

# SOLAR POWER SOLUTIONS

## SELECTION GUIDE



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Solar is the world's fastest growing energy technology and one of the primary elements to reach the global sustainability target. As a tried and tested power source, it is used around the world for numerous commercial, industrial, government and domestic applications. It is powering water pumps in African villages, weather stations in the Antarctic and satellites in space!

## Understand how to create your Solar System

To correctly build your solar-energy generator, you must make a backward study of your system, considering these key points:

### 1. Energy Storage

Understanding how much energy your battery can store. In this way you can select a solar panel that can replenish your 'stock' of energy. For example: a 20Ah-12V battery (240Wh) could supply 240W for one hour, 120W for two hours or even 2W for 120 hours.

### 2. Appliance Usage

Checking how much energy will your appliances use and how long will they use it for. The power consumption of appliances is generally given in watts. So, for example, a small portable TV is around 20W.

### 3. Energy Generation

Choosing the correct solar panel, considering how much energy it can generate. The generated energy is given from the power generation (in Watts) multiplied by the sun-exposure time, which can obviously vary depending on season, weather, position and orientation of the solar system.

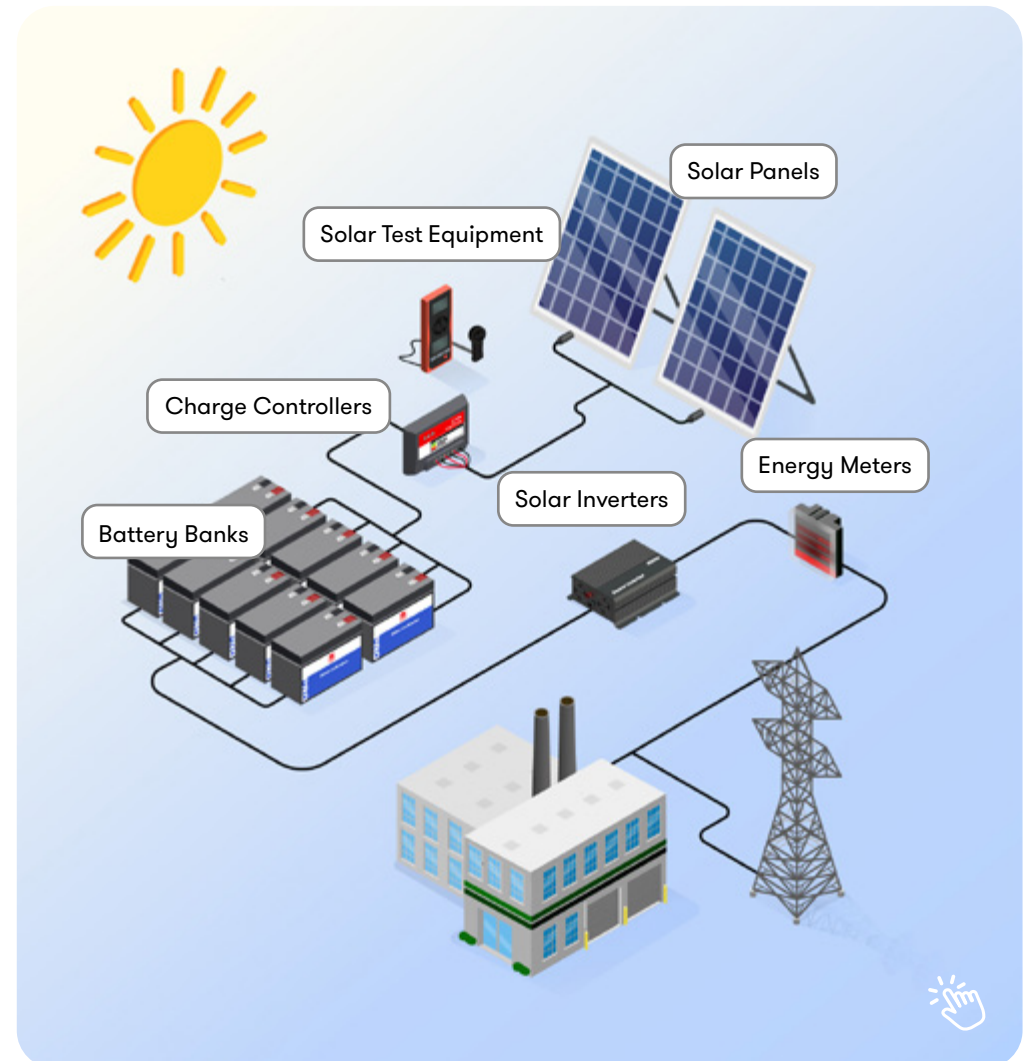
### 4. Charge Controllers

Selecting the best charge controller for your system. All solar panels need this element to stabilize the current and make it usable for the appliances.

### 5. Cables and Connectors

Making sure you pick the correct cables and connectors for the environment. Using the correct cable and connectors within the solar systems guarantee safety and high-quality operation over the years of usage.

“Every 24 hours, enough sunlight touches the Earth to provide the energy for the entire planet for 24 years.” Martha Maeda



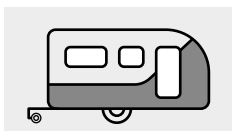
RS PRO rigid panels are chosen by our customers for their reliability, performance and long life. A focus on testing and quality control ensures our solar panels offer one of the best long-term investment and come with industry leading standards.

With a wide range of sizes from 5W to 200W, our rigid solar panels are the perfect fit for a wide range of applications:



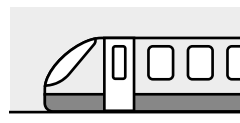
### Marine Application

boats, harbours' lights



### Energy-Travelling Solutions

caravan, camper



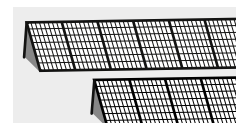
### Public Transportations

trolleys, buses, light rails



### Buildings

industrial or residential solutions



### Field Applications

solar farms, parking lots

The 5W to 45W panels are generally used for battery maintenance and small off grid projects such as electric fences. The 60W to 200W panels keep leisure batteries topped up in building, mobile and marine applications, with 12V DC equipment. Plus 120-240V AC appliances can be used with an inverter.

Whether you are after a professional maintainer or a renewable energy enthusiast, the RS PRO range of rigid solar panels will give you the energy you need. RS PRO offers also various Flexible Solar Panels, well suited for use where a super robust, low profile and lightweight panel is needed, or the substrate to which the panel will be fixed has a slight curve. Ideal for marine applications, energy-travelling solutions or public transportations.



RS PRO Solar Panels



## WHY CHOOSE RS PRO?

### Quality Control & Testing

Every panel is 100% tested from the electrical and mechanical point of view, in accordance with TUV Rhineland and IEC 61215 standards. All our panels are also electro luminescence tested to ensure there are no life shortening micro cracks in the cell circuit.

### Efficiency

We use only A grade cells to ensure the delivery of maximum power in all spectra of light but with the smallest overall dimension. This results in a more compact, robust and lighter solar panel. Increased spacing between the cells and frame edge also results in improvement of yields by up to 2.5%.

### Reliability

All crystalline panels carry 20 year cell output and they are designed to withstand the effects of salt water spray, frost, hail stones, ammonia, dust and sand in the harshest environments from -40 to +80C.

## Monocrystalline Solar Panels



POWER RATING	OPEN CIRCUIT VOLTAGE	DIMENSIONS L x W x D	BATTERY BANK CAPACITY	OPERATING TEMPERATURE	PACK	STOCK NO
20W	22V	540 x 278 x 25mm	10Ah	-40 to +85°C	5	904-6125
45W	22V	634 x 535 x 25mm	10Ah	-40 to +85°C	5	904-6137
80W	22V	670 x 815 x 35mm	10Ah	-40 to +85°C	2	904-6140
100W	23V	1005 x 670 x 35mm	10Ah	-40 to +85°C	2	904-6143
150W	22V	1490 x 670 x 35mm	10Ah	-40 to +85°C	2	904-6156

Image for illustrative purposes only

## Solar Panel Bulk Pack



POWER RATING	OPEN CIRCUIT VOLTAGE	DIMENSIONS L x W x D	BATTERY BANK CAPACITY	OPERATING TEMPERATURE	PACK	STOCK NO
30W	22V	660 x 380 x 25mm	10Ah	-40 to +85°C	5	904-6134

Image for illustrative purposes only

## Polycrystalline Solar Panels



Image for illustrative purposes only

POWER RATING	OPEN CIRCUIT VOLTAGE	DIMENSIONS L x W x D	BATTERY BANK CAPACITY	OPERATING TEMPERATURE	PACK	STOCK NO
1.5W	6V	189 × 139 × 2mm	-	-20 to +60°C	1	186-0599
5W	22V	250 × 200 × 25mm	35Ah	-40 to +85°C	5	904-6128
10W	22V	397 × 280 × 25mm	70Ah	-40 to +85°C	5	904-6121
10W	21.6V	390 × 250 × 3mm	-	-40 to +80°C	1	914-8454
60W	22V	685 × 670 × 35mm	10Ah	-40 to +85°C	5	904-6131
120W	22V	1250 × 670 × 35mm	10Ah	-40 to +85°C	2	904-6147

## Flexible & Polycrystalline Solar Panels



Image for illustrative purposes only

POWER RATING	OPEN CIRCUIT VOLTAGE	DIMENSIONS L x W x D	BATTERY BANK CAPACITY	OPERATING TEMPERATURE	PACK	STOCK NO
5W	21.6V	250 × 240 × 3mm	-	-40 to +80°C	1	914-8445
10W	21.6V	390 × 250 × 3mm	-	-40 to +80°C	5	904-6159
20W	21.6V	505 × 345 × 3mm	10Ah	-40 to +80°C	5	904-6153
20W	21.6V	505 × 345 × 3mm	-	-40 to +80°C	1	914-8457
60W	21.78V	1450 × 315 × 3mm	-	-40 to +80°C	1	914-8451
80W	21.6V	885 × 665 × 3mm	-	-40 to +80°C	2	904-6165
80W	21.6V	885 × 665 × 3mm	-	-40 to +80°C	1	914-8460

## Renewable Energy Lighting and Power Kit



Image for illustrative purposes only

### SUPPLIED WITH

- 1 × Solar Panel – 10W, 12V with 2.5m Cable to Connect to Battery Hub
- 1 × Solar Panel Wall Bracket and Fixings
- 1 × 10Ah / 12V Battery Hub inc 2 × 12V Lighting Ports, 2 × 5V USB Ports and 1 × 12V Auto Socket Port
- 1 × 5m Cable – from Battery Hub to LED Strip
- 4 × 300Lm Expandable LED Strip
- 3 × 2.5m Cables to link each of the LED Strips
- 1 × Pack of Cable Panel Pins
- 1 × User Manual

### SOLAR PANEL SIZE

306 × 218 × 25mm

### HUB SIZE

220 × 146 × 50mm

### STOCK NO

176-7087

# CHARGE CONTROLLERS

The final piece to complete your solar system is the charge controller. This essential piece of your solar system controls the charge put into your battery, stops overcharging and prevents the solar panel pulling power from the battery at night.

The RS PRO charge controllers can charge two batteries simultaneously and can work on both 12V or 24V systems. They have an optimized charging process that improves performances and battery life. The comprehensive self-diagnostics and electronic protection functions can prevent damage from installation mistakes or system faults.



**RS PRO Charge Controllers**

## Charge Controller



Image for illustrative purposes only

SOLAR PANEL VOLTAGE	MAX. POWER RATING FOR 12V & 24V PANELS	MAX. CURRENT RATING FOR 12V & 24V PANELS	DIMENSIONS L x W x D	STOCK NO
12V, 24V	150W	10A	135 x 70 x 35mm	905-4532
12V, 24V	300W	20A	135 x 70 x 35mm	905-4536

# SOLAR CONNECTORS

Solar connectors are used to connect solar panels to other panels, batteries, charge controllers and junction boxes. The most common type of solar connector is the MC4 connector: a standardised single pole connector that has built in strain relief and interlocks. These interlocks ensure a secure mating and protection against accidental release between plugs and sockets. As they are often used outside MC4 connectors are weather-proof and are paired with cable that is double-insulated and UV resistant.

The RS PRO Range of solar connectors includes plugs, sockets and adapters suitable for applications from 15A to 69A applications.



**RS PRO Solar Connectors**



## Branch



Image for illustrative purposes only

GENDER	VOLTAGE RATING	TERMINATION METHOD	CABLE CSA	OPERATING TEMPERATURE	STOCK NO
Female	1.5 kV	Snap-In	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4958
Male	1.5 kV	Snap-In	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4959

## Fused Connector



Image for illustrative purposes only

GENDER	VOLTAGE RATING	TERMINATION METHOD	CABLE CSA	OPERATING TEMPERATURE	STOCK NO
Female	1 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4962
Female, Male	1 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4960
Male	1 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4964

## Inline Fused Connector



Image for illustrative purposes only

GENDER	VOLTAGE RATING	TERMINATION METHOD	CABLE CSA	OPERATING TEMPERATURE	STOCK NO
Female	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4963
Female, Male	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4961
Male	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4965

## Panel Connector with Sealing Cap



Image for illustrative purposes only

GENDER	VOLTAGE RATING	TERMINATION METHOD	CABLE CSA	OPERATING TEMPERATURE	STOCK NO
Female	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4970
Male	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4971

## Straight



Image for illustrative purposes only

GENDER	VOLTAGE RATING	TERMINATION METHOD	CABLE CSA	OPERATING TEMPERATURE	STOCK NO
Female	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4967
Female, Male	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4966
Male	1.5 kV	Crimp	2.5 mm <sup>2</sup> , 4.0 mm <sup>2</sup> , 6.0mm <sup>2</sup>	-40°C +110°C	239-4968

## Solar PV Fuse Terminal Block



Image for illustrative purposes only

CURRENT RATING	VOLTAGE RATING	DIMENSION	IP RATING	STOCK NO
30A	1500V DC	Ø 130 × 68.4 × 19.5mm	IP20	239-4972

## Solar PV Cartridge Fuse



Image for illustrative purposes only

CURRENT RATING	FUSE SIZE	VOLTAGE RATING	FUSE SPEED	BODY MATERIAL	STOCK NO
4A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4985
10A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4973
12A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4974
15A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4979
16A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4980
20A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4982
25A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4983
30A	10 × 38mm	1kV DC	Fast Acting	Ceramic	239-4984
15A	10 × 85mm	1kV DC	Fast Acting	Ceramic	239-4976
20A	10 × 85mm	1.5kV DC	Fast Acting	Ceramic	239-4977
30A	10 × 85mm	1.5kV DC	Fast Acting	Ceramic	239-4978

## Solar Sealing Caps



Image for illustrative purposes only

GENDER	CURRENT RATING	STOCK NO
Female	15A	239-4988
Male	15A	239-4989

## Solar Connector Tools



Image for illustrative purposes only

USE	GENDER	PACK	STOCK NO
Disconnects RS PRO Male and Female NEC Interlocked solar connectors. Tightens glands on RS PRO Solar PV connectors only.	Female, Male	10	239-4986
Disconnects RS PRO Male and Female NEC Interlocked solar connectors.	Female, Male	10	239-4987

## Rechargeable Batteries

Their robustness and long lifetime make sealed lead acid and lithium batteries ideal for renewable energy systems: in fact, they are the most commonly used batteries across photovoltaic (PV) applications such as solar panels. They are available in a wide range of sizes and voltages to suit your requirements (typically with voltages of 6V to 24V).



Rechargeable Batteries

## Inverters

Solar inverters (also referred to as photovoltaic inverters) are a crucial component in any solar photovoltaic system. Whilst solar panels are key in creating direct current (DC) electricity, a solar photovoltaic inverter allows this electrical energy to be converted to alternating current (AC). As a result, this allows the electrical energy created to be used with a wide range of electrical appliances.



Inverters

## Cables

Cables are surely very important for the correct system operation. Together with the connectors, they are used to link all the system's components (panels, batteries, appliances, charge controllers, inverters). Solar cable is specially designed to be used in a photovoltaic power system. These cables are high UV radiation resistant and operates in a wide range of ambient temperature (usually from -40°C up to 100°C).



Power Cables



Hook-Up Wires

## Tests & Measurements

Electrical testing is a vital procedure for any product that uses electricity, keeping you safe and ensuring that wiring is up to government standard. RS PRO offers an expansive range of test and measuring instruments used in electrical and electronic work.



Power Meters



Oscilloscopes



Multimeters



Clamp Meters

## Energy Meters

Energy meters are devices used to measure and monitor energy use and give highly accurate and reliable readings resulting in quality measurement and data. Energy consumption is an important factor for both sustainability and cost reduction purposes. Integrating an energy meter into a power management system is ideal for monitoring energy efficiency.



Energy Meters

## Photovoltaic Cell Analyser

This photovoltaic cell analyser from RS PRO will assess your Solar Panels efficiency and help you locate defective or worn-out components. This cell analyser will perform auto-scan, manual scan and single-point I-V tests on your solar panels. It's supplied with a test lead set and Kelvin clips with a maximum current rating of 6A to measure electrical resistance. There's also a handy carrying bag and a four-wire to two-wire connector that eliminates lead resistance to ensure accurate readings.



Photovoltaic Cell Analyser

## Battery Box

This battery box from RS PRO is ideal for holding a battery up to 110 Ah and can be used in all weather conditions. That means it's suitable for transport, marine or agricultural use. With a polypropylene construction, this box is impact-resistant and corrosion-resistant. It's also reliably durable and holds up against chemical spills, including battery acid.



Battery Box

## Tools & Tool Kits

Designing a solar system is surely an electrician job, for this reason specific tools are indispensable for this kind of work. RS PRO offer a wide range of tool kits conveniently grouped by particular purposes, for example, you may see an electrician's hand tool kit with a variety of different tools for this specific field.



Tools & Tools Kits

**RS PRO products are audited against demanding international standards, inspected for durability and consistency and tested by leading engineers.**

Only when products have been through this process are they awarded our seal of approval, quality that can be trusted. Confidence in this process is reflected in our long product warranties, proof that our products will consistently deliver the quality you expect for a long time to come.

