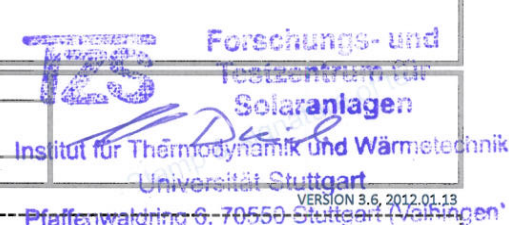




Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Certificate No.	011-7S2178 F				
						Date of issue	03.09.2013				
Company		Regulus spol. S r.o.				Country	Tschechien				
Brand (optional)						Website	www.regulus.cz				
Street, number		Do Koutu 1897/3				E-mail	regulus@regulus.cz				
Postal Code		143 00				Tel.	+420	241 765 191			
City		Praha 4				Fax	+420	241 763 976			
Collector Type (flat plate / evacuate tubular / un-glazed)						Flat plate collector					
Integration in the roof possible ?						No					
Collector name	Aperture area (A _a) [m ²]	Gross length [mm]	Gross width [mm]	Gross height [mm]	Gross area (A _G) [m ²]	Power output per collector unit G = 1000 W/m ² T _m -T _a :					
						0 K [W]	10 K [W]	30 K [W]	50 K [W]	70 K [W]	
KPR1+	1.91	2 030	1 027	92	2.08	1 423	1 352	1 190	1 002	788	
KPR11+	2.29	2 032	1 230	93	2.50	1 706	1 621	1 427	1 202	945	
Collector efficiency parameters related to aperture area (A _a)						η _{0a}	0.745				-
Type of fluid and flow rate see note 1						a _{1a}	3.556				W/(m ² K)
						a _{2a}	0.017				W/(m ² K ²)
Stagnation temperature - Weather conditions see note 2						t _{stg}	193				°C
Effective thermal capacity						C _{eff} = C/A _a	10.57				kJ/(m ² K)
Max. operation pressure - see note 3						p _{max}	1000				kPa
Incidence angle modifiers K _θ (θ)	G _{DIF} /G _{TOT}		θ _r / θ _L		50°	10°	20°	30°	40°	60°	70°
	min	max	K _θ (θ _r)	K _θ (θ _L)							
G _{DIF} /G _{TOT} : min&max - while measuring		-	-		0.85	1.00	0.98	0.96	0.92	0.74	0.49
											<i>Optional values</i>
Testing Laboratory						TZS, ITW University of Stuttgart					
Website						www.tzs.uni-stuttgart.de					
Test report id. number						08COL678/1OEM12					
Date of test report						03.09.2013					
Perf. test method						EN 12975-2 6.1.4 (outdoor)					
Comments of testing laboratory :											

Note 1	Fluid	Water	Flow rate	0.020 kg/s per m ²
Note 2	Irradiance, G _s =1000 W/m ²			
Note 3	Ambient temperature, T _a =30 °C			
Note 3	Given by manufacturer			



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Annual collector output based on EN 12975 Test Results,
annex to Solar KEYMARK Certificate

Certificate No.

011-7S2178 F

Issued

03.09.2013

Annual collector output kWh

Location and collector temperature (T_m)

Collector name	Location and collector temperature (T _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
KPR1+	2 104	1 446	886	1 681	1 107	639	1 163	733	419	1 260	783	438
KPR11+	2 523	1 734	1 062	2 015	1 327	766	1 394	879	502	1 511	939	525

Collector mounting: Fixed or tracking

Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m ²	T _a °C	Collector orientation or tracking mode
Athens	38	1 765	18.5	South, 25°
Davos	47	1 714	3.2	South, 30°
Stockholm	59	1 166	7.5	South, 45°
Würzburg	50	1 244	9.0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). Detailed description with all equations used is available from the Solar Keymark web site (direct link: <http://www.estif.org/solarkeymark/annexb1.php>)

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Datasheet version:

VERSION 3.6, 2012.01.13

Calculation program version:

3.07, October 2011 (SP)