	1.132	944	640
WT-B58-25					4,24	2.030	2.090	172	1.301	1.236	1.098	950	793	537
WT-B58-24					4,08	2.030	2.010	172	1.251	1.188	1.056	914	762	516
WT-B58-22					3,76	2.030	1.850	172	1.151	1.094	972	841	702	475
WT-B58-20					3,43	2.030	1.690	172	1.052	999	888	769	641	434
WT-B58-18					3,11	2.030	1.530	172	952	905	804	696	580	393
WT-B58-15					2,62	2.030	1.290	172	803	763	678	587	489	331
WT-B58-12					2,13	2.030	1.050	172	653	621	552	478	398	270
WT-B58-10					1,81	2.030	890	172	554	526	468	405	338	229
Power output per m <sup>2</sup> gross area					307	291	259	224	187	127				
Performance parameters test method		Steady state - outdoor												
Performance parameters (related to A <sub>G</sub> )		η <sub>0, b</sub>	a1	a2	a3	a4	a5	a6	a7	a8	Kd			
Units		-	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> )	-			
Test results		0,302	1,50	0,003	0,000	0,00	4.860	0,000	0,00	0,0E+00	1,10			
Incidence angle modifier test method		Steady state - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K <sub>θT, coll</sub>	1,01	1,07	1,18	1,37	1,55	1,50	1,02	0,19	0,00			
Longitudinal		K <sub>θL, coll</sub>	1,00	1,00	1,00	0,99	0,96	0,90	0,76	0,46	0,00			
Heat transfer medium for testing		Water												
Flow rate for testing (per gross area, A <sub>G</sub> )		dm/dt	0,020	kg/(sm <sup>2</sup> )										
Maximum temperature difference during thermal performance test		( $\vartheta_m - \vartheta_a$ ) <sub>max</sub>	70	K										
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; $\vartheta_a = 30$ °C)		$\vartheta_{stg}$	190	°C										
Maximum operating temperature		$\vartheta_{max, op}$	105	°C										
Maximum operating pressure		p <sub>max, op</sub>	800	kPa										
Testing laboratory		TestLab Solar Thermal Systems, Fraunhofer ISE					http://www.collectortest.com							
Test report(s)		KTB-2021-02, KTB-2021-03					Dated		03.08.2021					
		KTB-2021-08							19.11.2021					
		KTB-2022-05							01.06.2022					
Comments of testing laboratory		Datasheet version: 6.1, 2019-09-26												
		TestLab Solar Thermal Systems Heidenhofstraße 2 D-79110 Freiburg Tel: +49 (0)761 4588 5354												
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		011-7S1655 R										
Supplementary Information		Issued		2022-05-30										
<b>Annual collector output in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>														
Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg			
	$\vartheta_m$	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	
WT-B58-30		2.970	2.239	1.608	2.299	1.699	1.191	1.697	1.199	814	1.847	1.300	868	
WT-B58-25		2.493	1.879	1.349	1.929	1.426	1.000	1.424	1.006	684	1.550	1.091	729	
WT-B58-24		2.397	1.807	1.298	1.856	1.372	962	1.370	968	657	1.491	1.049	701	
WT-B58-22		2.206	1.663	1.194	1.708	1.263	885	1.261	891	605	1.372	965	645	
WT-B58-20		2.016	1.520	1.091	1.560	1.153	809	1.152	814	553	1.253	882	589	
WT-B58-18		1.825	1.376	988	1.412	1.044	732	1.043	737	500	1.135	798	534	
WT-B58-15		1.539	1.160	833	1.191	880	617	879	621	422	957	673	450	
WT-B58-12		1.252	944	678	969	717	502	715	506	343	779	548	366	
WT-B58-10		1.061	800	575	822	607	426	606	429	291	660	464	310	
Annual output per m <sup>2</sup> gross area		588	443	318	455	336	236	336	237	161	365	257	172	
Annual efficiency, $\eta_a$		33%	25%	18%	28%	21%	14%	29%	20%	14%	29%	21%	14%	
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)											A	--		
G (W/m <sup>2</sup> ) >	1000	$\vartheta_a$ (°C) >	20	$H_x$ (MJ/m <sup>2</sup> ) >										600
Maximum tested positive load											2400	Pa		
Maximum tested negative load											1750	Pa		
Hail resistance using ice balls (diameter)											25	mm		
<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, $A_{sol}$ (m <sup>2</sup> )	Hydraulic Designation Code				Aperture Area, $A_a$ (m <sup>2</sup> )								
WT-B58-30	5,05	1-H-12S-C:20,2580				2,83								
WT-B58-25	4,24	1-H-12S-C:20,2180				2,36								
WT-B58-24	4,08	1-H-12S-C:20,2100				2,26								
WT-B58-22	3,76	1-H-12S-C:20,1940				2,08								
WT-B58-20	3,43	1-H-12S-C:20,1780				1,89								
WT-B58-18	3,11	1-H-12S-C:20,1620				1,70								
WT-B58-15	2,62	1-H-12S-C:20,1380				1,42								
WT-B58-12	2,13	1-H-12S-C:20,1140				1,13								
WT-B58-10	1,81	1-H-12S-C:20,1070				0,94								
<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 ( $\eta_{col}$ )	24%			Zero-loss efficiency ( $\eta_0$ )	0,31			--						
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 ( $a_1$ )	1,50			W/(m <sup>2</sup> K)						
				Second-order coefficient ( $a_2$ )	0,003			W/(m <sup>2</sup> K <sup>2</sup> )						
				Incidence angle modifier IAM (50°)	1,32			--						
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: info@dincertco.de • www.dincertco.de														