



SUNBEAM<sup>SYSTEM</sup>

CATALOGUE 2022



After more than 10 years in the industry SUNBEAMsystem has left its mark and became renowned for its power solutions - whether it's on the road or on the high seas. This year we celebrate a decade full of innovation: our main driving force.

We take pride in distinguishing ourselves from the competition with unique, durable and environmentally conscious products.

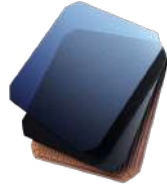
Since our foundation we have strived for the highest quality and performance. We have never lost the aim that each and every product must solve a problem - doing so in a discrete manner while offering a pleasant user experience.

It does not matter whether you are based in the arctic or in the tropic regions - our cutting edge solutions are ready to power your adventure.

# PREMIUM SOLAR PANELS

## WORLD'S BEST SOLAR CELLS

SUNBEAMsystem only uses highly efficient Sunpower™ cells to ensure the highest possible durability and unmatched efficiency of up to 25.2%



## TOUGH TOP & INTERNAL PROTECTION

The Internal stringer grants versatile durability. Materials on the top-side offers extreme UV endurance and transparency. Foundations for the 5-year warranty.

## FLUSHED CONNECTION (PROTECTED DESIGN)

The newest iteration of the invisible flat Flush cable features a reinforced cable integration to ensure a perfect result.



## SHADOW OPTIMIZED

Our unique and proprietary Shadow Optimized technology ensures maximum power output in partially shaded conditions, delivering the highest possible yield aboard yachts.



## WALKABLE SERIES TOUGH



Multiple test winner, premium panels with antislip surface and 5 years warranty.

## REINFORCED SERIES CARBON TOUGH+



The long-life solar panel for canvas & bimini, with internal carbon fiber stringer.

## PORTABLE SERIES TOUGH FOLD



A truly portable solar panel. Lightweight & waterproof.

# PLUG & PLAY

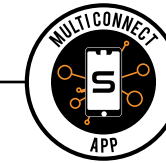
## CAN SUPPLY EXTREME CURRENTS UP TO 600A

Extreme performance in a modest guise - unique hardware and electronics allow for currents up to 600A. With a higher safety level than any other type of battery, and cobalt-free for a better environment.



## AN EASY UPGRADE USING EXISTING EQUIPMENT

Plug & Play offers an effortless upgrade. Even for the most demanding setup with legacy equipment. No need for extensive planning or support.



# DRIVE

## THE BEST BATTERIES FOR ELECTRIC PROPULSION



## FOR ALL VESSEL SIZES

DRIVE batteries can power anything from small outboards to large inboard electric drivetrains.

## NEVER WITHOUT JUICE

Keep an eye on your state of charge with the wireless Multi Connect APP.

## LONGER RANGE AND LIFETIME

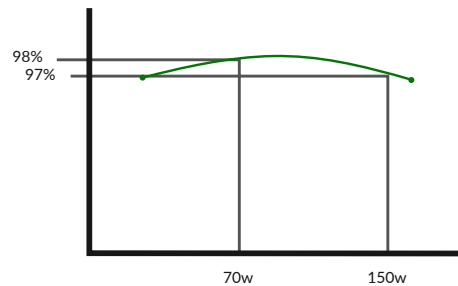
Up to 4.5 times longer range than traditional batteries with zero maintenance.



# MOONRAY SERIES

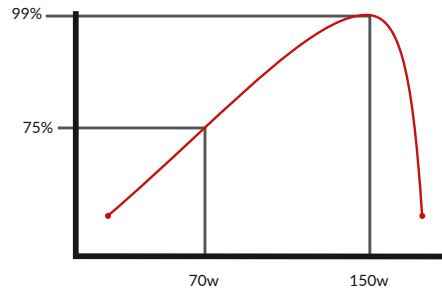
OPTIMIZED FOR REAL-WORLD CONDITIONS  
 WIRELESS APP MONITORING  
 SUITED FOR ALL BATTERY TYPES  
 DEVELOPED FOR YACHTS AND RV'S

MoonRay achieves a uniquely high peak efficiency in all conditions, with the charge already starting at low PV voltages. Where other controllers have a sharp efficiency curve, MoonRay maintains a consistent efficiency curve over the whole input range.



MOONRAY SMART MPPT

The in-house developed MPPT algorithm provides a consistent efficiency output curve from the MoonRay controllers that ensures the highest possible daily output.



COMPETITOR MPPT

Showing a characteristic peak output that is dependant on optimal conditions, leading to lower overall efficiency.



# MULTI CONNECT APP & MOBILE SMART HOME

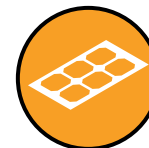


MOBILE SMART HOME PRODUCTS  
 UPDATED: MULTI CONNECT 2022  
 WIRELESS NETWORK PLATFORM

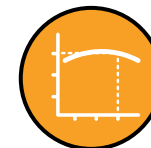
2022 brings a major update to the SUNBEAMsystem Multi Connect platform with the introduction of the Smart Hub and the addition of Mobile Smart Home products.

You can now use any Android tablet as the central Hub in your system, connecting all compatible products as well as multiple smartphones for both monitoring and controlling.

Upgrade existing lights with the smart dimmer. Connect your equipment to the smart switch for instant remote control. Battery Monitor products, for less anxiety.



LIVE AND HISTORIC SOLAR CHARGE PERFORMANCE



COMBINE DATA FROM MULTIPLE MOONRAYS



OVERVIEW OF YOUR TOTAL BATTERY BANK



CONNECT MULTIPLE SMARTPHONES SIMULTANEOUSLY

# TOUGH++

## THE BEST AND MOST EFFICIENT SOLAR PANEL ON THE MARKET!

Mark Slats, a born adventurer and athlete broke the world record for rowing across the Atlantic. In 2017 Mark Slats cut 22 days off the previous record and crossed the Atlantic in just 30 days - leaving his competition far behind. In 2020 Mark teamed up with Kai and won the TWAC again, adding another world record to his accomplishments.

“Out on the open ocean, you are fully dependent on your equipment. Therefore my boat was outfitted with the best solar panels available on the market.” - Mark Slats

Sunbeamsystem is a proud partner of Mark Slat's campaigns and will continue to deliver lightweight, durable, and extremely efficient solar panels for his future endeavors.

Mark Slats & Kai Wiedmer - Team Row4Cancer - Picture: Eva Bloem



## TOUGH++ | WORLD RECORD EFFICIENCY AT 25.2%

TOUGH++ is a state-of-the-art solar panel, with the newest and most powerful technology currently available. Built with the best materials to ensure it is resilient against the most demanding circumstances.



Pictures: Atlantic Campaigns



# TOUGH+

## DEVELOPED FOR PROFESSIONAL APPLICATIONS

SUNBEAMsystem TOUGH+ has been developed for professional purposes and high-end applications. Fitted with Sunpower™ cells with an impressive 23.7% efficiency, these models are the first choice for any user that's ready to put the highest demand on their panels.



TOUGH+ can be installed on any solid surface, providing a safe anti-slip surface to walk on - even in wet conditions. The TOUGH+ design is clean without any traditional eyelets and is instead delivered with a 3M double-sided adhesive sheet for a quick and trouble-free installation, paired with our flat Flush cable to create a seamless integration on any yacht deck.



	TOUGH++ 126W	TOUGH+ 116W	TOUGH+ 82W	TOUGH+ 58W	TOUGH+ 39W
Shadow Optimized	Yes	Yes	Yes	-	-
Size (cm)	106x54	106x54	77.8x54	54x54	37.8x53.5
Weight (Kg)	2.6	2.6	1.9	1.3	0.7
Cable	Flush - 2m	Flush - 2m	Flush - 2m	Flush - 2m	Flush - 2m

# TOUGH+

BLACK SERIES

## BALTIC 68 CAFÉ RACER FROM BALTIC YACHTS

Designed to deliver electrifying performance in more ways than one, the BALTIC 68 Cafe Racer is a groundbreaking yacht built to leave a mark on its spectator but not the environment. Her 'un-plug and go' electric propulsion and generation system is extremely eco-friendly and she's finished to a luxurious standard both on deck and below.

This Baltic 68 Café Racer's e-credentials include 12 TOUGH+BLACK solar panels mounted on the roof of the cabin. These power the air conditioning and ensure that the battery bank stays fully charged. The black panels blend into the superstructure perfectly, complemented with a series of cut-to-size TOUGH+ BLACK HOLE Gap Filler panels to complete the aesthetic lines of the design.

*“ This is a yacht which tackles today’s challenges of sustainability and low carbon targets head on – she’s fun and easy to handle, offering a genuinely rewarding sailing experience. ”*

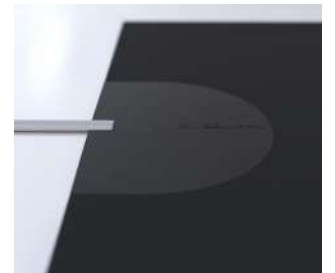
**Henry Hawkins EVP Baltic Yachts**



Photos: Stuart Pearce - Yacht-Shot



TOUGH+BLACK is the solution for any high-end yacht where aesthetics and seamless integration are a priority. TOUGH+BLACK features 24.4% cell efficiency, is free from eyelets and comes with a 3M double-sided adhesive for rapid and durable installation.



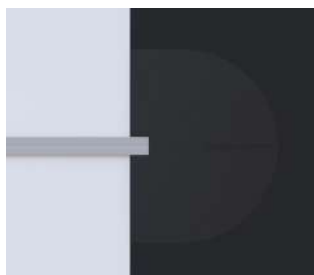
	TOUGH+ 121W B	TOUGH+ 86W B	TOUGH+ 46W Long B
Shadow Optimized	Yes	Yes	Yes
Size (cm)	106x54	77.8x54	85x27.7
Weight (Kg)	2.6	1.9	0.8
Cable	Flush - 2m	Flush - 2m	Flush - 2m





# TOUGH BLACK SERIES

The TOUGH BLACK series is the all-round solution for any user aiming for an inconspicuous solar panel installation. With their full black appearance, and boasting a 22.6% efficiency, the TOUGH BLACK series outshines the competition.



	TOUGH 114W B	TOUGH 111W B	TOUGH 78W B	TOUGH 55W B	TOUGH 55W B Long
Shadow Optimized	Yes	Yes	Yes	Yes	Yes
Size (cm)	79x74	106x54	77.8x54	54x54	106x27.7
Weight (Kg)	2.6	2.5	1.9	1	1
Cable	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m
Eyelets	No	6x6mm	4x6mm	4x6mm	No



## TOUGH BLACK HOLE - GAP FILLER

The TOUGH BLACK HOLE - gap filler panels allow for a seamless deck integration. This aesthetic solution lets you fill-up the space around your panels with ease: simply cut the filler panels to the desired size to create an uninterrupted surface. The filler panels measure 106 by 54 cm and are available with or without 3M double-sided adhesive to match your panels of choice.



EASY INSTALL WITH A CUSTOM FINISH



# CARBON

## DURABLE & LONG-LIFE

After years of development, there is finally a truly durable solution for using solar panels on a canvas surface: SUNBEAMsystem TOUGH+ CARBON. The CARBON series allows you to transform your sprayhood and bimini into efficient solar power generators.

Mounting solar panels on soft surfaces has traditionally been a challenge where you either had to choose between an expensive heavy customized structure to support your panels, or experience how lightweight solar panels would fail prematurely due to the lack of structural support.



THE PREFERRED CHOICE FOR SOFT SURFACES

### ENTER THE CARBON SERIES:

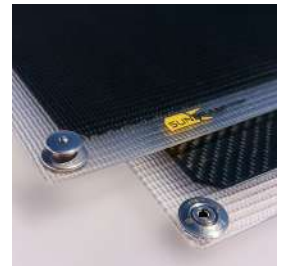
Protected Design with an internal carbon fiber stringer. Light as not to burden the cloth and stiff to provide structural integrity, protecting the precious interior. Powerful Sunpower™ cells provides an unbeatable amount of Watt per area. Combined with our Shadow Optimized technology they ensure a better output during partial shading.



With attention to every detail, the CARBON panels are the perfect solution for installation on soft surfaces. The solar panels arrive with pre-installed waterproof MC4 connections and the edges are coated with a flexible material to protect the fabric.

### CHOOSE BETWEEN BUTTON OR VELCRO ATTACHMENT

For general use you can simply attach button fasteners in the fabric yourself. Advanced users, experiencing hard winds or high speeds, can opt for the CARBON VELCRO BATTEN which distribute the forces over a larger area of fabric using velcro strips.



QUICK FIX  
BUTTONS



LIGHT & STIFF  
CARBON FIBER



5 YEARS  
WARRANTY

	T+ Carbon 116W	T+ Carbon 82W	T Carbon 55W
Shadow Optimized	Yes	Yes	Yes
Size (cm)	107.8 x 55.4	79.6x55.4	56.3x55.4
Weight (Kg)	2.8	2	1.4
Cable	7dm+MC4	7dm+MC4	7dm+MC4
Eyelets	6 x QuickFix	6 x QuickFix	4 x QuickFix



CARBON SERIES VIDEO





# TOUGH

## WINNER IN MULTIPLE REAL-LIFE TESTS

Since its introduction, the TOUGH series has been a first-prize winner in multiple independent real-life tests, carried out by third parties. Thanks to a broad range with different sizes, the TOUGH series offers a universal power solution for a wide variety of applications.

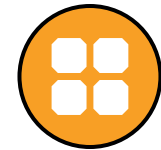
The unique TOUGH surface makes it the preferred panel not only for the yachting industry, but also for industrial off-grid purposes due to its resilience to the harshest conditions.

Every TOUGH model is built with Sunpower™ cells with a minimum efficiency of 22.6%. The walkable surface is incredibly durable, resistant to high UV-exposure and offers more light transmission than glass, especially in low light angles. Thanks to our Flushed connection (protected design), installing TOUGH panels will result in both an aesthetic and safe installation, without any risk of tripping on exposed cables.

In addition, all TOUGH panels from 55W and above are equipped with SHADOW OPTIMIZED technology, SUNBEAMsystem's own protected feature ensuring maximized power output in partially shaded conditions.



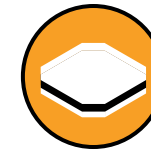
Picture by Rosättra Båtvarv | Linjett 43



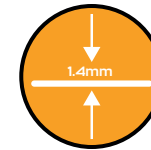
HIGH EFFICIENCY SOLAR CELLS



ANTISLIP SURFACE



UPGRADED CELL PROTECTION



INVISIBLE 2022 FLUSH CABLE



5 YEARS WARRANTY

	TOUGH 111W	TOUGH 78W	TOUGH 55W	TOUGH 37W	TOUGH 21W	TOUGH 21W Long
Shadow Optimized	Yes	Yes	Yes	-	-	-
Size (cm)	106x54	77.8x54	54x54	37.8x53.5	43.4x27.7	14.7x85
Weight (Kg)	2.6	1.9	1.3	0.7	0.3	0.3
Cable	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m
Eyelets	6x6mm	4x6mm	4x6mm	4x6mm	4x6mm	No



TOUGH SERIES VIDEO

# TOUGH

FOLD SERIES

## POWER YOUR ADVENTURES

TOUGH FOLD is the perfect companion when you need solar power on the go. Our waterproof FOLD series are available in four different sizes to power all your needs: simply unfold, connect and you'll be charging in no time.

The TOUGH FOLD panels are extremely small in relation to the wattage. When folded the size is comparable with a laptop. Fully laminated in one piece with soft corners offers unique protection against water and dust ingress.

Waterproof MC4 connectors feature a quick-release system.

# SMART POWER STATION

Whether you are working from your 'remote office' or planning your next expedition - the SMART POWER STATION is the perfect companion to cover your power needs.

Featuring the same cobalt-free lithium cells as the rest of our batteries, it packs an astonishing 154Wh capacity while being environmentally conscious. The SMART POWER STATION easily fits your bag, can charge a typical modern laptop 3 times or a mobile phone 10 to 15 times. Features a USB-C 60W PD port, 2 x USB-A and we have even included a 12V socket to power your mobile fridge!



## MINI-R

Combine a FOLD panel with our extremely small MINI-R charge controller to create the most portable battery charger on the market. Connect the 65W MINI-R directly to a 12V battery with the included clamps or 12V socket adapter and start charging right away.

## SMART & VERSATILE - SOLAR AND GRID CHARGE

Fully charged in 4 hours using the included 230V adapter or a USB-C PD charger. Rather charge your SMART POWER STATION on the go? Simply plug in one of our FOLD panels to get an instant solar charge!

	TOUGH Fold 124.5W	TOUGH Fold 62W	TOUGH Fold 41.5W	TOUGH Fold 21W
Size Folded (cm)	42 x 29	42 x 28.5	30 x 28	30.5 x 16
Size Unfolded (cm)	171.5 x 42	85 x 42	84 x 30	47 x 30.5
Weight (Kg)	2.6	1.3	1	0.45
Cable	Short +MC4	Short +MC4	Short +MC4	Short +MC4
Eyelets	4 x 9mm	4 x 9mm	4 x 9mm	4 x 9mm



FOLD SERIES VIDEO



# MULTI CONNECT APP & MOBILE SMART HOME

Gain full insight in your energy production and consumption using our SUNBEAMsystem Multi Connect application, available for both Android and iOS.

The application provides you with a care-free experience, giving fingertip control and access to all of your SUNBEAMsystem smart devices aboard your vessel.

Fully customizable: combine multiple devices, add shortcuts or switch to dark mode after sunset.

Newly introduced is the Smart Hub functionality, which allows you to use any Android tablet as a central hub for monitoring and accessing all connected SUNBEAMsystem smart devices - no more need for expensive proprietary displays.

**SMART HUB FEATURE**  
Central tablet display  
Connect all devices  
Remote monitoring



**MOBILE SMART HOME**  
Monitor and control all devices  
Personalize your dashboard  
Automated schedules



**SMART NOTIFICATIONS**  
Minimal top bar icon  
Out-of-focus notifications  
Wearables supported



SMART CUSTOM SWITCH



SMART DIMMER CONTROL



TURN ON/OFF WITH A CLICK



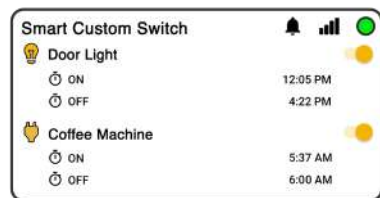
DETAILED MONITORING

Place your Smart Hub tablet in a convenient spot using the magnetic wall mount, easily detached for normal tablet use. By adding the proximity sensor your Hub tablet will automatically switch the screen on when you approach, switching off to save energy when nobody's near.

With the Smart Hub permanently connected to all devices in your network, it is possible to connect all family smartphones via the Hub to the Multi Connect network simultaneously. Remote internet access to the Smart Hub will soon be available.

# AUTOMATE YOUR MOBILE HOME

You can now add existing devices to the Multi Connect network with our newly launched Mobile Smart Home products.



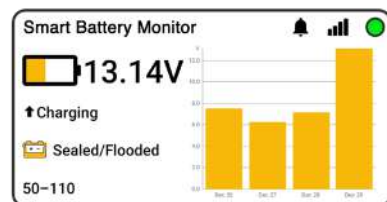
## SMART SWITCH & SMART DIMMER

Upgrade existing equipment with our Smart Switch or Smart Dimmer! Simply connect up to two existing consumers and enjoy remote control and automated schedules via the SUNBEAMsystem Multi Connect app. The Smart Switch offers simple on/off functionality, while the Smart Dimmer also allows for dimming your lighting to the desired brightness. Both the Smart Switch and Dimmer can control currents up to 10A (max 120W - 12V system), feature two channels that can be separately controlled and are powered by any 5-12V DC source.

## SMART BATTERY MONITORS

Monitor your existing 12V lead-acid batteries with the Multi Connect APP using our Smart Battery Monitors, available in three models. The Smart Battery Monitor (in both 500A or 1000A version) is a highly precise shunt, measuring the state of charge as well as in- and outgoing currents. Their smaller brother, the Smart Battery Monitor Light, provides you with an accurate voltage for a simple and easy charge reading.

All can be installed within minutes, allowing you to keep track of your battery's charge remotely.



## MOONRAY

MoonRay Solar Charge controllers can be added to your Multi Connect app with the optional bluetooth module. This makes the initial setup a breeze: simply select the right charging profile and you're good to go.

It also allows for monitoring both real-time and historic solar charge data. Combine data from multiple MoonRay's in a single view to show total production, or view their data separately to compare performance.

## SMART LITHIUM

All our SMART LITHIUM batteries have Multi Connect functionality right out of the box. The built-in module provides a rich amount of data, making shunts redundant. You can fully personalize how you want to group and show battery data, regardless of how many batteries you have in your vessel.

Easily switch between the combined view of all batteries to that of a single one, receive smart notifications or set alarms to warn for low levels of charge.



	Smart Switch
Power source	5 - 12V
Number Switches	2
Max Switch Current	10A
Dimensions	50 x 82 x 31mm

	Smart Dimmer
Power source	5 - 12V
Number Switches	2
Max Switch Current	10A
Dimensions	50 x 82 x 31mm

# SMART LITHIUM



## PLUG & PLAY

AN EASY UPGRADE FOR ANYONE

The Plug & Play models have the unique ability to be a simple DROP IN replacement for any lead-acid battery in vessels. The advanced electronics is gentle and ALTERNATOR FRIENDLY. It emulates an older battery, avoiding risks present in cheaper BMS based lithium batteries. All in all a battery that will let you upgrade WITHOUT CHANGING ANY OTHER EQUIPMENT.

Our **ONE** model is perhaps the most powerful battery on the market, with exceptional performance to handle the most demanding applications. The oversized internal construction of the **ONE** battery allows a 90% charge within 30 minutes and can deliver a peak discharge of up to 600A!

Looking for a bigger storage capacity? The **BASIC** model is optimized for usage in numbers, easily creating larger battery banks of up to 10 batteries in parallel.

	ONE	BASIC	BASIC 24V	MODEL S RACE		
Capacity	100Ah	100Ah	50Ah	38Ah		
System Voltage	12V	12V	24V	12V		
Max Cont. Charge	190A	100A	50A	80A	DEPTH OF DISCHARGE	80% OF FACTORY CAPACITY AFTER
Max Cont. Discharge	190A	100A	50A	80A	50% DoD	5000 cycles
Peak Discharge (10s)	600A	450A	225A	250A	70% DoD	3000 cycles
Weight	14.2kg	14.2kg	14.2kg	4.68kg	80% DoD	2500 cycles
Size (mm)	328 x 172 x 222	328 x 172 x 222	328 x 172 x 222	195 x 129 x 165	100% DoD	2000 cycles

# MULTI-LAYERED SAFETY

## 1 - SAFEST LIFEPO4 CHEMISTRY

Outstanding performance and unmatched safety with our lithium phosphate cells, offering a unique 5-year warranty.

## 2 - FIRE SAFETY VALVES

Our batteries are UN38.3 CERTIFIED: a guarantee for total safety even when exposed to fire, punctured or crushed cells, strong vibrations, overcharging or short-circuiting.

## 3 - ELECTRONIC SAFEGUARDS

The built-in BMS (Battery Management System) offers multiple automatic safety features, allows for use in a wide temperature range, and connects to your Multi Connect app.

SUPER QUICK CHARGE

DISCHARGE UP TO 600A

VIBRATION PROOF

AIR TRANSPORT CERTIFIED



ADVANCED HIGH CURRENT BMS

CYLINDRICAL BOLTED CELLS





# SMART LITHIUM

## DRIVE

Searching for the perfect marine propulsion battery? The SMART LITHIUM DRIVE range offers the perfect power source for both small outboard trolling motors as well as larger inboard drivetrains.

Based on the success of the Plug & Play series we have developed a series of batteries that serves all your electric propulsion needs. With these lightweight but powerful batteries you can expect better acceleration and higher top speeds, boosting the agility of your vessel.



**EXTREME POWER**  
Up to 10kW of power  
Quick Charge



**MULTI CONNECT APP**  
Wireless monitoring  
Range prognosis



**LiFePO4 CELLS**  
2.5x longer lifespan  
5 year warranty  
Deplete till 0% without damage



**LIGHTWEIGHT**  
4.5x less weight  
Carrying strap  
Optional silicone cover



**NEW 2022 FEATURES**  
Easy charge reboot  
Winter mode



**BUILT IN BMS**  
Use standard chargers  
Built-in safety features

	12v 1000Wh	12v 1300Wh	24v 1300Wh	36v 1380Wh	48v 1440Wh	48v 5kWh	48v 10kWh
Capacity	1000Wh	1300Wh	1300Wh	1380Wh	1440Wh	5.1kWh	10kWh
System Voltage	12V	12V	24V	36V	48V	48V	48V
Max. motor	55 lbs*	65 lbs*	85 lbs	115 lbs	180lbs/2.7kw	5.1kW	10kW or 5kW
Weight	10.8kg	14.2kg	14.2kg	14.5kg	15kg	53kg	110kg
Size (mm)	328x172x222	328x172x222	328x172x222	328x172x222	328x172x222	520x269x220	540x420x273

\* Use 3 batteries in serial connection for 36V 120lbs  
For 36V serial banks: 3-channel 12V charger, or individual 12V chargers required

	Silicone Cover
Max thickness	5 mm
Inside size (mm)	328 x 172 x 222

	Pole Adaptors
Material	Full Copper
Included	Pos+Neg+Bolts

# MOONRAY SERIES

PEAK PERFORMANCE IN ALL CONDITIONS  
 SHADOW OPTIMIZED TECHNOLOGY  
 OPTIMIZED FOR YACHTS & MOTORHOMES



MoonRay harvesting power in low light conditions  
 - Lunark Project, Greenland

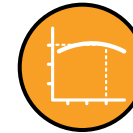


Yachts and RV's are among the most difficult solar applications to create perfect PV conditions: no fixed orientation, small surfaces and a lot of partial shadowing. These hard requirements demand a unique and innovative approach to ensure you get the most out of your SUNBEAMsystem solar panels. How did we optimize our MoonRay for this?



## LOW PV VOLTAGE START

- Charging starts early: use all daylight hours
- Perfect for cloudy weather or low sun angles
- No serial connections needed



## CONSISTENT EFFICIENCY CURVE

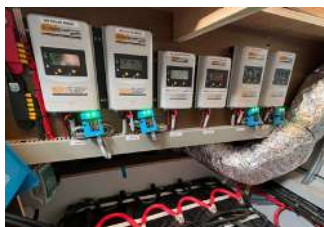
- Stable efficiency across all PV input
- No demands on solar angle and irradiation



## BROAD MPPT RANGE

- Optimized for both small and large panels
- Perfect fit with Shadow Optimized models

And MoonRay features the lowest self-consumption in the market with **only 13mA!**



Art nr.	Product	Sys Voltage	Max. PV rated power	Weight	Dimensions (mm)
MR160	MoonRay160	12/24V DC	160W(12V)   320W(24V)	0.6 kg	175x143x48
MR320	MoonRay 320	12/24V DC	320W(12V)   640W(24V)	1.1 kg	217x158x56.5

# LUNARK MISSION

MORIUSAQ, GREENLAND

Breaching new frontiers is in the human DNA - paired with the drive to explore some of the most inhabitable places, SAGA Space Architects has designed a foldable lunar habitat called Lunark.



Karl-Johan Sørensen  
Saga Space Architects

To power the first long-term test in the freezing arctic the Lunark was equipped with custom TOUGH++ Race solar panels which were integrated into the folding structure.

The energy supply consisted of our Smart Lithium batteries paired with Moonray charge controllers to ensure every bit of sunlight was captured and provide a comfortable living environment despite hurricane-level winds, snowstorms, and temperatures below -30°C.



From September to November 2020 the habitat was tested in a simulated moon mission, located in the arctic conditions of Moriusaq, Greenland. Sebastian Aristotelis and Karl-Johan Sorensen deployed the Lunark module and spent 60 days living inside isolated from the world.



**SAGA**  
Space Architects

**SUNBEAM** SYSTEM

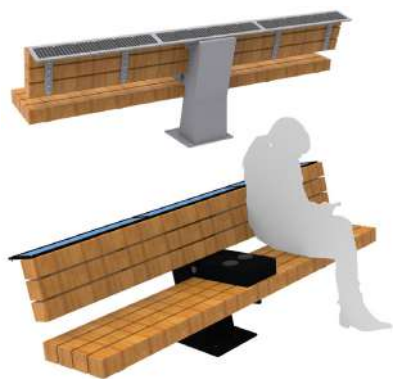




# INDUSTRIAL APPLICATIONS

One of SUNBEAMsystems key markets has always been the marine sector - a harsh environment for any electronics where salt water, varying temperatures and rough conditions soon deteriorate any substandard products.

These high requirements mean that our products are perfect for a broad range of other applications as well. Get in touch if you're curious about our off-grid solutions!



# TOUGH++

RACE SERIES

The TOUGH++ RACE Series features a never before seen power-to-weight ratio, without compromising the durability of the

panel. Specifically developed for race applications, together with our own Joakim Brantingson who's currently preparing for the 2023 Mini Transat:

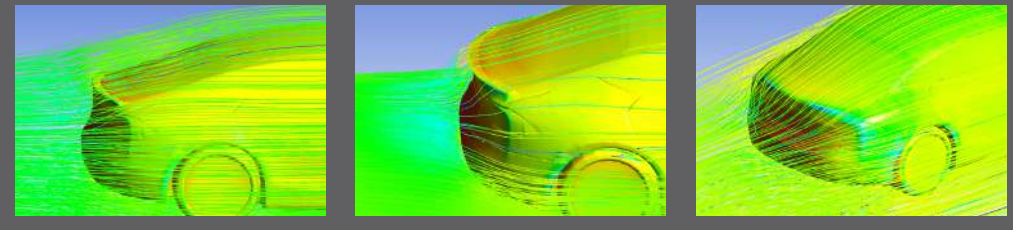
*"When I set sail I trust my solar panels to provide adequate power for the approx. 20 days of sailing it takes to cross the Atlantic. As we are alone on our boats, we rely on our power-hungry autopilots when we sleep. Speeds over 20 knots are not uncommon. But even more impressive is that boats cross the finish line at the other side of the Atlantic within minutes of each other, meaning every kilogram of weight counts."*



Spectrum Solar Team

# RESEARCH & DEVELOPMENT

How to improve an already ingenious product? Our R&D department took up the challenge and succeeded in optimizing a Tesla Model S at both slow and high speeds, as well as during the parking phase.



## AERODYNAMIC RANGE EXTENDER

By installing extra thin **TOUGH++ RACE** solar panels we added more than 20% of range in slow city traffic. To optimize highway use (100+km/h) we developed a **RANGE EXTENDING SPOILER**, resulting in a minimum of 5.5% reduction in drag. Made from carbon fiber, it adds range and not weight.



## PLUG & PLAY MODEL S RACE

The big surprise was that Tesla still uses outdated lead-acid batteries to power their 12V systems. Especially during parking these batteries siphon off range due to their inefficient charging cycle. We developed a special LiFePO4 battery: **MODEL S RACE** (38Ah). It offers a 64% reduction in weight and reduces parking consumption up to 20%.





MAREX 360 CC



# MAXA

The MAXA series is packed with a lot of the unique features you only find at SUNBEAMsystem. It features an ETFE surface (the next best thing after TOUGH) and comes at a very sharp price.



The MAXA series has been designed as the ideal solar panel for use on both motorhomes and utility vans, with a build quality and durability outshining the competition. The low weight and 3mm thickness make it perfect for rooftop integration. The ETFE surface is in most conditions self-cleaning by the occasional rain shower. Avoid the weight and air turbulence caused by solid solar panels.

The flat cable is easily glued along the roof to the cable entrance.

The 22.3% efficient cells ensures impressive amounts of solar power being produced from your available roof space. All of the MAXA panels comes with the Shadow Optimized-technology to ensure highest possible power output in real-world conditions.

	Maxa Black 109W	Maxa 109W	Maxa 54W	Maxa 54W Long
Shadow Optimized	Yes	Yes	Yes	Yes
Size (cm)	106x54	106x54	54.5x53.5	106x27.7
Weight (Kg)	2	2	1	1
Cable	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m	Flush - 1.5m

# NORDIC

The NORDIC series has been developed by SUNBEAMsystem for use in its region of origin: the northern latitudes. It offers a universal and economical solution for applications with a requirement for lightweight, flexible and compact solar panels.

All NORDIC models are equipped with our unique Shadow Optimized technology for improved performance in partial shadowing. All Nordic models feature modern and more efficient solar cells, increasing the peak power output. The Flush models are shipped without stainless steel eyes allowing for a seamless integration on hard surfaces.

The Junction Box models are fitted with stainless steel eyes and MC4 connectors for easy mounting and a waterproof connection.



	Nordic 104W JB	Nordic 104W	Nordic 54W JB	Nordic 54W
Shadow Optimized	Yes	Yes	Yes	Yes
Size (cm)	106x54	106x54	54.5x53.5	54.5x53.5
Weight (Kg)	2	2	1	1
Cable	7dm+MC4	Flush - 1.5m	7dm+MC4	Flush - 1.5m



## TOUGH++

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	FLUSH CABLE
TPP106x54FS	TOUGH++ 126W	125.8	Yes	106x54	25.20%	30V (80V)	20.48	6.08	23.264	6.45	3%	2.5	2m

## TOUGH+

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	FLUSH CABLE
TP106x54FS	TOUGH+ 116W	116.1	Yes	106x54	23.7%	30V (80V)	19.87	5.84	23.07	6.5	3%	2.5	2m
TP78x54FS	TOUGH+ 82W	82.3	Yes	77.8x54	23.7%	30V (80V)	21.12	3.9	24.52	4.36	3%	1.9	2m
TP54x54FS	TOUGH+ 58W	58.1	-	54x54	23.7%	30V (80V)	19.87	2.92	23.07	3.08	3%	1.3	2m
TP38x53FS	TOUGH+ 39W	38.7	-	37.8x53.5	23.7%	30V (80V)	19.88	1.95	23.08	2.05	3%	0.7	2m

## TOUGH+BLACK

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	FLUSH CABLE
TP106x54FS-B	TOUGH+ B 121W	121	Yes	106x54	24.40%	30V (80V)	20.16	6.01	23.17	6.43	3%	2.5	2m
TP78x54FS-B	TOUGH+ B 86W	85.7	Yes	77.8x54	24.40%	30V (80V)	21.42	4	24.52	4.36	3%	1.9	2m
TP85x27FS-B	TOUGH+B 46W L	46.2	yes	85x27.7	24.40%	30V (50V)	22.68	2.03	25.96	2.41	3%	0.8	2m

## TOUGH SERIES

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	FLUSH CABLE (m)	EYELETS 6mm
T106x54FS	TOUGH 111W	110.8	Yes	106x54	22.6%	30V (65V)	18.56	5.97	21.76	6.32	3%	2.6	1.5	6
T78x54FS	TOUGH 78W	78.4	Yes	77.8x54	22.6%	30V (65V)	19.72	3.98	23.12	4.48	3%	1.9	1.5	4
T54x54FS	TOUGH 55W	55.4	Yes	54x54	22.6%	30V (65V)	19.5	2.82	21.76	3.16	3%	1.2	1.5	4
T38x53FS	TOUGH 37W	36.9	-	37.8x53.5	22.6%	30V (50V)	18.57	1.99	21.77	2.11	3%	0.7	1.5	4
T28x43FS	TOUGH 21W	20.8	-	43.4x27.7	22.6%	30V (50V)	20.88	0.99	24.48	1.19	3%	0.3	1.5	4
T15x85FS	TOUGH 21W L	20.8	-	14.7x85	22.6%	30V (50V)	20.88	0.99	24.48	1.19	3%	0.3	1.5	No

## TOUGH BLACK

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	FLUSH CABLE (m)	EYELETS 6mm
T106x54FS-B	TOUGH B 111W	110.8	Yes	106x54	22.6%	30V (65V)	18.56	5.97	21.76	6.32	3%	2.6	1.5	6
T79x74FS-B	TOUGH B114W	114.3	Yes	79x74	22.6%	30V (65V)	19.14	6.16	22.44	6.52	3%	2.6	1.5	-
T78x54FS-B	TOUGH B 78W	78.4	Yes	77.8x54	22.6%	30V (65V)	19.72	3.98	23.12	4.48	3%	1.9	1.5	4
T54x54FS-B	TOUGH B 55W	55.4	Yes	54x54	22.6%	30V (65V)	19.5	2.82	21.76	3.16	3%	1.2	1.5	4
T106x27FS-B	TOUGH B 55W L	55.4	Yes	106x27.7	22.6%	30V (65V)	19.5	2.82	21.76	3.16	3%	1.2	1.5	-

## CARBON / QUICK FIX

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	MAX SYS VOLTAGE*	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	Kg	CABLE 7dm	FIXING
TPC 107x55QF	TOUGH+ 116W Carbon	116.1	Yes	107.8 x 55.4	23.70%	45V (80V)	19.87	5.84	23.07	6.15	3%	2.8	+MC4	6xQF
TPC 79x55QF	TOUGH+ 82W Carbon	82.3	Yes	79.6 x 55.4	23.70%	30V (80V)	21.12	3.9	24.52	4.36	3%	2	+MC4	6xQF
TC 56x55QF	TOUGH 55W Carbon QF	55.4	Yes	56.3 x 55.4	22.6%	45V (45V)	19.5	2.82	25.11	3.16	3%	1.4	+MC4	4xQF

\*Max System Voltage Include By-Pass-Diode

## FOLD SERIES

ART #	MODEL	W <sub>p</sub>	FOLD SIZE (cm)	UNFOLD SIZE (cm)	SUNPOWER CELL	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	MAX SYS VOLTAGE	Kg	SHORT CABLE	EYELETS 9mm
22.6%	T Fold 124.5W	124.5	42 x 29	171.5x42	22.6%	20.88	5.97	24.48	6.32	3%	30V	2.6	+ MC4	4
TZ85x42	T Fold 62W	62	42 x 28.5	85x42	22.6%	20.88	2.99	24.48	3.16	3%	30V	1.3	+ MC4	4
TZ86x30	T Fold 41.5W	41.5	30 x 28	84x30	22.6%	20.88	1.99	24.48	2.11	3%	30V	1	+ MC4	4
TZ47x30	T Fold 21W	20.75	30.5 x 16	47x30.5	22.6%	20.88	0.99	24.48	1.19	3%	30V	.45	+ MC4	4

## MAXA

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	MAX SYS VOLTAGE	Kg	FLUSH CABLE
X106x54FS-B	Maxa Black 109W	109.1	Yes	106x54	22.3%	18.432	5.92	21.696	6.29	4%	30V	2	1.5m
X106x54FS	Maxa 109W	109.1	Yes	106x54	22.3%	18.432	5.92	21.696	6.29	4%	30V	2	1.5m
X54x53FS	Maxa 54W	54	Yes	54.5x53.5	22.3%	20.224	3.06	25.74	2.75	4%	30V	1	1.5m
X106x27FS	Maxa 54W Long	54	Yes	106x27.7	22.3%	20.224	3.06	25.74	2.75	4%	30V	1	1.5m

## NORDIC

ART #	MODEL	W <sub>p</sub>	SHADOW OPT	SIZE (cm)	SUNPOWER CELL	V <sub>mp</sub>	I <sub>mp</sub>	V <sub>oc</sub>	I <sub>sc</sub>	PTOL +/-	MAX SYS VOLTAGE	Kg	CABLE	EYELETS 6mm
N106x54JB	Nordic 104W JB	104	Yes	106x54	Yes	17.55	5.93	22.69	6.34	5%	30V	2	7dm+MC4	6
N106x54F	Nordic 104W	104	Yes	106x54	Yes	17.55	5.93	22.69	6.34	5%	30V	2	Flush 1.5m	-
N54x53F	Nordic 54W	54	Yes	54.5x53.5	Yes	19.6	2.76	25.74	3.06	5%	30V	1	Flush 1.5m	-
N54x53JB	Nordic 54w JB	54	Yes	54.5x53.5	Yes	19.6	2.76	25.74	3.06	5%	30V	1	7dm+MC4	4

## BLACK HOLE GAP FILLER

ART #	MODEL	SIZE	FIXING	CELLS
TBlackHole	TOUGH BLACK Hole	106x54 cm	Not included	No Cells
TPBlackHole	TOUGH+ BLACK Hole	106x54 cm	Included 3M Adhesive	No Cells

## EXPLANATION OF LISTED VALUES

All values are measured in standard testing conditions:

- 1000W/M2, 1.5 atm, 25° Celsius
- Temperature coefficient I<sub>sc</sub> = 0.05 (%/°C)
- Temperature coefficient Voc = 0.27 (%/°C)
- Temperature coefficient Pmax = 0.29 (%/°C)

Weight: Listed weights without cables.

P<sub>max</sub> is the maximal attainable power.

V<sub>oc</sub> (Voltage open circuit), also referred to as the clamping voltage, is the maximum voltage when no load is connected.

I<sub>sc</sub> (Ampere short circuit) is the maximum current when the panel is short circuited.

V<sub>mp</sub> (Voltage maximum power) is the maximum voltage a panel produces under ideal circumstances.

I<sub>mp</sub> (Ampere maximum power) is the maximum current a panel produces under ideal circumstances.

INFORMATION ON DIFFERENT OPTIONS AND CORRECT MOUNTING CAN BE FOUND IN THE KNOWLEDGE BANK ON THE SUNBEAMSYSTEM WEBSITE

[WWW.SUNBEAMSYSTEM.COM](http://WWW.SUNBEAMSYSTEM.COM)



PHOTO: STUART PEARCE - YACHT-SHOT | BALTIC 68 CAFÉ RACER | BALTIC YACHTS  
FEATURING 12 X SUNBEAMSYSTEM TOUGH+ BLACK 121W SOLAR PANELS