



Annex to Solar Keymark Certificate		Licence Number	OEM 9999.2.16
		Date issued	2024-11-30
		Issued by	DQS Hellas
Licence holder	CORDIVARI SRL	Country	Italy
Brand (optional)		Web	www.cordivari.it
Street, Number	Zona Industriale Pagliare	E-mail	info@cordivari.it
Postcode, City	64020 Morro D' oro (TE)	Tel	+39 085 804 01

Collector Type	Flat plate collector
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Collector name	Gross area (A _G) m ²	Gross length mm	Gross width mm	Gross height mm	Power output per collector					
					G _b = 850 W/m ² , G _d = 150 W/m ² & u = 1.3 m/s					
					θ _m - θ _a					
					0 K	10 K	30 K	50 K	70 K	89 K
					W	W	W	W	W	W
ASAK XT MQ 2.7 VT 4 CONN	2,72	2.160	1.260	86	2.107	2.018	1.821	1.597	1.348	1.093
ASAK XT MQ 2.7 OR 4 CONN	2,72	1.260	2.160	86	2.107	2.018	1.821	1.597	1.348	1.093
Power output per m ² gross area					775	742	669	587	495	402

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	0,784	3,15	0,012	0,000	0,00	9.720	0,000	0,00	0,0E+00	0,92

Incidence angle modifier test method	Steady state - outdoor									
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	K _{θT, coll}	1,00	1,00	1,00	0,99	0,96	0,90	0,78	0,52	0,00
Longitudinal	K _{θL, coll}	1,00	1,00	1,00	0,99	0,96	0,90	0,78	0,52	0,00

Heat transfer medium for testing	Water									
Flow rate for testing (per gross area, A _G)	dm/dt	0,022	kg/(sm ²)							
Maximum temperature difference during thermal performance test	(θ _m -θ _a) _{max}	58,5	K							
Standard stagnation temperature (G = 1000 W/m ² ; θ _a = 30 °C)	θ _{stg}	190,5	°C							
Maximum operating temperature	θ _{max, op}	200	°C							
Maximum operating pressure	p _{max, op}	1000	kPa							

Testing laboratory	NCSR Demokritos / Solar & other Energy System	www.solar.demokritos.gr
Test report(s)	4196DE2	Dated
	4197DQ3	16/11/2016
		2/6/20217

Comments of testing laboratory	Ver. 6.2 (13.01.2022)
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Annex to Solar Keymark Certificate	Licence Number	OEM 9999.2.15
Supplementary Information	Issued	2024-06-30

Gross Thermal Yield in kWh/collector at mean fluid temperature ϑ_m

Collector name	Standard Locations	Athens			Davos			Stockholm			Würzburg		
	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
ASAK XT MQ 2.7 VT 4 CONN		3.422	2.564	1.786	2.673	1.943	1.310	1.954	1.349	874	2.121	1.461	932
ASAK XT MQ 2.7 OR 4 CONN		3.422	2.564	1.786	2.673	1.943	1.310	1.954	1.349	874	2.121	1.461	932
Gross Thermal Yield per m ² gross area		1.258	942	657	983	714	482	718	496	321	780	537	343
Annual efficiency, η_a		71%	53%	37%	60%	44%	30%	62%	43%	28%	63%	43%	28%
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	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	3000	Pa
Maximum tested negative load	3000	Pa
Hail resistance using steel ball (maximum drop height)	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)
ASAK XT MQ 2.7 VT 4 CONN	2,72	11-V-1234S-A:7.2,2060-C:20.6,1320-	2,57
ASAK XT MQ 2.7 OR 4 CONN	2,72	18-V-1234S-A:7.2,1158-C:20.6,2240-	2,57

Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}

Collector efficiency (η_{col})	63%	Zero-loss efficiency (η_0)	0,77	--
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)	3,15	W/(m ² K)
		Second-order coefficient (a_2)	0,012	W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0,96	--

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.