



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar	Registration No. Registernummer Num. d'enregistrement SKM 9921/4
	Date / Datum / Date 28/1/2013

Company / Firma / Société COSMOSOLAR LTD	Country/Land/Pays Greece
Street / Straße / Rue Ntrei Road, Dervenochorion Gate	Website http://www.cosmosol
Postal Code, Place / PLZ, Ort / Code postal, Place 322 00 Viotia	E-mail info@cosmosolar.co
Tel. / Fax +030 210 3478897 / 210 34794	

System classification / G / F	
Flow principle / G / F	Thermosyphon / G / F
Direct / indirect / G / F	Direct / G / F
Press. principle / G / F	Closed / G / F
Drain back/down / G / F	No drain (always filled) / G / F
Storage location / G / F	Outdoor / G / F
Storage position / G / F	Horizontal / G / F
Int. back-up / G / F	None / G / F
If other: / G / F	English / Deutsch / Francais
EN12976 type / G / F	Solar only / G / F

Collector(s) / Kollektor(en) / Capteur(s)					Storage(s) / Akkumulator(en) / F								
Company / Hersteller / Manufactuer COSMOSOLAR LTD Keymark reg. no. (optional) SKM 9921/2					Company / Hersteller / Manufactuer COSMOSOLAR LTD								
Model Bezeichnung Modèle	Per module / G / F			No. modules G F		Model Bezeichnung Modèle	Total volume		Gross diameter/width Diam. / Breite (Außenmaß) Diam. / Largeur hors Tout	Gross length Länge (Außenmaß) longueur hors tout	Back-up heated volume		El. back-up power G F
	Aperture area (A _a) Aperturfäche (A _a) Superficie d'entrée (A _a)	Gross length Länge (Außenmaß) Longueur Hors tout	Gross width Breite (Außenmaß) Largeur hors Tout				G	F			litres	mm	
EPI 20	1,302	1517	1019	1	-	1	120L	107	530	1120	~	~	~
EPI 12	1,613	1517	1247	1	-	1	160L	149	530	1320	~	~	~
EPI 25	1,768	2017	1017	1	-	1	200L	186	580	1320	~	~	~
EPI 16	1,995	1917	1197	1	-	1	250L	245	580	2120	~	~	~
EPI 54	2,265	2017	1277	1	-	1	300L	290	580	2120	~	~	~

Controller / G / F					Fluid / G / F				
Company/Hersteller/Manufacteur COSMOSOLAR LTD Model / Bezeichnung / Modèle EPI					Company/Hersteller/Manufacteur Model / Bezeichnung / Modèle Propylene glycol solution				
Functions G English F Deutsch F Francais					Freezing point G -4 to -36 °C F				

System family overview / G / F												
Collector G F	No. collectors / G / F											
	Storage / G / F											
	120L	160L	200L	250L	300L							
EPI 20		2	2									
EPI 12	1											
EPI 25	1	1	2	2					2			
EPI 16			1		2							
EPI 54			1		1							

Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüberichtsnummer / F Date of test report / Datum G / date F	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB www.solar.demokritos.gr 6041 DE2, 6043 DE2 6/9/2011
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Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Francais	Stamp & signature of test lab
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	Company / Firma / Société COSMOSOLAR LTD Street / Straße / Rue Ntrei Road, Dervenochorion Gate Country/Land/Pays Greece	
	Postal Code, Place / PLZ, Ort / Code postal, Place 322 00 Viotia Website http://www.cosmosol E-mail info@cosmosolar.co Tel. / Fax +99 210 3478897 / 210 34794	

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System family overview / G / F															
Collector type G F	Number of collectors / G / F														
	Storage type / G / F														
	120L			160L			200L			250L			300L		
EPI 20				2			2								
EPI 12	1														
EPI 25		1			1			2			2			2	
EPI 16						1			1						2
EPI 54						1			1						

Name of system konfiguration / G / F EGLK 120/1.89											
Collector type G EPI 12 F	No. collectors G 1 F	Storage type G 120L F									

Calculated annual results / G / F												
Location G F	Daily draw-off litres/day / G / F /											
	80	110	140	80	110	140	80	110	140	80	110	140
	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d
	Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y		
Stockholm, SE	1.244	1.708	2.172	615	725	764	49,4	42,5	35,2			
Würzburg, DE	1.191	1.638	2.085	612	738	782	51,4	45,0	37,5			
Davos, CH	1.349	1.848	2.356	848	990	1.042	62,9	53,6	44,2			
Athens, GR	929	1.270	1.621	774	981	1.086	83,3	77,2	67,0			

Perf. indicators G F	Q _d Heat demand / G / F Q _L System output / G / F f _{sol} QL/Q_d; solar fraction / G / F Q _{par} Elec. for pumps/controllers / G / F
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Ref. conditions G G F	Stockholm Würzburg DE Davos CH Athens GR G 1.156 1.226 1.682 1.717 Ta 7,5 9,0 3,2 18,5 Tc 8,5 10,0 5,4 17,8 ΔTc 2.1 - 14.9 7.0 - 13.0 4.6 - 6.2 10.4 - 25.2
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G kWh/m ² Annual irradiation South, 45° / G / F Ta °C Annual mean air temp. / G / F Tc °C Annual mean cold water temp. / G / F ΔTc °C Seasonal variation of Tc / G / F Th 45°C Desired (mix. valve) temp. / G / F

Max. operating press. - collector side G 200 kPa F	Max. operating press. - tank side G 1.000 kPa F
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Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Demokritos Website www.solar.demokritos.gr Test report id. number / Prüberichtnummer / F 6041 DE2, 6043 DE2 Date of test report / G / F 6/9/2011 Test method / G / F ISO 9459-5 (DST)
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Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Français	Stamp & signature of test lab
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Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar	Registration No. Registernummer Num. d'enregistrement	SKM 9921/4
	Date / Datum / Date	28/1/2013

Company / Firma / Société Street / Straße / Rue Postal Code, Place / PLZ, Ort / Code postal, Place	COSMOSOLAR LTD Ntrei Road, Dervenochorion Gate 322 00 Viotia	Country/Land/Pays Website E-mail Tel. / Fax	Greece http://www.cosmosol info@cosmosolar.co +99 210 3478897 / 210 34794
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System family overview / G / F																		
Collector type G F	Number of collectors / G / F																	
	Storage type / G / F																	
	120L			160L			200L			250L			300L					
EPI 20				2			2											
EPI 12	1																	
EPI 25		1			1			2			2				2			
EPI 16					1			1							2			
EPI 54						1			1									

Name of system konfiguration / G / F												EGLK 120/2.05		
Collector type G F	EPI 25			No. collectors G F	1			Storage type G F	120L					

Calculated annual results / G / F																		
Location G F	Daily draw-off litres/day / G / F /																	
	80			110			140			80			110			140		
	l/d			l/d			l/d			l/d			l/d			l/d		
			Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y						
Stockholm, SE	1.244	1.708	2.172	642	764	808	51,6	44,7	37,2									
Würzburg, DE	1.191	1.638	2.085	635	774	828	53,3	47,3	39,7									
Davos, CH	1.349	1.848	2.356	894	1.051	1.104	66,2	56,9	46,8									
Athens, GR	929	1.270	1.621	792	1.016	1.139	85,3	80,0	70,3									
Perf. indicators G F	Q_d Heat demand / G / F			Q_L System output / G / F			f_{sol} QL/Q_d; solar fraction / G / F			Q_{par} Elec. for pumps/controllers / G / F								

Ref. conditions G F			Stockholm	Würzburg DE	Davos CH	Athens GR						
	G		1.156	1.226	1.682	1.717						
	Ta		7,5	9,0	3,2	18,5						
	Tc		8,5	10,0	5,4	17,8						
	ΔTc		2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2						
G	kWh/m ²	Annual irradiation South, 45° / G / F										
Ta	°C	Annual mean air temp. / G / F										
Tc	°C	Annual mean cold water temp. / G / F										
ΔTc	°C	Seasonal variation of Tc / G / F										
Th	45°C	Desired (mix. valve) temp. / G F										

Max. operating press. - collector side G F	200 kPa		Max. operating press. - tank side G F	1.000 kPa	
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Testing Laboratory / Prüflaboratorium / Laboratoire d'essais Website Test report id. number / Prüfberichtsnummer / F Date of test report / G / F Test method / G / F	Demokritos www.solar.demokritos.gr 6041 DE2, 6043 DE2 6/9/2011 ISO 9459-5 (DST)
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Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire English Deutsch Francais	mp & signature of test lab
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Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate		Registration													
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat		Registernummer	SKM 9921/4												
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar		Num. d'enregistrement													
		Date / Datum / Date	28/1/2013												
Company / Firma / Société		Country/Land/Pays	Greece												
COSMOSOLAR LTD		Website	http://www.cosmosol												
Street / Straße / Rue		E-mail	info@cosmosolar.co												
Ntrei Road, Dervenochorion Gate		Tel. / Fax	+99 210 3478897 / 210 34794												
Postal Code, Place / PLZ, Ort / Code postal, Place															
322 00 Viotia															
System family overview / G / F															
Collector type	Number of collectors / G / F														
	Storage type / G / F														
G															
F															
	120L			160L			200L			250L			300L		
EPI 20				2			2								
EPI 12	1														
EPI 25		1		1			2			2			2		
EPI 16					1			1						2	
EPI 54						1			1						
Name of system konfiguration / G / F				EGLK 160/2.05											
Collector type		No. collectors		Storage type											
G	EPI 25	G	1	G	160L										
F		F		F											
Calculated annual results / G / F															
Location															
Daily draw-off litres/day / G / F /															
G	110	140	170	110	140	170	110	140	170	110	140	170			
F															
	l/d			l/d			l/d			l/d					
	Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y					
Stockholm, SE	1.708	2.172	2.637	757	851	920	44,3	39,2	34,9						
Würzburg, DE	1.638	2.085	2.532	763	864	929	46,6	41,4	36,7						
Davos, CH	1.848	2.356	2.856	1.025	1.139	1.218	55,5	48,3	42,6						
Athens, GR	1.270	1.621	1.962	999	1.174	1.296	78,6	72,4	66,1						
Perf. indicators															
G	Q _d	Heat demand / G / F													
G	Q _L	System output / G / F													
F	f _{sol}	Q _L /Q _d ; solar fraction / G / F													
F	Q _{par}	Elec. for pumps/controllers / G / F													
Ref. conditions															
		Stockholm SE	Würzburg DE	Davos CH	Athens GR										
G	G	1.156	1.226	1.682	1.717										
G	T _a	7,5	9,0	3,2	18,5										
F	F	T _c	8,5	10,0	5,4	17,8									
F	F	ΔT _c	2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2									
G	kWh/m ²	Annual irradiation South, 45° / G / F													
T _a	°C	Annual mean air temp. / G / F													
T _c	°C	Annual mean cold water temp. / G / F													
ΔT _c	°C	Seasonal variation of T _c / G / F													
Th	45°C	Desired (mix. valve) temp. / G / F													
Max. operating press. - collector side		200 kPa		Max. operating press. - tank side		1.000 kPa									
G				G											
F				F											
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais		Demokritos													
Website		www.solar.demokritos.gr													
Test report id. number / Prüberichtsnummer / F		6041 DE2, 6043 DE2													
Date of test report / G / F		6/9/2011													
Test method / G / F		ISO 9459-5 (DST)													
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire															
English Deutsch Français															



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4																						
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer																								
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen																								
				Date / Datum / Date		28/1/2013																						
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece																						
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosolar.com																						
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.com																						
				Tel. / Fax		+99 210 3478897 / 210 34794																						
System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L																						
		250L		300L																								
EPI 20				2																								
EPI 12		1																										
EPI 25		1		2		2																						
EPI 16		1		1		2																						
EPI 54				1																								
Name of system konfiguration / G / F						EGLK 160/2.30																						
Collector type		No. collectors		Storage type																								
G EPI 16		G 1		G 160L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		110			140			170			110			140			170											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		1.708			2.172			2.637			811			920			990			47,5			42,3			37,5		
Würzburg, DE		1.638			2.085			2.532			813			929			1.007			49,6			44,5			39,8		
Davos, CH		1.848			2.356			2.856			1.113			1.244			1.340			60,2			52,8			46,9		
Athens, GR		1.270			1.621			1.962			1.042			1.244			1.393			82,1			76,8			71,0		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q _L /Q _d ; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions				Stockholm		Würzburg DE		Davos CH		Athens GR																		
G				1.156		1.226		1.682		1.717																		
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa														
G								G																				
F								F																				
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English																												
Deutsch																												
Français																												



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Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen									
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Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosol							
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.co							
				Tel. / Fax		+99 210 3478897 / 210 34794							
System family overview / G / F													
Collector type		Number of collectors / G / F											
G		Storage type / G / F											
F		120L		160L		200L		250L		300L			
EPI 20				2		2							
EPI 12		1											
EPI 25			1			2		2		2			
EPI 16				1		1				2			
EPI 54				1		1							
Name of system konfiguration / G / F								EGLK 160/2.58					
Collector type		EPI 54		No. collectors		1		Storage type		160L			
G				G				G					
F				F				F					
Calculated annual results / G / F													
Location		Daily draw-off litres/day / G / F /											
G		110	140	170	110	140	170	110	140	170	110	140	170
F		l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y		
Stockholm, SE		1.708	2.172	2.637	862	981	1.060	50,5	45,2	40,2			
Würzburg, DE		1.638	2.085	2.532	856	990	1.086	52,2	47,5	42,9			
Davos, CH		1.848	2.356	2.856	1.191	1.349	1.454	64,5	57,2	50,9			
Athens, GR		1.270	1.621	1.962	1.077	1.296	1.463	84,8	80,0	74,6			
Perf. indicators		Q_d Heat demand / G / F											
G		Q_L System output / G / F											
F		f_{sol} QL/Q_d; solar fraction / G / F											
		Q_{par} Elec. for pumps/controllers / G / F											
Ref. conditions		Stockholm	Würzburg DE	Davos CH	Athens GR								
G		1.156	1.226	1.682	1.717								
G		T _a 7,5	9,0	3,2	18,5								
F		T _c 8,5	10,0	5,4	17,8								
		ΔT _c 2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2								
G	kWh/m ²	Annual irradiation South, 45° / G / F											
T _a	°C	Annual mean air temp. / G / F											
T _c	°C	Annual mean cold water temp. / G / F											
ΔT _c	°C	Seasonal variation of T_c / G / F											
T _h	45°C	Desired (mix. valve) temp. / G / F											
Max. operating press. - collector side				Max. operating press. - tank side									
G		200 kPa		G		1.000 kPa							
F				F									
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos							
Website						www.solar.demokritos.gr							
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2							
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System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L																						
		250L		300L																								
EPI 20				2																								
EPI 12		1																										
EPI 25		1		2		2																						
EPI 16		1		1		2																						
EPI 54				1																								
Name of system konfiguration / G / F						EGLK 160/3.10																						
Collector type		No. collectors		Storage type																								
G EPI 20		G 2		G 160L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		110			140			170			110			140			170											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		1.708			2.172			2.637			920			1.060			1.148			53,8			48,8			43,5		
Würzburg, DE		1.638			2.085			2.532			902			1.060			1.165			55,1			50,8			46,0		
Davos, CH		1.848			2.356			2.856			1.279			1.472			1.586			69,2			62,5			55,5		
Athens, GR		1.270			1.621			1.962			1.113			1.349			1.542			87,6			83,2			78,6		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q _L /Q _d ; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions				Stockholm		Würzburg DE		Davos CH		Athens GR																		
G				1.156		1.226		1.682		1.717																		
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa														
G								G																				
F								F																				
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English																												
Deutsch																												
Français																												



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4																						
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer																								
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen																								
				Date / Datum / Date		28/1/2013																						
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece																						
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosolar.com																						
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.com																						
				Tel. / Fax		+99 210 3478897 / 210 34794																						
System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L																						
EPI 20				2																								
EPI 12		1																										
EPI 25		1		2		2																						
EPI 16		1		1		2																						
EPI 54				1																								
Name of system konfiguration / G / F						EGLK 200/2.30																						
Collector type		No. collectors		Storage type																								
G EPI 16		G 1		G 200L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		170			200			250			170			200			250											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		2.637			3.101			3.881			1.007			1.069			1.104			38,2			34,5			28,4		
Würzburg, DE		2.532			2.970			3.714			1.016			1.086			1.130			40,1			36,6			30,4		
Davos, CH		2.856			3.364			4.205			1.340			1.428			1.463			46,9			42,4			34,8		
Athens, GR		1.962			2.313			2.891			1.393			1.515			1.586			71,0			65,5			54,8		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q _L /Q _d ; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions				Stockholm		Würzburg DE		Davos CH		Athens GR																		
G				1.156		1.226		1.682		1.717																		
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa														
G								G																				
F								F																				
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English Deutsch Français																												



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar		Registration No. Registernummer Num. d'enregistremen SKM 9921/4																											
		Date / Datum / Date 28/1/2013																											
Company / Firma / Société COSMOSOLAR LTD		Country/Land/Pays Greece																											
Street / Straße / Rue Ntrei Road, Dervenochorion Gate		Website http://www.cosmosolar.com																											
Postal Code, Place / PLZ, Ort / Code postal, Place 322 00 Viotia		E-mail info@cosmosolar.com																											
		Tel. / Fax +99 210 3478897 / 210 34794																											
System family overview / G / F																													
Collector type G F	Number of collectors / G / F																												
	Storage type / G / F																												
	120L			160L			200L			250L			300L																
EPI 20				2			2																						
EPI 12	1																												
EPI 25		1			1			2			2			2															
EPI 16					1			1						2															
EPI 54						1			1																				
Name of system konfiguration / G / F												EGLK 200/2.58																	
Collector type G F		EPI 54			No. collectors G F			1			Storage type G F			200L															
Calculated annual results / G / F																													
Daily draw-off litres/day / G / F /																													
Location G F	170			200			250			170			200			250													
	l/d			l/d			l/d			l/d			l/d			l/d													
Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																				
Stockholm, SE			2.637			3.101			3.881			1.086			1.156			1.200			41,2			37,3			30,9		
Würzburg, DE			2.532			2.970			3.714			1.104			1.183			1.226			43,6			39,8			33,0		
Davos, CH			2.856			3.364			4.205			1.463			1.559			1.603			51,2			46,4			38,1		
Athens, GR			1.962			2.313			2.891			1.480			1.621			1.717			75,4			70,1			59,4		
Perf. indicators G F		Q _d		Heat demand / G / F																									
		Q _L		System output / G / F																									
		f _{sol}		Q _L /Q _d ; solar fraction / G / F																									
		Q _{par}		Elec. for pumps/controllers / G / F																									
Ref. conditions G F				Stockholm		Würzburg DE		Davos CH		Athens GR																			
		G		1.156		1.226		1.682		1.717																			
		Ta		7,5		9,0		3,2		18,5																			
		Tc		8,5		10,0		5,4		17,8																			
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																			
G	kWh/m ²	Annual irradiation South, 45° / G / F																											
Ta	°C	Annual mean air temp. / G / F																											
Tc	°C	Annual mean cold water temp. / G / F																											
ΔTc	°C	Seasonal variation of Tc / G / F																											
Th	45°C	Desired (mix. valve) temp. / G / F																											
Max. operating press. - collector side G F		200		kPa		Max. operating press. - tank side G F		1.000		kPa																			
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																							
Website						www.solar.demokritos.gr																							
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																							
Date of test report / G / F						6/9/2011																							
Test method / G / F						ISO 9459-5 (DST)																							
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																													
English Deutsch Français																													



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4							
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer									
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen									
				Date / Datum / Date		28/1/2013							
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece							
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosol							
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.co							
				Tel. / Fax		+99 210 3478897 / 210 34794							
System family overview / G / F													
Collector type		Number of collectors / G / F											
G		Storage type / G / F											
F		120L		160L		200L		250L		300L			
EPI 20				2		2							
EPI 12		1											
EPI 25			1			2		2		2			
EPI 16				1		1				2			
EPI 54					1								
Name of system konfiguration / G / F								EGLK 200/3.10					
Collector type		EPI 20		No. collectors		2		Storage type		200L			
G				G				G					
F				F				F					
Calculated annual results / G / F													
Location		Daily draw-off litres/day / G / F /											
G		170	200	250	170	200	250	170	200	250	170	200	250
F		l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d	l/d
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y		
Stockholm, SE		2.637	3.101	3.881	1.174	1.261	1.314	44,5	40,7	33,9			
Würzburg, DE		2.532	2.970	3.714	1.191	1.288	1.340	47,1	43,4	36,1			
Davos, CH		2.856	3.364	4.205	1.612	1.717	1.778	56,4	51,0	42,3			
Athens, GR		1.962	2.313	2.891	1.559	1.734	1.875	79,5	75,0	64,8			
Perf. indicators		Heat demand / G / F											
G		Q _d											
F		Q _L		System output / G / F									
		f _{sol}		QL/Q_d; solar fraction / G / F									
		Q _{par}		Elec. for pumps/controllers / G / F									
Ref. conditions		Stockholm	Würzburg DE	Davos CH	Athens GR								
G		1.156	1.226	1.682	1.717								
G		T _a	7,5	9,0	3,2	18,5							
F		T _c	8,5	10,0	5,4	17,8							
		ΔT _c	2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2							
G	kWh/m ²	Annual irradiation South, 45° / G / F											
T _a	°C	Annual mean air temp. / G / F											
T _c	°C	Annual mean cold water temp. / G / F											
ΔT _c	°C	Seasonal variation of T_c / G / F											
Th	45°C	Desired (mix. valve) temp. / G / F											
Max. operating press. - collector side				200	kPa	Max. operating press. - tank side				1.000	kPa		
G						G							
F						F							
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos							
Website						www.solar.demokritos.gr							
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2							
Date of test report / G / F						6/9/2011							
Test method / G / F						ISO 9459-5 (DST)							
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire													
English Deutsch Français													



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4																						
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer																								
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen																								
				Date / Datum / Date		28/1/2013																						
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece																						
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosol																						
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.co																						
				Tel. / Fax		+99 210 3478897 / 210 34794																						
System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L																						
EPI 20				2																								
EPI 12		1																										
EPI 25		1		2		2																						
EPI 16		1		1		2																						
EPI 54				1																								
Name of system konfiguration / G / F						EGLK 200/4.10																						
Collector type		No. collectors		Storage type																								
G EPI 25		G 2		G 200L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		170			200			250			170			200			250											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		2.637			3.101			3.881			1.367			1.480			1.559			51,8			47,7			40,2		
Würzburg, DE		2.532			2.970			3.714			1.349			1.489			1.603			53,3			50,1			43,2		
Davos, CH		2.856			3.364			4.205			1.901			2.067			2.172			66,6			61,5			51,7		
Athens, GR		1.962			2.313			2.891			1.691			1.918			2.164			86,2			83,0			74,8		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q_L/Q_d; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions				Stockholm		Würzburg DE		Davos CH		Athens GR																		
G				1.156		1.226		1.682		1.717																		
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa														
G								G																				
F								F																				
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English Deutsch Français																												



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4																						
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer																								
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen																								
				Date / Datum / Date		28/1/2013																						
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece																						
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosolar.com																						
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.com																						
				Tel. / Fax		+99 210 3478897 / 210 34794																						
System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L		250L		300L																		
EPI 20				2		2																						
EPI 12		1																										
EPI 25		1		1		2		2																				
EPI 16				1		1				2																		
EPI 54				1		1																						
Name of system konfiguration / G / F						EGLK 250/4.10																						
Collector type		No. collectors		Storage type																								
G EPI 25		G 2		G 250L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		200			250			300			200			250			300											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		3.101			3.881			4.652			1.533			1.656			1.734			49,3			42,7			37,2		
Würzburg, DE		2.970			3.714			4.459			1.533			1.691			1.778			51,7			45,6			39,9		
Davos, CH		3.364			4.205			5.046			2.111			2.269			2.356			62,7			54,0			46,8		
Athens, GR		2.313			2.891			3.469			1.953			2.251			2.462			84,4			78,1			70,9		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q _L /Q _d ; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions		Stockholm		Würzburg DE		Davos CH		Athens GR																				
G		1.156		1.226		1.682		1.717																				
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200 kPa		Max. operating press. - tank side				1.000 kPa																		
G						G																						
F						F																						
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English Deutsch Français																												



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4																						
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer																								
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen																								
				Date / Datum / Date		28/1/2013																						
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece																						
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosol																						
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.co																						
				Tel. / Fax		+99 210 3478897 / 210 34794																						
System family overview / G / F																												
Collector type		Number of collectors / G / F																										
G		Storage type / G / F																										
F		120L		160L		200L																						
EPI 20				2																								
EPI 12		1																										
EPI 25		1		2		2																						
EPI 16		1		1		2																						
EPI 54				1																								
Name of system konfiguration / G / F				EGLK 300/4.10																								
Collector type		No. collectors		Storage type																								
G EPI 25		G 2		G 300L																								
F		F		F																								
Calculated annual results / G / F																												
Location		Daily draw-off litres/day / G / F /																										
G		250			300			400			250			300			400											
F		l/d			l/d			l/d			l/d			l/d			l/d											
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y																	
Stockholm, SE		3.881			4.652			6.202			1.664			1.805			1.910			42,9			38,8			30,8		
Würzburg, DE		3.714			4.459			5.948			1.691			1.840			1.953			45,5			41,3			32,8		
Davos, CH		4.205			5.046			6.728			2.269			2.435			2.558			54,0			48,3			38,0		
Athens, GR		2.891			3.469			4.625			2.243			2.505			2.742			77,6			72,2			59,3		
Perf. indicators																												
G		Q _d		Heat demand / G / F																								
F		Q _L		System output / G / F																								
		f _{sol}		Q_L/Q_d; solar fraction / G / F																								
		Q _{par}		Elec. for pumps/controllers / G / F																								
Ref. conditions				Stockholm		Würzburg DE		Davos CH		Athens GR																		
G				1.156		1.226		1.682		1.717																		
G		Ta		7,5		9,0		3,2		18,5																		
F		Tc		8,5		10,0		5,4		17,8																		
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2																		
G		kWh/m ²		Annual irradiation South, 45° / G / F																								
Ta		°C		Annual mean air temp. / G / F																								
Tc		°C		Annual mean cold water temp. / G / F																								
ΔTc		°C		Seasonal variation of Tc / G / F																								
Th		45°C		Desired (mix. valve) temp. / G / F																								
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa														
G								G																				
F								F																				
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos																						
Website						www.solar.demokritos.gr																						
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2																						
Date of test report / G / F						6/9/2011																						
Test method / G / F						ISO 9459-5 (DST)																						
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																												
English																												
Deutsch																												
Français																												



Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Registration No.		SKM 9921/4													
Kurzfassung EN 12976 Test Ergebnisse, Anlage zum Solar KEYMARK-Zertifikat				Registernummer															
Synthèse des résultats d'essais selon EN 12976, Annexe au certificat Solar				Num. d'enregistremen															
				Date / Datum / Date		28/1/2013													
Company / Firma / Société		COSMOSOLAR LTD		Country/Land/Pays		Greece													
Street / Straße / Rue		Ntrei Road, Dervenochorion Gate		Website		http://www.cosmosol													
Postal Code, Place / PLZ, Ort / Code postal, Place		322 00 Viotia		E-mail		info@cosmosolar.co													
				Tel. / Fax		+99 210 3478897 / 210 34794													
System family overview / G / F																			
Collector type		Number of collectors / G / F																	
G		Storage type / G / F																	
F		120L		160L		200L		250L		300L									
EPI 20				2		2													
EPI 12		1																	
EPI 25		1		1		2		2		2									
EPI 16				1		1				2									
EPI 54				1		1													
Name of system konfiguration / G / F								EGLK 300/4.60											
Collector type		EPI 16		No. collectors		2		Storage type		300L									
G				G				G											
F				F				F											
Calculated annual results / G / F																			
Location		Daily draw-off litres/day / G / F /																	
G		250		300		400		250		300		400							
F		l/d		l/d		l/d		l/d		l/d		l/d							
		Q _d kWh/y			Q _L kWh/y			f _{sol} %			Q _{par} kWh/y								
Stockholm, SE		3.881		4.652		6.202		1.787		1.936		2.059		46,0		41,6		33,2	
Würzburg, DE		3.714		4.459		5.948		1.796		1.971		2.111		48,3		44,2		35,5	
Davos, CH		4.205		5.046		6.728		2.453		2.646		2.794		58,3		52,4		41,5	
Athens, GR		2.891		3.469		4.625		2.339		2.646		2.952		80,9		76,3		63,8	
Perf. indicators		Q _d		Heat demand / G / F															
G		Q _L		System output / G / F															
F		f _{sol}		Q _L /Q _d ; solar fraction / G / F															
		Q _{par}		Elec. for pumps/controllers / G / F															
Ref. conditions		Stockholm		Würzburg DE		Davos CH		Athens GR											
G		1.156		1.226		1.682		1.717											
G		Ta		7,5		9,0		3,2		18,5									
F		Tc		8,5		10,0		5,4		17,8									
		ΔTc		2.1 - 14.9		7.0 - 13.0		4.6 - 6.2		10.4 - 25.2									
G		kWh/m ²		Annual irradiation South, 45° / G / F															
Ta		°C		Annual mean air temp. / G / F															
Tc		°C		Annual mean cold water temp. / G / F															
ΔTc		°C		Seasonal variation of Tc / G / F															
Th		45°C		Desired (mix. valve) temp. / G / F															
Max. operating press. - collector side				200		kPa		Max. operating press. - tank side				1.000		kPa					
G								G											
F								F											
Testing Laboratory / Prüflaboratorium / Laboratoire d'essais						Demokritos													
Website						www.solar.demokritos.gr													
Test report id. number / Prüberichtsnummer / F						6041 DE2, 6043 DE2													
Date of test report / G / F						6/9/2011													
Test method / G / F						ISO 9459-5 (DST)													
Comments of test lab / Kommentare des laboratoriums / Commentaires du laboratoire																			
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