



## Keymark Certificate



078/000297

AENOR certifies that the organization

### DELPASO SOLAR, S.L.

registered office PARQUE TECNOLÓGICO DE ANDALUCÍA, AVENIDA JUAN LÓPEZ DE PEÑALVER, 3 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 PSH 1700, PSH 2000, PSH 2000 H, PSH 2500 H, PSH 2500  
Technical information Specified in Annexes to the Certificate

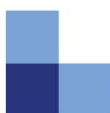
Production site PARQUE TECNOLÓGICO DE ANDALUCÍA, AVENIDA JUAN LÓPEZ DE PEÑALVER, 3 29590 MÁLAGA (Malaga - España)

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 2017-10-30

Last issued on 2022-10-30

Validity date 2027-10-30



Rafael GARCÍA MEIRO  
Chief Executive Officer



Annex to Solar Keymark Certificate					Licence Number		078/000297							
					Date issued		2022-10-30							
					Issued by		AENOR							
Licence holder		DELPASO SOLAR, S.L.			Country		España							
Brand (optional)		--			Web		<a href="http://www.delpasosolar.es">http://www.delpasosolar.es</a>							
Street, Number		Par. Tec. Andalucía, Av Juan López de Peñalver 3			E-mail		calidad@energiasolar dps.com							
Postcode, City		29590 Málaga			Tel		+34 952 11 15 24							
Collector Type					Flat plate collector									
Collector name					Power output per collector G <sub>b</sub> = 850 W/m <sup>2</sup> , G <sub>d</sub> = 150 W/m <sup>2</sup> & u = 1.3 m/s $\vartheta_m - \vartheta_a$									
					Gross area (A <sub>G</sub> )		Gross length	Gross width	Gross height	0 K	10 K	30 K	50 K	70 K
					m <sup>2</sup>	mm	mm	mm	W	W	W	W	W	W
PSH 1700					1,72	2.055	835	85	1.296	1.239	1.108	953	776	678
PSH 2000					1,97	2.058	958	85	1.484	1.419	1.269	1.092	888	776
PSH 2000 H					1,97	958	2.058	85	1.484	1.419	1.269	1.092	888	776
PSH 2500 H					2,49	1.208	2.058	85	1.876	1.794	1.604	1.380	1.123	981
PSH 2500					2,49	2.056	1.210	85	1.876	1.794	1.604	1.380	1.123	981



<b>Annex to Solar Keymark Certificate Supplementary Information</b>	<b>Licence Number</b>	<b>078/000297</b>
	<b>Issued</b>	<b>2022-10-30</b>

<b>Gross Thermal Yield in kWh/collector at mean fluid temperature <math>\vartheta_m</math></b>													
Collector name	Standard Locations $\vartheta_m$	Athens			Davos			Stockholm			Würzburg		
		25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
PSH 1700		2.116	1.555	1.031	1.633	1.146	718	1.202	803	486	1.309	873	520
PSH 2000		2.424	1.781	1.181	1.871	1.313	822	1.377	920	557	1.499	1.000	596
PSH 2000 H		2.424	1.781	1.181	1.871	1.313	822	1.377	920	557	1.499	1.000	596
PSH 2500 H		3.064	2.252	1.493	2.364	1.659	1.039	1.741	1.162	704	1.895	1.264	753
PSH 2500		3.064	2.252	1.493	2.364	1.659	1.039	1.741	1.162	704	1.895	1.264	753
Gross Thermal Yield per m <sup>2</sup> gross area													
Annual efficiency, $\eta_a$													
Fixed or tracking collector													
Annual irradiation on collector plane													
Mean annual ambient air temperature													
Collector orientation or tracking mode													

The collector is operated at constant temperature  $\vartheta_m$  (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/>

<b>Additional Information</b>			
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 <sup>2</sup> ) >	1000	$\vartheta_a$ (°C) >	20
		$H_x$ (MJ/m <sup>2</sup> ) >	600
Maximum tested positive load	2400	Pa	
Maximum tested negative load	2400	Pa	
Hail resistance using ice balls (diameter)	25	mm	

<b>Additional collector attribute(s)</b>			
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

<b>Energy Labelling Information</b>		<b>Additional Informative Technical Data</b>	
	Reference Area, $A_{sol}$ (m <sup>2</sup> )	Hydraulic Designation Code	Aperture Area, $A_a$ (m <sup>2</sup> )
PSH 1700	1,72	1-V-1234S-A:7.2,1911-C:16.4,903-D	1,61
PSH 2000	1,97	1-V-1234S-A:7.2,1911-C:16.4,1023-D	1,87
PSH 2000 H	1,97	1-V-1234S-A:7.2,811-C:16.4,2106-D	1,87
PSH 2500 H	2,49	1-V-1234S-A:7.2,1072-C:16.4,2106-D	2,37
PSH 2500	2,49	1-V-1234S-A:7.2,1911-C:16.4,1272-D	2,37

<b>Data required for CDR (EU) No 811/2013 - Reference Area <math>A_{sol}</math></b>		<b>Data required for CDR (EU) No 812/2013 - Reference Area <math>A_{sol}</math></b>	
Collector efficiency ( $\eta_{col}$ )	60%	Zero-loss efficiency ( $\eta_0$ )	0,75
Remark: Collector efficiency ( $\eta_{col}$ ) 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 <sup>2</sup> , expressed in % and rounded to the nearest integer. Deviating from the regulation $\eta_{col}$ 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 ( $a_1$ )	3,13
		Second-order coefficient ( $a_2$ )	0,017
		Incidence angle modifier IAM (50°)	0,94
		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.	