TÜVRheinland[®]

DIN CERTCO

Summary of	f EN 12	297	76 1	Tes	t R	esu	ılts,	,										Lic	ence	e Nu	mt	er		01	1-7	' S1 3	372	Α		
annex to So	mpany holding licence HELIONAL																	lss	ued					20	12.	05.	10			
Company hold																			Cour	trv		Gre	ece	, ,				_		=
Street															k,P.(D.B	ox 8		Web			-			onal.	.con	1			
																			E-ma						onal					
Postal Code								570)13		The	essa	Ioni	kı					Tel. /	Fax							691/	-49	8	
			9	Svst	em	clas	sific	atio	on /	Svs	ten	neig	enso	chaf	ten	/ Ca	arac	téri	stiaue	es du	svs	tème	3							
Flow principle					-					- 1 -		- 0	-	The							- / -		-							
Direct/indirect	t													Indi	irec	t														_
Press. principl	le													Clos	sed															
Drain back/do	wn													Alw	ays	fille	ed (r	no d	lrain)											
Storage location														Out																
Storage position														Hor		ntal														
Internal back-														Nor	ne															_
If other internal back-up, please specifiy:													<u> </u>		-														_	
EN12976 type														Sola	ar o	niy					_							_	_	_
Collector(s) Company HELIONAL																			S	tor	age(-								
CompanyHELIOKeymark reg, no (if available)84/01									<u>```</u>					Con	•								HE	LIOI	NAL					_
Keymark reg, no (if available) 84/01 Per module/							01.	19/.	2					Кеу	ma	rk re	eg, r	10. ((if ava	ilable	e)									_
			Per	mod	ule/			_												£						a				
a) (es									vidt					-	nio				
	Š.									-	Number of modules									er/v					Back-up heated volume			101		
del Aperture area (Gross length Gross width						5				Ĕ						Total volume			Gross diameter/width			÷		eate			ĉ	Ś		
del Aperture are Gross length					1					in o							olui		lian			Gross length			č d		El. back-up power			
_	ertu		5				SS			-	ă				_			al <		SS (ss			n-X		1 Jey	5	
			č	5			5				n N			lobolu	ae			Ţđ		5 5			ğ			Bac				
				m			m				า - ท						_	itre	_	mn		-	mm			itre	5		kW	
FPS 2.0	m² m		0	.992	2	2	2	- 3		3	HFP		_	_	120	_	550		-	106		L	0	\rightarrow						
		_			_			_			-	<u> </u>	_	HFP		-	_	150 200		550 590		1260 1420			0		\rightarrow			_
								_			-		_	HFP				200 250	_	590	_		1420 1640		-	0	\rightarrow			_
											-		_	-	0 200		-	200	-	000	, 		10-10	<u> </u>	-	<u> </u>	\rightarrow			-
			C	ontr	olle	٥r															FI	uid								=
Company					n/a								_	Con	npa	nv							LTC	нім	1					-
Model					n/a									Мо	· ·							_			glyc	ol				_
																						n/a		°C	<u> </u>					
											veta	om f	fam	ily o	vor	vio	N/													=
											ysta		am				f col	lect	ors											_
Collector name	ĺ																rage													_
			HF	PS :	120	/2			H	FPS	150)/2					200			Н	FPS	250	/4		Γ					_
FPS 2.0		1						1						2						2										
Testing Labora	tory																Ins	titu	t für S	Solar	tec	hnik	SP	۲ , ۱	CH-	864	10 R	apr	oers	swi
Testing Laboratory Website																ww	w.s	olare	nerg	y.c	<u>h</u>									
Test report id. number																S1 :	39E	IN / S	6140	QP	EN									
Date of test report																31.	08.	2010						_						
Comments of test lab																		-											_	
																						C				So	lart	echi	nik	
																	- L			4					For	schu	y Ing			
																								N	1	all	So Prù For			
																					1		h.	rel	Xe.					
																							~	uz	sol la	nu				
All values are subject t	o some uno	ertai	nty; e	.g. the	e unce	ertain	ty on .	syster	m out	put is	typic	allv in	the r	anae d	of ± 5	5 % to	± 15	%								Ve	rsion 2	.1, 20	12-0.	2-08

DIN CERTCO • Alboinstraße 56 • 12103 Berlin

TÜVRheinland®

C					14.0						_		_				: f :		n Nia			011	764 77	2.4
	y of EN 1 Solar Kl				-										lss			τιο	n No.	_		-	75137	
annex to	o Solar Ki		KK	Certific	εаτе	3									ISS	su	ea					10.	05.201	.2
Company						HELIO										-	ount				_	ece		
Street						Oreok	astro	o Inc	dust	rial	Parl	<,P.(D.B	ox 8	39	÷	/ebs					/w.helio		
Postal Cod	le					57013		The	essa	lonił	ĸi						-mai			20		o@heli		
									_		_	_	_	_	_		el. /	Fax	-	+30	232	LO 783 ·	-691/-4	198
					_					ami											<u> </u>			
		—		120/2	FC		n st FPS		_	and	COI		PS				e nu		er of co		iot:	rs I		
Collector	name			120/2				130	<i>י</i> ן <i>ב</i>		•	пг	73	200	J/4	_	-		PS 250	<i>J</i> /4				
FPS 2.0		1	_			1	_				2					╞	2	_					\vdash	++
			-				-				_	_			<u> </u>	╞	_	-					\vdash	++
			-				-				_	_			<u> </u>	╞	_	-					\vdash	++
			-			_	-				_	_				┝	_	-					$\left \right $	++
													_											
	ystem kon	figurat															HF		20/2					
Collector n	ame		FPS	52.0		No. Co								1				Sto	orage na	me		H	FPS 12	.0/2
							C	alcu	late	d ar					•									
					- 1	111	2		50	Da	<u> </u>		N-0	tt (I		_	day)	50	80	14	10	50	80	110
Location		50 I/c		80 I/d		110 I/c	-		50 I/d			80 I/d		-	11(l/d	-		/d	l/d	11 /	-	50 I/d	l/d	110
				Qd kW	h/v	ijτ			i/u		Ql I		h/v		i/u	-	-	/u	fsol %	1/	u		bar kW	
Stockholm	i, SE	77	5	1'244		1'70)8		458			628	·/ y		764	4	5	9.1	50.5	44	1.7	0		0
Würzburg		74	4	1'19'		1'63	38		458		(640			79	1		1.6	53.7	48	3.3	0	0	0
Davos, CH		84	1	1'349)	1'84	18		689			938			1'12	20	8	1.9	69.5	60).6	0	0	0
Athens, Gl	۲	57	7	929		1'27	70		534			781			987	7	9	2.5	84.1	77	7.7	0	0	0
																								<u> </u>
										_							_						<u> </u>	
Dorf indic	ators for the	table	ahov																					
Q _d	kWh/y	Heat		-																				
Q⊥ Q⊥	kWh/y			eating n	eed	ed																		
Q _{par}	kWh/y	-	-	for pun			مالد																	
Qpai		Liceti															_							
			Sto	ockholm	SE			DE	Ľ)avo		1	A		ns (ΞR	_							
	•:	G	-	1'157	_		230			1'6		_			718		+			-				
Ref. condi	tions	Та		7.5	_		9.0			3.					8.5		-			-				
		Tc ± ΔTc	-	8.5 6.4	_		0.0 3.0			5. 0.		_			7.8 '.4		+-			-				
G	kWh/m²		_	adiation	Sol					0.	0				.4									
Ta	°C	-		ean air t																				
Tc	°C			ean cold																				
ΔTc	°C	-		variation																				
Th	45 °C	Desire	ed ho	ot water	ter	nperat	ture	(mi	xing	val	ve t	em	oera	atui	re).									
Max. opei	ating press	s coll	ecto	r side			300)	kPa	1	Ma	х. о	per	atir	ng p	ores	ss 1	tank	side				1'000	kPa
Testing La	boratory													Ins	titu	t fi	ür So	larte	echnik S	PF,	CH-	8640 R	appers	wil
Website														_			aren			,				
Test repo	rt id. numb	er												_			′ S14							
Date of te	st report													203	10.0)8.	31							
Test meth	od													ISC	94	59	-5 (C	ST)						
Comment	s of test la	b																						
	2 was teste	-	ne "m	nedium"	sub	type.										-	-1-			6			Sola	rtechnik
						10.00														S	F	7	Prüfu Forsc	ing
																				A	n		. 0, 50	
																			/	1	/	N		
																			U	~ [C	185	qNa		
All values are su	ibject to some u	ncertainty,	e.g. th	ne uncertain	ty on :	system ou	itput is	typic	ally in	the ro	inge d	of ± 5	% to	± 15 :	%							V	ersion 2.1	, 2012-02-0

DIN CERTCO • Alboinstraße 56 • 12103 Berlin

TÜVRheinland®

Summai	ry of EN 1	L2976	Tes	t Result	s,									Ce	ert	ifica	tio	n No.			011-	7513	372	Α
	Solar Kl				-									lss	sue	ed					10	.05.2	012	:
Company					HE	LIO	NAL								C	ount	ry			Gre	ece		_	
Street					Or	eok	astro	Indu	stria	al Pai	ҡ,Р.	O.Bo	ox 8	39	W	'ebsi	te			ww	/w.heli	onal.	.cor	n
Postal Cod	40				E 7	013		Thes		aiki					E٠	mail				inf	o@heli	onal	.cor	n
Postal Cot	ле 				57	012		mes	saiui	пкі					Te	el. / I	ах	-	+30	23:	10 783	-691	/-49	98
		-					-	stem	_	-	_	_	_											
					Fore					d co				_	ive	nu		er of co		cto	s			
Collector	name	H	-PS	120/2		н	FPS :	150/	2			PS	200)/4	_		HI	PS 250)/4				_	
FPS 2.0		1			1					2						2								\square
					_	-	\square	+	+	_	-				┝	_				_			-	\vdash
						\vdash	\vdash	+	+		\vdash				┢									\vdash
	ystem kon	-								_						HF		.50/2						
Collector n	ame		FPS	2.0	No	. Co	llecto	ors Icula	tod				l tc				Sto	orage na	me		F	IFPS	150	/2
							La	icula		Daily	-			itre	s/c	lav)								
Location		80		110		140)	8			110	_	<u> </u>	140	-		30	110	14	40	80	11	L0	140
Location		l/d		l/d		l/d		l/	ď		l/d			l/d		- I	/d	l/d	l/	/d	l/d	I/		l/d
				Qd kWh/						QL		h/y						fsol %			Q	par k	Wh	ı/y
Stockholm		1'24		1'708	_	2'17		62	27		745		_	828		_).4	43.6	38		0	-)	0
Würzburg		1'19		1'638	_	2'08			18		775	_	_	884		_	4.4	47.3		2.4	0	-)	0
Davos, CH		1'34		1'848	_	2'35		9		_	1'09			1'22	-	-).6	59.1	-	2.0	0	-)	0
Athens, G	R	929		1'270	+	1'62	1	79	97	-	976			1'15	4	8	5.8	76.8	71	L.2	0	()	0
					+					-		_				_						+	_	
	ators for the	1																						
Qd	kWh/y	Heat d																						
QL	kWh/y			eating nee																				
Qpar	kWh/y	Electri	city	for pump	s/co	ntro	ollers						_		_								_	
			Sto	ckholm Sl	W	ürzt	ourg	DE	Dav	/os C	Н	A	the	ns G	SR									
		G		1'157		1':	230		1	'684			1'7	718										
Ref. condi	tions	Та		7.5		9	9.0			3.2			18	3.5										
		Тс		8.5		1	0.0			5.4			17	7.8										
		± ΔTc		6.4		-	8.0			0.8			7	.4										
G	kWh/m²			adiation S																				
Та	°C	-		ean air ter																				
Тс	°C			ean cold w		ter	np.																	
ΔTc	°C			variation o	-																			
Th	45 °C	1		ot water t	emp	erat			-					-								_	_	
Max. opei	rating pres	s colle	cto	r side			300	k	Pa	Ma	ax. c	per						side						kPa
Testing La	boratory																	echnik S	PF,	CH-	8640 R	appe	ersw	/il
Website																aren				_			_	
	rt id. numb	er										_				S14	DQP	EN						
Date of te	•											_	404			F (D	CT)						_	
Test meth													150	94	59	-5 (D	51)						_	
	s of test la	-														-								oct
	est number																		C		DE		olart üfun	echnik Ig
	nce for the Scheme Rul					late	d acc	ordir	ng to	the	Spe	cific	CEI	N				/	1)			schu	
																		L.	10	55	Na			
All values are si	ubiect to some u	ncertainty; e	e.g. th	e uncertainty o	n syste	em ou	tput is	ypicall	in the	e range	of ± 5	% to :	± 15 9	%	_						l	ersion	2.1, 2	012-02-0

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 %

DIN CERTCO • Alboinstraße 56 • 12103 Berlin

TÜVRheinland®

Summai	y of EN 1	2976	Tes	t Result	s.	_						-		lo	Cer	tific	atio	n No.		-	011-7	/S1372	2 A
	o Solar Kl				-									_		led					-)5.201	
Company					H	ELIOI	NAL		-			-			0	Coun	trv			Gre	ece		
Street					-		astro	Ind	usti	rial P	Park	с, Р. (D.Bo	x 89	_	Neb					w.helic	nal.co	m
Postal Cod	10				57	013		Tho	ccal	onik	-i				E	E-ma	il			info	o@helio	onal.co	m
Postal Cot	le l				57	015		me	5581	UTIK		_			٦	Tel. /	Fax		+30	231	LO 783 -	691/-4	98
		1					-	_	_	_	-	_	rviev										
			-00		For			_		nd	coll				-	/e ni		er of co		tor	s		
Collector	name		- 42	120/2	_	-	FPS 1	150/	/2	_	-		P5 2	200/	4	_	_	PS 250	J/4				<u> </u>
FPS 2.0		1			1	_		\rightarrow		_	2		\rightarrow			2	2						
					_	_		\rightarrow			_	_	\rightarrow		+	_							\square
					_	_		\rightarrow			_	_	\rightarrow		+	_							\square
					_	_		\rightarrow	\rightarrow		\rightarrow	_	\rightarrow	_	_	_	_						\vdash
Name of s	ystem kon	-														Η	FPS 2	00/4					
Collector n	ame		FPS	2.0	No	o. Co	llecto						2				Sto	orage na	me		H	FPS 200	0/4
							Са	lcul	ate				sult										
		110		140	-	170		1	110	Dai	<u> </u>		v-of			/day	110	140	17	20	110	140	170
Location		110 I/d		140 I/d	-	170 I/d			L10 I/d	-		L40 I/d			70 /d	_	110 I/d	140 I/d	17 /	-	110 I/d	140 I/d	170 I/d
		i/u		Qd kWh/	/v	i/u			iy u		QL k		n/v		u	_	i/u	fsol %	1/1	u		ar kW	
Stockholm	i, SE	1'70		2'173	<u>,</u>	2'63	7	9	993			167		1'3	313		58.1	53.7	49	.8	0	0	0
Würzburg		1'63	8	2'085		2'53	2	1'	001		1	199	,	1'3	372	(51.1	57.5	54	.2	0	0	0
Davos, CH		1'84		2'356		2'85	6	1'	492	2		774		2'0)05	8	30.7	75.3	70	.2	0	0	0
Athens, Gl	۲	1'27	0	1'621		1'96	2	1'	161		1'	426	3	1'6	58	9	91.4	88.0	84	.5	0	0	0
					_					_			\rightarrow			_							<u> </u>
					_					_			\rightarrow									<u> </u>	
Perf indic:	ators for the	e table a	hov	e																			
Qd	kWh/y	Heat d																					
QL QL	kWh/y			eating nee	edeo	ł																	
Qpar	kWh/y			for pump			llers																
	,,			ckholm S					D				۸+	hens									
		G	510	1'157			230			avos 1'68		1		1'71	-	·			_				
Ref. condi	tions	с Та		7.5	-		.0	+		3.2	-	-		18.5	-				-				
iter: condi	10113	Тс		8.5	-		0.0	+		5.4				17.8									
		± ΔTc		6.4	-		.0	+		0.8				7.4									
G	kWh/m²		l irra	adiation S	out	-	-	_			-												
Та	°C	Annua	l me	ean air tei	npe	ratu	re																
Тс	°C	Annua	l me	ean cold v	vate	r ter	np.																
ΔTc	°C	Seasor	nal v	ariation o	of To																		
-TI-	45 °C	Desire	d ho	ot water t	emp	erat	ure (mix	ing	valv	/e te	emp	perat	ture).								
Th				. cido			300		kPa	ſ	Max	k. O	pera	ting	pre	ess	tank	side				1'000	kPa
	rating press	s colle	ctor	side												für S	alarto	chnik S	PF (CH-3	8640 Ra	appersv	vil
		s colle	ctor	side									1	nstit	ut	iui 3	Jiai te		,	_			
Max. oper Testing La Website	boratory		ctor	side									1	www	/.so	lare	nergy	.ch	, 、				
Max. oper Testing La Website Test repor	boratory rt id. numb		ctor										۱ د	www 5139	/.so EN	lareı / S14		.ch					
Max. oper Testing La Website Test repor Date of te	boratory rt id. numb st report		ctor											www 5139 2010	/.so EN .08	lareı / S14 .31	nergy 10QP	.ch					
Max. oper Testing La Website Test repor	boratory rt id. numb st report		ctor	side										www 5139 2010	/.so EN .08	lareı / S14	nergy 10QP	.ch					
Max. oper Testing La Website Test repor Date of te Test meth Comment	boratory rt id. numb st report od s of test lal	er D												www 5139 2010 SO 9	/.so EN .08	lareı / S14 .31	nergy 10QP	.ch					
Max. oper Testing La Website Test repor Date of te Test meth Comment The syster	boratory rt id. numb st report od s of test lal n model HF	er 0 PS 200/	'4 is	the subty	-			_					ecto	www 5139 2010 SO 9	/.so EN 9.08	llarei / S14 3.31 9-5 (nergy 10QP	.ch					
Max. oper Testing La Website Test repor Date of te Test meth Comment The syster aperture a	boratory rt id. numb st report od s of test lal n model HF irea to the	er o PS 200/ total sto	/4 is ore v	the subty rolume (A	/V-r	atio)	. In a	ссо	rdaı	nce t	to tl	he S	ecto	www 5139 2010 SO 9 r ific C	/.so EN .08 945	larei / S14 3.31 9-5 (nergy 10QP	.ch	5	F	P F		technik ng ung
Max. oper Testing La Website Test repor Date of te Test meth Comment The syster aperture a Keymark S	boratory rt id. numb st report od s of test lal n model HF irea to the icheme Rul	er D PS 200/ total sto es for So	'4 is ore v	the subty olume (A Thermal I	/V-r Prod	atio) ucts,	. In a , high	ccoi i ter	rdai npe	nce t eratu	to tl ire a	he S and	ecto Speci	www 5139 2010 50 9 r ific C ety te	.08 .08 .45 EN	larei / S14 3.31 9-5 (nergy 10QP	.ch	5				
Max. open Testing La Website Test repor Date of te Test meth Comment The syster aperture a Keymark S were perfe	boratory rt id. numb st report od s of test lal n model HF irea to the	er PS 200/ total sto es for So er SPF te	/4 is pre v plar st n	the subty olume (A Thermal I umber S1	/V-r Prod 40Q	atio) ucts, P on	. In a , high this	ccoi ter syst	rdai npe :em	nce t ratu . The	to tl ire a	he S and	ecto Speci	www 5139 2010 50 9 r ific C ety te	.08 .08 .45 EN	larei / S14 3.31 9-5 (nergy 10QP	.ch	5		PF		

DIN CERTCO • Alboinstraße 56 • 12103 Berlin

TÜVRheinland[®]

Summa	ry of EN 1	2976	Tes	t Result	s,									Ce	erti	fica	tio	n No.			011-7	751372	2 A
	o Solar Kl				-									lss	sue	d					10.	05.201	2
Company					HEL	.IONA	۱L	-	-	-	-	-	-	-	Со	untr	v			Gre	ece	_	
Street						okast		ndust	trial	Par	k,P.	O.B	ox 8	39		ebsit					w.helio	nal.co	m
Postal Co	40				570	10	ти	nessa	Joni	k:	-				E-r	nail				info	o@helio	onal.co	m
Postal Co	Je				570	15		iessa							Те	l. / F	ах		+30	231	.0 783 -	691/-4	98
		1					-	em f		-													
					or e			_	and	col				_	ive	nun		er of co		tor	S		
Collector	name	HF	PS :	120/2		HFP	S 15	0/2			HF	PS	200)/4			HF	PS 250)/4				
FPS 2.0		1			1					2						2							
Name of s	system kon	figuratio	on									_		_		HFF	PS 2	50/4		_			
Collector r			FPS	2.0	No.	Colle	ctors	5					2				Sto	rage na	me		Н	FPS 25	0/4
							Calc	ulate															
									_	_			ff (li		-		_		_				
Location		140		170		200		140	_		170			200	-	14	-	170	20		140	170	200
		l/d		l/d	_	l/d	_	l/d		<u></u>	l/d	h. /		l/d		I/	d	l/d	/	d	l/d	l/d	l/d
Stockholm	SE SE	2'173		Qd kWh/ 2'637		'101	_	1'19		QL 1	к vv '33			1'47	<u>'0</u>	54	٥	fsol % 50.8	47	1		oar kW	n/y 0
Würzburg		2'08		2'532	_	970	_	1'20		_	37			1'52		57		54.3	51		0	0	0
Davos, CH		2'356		2'856	_	'364		1'77	_	_	2'00			2'20		75		70.2	65	_	0	0	0
Athens, G		1'62'	1	1'962	2	'313		1'42	6	1	'66)	1	1'87	8	88		84.6	81	2	0	0	0
					1																		
	ators for the	1																					
Qd	kWh/y	Heat d		-																			
QL	kWh/y		-	eating nee																			
Qpar	kWh/y	Electric	city	for pump	s/con	trolle	ers																
			Sto	ckholm SE	Wü	rzbur	rg DE		Davo	os Cl	H	A	the	ns G	SR								
		G		1'157		1'23	0		1'6	684			1'7	718									
Ref. cond	itions	Та		7.5		9.0				.2				3.5									
		Тс		8.5		10.0				.4				7.8									
-	1.1.1.1.2	± ΔTc		6.4		3.0			0.	.8			7	.4									
G T-	kWh/m² °C	-		diation S																			
Ta Tc	°C			an air ter an cold w	•																		
ΔΤς	°C			ariation o		temp																	
Th	45 °C			t water te		ratur	e (m	ixina	z val	ve t	em	oera	atur	e).									
	rating press						00	kPa	-						res	s ta	ank	side				1'000	kPa
Testing La											_							chnik S	PF (CH-	8640 R:	·	1
Website	iboratory															rene)F1, (5040 Na	аррега	/VII
	rt id. numb	er											_			S140							
Date of te		•											_)8.3		~						
Test meth	•												_			- 5 (DS	ST)			-			
Comment	s of test la	b																					
	est number	-	te	em subtur		DS 25	0/4 3	c (1)	20 51	<u>га т</u>	he :	ann	ual										technik
	nce for the													N		1			5	F	7	Prüfu Forsch	ng
17	Scheme Rul					iieu e	acc01	ung	, .0 (.ne :	she		CEF	•				/	N	2	nl	rorsch	ung
																1		C	. (a	5	4/a		
									n the r							1			1		2	ersion 2.1,	

DIN CERTCO • Alboinstraße 56 • 12103 Berlin