



Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2622 F
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Annual collector output kWh/module													
Collector name	Location and collector temperature (T <sub>m</sub> )												
	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	
MSOL 270V	3 074	2 075	1 248	2 277	1 483	846	1 684	1 037	576	1 831	1 113	607	
MSOL 270H	3 074	2 075	1 248	2 277	1 483	846	1 684	1 037	576	1 831	1 113	607	
MSOL 240V	2 708	1 828	1 099	2 006	1 306	745	1 483	914	507	1 613	980	534	
MSOL 240H	2 708	1 828	1 099	2 006	1 306	745	1 483	914	507	1 613	980	534	
MSOL 200V	2 232	1 507	906	1 653	1 077	614	1 223	753	418	1 330	808	440	
MSOL 200H	2 232	1 507	906	1 653	1 077	614	1 223	753	418	1 330	808	440	

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G <sub>tot</sub> kWh/m <sup>2</sup>	T <sub>a</sub> °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 <sub>tot</sub>	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
T <sub>a</sub>	Mean annual ambient air temperature	°C
T <sub>m</sub>	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<sub>m</sub>). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

<b>DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany</b> <b>Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de •</b> <b>www.dincertco.de</b>	Datasheet version: 4.05, 2013-11-07
	ScenoCalc version: Ver. 4.05 (Nov, 2013)