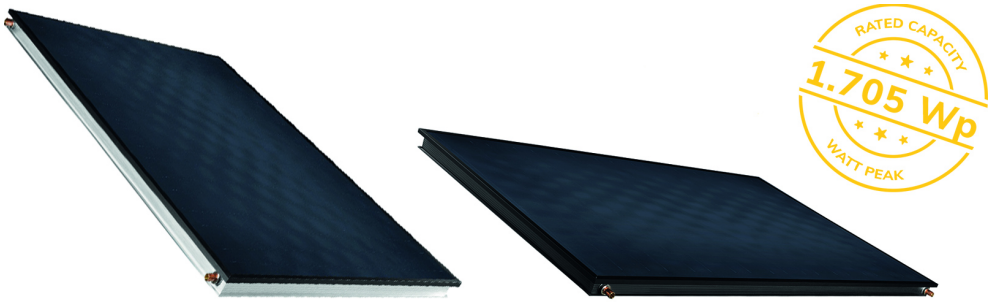
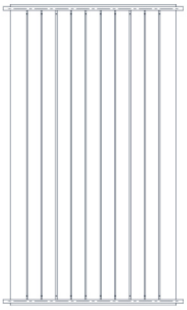
sunWin 24M

ALUMINIUM FRAME COLLECTOR

Data sheet



Absorber



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Dimensions	sunWin 24M-BLACK	sunWin 24M
Gross area (m^2)	2,38	
Aperture area (m^2)	2,22	
Absorber area (m^2)	2,20	
Height (mm)	2.064	
Width (mm)	1.154	
Depth (mm)	68	

Relevant installation values	sunWin 24M-BLACK	sunWin 24M
Application	On-roof / in-roof / flat roof / freestanding	
Orientation	vertical / horizontal	
Max. inclination (°)	90	
Min. inclination (°)	20	
Cover frames	Alu charcoal grey (RAL 7016), as accessories available, from 23°	
Connection	Compression fitting, approved for drain-back systems	
Connection dimensions (mm)	22	
Position connections	4 on side (when used vertically)	
Mass flow (l/m^2h)	10 (low flow) - 70 (high flow)	
Flow	heat transfer fluid can flow in both directions	
Weight without heat carriers (kg)	32	
max. Collectors in a row (pcs.)	12	

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Collector structure	sunWin 24M-BLACK	sunWin 24M
Frame	Aluminum single walled	
Frame Color	Alu nature/ black anodized	
Type of glass	Structured solar class	
Glass cover (mm)	3,2	
Glass transmission (%)	91	
Glass sealing	2-component silicone	
Glass replaceable	no	
Rear wall	Aluminum sheet	
Rear wall material	Mineral wool	
Rear wall insulation (mm)	30	
Cover system	cover strip black anodized	

Absorber	sunWin 24M-BLACK	sunWin 24M
Absorber sheet	Alu – Full plate	
Absorber piping	Copper / Harp	
Connection absorber - pipe	Laser welded	
Absorber coating	highly selective - absorption 95 %, emission 5 %	
Absorber content (lt)	1,57	
Max. use pressure (bar)	10	
Test pressure (bar)	15	

Test results acc. Solar Keymark	sunWin 24M-BLACK	sunWin 24M
Local safety factors and local regulations must be observed!		
Climate class	A	
Hail rating	HW3	
Standard stagnation temperature (°C)	200	
max. tested positive load (Pa)	4000	
max. tested negative load (Pa)	3000	

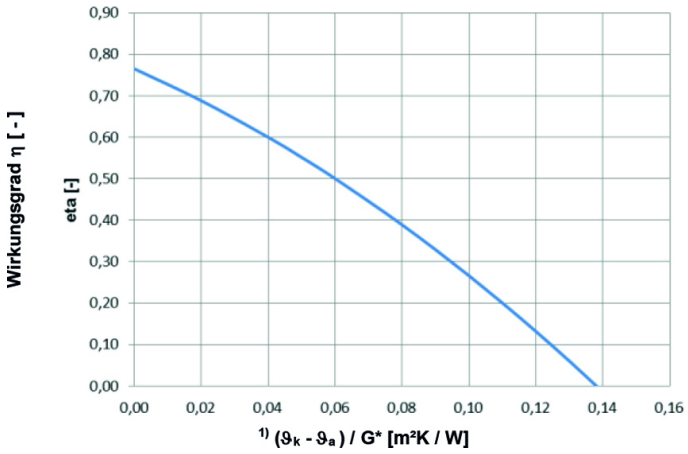
Performance data	sunWin 24M-BLACK	sunWin 24M
acc. to EN ISO 9806 / related to gross area		
Test number	TÜV Rheinland, 21248537.001	
Conversion factor η0	0,765	
Coefficient a_1 (W/m²K)	3,549	
Coefficient a_2 (W/m²K)	0,018	
Angle factor	0,94	

Collector output	sunWin 24M-BLACK	sunWin 24M
acc. to Solar Keymark data sheet / Würzburg at 50°C		
m² / annum (kWh)	459	
Collector / annum (kWh)	1092	

Power output	sunWin 24M-BLACK	sunWin 24M
in watt (at G=1000 W/m²)		
at Δ T = 0K	1 705	
at Δ T = 10k	1622	
at Δ T = 30k	1432	
at Δ T = 50k	1210	
at Δ T = 70k	955	

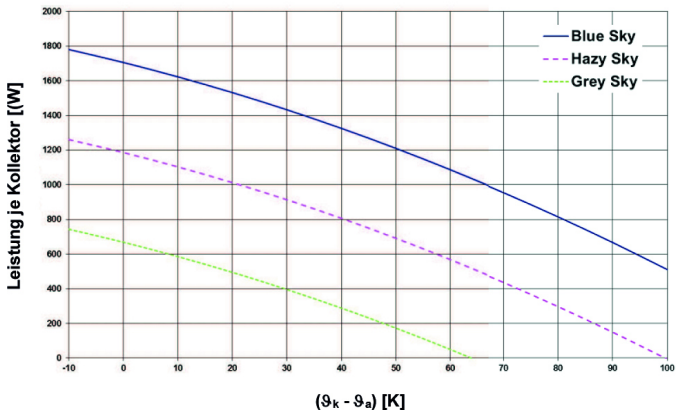
Efficiency characteristic

acc. EN ISO 9806 at G* = 800 W/m²



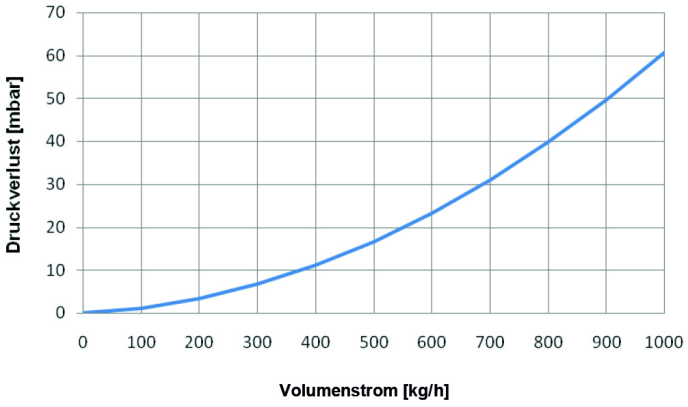
Power characteristic

acc. EN ISO 9806 at G* = 1000 W/m²



Pressure loss-diagram

Water-propylene glycol mixture (60:40), temperature 50°C



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

Hydraulic connection

Fig. 1

vertical in a row -> forerun right hand side

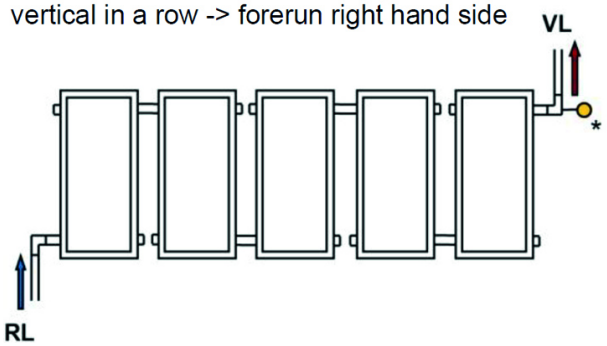
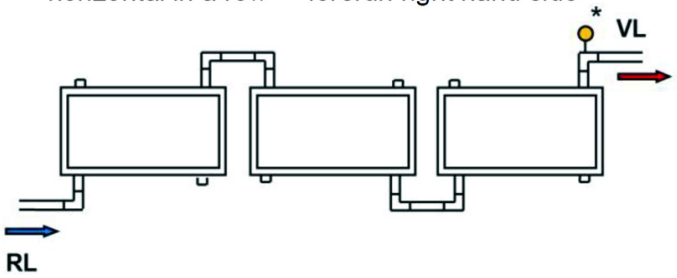


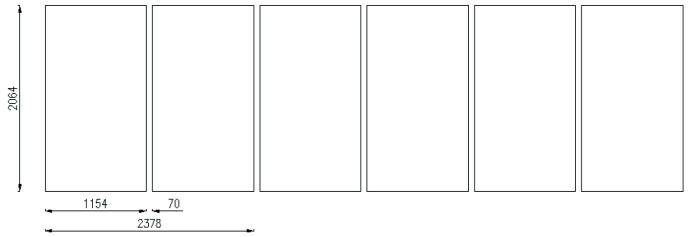
Fig. 2

horizontal in a row -> forerun right hand side



• *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).*

Collector field dimensions type vertical without flashing	
Vertical distance (mm)	18
Horizontal distance (mm)	70

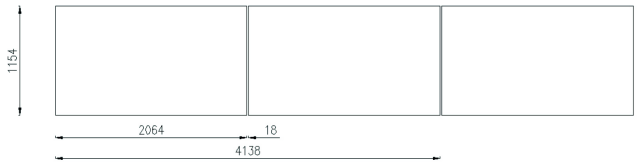


Collector array in one row			Collector array in two rows		
Collector (piece)	Wide (mm)	Height (mm)	Collector (piece)	Wide (mm)	Height (mm)
1	1.154	2.064	2	1.154	4.146
2	2.378	2.064	4	2.378	4.146
3	3.602	2.064	6	3.602	4.146
4	4.826	2.064	8	4.826	4.146
5	6.050	2.064	10	6.050	4.146
6	7.274	2.064	12	7.274	4.146
7	8.498	2.064	14	8.498	4.146
8	9.722	2.064	16	9.722	4.146
9	10.946	2.064	18	10.946	4.146
10	12.170	2.064	20	12.170	4.146
11	13.394	2.064	22	13.394	4.146
12	14.618	2.064	24	14.618	4.146

Collector field dimensions type vertical with flashing	
Vertical distance (mm)	18
Horizontal distance (mm)	70

Collector array in one row			Collector array in two rows		
Collector (piece)	Wide (mm)	Height (mm)	Collector (piece)	Wide (mm)	Height (mm)
1	1.154	2.064	2	1.154	4.146
2	2.378	2.064	4	2.378	4.146
3	3.602	2.064	6	3.602	4.146
4	4.826	2.064	8	4.826	4.146
5	6.050	2.064	10	6.050	4.146
6	7.274	2.064	12	7.274	4.146
7	8.498	2.064	14	8.498	4.146
8	9.722	2.064	16	9.722	4.146
9	10.946	2.064	18	10.946	4.146
10	12.170	2.064	20	12.170	4.146
11	13.394	2.064	22	13.394	4.146
12	14.618	2.064	24	14.618	4.146

Collector field dimensions type horizontal without flashing	
Vertical distance (mm)	70
Horizontal distance (mm)	18



Collector array in one row			Collector array in two rows		
Collector (piece)	Wide (mm)	Height (mm)	Collector (piece)	Wide (mm)	Height (mm)
1	2.064	1.154	2	2.064	2.378
2	4.146	1.154	4	4.146	2.378
3	6.228	1.154	6	6.228	2.378
4	8.310	1.154	8	8.310	2.378
5	10.392	1.154	10	10.392	2.378
6	12.474	1.154	12	12.474	2.378
7	14.556	1.154	14	14.556	2.378
8	16.638	1.154	16	16.638	2.378
9	18.720	1.154	18	18.720	2.378
10	20.802	1.154	20	20.802	2.378
11	22.884	1.154	22	22.884	2.378
12	24.966	1.154	24	24.966	2.378

Collector field dimensions type horizontal with flashing	
Vertical distance (mm)	70
Horizontal distance (mm)	18

Collector array in one row			Collector array in two rows		
Collector (piece)	Wide (mm)	Height (mm)	Collector (piece)	Wide (mm)	Height (mm)
1	2.064	1.154	2	2.064	2.378
2	4.146	1.154	4	4.146	2.378
3	6.228	1.154	6	6.228	2.378
4	8.310	1.154	8	8.310	2.378
5	10.392	1.154	10	10.392	2.378
6	12.474	1.154	12	12.474	2.378
7	14.556	1.154	14	14.556	2.378
8	16.638	1.154	16	16.638	2.378
9	18.720	1.154	18	18.720	2.378
10	20.802	1.154	20	20.802	2.378
11	22.884	1.154	22	22.884	2.378
12	24.966	1.154	24	24.966	2.378

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