



1,6 KW OFF-GRID PV Package (Island system) *illustration similar*

Autonomous power supply with photovoltaic 24 system for 230V (or 110V) consumers

Powerful photovoltaic package for autonomous power supply, independent of the public electricity grid. Material offer without installation.

The package consists of high-quality state of the art photovoltaic components from famous manufacturers that are perfectly matched to one another.

The technical system design has been developed by German engineers on the basis of many years of practical experience.

The system's intelligent energy management is based on continuous technical communication between the essential components. High system efficiency leads to long-term and reliable high-power returns.

The PV package is commissioned in Germany and can be delivered to a German shipping firm address (for further export).



OFF-GRID PV System (24V)
Basis package: PV = 1.62 KWp, AC = 1,6KW/3,2KW, Storage = 4,8 KWh
6 pcs PV solar panels 270Wp = 1,620 Wp (1.62KW) Panel type: PHOTON SOLAR SC-270P - 270Wp poly crystalline Made in EU - 30 years performance guarantee - German brand Panel frame size: 1640 x 992 x 40 mm
DC wire set: PV wire with connectors
Sub-structure for the panels: aluminum profile units incl. panel clamps and clamp screws
MPPT charge controller with display - European brand
1.6 KW sinus (Island) solar inverter - European brand connection to an additional external AC power source (e. g Diesel generator as back up) 1,600 W permanent load – 3.2 W short-term max. peak load
Energy Storage: 2 pcs x 12V200Ah (C20) deep cycle GEL battery 4.8 KWh battery size (usable capacity @ 50% = 2.4 KWh)
Battery wire set with battery fuse protections

The system is designed as a 24V system with the highest possible efficiency and can be expanded as required with additional panels and batteries. 230V AC consumers can be connected (optionally 110V AC consumers upon request). The 230V output corresponds to a common socket (Schuko). Other outlet sockets are available on request.

The battery is protected by a depth-of-discharge (DOD) protection at 50% of the capacity, to maintain many cycle frequencies and long-life battery use. The free battery capacity above the determined level of discharge protection is the available capacity for consumption. Doubled peak load: The inverter can take twice the power of the electrical loads for a short time.



The components compiled in this package data sheet correspond to the basic package version for an autonomous 24 V system. Depending on individual needs (electricity consumption) and local conditions (location), an extension with more or upgrade components may be required at extra charge.

Extensions - application examples:

More PV panels:

If the power production at day light is not sufficient, you should increase the number of panels.

- For example, a customer from Northern Europe (e.g. Finland) may need twice as many panels as a customer from Africa (e.g. Nigeria).
- If you consume a lot of electricity during the day, the available PV panel power may not be sufficient to provide enough surplus to the batteries. In this case, an increase in the number of panels is also recommended. A panel extension for this package is possible upon request.

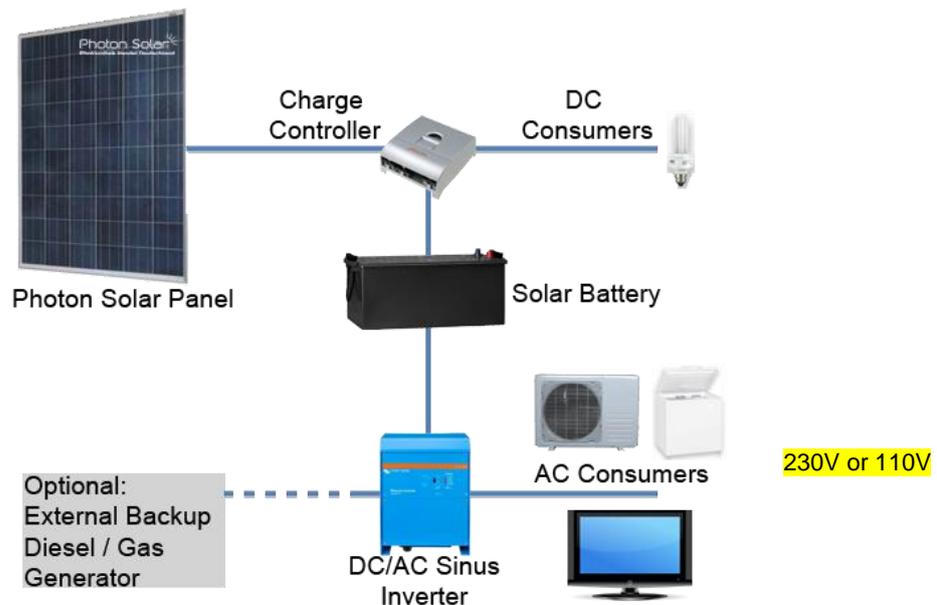
Larger inverter - Backup against grid blackouts - 3-phase system configuration:

If the power of the loads is higher than the inverter, you should choose a larger inverter, which is available upon request. Our 24V sine wave solar inverter is available in the following sizes: 1.6 KW, 3 KW, 5 KW and 8 KW.

Our basic package version includes a pure sine wave island inverter with one entry for an external AC power source (e. g. Diesel generator or public grid). Upgrade option: There is an inverter upgrade version providing two entries for connection of external AC power sources (e. g. public grid power supply and diesel generator). The parallel operation of three identical systems allows the setup of a 3-phase system: For example: 3 x 1.6KW (1ph) = 4.8 KW (3ph).

More batteries – larger energy storage capacity

If required, you can expand your storage capacity in steps of 4.8 KWh (24V = 2 x 12V200Ah), e.g.: 4.8 KWh, 9.6 KWh, 14.4 KWh etc. The free capacity above the set DOD level is available for the power consumption: Example 50% depth-of-discharge of 9.6 KWh = 4.8 KWh. Autonomy time: Depending on how long you want to consume power from the energy storage in the absence of sun (at night, rain), the more batteries you should schedule.



Warning: Danger of life and fire in case of improper connection!
 This PV package may only be connected by a professional, trained and certified electrician who carries out the electrical connection in accordance with the legal requirements of the respective country.

Note: Offer without installation. Standard package without claim to completeness. Due to local circumstances, deviating or additional material may be required at an extra charge. The general terms and conditions of PHOTON SOLAR Energy GmbH apply. *document status: Sep 13, 2018*

PHOTON SOLAR Energy GmbH – Niermannsweg 11-15 – 40699 Erkrath - Germany
 www.photon-solar.de – info@photon-solar.de - Tel: +49-211-280 125-0 - Fax: +49-211-280 125-29