



Highly efficient cells



Excellent impact and weight resistance (tempered glass 3.2 + aluminium frame)



TÜV certified waterproof junction box with hot-spot protection



Exceptional output even under weak light



Quality guaranteed by Uniteck
Made in P.R.C.



EN61215
EN61730

UNISUN M & BC rigid solar panels

HIGH EFFICIENCY

UNISUN is the range of high performance monocrystalline panels for leisure applications (boating and camping-car), isolated sites or signage.

Their multi-layer structure guarantees exceptional yields, even in very low sunlight conditions.

The thickness of their aluminum frame (35 or 40 mm) allows a better heat dissipation and enabling increased power.

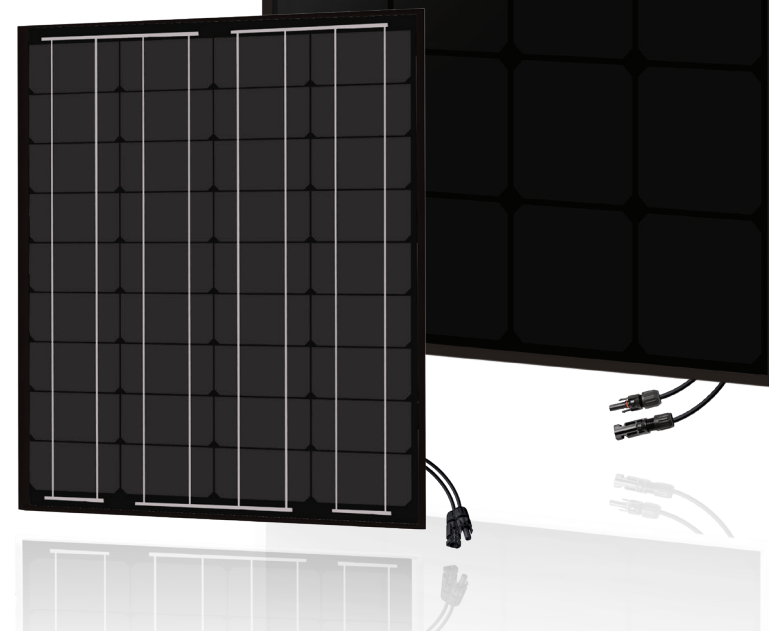
On the surface, their high transmissibility tempered glass and their anodized aluminum frame protect them from external attacks (shocks, oxidation, corrosion)

Their modular design simplifies scaling up power out through either series or parallel connection, facilitate by their fast solar connectors.

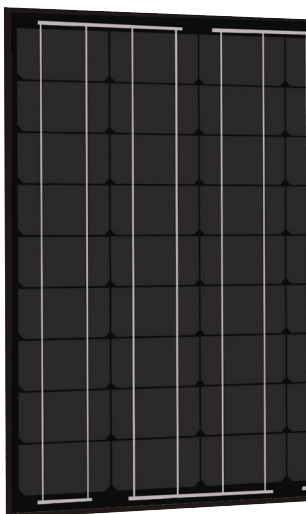
The UNISUN range is available in standard monocrystalline cells and back contact monocrystalline cells. UNISUN Back Contact (electrical contact at the back) has the entire cell surface to capture light energy.

With the same power, thanks to their higher efficiency (power/surface ratio), back contact panels offer the advantage of being more compact and therefore ideal for applications where space or weight are criteria of choice.

For more aesthetics and sobriety, the standard UNISUN monocrystalline panels from 50W are equipped with the premium design "Black Backsheet". (black background).



UNISUN M



Monocrystalline module:
series connections on the front face
of the cells

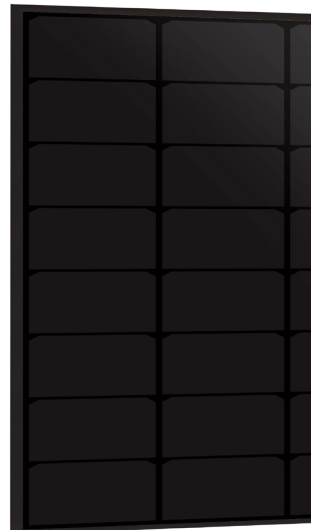


10% of the surface is hidden by the
electrical connections

ex. panels with 125 mm x 125 mm
cells

intensity (Imp)	2,5-2,8 A
voltage (Vmp)	0,5-0,52 V
electrical contact	front contact
cell efficiency	20,5%
number of cells necessary for battery charging	36 cells (36 x 0,5 V) = 18 V
compactness of panel	++
saving money	+++

UNISUN BC



Back contact module:
series connections on the back
of the cells



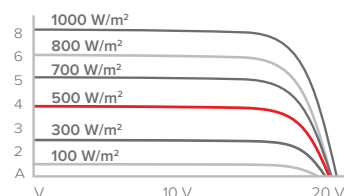
No areas covered on the front face

ex. panels with 125 mm x 125 mm
cells

intensity (Imp)	3,2-3,3 A
voltage (Vmp)	0,56-0,57 V
electrical contact	back contact
cell efficiency	23-24%
number of cells necessary for battery charging	32 cells (32 x 0,57 V) = 18 V
panel compactness	+++
saving money	++

SOLAR PRODUCTION EXPLANATION

i Intensity/voltage curve (eg. panel of 150W)
depending on solar radiation W/m²



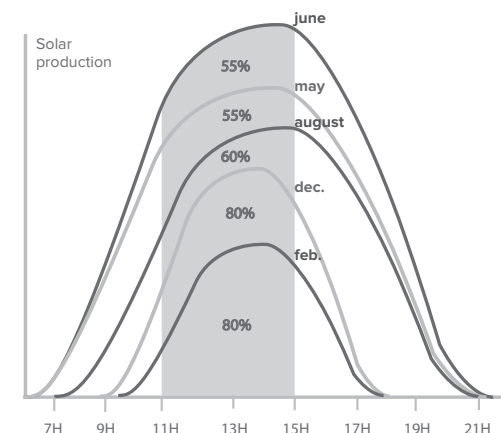
Example of 150W panel

Lille• in Lille :
winter= 200W/m²
summer= 700W/m²

Marseille• in Marseille :
winter= 500 W/m²
summer= 850 W/m²

Distribution of daily solar
production in France

MarseilleWith solar radiation in Marseille, during winter, a solar panel will
produce
50% of its power (=500W/m²)



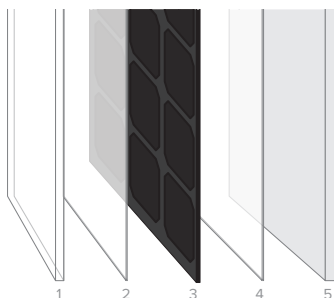
The solar production has a Gaussian curve (bell-shaped curve), with a
sunlight main period between 11 a.m. and 3 p.m. During winter, 80% of the
production is made during this period when the data is between 50%
and 60% during summer (it is because the sunlight period is more spread).

i Average coefficient of solar
production in France.

	Lille	Bordeaux	Marseille
January	x 0,7 - 1	x 1 - 1,5	x 1,5 - 2
February	x 1 - 1,5	x 1,5 - 2,5	x 2 - 3
March	x 2 - 2,5	x 3 - 3,5	x 3 - 4
April	x 3 - 3,5	x 3,5 - 4	x 4 - 5
May	x 3 - 4	x 4 - 5	x 4,5 - 6
June	x 4 - 4,5	x 4 - 6	x 5 - 6,5
July	x 4 - 4,5	x 4 - 6	x 5 - 7
August	x 3,5 - 4	x 4 - 5	x 4,5 - 6
September	x 2,5 - 3	x 3,5 - 4	x 4 - 4,5
October	x 1,5 - 2	x 2 - 2,5	x 2,5 - 3
November	x 0,7 - 1	x 1 - 1,5	x 1,5 - 2,5
December	x 0,5 - 0,7	x 0,8 - 1,5	x 1,5 - 2

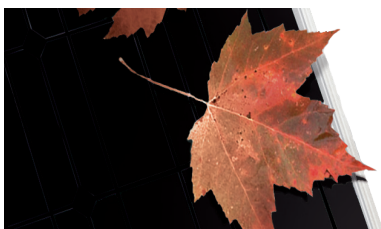
57In July a panel in Marseille will produce from 5 to 7 times its power
(eg. for a panel of 100W = 500 to 700Wh/j)

HIGH QUALITY STRUCTURE



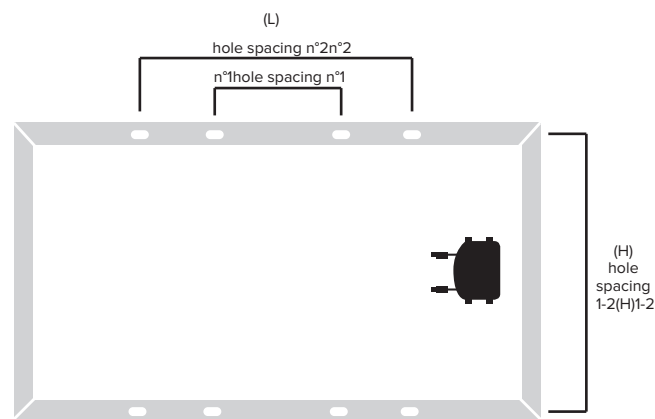
1. Tempered glass 3.2mm, high transmissibility (low iron content)
2. EVA Resin 0,45mm
3. Highly efficient cells
4. EVA Resin 0,45mm
5. Frame (anodised aluminium)

ANTI HOT-SPOT



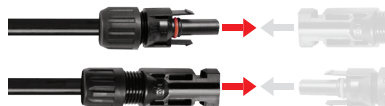
Protection against Hot-spots and surges

HOLE SPACING ADAPTED TO UNITECK MOUNTING BRACKETS



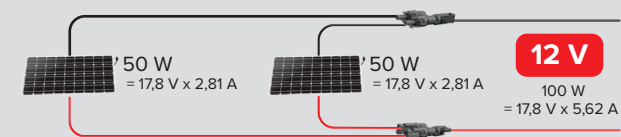
hole diam. : 14 x 9 mm (excepted UNISUN 5.12M ø 5mm) 14 x 9 mm UNISUN 5.12M ø 5mm

QUICK CONNECTORS

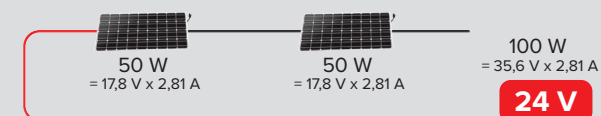


UPGRADABLE COMBINATION

Parallel connection: for more power (Watt)



Series connection: for your 24V batteries



	20 W	40 W	100 W	150 W	300 W
UNISUN 20.12M	×1	×2	—	—	—
UNISUN 50.12M	—	—	×2	×3	—
UNISUN 150.12M	—	—	—	—	×2
UNICONNECT 1.6	×1	×1	×1	×1	×1
Parallel connectors kit	—	2 pan.	2 pan.	3 pan.	2 pan.



UNISUN M & BC rigid solar panels



**UNISUN
5.12 M**
Ref 0491



**UNISUN
10.12 M**
Ref 0798



**UNISUN
10.24 M**
Ref 1436



**UNISUN
20.12 M**
Ref 0071



**UNISUN
20.24 M**
Ref 0804



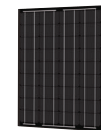
**UNISUN
30.12 M**
Ref 0842



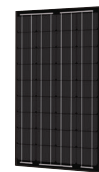
**UNISUN
50.12 M**
Ref 0088



**UNISUN
60.12 BC**
Ref 1238



**UNISUN
50.24 M**
Ref 1870



**UNISUN
80.12 M**
Ref 0095

Electrical performance

Max. power (Pm)*	5 W	10 W	10 W	20 W	20 W	30 W	50 W	60 W	50 W	80 W
Power tolerance*	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %
	12 V	12 V	24 V	12 V	24 V	12 V	12 V	12 V	24 V	12 V
Technology	mono/perc	mono/perc	mono/perc	mono/perc	mono/perc	mono/perc	mono/perc	back contact	mono/perc	mono/perc
Voltage at max. power (Vmp)*	19,4 V	17,6 V	35,2 V	17,8 V	35,2 V	17,8 V	17,8 V	18,6 V	36,6 V	17,8 V
Intensity at max. power (Imp)*	0,26 A	0,57 A	0,29 A	1,12 A	0,57 A	1,69 A	2,81 A	2,96 A	1,4 A	4,49 A
Voltage in open circuit (Voc)*	22,9 V	21,77 V	43,54 V	22,3 V	43,54 V	22,3 V	22,3 V	21,8 V	42,7 V	22,3 V
Intensity in short circuit (Icc/ ISC)*	0,27 A	0,65 A	0,33 A	1,21 A	0,65 A	1,82 A	3,03 A	3,13 A	1,5 A	4,85 A
Cell efficiency	20,60%	18,4%	18,4%	20,60%	20,60%	20,60%	20,60%	23,80%	20,60%	20,60%
Module efficiency*	7,56%	11,52%	11,52%	12,65%	12,65%	11,86%	14,20%	18,18%	14,20%	15,15%

Maximum battery charging power***

12V battery	with PWM controller	0,23 A	0,46 A	n.a.	0,90 A	n.a.	1,35 A	2,25 A	2,50 A	n.a.	3,88 A
	with MPPT controller	0,33 A	0,65 A	0,65 A	1,30 A	1,30 A	1,96 A	3,26 A	3,59 A	3,26 A	5,22 A
24V battery	with PWM controller	n.a.	n.a.	0,23 A	n.a.	0,46 A	n.a.	n.a.	n.a.	1,20 A	n.a.
	with MPPT controller	n.a.	n.a.	0,33 A	n.a.	0,65 A	n.a.	n.a.	n.a.	1,63 A	n.a.

Temperature characteristics

Operating temperature	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C
NOCT / TUC**	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C
Temperature coefficient	Pm	-0,43%/°C	-0,48 %/°C	-0,48 %/°C	-0,48%/°C	-0,48%/°C	-0,43%/°C	-0,43%/°C	-0,3%/°C	-0,43%/°C
	Voc	-0,34%/°C	-0,34 %/°C	-0,34 %/°C	-0,34%/°C	-0,34%/°C	-0,34%/°C	-0,34%/°C	-0,28%/°C	-0,34%/°C
	Icc	0,05%/°C	0,037 %/°C	0,037 %/°C	0,037%/°C	0,037%/°C	0,05%/°C	0,05%/°C	0,05%/°C	0,05%/°C

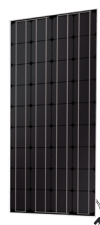
Mechanical characteristics

Anodised aluminium frame	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Black backsheet design	yes	no	no	no	yes	yes	yes	yes	yes	yes
Hole spacing	n°1 - L x H	154 x 195	120 x 260	120 x 260	120 x 260	120 x 260	120 x 260	120 x 500	120 x 500	127 x 500
for fixing (mm)	n°2- L x H	-	183 x 260	183 x 260	420 x 260	420 x 260	420 x 260	420 x 500	420 x 500	860 x 500
* (oblong 14 x 9)										
Cable length (with connectors)	-	-	-	-	-	-	900 mm	900 mm	900 mm	900 mm
Module dimensions (mm)	216×306×18	310×280×35	310×280×35	510×310×35	660×310×35	310×680×35	640×550×35	550×550×35	660×550×35	960×550×35
Module weight	0,8 kg	1,3 kg	1,3 kg	2 kg	2 kg	3,1 kg	4,1 kg	3,8 kg	4,1 kg	6,3 kg

Product warranty

Period	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years
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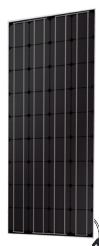
1 000 W/m², AM 1.525°C.800 W/m²25°C1 m/s.800W/m²20°C1 m/s.



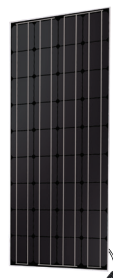
**UNISUN
100.12 M**
Ref 0446



**UNISUN
120.12 BC**
Ref 1245



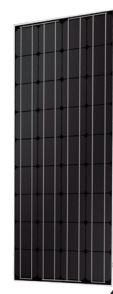
**UNISUN
100.24 M**
Ref 1443



**UNISUN
150.12 M**
Ref 0453



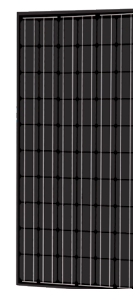
**UNISUN
165.12 BC**
Ref 1528



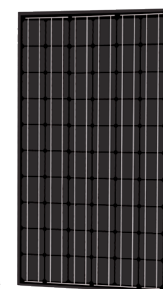
**UNISUN
150.24 M**
Ref 1887



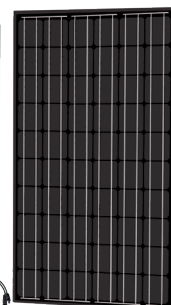
**UNISUN
200.12 BC**
Ref 3324



**UNISUN
200.24 M**
Ref 1337



**UNISUN
300.12 M**
Ref 2013



**UNISUN
400.24 M**
Ref 5052

Electrical performance

Max. power (Pm)*	100 W	120 W	100 W	150 W	165 W	150 W	200 W	200 W	300 W	400 W
Power tolerance*	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	0/+3 %	+/-3 %	+/-3 %
	12 V	12 V	24 V	12 V	12 V	24 V	12 V	12/24 V	12/24 V	12/24 V
Technology	mono/perc	back contact	mono/perc	mono/perc	back contact	mono/perc	back contact	mono/perc	mono/perc	mono/perc
Voltage at max. power (Vmp)*	17,8 V	19,8 V	36,6 V	17,8 V	27,9 V	38,9 V	34 V	35,6 V	30,5 V	41,8 V
Intensity at max. power (Imp)*	5,62 A	6,06 A	2,81 A	8, 43 A	5,38 A	3,99 A	6,24 A	5,62 A	9,82 A	9,34 A
Voltage in open circuit (Voc)*	22,3 V	23,3 V	42,7 V	21,3 V	33,5 V	45,9 V	40,0 V	42,7 V	35,5 V	48,9 V
Intensity in short circuit (Isc/ ISC)*	6,07 A	6,42 A	3,04 A	9,10 A	5,81 A	4,22 A	5,88 A	6,07 A	11,1 A	9,8 A
Cell efficiency	20,60%	24,40%	20,60%	20,60%	24,4%	20,60%	23,80%	20,60%	20,20%	22,70%
Module efficiency*	17,32%	20,78%	15,15%	16,58%	20,54%	16,58%	20,43%	15,80%	19,60%	20,47%

Maximum battery charging power***

12V battery	with PWM controller	4,86 A	n.a.	n.a.	7,28 A	n.a.	n.a.	n.a.	n.a.	n.a.
	with MPPT controller	6,52 A	7,17 A	6,52 A	9,78 A	10,76 A	9,78 A	13,04 A	13,04 A	19,57 A
24V battery	with PWM controller	n.a.	n.a.	n.a.	n.a.	n.a.	3,60 A	n.a.	4,86 A	n.a.
	with MPPT controller	n.a.	n.a.	3,26 A	n.a.	n.a.	4,89 A	n.a.	6,52 A	13,04 A

Temperature characteristics

Operating temperature	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C	-40/+85°C
NOCT / TUC**	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C	45 ±2°C
Temperature	Pm	-0,43%/°C	-0,3%/°C	-0,43%/°C	-0,48%/°C	-0,3%/°C	-0,43%/°C	-0,43%/°C	-0,43%/°C	-0,48%/°C
coefficient	Voc	-0,28%/°C	-0,28%/°C	-0,34%/°C	-0,34%/°C	-0,28%/°C	-0,34%/°C	-0,34%/°C	-0,34%/°C	-0,34%/°C
	Isc	0,05%/°C	0,05%/°C	0,05%/°C	0,037%/°C	0,05%/°C	0,05%/°C	0,05%/°C	0,05%/°C	0,037%/°C

Mechanical characteristics

Anodised aluminium frame	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Black backsheet design	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hole spacing for n°1 - L x H	127 x 500	127 x 500	127 x 500	600 x 635	600 x 626	600 x 626	600 x 626	800 x 768	720 x 950	720 x 1094
fixing (mm) * n°2- L x H (oblong 14 x 9)	710 x 500	860 x 500	860 x 500	1100 x 635	1100 x 626	1100 x 626	1100 x 626	1300 x 768	1220 x 950	1220 x 1094
Cable length (with connectors)	900 mm	900 mm	900 mm	900 mm	900 mm	900 mm	900 mm	900 mm	900 mm	900 mm
Module dimensions (mm)	1050×550×35	1050×550×35	1200×550×35	1340×675×35	1190×675×35	1500×675×35	1450×675×40	1580×808×40	1500×990×40	1680×1134×40
Module weight	7,0 kg	7,0 kg	7,5 kg	9,8 kg	9,3 kg	10,8 kg	12,9 kg	13,6 kg	15,5 kg	17,0 kg

Product warranty

Period	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years	5 years
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