

# SOLAR KIT MODEL: SEM-HT60KA



**60,000**      *Solar PV Hybrid Kit*  
**8,640**        *kWh per month*  
**288,000**    *Wh per day*  
**77,760**      *VAh Battery*

<i>Quantity</i>	<i>Description</i>
240	<i>Solar panels 250W Polycrystalline</i>
1	<i>Solar Inverter SUN 60KW + Stringbox 320</i>
1	<i>Solar hybrid inverter SUN STORAGE 60 KW</i>
54	<i>Battery bank OPzV 12V 120AH or equivalent</i>
120	<i>Support structure for solar panels</i>
1	<i>15m DC cables 1x5,6mm R1000 2 core PV panel to charge controller with thimble at ends</i>
1	<i>2m DC cables 1x5,6mm R1000 2 core battery to hybrid inverter with thimble at ends</i>
1	<i>2m DC cables 1x5,6mm R1000 2 core battery interconnection with thimble at ends</i>
1	<i>2m DC cables 1x5,6mm R1000 2 core battery interconnection with thimble at ends</i>
1	<i>5m AC cable 1x5,6mm R1000 2 core inverter to main breaker with thimble at ends</i>
2	<i>1 pair Solar connector MC4 2 in 1</i>
1	<i>1 installation tool kit</i>

## **SYSTEM WARRANTY\*:**

Solar modules production:            25 years  
 Module support structure:            25 years  
 Inverters:                                    3 years standard, (extendable to 25 years)  
 Battery:                                      1 year (10 years life)

## **Quality of Components:**

Manufactured in EU.  
 All components in the kit are high quality with CE standard

## **Description**

SITECNO solar kits for hybrid with diesel generator, batteries and grid are complete solutions which also provide energy in all unforeseen situations that may lead either by time, by circumstances of outage and any situation. It is a complete solution for saving your energy costs and fuel.

# Kit Advantages

- Easy to organize the order through a unique code and provider
- Compatibility between all components secured
- Measurement of energy flows installation
- CE Highest quality components
- Possibility of dimensioning kits for other power settings (on request)

## ***Function of the system***

1. The place uses the solar energy produced by photovoltaic modules during the hours of sun, plus the excess energy store in the batteries.
2. The grid is second choice after solar energy and the first choice for the night. In the absence of solar energy, either by night or unstable climate. The surplus energy will stored in batteries and grid.
3. The battery is a third option, when grid is unstable, the load consumes energy from the batteries.
4. The diesel generator (if connected) is the last option when the load does not get solar energy, batteries do not have enough stored energy or empty, and there is load shedding in the grid. In these situations the location consumes energy from diesel generator and also charges the batteries.

## Modular system

These systems are module type and can be installed as per your space and requirement. You can ask for additional services as state-of-the-art designing, drawings, engineering and installation of your projects.

Solar kits with modular system can be extended to MW projects

## ***Solar Kit Applications:***

- |                                      |                   |                   |
|--------------------------------------|-------------------|-------------------|
| • Schools                            | • Hospitals       | • Hotels          |
| • Restaurants                        | • Resorts         | • Scout camps     |
| • Gymnasium                          | • Service centres | • Petrol Stations |
| • Electric vehicle charging stations |                   | • Parking Areas   |

## ***Additional Accessories***

You can ask for additional accessories for extension at your installation or shifting of your system to another place.

## ***Installation Training Services***

Training of installation is offered for technical persons on time to time basis. Schedule of the training session announce on web site.

## ***Operation and maintenance services***

Operation and maintenance services offered for the valued customers for efficient operation of the system. Customers may ask for the O&M service contract with the company.

## ***Monitoring services***

In order to monitor solar power systems, data can be transmitted to remote locations. For communication between the solar inverter and monitoring devices, SITECNO provides different choices:  
Wireless / Blue-tooth / GSM network / GPRS.



# Polycrystalline Solar Module 250W

SITECNO Solar Photovoltaic Panels stand for quality, durability and most importantly, high performance. Our experience, capacity of research, continuing development and improvement have turned us into a company recognized in the sector by the high value offered to our clients.

Due to their engineered hollow section frame and its special textured glass with AR coating, SITECNO modules meet the maximum demands with regard to stability and corrosion resistance.

Thanks to their high performance SITECNO modules are prepared for changes in legislation. These panels will produce 5% more than any other of the same features.

The performance warranty is for 25 years, after 12 years, modules still produce a minimum 90% of their nominal performance. After 25 years module still produce a minimum 80% of their nominal performance.

## Electrical Characteristics:

MODEL	SI-P60-250
Nominal Power (Pmax)	250W
Open Circuit Voltage ( $V_{oc}$ )	37,5V
Short Circuit Current ( $I_{sc}$ )	8,76A
Voltage at Nominal Power ( $V_{mp}$ )	30,3V
Current at Nominal Power ( $I_{mp}$ )	8,24A
Module Efficiency (%)	15,20

## Mechanical Characteristics:

Cell type	Polycrystalline 156x156mm
Number of cells	60 (6x10)
Module dimension	1660 x 990 x 50mm
Weight	20kg
Front cover	TSG low-iron tempered glass
Frame	Aluminium alloy
Junction box	IP65, 3 diodes
Cable length	1200mm (+) , 800mm(-)
Connector	PV-JM601



## Temperature Coefficients:

Nominal Operating Cell Temperature	25°C ±2°C
Temperature Coefficients of Pmax	-0.43% / °K
Temperature Coefficients of Voc	-0.31% / °K
Temperature Coefficients of Isc	0.04% / °K
Operating Temperature	-40 °C to +85 °C
Maximum System Voltage	1000V DC
Reverse current load	15A



# SUN Power 60 kW with transformer

Three phase inverter for medium and large power outputs on-roof applications and also for ground-based multi-megawatt applications

## Maximum efficiency at high temperatures

Advanced maximum power point tracker system (MPPT). Low voltage ride through capability, active power control and reactive power control. Suitable for medium voltage installations

## Easy to install

No additional items are required. Manual disconnection from the grid. Complete electrical protection equipment supplied as standard.

## Easy to maintain

Internal data logger for up to 3 months data storage. Control from either a remote PC or on-site from the inverter front key pad. Status and alarm LED indicators. LCD Screen. Useful life of more than 20 years.

## Software included

Included at no extra cost are the SUN Manager, SUN Monitor and its Sun Monitor smart phone version for monitoring and recording the inverter data over the internet.

- **Standard 5 year warranty, extendable for up to 25 years**

The SUN Power three-phase inverters offer rated capacities from 50 to 250 kW and are designed for installation on large-scale industrial rooftops and also ground-based PV plants. The SUN PV inverter with the highest efficiency level of the whole market in its power range .

Designed for ease of maintenance, offering high performance at high temperatures and featuring full electrical protections as a standard supply, this inverter family is one of the most popular among the SUN range.

## PROTECTIONS

- Galvanic isolation between the DC and AC side.
- Reverse polarity.
- Output short-circuits and overloads.
- Insulation failures.
- Anti-islanding with automatic disconnection.
- DC switch.
- DC fuses.
- AC circuit breaker.
- DC and AC surge arresters type 2.

## OPTIONAL ACCESSORIES

- Inter-inverter communication via RS-485, Ethernet or Bluetooth.
- GSM / GPRS remote communication.
- PV array string current monitoring. SUN String Control.





### **Input (DC)**

Recommended PV array power range <sup>(1)</sup>	63 - 78 kWp
Voltage range MPP	405 - 750 V
Maximum voltage <sup>(2)</sup>	900 V
Maximum current	156 A
Inputs	4
MPPT	1

### **Output (AC)**

Rated power <sup>(3)</sup>	66 kW
Maximum current	118 A
Rated voltage	400 V
Frequency	50 / 60 Hz
Phi Cosine <sup>(4)</sup>	1
Phi Cosine adjustable	Yes. Smax=66 kVA
THD <sup>(5)</sup>	<3%

### **Efficiency**

Maximum efficiency	96.4%
Euro-efficiency	94.7%

### **General Information**

Refrigeration system	Forced ventilation
Air flow	2600 m <sup>3</sup> /h
Stand-by consumption <sup>(6)</sup>	30 W
Consumption at night	1 W
Ambient temperature	-25 °C to 65 °C
Relative humidity (non-condensing)	0 - 95%
Protection class	IP20
Marking	CE

EMC and security standards

EN 61000-6-1, EN 61000-6-2, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12, EN 62109-1, EN 62109-2, IEC62103, EN 50178, FCC Part 15, AS3100

Grid connection standards

IEC 62116, RD1699/2011, DIN V VDE V 0126-1-1, CEI 0-16 Ed. III, CEI 0-21, G59/2, VDE-AR-N 4105:2011-08, BDEW-Mittelspannungsrichtlinie:2011, P.O.12.3, South African Grid code, Chilean Grid Code, Romanian Grid Code, IEEE929, Thailand MEA & PEA requirements, IEC61727, UNE 206007-1, ABNT NBR 16149, ABNT NBR 16150, CGC China, DEWA (Dubai) Grid Code, Jordan Grid Code

**Notes:** 1) Depending on the type of installation and geographical location (2) Must not be exceeded under any circumstances. Consider the voltage increase of the 'Voc' at low temperatures (3) AC Power for 40 °C ambient temperature. For each °C of increase, the output power will be reduced at the rate of 1.8% (4) For Pout>25% of the rated power (5) For Pout>25% of the rated power and voltage in accordance with IEC 61000-3-4 (6) Consumption from PV field.



# SUN STORAGE Power 60 kW

SUN STORAGE Power battery inverter is a three-phase, two way unit that can either be used in off-grid systems or connected to the general supply network. This inverter offers a high power density in a single power block, providing a choice of configurable operating modes.

## ***Battery management***

The SUN STORAGE Power features high-tech battery management in order to maximise the useful life of the storage system. The battery temperature can be monitored at all times, guaranteeing a correct operation.

## ***Back-up genset***

Furthermore, the SUN STORAGE Power permits the connection of a back-up generator, should this be necessary. It is possible to startup the inverter by using the genset, in order to charge the batteries.

## ***Operating modes:***

### ***Stand-alone mode***

The SUN STORAGE Power generates a stand-alone AC grid and acts as a grid manager, guaranteeing the correct balance between generation, consumption and the storage system. To achieve this, the SUN STORAGE Power is able to control the energy flows between the grid and the batteries, based on the status at any given time. The SUN STORAGE Power inverter allows a solar energy source to be integrated into the grid, through the use of SUN inverters.



### ***Back-up mode***

This operating mode has been designed for grid-connected systems, where grid outages are long and frequent, meaning that a back-up power source is required. The SUN STORAGE Power inverter operates through a connection to the AC grid. In order to guarantee a power source, the inverter maintains the batteries charged. During a grid outage, the battery inverter generates the AC network and the energy stored in the batteries is used to power the loads. If any renewable energy sources are connected to the grid and the energy generated is greater than that demanded, then the surplus could be injected into the grid. Furthermore, this mode also makes it possible to implement peak shaving strategies, in order to shave consumption peaks and reduce the contracted power.

### ***Self-consumption mode***

This operating mode is conceived for grid-connected systems with renewable energy sources, in order to minimise grid consumption. If the energy generated is greater than demand, then any surplus energy could charge the batteries or, if they are fully charged, the energy could be injected into the grid. If the loads demand more energy than that produced by the renewable sources, then the batteries would cover this demand, increasing the self-consumption ratio. This mode also allows for the implementation of peak shaving strategies in order to shave consumption peaks and lower the electricity bill.

## ***PROTECTIONS:***

- Galvanic isolation between the DC, and AC sides.
- Short-circuits and overloads at the output.
- Insulation faults.
- DC switch.
- AC circuit breaker.



### **Batteries (DC)**

Nominal power	≥ 62 kW
Voltage range	330 - 820 V
Minimum voltage <sup>(1)</sup>	1,000 V
Maximum current	191 A
Inputs	4
Type of battery	Lead, Ni-Cd, Li-ion

### **Input (AC)**

Rated voltage	400 V
Voltage range	320-480 V
Frequency	50 / 60 Hz
Frequency range	40 -70 Hz
Charging current range	0 - 96 A
Maximum power	250 kW

### **Output (AC)**

Rated power <sup>(2)</sup>	60 kW
Maximum current	96 A
Rated voltage	400 V
Frequency	50 / 60 Hz

### **Efficiency**

Maximum efficiency	96.4%
--------------------	-------

### **General Information**

Galvanic isolation	Yes
Air flow	2600 m <sup>3</sup> /h
Stand-by consumption	30 W
Ambient temperature	-20 °C to +65 °C
Relative humidity (non-condensing)	0 - 95%
Maximum altitude <sup>(3)</sup>	3000
Protection class	IP20
Weight	900 kg

Compliance with standards:	EN 61000-6-1, EN 61000-6-2, EN 61000-6-4, EN 61000-3-12, EN 61000-3-11, EN 62109-1, EN 62109-2, IEC 62103, EN 50178, FCC Part 15, EN 50438, IEC 62116, IEC 61727, VDE 0126-1-1
----------------------------	--

- Notes: (1) Above 820 V, the maximum current decreases gradually  
(2) AC Power for 40 °C ambient temperature  
(3) Over 1,000 m temperature for rated power is reduced at the rate of 4.5 °C for each 1,000 m.

### **ACCESSORIES SUPPLIED AS STANDARD:**

- RS-485 communication.
- CAN communication for smart batteries.
- Configurable potential free inputs.
- Configurable potential-free outputs, some for the connection and disconnection of a back-up genset
- DC pre-charge system.
- Type 2, AC surge arresters.



# ACCESSORIES

The rechargeable batteries are lead-lead dioxide systems. The dilute sulphuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special one way valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.

## **Type of Battery:**

Standards:  
Capacity Range:  
Normal Voltage range:  
Container Material:  
Grid alloy (+ive, -ive)  
Plates (+ive, -ive)  
Electrolyte:  
Application:  
Connector design:  
Design life up to  
Cycles up to:  
Operating temperature:

## **Solar.bloc**

IEC 60896, IEC 61427, DIN 40744  
180 AH  
12V  
PP, talcum  
Pb + <1% Ca  
Tubular, Grid  
H2SO4, GEL  
Solar  
bolted connector  
10 years  
1300  
-20°C to +40°C



## **Design**

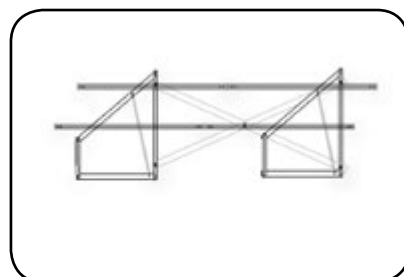
Technical feature

## **Modular type**

Aluminium  
25 years warranty  
Tamper proof nut bolt  
100% recyclable material  
A2 Stainless steel bolts  
2,49kg/m  
wind, snow  
CE Certifies



Weight  
Loads  
Test certificate



Support structure

## **Cable:**

- Model:
- Rated Voltage:
- Rating Current:
- Cable Size:
- Proof Voltage:
- Protection Class:
- Temperature Range:
- Flame class:

SI-MC4-F  
TUV 1500V DC / UL 600V DC  
20-30A  
2.5-4.0-6.0, 10-12-14AWG  
TUV 1500V AC, 1 min  
Class II  
-40 to 85°C  
UL94-V0



Cable with connector

## **Connector:**

Flexible conductor,  
Maximum service temperature:  
Estimated lifetime:  
UV Resistant UV Resistant  
Grease & mineral oils resistance:  
Grease & mineral oils resistance:

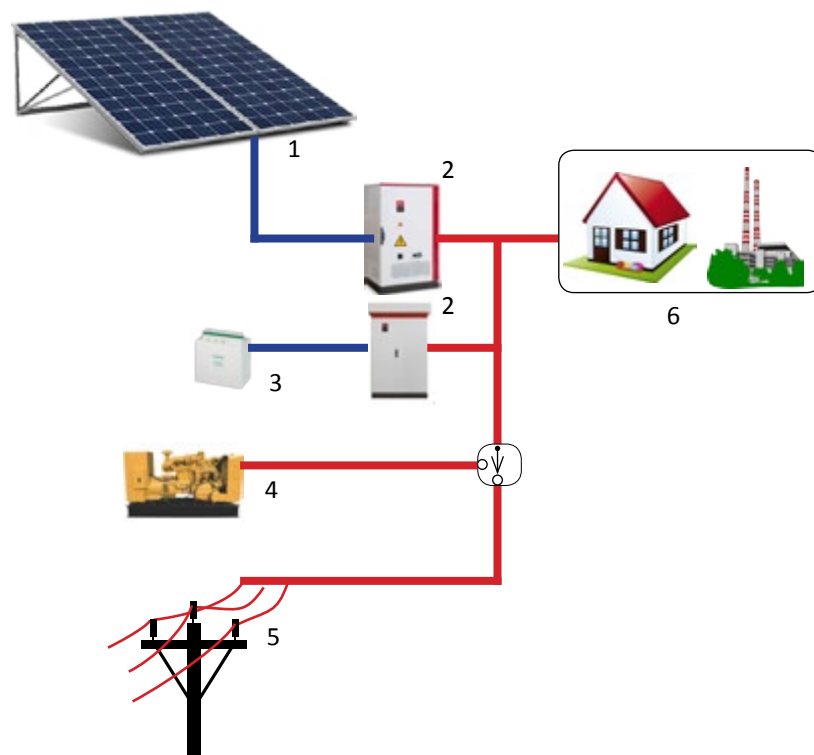
class 5  
120°C  
30 years.  
excellent  
excellent



Cable connector MC4



# SINGLE LINE DIAGRAM



1. Photovoltaic modules
2. Inverters
3. Batteries
4. Diesel generator
5. Grid
6. Consumption





SITECNO S.A.  
C/ Can balmes 1, Zona industrial,  
Santa. M<sup>a</sup>. de Palautordera,  
08460 Barcelona, Spain.  
Tel: +34 938482544  
Fax: +34 938480439  
info@sitecnosolar.com  
www@sitecnosolar.com



*Authorized distributor:*

