



Summary of		EN12976-2		SOLAR SYSTEM test results		Licence Number		SKM 10115.3				
Annex to Solar KEYMARK Certificate						Issued		2021-06-25				
Company				CICERO HELLAS S.A.		Country		Greece				
Brand (optional)				Calpak Prisma, Calpak Neo, Prisma, Physis, Thermos		Website		www.calpak.gr				
Street				9, Sygrou Ave.		E-mail		export@calpak.gr				
Postal Code				11743 Athens		Tel. / Fax		+30 210 9247250 / 9231616				
System classification												
Application(s)						Hot water						
Solar loop, circulation principle						Thermosyphon						
Direct solar loop / heat exchanger						Heat exchanger						
Open, vented or closed solar loop						Closed						
Drain back/down						Always filled (no drain)						
Store location						Outdoor						
Store orientation (of main axis)						Horizontal						
Type of auxiliary heating (internal back-up heat)						Electric						
If other auxiliary/internal back-up heating, please specify:												
Solar+supplementary OR Solar-only / Solar pre-heat						Solar only / Solar preheat						
Collector(s)					Heat store(s)							
Company					Company							
CICERO HELLAS S.A.					CICERO HELLAS S.A.							
Keymark lic.no. if available					Keymark lic.no. if available							
SKM 10093.2												
Per module					Store name							
Collector name		Gross Area (Ag)	Gross length	Gross width	Total nominal volume	Gross height	Gross width	Gross depth	Auxiliary heated volume	Electrical aux. heating power		
		m ²	mm	mm							litres	mm
PRISMA 2.0		2.00	1625	1235	P-160	151	1385	500		-	3.5	
PRISMA 2.5		2.50	2020	1235	P-200	192	1710	500		-	3.5	
					P-300	295	2310	500		-	3.5	
Solar loop controller					Solar loop fluid							
Keymark lic.no. if available					Recommended/required							
-					Required							
Company Name					Company Name							
-					-							
Solar loop pump - power range					Freezing point							
- W to - W					-55 °C							
System family overview												
Number of collectors in each configuration for each store												
Collector name	Store name											
	P-160			P-200			P-300					
PRISMA 2.0	1			1	2		1	2				
PRISMA 2.5		1			1			1	2			
Testing Laboratory					NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB							
Website					www.solar.demokritos.gr							
Test report id. number					6122DE1, 6123DE1, 6123F1							
Date of test report					2021-06-22							
Comments of test lab												
Comments ...												
N.C.S.R. "DEMOKRITOS" SOLAR ENERGY LABORATORY Tel: +210 6503815 - Fax: +210 6544592 P.O. BOX 60037, 15310 Ag. Paraskevi, Greece												

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Version 4.5, 2017-10-24

Central Offices: 4, Kalavriton, 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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Summary of				EN12976-2				test results				Certification No.				SKM 10115.3					
Annex to Solar KEYMARK Certificate												Issued				2021-06-25					
Company				CICERO HELLAS S.A.								Country		Greece							
Brand (optional)				Calpak Prisma, Calpak Neo, Prisma, Physis, Thermos								Website		www.calpak.gr							
Street				9, Sygrou Ave.								E-mail		export@calpak.gr							
Postal Code				11743				Athens				Tel. / Fax		+30		210 9247250 / 9231616					
System family overview																					
For each storage and collector size, give number of collectors																					
Collector name		P-160				P-200				P-300											
PRISMA 2.0		1				1	2			1	2										
PRISMA 2.5			1				1				1		2								
Name of system configuration												PRISMA 300/2.5									
Collector name				PRISMA 2.5				No. Collectors				1		Storage name				P-300			
Calculated annual results for "solar-only / preheat system"																					
Location		Qd,sh	Daily drawoff				250	l	Daily drawoff				300	l	Daily drawoff				400	l	
			Qd,hw	QL	Qpar	fsol			Qd,hw	QL	Qpar	fsol			Qd,hw	QL	Qpar	fsol			
			MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%						
Stockholm SE		-	13939	5424	-	39		16746	5645	-	34		22327	5992	-	27					
WürzburgDE		-	13371	5708	-	43		16052	6055	-	38		21413	6370	-	30					
Davos CH		-	15137	7821	-	52		18165	8168	-	45		24220	8546	-	35					
Athens GR		-	10407	7411	-	71		12488	8136	-	65		16651	8956	-	54					
Perf. indicators for the table above																					
Qd,sh		MJ/y		Not relevant for solar domestic hot water system																	
Qd		MJ/y		Annual heat demand for domestic hot water																	
QL		MJ/y		Annual heat energy delivered by the solar system																	
Qpar		MJ/y		Annual parasitic energy: (electricity for pumps/controllers)																	
f _{sol} =QL/Q _d		-		Solar fraction																	
Ref. conditions				Stockholm SE				Würzburg DE				Davos CH				Athens GR					
		G		1,157				1,230				1,684				1,736					
		Ta,ave		7.5				9.0				3.2				18.5					
		Tc,ave		8.5				10.0				5.4				17.8					
		± ΔTc		6.4				3.0				0.8				7.4					
G	kWh/m²	Annual irradiation South, 45°																			
Ta,ave	°C	Annual average outdoor air temperature																			
Tc,ave	°C	Annual average mains cold water temp.																			
ΔTc	K	Seasonal variation of Tc																			
Th	45 °C	Desired hot water temperature (mixing valve temperature).																			
Max. operating press. - collector side						200		kPa		Max. operating press. - tank side						1000		kPa			
Testing Laboratory						NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB															
Website						www.solar.demokritos.gr															
Test report id. number						6122DE1, 6123DE1, 6123F1															
Date of test report						2021-06-22															
Test method						ISO 9459-5 (DST)															
Comments of test lab																					
extrapolated																					
						N.C.S.R. "DEMOKRITOS" SOLAR ENERGY LABORATORY Tel: +210 6503815 - Fax: +210 6544592 P.O. BOX 60037, 15310 Ag. Paraskevi, Greece															

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Summary of	EN12976-2	test results	Certification No.	SKM 10115.3
Annex to Solar KEYMARK Certificate			Issued	2021-06-25
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Brand (optional)	Calpak Prisma, Calpak Neo, Prisma, Physis, Thermos		Website	www.calpak.gr
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Postal Code	11743	Athens	Tel. / Fax	+30 210 9247250 / 9231616

System family overview

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Name of system configuration				PRISMA 300/4.0	
Collector name	PRISMA 2.0	No. Collectors	2	Storage name	P-300

Calculated annual results for "solar-only / preheat system"

[illegible]

Perf. indicators for the table above

$Q_{d,sh}$	MJ/y	Not relevant for solar domestic hot water system
Q_d	MJ/y	Annual heat demand for domestic hot water
Q_L	MJ/y	Annual heat energy delivered by the solar system
Q_{par}	MJ/y	Annual parasitic energy: (electricity for pumps/controllers)
$f_{sol}=Q_L/Q_d$	-	Solar fraction

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR		
	G	1,157	1,230	1,684	1,736		
	T _{a,ave}	7.5	9.0	3.2	18.5		
	T _{c,ave}	8.5	10.0	5.4	17.8		
	± ΔT _c	6.4	3.0	0.8	7.4		

G	kWh/m ²	Annual irradiation South, 45°
T _{a,ave}	°C	Annual average outdoor air temperature
T _{c,ave}	°C	Annual average mains cold water temp.
ΔT _c	K	Seasonal variation of T _c
T _h	45 °C	Desired hot water temperature (mixing valve temperature).

Max. operating press. - collector side	200	kPa	Max. operating press. - tank side	1000	kPa
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Testing Laboratory	NCSR "DEMOKRITOS" - SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6122DE1, 6123DE1, 6123F1
Date of test report	2021-06-22
Test method	ISO 9459-5 (DST)

Comments of test lab extrapolated	N.C.S.R. "DEMOKRITOS" SOLAR ENERGY LABORATORY Tel: +210 6503815 - Fax: +210 6844582 P.O. BOX 60037, 15310 Ag. Paraskevi, Greece
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All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of $\pm 5\%$ to $\pm 15\%$

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