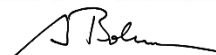


Annex to Solar Keymark Certificate					Licence Number		011-7S2902 C				
					Date issued		2019-02-07				
					Issued by		DIN CERTCO				
Licence holder		Absolicon Solar Collector AB			Country		Sweden				
Brand (optional)					Web		www.absolicon.com				
Street, Number		Fiskaregatan 11			E-mail		info@absolicon.com				
Postcode, City		SE-871 33 Härnösand			Tel		+46 611 55 70 00				
Collector Type					Concentrating collector						
Collector name		Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector					
						$G_b = 850 \text{ W/m}^2$, $G_d = 150 \text{ W/m}^2$ & $u = 1.3 \text{ m/s}$ $\vartheta_m - \vartheta_a$					
						0 K	10 K	30 K	50 K	70 K	180 K
		m^2	mm	mm	mm	W	W	W	W	W	W
T160		6.04	1'095	5'514	5.51	3'654	3'610	3'522	3'434	3'346	2'861
Power output per m^2 gross area						605	598	583	568	554	474
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		-	$\text{W}/(\text{m}^2\text{K})$	$\text{W}/(\text{m}^2\text{K}^2)$	$\text{J}/(\text{m}^3\text{K})$	-	$\text{J}/(\text{m}^2\text{K})$	s/m	$\text{W}/(\text{m}^2\text{K}^4)$	$\text{W}/(\text{m}^2\text{K}^4)$	-
Test results		0.697	0.73	0.000	0.000	0.00	1'483	0.000	0.00	0.0E+00	0.12
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	1.00	0.00
Longitudinal		$K_{\theta L, coll}$	0.99	0.99	0.98	0.96	0.91	0.77	0.53	0.18	0.00
Heat transfer medium for testing						Water					
Flow rate for testing (per gross area, A_G)						dm/dt		0.023		kg/(sm ²)	
Maximum temperature difference during thermal performance test						$(\vartheta_m - \vartheta_a)_{max}$		150		K	
Standard stagnation temperature ($G = 1000 \text{ W/m}^2$; $\vartheta_a = 30^\circ\text{C}$)						ϑ_{stg}		180		°C	
Maximum operating temperature						$\vartheta_{max op}$		180		°C	
Maximum operating pressure						$p_{max, op}$		1000		kPa	
Testing laboratory		SPF Testing, CH-8640 Rapperswil, Switzerland				www.spf.ch					
Test report(s)		C1730ISO				Dated		25.01.2019			
Comments of testing laboratory						Ver. 6.2 (22.09.2021)					
						 INSTITUT FÜR SOLARTECHNIK 					
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 Supplementary Information	Licence Number	011-7S2902 C
	Issued	2019-02-07

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	25°C	50°C	75°C
T160		5'997	5'607	5'251	4'489	4'139	3'830	3'826	3'514	3'237	3'703	3'392	3'124
Gross Thermal Yield per m ² gross area		993	928	869	743	685	634	634	582	536	613	562	517
Annual efficiency, η_a		42%	39%	36%	43%	40%	37%	45%	41%	38%	42%	39%	36%
Fixed or tracking collector		NS-axis tracking											
Annual irradiation on collector plane		2386 kWh/m ²			1715 kWh/m ²			1408 kWh/m ²			1444 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		Tracking			Tracking			Tracking			Tracking		
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 Draft Ver. 6.2 (22.09.2021). A detailed description of the calculations is available at http://www.estif.org/solarkeymarknew/													

Additional Information						
Collector heat transfer medium					Water	
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) >	1100	θ _a (°C) >	40	H _x (MJ/m ²) >	700	
Maximum tested positive load					1000	Pa
Maximum tested negative load					1000	Pa
Hail resistance using ice balls (diameter)					25	mm

Additional collector attribute(s)			
Using external power source(s) for normal operation	Yes	Active or passive measure(s) for self-protection	Yes
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)
T160	6.04	1-H-LRS-AC:22.4,5455	6.04

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})	58%	Zero-loss efficiency (η_0)	0.60
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)	0.73
		Second-order coefficient (a_2)	0.000
		Incidence angle modifier IAM (50°)	0.83
		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.	