


Annex to Solar Keymark Certificate					Licence Number		011-7S2894 P							
					Date issued		2021-03-23							
					Issued by		DIN CERTCO							
Licence holder		Consolar Solare Energiesysteme			Country		Germany							
Brand (optional)		-			Web		https://www.consolar.de/							
Street, Number		Gewerbestraße 7			E-mail		Anfrage@consolar.de							
Postcode, City		D-79539 Lörrach			Tel		+49 (0)7621 42228-34							
Collector Type					WISC (Wind and/or infrared sensitive collector)									
Collector name					Power output per collector Gb = 850 W/m ² , Gd = 150 W/m ² & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					0 K	10 K	30 K	50 K	70 K	39 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
SOLINK PVT-Wärmepumpenkollektor 380 Wp					1.98	1 987	995	67	558	0	0	--	--	0
Power output per m² gross area					282	0	0	--	--	0				
Performance parameters test method		Quasi dynamic												
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		0.137	84.35	0.000	22.030	0.44	41 580	0.111	0.00	0.0	1.00			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		$K_{\theta T, coll}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.00			
Longitudinal		$K_{\theta L, coll}$	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.00			
Heat transfer medium for testing					Water									
Flow rate for testing (per gross area, A_G)					dm/dt	0.020	kg/(sm ²)							
Maximum temperature difference during thermal performance test					$(\vartheta_m - \vartheta_a)_{max}$	9	K							
Standard stagnation temperature (G = 1000 W/m²; $\vartheta_a = 30$ °C)					ϑ_{stg}	70	°C							
Maximum operating temperature					$\vartheta_{max, op}$	80	°C							
Maximum operating pressure					$p_{max, op}$	600	kPa							
Testing laboratory		Institut für Gebäudeenergetik, Thermotechnik und Energiespeicherung (IGTE)					http://www.igte.uni-stuttgart.de							
Test report(s)		21COL1605 18COL1436Q/1					Dated		23.03.2021 23.03.2021					
Comments of testing laboratory					Datasheet version: 6.1, 2019-09-26									
This data sheet replaces the data sheet issued on 16.01.2019 The collector was retested with a new PV-model (380 W)					 <p>Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Plattenwaldring 8, 70560 Stuttgart (Vaihingen)</p>									
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Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S2894 P
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Annual collector output in kWh/collector at mean fluid temperature ϑ_m													
Collector name	ϑ_m	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
SOLINK PVT-Wärmepumpenkollektor	1 207				10			75				143	
Annual output per m ² gross area	609	--	--	--	5	--	--	38	--	--	72	--	--
Annual efficiency, η_a	35%	--	--	--	0%	--	--	3%	--	--	6%	--	--
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)	A
G (W/m ²) >	1000
ϑ_a (°C) >	20
H_x (MJ/m ²) >	600
Maximum tested positive load	5500 Pa
Maximum tested negative load	2500 Pa
Hail resistance using steel ball (maximum drop height)	1.4 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 checked="" 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)
SOLINK PVT-Wärmepumpenkollektor 380 Wp	1.98	1-H-12345-A:11.9,19800	1.98

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})	-159%	Zero-loss efficiency (η_0)	0.28
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)	46.90 W/(m ² K)
		Second-order coefficient (a_2)	0.000 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	1.00
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.			