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| Annex to Solar Keymark Certificate Supplementary Information | Licence Number | 011-7S096 F |
| | Issued | 2016-12-06 |

Annual collector output in kWh/collector at mean fluid temperature ϑ_m , based on ISO 9806:2013 test results

| Standard Locations | ϑ_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 |
| Sunnyline 28 | | 3 148 | 2 215 | 1 424 | 2 366 | 1 608 | 988 | 1 747 | 1 123 | 665 | 1 910 | 1 220 | 711 |
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| Annual output per m ² gross area | | 1 132 | 797 | 512 | 851 | 578 | 356 | 628 | 404 | 239 | 687 | 439 | 256 |
| 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) | A | -- |
| Maximum tested positive load | 2500 | Pa |
| Maximum tested negative load | 2000 | Pa |
| Hail resistance using steel ball (maximum drop height) | 2 | m |

Energy Labelling Information

| | Reference Area, A_{sol} (m ²) | Data required for CDR (EU) No 811/2013 - Reference Area A_{sol} | |
|--------------|---|--|--|
| Sunnyline 28 | 2.78 | Collector efficiency (η_{col}) | 54 % |
| | | <i>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/m², 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.</i> | |
| | | Data required for CDR (EU) No 812/2013 - Reference Area A_{sol} | |
| | | Zero-loss efficiency (η_0) | 0.703 -- |
| | | First-order coefficient (a_1) | 3.50 W/(m ² K) |
| | | Second-order coefficient (a_2) | 0.011 W/(m ² K ²) |
| | | Incidence angle modifier IAM (50°) | 0.93 -- |
| | | <i>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.</i> | |