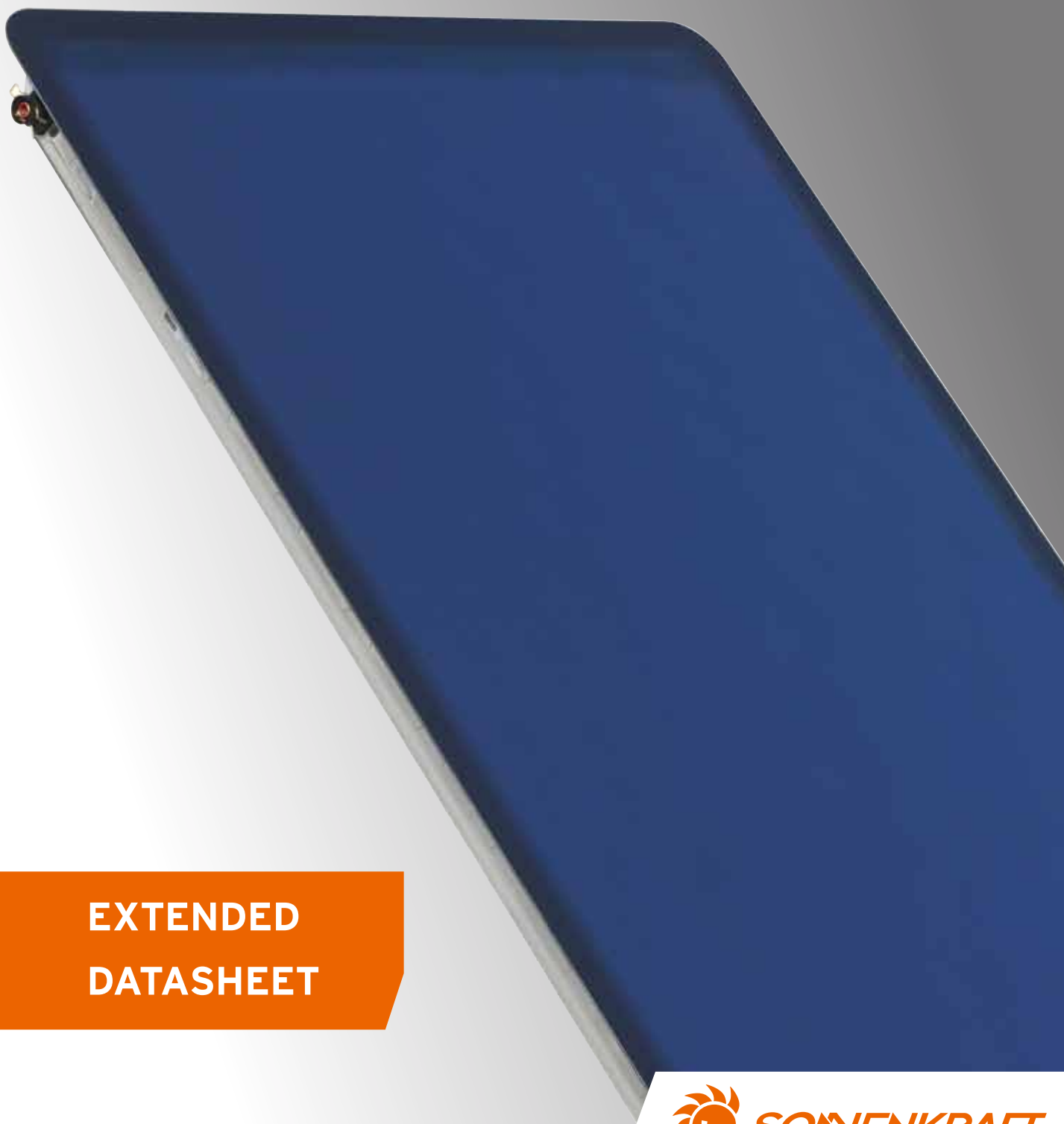


SONNENKRAFT®
ON-ROOF COLLECTOR
SKR500/SKR500L



**EXTENDED
DATASHEET**

Detailed technical specification & material overview

Absorber

Absorber type		Full plate
Number of absorbers		1
Area	m ²	2.30
Length	mm	1988
Width	mm	1156
Thickness	mm	0.4
Material of the absorber plate		Aluminum
Kind of absorber coating		Blue Tec Eta Plus, Alanod Mirrotherm, Tinox Classic *
Absorption α	%	95 \pm 1
Emission ϵ	%	5 \pm 2
Hydraulic design (kind of hydraulic circuit)		Meander
Number of riser tubes (absorber tubes)		1
Number of serial tube segments		1
Number of parallel tube segments		1
Outer diameter of riser tubes	mm	8
Thickness of the wall of riser tubes	mm	0.4
Length of riser tubes	mm	21397
Material of riser tubes		Copper
Distance between the fluid channels	mm	96
Outer diameter of manifold (header) tube	mm	18
Thickness of the wall of manifold (header) tubes	mm	0.7
Length of manifold (header) tubes	mm	1232
Material of manifold (header) tubes		Copper
Joint absorber – absorber tubes (risers)		Laser welding
Number of connections		4

Cover

Length	mm	2079
Width	mm	1240
Number of covers		1
Material of the cover		ESG Extra clear glass (EN12150)
Structure of the cover		No structure
Thickness of the cover	mm	3.2
Transmission coefficient T of the cover		90

Casing

Material frame		Aluminum (AlMg3, EN AW 5754-H111), deep drawn tray, 0,8 mm
Material back board		Aluminum (AlMg3, EN AW 5754-H111), deep drawn tray, 0,8 mm
Length	mm	2.079
Width	mm	1.240
Depth	mm	94.6
Sealing material		Silicone

Thermal insulation

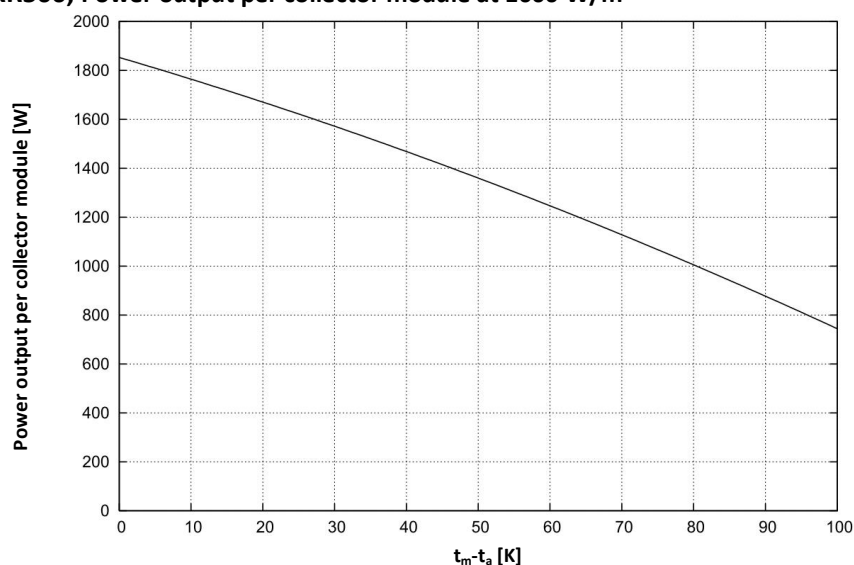
Thickness of the backside insulation	mm	50
Thickness of the sidewise insulation	mm	-
Material of insulation	mm	Rock wool
Specific weight	kg/m³	50

Thermal capacity of collector

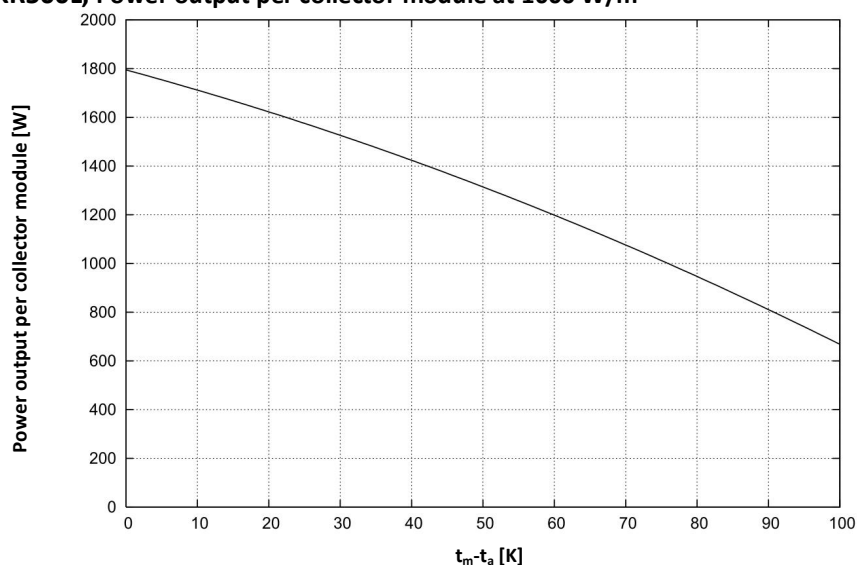
Effective thermal capacity (heat capacity c_{eff})	kJ/K	10.23 / 10.41
Specific effective thermal capacity based on the aperture area (heat capacity c_{eff})	kJ/Km² A_a	4.53 / 4.60

Performance diagrams

SKR500, Power output per collector module at 1000 W/m²



SKR500L, Power output per collector module at 1000 W/m²



Annotation: The values given are valid for radiation of normal incidence

$$\eta = \eta_0 - (a_1 \cdot \Delta T) / E_g - (a_2 \cdot \Delta T^2) / E_g$$

η Efficiency coefficient

η_0 Optical efficiency coefficient (at $\Delta T = 0$)

a_1 Heat transfer coefficient (also k_1 , W/(m²K))

a_2 Temperature depending heat transfer coefficient (also k_2 , W/(m²K²))

ΔT Temperature difference between absorber and ambient (K)

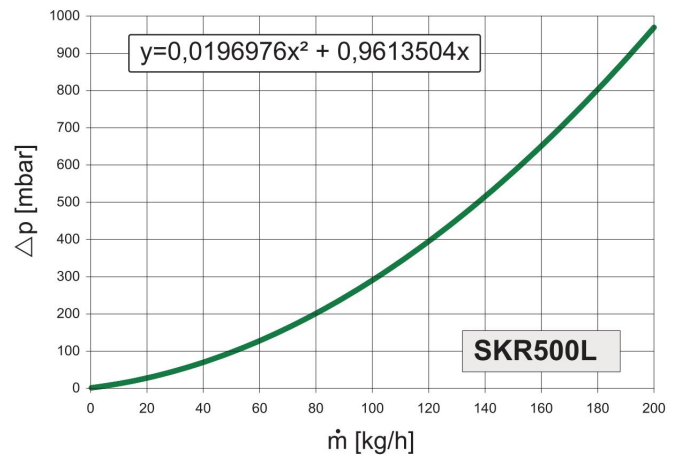
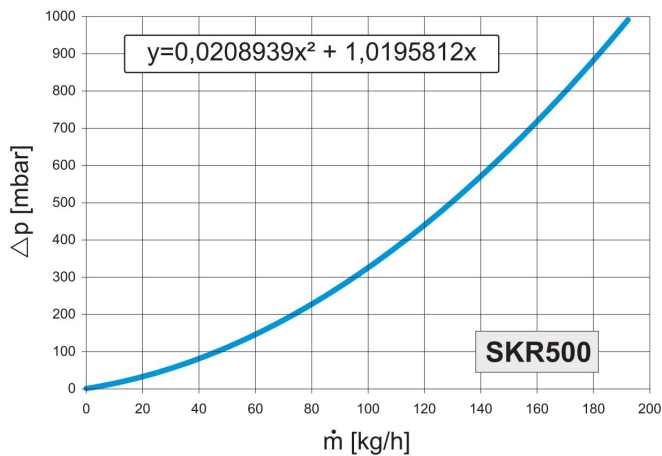
E_g Irradiation (W)

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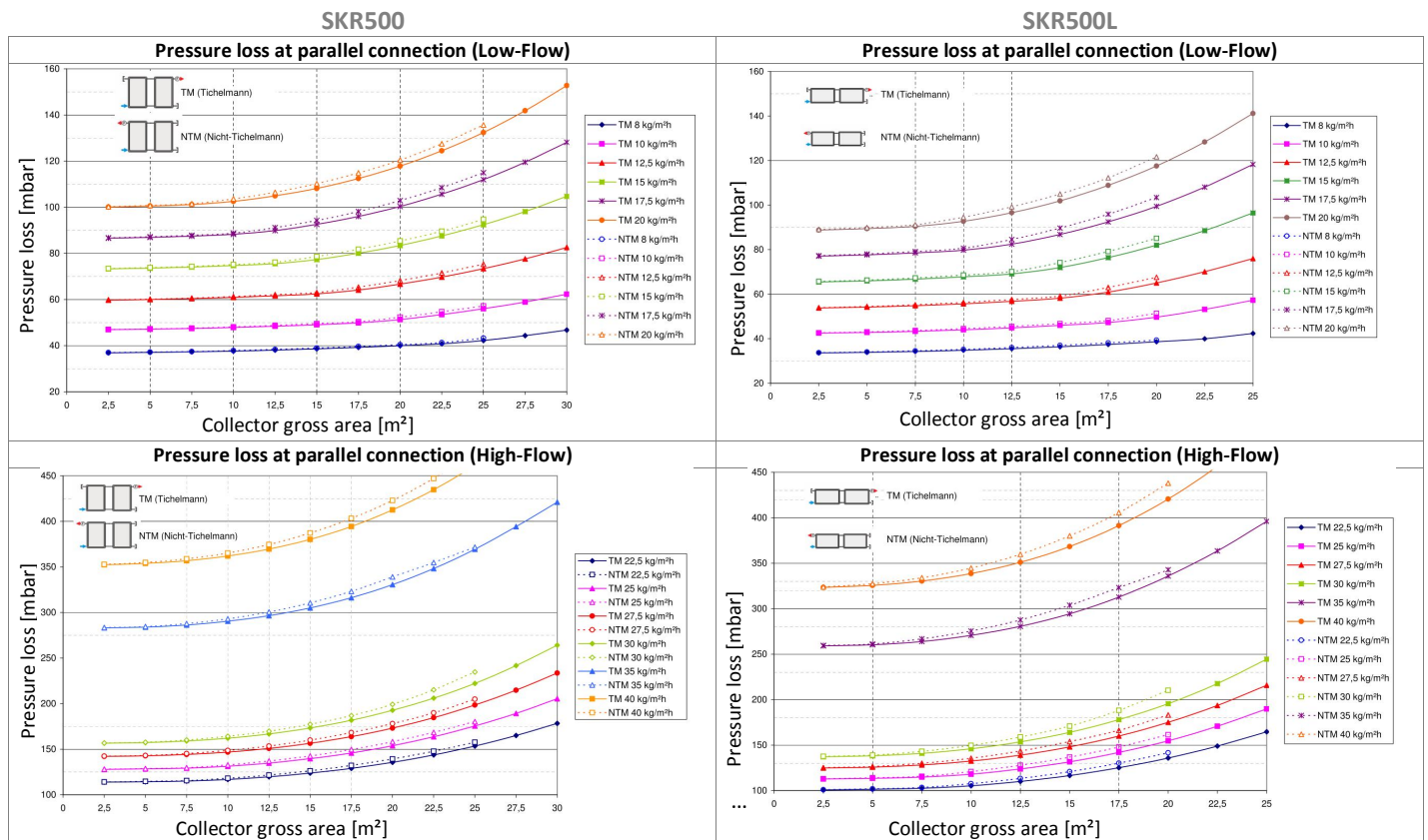
Subject to typesetting and printing errors.

Technical changes may be made without prior notice.

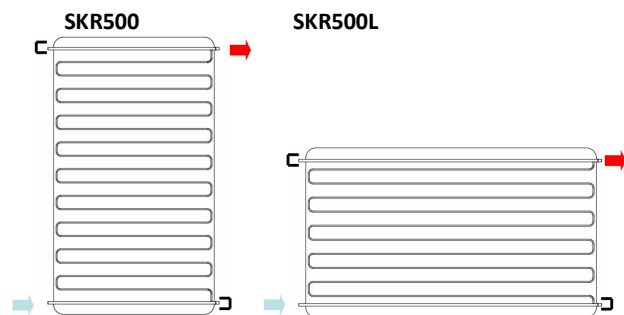
Pressure losses



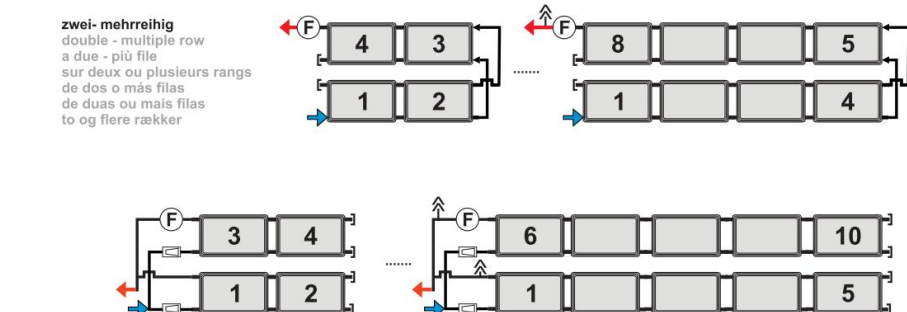
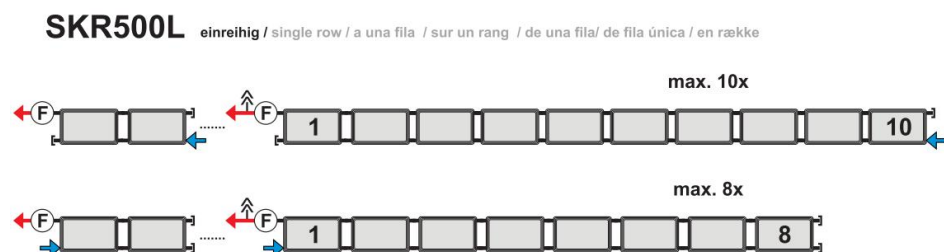
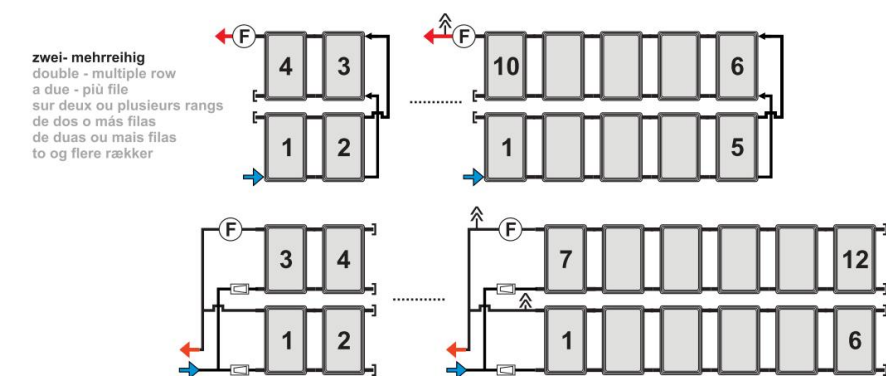
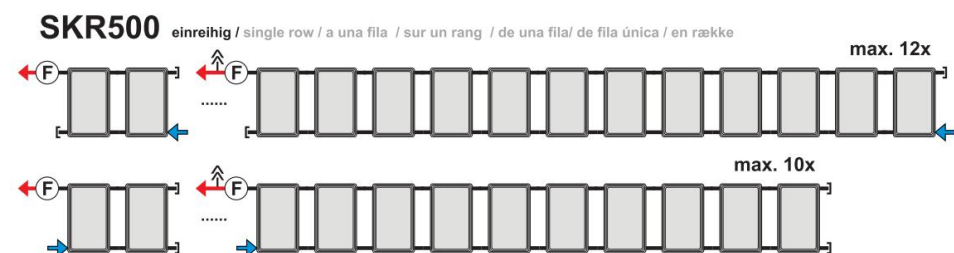
Pressure loss collector for anti-freeze (FS) / water mixture (40% / 60%) at a thermal conducting temperature of 50° C.



Internal hydraulic flow



Recommended hydraulic connection



DE **Vorlauf**
GB Supply
IT Mandata
FR Aller
ES Ida
PT Avanço
DK Fremløb



DE **Rücklauf**
GB Return
IT Ritorno
FR Retour
ES Retorno
PT Retorno
DK Retur



DE **Hydraulischer Verbinder SKR-HV**
GB Hydraulic connectors SKR-HV
IT Collegamento idraulico SKR-HV
FR Connecteur hydraulique SKR-HV
ES Elemento de unión hidráulico SKR-HV
PT Ligações hidráulicas SKR-HV
DK Hydraulisk forbinder SKR-HV



DE **Endkappe SKR-ES**
GB End cap SKR-ES
IT Tappo terminale SKR-ES
FR Bouchon SKR-ES
ES Tapa terminal SKR-ES
PT Tampa terminal SKR-ES
DK Slutkappe SKR-ES



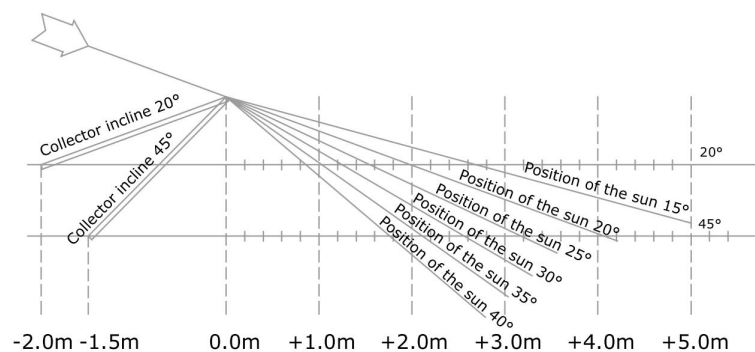
DE **Tauchhülse SKR-TH**
GB Immersion sleeve SKR-TH
IT Sonda ad immersione SKR-TH
FR Doigt de gant SKR-TH
ES Caudalímetro DMS
PT Bainha de imersão SKR-TH
DK Fælerlomme SKR-TH



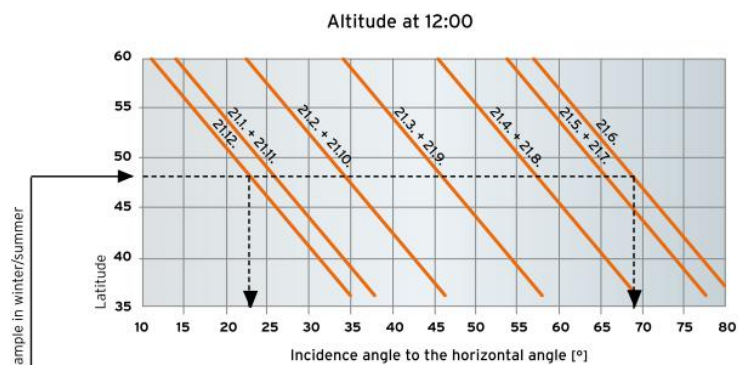
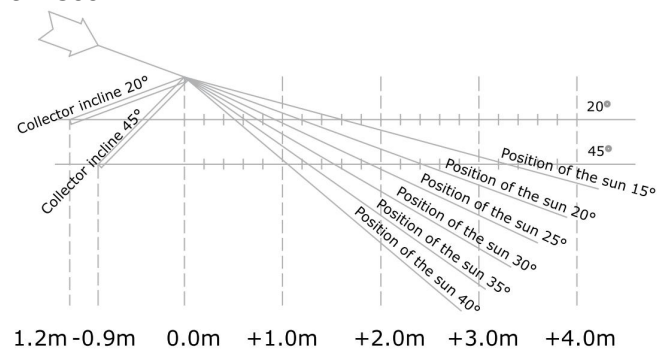
DE **Durchflussmengenmesser DMS**
GB Volumetric flow meter DMS
IT Contatore quantità di flusso DMS
FR Débitmètre à flotteur DMS
ES Caudalímetro DMS
PT Medidor de caudal DMS
DK Flowregulator DMS

Shadowing diagram

SKR500



SKR500L



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Statics

The collectors must only be mounted on sufficiently load-bearing roof surfaces and substructures. It is imperative that the static load bearing capacity of the roof or substructure is checked in terms of local and regional conditions prior to installation of the collectors by the customer, if necessary with the involvement of a structural engineer. Particular attention should be paid to the quality of the (timber) substructure in terms of the stability of the screw connections necessary for fastening the collectors. To prevent damage to the roofing in the event of considerable loads, the use of metal reinforcements such as metal bricks is recommended. The inspection of the entire collector structure according to DIN 1055 Parts 4 and 5 (EN 1991-1 Parts 4 and 5) or as per the applicable country-specific regulations is particularly important in areas with heavy snowfall or in areas exposed to high wind speeds. The assessment should also take into account any particular circumstances at the place of installation (foehn wind, air jets or eddy formation etc.) which can lead to increased loads. Snow catchers are to be installed at a maximum distance of 0.5m from the upper edge of the collector (the collector should not function as a snow catcher). It must be ensured for the selection of the installation location that the maximum loads are neither exceeded by snow nor wind forces. Basically, the collector arrays must be installed so that any possible accumulation of snow is prevented from reaching the collectors by snow barriers (or by special forms of installation). The collectors may not be installed at the edge of the roof (e/10 marginal zones on areas of roofing are to be complied with pursuant to EN 1991, but they must be at least 1m). The upper edge of the collector may not project beyond the roof ridge.

Flat roof mounting tips: The installation of a collector array is an intervention into a (existing) roof; converted and inhabited loft spaces or roofs with less than the minimum slope (with regard to the covering) in particular require building measures e.g. under roof membranes, as protection against water penetration caused by wind pressure and driving snow. For larger collector arrays we recommend installing the collectors on a special supporting structure made of steel profiles. Alternatively installation is possible without penetrating the roof membrane by using concrete ballast with guys. The collectors are mounted on concrete blocks. Rubber mats should be used if necessary to increase the adhesion (static friction) between the roof and concrete ballast blocks and to prevent damage to the roof membrane. In addition, it is necessary to secure the collectors with 5 mm steel cables (min. tensile strength 1450 N/mm²) to absorb any peak wind loads.

Pitched roof mounting tips: The installation of a collector array is an intervention into a (existing) roof. Roof coverings such as bricks, shingles and slates, especially converted and inhabited loft spaces or roofs with less than the minimum slope (with regard to the covering) require building measures e.g. under roof membranes, as protection against water penetration caused by wind pressure and driving snow.

Statics SKR500

SYSTEM		PERMISSIBLE WIND GUST SPEED q [kN/m ²]	PERMISSIBLE WIND GUST SPEED [km/h]	PERMISSIBLE SNOW LOAD SK [kN/m ²]
DBPR, SKR500	SL	1,09	150	2,5
	HL	1,09	150	3,75
DBPR, SKR500L	SL	1,09	150	2,5
	HL	1,09	150	3,75
SSPR, SKR500	SL	1,09	150	2,3
	HL	1,09	150	3,75
SSPR, SKR500L	SL	1,09	150	2,5
	HL	1,09	150	3,75
DBA20R, SKR500	SL	1,09	150	2,3
	HL	1,09	150	3,75
DBA20R, SKR500L	SL	1,09	150	2,3
	HL	1,09	150	3,75
SSA20R, SKR500	SL	1,09	150	2,3
	HL	1,09	150	3,75
SSA20R, SKR500L	SL	1,09	150	2,2
	HL	1,09	150	3,75
BBALGK/SKR, 45°, SKR500 (flat roof)	SL	0,95	140	2,5
	HL	0,95	140	3,75
BBALGK/SKR, 45°, SKR500L (flat roof)	SL	0,95	140	2,5
	HL	0,95	140	3,75
SSA45R, SKR500 (pitched roof)	SL	0,95	140	2
	HL	0,95	140	3
SSA45R, SKR500L (pitched roof)	SL	0,95	140	2
	HL	0,95	140	3,75
SSA20R, SKR500 (flat roof)	SL	0,95	140	1,8
	HL	0,95	140	2,5
SSA20R, SKR500L (flat roof)	SL	0,95	140	1,8
	HL	0,95	140	3,0

More information on statics incl. number of mounting supports and fastening points see manuals. For information on support reactions please contact us.

SL = Standard Load, HL = High Load

Lightning protection / Equipotential bonding of the building

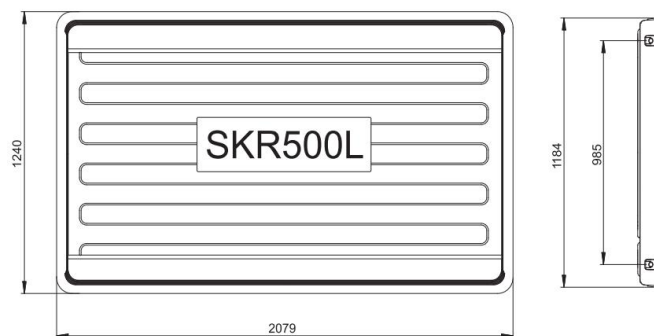
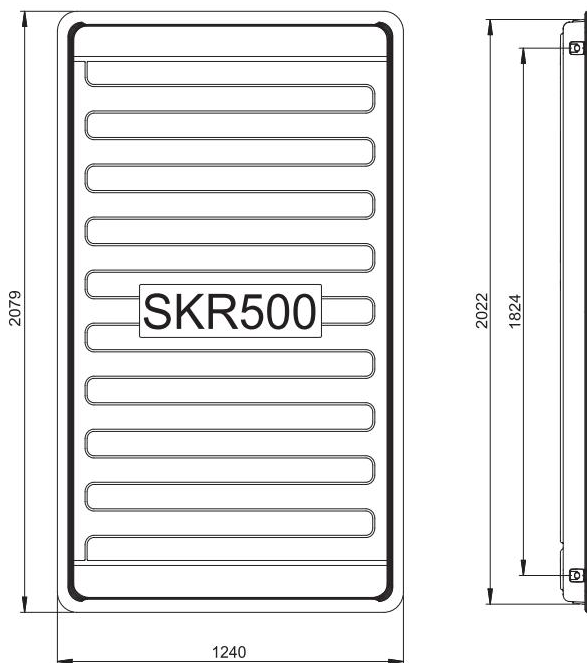
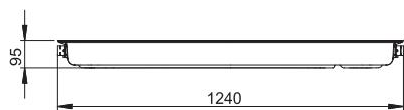
In accordance with the lightning protection standard ÖVE/ÖNORM EN 62305 Part 1-4 the collector array cannot be connected to the building's lightning protection. A safety distance of at least 1 m must be maintained from any possible adjacent conducting object. For installations on metal substructures at the installation site, generally qualified electricians must be consulted. To carry out a building potential equalisation, the metal tubes of the solar circuit and all collector cases or fastenings must be connected to the main potential equalisation bus by a qualified electrician in accordance with ÖVE/ÖNORM E 8001-1 or the country-specific standards.

Pictures/Cross section of SKR500/SKR500L with different mounting systems

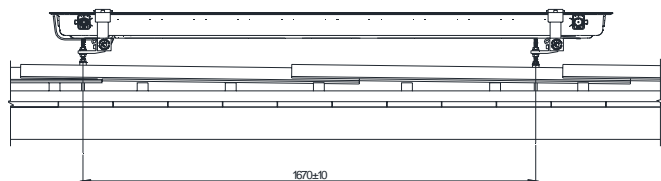
SKR500

SKR500L

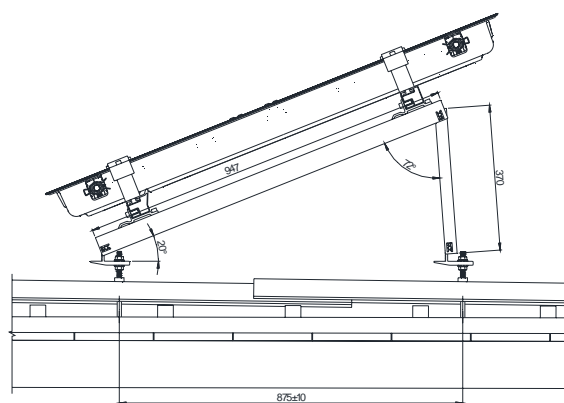
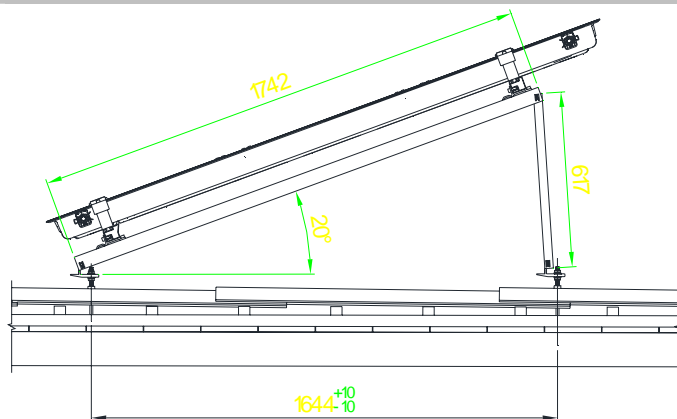
Collector

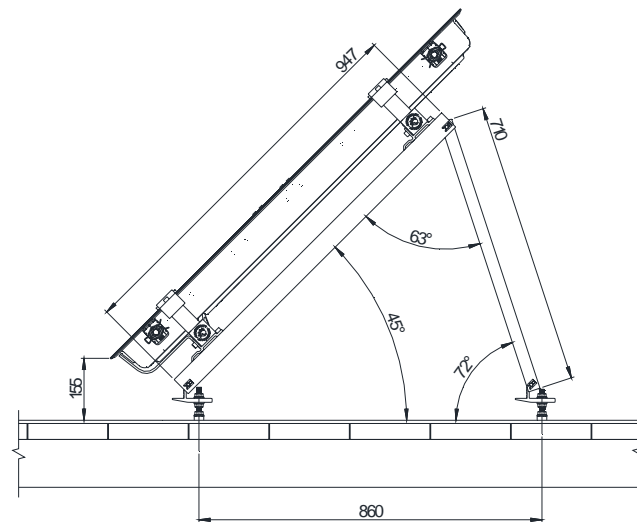
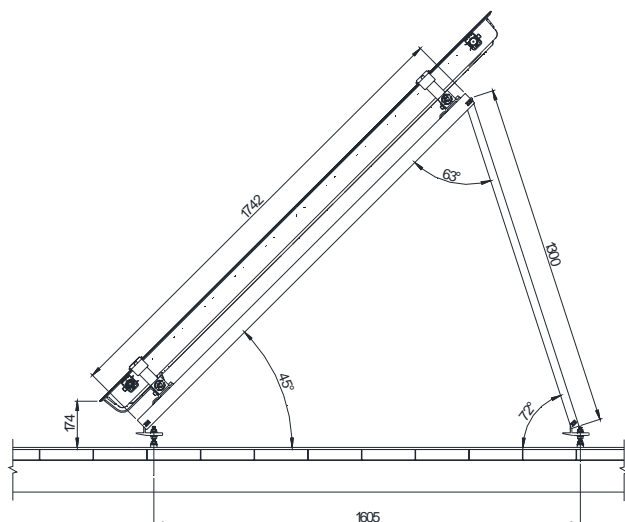


SSPR/FKPR/BDA0R

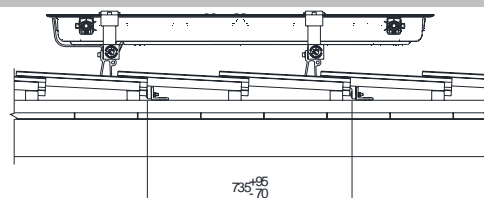
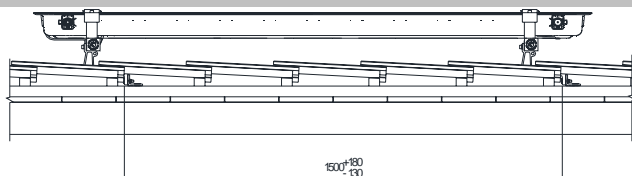


SSA20R/BDA20R

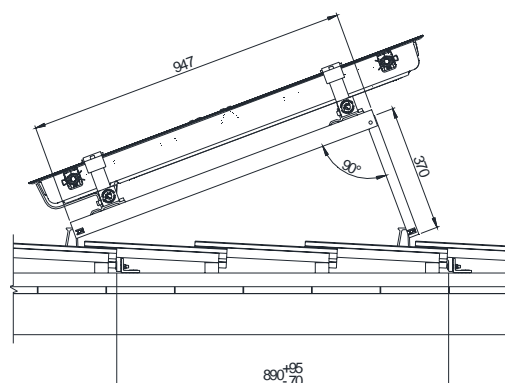
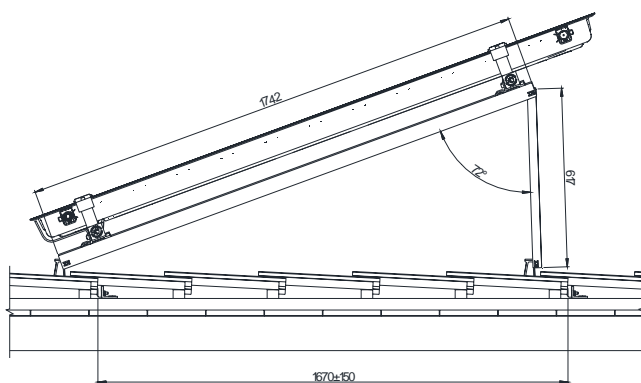




DBPR



DBA20R



DBPR-N/L-H

DBPR-N/L-R

WA45-60R

BBALGK/SKR

Overview of available documentation

Product Data Sheets	Content	Available on (partner login) www.sonnenkraft.com
On-roof SKR500/SKR500L	<ul style="list-style-type: none"> General product information Technical data Product benefits Drawings 	X
Concrete ballast collector mounting SKR500, BBALGK/SKR		X
Wall/projecting roof installation SKR500, WA45-60		X
Manuals for Mounting Systems	Content	Available on (partner login) www.sonnenkraft.com
SSPR/FKPR/BDA0R	<ul style="list-style-type: none"> Safety information Assembly instructions Operating tips Technical data Recommended hydraulic connection Overview of materials Overview of tools Mounting Collector dimensions Recommendation for fastening points incl. static EEC - Safety data sheet FS Warranty 	X
SSA20R/BDA20R		X
SSA45R/BDA45R		X
DBPR		X
DBA20R		X
DBPR-N/L-H		X
DBPR-N/L-R		X
WA45-60R		X
BBALGK/SKR		X
TGSKRE		X
	<ul style="list-style-type: none"> Collector strap for SKR500 	X
Various	Content	Available on (partner login) www.sonnenkraft.com
Drawings / CAD / ..	<ul style="list-style-type: none"> AUTOCAD Drawings - Top views / Side views / etc. of SKR500 and SKR500L collectors, collector fields and mounting systems Symbols for system drawings 	X
FS data sheet	<ul style="list-style-type: none"> Dilution table Physical Parameters Thermodynamic data 	X
Reference Pictures	<ul style="list-style-type: none"> Pictures of references 	X
Product Pictures	<ul style="list-style-type: none"> Product pictures 	X
Planners guide	<ul style="list-style-type: none"> General guide for planning SONNENKRAFT solar systems 	X
Diagram manual, diagrams	<ul style="list-style-type: none"> Diagrams for all main SONNENKRAFT solar system solutions 	X
Online spare part catalog	<ul style="list-style-type: none"> Spare part catalog for all main SONNENKRAFT products 	X
Solar Calculator	<ul style="list-style-type: none"> Solar calculator for all main SONNENKRAFT solar system solutions 	X
Price catalogue	<ul style="list-style-type: none"> Price catalogue for current product range 	X
Tender texts	<ul style="list-style-type: none"> eg Datatorm 	X
Various	<ul style="list-style-type: none"> Various other documents are available (brochures, leaflets, forms, presentations, etc.) 	X
Certificates	<ul style="list-style-type: none"> Solar Keymark, Performance test reports, Quality test reports (see below) 	X

Certificates	Certificate Number	Certificate	Effective date
SKR500	011-7S1277 F	Solar Keymark, Registration no.	30.06.2010
SKR500L	011-7S1284 F	Solar Keymark, Registration no.	30.06.2010
SKR500	KTb Nr. 2010-08-k-a	Report of measurement according to EN 12975-1,2:2006	28.06.2010
SKR500L	KTb Nr. 2010-09-k-a	Report of measurement according to EN 12975-1,2:2006	28.06.2010
SKR500	KEV-2010-01-k-a	Proof of Profit acc. ktb-2010-08-k-a	28.06.2010
SKR500L	KEV-2010-02-k-a	Proof of Profit acc. ktb-2010-09-k-a	28.06.2010
SKR500/SKR500L	E 0015	Certificate according to the certification rules NF 441 for Domestic Solar Water Heaters for "SONNENKRAFT – COMPACT E/COMPACT E EHP & SKR500"	06.02.2013
SKR500/SKR500L	14/11-1648	Avis Technique	23.03.2012
NF CESI	E 0015	SONNENKRAFT – COMPACT E/COMPACT E EHP & SKR500	06.02.2013

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Overview of available accessories

Article	Article Number	Description
TGSKR-E	141 629	Collector strap for SKR500
SKR-TH	110 047	Immersion sleeve for temperature measurement directly in the medium; 1 x per collector field
SKR-ES	110 048	2 x end caps for blanking off unused SKR connections
SKR-HV	110 050	2 x hydraulic SKR quick connectors; for the tool-free hydraulic connection
SKR-SA	110 051	1 x system connection 1" male flat seal on SKR quick connector
SKR-WA	110 052	1 x 90°, ø 18 system corner connector
SKR-EV	110 074	Air vent for SKR collector, 1 x per collector field
HVS25-EWSID	110 065	Hydraulic connection set for 25 m 2 (4 SKR-SA + connections DN20-1" female thread + 4 sealings)
SKR-RV	110 049	1 x SKR repair connector; for collector or connector replacement
BBALGK/SKR	111 826	1 pc. concrete ballast for SKR500, weight: 285 kg
Various mounting systems	Sets see price catalogue	SSPR, SSA20R, SSA45R, DBPR, DBA20R, BDPR, BDA20R, BDA45R, DBPR-H, DBPR-R, BBALSKR45, WA45-60R