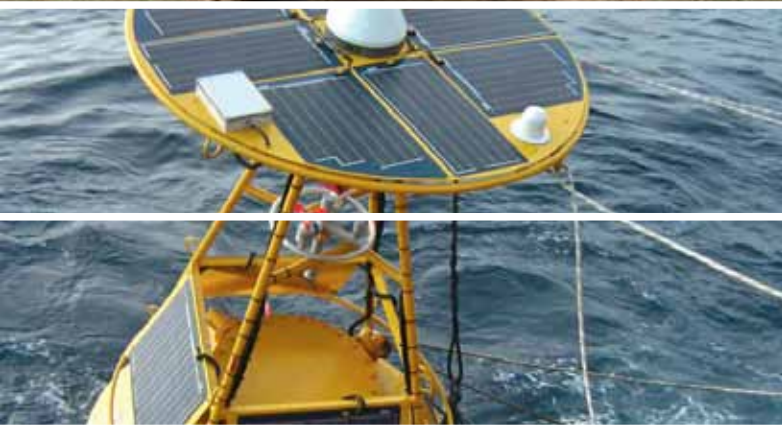


SOLARA[®]

module. komponenten. systeme



SOLAR POWER WHERE I NEED IT

FOR MOBILE PEOPLE AND STAND ALONE SYSTEMS

2015 / 2016



Complete systems, solar panels, charge controllers and mounting systems for mobile leisure time, caravans, RVs, yachts, boats, holiday homes, measurement and traffic engineering, street furniture, buoys

Content

Not all solar panels are the same	3
The Stand-Alone Principle	4
Basic facts for leisure applications	5
SOLARA Complete sets	6
SOLARA Profi Packs	7
SOLARA Premium Packs	8
SOLARA Power Packs	9
SOLARA Solar Panels	10
Our modules are different	11
SOLARA S Series	12-13
SOLARA Power S Series	14-14
SOLARA M Series	16-17

SOLARA Power M Series	18-19
SOLARA ABS Spoilers & Controllers	20
SOLARA Charge Controllers	21
Phocos Regulators	22
Sunware Regulators	23
MorningStar Controllers	24
MorningStar 2 Circuit Charge Controllers	25
SOLARA ABS Spoilers	26
Accessories & Adhesive Set	27
The production facility	28



NOT ALL SOLAR PANELS ARE THE SAME There are differences in quality!

To produce „Made in Germany“ and still be competitive is not contradictory!

Asia has a production cost advantage?

NO - Shipping costs from Asia to Europe are already more expensive than labor cost advantages.

BUT - There are differences in the specification and therefore in quality!

To cut expenses, the low cost productions tend to use low-grade materials and shortened production processes.

WE DO NOT JUST PROVIDE PANELS! We also offer:

- high quality of service before and after sale
- best quality of material and workmanship
- high electric efficiency and long-lasting guarantees
- high-value additional components from premium manufacturers

In addition to the mandatory certification tests, our production continuously perform their own quality tests.

Such as:

- mechanical load tests
- weather-proofness of the cell embedding
- climate test of the whole solar panel
- salt water resistance tests
- degradation tests
- testing the cells for microfissures
- stability of the soldered connections



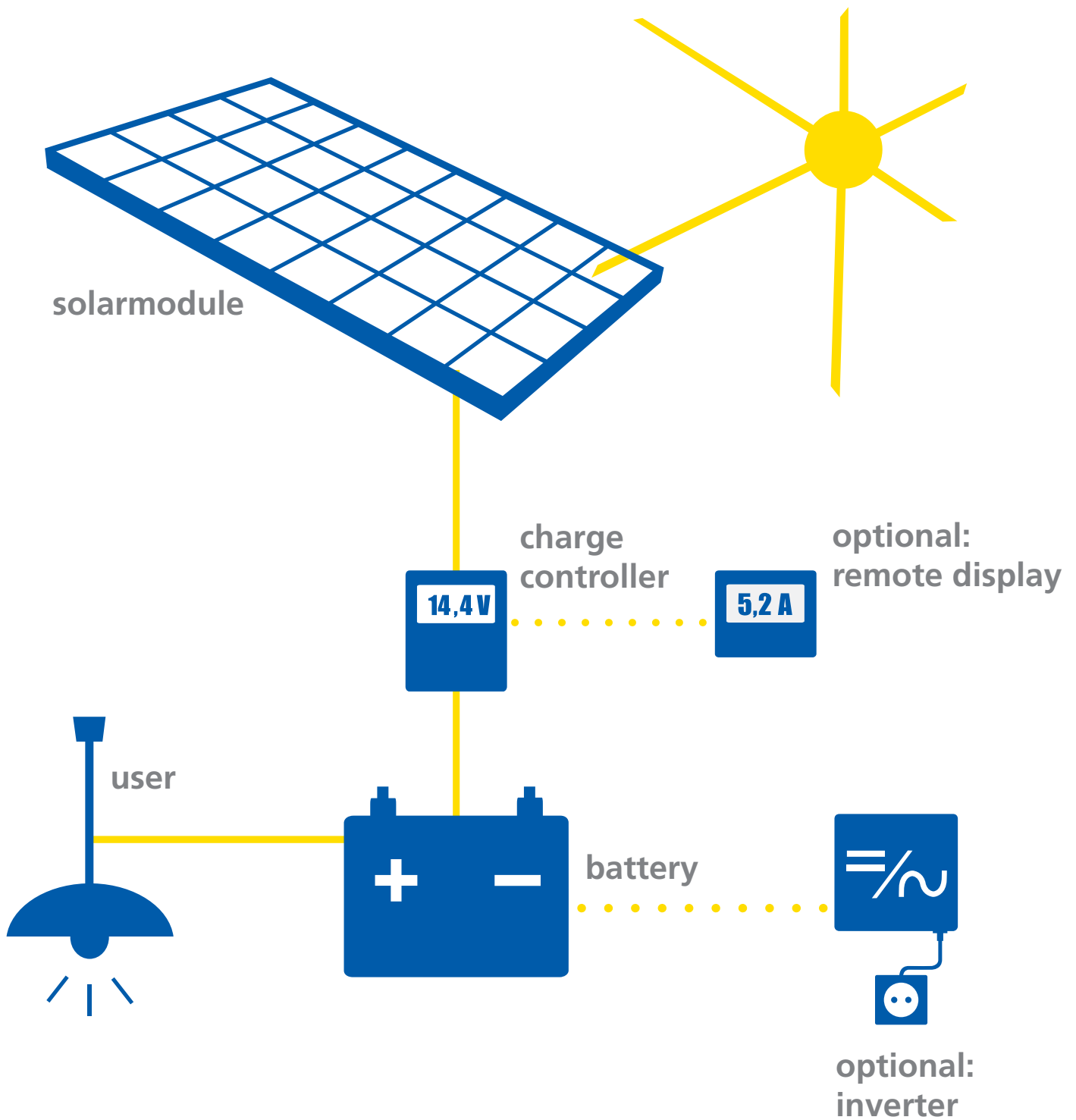
- Qualified, IEC 61215
- Safety tested, IEC 61730
- Heavy Snow Load tested
- Ammonia resistance tested
- Salt corrosion resistance tested
- ANSI/UL 1703 listed
- Periodic inspection



Additional technical information, datasheets, manuals etc. are available at www.solara.de.

BASIC FACTS FOR MOBILE SOLAR APPLICATIONS

THE PRINCIPAL OF A BASIC SYSTEM



BASIC FACTS FOR MOBILE SOLAR APPLICATIONS

SOLARA IN LEISURE APPLICATIONS

To find out which of our panels are best suited to your and your vehicle's needs, take a closer look at your usage conditions first. The total energy consumption is calculated from the number of users, the vehicle size, and the points of consumption.

- Do you usually travel by yourself or with your family?
- Do you use your caravan or RV just in the summer, just on weekends, or all year long?
- Sunny days and sunshine intensities vary considerably between northern and southern Europe. Do you travel more in the North or more in the South?

How to calculate your daily energy requirements

To get a reliable reference value for your daily energy requirements, list all the individual points of consumption in your vehicle, such as lights, radio, refrigerator, and multiply these with their average usage periods. Add these together to figure out your total energy requirements in watt-hours per day (Wh/d).

Device	Nominal output	Usage duration per day	Consumption per day
Radio	15 Watt	4 hours	60 Wh/d
Colour TV	40 Watt	3 hours	120 Wh/d
12V satellite receiver	40 Watt	3 hours	120 Wh/d
Lamps	10 Watt	5 hours	50 Wh/d
Total daily consumption:			350 Wh/d

How to select the solar panels that meet your individual requirements

Solara panels for leisure use are available in different strengths and designs. When selecting panels for your vehicle, make sure to take into consideration when and how often you travel. If in doubt, go for the next higher performance category or add a second panel – so you have a more reliable energy source and you can charge faster during sunlight hours.

Choose

- one or more S405M36 Ultra solar panels for summer-only use
- one or more S405M36 Ultra solar panels for predominantly weekend use
- one or more S560P36 Ultra panels for all-year use

Which system for which user?

The overviews below list typical usage examples for the different system sizes available for small, medium-sized and large caravans.

60 Wp system

- Ideal for small caravans
- Usage period: April to September
- Electricity is used for lights, pump and radio
- Recommended Solara components: Complete Set PP240

90 Wp system

- Ideal for small to medium-size caravans
- Usage period: April to September
- Electricity is used for lights, pump, radio, TV/satellite
- Recommended Solara components: Complete Set PP360

100-200 Wp system

- Ideal for medium to large-size caravans
- Usage period: all year long
- Electricity is used for lights, pump, radio, TV/satellite
- Recommended Solara components: Complete Sets PRP405 or PRP560

More than 200 Wp system

- Ideal for medium to large-size caravans
- Usage period: all year long
- Electricity is used for lights, pump, radio, TV/satellite, refrigeration compressor
- Recommended Solara components: Complete Sets PRP805/2, PRP1120/2 or POP565

VARIETY IN PERFORMANCE, TECHNOLOGY AND PRICES

Solar Complete Sets for Everyone's Needs

Our three SOLARA complete sets - we call them "Packs" - impress by:

- our variety of products - your choice
- matching technology management
- persuasive pricing.



TÜV-approval for the glue and the ABS-spoilers!



FOR THE PROFESSIONAL

Profi Packs with:

- 60 / 90 Watt
- Charge regulator, 20A



FOR CHALLENGERS

Premium Packs with:

- 100 / 140 Watt
- Two circuit charge controller, 20A



FOR ENERGIZERS

Power Packs with:

- 110 / 140 Watt
- MPPT- or two circuit charge controller

FOR PROFESSIONALS

SOLARA Profi Packs



Your advantage:

Premium quality by SOLARA for professionals - with powerful solar panels in several sizes

This is how we solve your spacing issues. Also included: a 20 Amp charge controller and all components you need to install your solar system on top of your RV.

Scope of delivery:

- SOLARA panel
- white ABS brackets
- special glue set for gluing the ABS brackets
- white roof grommet DD1
- charge controller 20 Amp
- 10 m cable, UV-resistant

Type	PP240	PP360	PP480/2	PP720/2
Power [W]	60	90	120	180
Daily Yield [Wh]	240	360	480	720
Panel #	S240M36 Ultra	S360M36 Ultra	S240M36 Ultra	S360M36 Ultra
Amount of cells [pieces]	36	36	36	36
Amount of modules [pieces]	1	1	2	2
Dimensions L x W x H [mm]	710 x 680 x 40	1237 x 557 x 40	710 x 680 x 40	1237 x 557 x 40
Length incl Spoilers [mm]	860	1387	2 x 860	2 x 1387

FOR CHALLENGERS

SOLARA Premium Packs



Your advantage:

Even higher daily output due to highest possible solar panel performance!

Additionally, these complete sets enable you to charge two battery circuits (e.g. starter battery) independently from each other.

Scope of delivery:

- SOLARA panel
- white ABS brackets
- special glue set for gluing the ABS brackets
- white roof grommet DD1
- 20 Amp charge controller FOX 320
- 10 m cable
- adapter cable for the Schaudt-EBL block

Type	PRP405	PRP560	PRP805/2	PRP1120/2
Power [W]	100	140	200	280
Daily Yield [Wh]	400	560	800	1120
Panel #	S405M36 Ultra	S560M36 Ultra	S405M36 Ultra	S560M36 Ultra
Amount of cells [pieces]	36	36	36	36
Amount of modules [pieces]	1	1	2	2
Dimensions L x W x H [mm]	1237 x 557 x 40	1500 x 680 x 40	1237 x 557 x 40	1500 x 680 x 40
Length incl Spoilers [mm]	1387	1650	2 x 1387	2x 1650

FOR ENERGIZERS

SOLARA Power Packs



Your advantage:

Maximum output on smallest possible surface - 36 instead of 32 Sun-Power cells!

Due to the special back-contact cells, our Power Packs provide you with the maximum daily output.

In addition the complete sets contain a MorningStar MPPT charge controller for 10 to 15 percent more output or the morningstar DUO to charge two battery circuits independently from each other.

Scope of delivery:

- SOLARA panel
- white ABS brackets
- special glue set for gluing the ABS brackets
- white roof grommet DD1
- charge controller MPPT 15 Amps or Morningstar DUO 20 Amps
- 10 m cable, UV-resistant

Type	POP440/DUO	POP565/DUO	POP440/MPPT	POP565/MPPT
Power [W]	110	140	110	140
Daily Yield [Wh]	440	600	440	600
Panel #	S440M36 Ultra	S565M44 Ultra	S440M36 Ultra	S565M44 Ultra
Amount of cells [pieces]	36	44	36	44
Amount of modules [pieces]	1	1	1	1
Dimensions L x W x H [mm]	1237 x 557 x 40	1500 x 557 x 40	1237 x 557 x 40	1500 x 557 x 40
Length incl Spoilers [mm]	1387	1650	1387	1650
Charge controller	Sun Saver DUO	Sun Saver DUO	Sun Saver MPPT	Sun Saver MPPT

HIGHEST CELL QUALITY, RIGID FRAMED OR SEMI-FLEXIBEL Solar Panels that make sense

Our ambition is to provide a sensible variety of products on the highest possible technical level.

This is why we produce for you in Germany:

- framed solar panels - new in 2014: with 100 and 140 W output
- frameless solar panels - aerodynamically flat
- BackContact panels - highest output on smallest possible surface
- semi-flexible marine panels - now with 42 cells for maximum daily output



RIGID MODULES ESPECIALLY FOR MOBILE APPLICATIONS

SOLARA MODULES ARE DIFFERENT

Each SOLARA-module has an unchanging serial number protected behind the front glass



The modern water protected (IP65) is not higher than the frame

Extremely stable untwistable hollow profile frame is made of seawater resistant aluminium and especially made for mobile applications.

The standardized label on the backside informs about the module type, the power and additional technical data.

The edges are stabilized by massive aluminium angles.

MODULES RIGIDLY FRAMED AND RELIABLE

SOLARA S-SERIE

Premium quality –
for professional use

- Solar modules with 36 high-performance solar cells
- High performance also during low irradiation and months with diminished light
- Salt spray corrosion tested according to DIN EN ISO 9227-NSS
- Ammonia resistant
- Sturdy, seawater-resistant aluminium frame
- Frost resistant frame construction
- Large, waterproof junction box equipped with spring-type terminals
- Weather and water proof foil provides highest life expectancy even under extreme climatic conditions
- Manufactured exclusively in the Solar-Fabrik Wismar, certified according to DIN EN ISO 9001:2008 and ISO 14001:2009
- 5 years product warranty*, up to 26 years performance guarantee*

* Complete warranty conditions under www.solara.de

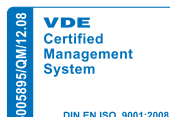


55 W - 60 W - 100 W - 140 W

Modules can have small color differences
determined by production processes



Saltspraytest
compliant to DIN
EN ISO 9227-NSS



TECHNICAL DATA

SOLARA S-SERIE

Output under STC*

Module type	S220M36 Ultra	S240M36 Ultra	S405M36 Ultra	S560P36 Ultra	
Daily output in summer in Germany ($\bar{\varnothing}$)	220	240	400	560	Wh/d
Rated output (Pmpp)	55	60	100	140	Wp
Short-circuit current (Isc)	3,40	4,00	6,20	8,42	A
Open-circuit voltage (Uoc)	21,30	21,90	21,50	21,80	V
Voltage (Umpp)	17,60	17,40	17,20	17,90	V
Current (Impp)	3,10	3,70	5,90	7,82	A
Module efficiency (η)	11,8	11,4	14,5	13,7	%

* Under standard testing conditions STC (1,000 W/m², spectrum 1.5, cell temperature 25 °C)

Output at 800 W/m², NOCT, AM 1,5

Rated output (Pmpp)	44,90	51,50	79,50	110,85	Wp
Short-circuit current (Isc)	2,84	3,30	4,96	6,72	A
Open-circuit voltage (Uoc)	21,50	21,50	21,37	21,39	V
Voltage (Umpp)	17,00	17,00	17,05	17,51	V
Current (Impp)	2,4	3,0	4,8	6,3	A

Dimensions and weight

Dimensions (LxW)	1330x350	775x680	1237x557	1500x680	mm
Weight	6,3	6,6	7,9	12,1	kg
Cell dimensions	103x103	156x78	125x125	156x156	mm

Thermal properties

TK Pmpp	-0,45	%/K
TK Uoc	-0,36	%/K
TK Isc	0,03	%/K
NOCT	46 ± 2	°C

Other technical data

System voltage	12	V
Reverse current carrying capacity IR	12	A
Measuring accuracy Pmpp at STC	± 5	%
Frame thickness	40	mm
Glass thickness	3,2	mm

Material used

Number of cells	36
Front	tempered solar glass
Junction box	IP65 with spring-type terminals

As of 08/2014. Errors and omissions excepted. Technical changes reserved.

FRAMED MODULES FOR HIGHEST PERFORMANCES

SOLARA POWER S-SERIES

Maximum performance – on smallest surface

Improved appearance:

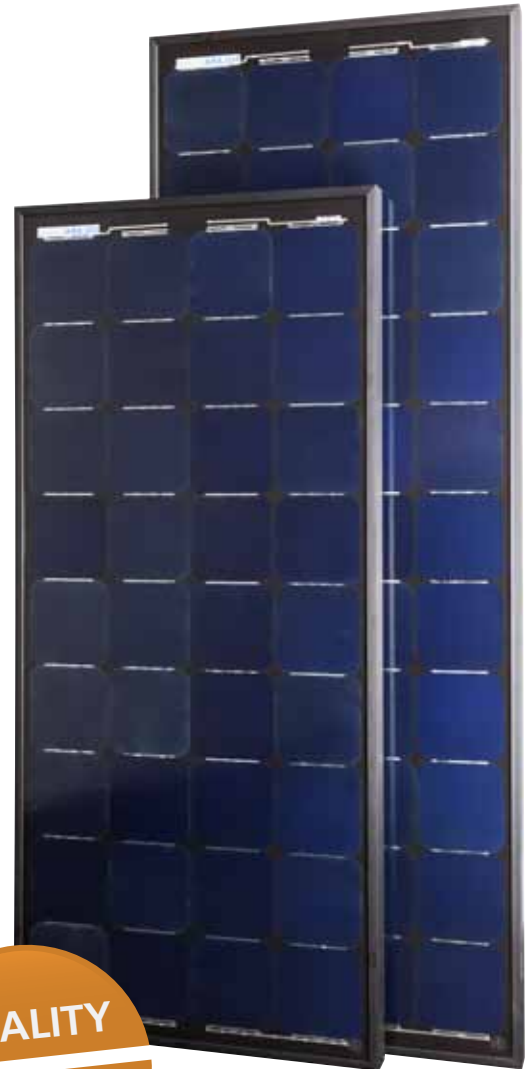
- Elegant and attractive design with black finishing
- Slim shape – for a wide range of applications

Long lifetime even under extreme conditions:

- 3.2 mm, scratch-resistant thermally hardened thin glass
- Excellent mechanical load resistance thanks to its torsion-resistant module frame
- Especially developed for permanent operation at extreme heat as well as high humidity

Performance guarantee*:

- Highest day yield through the use of monocrystalline Back-Contact cells with 22% of cell efficiency
- Best low-light behaviour
- 5 years product warranty and up to 26 years performance warranty
- Manufactured exclusively in Germany:
in the Solar-Fabrik Wismar, certified according to DIN EN ISO 9001:2008, ISO 14001:2009 and OHSAS 18001:2007



Slight colour variation of modules is possible due to specific conditions in production.

36 cells at 110 Watt
44 cells at 140 Watt

* Complete warranty conditions under www.solara.de



TECNICAL DATA

SOLARA POWER S-SERIES

Performance under STC*

Module type	S440M36 Ultra	S565M44 Ultra	
Daily output in summer in Germany (Ø)	440	565	Wh/d
Nominal power (Pmpp)	110	140	Wp
Short-circuit current (Isc)	6,02	6,14	A
Open-circuit voltage (Uoc)	24,06	29,63	V
Voltage (Umpp)	20,25	25,10	V
Current (Impp)	5,43	5,58	A
Efficiency (η)	16,5	16,7	%

* Under standard testing conditions STC (1,000 W/m², spectrum 1.5, cell temperature 25 °C)

Power at 800 W/m², NOCT, AM 1,5

Module type	S440M36 Ultra	S565M44 Ultra	
Nominal power (Pmpp)	81,27	103,52	Wp
Short-circuit current (Isc)	4,88	4,97	A
Open-circuit voltage (Uoc)	22,46	27,66	V
Voltage (Umpp)	18,60	23,05	V
Current (Impp)	4,37	4,49	A

Dimensions and weight

Dimensions (LxW)	1237 x 557	1500 x 557	mm
Weight	7,9	9,9	kg

Thermal properties

TK Pmpp	-0,38	%/K
TK Uoc	-0,28	%/K
TK Isc	0,057	%/K
NOCT	46 ± 2	°C

Other technical specifications

Max. system voltage	12	V
Reverse current carrying capacity IR	12	A
Measuring accuracy Pmpp at STC	± 5	%
Frame height	40	mm

Material used

Number of cells	36 (S440M46 Ultra) 44 (S565M44 Ultra)
Cell dimensions	125 x 125 mm
Cell technology	monocrystalline Back-Contact cells
Front side	tempered solar glass, glass thickness 3.2 mm
Module frame	black anodized
Junction box	IP65 with spring-type terminals

As of 03/2014. Errors and omissions excepted. Technical changes reserved.

SEMI-FLEXIBLE MODULES

SOLARA M-SERIES

Flat, walkable and semi-flexible

Technology and Design:

- Maximum stability through stainless steel mounting plate
- Thanks to innovative cell-chaining technique semi-flexible (up 3%) mountable
- Foot traffic at a fixed, fully-scale application on firm ground
- Teflon-like extremely resistant protective film on front and back
- Particularly flat and glued screwed cable outlet with strain relief
- Unique serial number clearly on the front of the module

Best performance with the highest quality:

- Extremely high yields through the use of crystalline high performance cells
- Maximum daily yield by additional single cells
- Powerful low-light performance – High yields even under cloudy and partially shaded conditions
- External cell protector with bypass diodes offers protection against cell overheating (Hot-Spots) is included
- Manufactured exclusively in Germany



36 High efficient cells

12 W • 23 W • 34 W • 45 W • 68 W



42 High efficient cells

35 W • 50 W • 70 W

TECHNICAL DATA

SOLARA M-SERIES

Technical Data M-Series (36 cells)

Module type	S40M36 Marine	S80M36 Marine	S120M36 Marine	S160M36 Marine	S225M36 Marine
Maximum power (Pmax)	12 Wp	23 Wp	34 Wp	45 Wp	68 Wp
Average daily output in summer (Germany)	48 Wh/d	92 Wh/d	136 Wh/d	180 Wh/d	272 Wh/d
System voltage	12 V	12 V	12 V	12 V	12 V
Voltage at maximum power	19 V	19 V	19 V	19 V	19 V
Open circuit voltage	22,6 V	22,6 V	22,6 V	22,6 V	22,6 V
Current at maximum power	0,63 A	1,21 A	1,78 A	2,36 A	3,67 A
Short circuit current	0,7 A	1,3 A	1,9 A	2,5 A	3,8 A
Number of cells	36	36	36	36	35
Dimension in mm (L x W x H)	445 x 267 x 2	440 x 460 x 2	590 x 460 x 2	756 x 460 x 2	800 x 646 x 2
Weight	1,3 kg	2,0 kg	3,1 kg	3,75 kg	5,4 kg
Hotspot protector	No	No	Yes	Yes	Yes

Technical Data M-Series (42 cells)

Module type	S140M42 Marine	S200M42 Marine	S280M42 Marine
Maximum power (Pmax)	35 Wp	50 Wp	70 Wp
Average daily output in summer (Germany)	140 Wh/d	200 Wh/d	280 Wh/d
System voltage	12 V	12 V	12 V
Voltage a maximum power	19,7 V	21,2 V	19,5 V
Open circuit voltage	25,7 V	25,7 V	25,7 V
Current at maximum power	1,78 A	2,36 A	3,84 A
Short circuit current	1,92 A	2,57 A	3,84 A
Number of cells	42	42	42
Dimension in mm (L x W x H)	471 x 660 x 2	592 x 660 x 2	823 x 660 x 2
Weight	3,5 kg	4,4 kg	5,9 kg
Hotspot protector	Yes	Yes	Yes

All data, tests and certificates can vary depending on module type.

According to STC (Standard), 1000 W/m², Spectrum AM 1.5, Cell temperature 25 °C, Pmin: +/-5%. Subject to change due to permanent development. As of 03/2014. Errors and omissions excepted. Technical changes reserved.

SEMI-FLEXIBLE MODULES FOR HIGHEST PERFORMANCE

SOLARA POWER M-SERIES

Maximum performance –
even under extreme conditions

Appearance and design:

- Elegant and attractive design
- Extremely flat shape (5 mm) with aluminium Sandwich plate inside
- Flexible and bendable plate for adaptable mounting on curved surfaces (up to 3%)
- High stability even to walk on when installed flatly on solid subsurface
- Already prepared cable gland in the carrier plate

Excellent performance with top quality:

- Highest efficiency ensured by the use of monocrystalline Back-Contact cells with 22% efficiency
- Increased tension thanks to additional single cells
- Best low-light behaviour – high yields even under diffuse irradiation
- Especially developed for permanent operation at extreme heat as well as high humidity
- Equipped with an UV resistant solar cable, seawaterproof cable outlet and mounting holes
- External cell protector with bypass diodes offers protection against cell overheating
- Manufactured exclusively in Germany
- Product guaranty 3 years



Outstanding daily yield because of
highest cell efficiency and maximum
number of cells



TECHNICAL DATA

SOLARA POWER M-SERIES

Performance under STC*

Module type	S 440M34 Marine	S 460M35 Marine
Daily output in summer in Germany (Ø)	440 Wh/d	460 Wh/d
Nominal power (Pmpp)	110 Wp	115 Wp
Short-circuit current (Isc)	6,30 A	6,30 A
Open-circuit voltage (Uoc)	23,30 V	24,00 V
Voltage (Umpp)	19,70 V	20,30 V
Current (Impp)	5,90 A	5,90 A
Cell efficiency (η)	> 22 %	> 22 %

* Under standard testing conditions STC (1,000 W/m², spectrum 1.5, cell temperature 25 °C)

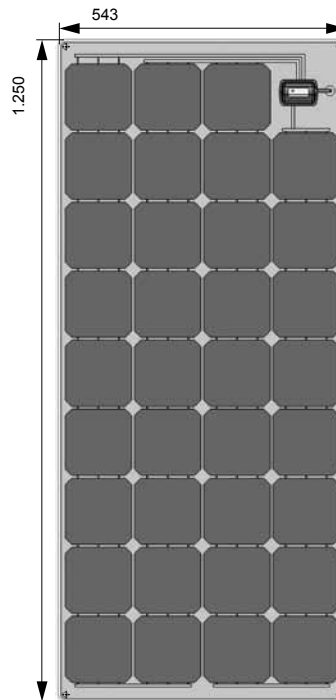
Dimensions and weight

Dimensions (LxW)	988 x 659 mm	1.250 x 543 mm
Weight	5,3 kg	4,4 kg
Cabel lenght	2,5 m	2,5 m

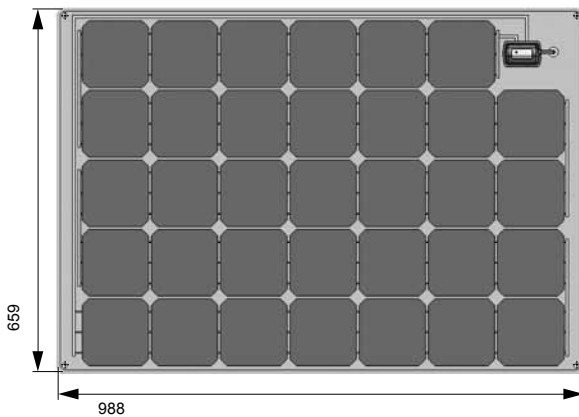
Material used

Number of cells	34 (S 440M34) 35 (S 460M35)
Cell technology	monocrystalline Back-Contact cells
Front and rear side	High resistant and watertight foil (Nowoflon), sealed laterally with the same backsheet foil
Cable outlet (front side)	Robust, small, flat, sealed and waterproof cable outlet, screwed and potted

S 460M35 Marine



S 440M34 Marine



As of 03/2014. Errors and omissions excepted. Technical changes reserved.
Measurements in mm

CERTIFIED SAFETY

SOLARA ABS-SPOILERS

The Spoilers from SOLARA is made of ABS-plastic and TÜV certified in combination with the SOLARA Polymer adhesive set FIXPACK.

- Citycrash - Test by TÜV succesfully mastered
- Successfully material crash tested after weathering



Funktionalität



www.tuv.com
ID 0000039248



HS55/black

Further information on our spoilers and adhesive sets on page 26!

FOR ALL POWER CLASSES, VOLTAGES AND BATTERY TYPES

Leading Solar Charge Controllers



SOLARA by Phocos

- One-circuit controller with optimised cost-performance ratio
- System voltages 12/24 V
- Currents from 4 to 20 A
- Battery types adjustable



Sunware

- High-value two-circuit controllers, up to 20 A
- with or without remote display
- The best designed solar controller
- Automatic detection of system voltage
- Charge distribution easily adjustable



MorningStar

- One-circuit, two-circuit and MPPT controllers with 5 years warranty
- The robust and thus extremely reliable charge controller
- Currents from 4.5 to 60 A
- Simple handling due to manual adjustments

OPTIMIZED BATTERY CHARGING

SOLARA REGULATORS BY PHOCOS

These regulators charge the battery according to voltage and battery type. The charging characteristics guarantee optimized charging. LVD terminals can protect the battery from discharging. High reliability, modern technology and quick installation - key factors of SOLARA controllers.

- Automatic voltage detection
- Solar power < 90 - 350 W
- Solar current up to 20 A
- LVD up to 20 A
- Battery type adjustable
- SOC indicator with LED

Prod.-No.	Panel Output	Voltage	Display
SR85TL	Up to 90 W	12 / 24 V	LED
SR135TL	Up to 140 W	12 / 24 V	LED
SR175TL	Up to 180 W	12 / 24 V	LED
SR345TL	Up to 350 W	12 / 24 V	LED



CONTROLL STATION FOR YOUR SOLAR SYSTEM

SOLARA REMOTE DISPLAYS

Module current, battery voltage and load current are the important numbers in a solar system. SOLARA displays show them in clear visible numbers.

- Good readable LCD display
- Value selection by switch
- Optional: Array and load current, battery voltage
- 2 m connection cable



SR/CMM

Prod.-No.	Displays	Compatible regulators
SR/CMM	Voltage 0-35 V, Power 0-25 A	SR85TL - SR345TL

LOADING TWO CIRCUITS SUNWARE REGULATORS

FOX Two Circuit Controller

FOX charge controllers distinguish themselves by their almost elegant design and high-value appearance. All new is the FOX-360 with integrated display; already well-known: the FOX-320 with an optional remote display (FOX -MD1). System voltages are detected automatically, the battery type can be adjusted.

- 12/24 V system voltage, automatic detection
- 340 W solar voltage for 12-V systems (20 A)
- 640 W solar voltage for 24-V systems
- for two battery circuits
- 20 A max. solar current
- LCD display FOX-360
- LED display FOX-320

Prod.-No.	Panel output	Voltage	Display
FOX-360	340 / 20	12/24 V	LCD
FOX-320	340 / 20	12/24 V	LED
FOX MD1	Remote display for FOX-320		LCD



FOX-360



FOX-320



FOX MD1

FOR VOLTAGE AND CURRENT SOLARA Digital Display

A central control panel for the PV system and the battery. Displays charge/discharge current or battery voltage. Flush mounting version also available. Voltage: 8-48 V, Current: 20 A max.

Universal display which is to be installed between charge controller and battery.

Prod. no. DA20

Prod. no. DA20/E (for flush mounting)

Prod.-No.	Panel output	Voltage	Display
DA20	340 / 20	8 - 48 V	LCD
DA20/E	340 / 20	8 - 48 V	LCD



DA20/E (flush mounting)



DA20

THE PROFESSIONAL WAY OF CHARGING MORNINGSTAR REGULATORS

Advanced features:

- Epoxy-sealed motherboard
- Microprocessor control
- Automatic 12/24 V switching
- Charges gel-type batteries
- Temperature sensor and LVD
- Controlled target values with PWM charging
- All fuses are electronic
- For large-size systems with 45/60 A

MorningStar SunSaver

Prod. no.	Panel output	Voltage	Display
SunGuard	up to 75 Wp, 4,5 A	12 V	/
SunSaver 6	up to 110 Wp, 6 A	12 V	LED
SunSaver 10	up to 165 Wp, 10 A	12 V	LED
SunSaver 20	up to 330 Wp, 20 A	12 V	LED



SunGuard 4,5 A



SunSaver 6/10/20 A

MorningStar TriStar

The charge controller for professional applications with currents of up to 60 A and system voltages up to 48 V.

Prod. no.	Panel output	Voltage	Display
TriStar 45	up to 740 Wp, 45 A	12-48 V	**
TriStar 60	up to 990 Wp, 60 A	12-48 V	**

** Accessories: LCD display, remote display and battery sensor on request



TriStar 45/60 A

Best quality with 5 years warranty

CHARGING TWO BATTERY CIRCUITS

MORNINGSTAR

2 CIRCUIT CHARGE CONTROLLER

Morningstar Sun Saver Duo

The newest generation of Morningstar controllers for charging of two circuits at one

- Flexible charging of two circuits (90%:10% or 50%:50%)
- Module power up to 425 Wp
- Max. solar current 25
- Top quality with 5 year warranty
- Remote display (RM-1) optional
- RM1 shows battery voltages, solar current, Ampere hours
- Temperature sensor optional



SunSaverDuo 25 A



Remote display RM-1

Prod.-No.	Panel output	Voltage	Display
SunSaverDuo	up to 425 Wp, 25 A	12 V	inkl. LCD Fernanzeige
SunSaverDuo Basic	up to 425 Wp, 25 A	12 V	ohne Anzeige nur Regler

POWER CHARGING WITH MPPT

MORNINGSTAR CHARGE CONTROLLER

- 12/24 V battery voltage
- Detection of peak voltages ensures minimal power loss
- Optimised output at low sunlight levels
- Can process module voltages up to 75 V
- Low voltage disconnection
- Data logging over 30 days
- LCD remote display (optional)



SunSaver MPPT 15A



Remote display RM-1

Prod. no.	Panel output	Voltage	Display
SunSaver MPPT	up to 200/400 Wp, 15 A	12/24 V	LCD
Remote display RM-1	Remote display for SunSaver MPPT		LCD

MODULE MOUNTING TÜV APPROVED

SOLARA ABS-SPOILERS



HSxx/W



HSE/W



HSV/W

The ABS brackets match the solar panel widths. Also available are corner brackets and connector brackets.

The brackets are glued onto the vehicle roof with our special ABS adhesive (FIX PACK), the solar panels are connected to the spoilers by using screws.

- 100% recyclable
- UV-resistant
- More than 50% lighter
- Warranty: 5 years
- White ABS plastics



Funktionalität



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Type	Prod.-No.	Module with	Pieces
Spoiler-Set	HS35/W	350 mm	2
Spoiler-Set	HS45/W	450 mm	2
Spoiler-Set	HS55/W	550 mm	2
Spoiler-Set	HS55/black	550 mm	2
Spoiler-Set	HS68/W	680 mm	2
Corner Spoiler-Set	HSE/W	compatible wit all modules	4
Spoiler-Set	HSV/W	compatible wit all modules	2

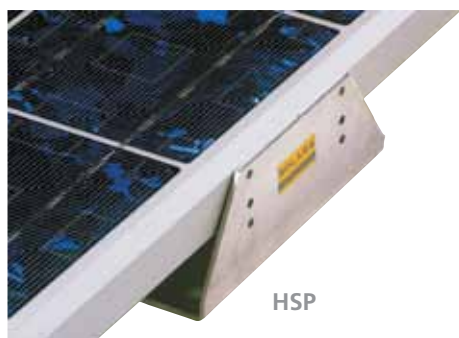
Always use the special ABS adhesive for installation!



**NEW - the HS55/black
55cm ABS spoiler in black**

INDIVIDUAL MODULE MOUNTING

SOLARA ALLUMINIUM BRACKETS



HSP

Aluminium installation sets - ideal for caravans, RVs, garden sheds and holiday homes. PROFI mounting angles feature height adjusters and ships with self-tapping screws. These angle brackets can be screwed onto the roof or glued by using the SOLARA® Glue Set.

Type	Prod. no.	Module length	Amount
PROFI Mounting Angles (4 pc.)	HSP	up to 1250 mm	4
PROFI Mounting Angles (6 pc.)	HSP400	more than 1250 mm	6

ACCESSORIES

SOLARA ROOF GROMMET



DD1/W

DD2/W

The roof grommets DD1 and DD2 are available in matching colour, with broad adhesive seam and long-lasting PG cable glands suitable for the roof brackets.

Easy glue-mounting with a special adhesive, providing a secure and watertight cable feed to the interior.

Type	Application
Roof grommet DD1/W	for 1 cable
Roof grommet DD2/W	for 2 cables

SOLID GLUEING - TÜV CERTIFIED

SOLARA ADHESIVE SET



Special adhesive for SOLARA® ABS plastic mounting systems, aluminium mounting angles, SOLARA Marine Series or roof grommets

The one component adhesive contained in the Glue Set from INNOTEC is a pure MS isomer, isocyanate-free and thus poison-free! Storable for one year. Ideally suitable for gluing plastic such as ABS onto coated surfaces. Fixed component of the SOLARA complete sets.

Scope of delivery: cartridge, cleaning agent, cloth, sanding paper

Type	Application
FIX PACK	glue for 1 panel



The Solar-Fabrik Wismar



Your specialist dealer:

The high-performance, high-resilience Solara solar panels are all manufactured at Solar-Fabrik Wismar, Germany.

For over 15 years now, this has been the home base from which our engineers and specialists have been providing their extensive technological expertise to generate energy in a sustainable and environmentally-friendly way. Our R&D team includes some of the most respected experts in the field and frequently collaborates with renowned education and research institutions. We firmly believe that planning, production and sales go hand-in-hand and should always come from a single provider. This way, we can offer you the highest quality in products and services at all times – with maximum reliability, transparency and flexibility for you as well as for us.