



Stand Alone Systems

# SOLARA®

## Solar Electricity for Non-Grid Systems

2010



For Homes, Industrial and Commercial Buildings, Boats, Yachts, RVs, Caravans, Lighting, Cooling and Pumping Systems, Buoys and Measurement Equipment



## SOLARA® Modules S-Series

SOLARA® SM50S - SM520S

The SOLARA® modules are all "Made in Germany". These high performance modules withstand the hardest environmental conditions such as hail, ice and high humidity. The modules are extremely reliable and have a 26 year performance guarantee. The front is made of tempered glass and for easy mounting every module has a rigid hollow-profile aluminium frame that can be drilled.

Part No.	SM50S	SM100S	SM200S
Performance:	48 Wh/d*	108 Wh/d*	220 Wh/d*
Nom. Power:	12 Wp	27 Wp	55 Wp
Weight:	ca. 2.3 kg	ca. 3.0 kg	ca. 5.9 kg
Size (lxwxh) mm:	468x250x40	540x457x40	998x457x40

Part No.	SM220S/M55	SM360S	SM520S
Performance :	220 Wh/d*	360 Wh/d*	520 Wh/d*
Nom. Power:	55 Wp	90 Wp	130 Wp
Weight:	ca. 5.4 kg	ca. 7.9 kg	ca. 12.1 kg
Size (lxwxh) mm:	1330x350x40	1237x557x40	1500x680x40



## SOLARA® SM420SP

SOLARA - Module SM420SP

The SM420SP is ideal for a wide range of off-grid applications. The monocrystalline solar cell combines higher voltage per cell and exceptional low-light performance to outstanding performance. 26 years performance warranty are another sign for highest quality.



**new higher performance  
due to highly efficient  
solar cells**



Part No.	SM420SP
Performance:	420 Wh/d*
Nom. Power:	105 Wp
Weight:	8.5 kg
Size (lxwxh) mm:	1182 x 562 x 40

### features and benefits:

- nice appearance due to monocrystalline solar cells
- very high cell efficiency >20%
- highest performance with the smallest size
- exceptional low-light performance

\*Wh/d = watt hours per day. Average daily earning in summer in Germany

## SOLARA® Modules M-Series

SOLARA® SM40M - SM225M



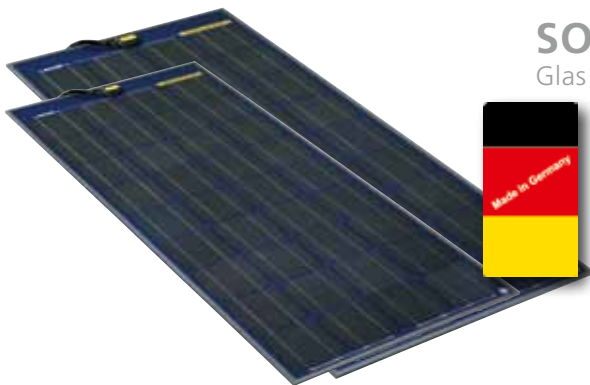
Tried and tested, this is the most popular marine solar module available. They are made of a high grade stainless steel backing which is covered by a double layer of powder coating. They are small, very thin, slightly flexible and very robust. If fixed to a solid surface they can also be walked on. This is due to the high resistant plastic front foil so there is no glass that can break. The high efficiency solar cells are very productive even under low light levels. For easy wiring all modules have 1.5m pre-mounted cable.

As an option the modules edge can be protected with a black UV-resistant edge protector.



Part No.	SM40M	SM60M	SM80M
Performance:	48 Wh/d*	72 Wh/d*	92 Wh/d*
Nom. Power:	12 Wp	18 Wp	23 Wp
Weight:	ca. 1.3 kg	ca. 1.65 kg	ca. 2.0 kg
Size (lxwxh) mm:	445x267x2	620x250x2	440x460x2

Part No.	SM120M	SM160M	SM225M
Performance:	136 Wh/d*	180 Wh/d*	272 Wh/d*
Nom. Power:	34 Wp	45 Wp	68 Wp
Weight:	ca. 3.1 kg	ca. 3.75 kg	ca. 5.4 kg
Size (lxwxh) mm:	590x460x2	756x460x2	800x645x2
Cell protector	✓	✓	✓



## SOLARA® Modules K-Series

Glas module to glue on

This module is perfect for RV's and caravans. It can be very simply glued to any even surface. Due to the module being very thin it is nearly invisible, can be walked on and is virtually theft-proof.

Part No.	SM220K	SM340K
Performance:	220 Wh/d*	340 Wh/d*
Nom. Power:	55 Wp	85 Wp
Weight:	4.6 kg	6.7 kg
Size (lxwxh) mm:	1040x455x7	1235x555x7

## SOLARA® Mounting Systems

The simple way to mount

Mounting angles made of aluminium.

Perfect for mounting modules to cottages with wooden roofs, SHS or RV's. The mounting angles are adjustable and include self fixing screws. The angle itself can be glued or screwed to the surface.

Part No.	Type	For mounting the panels
HSP	Mounting angles (4 pcs)	SM 50S/100S/200S/220S
HSP400	Mounting angles (6 pcs)	SM 360S/420SP/520S



HSP

## SOLARA® Mounting Spoilers Made of ABS Plastic

- 100% recyclable
- UV-resistant
- more than 50% lighter
- ABS white in colour
- 5 years warranty

Part No.	Type	For mounting the
HS35/W	Mounting spoiler	SM220S/M55
HS45/W	Mounting spoiler	SM200S
HS55/W	Mounting spoiler	SM360S/SM420SP
HS68/W	Mounting spoiler	SM520S
HSE/W	Mounting edge	all S-Series modules
HSV/W	Mounting profile	all S-Series modules



HSV/W



HSE/W



HSxx/W

Mounting only with HSKS/ABS

## SOLARA® Glue Set

SOLARA® Special adhesive for ABS plastics

SOLARA® Adhesive for HSP angles, M-Series an K-Series modules

Part No. HSKS/ABS

Part No. HSKS2

## SOLARA® Roof Grommet

More accessories for easy installation

They only require adhesive for a safe and waterproof leadthrough of the cable to the inside of the vehicle.

Part No.	Description
DD1/W	Roof grommet with 1 cable entry
DD2/W	Roof grommet with 2 cable entry
DD4	Roof grommet with 3 cable entry (order cable glands separately)
PG-DD4	PG cable gland for DD4



DD1/W



DD2/W



DD4

## SOLARA® Complete Solutions

The easy DIY kit for solar energy

SOLARA® complete solution kits include all necessary items that are needed to install a functional solar system:

- SOLARA modules from the S- or M-Series
- SOLARA charge controller
- Mounting brackets (S-Series)
- Adhesive (M-Series)
- Cable and instructions

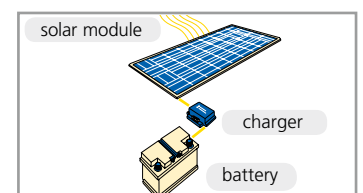
**For further details of these complete solution kits please contact your local distributor.**

Complete sets with SOLARA M-Series:

Part No.	Solar module
BS40M	SM40M
BS60M	SM60M
BS80M	SM80M
BS120M	SM120M
BS160M	SM160M
BS225M	SM225M

Complete sets with SOLARA S-Series:

Part No.	Solar module
CS200S	SM200S
CS220S/M55	SM220S/M55
CS360S	SM360S
CS520S	SM520S
CS220K	SM220K
CS420SP	SM420SP



## SOLARA® Charge Controllers

For a long battery life

SOLARA® charge controllers are designed to protect batteries from overcharge and deep discharge. Coloured LED's or LCD displays help to provide a clear picture of the solar system.

### Quality „Engineered in Germany“



- High reliability
- PWM charging characteristic
- Automatic 12/24V detection (except SR60UL)
- Low voltage disconnection (except SR60UL)
- Excellent value
- Mounting friendly due to DIN rail option

Part No.	Module power up to	Voltage	Display
SR60UL	240 Wh/d (bis 60 Wp)	12V	LED
SR135TL	540 Wh/d (bis 135 Wp)	12V/24V	LED
SR170CX	680 Wh/d (bis 170 Wp)	12V/24V	LCD
SR340CX	1360 Wh/d (bis 340 Wp)	12V/24V	LCD



SR60UL



SR135TL



SR170CX

SR340CX

## SOLARA® Remote Displays

Controll center for solar systems

The remote meters are working in combination with the charge regulators SR135TL, SR170CX and SR340CX. The meters have 2m connection cable.

Part No.	Description	For regulator type
SR/CMM	Shows voltage 0-35V, solar and load current 0-25A	SR135 TL
SR/CXM	Shows battery voltage, solar and load current Last 7 days of the SRxxxCX datalogger	SR170/340CX



SR/CMM



SR/CXM

## SOLARA® Battery Manager SR/ZB

To recharge or trickle charge a second on-board battery:

The battery manager is a unit for charging or keeping a second battery fully charged in mobile applications like yachts or RV's. Furthermore special loads can be supplied with the built-in excess energy management. It can also be used to provide a constant voltage of 1.5, 3, 4.5, 6, 9, 12 or 13.6 VDC for small loads.

Part No.	Description	Voltage	Display
SR/ZB	Battery manager	12 V	LED



SR/ZB

## SOLARA® Digital Displays

The DA20 is a simple LCD monitor displaying charging and discharging current plus battery voltage. Voltage 8-48V, max. current 20A. (Also available for flush mounting).

**Part No.:** DA20

**Part No.:** DA20/E (for flush mounting)



DA20/E

DA20

## Energy Saving Lamps

DC bulbs with detachable tube

The detachable tube on these lamps can be removed and replaced in case of a failure or damage. This saves costs. These lamps have a high luminous efficiency with low power consumption. The life time expectancy is more than 10.000 hours. All lamps have an E27 socket and over-temperature protection. This lamp is perfect for your cottage or in SHS's.

Part No.	Voltage	Nom. Power
SL5CFL	11-15 V	5 W
SL7CFL	11-15 V	7 W
SL11CFL	11-15 V	11 W
SL15CFL	11-15 V	15 W



## Morningstar Charge Controllers

The best products from one of the leading manufacturers in the world

All of the Morningstar controllers have outstanding reliability, high performance, high efficiency and flexibility. They also have a 5 years warranty.



Part No.	Name	Module power up to	Display
SR75UL	SunGuard	300 Wh/d (75 Wp)	/
SR110TL	SunSaver	440 Wh/d (110 Wp)	LED
SR165TL	SunSaver	660 Wh/d (165 Wp)	LED
SR331TL	SunSaver	1320 Wh/d (330 Wp)	LED
SR250TL	ProStar	1000 Wh/d (250 Wp)	LED
SR250LCD	ProStar	1000 Wh/d (250 Wp)	LCD-Disp.**
SR500TL	ProStar	2000 Wh/d (500 Wp)	LED
SR500LCD	ProStar	2000 Wh/d (500 Wp)	LCD-Disp.**
SR740TL	TriStar	2960 Wh/d (740 Wp)	*
SR990TL	TriStar	3600 Wh/d (990 Wp)	*
SR/RD-1	RelayDriver	for 4 Relais	

**5 years warranty!**



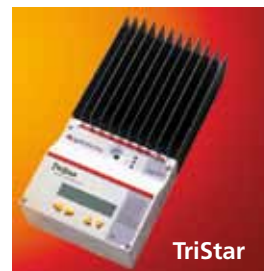
SunGuard



SunSaver



ProStar



TriStar

\*\* LCD display for battery voltage, charging current and load current.

\* available accessories: LCD display, remote display or temp. sensor

### Morningstar controllers advantages

- micro processor controlled (ProStar and TriStar)
- automatic 12/24V detection (ProStar and TriStar)
- can charge wet or gel-type batteries
- temperature sensor and LVD
- IU charging characteristic
- electronically fused
- suitable for large solar systems with 45/60A (only TriStar)

## Morningstar® Charge Controller For Two Battery Circuits

To recharge two separate 12V batteries

The MorningStar SunSaver Duo is recharging two separate batteries at the same time. The spreading is adjustable to the settings 90%/10% or 50%/50%. Furthermore the regulator has a remote LCD display. This shows battery voltage, charging current and amp-hours. The display comes with 10 m cable and is designed for on wall or flush mounting. A remote temperature sensor is an option. Top quality with 5 years warranty.

Part No.	Module power up to	Voltage	Display
SR425DUO	1700 Wh/d* (425 Wp)	12 V	with remote LCD Display
SR425Basic	1700 Wh/d* (425 Wp)	12 V	just the controller, no display



Charging priority selectable!

## Your Questions - Our Answers

How to measure the size of equipment required?

Quite simply: you work out your average consumption per day: Add that to the specified power of an appliance (watts) and multiply it with the daily running hours.

For example:	Appliance	Specified power	Running time per day	Consumption per day
	Radio	15 watts	4 hrs	60 Wh/d
	Light	40 watts	5 hrs	200 Wh/d
	Colour TV	40 watts	3 hrs	120 Wh/d
	Receiver	40 watts	3 hrs	120 Wh/d
	<b>Total:</b>			<b>500 Wh/d</b>

If you are using your RV, boat, cottage mainly weekends you have to calculate your weekly needs. According to the above example 1000Wh are needed for the weekend (two days). That means you would need one SM200S with 220Wh/d average production per day in the summer time. During the week the panel is able to produce 1100Wh within 5 days and that will cover the need you have over the weekend.

# Non-Grid Power Supply

## DC Coupled Systems

STUDER pure sine wave AC inverters



WRSAJ275 - 2100

### Advantages of Studer

- high efficiency and steady output
- outstanding overload capacity
- digital regulation and micro processor controlled
- a supply to any kind of electrical device
- complete internal protection of the inverter (overload, overheat, short-circuit and reverse polarity)
- adjustable load detection
- complete with connection cable
- 24V and 48V units also available on request



WRSXPC  
WRSC

### AJ series

Part No.	Watt	Surge power (5sec.)	Size (lxwxh)	Weight
WRSAJ275	200 W	450 W	163x142x84 mm	2.4 kg
WRSAJ500	400 W	1000 W	240x142x84 mm	4.5 kg
WRSAJ1000	800 W	2200 W	428x142x84 mm	8.5 kg
WRSAJ2100	2000 W	5000 W	399x273x84 mm	19.0 kg

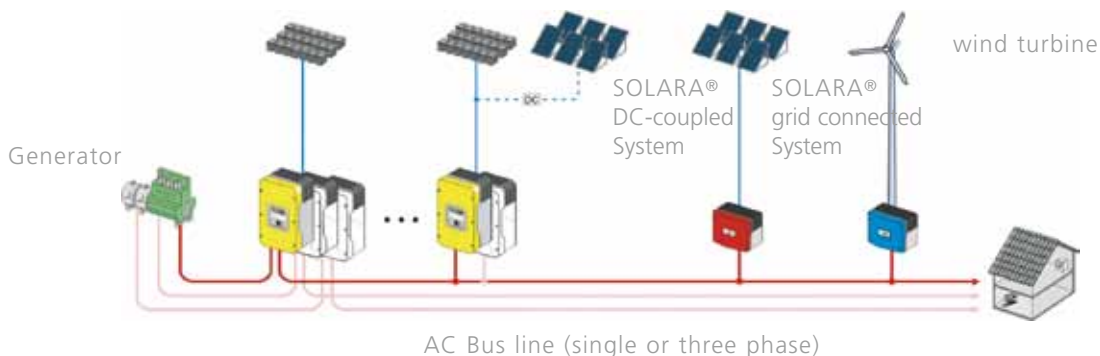
### Compact/XPCompact series

The compact series features an integrated battery charger and inverter for uninterruptible power supply. They also have programmable contacts for generator starting or alarms.

Part No.	Watt	Surge power	Size (lxwxh)	Weight
WRSXPC1400	1100 W	3300 W	140x215x124 mm	11.7 kg
WRSC1600	1300 W	3900 W	480x215x124 mm	16.0 kg

## AC Coupled Systems (Mini Grid)

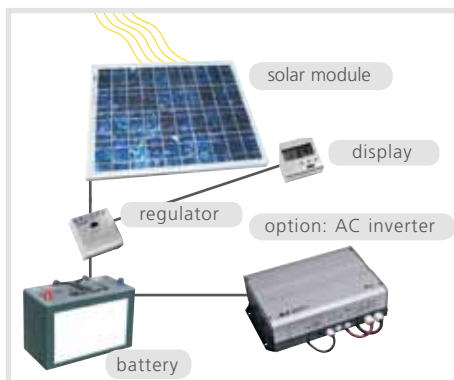
AC coupled systems are designed for larger off-grid installations like villages power supply, farms, lodges, hospitals, schools, telecommunication stations etc.. With an AC coupled system nearly any type of electricity generator (PV, wind, water, biomass, diesel) can be integrated. All components, generators and consumers, are connected to the AC line. The major component is a special inverter/charger unit providing the AC-bus-line.



For further details and system design, please contact your local SOLARA distributor.

## SOLARA® Global Solar Solutions

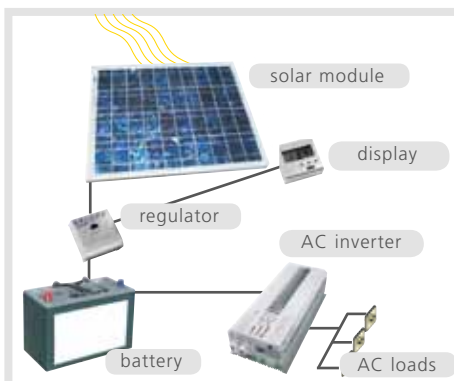
Around the world SOLARA® solar systems increase the lifestyle of the people, produce eco-friendly energy to secure power supply even for professional applications. SOLARA® technology makes it possible to use electricity where no grid exists.



### Small solar home system (SHS)

Small solar system to operate a few lights in a remote house/hut.

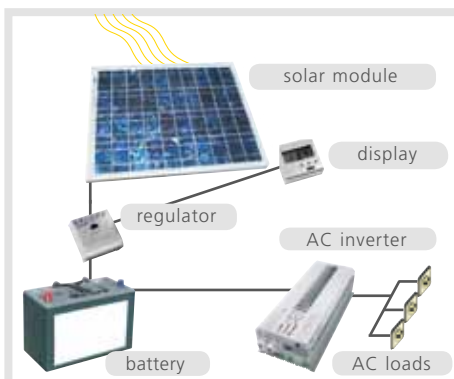
Solar: 20-75 Wp  
 Regulator: 8 A, LVD, indication LEDs  
 Battery: max. 100 Ah  
 Load: DC-lamps, radio  
 Operation Time: less than 5 h/day  
 Option: AC inverter



### Large solar home system

Solar system to electrify larger houses, schools or medical centers in rural areas.

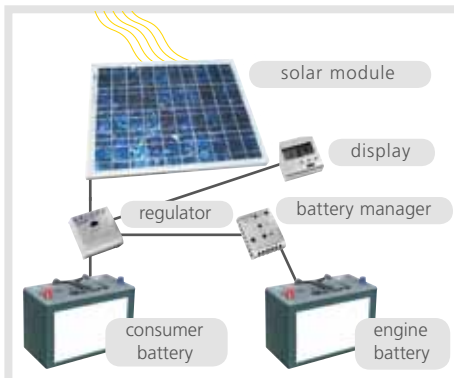
Solar: 500-1000 Wp  
 Regulator: 30 A, LVD, LCD display  
 Battery: ca. 400 Ah  
 Load: lamps, radio, fridges, TV, computer  
 Operation Time: approx. 2-5 h/day  
 AC inverter: approx. 1500 W



### Solar powered telecom/measurement station

Solar system to electrify communication- and measurement stations

Solar: 55-500 Wp  
 Regulator: 30 A, LVD, LCD display  
 Battery: ca. 500 Ah  
 Load: lamps, radio, PC, technical equipment  
 Operation Time: approx. 2-5 h/day  
 Option: AC inverter



### Leisure time application

Solar energy to supply the 12V DC system in a boat or a RV

Solar: 55-150 Wp  
 Regulator: 10 A, LVD, LCD display  
 Battery: approx. 200 Ah  
 Load: lamps, radio, TV, pump, fridge  
 Operation Time: approx 5-7 h/day  
 Option: AC inverter, engine battery charging

Your specialist dealer: