



APPROVED PRODUCTS

Solar Photovoltaic Solutions

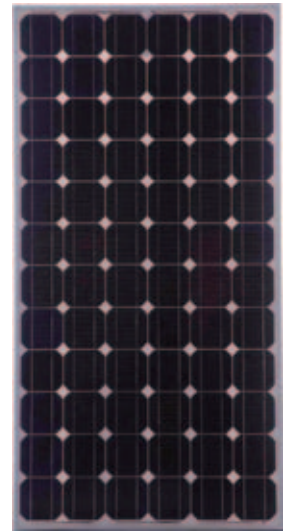




Solar Photovoltaic Overview

Introduction

Grant Solar PV utilises free energy from the sun to generate electricity. It relies on daylight (rather than radiation) to generate power through the use of photovoltaic cells within roof-mounted collectors (modules). The collectors are simple to install in an on-roof, in-roof and flat roof arrangement, both landscape and portrait. The electricity produced by Grant Solar PV can be used to drive any appliance that is powered by electricity. An inverter (usually situated in the loft) converts the DC current into usable AC current that can be used as power. A 1.8kWp system (10 panels) should produce 1693kW/hrs of electricity per year. To put this into perspective, the average household usage is 10kW/hrs per day.



Solar PV Monocrystalline
Collector - Code: GPV180M

Feed in Tariffs

New from 1st April 2010 to 31st March 2012

Government legislation means feed-in tariffs (FITs) became available in Great Britain from of 1st April 2010. Under this scheme energy suppliers make regular payments to householders and communities who generate their own electricity from renewable or low carbon sources including solar electricity (PV panels).

FIT will then benefit you in 3 ways:

1. Generation tariff - a set rate paid by the energy supplier for each unit (or kWh) of electricity you generate (see table below). This rate will change each year for new entrants to the scheme (except for the first 2 years), but once you join you will continue on the same tariff for 25 years.
2. Export tariff - you will receive a further 3p/kWmin from your energy supplier for each unit you export back to the electricity grid, that is when it isn't used on site.
3. Energy bill savings - you will be making savings on your electricity bills, because generating electricity to power your appliances means it is FREE of charge to the customer. The amount you save will vary depending how much of the electricity you use on site.

UK PV Solar Generation Tariffs 1/4/2010 - 31/3/2012

Technology	Scale	Tariff level for new installations in period (p/kWh) [NB tariff will be inflated annually]	Tariff lifetime
PV	< 4kW (New Build**)	36.1	25
PV	< 4kW (Retrofit**)	41.3	25
PV	> 4-10kW	36.1	25
PV	> 10-100kW	31.4	25
PV	> 100kW-5MW	29.3	25
PV	Stand alone system**	29.3	25

** "Retrofit" means installed on a building which is already occupied;

"New Build" means where installed on a new building before first occupation;

"Stand alone" means not attached to a building and not wired to provide electricity to an occupied building.

How 'green' is Solar PV?

Solar power is a renewable energy source that does not require the burning of fossil fuels and does not leave a carbon footprint as it generates no carbon dioxide.

It makes no noise, emits no pollutants, creates no waste and uses no fuel, thus meaning it is The BEST green energy supply.

Location of collectors

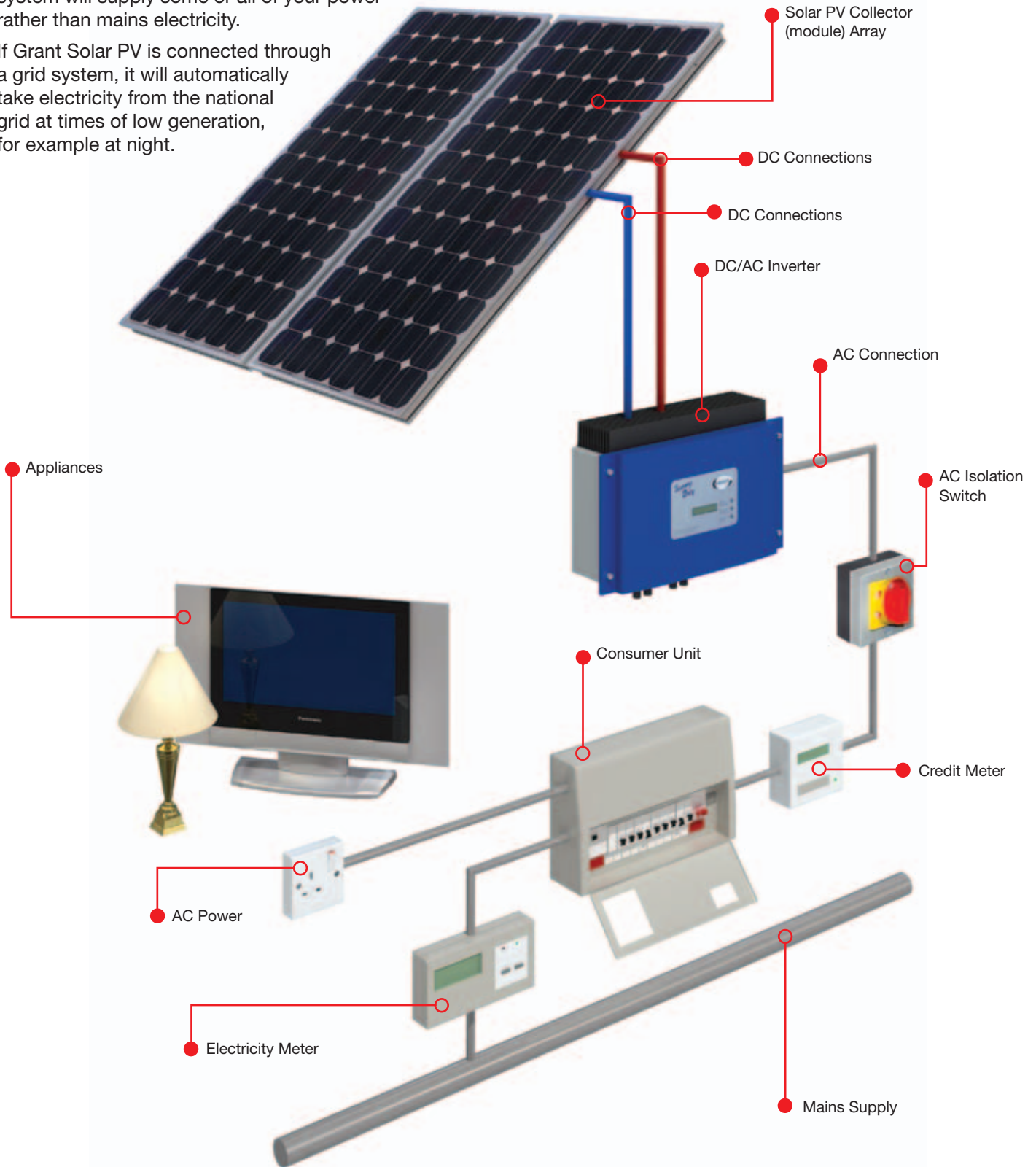
The location of PV collectors is vitally important. They must receive the maximum amount of daylight possible, so it is not advisable to install them in situations where surrounding buildings or trees may cast shadows. The best location for a PV solar collector is on a south-facing roof or side of a building.

WF Solar Photovoltaic System

Electricity requirements vary depending on the size of your house and how energy-efficient the building and appliances are. With a Grant Solar PV system you will be able to reduce electricity bills because the system will supply some or all of your power rather than mains electricity.

If Grant Solar PV is connected through a grid system, it will automatically take electricity from the national grid at times of low generation, for example at night.

There is no need to manually switch the system, this will be done instantly.



To the highest standard

The main type of collector is a monocrystalline 180 watt solar PV collector. They are produced from a high efficiency pure single crystal silicon. The collectors have two connection boxes on the back of each module. A bypass diode bridge for each connection box prevents the individual solar cells from overheating (hot spot effect). This ensures the reliable operation of the collectors and inverter. The collector frames are made from torsion-proof, anodised aluminium and meet the highest requirements in terms of stability and corrosion resistance.

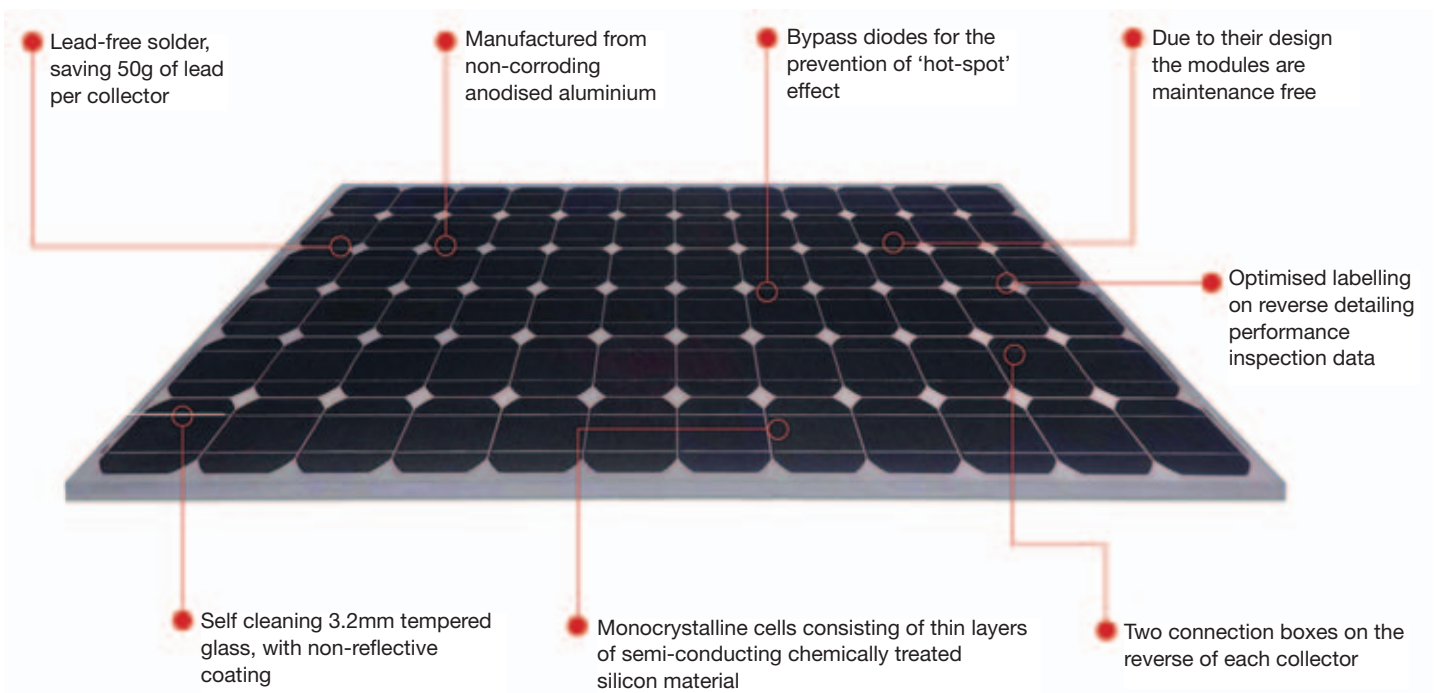


Technical specifications

Key Data

Key Data	Monocrystalline
Outer dimensions (L x W x H)	1580mm x 808mm x 45mm
Frame type	Anodised Aluminium
Front glass (TSG)	Toughened safety glass
Weight	15.5 kg
Connection system/ cross section of solar cable	Multi contact type 4 / 4 mm ²
Lengths: Positive cable/ Negative cable	125 cm ± 5 cm / 80 cm ± 5 cm
Packing unit	Single or 2-module packs
Suitability to type / type approval	IEC61215 EN61730
Electrical classification	Safety Class II
Product guarantee	5 years
Performance guarantee to 90% Pmpp min	10 years
Performance guarantee to 80% Pmpp min	25 years

Design



Solar PV Kit

Solar PV is available as standard On-Roof kits comprising: Collectors, mounting brackets, inverter, 32A isolator, single phase in-line kWh meter, cables and adaptors to suit. The following outputs are available in a pack:

	Portrait/ Landscape	Part No.
0.54kWp = 3 collectors	P	W267-701
1.44kWp = 8 collectors	P	W267-702
1.8kWp = 10 collectors	P	W267-703
2.1kWp = 12 collectors	P	W267-704
2.52kWp = 14 collectors	P	W267-705
2.88kWp = 16 collectors	P	W267-706
3.24kWp = 18 collectors	P	W297-674
3.6kWp = 20 collectors	P	W297-675
3.96kWp = 22 collectors	P	W297-676
0.54kWp = 3 collectors	L	W297-677
1.44kWp = 8 collectors	L	W297-678
1.8kWp = 10 collectors	L	W297-679
2.1kWp = 12 collectors	L	W297-680
2.52kWp = 14 collectors	L	W297-681
2.88kWp = 16 collectors	L	W297-682
3.24kWp = 18 collectors	L	W297-683
3.6kWp = 20 collectors	L	W297-684
3.96kWp = 22 collectors	L	W297-685

Bespoke kits of any size including In-Roof and Flat-Roof mounting can be designed to suit almost any application, by special order.

Sunny Boy Inverter

The Sunny Boy is available in two sizes for the standard kits and is an ideal inverter for new or existing power systems with outstanding quality and performance. The unit utilises unsurpassed reliability and efficiency coupled with simplistic design for ease of installation both internally or externally. The unit even features an enhanced temperature range of -25 °C to +60 °C ambient temperature. Furthermore, no additional DC isolator is needed (subject to G83/G59 requirements).



Soladin 600 Inverter

The Soladin 600 Inverter is currently the world's smallest mini-string inverter, designed for mounting inside the home. The unit is compact and includes 230V and DC connections. The inverter is fitted with two Multi-Contact DC terminals for easy plug-and-play installation, and also has a communication port for remote monitoring with an advanced yield indicator at the front.



Sunny Beam Wireless Data Monitor

The Sunny Beam is an 'optional' wireless device that monitors the performance of the Solar PV system. It displays real-time power output numerically and graphically, either for the complete system or up to four individual Sunny Boy inverters, and because it is wireless it can be located anywhere in the house. The unit stores production data for up to a month which can be reviewed at any time, day or night. Its sleek design incorporates a solar cell for more power. With its large LCD screen, easy setup and use, the Sunny Beam provides the next step in monitoring convenience.



Roof inclination and direction

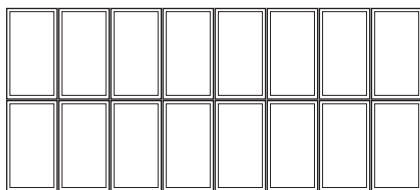
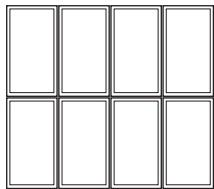
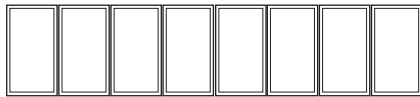
When choosing a system there are a number of factors to consider. Almost any roof type is suitable, however a south facing arrangement could gain 100% of the light available during the day. If the roof was to face South-East or South-West there will be a reduction in yield by 5-10%.

Positioning

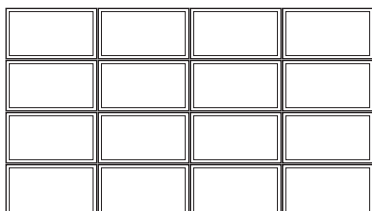
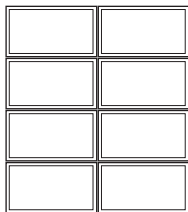
Collectors can be positioned on the roof either in a portrait or landscape arrangement, as shown below.

Solar PV

Portrait



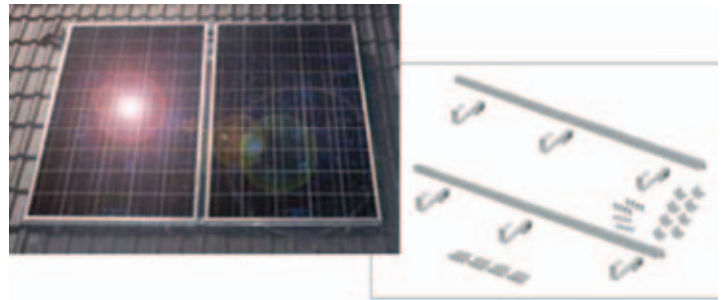
Landscape



Up to 16 collectors can be used in series*

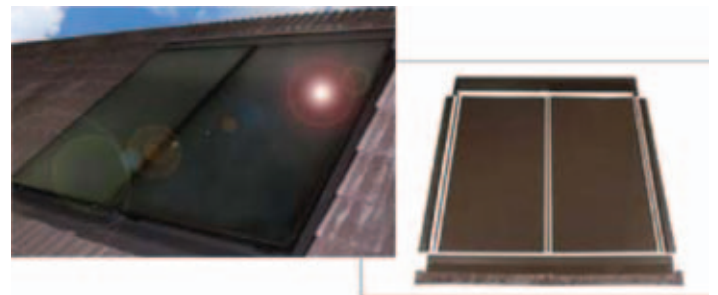
On-Roof

Solar Collectors can be quickly and easily located above the roof tiles or slates using brackets and a mounting rail attached directly to the roof trusses. This system is available with fixing brackets suitable for all roof tile types including slates, on roof pitches ranging from 20° to 60°. The on-roof mounting system is supplied as standard with any Solar Kit.



In-Roof*

Installation of Solar Collectors set into the roof tiles or slates ensures a low-profile appearance. The roof surface beneath the collectors is closed within an aluminium weathering cassette incorporating flashings, drainage channels, etc. In new build applications this mounting option reduces roofing costs, as tiles are not required beneath the collectors.



Flat-Roof*

The flat-roof system is based upon the on-roof design. The mounting rails are fitted to a rigid inclined frame structure. This method allows the collectors to be positioned quickly and easily on a flat roof.



*In-Roof and Flat Roof PV kits are available by special order.

Bespoke kits for larger PV systems can be designed. Please enquire for details.

Free Solar Photovoltaic Design

Solar Systems can easily be 'retro-fitted' to existing properties, or you can take the opportunity to install a built-in solution if you are re-roofing, or building a new home.

We are now able to offer a unique custom design service for all Solar Photovoltaic systems, completely free of charge, for any household, or business in the UK.

With the use of the latest dynamic simulation software for the design and calculation of solar systems, we can not only size a system, but give very accurate measurements of the achievable solar gain, CO2 reduction and fuel savings.

Why not let us design a system for your specific requirements and we can even recommend an installer to carry out the job!

For further information contact the WF Renewables Team on: 08457 353433

Your Opportunity to get Involved in Photovoltaic Installations

With recent government announcements and implementation of the Feed In Tariff (FIT) solar photovoltaic has suddenly become a very sought after technology and is now commonly specified on both new build and retrofit.

The good news is that if you are working as an electrician you already have most of the skills and qualifications needed to install the systems and be registered onto the Microgeneration Certification Scheme (MCS). Customers who use an MCS certified installer will earn up to 41.3p for every kWh (or 'unit') they generate, even if they use it themselves, and even more if they export it to the grid.

Financial returns can vary because the electricity you use while your PV system is generating is free, on top of being paid for just generating it. Therefore each case will vary. A small scale retrofit system (<4kWp) is best rewarded. Also with the FIT rates guaranteed for 25 years and index linked to make the payments rise in line with inflation, the future returns are extremely attractive.

The Feed in Tariff or "Clean Cash Back" rates are only available if PV is installed by an MCS approved contractor. The MCS is an independent scheme that certifies micro generation products and installers in accordance with consistent standards.

You can join the scheme through several different certification bodies such as the ECA or NICEIC.

As a first step WF is pleased to be able to help you as a contractor by facilitating a 3 day PV Installers course. The course covers everything a PV installer needs to become proficient in installing Photovoltaic systems and guidance on how to take the next step in gaining the all important MCS approval (this is not the MCS approval itself).

The Logic Certification PV course will cover the following:

- Solar Photovoltaic survey assessment
- SAP calculations
- G83/1 Grid connection requirements
- AC & DC electrical theory
- Basic roofing structures & integrity issues
- Hands-on PV Panel Mounting
- Mechanical installation of roof fixings
- Setting to work/commissioning
- System testing

Duration

3 Days

Course includes Logic certification fees, lunch and refreshments.

Further costs will be involved in gaining the actual MCS approval from your trade association. This course is aimed at either experienced electricians or solar PV installers intending to install Grid Connected Solar PV Systems up to 5kWp. It covers the related regulations and standards, AC and DC theory, PV cell types, PV array types, system design and installation, commissioning, testing and fault finding. This course is not intended to cover roof work or access work in detail. The assessment involves both written and practical tasks leading to a nationally recognised installer qualification.

Important: It is pre-requisite that candidates are electrically qualified and are able to design, install, inspect and test a single phase electrical circuit in accordance with BS7671:2008 (the IEE Wiring Regulations 17th Edition).

Course fees include all training and assessment materials for use during the course as well as all the course material and other useful industry documentation supplied on a CD in electronic format.



There's a WF Branch Near You



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Certificate No. 3738



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