

									1		Page 1/2		
Annex to Solar Keymark Certificate							e Numb	er	SKM 10132.7				
							ssued		2024-12-15 DQS Hellas				
							by						
Licence holder	PAPA	EMMAN	NOUEL S	5.A.		Country	Country Greece						
Brand (optional)	SOLAR FLAME						www.papaemmanouel.gr						
Street, Number		oumaria				E-mail	exports@papaemmanouel.gr						
Postcode, City	32009	Oinofyta '	Viotias			Tel	Tel +30 22620 31931						
Collector Type						Flat plat	te collecto	r					
		Gross area (A <sub>G</sub> )				Power output per collector Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s							
Collector name		Gross area ( <i>i</i>	Gross length	Gross width	Gross height	2010 10 2010	1		- ϑ <sub>a</sub>				
						0 K	10 K	30 K	50 K	70 K	104 K		
EN44Y Cara 2 2001/		m <sup>2</sup>	mm	mm	mm	W	W	W	W	W	W		
FMAX Gen2-300V FMAX Gen2-300H		3.02	2,160	1,400	86	2,329	2,233	2,025	1,798	1,552	1,093		
FIVIAX Gen2-300H		3.02	1,400	2,160	86	2,329	2,233	2,025	1,798	1,552	1,093		
D										-			
Power output per m <sup>2</sup> gross area	Loren I	C I		and Providence		771	739	671	595	514	362		
Performance parameters test met Performance parameters (related			tate - out a1		- 2	- 4	a5	- 6		- 0	الاما		
Units		η0, b	1000 No. 10	a2 W/(m²K²)	a3	a4	J/(m <sup>2</sup> K)	a6	a7	a8 W/(m²K⁴)	Kd		
Test results		- 0.780	3.12	0.008	0.000	0.00	13.001	s/m 0.000	0.00	0.0E+00	0.92		
		0.780	and the second			0.00	13,001	0.000	0.00	0.01+00	0.92		
Incidence angle modifier test meth	lod	1 2		tate - out							3		
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°		
Transversal		K <sub>0T,coll</sub>	1.00	1.00	1.00	0.99	0.96	0.91	0.78	0.53	0.00		
Longitudinal K <sub>0L.coll</sub>		1.00	1.00	1.00	0.99	0.96	0.91	0.78	0.53	0.00			
Heat transfer medium for testing							Water		0.000	1 // 2	<u>،</u>		
Flow rate for testing (per gross area, A <sub>G</sub> )							dm/dt			0.022 kg/(sm <sup>2</sup> )			
Maximum temperature difference during thermal performance test Standard starsetion temperature ( $G = 1000 \text{ W/m}^2 + 3 = 30 \text{ °C}$ )							(ϑ <sub>m</sub> -ϑ <sub>a</sub> ),	nax		73.7 K			
Standard stagnation temperature (G = 1000 W/m <sup>2</sup> ; $\vartheta_a$ = 30 °C) Maximum energy temperature							ឋិ <sub>stg</sub>		240 °C				
Maximum operating temperature Maximum operating pressure						ປີ <sub>max op</sub>			250 °C				
						• Carrolan	p <sub>max,op</sub> 1000 kPa www.solar.demokritos.gr						
Testing laboratory	NCSR Demokritos / Solar & other Energy System						WWW.SO	ar.demo					
Test report(s)		4439 DE1 4439 DQ1							20/11/24 12/12/24				
Comments of testing laboratory								Ver.	6.2 (13.01	.2022)			
							SOLAR Tel: +210 6	ENERGY 1 503815 - Fa	KRITO LABORATO x: +210 65445 Paraskevi, Gre	Sell	Suss		
Central Offices: Ka				Athens, T Iobal.con				+30 210	6233495	i,			



Annex to Solar Keymark Certific	cate					Licen	ce Nur	nber		SKM	10132	.7	
Supplementary Information		Issued					2024-12-15						
	tor at n	ooon fi	uid tor	nnorat			-						
Gross Thermal Yield in kWh/collec				nperat				ا م ما ا م م			A/		
Standard Locations		Athens 50°C		25%	Davos	75°C		tockholi			Nürzbu	-	
Collector name 👌 🕅			75°C 2,067	25°C	50°C 2,210		25°C	50°C 1,529	75°C 1,033	25°C	50°C	75°C	
FMAX Gen2-300H		2,875	2,067		2,210		_	1,529	1,033	2,357			
	3,192	2,075	2,007	2,311	2,210	1,333	2,172	1,525	1,035	2,337	1,050	1,10.	
	—												
		-		-	-	-			-				
						-							
Gross Thermal Yield per m <sup>2</sup> gross area	1,256	952	685	986	732	515	719	506	342	780	549	365	
Annual efficiency, η <sub>a</sub>	71%	54%	39%	60%	45%	32%	62%	43%	29%	63%	44%	29%	
Fixed or tracking collector	<u> </u>			_			-	nded to r		_		1.2	
Annual irradiation on collector plane	176					530 kWh/m²			1166 kWh/m <sup>2</sup>			/m²	
Mean annual ambient air temperature		18.5°C			3.2°C	20		7.5°C	- 0	-	9.0°C	- 0	
Collector orientation or tracking mode		outh, 2		South, 30°				South, 45		South, 35°			
The collector is operated at constant te													
collector performance is performed wit								aic Ver. 6	.2 (13.0	1.2022	). A deta	uled	
description of the calculations is availab	oie at htt												
		Ad	dition	al Info	rmatio	on							
Collector heat transfer medium										Water	-Glycole		
The collector is deemed to be suitable f	for roof i	integrat	tion							1	<b>lo</b>		
The collector was tested successfully ur	nder the	followi	ng cond	litions:									
Climate class (A+, A, B or C)										4	-	-	
G (W/m <sup>2</sup> ) > 1000	θa	< (°C) >		20 H <sub>x</sub> (M				H <sub>x</sub> (MJ	J/m <sup>2</sup> ) > 600				
Maximum tested positive load				-					3000 Pa			Pa	
Maximum tested negative load									30	00	F	<b>'</b> a	
Hail resistance using steel ball (maximu										2	r	n	
			nal co									-	
Using external power source(s) for nor		ration	No				sure(s) f	or self-p	rotectio	n		No	
Co-generating thermal and electrical po			No	Façade	collect							No	
Energy Labelling Info	rmatio	n			Add	litiona	l Info	mative	e Tech	nical [	Data		
	Reference Area, A <sub>sol</sub> (m <sup>2</sup> )			Hydraulic Designation Code					Aperture Area, A <sub>a</sub> (m <sup>2</sup> )				
FMAX Gen2-300V		3.02		16-V-1	234S-A	:7.2,206	0-C:20.6,1460-			2.88			
FMAX Gen2-300H		3.02		25 1/ 4	2345-1								
		5.0Z		25-V-1	2343-A	:7.2,130	)0-C:20.	6,2220-		2.	88		
		3.02		25-V-1	2343-A	:7.2,130	0-C:20.	6,2220-		2.			
ļ		3.02		25-V-1	.2343-A	:7.2,130	0-C:20.	6,2220-		2.			
		3.02		25-V-1	.2343-A	:7.2,130	)0-C:20.	6,2220-		2.			
		3.02		25-V-1	.2343-A	:7.2,130	00-C:20.	6,2220-		2.			
		3.02		25-V-1		:7.2,130	00-C:20.	6,2220-		2.			
		3.02		25-V-1		:7.2,130	00-C:20.	6,2220-		2.			
		3.02		25-V-1	2343-7	:7.2,130	00-C:20.	6,2220-		2.			
		3.02		25-V-1	2343-7	:7.2,130	00-C:20.	6,2220-		2.			
		3.02		25-V-J	2343-A	:7.2,130	JO-C:20.	6,2220-		2.			
		3.02		25-V-J		:7.2,130	JO-C:20.	6,2220-		2.			
		3.02				:7.2,130	00-C:20.	6,2220-		2.			
		3.02				:7.2,130	00-C:20.	6,2220-		2.			
		3.02					00-C:20.	6,2220-		2.			
		3.02				.7.2,130	00-C:20.	6,2220-		2.			
		3.02				:7.2,130	00-C:20.	6,2220-		2.			
		3.02				:7.2,130	00-C:20.	6,2220-		2.			
											88		
	13 - Refe	erence A	Area	Data re	equired	for CDF	(EU) N	6,2220- 0 812/20		ference	88	sol	
Collector efficiency $(\eta_{col})$		erence A 63%	Area	Data re Zero-lo	equired ass effici	for CDF ency (ŋ	R (EU) N		0.	ference 77	Area A		
Collector efficiency (η <sub>col</sub> ) Remark: Collector efficiency (ηcol) is define	d in CDR	erence A 63% (EU) No	Area	Data re Zero-lc	equired oss effici rder coe	for CDF ency (ŋ	R (EU) N 0 ) (a <sub>1</sub> )		0. 3.	ference 777	88 Area A W/(	 m²K)	
Collector efficiency (η <sub>col</sub> ) Remark: Collector efficiency (ηcol) is define 811/2013 as collector efficiency of the solar	d in CDR collector	erence / 63% (EU) No at a	Area	Data re Zero-lc First-on Seconc	equired ss effici rder coe l-order	for CDF ency (η efficient coefficie	R (EU) N (a1) (a2) (b) (b) (b) (b) (b) (b) (b) (b	o 812/20	0. 3. 0.0	ference 77 12 108	88 Area A W/(		
Collector efficiency (n <sub>col</sub> ) Remark: Collector efficiency (ncol) is define 811/2013 as collector efficiency of the solar temperature difference between the solar c	d in CDR collector ollector a	erence 4 63% (EU) No at a and the		Data re Zero-lc First-or Secono Incider	equired ss effici der coe l-order of nee angl	for CDF ency (ŋ efficient coefficie e modif	<b>R (EU) N</b> (a) (a <sub>1</sub> ) ent (a <sub>2</sub> ) ier IAM	o 812/20 (50°)	0. 3. 0.0 0.	ferences 777 12 1008 197	88 Area A W/( W/(r	 m²K) m²K²) 	
Collector efficiency (n <sub>col</sub> ) Remark: Collector efficiency (ncol) is define 811/2013 as collector efficiency of the solar temperature difference between the solar or surrounding air of 40 K and a global solar irra	d in CDR collector ollector a adiance o	Frence A 63% (EU) No at a and the f 1000 W	//m²,	Data re Zero-lo First-ou Secono Incider	equired ass effici rder coe l-order i rce angl	for CDF ency (ŋ :fficient coefficie e modif a given ii	R (EU) N (a1) ent (a2) ier IAM ier IAM	o 812/20 (50°)	0. 3. 0.0 0. elated to	ferences 77 12 008 97 collecto.	e Area A W/( W/( W/( r reference	 m²K) m²K²)  ce area	
Collector efficiency (n <sub>col</sub> ) Remark: Collector efficiency (ncol) is define 811/2013 as collector efficiency of the solar temperature difference between the solar or surrounding air of 40 K and a global solar irra expressed in % and rounded to the nearest i	d in CDR collector ollector a adiance o integer. D	erence A 63% (EU) No at a ind the f 1000 W Deviating	V/m²,	Data re Zero-lc First-oi Seconc Incider <i>Remark</i> (A sol) w	equired ass effici rder coe l-order ice angl : The dat hich is ap	for CDF ency (ŋ efficient coeffici e modif a given i operture a	R (EU) N (a1) (a1) ier IAM n this sec rea for v	o 812/20 (50°) tion are ro alues acco	0. 3. 0.0 elated to ording to	ferences 777 12 2008 97 collecto EN 1297	88 Area A W/( W/( r reference 5-2 or g	m <sup>2</sup> K) m <sup>2</sup> K <sup>2</sup> )  ce area ross	
Remark: Collector efficiency (ncol) is define 811/2013 as collector efficiency of the solar temperature difference between the solar c surrounding air of 40 K and a global solar irra expressed in % and rounded to the nearest i the regulation ncol is based on reference are	d in CDR collector ollector a adiance o integer. D ea (Asol)	erence A 63% (EU) No at a and the f 1000 W beviating which is	V/m², ; from	Data re Zero-lc First-on Seconc Incider Remark (A sol) w area for	equired oss effici rder coe l-order ngl : The dat thich is ap	for CDF ency (ŋ efficient coefficie e modif a given i berture a 5. Consis	(EU) N (a) (a) (a) (a) (a) (a) (a) (a) (a) (a)	o 812/20 (50°)	0. 3. 0.0 0. elated to ording to either app	ference 77 12 12 008 997 collecto EN 1297 erture or	Area A Area A W/(t W/(t r referent t5-2 or g gross and	m <sup>2</sup> K) m <sup>2</sup> K <sup>2</sup> )  ce area ross ea can	
Collector efficiency (n <sub>col</sub> ) Remark: Collector efficiency (ncol) is define 811/2013 as collector efficiency of the solar temperature difference between the solar or surrounding air of 40 K and a global solar irra expressed in % and rounded to the nearest i	d in CDR collector ollector a adiance o integer. D ea (Asol)	erence A 63% (EU) No at a and the f 1000 W beviating which is	V/m², ; from	Data re Zero-lc First-on Seconc Incider Remark (A sol) w area for	equired ass effici der coe l-order o foce angl ince angl ince august in calculo in calculo in calculo	for CDF ency (ŋ efficient coefficie e modif a given i berture a 5. Consis	(EU) N (a) (a) (a) (a) (a) (a) (a) (a) (a) (a)	o 812/20 (50°) tion are re alues acco	0. 3. 0.0 0. elated to ording to either app	ference 77 12 12 008 997 collecto EN 1297 erture or	Area A Area A W/(t W/(t r referent t5-2 or g gross and	m <sup>2</sup> K) m <sup>2</sup> K <sup>2</sup> )  ce area ross ea can	

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