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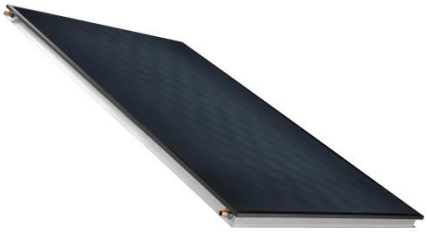
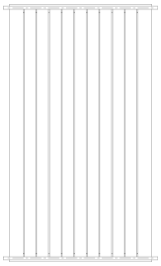


Absorber



Register number 011-7S2501 F

Assembly:	
Glass:	Hardened, hail proof, 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:	20°
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 η_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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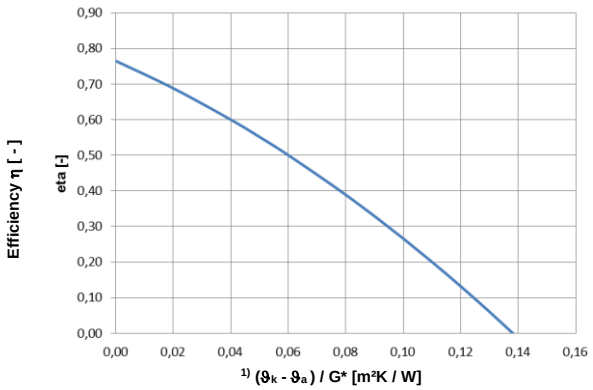
Power output in Watt (according to EN ISO 9806)			
	Irradiance W / m²		
	400 W/m²	700 W/m²	1000 W/m²
[1] $\vartheta_k - \vartheta_a = 10$ K	585	1104	1622
[1] $\vartheta_k - \vartheta_a = 30$ K	395	914	1432
[1] $\vartheta_k - \vartheta_a = 50$ K	172	692	1210

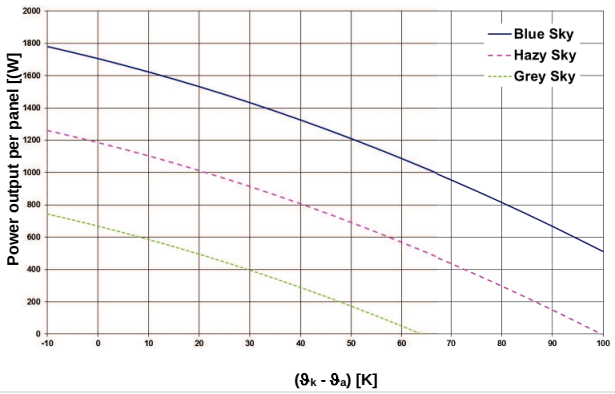
Efficiency characteristic (according to EN ISO 9806)

(for G* = 800 W / m²)



Power characteristic (according to EN ISO 9806)

(for G = 1000 W / m²)

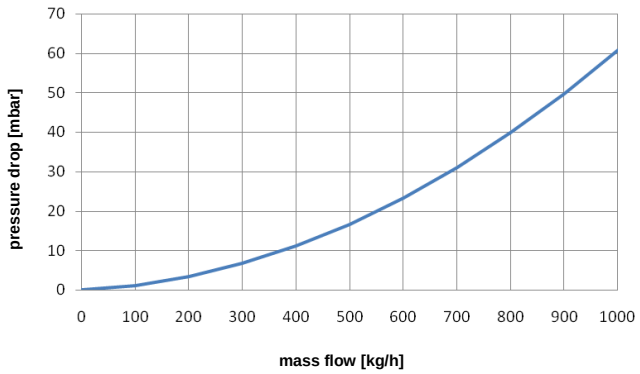


[1] $\vartheta_k - \vartheta_a$ ... Temperature difference between the mean panel temperature and the outside temperature

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 ΔP_{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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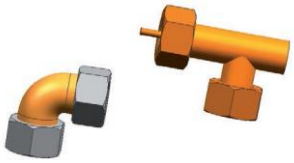
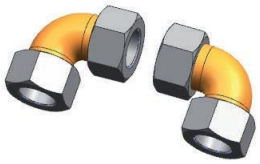
Connecting kit: Sensor

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



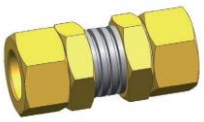
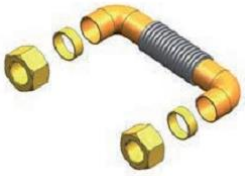
• *Help: One kit is necessary for positioning the sensor !*

Connecting kit: with elbow



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

Accesories:

Locking piece with clamping ring 22 mm 2 pc. per collector	Flexible connection, straight 65 mm 1 pc. per collector at vertically assembling	Flexible connection,, elbow 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

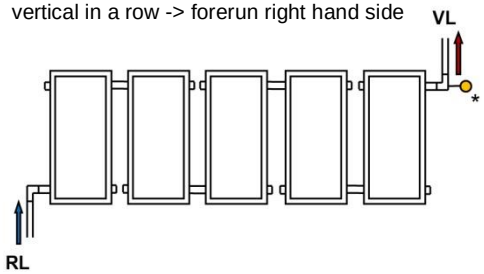
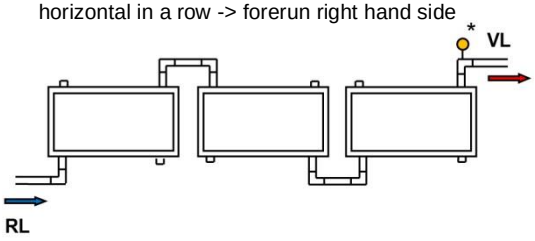


Fig. 2

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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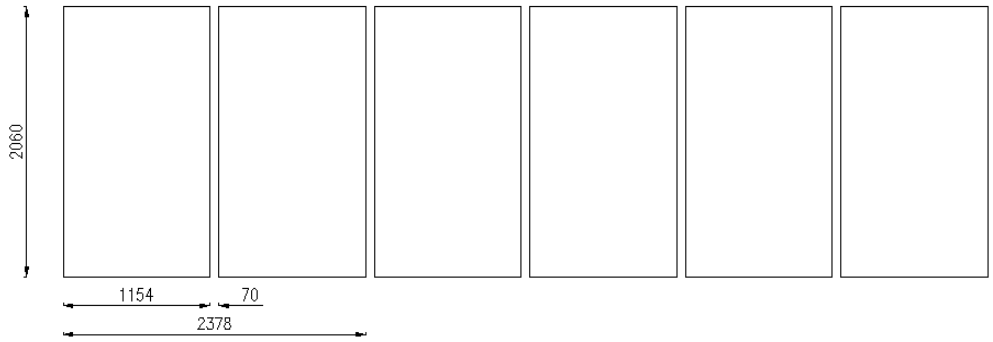
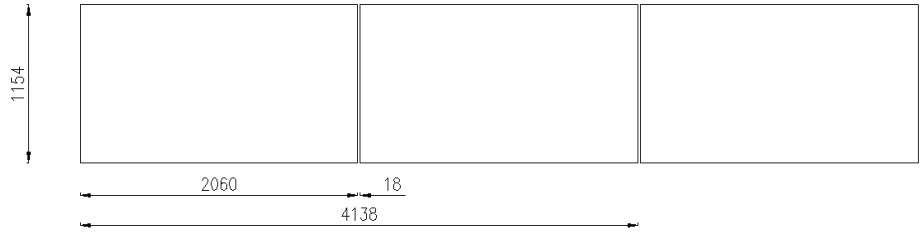
Measurements type vertical:



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