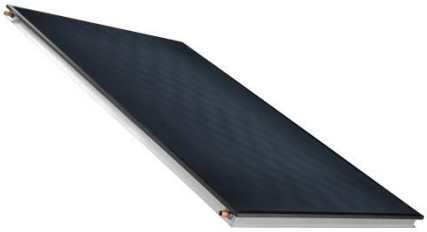
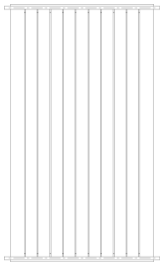
# sunWin 24M



**Absorber**



Register number 011-7S2501 F

| Assembly: | |
|---|---|
| Glass: | Hardened, hail proof **(HW 3),** structured solar glass, 3.2 mm, transmissivity: 91 % |
| Frame: | Aluminium frame, welded, top surface „natural“, cover strip black anodized |
| Absorber: | Aluminium full-plate absorber (harp geometry) with highly selective coating; laser welded; absorption: 95 %, emission: 5 %, with external sensor |
| Rear wall insulation: | 30 mm of degassing-free mineral wool |
| Glass sealing: | 2-component silicone |
| Rear wall: | Made of aluminium, sea water resistant, 0.4 mm |
| Connections: | Compression fitting 22 mm, 4 connections on side (if vertically assembled), heat transfer fluid can flow in both directions (L -> R or R -> L), approved for drain-back systems |

| Technical data: | | | |
|---|---|---|---|
| Dimensions vertical (LxWxH): | 2064 x 1154 x 68 mm | Total volume of the collector: | 1,57 lt. |
| Gross area: | 2,38 m² | Max. inclination: | 90° |
| Aperture area: | 2,22 m² | Min. inclination: | 15° |
| Absorber area: | 2,20 m² | Max. operating pressure: | 10 bar |
| Weight without heat carrier: | 32 kg | Testing pressure: | 15 bar |
| Assembling: | Vertical, Horizontal, on-roof, freestanding | | |

| Efficiency values (according to EN ISO 9806): | |
|---|---|
| **Reference** | **Aperture area** |
| Test number: | TÜV Rheinland, 21248537.001 |
| Conversion factor $\eta_0$: | 0,765 |
| Thermal transmittance coefficient simple $a_1$: | 3,549 W/m²K |
| Thermal transmittance coefficient square $a_2$: | 0,018 W/m²K² |
| Angle factor: | 0,94 |
| Efficiency $\eta_{0,05}$: | 0,57 |

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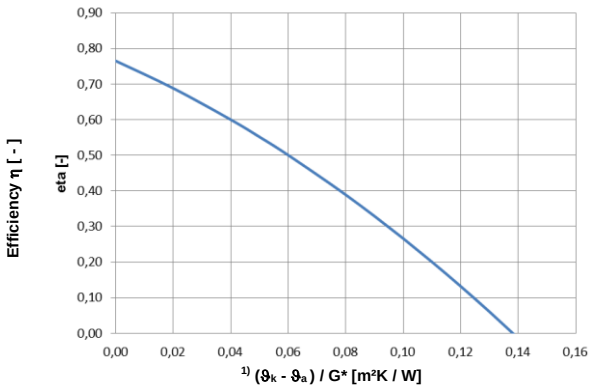
| Power output in Watt (according to EN ISO 9806) | | | |
|---|---|---|---|
| | Irradiance W / m² | | |
| | **400 W/m²** | **700 W/m²** | **1000 W/m²** |
| [1] $\vartheta_k - \vartheta_a = 10$ K | 585 | 1104 | 1622 |
| [1] $\vartheta_k - \vartheta_a = 30$ K | 395 | 914 | 1432 |
| [1] $\vartheta_k - \vartheta_a = 50$ K | 172 | 692 | 1210 |

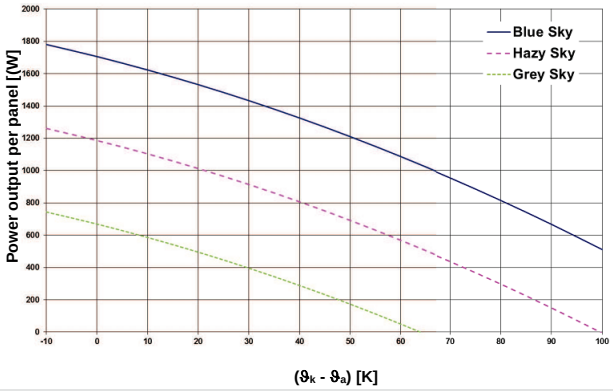
**Efficiency characteristic (according to EN ISO 9806)**

(for G* = 800 W / m²)




**Power characteristic (according to EN ISO 9806)**

(for G = 1000 W / m²)

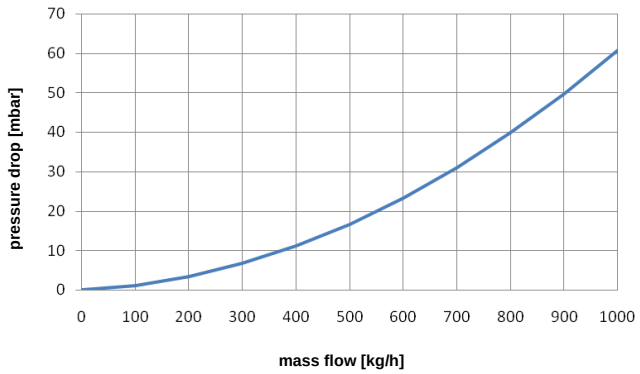



[1] $\vartheta_k - \vartheta_a$ ... Temperature difference between the mean panel temperature and the outside temperature

**Pressure loss:**

(water-propylenglykol-mixture (60:40), at a temperature of 50°C)

If the collectors are connected in series you can determine the pressure loss per collector with the volume flow of the entire collector field. Then multiply the result with the number of collectors.




**Example pressure loss of a collector-field:**

**step 1:** determine the overall mass flow of the solar plant $P_{tot}$ (kg/h) = $P_s$ (kg/m²h) x N x A (m²)

**step 2:** take the pressure loss of the collector $\Delta P_{col}$ of the diagram

**step 3:** the pressure loss of the collector-field is $\Delta P_{tot} = \Delta P_{col}$ x N

**Nomenclature:**
$P_s$ = specific mass flow per m²
N = number of collectors
A = absorber area of the collector = 2,20 m²

**example:** solar plant with 5 collectors in series

specific mass flow per m² = 50 kg/m²h
50 x 5 x 2,20 = 550 kg/h
acc. to diagram above 550 kg/h = 20 mbar x 5 pcs. = **100 mbar** for the entire system with 5 collectors
**recommended mass flow (high flow):** 25 kg/m²h up to 50 kg/m²h
**recommended mass flow (low flow):** 15 kg/m²h up to 25 kg/m²h (notice: system hydraulics !)
**min. mass flow of each collector-field:** 250 kg/h

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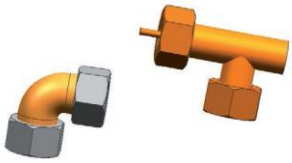
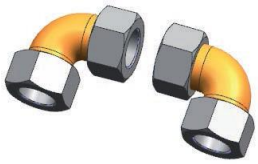
## Connecting kit: Sensor

Set of connections with clamping ring (elbow) and sensor pocket;
also with pre-insulated stainless-steel flexible tubes; dimension 22 mm



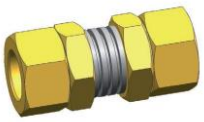
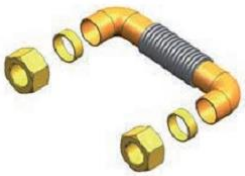
• *Help: One kit is necessary for positioning the sensor !*

## Connecting kit: with elbow



• *Help: For further collector fields without a sensor !*

## Accesories:

| Locking piece with clamping ring 22 mm<br>2 pc. per collector | Flexible connection, straight 65 mm<br>1 pc. per collector at vertically assembling | Flexible connection,, elbow<br>1 pc. per collector at horizontally assembling |
|---|---|---|
|  |  |  |

## Hydraulic connection:

Install the sensor (*) on the furthest to the right/left collector (using the connecting kit).

**Attention!** If the sun is shining during the installation of the collectors the connection units can get very hot!
**Attention!** Make arrangements against accidents before working on the roof! Note the rules for accident prevention!

**Fig. 1**

vertical in a row -> forerun right hand side

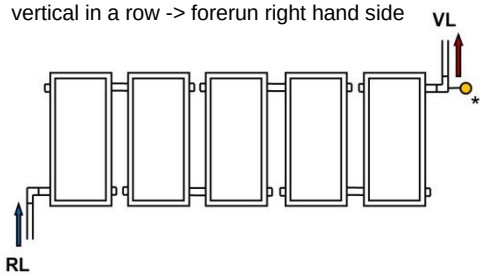
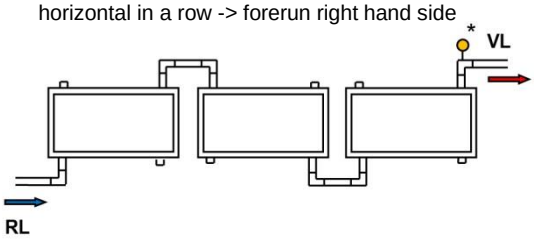



**Fig. 2**

horizontal in a row -> forerun right hand side




VL = forerun RL = return

• *Note: You can connect up to 12 units of collectors in a row. Furthermore the collectors should be separated and connected according to Tichelmann principle (see Fig. 1 and Fig. 2).*

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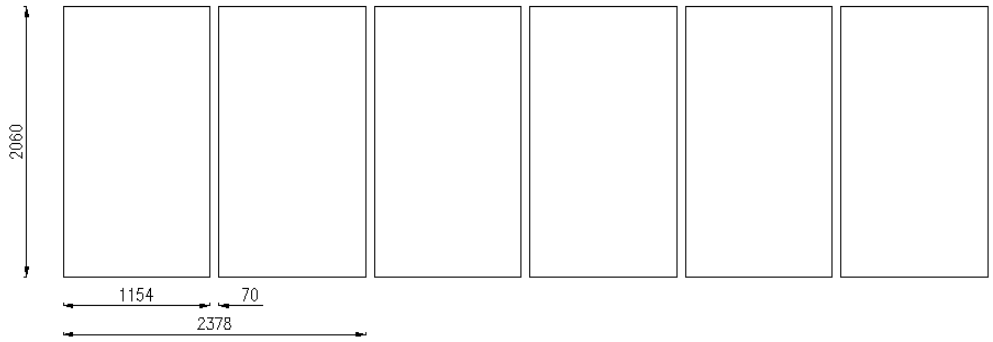
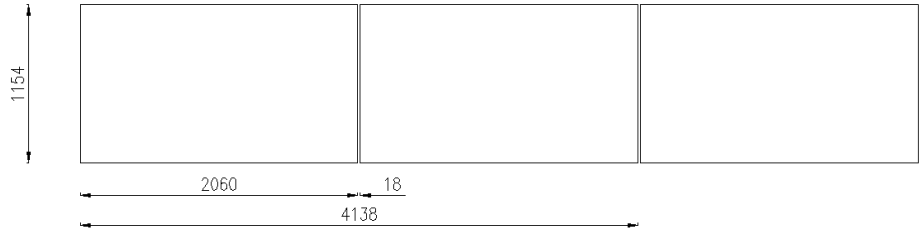
## Measurements type vertical:




| Number of collectors | Width (without sensor-kit) |
|---|---|
| 2 units | 2378 mm |
| 3 units | 3602 mm |
| 4 units | 4826 mm |
| 5 units | 6050 mm |
| 6 units | 7274 mm |
| 7 units | 8498 mm |
| 8 units | 9722 mm |
| 9 units | 10946 mm |
| 10 units | 12170 mm |

## Measurements type horizontal:




| Number of collectors | Width (without sensor-kit) |
|---|---|
| 2 units | 4138 mm |
| 3 units | 6216 mm |
| 4 units | 8294 mm |
| 5 units | 10372 mm |
| 6 units | 12450 mm |
| 7 units | 14528 mm |
| 8 units | 16606 mm |
| 9 units | 18684 mm |
| 10 units | 20762 mm |