

Annex to Solar Keymark Certificate - Summary of EN ISO 9806:2013 Test Results					Licence Number		011-7S291 F				
					Date issued		2017-09-26				
					Issued by		TÜV Rheinland Energy GmbH				
Licence holder		Windhager Zentralheizung Technik GmbH			Country		Austria				
Brand (optional)					Web		www.windhager.com				
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Postcode, City		5201 Seekirchen am Wallersee			Tel		+43 (0)6212 2341 0				
Collector Type					Flat plate collector, glazed						
					Power output per collector G _b = 850 W/m ² ; G _d = 150 W/m ² ϑ _m - ϑ _a						
					0 K	10 K	30 K	50 K	70 K	90 K	
Collector name		m ²	mm	mm	mm	W	W	W	W	W	W
SolarWIN SWA 225		2.25	2 100	1 070	106	1 539	1 471	1 323	1 159	979	783
SolarWIN SWH 225		2.25	1 070	2 100	106	1 539	1 471	1 323	1 159	979	783

Annex to Solar Keymark Certificate Supplementary Information	Licence Number	011-7S291 F
	Issued	2017-09-26

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on EN ISO 9806:2013 test results													
Standard Locations		Athens			Davos			Stockholm			Würzburg		
Collector name	ϑ_m	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
SolarWIN SWA 225		2 444	1 802	1 243	1 890	1 360	913	1 385	944	609	1 501	1 020	646
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Annual output per m ² gross area		1 088	802	553	841	605	406	616	420	271	668	454	288
Fixed or tracking collector		Fixed (slope = latitude - 15°; rounded to nearest 5°)											
Annual irradiation on collector plane		1765 kWh/m ²			1714 kWh/m ²			1166 kWh/m ²			1244 kWh/m ²		
Mean annual ambient air temperature		18.5°C			3.2°C			7.5°C			9.0°C		
Collector orientation or tracking mode		South, 25°			South, 30°			South, 45°			South, 35°		
The collector is operated at constant temperature ϑ_m (mean of in- and outlet temperatures). The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool Scenocalc Ver. 5.01 (March 2016). A detailed description of the calculations is available at www.solarkeymark.org/scenocalc													

Additional Information		
Collector heat transfer medium	Water-Glycole	
Hybrid Thermal and Photo Voltaic collector	No	
The collector is deemed to be suitable for roof integration	No	
The collector was tested successfully according to EN ISO 9806:2013 under the following conditions:		
Climate class (A, B or C)	C	--
Maximum tested positive load	2000	Pa
Maximum tested negative load	1500	Pa
Hail resistance using steel ball (maximum drop height)	-	m

Energy Labelling Information			
	Reference Area, A_{sol} (m ²)	Data required for CDR (EU) No 811/2013 - Reference Area A_{sol}	
SolarWIN SWA 225	2.25	Collector efficiency (η_{col})	55 %
SolarWIN SWH 225	2.25	Remark: Collector efficiency (η_{col}) is defined in CDR (EU) No 811/2013 as collector efficiency of the solar collector at a temperature difference between the solar collector and the surrounding air of 40 K and a global solar irradiance of 1000 W/m ² , expressed in % and rounded to the nearest integer. Deviating from the regulation η_{col} is based on reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806:2013.	
		Data required for CDR (EU) No 812/2013 - Reference Area A_{sol}	
		Zero-loss efficiency (η_0)	0.685 --
		First-order coefficient (a_1)	2.93 W/(m ² K)
		Second-order coefficient (a_2)	0.009 W/(m ² K ²)
		Incidence angle modifier IAM (50°)	0.93 --
		Remark: The data given in this section are related to collector reference area (A_{sol}) which is aperture area for values according to EN 12975-2 or gross area for ISO 9806. Consistent data sets for either aperture or gross area can be used in calculations like in the regulation 811 and 812 and simulation programs.	