Keymark Certificate

078/000219

AENOR certifies that the organization

DELPASO SOLAR, S.L.

registered office	PTA - AVDA. JUAN LÓPEZ DE PEÑALVER, 3 CAMPANILLAS 29590 MÁLAGA (Malaga - España)
supplies	**Solar collectors**
in compliance with	UNE-EN 12975-1:2006+A1:2011 (EN 12975-1:2006+A1:2010)
Trade Mark Technical information	DPS VSH2200, DPS HSH2200, DPS VSHJ2200, DPS HSHJ2200, DPS VSH2600, DPS HSH2600, DPS VSHJ2600, DPS HSHJ2600 Specified in Annexes to the Certificate
Production site	PARQUE TECNOLÓGICO DE ANDALUCÍA, AVENIDA JUAN LÓPEZ DE PEÑALVER, 3CAMPANILLAS 29590 MÁLAGA (Malaga - España)
Certification scheme	In order to grant this Certificate, AENOR has tested the product and has verified the quality system implemented for its manufacture. AENOR performs these tasks periodically while the Certificate has not been cancelled, in accordance with Specific Rules RP 078.01.
First issued on	2014-12-04
Last issued on	2024-12-04
Validity	2029-12-04

Rafael GARCÍA MEIRO
CEO

ENAC
CERTIFICACIÓN
ISO 17065
Nº1 / C-PR271

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AENOR

Annex to Solar Keymark Certificate		Licence Number	078/000219
		Date issued	2024-12-04
		Issued by	AENOR

Licence holder	**DELPASO SOLAR, S.L.**	**Country**	SPAIN
Brand (optional)	--	**Web**	http://www.dpsm.es
Street, Number	PARQUE TECNOLÓGICO DE ANDALUCÍA, AVENIDA JUAN LÓPEZ DE PEÑALVER, 3	**E-mail**	calidad@dpsm.es
Postcode, City	29590 MÁLAGA	**Tel**	+34 952111524

Collector Type	Flat plate collector

Collector name	Gross area (A_G)	Gross length	Gross width	Gross height	Power output per collector Gb = 850 W/m2, Gd = 150 W/m2 & u = 1.3 m/s $\vartheta_m - \vartheta_a$					
					0 K	10 K	30 K	50 K	70 K	79 K
	m²	mm	mm	mm	W	W	W	W	W	W
DPS VSH2200	2,23	2.089	1.069	98	1.556	1.477	1.303	1.105	883	776
DPS HSH2200	2,23	1.069	2.089	98	1.556	1.477	1.303	1.105	883	776
DPS VSHJ2200	2,22	2.074	1.074	98	1.549	1.471	1.297	1.100	879	773
DPS HSHJ2200	2,22	1.074	2.074	98	1.549	1.471	1.297	1.100	879	773
DPS VSHJ2600	2,57	2.074	1.239	98	1.793	1.703	1.501	1.273	1.018	894
DPS HSHJ2600	2,57	1.239	2.074	98	1.793	1.703	1.501	1.273	1.018	894
DPS HSH2600	2,58	1.234	2.089	98	1.800	1.709	1.507	1.278	1.022	898
DPS VSH2600	2,58	2.089	1.234	98	1.800	1.709	1.507	1.278	1.022	898
Power output per m² gross area					698	663	584	495	396	348

Performance parameters test method	Steady state - indoor									
Performance parameters (related to A_G)	η0, b	a1	a2	a3	a4	a5	a6	a7	a8	Kd
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	J/(m²K)	s/m	W/(m²K⁴)	W/(m²K⁴)	-
Test results	0,701	3,40	0,013	0,000	0,00	4.360	0,000	0,00	0,0E+00	0,97

Incidence angle modifier test method		Steady state - outdoor							
Incidence angle modifier	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Transversal	$K_{\theta T,coll}$	1,00	1,00	0,99	0,98	0,97	0,94	0,88	0,71	0,00
Longitudinal	$K_{\theta L,coll}$	1,00	1,00	0,99	0,98	0,97	0,94	0,88	0,71	0,00

Heat transfer medium for testing		Water	
Flow rate for testing (per gross area, A_G)	dm/dt	0,033	kg/(sm²)
Maximum temperature difference during thermal performance test	$(\vartheta_m-\vartheta_a)_{max}$	49	K
Standard stagnation temperature (G = 1000 W/m²; ϑ_a = 30 °C)	ϑ_{stg}	214,8	°C
Maximum operating temperature	ϑ_{max_op}	200	°C
Maximum operating pressure	$p_{max,op}$	1000	kPa

Testing laboratory	Fundación CENER-CIEMAT, LEST	http://www.cener.com	
Test report(s)	30.2367.0-4-1 / 30.2367.0-5-1 30.2367.0-6-1 / 30.2367.0 30.3280.0	**Dated**	29/10/2014 04/01/2018

Comments of testing laboratory Ver. 6.2 (13.01.2022)

- The only difference between the SH and SHJ collectors is the colector box profile.
- The collectors models VSH2200 and VSH2600 were tested according to ISO 9806:2013 According to SKM rules, the results of the collector model VSH2600 are representative for the whole SH-SHJ family.

CENER

Annex to Solar Keymark Certificate	Licence Number	078/000219
Supplementary Information	Issued	2024-12-04

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
DPS VSH2200		2.561	1.816	1.166	1.931	1.315	800	1.431	921	540	1.559	1.001	577
DPS HSH2200		2.561	1.816	1.166	1.931	1.315	800	1.431	921	540	1.559	1.001	577
DPS VSHJ2200		2.550	1.807	1.161	1.922	1.309	796	1.424	916	538	1.552	996	575
DPS HSHJ2200		2.550	1.807	1.161	1.922	1.309	796	1.424	916	538	1.552	996	575
DPS VSHJ2600		2.952	2.092	1.343	2.225	1.515	922	1.649	1.061	623	1.797	1.153	665
DPS HSHJ2600		2.952	2.092	1.343	2.225	1.515	922	1.649	1.061	623	1.797	1.153	665
DPS HSH2600		2.963	2.101	1.349	2.234	1.521	926	1.655	1.065	625	1.804	1.158	668
DPS VSH2600		2.963	2.101	1.349	2.234	1.521	926	1.655	1.065	625	1.804	1.158	668
Gross Thermal Yield per m² gross area		1.149	814	523	866	589	359	642	413	242	699	449	259
Annual efficiency, η_a		65%	46%	30%	53%	36%	22%	55%	35%	21%	56%	36%	21%
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m²			1630 kWh/m²			1166 kWh/m²			1244 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°			South, 30°			South, 45°			South, 35°		

The collector is operated at constant temperature ϑm (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/m²) >	1000	ϑ_a (°C) >	20	H_x (MJ/m²) >	600
Maximum tested positive load				2100	Pa
Maximum tested negative load				2100	Pa
Hail resistance using ice balls (diameter)				25	mm

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

	Reference Area, A_{sol} (m²)
DPS VSH2200	2,23
DPS HSH2200	2,23
DPS VSHJ2200	2,22
DPS HSHJ2200	2,22
DPS VSHJ2600	2,57
DPS HSHJ2600	2,57
DPS HSH2600	2,58
DPS VSH2600	2,58

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

Collector efficiency (η_{col})	54%

Remark: Collector efficiency (ηcol) 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/m², expressed in % and rounded to the nearest integer. Deviating from the regulation ηcol is based on reference area (Asol) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2017.

Additional Informative Technical Data

Hydraulic Designation Code	Aperture Area, A_a (m²)
9-V-1234S-A:7,2,1905-C:16,8,1108-D	2,00
18-V-1234S-A:7,2,905-C:16,8,2108-D	2,00
9-V-1234S-A:7,2,1905-C:16,8,1108-D	2,00
18-V-1234S-A:7,2,905-C:16,8,2108-D	2,00
10-V-1234S-A:7,2,1905-C:16,8,1273-	2,33
18-V-1234S-A:7,2,1070-C:16,8,2108-	2,33
18-V-1234S-A:7,2,1070-C:16,8,2108-	2,33
10-V-1234S-A:7,2,1905-C:16,8,1223-	2,33

Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}

Zero-loss efficiency (η_0)	0,698	--
First-order coefficient (a_1)	3,40	W/(m²K)
Second-order coefficient (a_2)	0,013	W/(m²K²)
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.

ENERGY
SOLUTIONS
MANUFACTURERS

Dichiarazione requisiti minimi dei Collettori Solari

Il sottoscritto Victor Manuel Jimenez Del Paso, nella qualità di amministratore della DELPASO SOLAR S.L., con sede in Avda. Juan Lòpez de Peñalver 3, Parque Tecnológico de Andalucía, E-29590, MÁLAGA (Málaga) – ESPAÑA,

CERTIFICA

che il seguente collettore solare termico PAD SOLAR HSH2600

MARCHIO PRODUTTORE	Modello Collettore Solare	MARCHIO COMMERCIALE	Area lorda AG (m2)	Energia prodotta Qcol (50°C) (Kwh/anno)
DELPASO SOLAR S.L.	DPS HSH2600	**PAD SOLAR**	2,58	1.158

rinominato con marchio commerciale **PAD SOLAR**, corrisponde tecnicamente e prestazionalmente, all'apparecchio modello **DPS HSH2600** prodotto dalla stessa Delpaso Solar S.L. e che quindi **PAD SOLAR** rappresenta solo un marchio commerciale.
Infine si certifica che il prodotto è dotato di certificazione KeymarkUNE-EN 12975-1:2006 078/000219 e rispetta i requisiti minimi di cui all'art. 2.3 dell'Allegato I "Criteri di ammissibilità degli interventi" al D.M. 12/02/2016 – Conto Termico 2.0 per l'accesso agli inventivi di cui all'articolo 4 comma 2 lettera c) dello stesso D.M. 16/02/2016.

Málaga, 20/12/2024

Victor Manuel Jimenez Del Paso

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