SOLAR KIT MODEL: SISMA-HT12000

12000 Solar PV Hybrid Kit
1728 kWh per month production
57600 Wh per day production

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Solar panels 250W Polycrystalline</td>
</tr>
<tr>
<td>1</td>
<td>Solar hybrid inverter tripower 12000TL</td>
</tr>
<tr>
<td>3</td>
<td>Solar hybrid inverter Sunny Island 4,4M</td>
</tr>
<tr>
<td>12</td>
<td>Battery bank 12V 150AH or equivalent</td>
</tr>
<tr>
<td>1</td>
<td>Support structure for solar panels</td>
</tr>
<tr>
<td>3</td>
<td>15m DC cables 1x5.6mm R1000 2 core PV panel to charge controller with thimble at ends</td>
</tr>
<tr>
<td>3</td>
<td>2m DC cables 1x5,6mm R1000 2 core battery to hybrid inverter with thimble at ends</td>
</tr>
<tr>
<td>1</td>
<td>25 x 0.5m DC cables 1x5,6mm R1000 2 core battery interconnection with thimble at ends</td>
</tr>
<tr>
<td>3</td>
<td>5m AC cable 1x5,6mm R1000 2 core inverter to main breaker with thimble at ends</td>
</tr>
<tr>
<td>4</td>
<td>5m AC cable 1x5,6mm R1000 2 core inverter to inverter with thimble at ends</td>
</tr>
<tr>
<td>3</td>
<td>1 pair Solar connector MC4</td>
</tr>
<tr>
<td>1</td>
<td>1 installation tool kit</td>
</tr>
</tbody>
</table>

SYSTEM WARRANTY*:
Solar modules production: 25 years
Module support structure: 25 years
Inverters: 5 years standard, (extendable to 25 years)
Battery: 1 year (life 10 years)

Quality of Components:
Manufactured in EU.
All components in the kit are high quality with CE standard

Description
SITECNO solar kits for hybrid system 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.
Kits 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
- Support pre (Combiner Box) enclosures configured to facilitate mounting installation.
- Possibility of dimensioning variants references listed 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 is the last option when the load does not get solar energy, batteries do not have enough stored energy or are 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
- Restaurants
- Gymnasium
- Electric vehicle charging stations
- Gardens
- Markets
- Administration buildings
- Hospitals
- Resorts
- Service centres
- Multi story buildings
- Shopping malls
- Hotels
- Scout camps
- Petrol Stations
- Parking Areas
- Old houses
- Public service offices

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 two basic choices: Wireless or Blue-tooth and wired variants.
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 4mm 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 (VOC)**: 37,5V
- **Short Circuit Current (ISC)**: 8,76A
- **Voltage at Nominal Power (Vmp)**: 30,3V
- **Current at Nominal Power (Imp)**: 8,24A
- **Module Efficiency (%)**: 15,20

Mechanical Characteristics:

- **Cell type**: Polycrystalline156x156mm
- **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, 3diodes
- **Cable length**: 1200mm (+), 800mm(-)
- **Connector**: PV-JM601

Temperature Coefficients:

- **Nominal Operating Cell Temperature (NOCT)**: 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
TRIPOWER 12000TL

Economical
• Maximum efficiency of 98.2 %
• SMA OptiTrac Global Peak
MPP tracking for best MPP tracking efficiency
• Bluetooth® communication

Reliable
• Triple protection with Optiprotect:
  Electronic string fuse
  Self-learning string failure detection
  DC surge arrester (Type II) can be integrated

Flexible
• DC input voltage up to 1,000 V
• Integrated grid management functions
• Custom plant design with Optiflex

Simple
• Three-phase feed-in
• Cable connection without tools
• SUNCLIX DC plug-in system
• Easily accessible connection area

The three-phase inverter for easy plant design Full of pioneering technology: highly flexible plant design with the three-phase Sunny Tripower inverter. Thanks to Optiflex technology, two MPP inputs and a broad input voltage range, it is suited to almost any module configuration. It meets any requirement such as reactive power supply, grid support thus reliably participating in grid management. The safety concept Optiprotect with its self-learning string-failure detection, electronic string fuse and integrable DC surge arrester type II, ensures maximum availability.

Input (DC)
Max. DC power (@ cos φ = 3) 12250 W
Max. input voltage 1000 V
MPP voltage range / rated input voltage 380 V ... 800 V / 600 V
Min. input voltage / initial input voltage 150 V / 188 V
Max. input current input A / input B 22 A / 11 A
Max. input current per string input A / input B 33 A / 12.5 A
Number of independent MPP inputs / strings per MPP input 2 / A:4; B:1

Output (AC)
Rated power (@ 230 V, 50 Hz) 12000 W
Max. apparent AC power 12000 VA
Nominal AC voltage / range 3 / N / PE, 230 V / 380 V / 400 V
AC power frequency / range 50 Hz, 60 Hz / -5 Hz … +5 Hz
Rated power frequency / rated grid voltage 50 Hz / 230 V
Max. output current 16 A
Power factor at rated power 1
Displacement power factor, adjustable 0 overexcited ... 0 underexcited
Efficiency
Max. efficiency / European weighted efficiency 98.1 % / 97.7 %

Protective devices
DC disconnect device ●
Ground fault monitoring / grid monitoring ●/●
DC reverse polarity protection / ○
AC short-circuit current capability / galvanically isolated ●/●
All-pole-sensitive residual-current monitoring unit ●
Protection class (according to IEC 62103) / overvoltage category (according to IEC 60664-1) I/III

General data
Dimensions (W / H / D) 665 / 690 / 265 mm (26.2 / 27.2 / 10.4 inches)
Weight 59 kg (130.07 lb)
Operating temperature range –25°C … +60°C (–13°F … +140°F)
Noise emission (typical) 51 dB(A)
Self-consumption (night) 1 W
Topology Transformerless
Cooling concept Convection
Degree of protection (according to IEC 60529) IP65
Climatic category (according to IEC 60721-3-4) 4K4H
Maximum permissible value for relative humidity (non-condensing) 100%

Features
DC connection / AC connection SUNCLIX / Spring clamp terminal
Display Graphic ○/●/○
Interface: RS485, Bluetooth, Speedwire/Webconnect ○/○
Multi-function relay / Power Control Module ●/○/○/○
Warranty: 5 / 10 / 15 / 20 / 25 years

● Standard features ○ Optional features — Not available, Data at nominal conditions
SUNNY ISLAND 4.4M

The custom-fit solution for on-grid and off-grid The Sunny Island 4.4M support a wide range of on-grid and off-grid applications, and both systems have a number of compelling product features. Users benefit from SMA’s over 25 years of experience with battery inverter technology. Its high protection class, wide temperature range and overload capacity provide the kind of reliability needed for off-grid use. Intelligent load and energy management keeps the system running even in critical situations. And being a core element in the SMA Flexible Storage System for new and existing PV systems, the Sunny Island system stores generated solar power and works with the Sunny Home Manager to intelligently manage home energy consumption. The quick configuration guide and intuitive user interface help ensure quick and convenient commissioning in any both cases. The new Sunny Island 4.4M system are the perfect product solutions for stand-alone and grid-connected systems in a power output range of up to 13 kW.

Technical data Sunny Island 4.4M

Operation on the utility grid or generator

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input voltage / AC input voltage range</td>
<td>230 V / 172.5 V … 264.5 V</td>
</tr>
<tr>
<td>Rated input frequency / permitted input frequency range</td>
<td>50 Hz / 40…Hz … 70 Hz</td>
</tr>
<tr>
<td>Maximum AC input current</td>
<td>50 A</td>
</tr>
<tr>
<td>Maximum AC input power</td>
<td>11,500 W</td>
</tr>
</tbody>
</table>

Stand-alone or emergency power operation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated grid voltage / AC voltage range</td>
<td>230 V / 202 V ... 253 V</td>
</tr>
<tr>
<td>Rated frequency / frequency range (adjustable)</td>
<td>50 Hz / 45 Hz ... 65 Hz</td>
</tr>
<tr>
<td>Rated power (for Unom / fnom / 25°C / cos ϕ = 1)</td>
<td>3,300 W</td>
</tr>
<tr>
<td>AC power at 25°C for 30 min / 5 min / 3 s</td>
<td>4,400 W / 4,600 W / 5,500 W</td>
</tr>
<tr>
<td>AC power at 45°C continuously</td>
<td>3,000 W</td>
</tr>
<tr>
<td>Rated current / short-circuit current (peak)</td>
<td>14.5 A / 60 A</td>
</tr>
<tr>
<td>THD output voltage / power factor with rated power</td>
<td>&lt; 4.5% / -1 … +1</td>
</tr>
</tbody>
</table>

Battery DC input

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input voltage / DC voltage range</td>
<td>48 V / 41 V ... 63 V</td>
</tr>
<tr>
<td>Maximum battery charging current / rated DC charging current / DC discharging current</td>
<td>75 A / 63 A / 75 A</td>
</tr>
<tr>
<td>Battery type / battery capacity (range) Li-ion*, FLA, VRLA /</td>
<td>100 Ah ... 10,000 Ah (lead)</td>
</tr>
<tr>
<td></td>
<td>50 Ah ... 10,000 Ah (li-ion)</td>
</tr>
<tr>
<td></td>
<td>IUoU charge procedure with automatic full charge and equalization charge</td>
</tr>
<tr>
<td>Charge control</td>
<td></td>
</tr>
</tbody>
</table>

Efficiency / self-consumption

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum efficiency</td>
<td>95.3%</td>
</tr>
<tr>
<td>Self-consumption without load / standby</td>
<td>18 W / 6.8 W</td>
</tr>
</tbody>
</table>

Protective devices (equipment)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC short-circuit / AC overload</td>
<td>●/●</td>
</tr>
<tr>
<td>DC reverse polarity protection / DC fuse</td>
<td>– / –</td>
</tr>
</tbody>
</table>
Overtemperature / battery deep discharge ●/●
Overvoltage category as per IEC 60664-1 III

**General data**
Dimensions (width x height x depth) 467 mm x 612 mm x 242 mm (18.4 inches / 24.1 inches / 9.5 inches)
Weight 44 kg (97 lbs)
Operating temperature range -25°C … +60°C (-13°F … +140°F)
Protection class according to IEC 62103 I
Climatic category according to IEC 60721 3K6
Degree of protection according to IEC 60529 IP54

**Features / function**
Operation and display / multifunction relay External via SRC-20 / 2
Three-phase systems / battery backup function ●/●
State of charge calculation / full charge / equalization charge ●/●/●
Integrated soft start / generator support ●/●
Battery temperature sensor / data cables ●/●
Certificates and approvals www.SMA-Solar.com
Warranty 5 years

**Accessories**
For off-grid applications
Battery cable / battery fuse ○/○
Interface SI-COMSMA (RS485) ○
Load-shedding contactor / external battery current measurement ○/○
Sunny Island Charger SIC50-MPT ○

For on-grid applications
Battery cable / battery fuse ○/○
Interface SWDMSI-NR (Speedwire) ○
Sunny Home Manager / SMA Energy Meter ○/○
Automatic transfer switch for battery backup (procurement via external supplier) ○

**Type designation**
SI4.4M-11

- Standard features ○ Optional features — Not available
SOLAR BLOC BATTERY

Solar bloc valve regulated lead-acid batteries for cyclic applications

Your benefits with HOPPECKE solar.bloc

Maintenance-free regarding water refilling - due to Absorbent Glass Mat technology
Optimized cycle stability - due to optimized electrode design for efficiently change current acceptance
OpTimum operational safty - integrated backfire protection and central degassing system
High short-circuit safety even during the installation - based on HOPPECKE system connectors

Typical applications of HOPPECKE solar.bloc

Solar Off-grid applications
Power supply for remote off-grid applications and isolated power networks, solar home systems, solar street lighting, healthcare facilities

Storage for direct consumption of photovoltaic (PV) energy

Telecommunications
Mobile phone stations, BTS-stations, Off-grid/on-grid solutions

Traffic systems
Signalling systems
Lighting

Type of Battery: Solar.bloc
Standards: IEC 60896, IEC 61427, DIN 40744
Capacity Range: 150 AH
Normal Voltage range: 12V
Container Material: PP, talcum
Grid alloy (+ive, -ive): Pb + <1% Ca
Plates (+ive, -ive): Grid, Grid
Electrolyte: H2SO4, AGM
Application: Solar
Connector design: bolted connector
Design life up to: 10 years
Cycles up to: 800
Operating temperature: -20°C to +40°C

Service life in cycles and Depth of Discharge

Depth of Discharge DoD [%]

Number of cycles [n]

Size: LxWxH : 498mm x 177mm x 230mm
Weight: 55 Kg
ACCESSORIES

**Design**
- Technical feature

**Modular type**
- Aluminium
- 25 years warranty
- Tamper proof nut bolt
- 100% recyclable material
- A2 Stainless steel bolts
- 2.49kg/m

**Weight**
- Loads
- wind, snow

**Test certificate**
- CE Certifies

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**Cable:**
- Model: SI-MC4-F
- Rated Voltage: TUV 1500V DC / UL 600V DC
- Rating Current: 20-30A
- Cable Size: 2.5-4.0-6.0, 10-12-14AWG
- Proof Voltage: TUV 1500V AC, 1 min
- Protection Class: Class II
- Temperature Range: -40 to 85ºC
- Flame class: UL94-V0

**Connector:**
- Flexible conductor, class 5
- Maximum service temperature: 120ºC
- Estimated lifetime: 30 years.
- UV Resistant
- UV Resistant
- Grease & mineral oils resistance: excellent
- Grease & mineral oils resistance: excellent

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Support structure

Cable with connector

Cable connector MC4
INSTALLATION APPLICATION

- Instant self-consumption system with feed in grid (on grid)
- Instant self-consumption system without feed in to the grid (on grid)
- Solar system hybrid compatible with diesel generator (on grid)

1. Módulos fotovoltaicos
2. Inversores
3. Batería
4. Red eléctrica
5. Generador diésel
6. Conmutador
7. Consumo
INSTALLATION APPLICATION

- Instant self-consumption system (off grid)

1. Módulos fotovoltaicos
2. Inversores
3. Batería
4. Consumo
Produce your own FREE energy
Your contribution for a sustainable earth and reduce CO2