

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number Issued		011-7S2574 F 2015-09-17			
Company holding the Brand (optional)		Max Weishaupt GmbH				Country		Deutschland			
Street, street number		Max-Weishaupt-Strasse 14				Website		www.weishaupt.de			
Postal Code / City, province		88477 Schwendi		E-mail		Fg.eisler@weishaupt.de					
Collector Type (flat plate glazed/un-glazed; evacuate tubular)		Flat plate collector - glazed									
Thermal / photo voltaic hybrid collector? (PVT collector)		No									
Integration in the roof possible? (manufacturers declaration)		No									
						Power output per collector module					
						Gb = 850 W/m ² ; Gd = 150 W/m ²					
						Tm-Ta					
						0 K	10 K	30 K	50 K	70 K	
Collector name						W	W	W	W	W	
		Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	1 907	1 822	1 601	1 313	958
WTS-F2 K6		2.33	2 070	1 212	68	2.51	1 907	1 822	1 601	1 313	958
WTS-F2 K5		2.33	1 212	2 070	68	2.51	1 907	1 822	1 601	1 313	958
Performance test method		Liquid heating collector - quasi-dynamic - outdoor									
Performance parameters related to aperture		η _{0b}	c1	c2	c3	c4	c6	Kθ _d			
Units		-	W/(m ² K)	W/(m ² K ²)	J/(m ³ K)	-	s/m	-			
Test results - Flow rate and fluid see note 1		0.826	3.294	0.036	0.000	0.000	0.000	0.938			
Bi-directional incidence angle		No Kθ values are obligatory for 50°.									
Incidence angle modifiers Kθ(θ)		Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Incidence angle modifier not bi-directional - leave fields blank		Kθ(θ)	1.00	0.99	0.98	0.95	0.92	0.85	0.71	0.36	0.00
Stagnation temperature - Weather conditions see note 2		T _{stg}	178	°C							
Effective thermal capacity		c _{eff} = C/A _{Ap}	7.473	kJ/(m ² K)							
Max. intended operation temperature - see note 3		T _{max,op}	120	°C							
Max. operation pressure - see note 3		p _{max,op}	600	kPa							
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area											
Flow rate	kg/(s m ²)	-	-	-	-	-	-	-	-	-	-
Pressure drop, ΔP	Pa	-	-	-	-	-	-	-	-	-	-
Optional weather data		Location						Link			
Testing Laboratory		TZS, ITW University Stuttgart									
Website		http://www.itw.uni-stuttgart.de									
Test report id. number		15COL1285OEM01, 15COL1286OEM01, 15COL1286QOEM01					Date of test report		2015.09.17		
During the test GDIF/GTOT was always between		0	and	1							
Comments of testing laboratory:											
none											
Note 1	Flow rate	0.020	kg/(s m ²)	Fluid	Water						
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C										
Note 3	Given by manufacturer										
Datasheet version: 4.06, 2014-01-15											
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2574 F
	Issued	17.09.2015

Annual collector output kWh/module														
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		
WTS-F2 K6	3 043	2 147	1 252	2 316	1 503	779	1 712	1 070	551	1 866	1 162	588		
WTS-F2 K5	3 043	2 147	1 252	2 316	1 503	779	1 712	1 070	551	1 866	1 162	588		

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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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

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T_m). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

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	ScenoCalc version: Ver. 4.06 (Jan, 2014)