



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence number	011-7S1539 F
		Date of issue	26.03.2012
Company holding the licence	Watt S.A.	Country	Poland
Brand (optional)		Website	http://www.watt.pl/en/
Street, number	ul. Watta 6	E-mail	info@watt.pl
Postal Code	41-208	Tel.	+48 32 287 66 80
City	Sosnowiec	Fax	+48 32 287 66 84
Collector Type (flat plate / evacuate tubular / un-glazed)		Flat plate collector	
Integration in the roof possible? (see comments of testing laboratory)		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	10 K	30 K	50 K	70 K
						[W]	[W]	[W]	[W]	[W]
Watt 3025 S	2.35	2 516	1 016	90	2.56	1 848	1 758	1 553	1 315	1 044
Watt 3025 S+	2.35	2 516	1 016	90	2.56	1 848	1 758	1 553	1 315	1 044
Watt 3020 S	1.87	2 018	1 018	90	2.05	1 470	1 398	1 235	1 046	831
Watt 3020 S+	1.87	2 018	1 018	90	2.05	1 470	1 398	1 235	1 046	831
Watt 3020 SU	1.87	2 018	1 018	90	2.05	1 470	1 398	1 235	1 046	831
Watt 3020 SU+	1.87	2 018	1 018	90	2.05	1 470	1 398	1 235	1 046	831

Collector efficiency parameters related to aperture area (A_a) Type of fluid and flow rate see note 1	η_{0a}	0.785	-
	a_{1a}	3.66	W/(m ² K)
	a_{2a}	0.0174	W/(m ² K ²)

Stagnation temperature - Weather conditions see note 2	t_{stg}	200	°C
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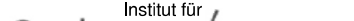
Effective thermal capacity	$C_{eff} = C/A_a$	4.4	kJ/(m ² K)
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Max. operation pressure - see note 3	p_{max}	600	kPa
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Incidence angle modifiers $K_{\theta}(\theta)$			θ_T / θ_L	50°					
	$K_{\theta d}$	0.89	$K_{\theta}(\theta)$	0.95	at G_{DIF}/G_{TOT}	0.15			
	b_0	0.11							

Testing Laboratory	Institut für Solarenergieforschung Hameln
Website	www.isfh.de
Test report id. number	30-12/KD, 31-12/KQ, 32-12/KD, 33-12/KD
Date of test report	22.03.2012, 23.03.2012, 22.03.2012, 23.03.2012
Perf. test method	EN 12975-2 6.1.5 (indoor)

Comments of testing laboratory :	
Additionally, the manufacturer Watt S.A. produces the collector types Watt 3025 SL, Watt 3025 SL+, Watt 3025 SRL, Watt 3025 SRL+, Watt 3020 SL, Watt 3020 SL+, Watt 3020 SLR, Watt 3020 SLR+, Watt 3020 SUL, Watt 3020 SUL+, Watt 3020 SULR and Watt 3020 SULR+. The collector types with „L“ in the type designation have painted casing and the types with „R“ can be installed in the roof.	

Note 1	Fluid	Water	Flow rate	0.047	kg/s per m ²	 Institut für Solarenergieforschung GmbH Am Ohrberg 1 D-31860 Emmerthal Tel.: 0 51 51 / 999-100 Fax: 0 51 51 / 999-500
Note 2	Irradiance, G _s =1000 W/m ² ; Ambient temperature , T _a =30 °C					
Note 3	Given by manufacturer					



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

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Annual collector output kWh

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			
Watt 3025 S	2 941	2 082	1 324	2 392	1 645	960	1 644	1 059	617	1 786	1 145	656			
Watt 3025 S+	2 941	2 082	1 324	2 392	1 645	960	1 644	1 059	617	1 786	1 145	656			
Watt 3020 S	2 340	1 657	1 054	1 904	1 285	764	1 308	843	491	1 422	911	522			
Watt 3020 S+	2 340	1 657	1 054	1 904	1 285	764	1 308	843	491	1 422	911	522			
Watt 3020 SU	2 340	1 657	1 054	1 904	1 285	764	1 308	843	491	1 422	911	522			
Watt 3020 SU+	2 340	1 657	1 054	1 904	1 285	764	1 308	843	491	1 422	911	522			

Collector mounting: Fixed or tracking

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

Overview of locations

Location	Latitude °	G _{tot} 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°

G _{tot}	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, 2012.01.20

Calculation program version:

3.07, October 2011 (SP)