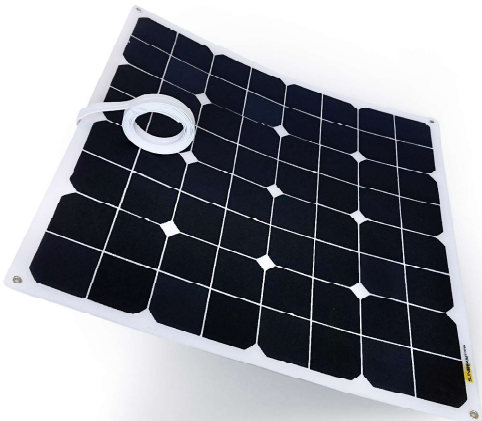


# SUNBEAM<sup>SYSTEM</sup>

## Innovative Solar Panels



- Flexible & Walkable
- Highest Efficiency
- Extremely Durable

## Catalogue 2019



### The Swedish Philosophy

The Swedish company SUNBEAMsystem is the market leader in flexible and walkable solar panels. They are specifically designed for use in the most demanding circumstances, which makes them well suited for application in the yachting industry as well as other off-grid purposes. This makes these high tech solar panels a reliable source of sustainable energy, anywhere in the world.

The record-holding Sunpower™ solar cells guarantee the highest possible production per square meter, a minimal efficiency loss and an improved performance in low light intensity. Our solar panels are very small in size due to the incredible high efficiency of these unique solar cells (24.8% in the Tough++ models).

The unique Swedish design, combined with a high quality and finish, are the basis for a serie of extremely durable solar panels.

Flexible

Walkable

High Production

Small in Size



OFF-GRID



MOBILITY



YACHTING

## What makes SUNBEAMsystem unique?

Innovation is one of the most important drivers within SUNBEAMsystem. The Swedish brand distinguishes itself from the rest of the market by a series of unique and brand specific innovations, features you won't be finding elsewhere. SUNBEAMsystem was founded from the wish to enjoy solar energy aboard, but there was a list of concessions behind every available solution. Convinced by the fact that a better solution should be possible SUNBEAMsystem is now known as the undisputed market leader within the market of hightech solar panels.

We use the newest and best materials available, and supplement them with a range of innovations we developed in-house, to seamlessly match the markets demand. We explore the boundaries of what's possible and combine everything in a state-of-the-art design to achieve the best possible product. Curious how SUNBEAMsystem distinguishes itself from other brands?

### The revolutionary Tough surface

The Tough surface from SUNBEAMsystem is made of extremely durable materials, transmits more light than normal glass and is fitted with an antislip profile. Due to this profile the solar cells catch more light in low sun angles, resulting in a higher daily productions



### Invisible Flushed power cable

The flat SUNBEAMsystem Flush power cable is attached to the back of the panel, allowing for an installation without visible cables. This means that the solar panels is fully integrated into the underlying surface, without the risk of cable damage or tripping hazard.



### The best Sunpower solar cells

SUNBEAMsystem uses the best solar cells in the world: Sunpower™ Maxeon. These cells are on average 1,5 to 2 times as efficient as the cells used in standard glass panels and guarantee that solar panels from SUNBEAMsystem put out the highest production per m<sup>2</sup>.



SUNPOWER

### Unique Shadow Optimized technology

In 2019 most of our models are fitted with the unique Shadow Optimized technology, a feature you'll only find at SUNBEAMsystem. This technology improves the output when a panel is partially shaded, allowing for an even higher daily production.





### The Tough++ series

With the Tough++ 120W Flush, SUNBEAMsystem brings the best and most efficient solar panel available. The newest Sunpower™ Maxeon cells, with an incredible efficiency of 24.8%, are literally twice as efficient as the standard glass solar panels you normally see on houses. On average they produce *more* than twice as much energy on a daily basis than standard glass panels since they also work in low light intensity.

With this state-of-the-art solar panel you get the best and newest solar technology that's currently available. If you really want to get the most out of the available space: look no further. And on top of that the design is fully resilient against the most demanding situations.

Besides the highest production, the Tough++ 120W Flush will also offer you all the advantages of the extremely durable SUNBEAMsystem antislip Tough surface, and allow for an installation without visible wiring due to the newest SUNBEAMsystem flat Flush power cable (attached to the back of the panel).

The Tough+ serie is shipped without stainless steel eyes and includes a separately packed double sided 3M sticker sheet for easy mounting. If you prefer a curing glue we recommend *white* Simson MSR CA or Sikaflex 291. For a perfect result no matter what choice of attachment we recommend running a thin line of kit along the 3mm edges of the panels.

20% More Power

Flat Flush Power Cable

UV-Proof & Antislip

3M Mounting

5 Year Warranty



Tough++ 120W Flush



THE BEST AND MOST EFFICIENT SOLAR PANEL AVAILABLE!

Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Cell	Kg	L	W	Cable	Eyes	3M
TPP120F	Tough++ 120W Flush	122,9W	120W	23,17V	6,43A	20,29V	6,06A	±3%	Yes	24,8%	2,0	106cm	54cm	2m	No	Yes

### The Tough+ series

The four models in the SUNBEAMsystem Tough+ serie are developed for professional purposes and high-end installations. All models are fitted with Sunpower™ cells with an efficiency of no less than 23.7%, resulting in a high production on even the smallest surfaces.

Tough+ is equipped with the same superior materials that have previously been developed for the original Tough series by SUNBEAMsystem. The innovative Tough surface offers a longer lifespan than any other thin and lightweight solar panel. The antislip profile is not only practical for deck mounting; it also catches more light in low sun angles. In addition, the dirt repellent properties also improve daily production by helping to keep the panels clean.

Due to the flat SUNBEAMsystem Flush power cable the panels can be seamlessly integrated on any hard surface, flat as well as curved. After mounting there will be no visible cables and because of the minimal height of only 3mm the panels will be an integral part of the deck.

The Tough+ serie is shipped without stainless steel eyes and includes a separately packed double sided 3M sticker sheet for easy mounting. If you prefer a curing glue we recommend *white* Simson MSR CA or Sikaflex 291. For a perfect result no matter what choice of attachment we recommend running a thin line of kit along the 3mm edges of the panels.

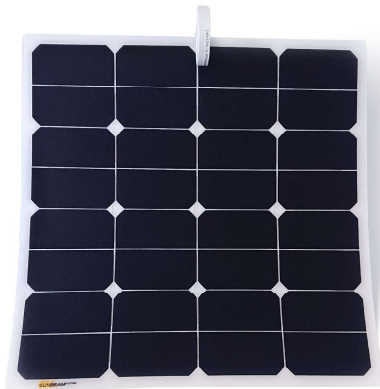
13% More Power

Flat Flush Power Cable

UV-Proof & Antislip

3M Mounting

5 Year Warranty



Tough+ 56W Flush



**3M** VHB



Tough+ 80W Flush

TOUGH+ IS SPECIFICALLY DEVELOPED FOR PROFESSIONAL PURPOSES

Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Cell	Kg	L	W	Cable	Eyes	3M
TP38F	Tough+ 38W Flush	38,7W	38W	23,09V	2,05A	19,88V	1,95A	± 3%	No	23,7%	0,7	53,5cm	37,8cm	2m	No	Yes
TP56F	Tough+ 56W Flush	58,1W	56W	23,07V	3,08A	19,87V	2,92A	± 3%	No	23,7%	1,0	54,5cm	53,5cm	2m	No	Yes
TP80F	Tough+ 80W Flush	82,3W	80W	24,52V	4,36A	21,12V	3,9A	± 3%	Yes	23,7%	1,5	77,8cm	54cm	2m	No	Yes
TP113F	Tough+ 113W Flush	116,1W	113W	23,07V	6,15A	19,87V	5,84A	± 3%	Yes	23,7%	2,0	106cm	54cm	2m	No	Yes

## The Tough series

Since its introduction, the SUNBEAMsystem Tough series has been the absolute winner in multiple real life tests. Due to the wide range of different models the Tough serie is a universal solution for a multitude of markets. The Tough surface is the preferred choice for not only yachts but also for the industrial off-grid purposes. All Tough models are fitted with Sunpower™ Maxeon cells with an efficiency of 22.5% or higher.

The surface of the Tough serie is extremely durable and resistant to strong and long UV exposure. It transmits more light than standard materials, which contributes to a higher daily production. The ribbed profile do not only provide anti slip properties, but also catches more light in low sun angles. In addition, all Tough models from 54W and up are equipped with SUNBEAMsystems innovative Shadow Optimized technology. Due to this technology the panels will perform better when partially shaded.

The Flush models with a flat power cable (without a Junction Box) are by far the best choice for professional installations. Not only does it provide a completely smooth surface on a only 3mm thin panel, but also a degree of waterproofness that cannot be achieved with a junction box.

## TOUGH

Extremely Durable

Powerful & Compact

Shadow Optimized

UV-Proof & Antislip

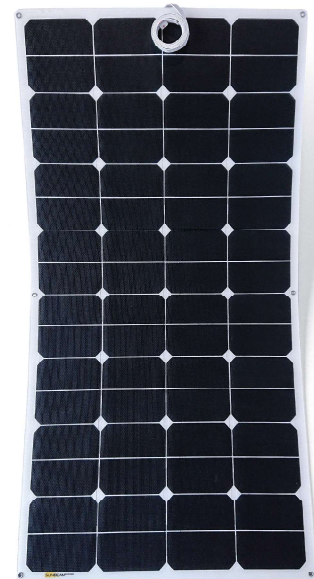
5 Year Warranty



Tough 54W Flush



Tough 108W Flush



## TEST WINNER

Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Cell	Kg	L	W	Cable	Eyes	3M
T20F	Tough 20W Flush	20,8W	20W	24,48V	1,19A	20,88V	0,99A	±3%	No	>22,5%	0,3	43,4cm	27,7cm	1,5m	4x6mm	No
T20LF	Tough 20W Long Flush	20,8W	20W	24,48V	1,19A	20,88V	0,99A	±3%	No	>22,5%	0,3	85cm	17,7cm	1,5m	No	No
T36F	Tough 36W Flush	36,9W	36W	21,77V	2,11A	18,57V	1,99A	±3%	No	>22,5%	0,7	53,5cm	37,8cm	1,5m	4x6mm	No
T54F	Tough 54W Flush	55,4W	54W	21,76V	3,16A	18,56V	2,98A	±3%	Yes	>22,5%	1,0	54,5cm	53,5cm	1,5m	4x6mm	No
* T54JB	Tough 54W Junction Box	55,4W	54W	21,76V	3,16A	18,56V	2,98A	±3%	Yes	>22,5%	1,0	55,5cm	53,5cm	2 x 0,8m	4x6mm	No
T76F	Tough 76W Flush	78,4W	76W	23,12V	4,48A	19,72V	3,98A	±3%	Yes	>22,5%	1,5	77,8cm	54cm	1,5m	4x6mm	No
T108F	Tough 108W Flush	110,8W	108W	21,76V	6,32A	18,56V	5,97A	±3%	Yes	>22,5%	2,0	106cm	54cm	1,5m	6x6mm	No
* T108JB	Tough 108W Junction Box	110,8W	108W	21,76V	6,32A	18,56V	5,97A	±3%	Yes	>22,5%	2,0	106cm	54cm	2 x 0,8m	6x6mm	No

\* The Tough 54W Junction Box and 108W Junction Box are only available upon request..

### The Tough BLACK series

The SUNBEAMsystem Black serie has been specifically designed to integrate with the surface and not look as a solar panel. Due to the dark color the Black models will match the design on ultra modern yachts really well.

Wherever there are high aesthetic requirements the Tough Black serie is your best solution.

The Tough Black serie offers the same advantages and specifications as the Tough serie and is available in four different models. For mounting we advise black Simson MSR CA or Sikaflex 291.

Completely Black

Powerful & Compact

Shadow Optimized

UV-Proof & Antislip

5 Year Warranty



Tough 76W Flush Black



Tough 54W Long Flush Black



Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Cell	Kg	L	W	Cable	Eyes	3M
T54F-Black	Tough 54W Flush Black	55,4W	54W	21,76V	3,16A	18,56V	2,98A	±3%	Yes	>22,5%	1,0	54,5cm	53,5cm	1,5m	4x6mm	No
T54LF-Black	Tough 54W Long Flush Black	55,4W	54W	21,76V	3,16A	18,56V	2,98A	±3%	Yes	>22,5%	1,0	106cm	27,7cm	1,5m	No	No
T76F-Black	Tough 76W Flush Black	78,4W	76W	23,12V	4,48A	19,72V	3,98A	±3%	Yes	>22,5%	1,5	77,8cm	54cm	1,5m	4x6mm	No
T108F-Black	Tough 108W Flush Black	110,8W	108W	21,76V	6,32A	18,56V	5,97A	±3%	Yes	>22,5%	2,0	106cm	54cm	1,5m	6x6mm	No



### The Quick Fix series

The Quick Fix system allows for a semi-temporary mounting on canvas or other surfaces. Easy and fast to mount with the stainless steel studs. The Quick Fix system is the ideal solution to mount solar panels on a sprayhood or bimini.

For a high wind usage we advise the additional SunZip system. This fabric backplate is placed between the Quick Fix panel and the canvas and distributes the point forces from the corners of the panels over a larger surface. The SunZip backplate is attached to canvas using velcro strips (included). Tested in winds up to 50 knots.

The Quick Fix panel is fitted with 2.5mm<sup>2</sup> cables equipped with waterproof (IP67) MC4 connectors. This makes connecting the cables very easy, as well as adjusting the installation to the right system voltage or quick disconnection of the panels.

Detachable Solar Panel

Sprayhood & Bimini

Quick Mounting

Features Tough Surface

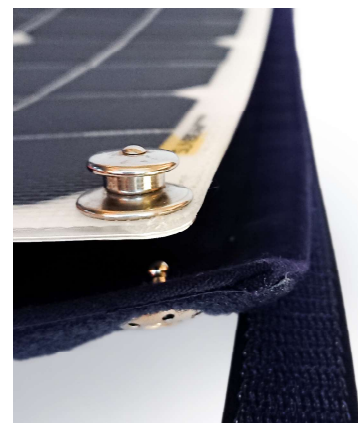
5 Year Warranty



Tough 54W Quick Fix



Art #	Product
Sunzipbak	SunZip backplate for Quick Fix system
QFcanvas	4 pc snap connectors for canvas (tools inc.)
QFstd	4 pc snap connectors for hard surfaces (rectangular)
QFrf	4 pc snap connectors for hard surfaces (stainless steel, round 20mm)



Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Cell	Kg	L	W	Cable	Eyes	3M
T54QF	Tough 54W Quick Fix	55,4W	54W	21,76V	3,16A	18,56V	2,98A	±3%	Yes	>22,5%	1,0	55,5cm	53,5cm	2 x 0,8m	4xLOXX	No



### The Nordic series

The Nordic serie has been developed by SUNBEAMsystem for use in the Northern regions, making it a universal solution for purposes with a requirement for lightweight, flexible and compact solar panels. Because they are more efficient than standard glass solar panels you'll get a higher production from a relatively small size. Together with the minimal thickness of only 3mm they are ideal for use on campers, caravans or other recreational vehicles.

The Nordic models are fitted with a smooth surface and will withstand impacts. All models are equipped with the SUNBEAMsystem Shadow Optimized technology for improved performance in partial shadowing. The Junction Box models are fitted with stainless steel eyes and MC4 connectors for easy mounting and connection. The Flush models are shipped without stainless steel eyes allowing for a seamless integration on hard surfaces. We advice white Simson MSR CA or Sikaflex 291 for mounting.

High Production

Shadow Optimized

Small Size

Flush & Junction Box

2 Year Warranty



Nordic 100W Flush



Nordic 50W Junction Box



Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Kg	L	W	Cable	Eyes	3M
N50F	Nordic 50W Flush	50W	50W	21,7V	3,1A	18,5V	2,9A	± 5%	Yes	0,9	54,5cm	53,5cm	1,5m	No	No
N50JB	Nordic 50W Junction Box	50W	50W	21,7V	3,1A	18,5V	2,9A	± 5%	Yes	0,9	54,5cm	53,5cm	2 x 0,8m	6x6mm	No
N100F	Nordic 100W Flush	100W	100W	21V	6,3A	17,6V	5,7A	± 5%	Yes	1,8	106cm	54cm	1,5m	No	No
* N100JB	Nordic 100W Junction Box	100W	100W	21V	6,3A	17,6V	5,7A	± 5%	Yes	1,8	106cm	54cm	2 x 0,8m	6x6mm	No

\* The Nordic 100W Junction Box model is only available upon request.

### The Classic series

The Classic serie is the economic choice whenever there are no high demands for intensive usage and space is not the limiting factor. Since the cells are less efficient than the cells used in the Tough or Nordic series the daily production is a little lower and the panels are bigger in size, but also more affordable.

The Classic models are only available with Junction Box connection, fitted with MC4 connectors.

Only 3mm Thin

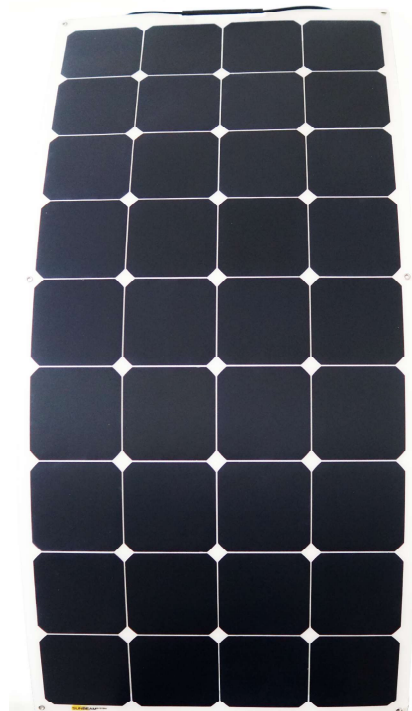
Economic Choice

Junction Box

2 Year Warranty



Classic 50W Junction Box



Classic 100W Junction Box

Art #	Product	P <sub>max</sub>	P	V <sub>oc</sub>	I <sub>sc</sub>	V <sub>mp</sub>	I <sub>mp</sub>	P <sub>tol</sub>	S/Opt	Kg	L	W	Cable	Eyes	3M
C50JB	Classic 50W Junction Box	50W	50W	21,2V	3,05A	17,6V	2,84A	± 5%	No	1,0	62,2cm	53,5cm	2 x 0,8m	4x6mm	No
C100JB	Classic 100W Junction Box	100W	100W	21,6V	5,97A	17,8V	5,62A	± 5%	No	1,9	118,5cm	54cm	2 x 0,8m	6x6mm	No

### Charge Regulators

To connect a solar panel to a battery you need a charge regulator. This regulator transforms the voltage from the solar panel to the right charging voltage for the battery. There are two types of charge regulators: MPPT and PWM. For smaller and mobile purposes SUNBEAMsystem developed the Mini-R, a portable PWM regulator which can be used on the go. For permanent installations we advise the MPPT regulators from EPsolar. These regulator work according to the Maximum Power Point Tracking principle, achieving the highest efficiency from a solar panel installation

More information on the right type of regulator can be found in the Knowledge Bank on the SUNBEAMsystem website.

Special Solar Chargers

30% More Production

Multiple Battery Types

#### EP PeakPower XTRA

The EP PeakPower XTRA serie is equipped with highly efficient MPPT technology. The regulators have a low self-consumption and a peak conversion of 98%. The built-in display makes configuration easy. The separately sold MT-50 display shows the real-time performance of the system and can be installed in a convenient place. It also offers the option to change advanced settings.

The XTRA charge regulators are IP32 rated and will automatically recognize the system voltage (either 12 or 24V). It comes with three different charge settings to fit your type of lead acid batteries.

The MT-50 display can be used to set a custom charging profile, which is necessary for some AGM batteries and most lithium batteries (not needed for the SUNBEAMsystem SMART-LITHIUM).



EPsolar XTRA-N



EPsolar MT-50

#### SUNBEAMsystem Mini-R

The SUNBEAMsystem Mini-R might be the smallest 5A charging regulator you have ever seen.

The Mini-R has been specifically designed for mobile applications: extremely light, portable and featuring a waterproof IP67 housing. Combined with a solar panel (of max. 65W) you'll have a fully mobile power source at your disposal, which you can take anywhere you want.

The Mini-R is a so called 'in-line' regulator that is connected between the solar panel and the battery. Use the included crocodile clamps for temporary connection or the accessory cables for a permanent connection to a battery.

The Mini-R is only available in a 12V version.



SUNBEAMsystem Mini-R

Art #	Product	System voltage	Max. PV Input	Weight	Dimensions
MPPT10EP	EPsolar XTRA-N 10A MPPT	12/24V DC	130W (12V) 260W (24V)	0.6kg	175 x 143 x 48 mm
MPPT20EP	EPsolar XTRA-N 20A MPPT	12/24V DC	260W (12V) 520W (24V)	1.1kg	217 x 158 x 57 mm
MPPT40EP	EPsolar XTRA-N 40A MPPT	12/24V DC	520W (12V) 1040W (24V)	1.9kg	255 x 185 x 68 mm
Mini-R	SUNBEAMsystem Mini-R Portable	12V DC	65W (12V)	0.1kg	66 x 38 x 16 mm



## THE FLUSH CABLE

Most of the SUNBEAMsystem models are fitted with the flat Flush power cable, a unique feature you will only find at SUNBEAMsystem. The Flush cable allows for a professional installation, without visible wiring. The result: A completely flat and integrated surface, without a protruding Junction Box and without visible power cables.

On all the SUNBEAMsystem Flush models the flat power cables are attached to the backside of the panel, allowing the cable to be led away, or connected, underneath the panel. The cable can also be glued to the deck (or other surface), making it practically invisible on a white background.

The Flush cable is only 1.4mm thin but features an impressive 2 x 2.1mm<sup>2</sup> inner core. It's fitted with an UV-resistant housing and a fully pre-tinned copper core to ensure the longest possible longevity.

## SHADOW OPTIMIZED

The SUNBEAMsystem Shadow Optimized technology is unique in the market and allows for an improved production when a solar panel is partially shaded.

In models featuring the Shadow Optimized label the solar cells are internally divided in multiple groups, connected in parallel, allowing them to function independently from each other.

Because of this, a single solar panel with Shadow Optimized technology is essentially build up from two separate internal solar panels. This means that when one part of the solar panel catches less light, or is shaded, the other part can continue to generate electricity at full power.

This technology offers an innovative solution for users who experience shading on a regular basis, such as sailing yachts, and especially when the panels are positioned in the middle of the deck.



Information on different options and correct mounting can be found in the Knowledge Bank on the SUNBEAMsystem website.

### EXPLANATION OF LISTED VALUES

All values are measured in standard testing conditions:

- 1000W/M<sup>2</sup>, 1.5 atm, 25° Celsius.
- Temperature coefficient  $I_{sc}$  = - 0.05 (%/°C)
- Temperature coefficient  $V_{oc}$  = - 0.27 (%/°C)
- Temperature coefficient  $P_{max}$  = - 0.38 (%/°C)

$P_{max}$	is the maximal attainable power.
$V_{oc}$	(Voltage open circuit), also referred to as the clamping voltage, is the maximum voltage when no load is connected.
$I_{sc}$	(Ampere short circuit) is the maximum current when the panel is short circuited.
$V_{mp}$	(Voltage maximum power) is the maximum voltage a panel produces under ideal circumstances.
$I_{mp}$	(Ampere maximum power) is the maximum current a panel produces under ideal circumstances.
Weight	Listed weights without cables.