


Annex to Solar Keymark Certificate					Licence Number		011-7S2894 P							
					Date issued		2025-01-14							
					Issued by		DINCERTCO							
Licence holder		Consolar Solare Energiesysteme			Country		Germany							
Brand (optional)					Web		https://www.consolar.de							
Street, Number		Gewerbestraße 7			E-mail		anfragen@consolar.de							
Postcode, City		D-79529 Lörrach			Tel		+49 (0)69 7409328-0							
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	40 K				
					m ²	mm	mm	mm	W	W	W	W	W	W
SOLINK 430 MV PVT-Wärmepumpenkollektor					2.00	1 730	1 156	53	767	115	0	--	--	0
SOLINK 430 MH PVT-Wärmepumpenkollektor					1.99	1 143	1 743	53	763	115	0	--	--	0
SOLINK 530 LH PVT-Wärmepumpenkollektor					2.42	1 143	2 115	53	927	139	0	--	--	0
Power output per m² gross area					383	58	0	--	--	0				
Performance parameters test method		Quasi dynamic												
Performance parameters (related to A_G)		$\eta_{0, b}$	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		0.329	40.94	0.000	4.928	0.14	42 730	0.045	0.00	0.0	0.83			
Incidence angle modifier test method		Quasi dynamic - outdoor												
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°			
Transversal		K _{θT, coll}	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.00			
Longitudinal		K _{θL, 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}	10		K									
Standard stagnation temperature (G = 1000 W/m²; ϑ_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)		24COL1743/1 24COL1744/1 24COL1744Q/1					Dated		08.01.2025 08.01.2025 08.01.2025					
Comments of testing laboratory		Ver. 6.2 (13.01.2022)												
Documented performance parameters are taken from 24COL1743/1 (SOLINK 430 MV PVT-Wärmepumpenkollektor)		 <p>Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmetechnik Universität Stuttgart Pfaffenwaldring 6, 70560 Stuttgart (Vaihingen)</p>												
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Supplementary Information		011-7S2894 P											
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		2025-01-14											
Gross Thermal Yield 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			
SOLINK 430 MV PVT-Wärmepumpenkollektor	1 115				54			149		212			
SOLINK 430 MH PVT-Wärmepumpenkollektor	1 109				53			148		211			
SOLINK 530 LH PVT-Wärmepumpenkollektor	1 349				65			180		257			
Gross Thermal Yield per m ² gross area		557	--	--	27	--	--	75	--	--	106	--	--
Annual efficiency, η_a		32%	--	--	2%	--	--	6%	--	--	9%	--	--
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. 6.2 (13.01.2022). 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										Yes			
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										3250		Pa	
Maximum tested negative load										2750		Pa	
Hail resistance using steel ball (maximum drop height)										1.2		m	
Additional collector attribute(s)													
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			
Energy Labelling Information						Additional Informative Technical Data							
		Reference Area, A _{sol} (m ²)		Hydraulic Designation Code				Aperture Area, A _a (m ²)					
SOLINK 430 MV PVT-Wärmepumpenkollektor		2.00		1-H-1234S-11.4,23120-20.5,1151-D				2.00					
SOLINK 430 MH PVT-Wärmepumpenkollektor		1.99		1-H-1234S-11.4,20630-20.5,1739-D				1.99					
SOLINK 530 LH PVT-Wärmepumpenkollektor		2.42		1-H-1234S-11.4,25260-20.5,2111-D				2.42					
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})		-92%		Zero-loss efficiency (η_0)				0.38				--	
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)				32.56				W/(m ² K)			
		Second-order coefficient (a ₂)				0.000				W/(m ² K ²)			
		Incidence angle modifier IAM (50°)				0.97				--			
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.													
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