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Annex to Solar Keymark Certificate							e Numb	er	SKM 10109.1				
							sued		2020-12-21				
						Issued	hv		DQS Hellas				
Licence holder	VENMAN S.A. Country								1000	Ciido			
Brand (optional)	Web						http://www.venman.gr						
Street, Number	7th Km Old National Road Thossalaniki					E-mail	info@venman.gr						
Postcode, City	7th Km Old National Road Thessaloniki – 57022, Thessaloniki					Tel		2310 78					
rostcode, city	37022,	THESSAIO	HIKU			liei	150	2310 70	4004				
Collector Type						Flat plat	e collecto	r					
Collector name					Gross height	Power output per collector							
		Gross area (A _G)	Gross length	Gross width		Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s							
						ϑ _m - ϑ _a							
						0 K	10 K 30 k		50 K	70 K	84 K		
		m²	mm	mm	mm	W	W	W	W	W	W		
H81MP 2.0		1.90	1,970	965	80	1,472	1,388	1,198	979	731	538		
H81MP 2.5		2.40	1,970	1,220	80	1,860	1,753	1,513	1,237	924	679		
	,	9		. 9					6.09		V-		
							\$c 15						
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											ĺ		
							2						
									1				
						1							
							5						
Power output per m² gross area						775	730	630	515	385	283		
Performance parameters test met	hod	Steadys	tate - out	tdoor									
Performance parameters (related	DV.Secretify	η0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd		
Units		- 107.2	725,0007	W/(m²K²)	1530-0140		J/(m²K)	s/m	0233990	W/(m ² K ⁴)			
Test results		0.786	4.24	0.019	0.000	0.00	0	0.000	0.00	0.0E+00	0.91		
Section 1997								10.000		0.02.00			
Incidence angle modifier test met	100	ra sa		tate - out		1 400	500	500	7.00	0.00	200		
Incidence angle modifier		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°		
Transversal	-	K _{θT,coll}	1.00	1.00	0.99	0.98	0.94	0.87	0.74	0.48	0.00		
Longitudinal		$K_{\theta L, coll}$	1.00	1.00	0.99	0.98	0.94	0.87	0.74	0.48	0.00		
Heat transfer medium for testing							Water-Glycole dm/dt 0.021 kg/(sm²)						
Flow rate for testing (per gross area, A _G)							dm/dt	kg/(sm²)				
Maximum temperature difference during thermal performance test										K			
Standard stagnation temperature (G = 1000 W/m ² ; ϑ_a = 30 °C)							ϑ_{stg}		187 °C				
Maximum operating temperature							Ŭ _{max op} - °C						
Maximum operating pressure							p _{max,op} - kPa						
Testing laboratory	NCSR Demokritos						http://www.solar.demokritos.gr						
Test report(s) 4284 DQ2					Dated 17/12/2020								
	DE2							30/10/2020					
	E2				30/10/2020								
Comments of testing laboratory							Da	atasheet v	ersion: 6.1	l, 2 019-09-	26		
Example comment Qualification tests are in extension of test report 4207 DQ2							N.C.S.R. "D E M O K R I T O S" SOLAR ENERGY LABORATOBY Tel: +210 6503815 - Fax: +210 6544594 P.O. BOX 60037, 15310 Ag. Paraskevi, Greece						

DQS HELLAS Ltd, Central Offices: Kalavriton 4, 145 64 kifisia, Athens, Tel: +30 210 6233493-4 , Fax: +30 210 6233495, http://www.dqs.gr, e-mail: i.alexiou@dqs.gr

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Annex to Solar Keymark Certific			ce Nur	nber	SKM 10109.1								
Supplementary Information	Issue	d		2020-	11-10								
Annual collector output in kWh/col	lector a	at mea	n fluid	tempe	rature	მ ო							
Standard Locations		Athens	1		Davos		S	tockhol	m	Würzburg			
Collector name ϑ_n	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	
H81MP 2.0		1,565	911	1,722	1,098	596	1,277	770	407	1,393	831	433	
H81MP 2.5	2,955	1,976	1,151	2,175	1,387	752	1,613	973	514	1,759	1,050	546	
Appual output par es? =====	1 221	024	400	000	F70	242	672	405	244	722	427	220	
Annual output per m² gross area Annual efficiency, η _a	1,231 70%	824 47%	480 27%	906 56%	578 35%	313 19%	672 58%	405 35%	214 18%	733 59%	437 35%	228 18%	
Fixed or tracking collector	70%	4/%				19% tude - 1!					33%	16%	
Annual irradiation on collector plane	176	65 kWh			30 kWh			56 kWh			14 kWh	/m²	
Mean annual ambient air temperature	18.5°C			3.2°C			7.5°C			9.0°C			
Collector orientation or tracking mode	South, 25°			S	outh, 3	0°	S	outh, 4!	5°	South, 35°			
The collector is operated at constant te	mperati	ure ປີm	(mean d	of in- an	d outle	t tempe	ratures). The ca					
collector performance is performed wit													
detailed description of the calculations	is availa	ble at h	ttp://w	ww.esti	f.org/so	olarkeyn	narknev	v/					
		Add	ditiona	l Info	matio	n							
Collector heat transfer medium										Wa	iter		
The collector is deemed to be suitable f	or roof	integrat	ion								lo		
The collector was tested successfully ur	der the	followi	ng cond	litions:									
Climate class (A+, A, B or C)										4	-	-	
G (W/m ²) > 1000	∂ _a (°C) >			20 H _X				$H_X(M)$	1J/m²) >		600		
Maximum tested positive load												a	
Maximum tested negative load										000		a	
Hail resistance using steel ball (maximu				lastau	ib	+0/0\				2	r	n	
Using oxternal newer source(s) for		dditio					o moaci	uro(c) fo	r colf n	rotoctio	n		
Using external power source(s) foCo-generating thermal and electr			LIOII			r passive collector		ire(s) io	r seii-p	rotectio	П		
Energy Labelling Info						litiona		mativ	Toch	nical F)ata		
Lifeigy Labelling illion			A (²)									/m²\	
H91MD 2.0	Reference Area, A _{sol} (m ²) MP 2.0 1.90			Hydraulic Designation Code 10-VH-1234S-A:7.2,1890-C:20,1030-					Aperature Area, A _a (m²) 1.80				
H81MP 2.0													
H81MP 2.5		2.40		11-VH-1234S-A:7.2,1890-C:20),1280-	0- 2.29				
_				 									
Data required for CDR (EU) No 811/203	13 - Ref	erence	Area	Data re	equired	for CDF	R (EU) N	o 812/2	2013 - R	eferen	e Area	A _{sol}	
Collector efficiency (η _{col})		57%			•	iency (η				77	_	-	
				First-o	der coe	efficient	(a ₁)		4.	24	W/(ı	m²K)	
Remark: Collector efficiency (ηcol) is defined				Second	l-order	coefficie	ent (a ₂)		0.0)19	W/(r	m²K²)	
811/2013 as collector efficiency of the solar of						e modif		` '		95	-	-	
difference between the solar collector and the		-				ta given i					-		
and a global solar irradiance of 1000 W/m², e rounded to the nearest integer. Deviating fro	•			-		h is apert		-		-			
		-		_	•	0 9806. (
based on reference area (Asol) which is anert												nd	
based on reference area (Asol) which is apert according to EN 12975-2 or gross area for ISC						d in calcu	lations li	ke in the	regulati	on 811 ai	na 812 ai	nu	
					n be used ion progr		lations li	ke in the	regulati	on 811 ai	na 812 a	nu	

http://www.dqs.gr, e-mail: i.alexiou@dqs.gr